HIGH CONSERVATION VALUE ASSESSMENT AND MANAGEMENT PLAN

September 2025

This Plan has been prepared for and on behalf of

The Trust Company (PTAL) Limited in its capacity as trustee of the Tasmanian Forest Investment Sub Trust (TFIST)

and

The Trust Company (Australia) Limited in its capacity as trustee of the Tasmanian Forest Operating Sub Trust (TFOST)

and

Forico Pty Limited as Forest Manager (Forico)

Queries, comments and feedback are welcomed.

Please contact forico@forico.com.au or send comments to:

Forico Pty Limited

PO Box 5316

LAUNCESTON TAS 7250

Cover Photo: Rehabilitation Plantings and *Eucalyptus viminalis* (white gum) forest

ACKNOWLEDGEMENT OF COUNTRY

To all Aboriginal Traditional Owners and Spiritual Custodians of these islands, Forico respectfully walks with you towards a future where a voice, treaty and truth telling will be heard and supported.

- *We acknowledge that you have not always been heard, and we promise to listen.*
- *We acknowledge that access to your cultural sites has been lost, and invite you back.*
- *We acknowledge that your culture has a unique connection to Country, and we seek to understand and learn from this.*
- *We acknowledge that your ancestors actively cared for this Country, and we seek your guidance for future management.*

By offering this acknowledgement we pay our respects to you, your communities and your past, present and future Elders.

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Purpose of this document

This *HCV Assessment and Management Plan* was written to provide a clear overview of:

- efforts made by Forico Pty Limited to assess and characterise High Conservation Values (HCVs) on land under its control;
- rationale behind its HCV assessment and monitoring regimes;
- processes for involving stakeholders;
- summary of the HCVs identified to date;
- HCV management strategies implemented to date; and
- planned future program for HCV assessment, monitoring and management.

1. CONTEXT

1.1 Overview of the Forest Management Unit (FMU)

The operational areas managed by Forico Pty Limited (Forico) consist of an extensive hardwood plantation estate and a smaller area of softwood plantation, within which a range of forest products are established, grown, and harvested in a sustainable manner.

The Forest Management Unit (FMU) consists of these operational areas, plus natural vegetation areas, primarily on freehold land and in limited instances on third-party land. The freehold areas are termed the Permanent Estate, and are owned by The Trust Company (PTAL) Limited in its capacity as trustee of the Tasmanian Forest Investment Sub Trust (TFIST). The third-party land areas are termed the Semi-Permanent Estate, as they may change over time. In both cases, Forico has management control over the land within its FMU.

The FMU comprises hardwood (*Eucalyptus nitens* and *Eucalyptus globulus*) and softwood (*Pinus radiata*) grown in plantations totalling 87,563 hectares. The FMU also includes some 76,732 hectares of natural vegetation managed for conservation values (Table 1). Areas of natural vegetation on the Forico FMU will be managed as natural vegetation and not be subject to harvesting activities. The natural forest areas are also made available to individuals and small businesses seeking to access non-timber forest products such as native pepper berries and leatherwood nectar, under agreements that they be harvested in a sustainable manner without damage to other values.

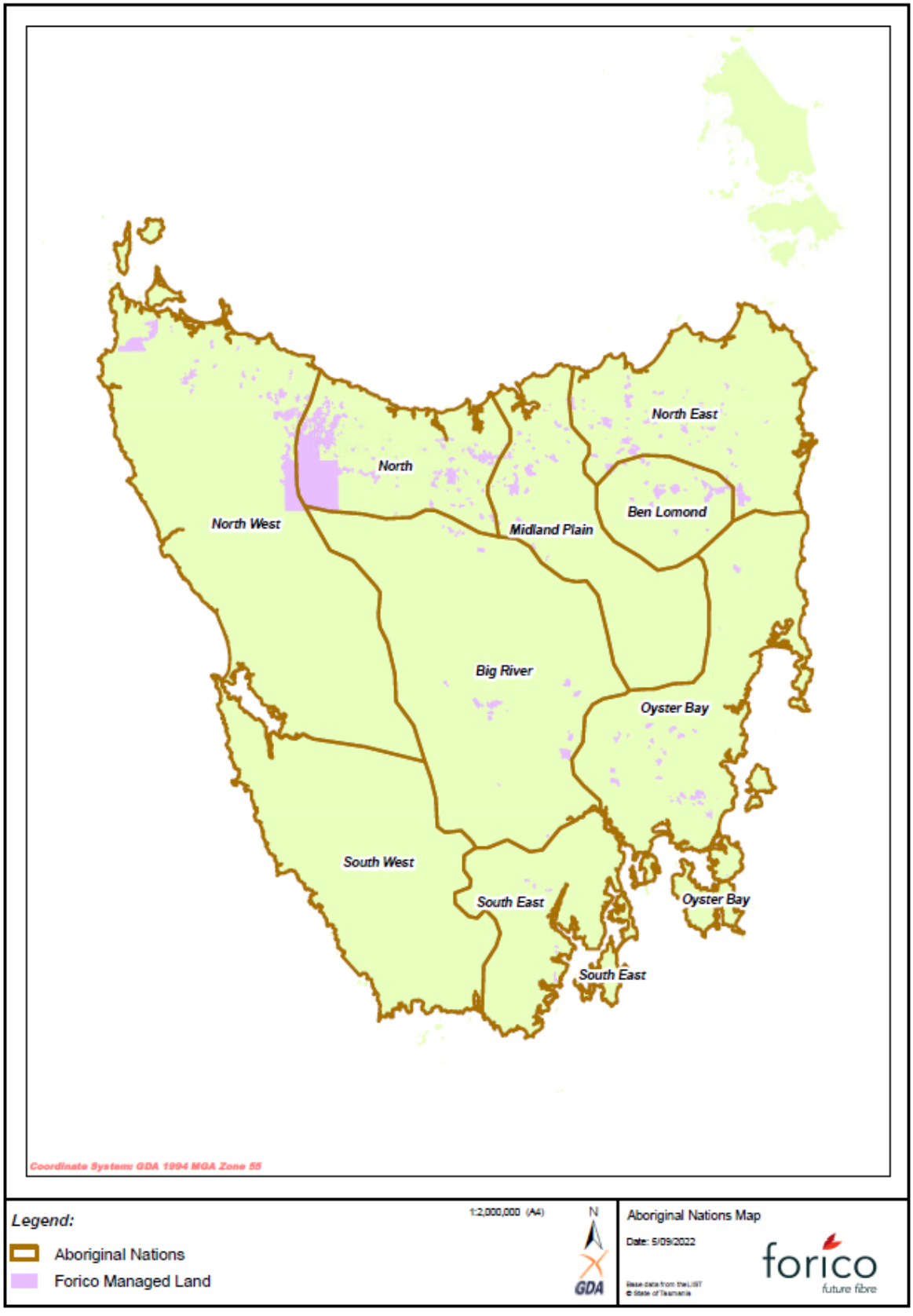
The hardwood estate accounts for approximately 82%of the FMU plantation area (net planted area basis), with the softwood estate making up the remaining18%. These plantations are currently grown to produce fibre for the pulp and paper industry and solid wood products for the structural and veneer timber markets. The FMU is located entirely within Tasmania, with resource situated in the southeast, northeast and northwest of the State (Figure 1).

Table 1. The Forico Forest Management Unit

PERMANENT ESTATE	**Area (ha)** [1]
Net plantation area	86,065
Native vegetation area	76,732
Infrastructure and other	7857
Sub-Total	**170,655**
SEMI-PERMANENT ESTATE	
Net plantation area	1498
TOTAL	**172,153**

[1] as at 30/06/2025 Forico *State of the Estate Report*

Figure 1. The Forico Forest Management Unit and historical boundaries of the original Aboriginal Nations of the islands now known as Tasmania. Source: Johnson et al (2015).



1.2 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 (including the extensive areas of subalpine grassland on Surrey Hills);
- scrub, heathland and coastal complexes;
- saltmarsh, wetland and peatland (including *Sphagnum* peatland);
- wet sclerophyll forest; and
- dry sclerophyll forest.

Each of these broad native vegetation types are represented in the FMU and have their own unique biodiversity elements.

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*, many of which occur within the FMU. Some of these species are originally endemic only to Tasmania, while others were previously more widely distributed, but have become extinct on mainland Australia.

1.3 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 2020).

1.4 Legislative context and requirements

Forestry activities in Tasmania are regulated under the *Forest Practices Act 1985* and *Forest Practices Regulations 2017*, both administered by an independent statutory authority, the Forest Practices Authority (FPA), and form 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.

The guidelines and prescriptions in the FPC address operational activities including:

- operational planning;

- building access to the forest;
- harvesting of timber;
- management of natural and cultural values (soil and water, geomorphology, visual landscape, flora, fauna and cultural heritage);
- establishing and maintaining forests; and
- management of fuels, oils, rubbish, and emissions.

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

- *Code of Practice for Aerial Spraying 2002*;
- *Code of Practice for Ground Spraying 2001*;
- *Quarry Code of Practice 2017*; and
- *Forest Safety Code (Tasmania) 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) (Table 2) are incorporated into the requirements of the forest practices system. Many of these key pieces of legislation are also applicable to areas of the FMU that are not subject to forestry operations, but which also contain HCVs.

Table 2. Acts and regulations relevant to the management of HCVs in Forico's FMU

Legislation	Purpose	Responsible agency
State legislation		
Aboriginal Heritage Act 1975	To provide for the identification and protection of all Aboriginal relics (sites).	Aboriginal Heritage Tasmania (NRE Tas)
Agricultural and Veterinary Chemicals (Control of Use) Act 1995	Controls the handling and use of agricultural and veterinary chemicals in Tasmania.	Biosecurity and Product Integrity Division (NRE Tas)
Agricultural and Veterinary Chemicals (Control of Use) Regulations 2012	Defines requirements for neighbour notifications, operator training, handling and storage of chemicals, penalties for non-compliance with the Act.	Biosecurity and Product Integrity Division (NRE Tas)
Animal Welfare Act 1993	Ensure animals are not treated cruelly (addresses game control).	Wildlife Management Branch (NRE Tas)
Biosecurity Act 2019	Includes the General Biosecurity Duty to take all reasonable and practical measures to prevent, eliminate, or minimise biosecurity risks.	(NRE Tas)
Environmental Management and Pollution Control Act 1994	Establishes duty of care on everyone to prevent or minimise environmental harm. Defines potentially harmful activities	Environment Protection Authority (EPA)

Legislation	Purpose	Responsible agency
	requiring assessment and approval. Identifies the notification requirements for environmental incidents.	
Firearms Act 1996	To provide for the regulation, registration and control of firearms.	Tasmania Police
Fire Service Act 1979	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
Forest Practices Act 1985	Establishes the *Forest Practices Code* 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 (NRE Tas)
Forest Practices Regulations 2017	Supports implementation of the *Forest Practices Act 1985*, including situations for which a Forest Practices Plan is not required. Also defines "vulnerable land".	Forest Practices Authority (Department of State Growth)
Historic Cultural Heritage Act 1995	To identify, assess and protect historic (post European settlement) cultural heritage.	Heritage Tasmania (NRE Tas)
Land Use Planning and Approvals Act 1993 and Land Use Planning and Approvals Amendment (Tasmanian Planning Policies and Miscellaneous Amendments) Act 2018	Provides for land use planning and approvals except for forest practices specifically regulated by the *Forest Practices Act 1985*.	Tasmanian Planning Commission
Nature Conservation Act 2002	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. Schedule 3A of the Act lists vegetation types (forest and non-forest) considered threatened, which links to the definition of "vulnerable land" under the *Forest Practices Regulations 2017*.	(NRE Tas)
Threatened Species Protection Act 1995	Provides for the conservation and management of scheduled	(NRE Tas)

Legislation	Purpose	Responsible agency
	threatened species of flora and fauna.	
Commonwealth legislation		
Aboriginal and Torres Strait Islander Heritage Protection Act 1984	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 Climate Change, Energy, the Environment and Water
Environment Protection and Biodiversity Conservation Act 1999	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 the Environment and Energy

1.5 Precautionary Principle

The precautionary principle can be described as a strategy to conservatively manage a range of potential risks 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. Forico's Purpose, states:

> **'We are the custodians of the natural environment, entrusted to use our natural resources for the betterment of future generations and to preserve and create value for our investors.'**

Forico implements measures that aim to maintain and/or enhance HCVs in a manner consistent with the precautionary principle. This principle is reflected in the Forico Environmental Sustainability Policy and the Forico Safety, Health and Environment (SHE) Management System, specifically the Risk Management Standard and Risk Management Procedure.

An example of Forico's application of the precautionary principle arose as part of stakeholder input. During the 2020 review of this HCV Assessment and Management Plan a stakeholder highlighted the potential merit of analysing the reservation status of native vegetation communities at a bioregional level. This exercise demonstrated that in a number of instances where threatened communities could be considered under-reserved at the bioregional level, the presence of that community on Forico's land substantially added to the total area of that community being managed for conservation and biodiversity values. This is discussed in more detail in section 7.1.3 and Table 22.

2. ASSESSMENT OF HIGH CONSERVATION VALUES

2.1 High Conservation Values

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 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. These categories are each subdivided into further sub-values, which are discussed in greater detail later in this plan.

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.
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

Forico has both a policy and strategic commitment to manage the FMU to deliver sustainable forest management outcomes. This commitment incorporates the identification of HCVs, and where required, their maintenance and/or enhancement. To this end, a number of information sources have been interrogated and on-ground assessments have been undertaken to identify and evaluate HCVs throughout the Forico FMU.

These sources include:

- Forest Practices Plans (identification of HCVs in specific operations) [see Section 2.3.1 below];
- Regional Ecosystem Model (strategic model that was initially used to identify potential HCVs throughout the FMU) [see Section 2.3.2 below];
- High Conservation Valuation and Assessment Program [see Section 2.3.3 below];
- public information sources (including the *Natural Values Atlas* and TasVeg) [see Section 3.1 below];
- Forico GIS (contains a significant amount of spatial data throughout the FMU – accumulated internally, but also incorporating externally available spatial information) [see Section 3.2 below]; and
- consultation with qualified experts and other relevant stakeholders to firstly prioritise, then appropriately and adequately monitor HCVs throughout the FMU to ensure values are maintained and where applicable enhanced [see Sections 2.3.3, 2.3.4 and Section 3.4 below].

Forico 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. See Sections 2.3.3 and 2.3.4 below.

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 European;
- geomorphology;
- soil and water values; and
- visual landscape

The evaluation initially involves 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. (see Section 3.2 Geographic Information Systems).

Field verification is then 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 values 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 Forico supervisors, and mandatory reporting of compliance to the FPA is done at the end of each discrete operational phase of the operation.

Prior to the certification of an FPP, Forico undertakes a rigorous peer review process to ensure the FPP complies with all legal requirements and other Forico's other voluntary commitments, including this management plan.

Implementing prescriptions in the FPP and applying the *Forest Practices Code*, and liaising with Forest Practices Authority specialists and other government land management agencies, ensures natural

values are considered and managed appropriately during the course of operational activities and across the adjacent landscape.

2.3.2 Best Available Information

Since Forico's inception in 2014, as part of a strategy to continually improve the approach to manage HCVs across the FMU, Forico has progressively verified the data originally captured through the REM. The ultimate objective for Forico is to maintain and/or enhance natural ecosystems. To achieve this goal, a number of approaches have been considered and evaluated to ensure HCV's are not compromised.

The REM remains as a spatial layer on the Forico GIS, but this approach has largely been replaced by the use of updated spatial datasets and field-verified information. Where available, this information serves to complement and improve upon the information previously provided from the REM. Forico's new approach utilises data that has been verified in the field in a structured fashion, and which is clearly auditable, to quantifiably determine the presence or otherwise of actual HCVs, and HCVF, throughout the FMU.

Forico is confident that by using the best available information and spatial data from both internal and external sources, the accurate identification and management of HCVs and HCVF throughout the FMU will be optimised. This current approach, described below, uses approved scientific techniques and ground-truthing by suitably qualified experts. This is progressively resulting in more accurate mapping of HCVs and HCVF throughout the FMU.

2.3.3 High Conservation Value assessment and verification program

Forico has undertaken a diligent assessment process to verify and validate HCVs across the FMU. Objectives of the assessment program included:

- identification of HCVs that either occur within or are positioned adjacent to the FMU that could be impacted by Forico 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 larger Forico management system.

Each of the polygons identified as containing HCVs by the REM has been physically visited and inspected to assess the condition of the site and value, identify any issues or hazards present, and suggest management prescriptions that will maintain and/or enhance the identified values in future.

Analysis of the GIS coverage has demonstrated that the REM-identified HCV locations are embedded within the broader natural vegetation zone. Further on-ground verification and validation has been conducted by suitably qualified staff and external consultants to determine whether the extent of the HCV coverage can be expanded. Known threatened flora and fauna localities have also been monitored using contemporary scientific methods. To ensure transparency is achieved during the assessment process, Forico has engaged an independent ecological expert to validate the identified HCV locations while assessing the extensive natural vegetation coverage retained throughout the FMU (see 2.3.4 below). The objective of utilising an independent technical expert is to validate Forico's plan to maintain and enhance native vegetation and consider further improvements to methodologies. The process is fundamentally one of continual improvement.

2.3.4 Natural forest assessment and monitoring program

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

Vegetation condition assessments (VCAs)

The Department of Parks, Primary Industries, Water and Environment (now NRE TAS) has developed a nationally recognised Vegetation Condition Assessment (VCA) tool for assessing vegetation condition in Tasmania.

This tool, described in Michaels (2020), has been selected by Forico to assess the ecological condition of forest and non-forest native vegetation communities located within Forico's natural forest areas. Adopting a nationally approved technique, conducted by trained personnel, ensures a robust systematic program of assessment. The program has the ability to quantify natural values present. This process identifies maintenance and enhancement opportunities throughout the FMU with structured and robust methodologies.

A number of different spatial datasets have been used to identify target areas, including the internal Forico Geographic Information System (GIS), the REM, and external sources such as the *Natural Values Atlas* and TasVeg databases.

The initial VCA program has focused on the listed threatened native vegetation communities (both forest and non-forest) within the FMU. Further work has progressively assessed other native vegetation communities, both forest and non-forest, present in the FMU (Spicer & Wapstra 2018a, b, c).

Threatened flora assessments

Forico undertakes surveys for threatened flora across the FMU, incorporating long-term monitoring, extension surveys, population census and management. Recorded populations of threatened flora have been documented on GIS and in supporting reports with information provided on the species' conservation status, distribution within the FMU, and priority for management. All relevant population information has been supplied to the *Natural Values Atlas* database maintained by NRE Tas, and where appropriate, voucher specimens provided (under permit) to the Tasmanian Herbarium.

The *Natural Values Atlas* database have been interrogated and superimposed on a GIS shape file of the Forico FMU to ensure that known flora species were identified and can subsequently be monitored (e.g. Wapstra & Spicer 2019a, b).

Threatened fauna assessments

Forico has participated in long-term monitoring studies within the FMU, including but not limited to:

1. ptunarra brown butterfly (*Oreixenica ptunarra*);
2. wedge-tailed eagle (*Aquila audax*) and white-bellied sea-eagle (*Haliaeetus leucogaster*) (e.g. Forico 2015); and
3. Tasmanian devil (*Sarcophilus harrisii*).

Research programs in partnership with external experts have been initiated for the ptunarra brown butterfly and Tasmanian devil, which are providing valuable information on these threatened species. Studies regarding wedge-tailed eagle nest locaitons, and their sensitivity to disturbance in the landscape, have been undertaken in conjunction with the Forest Practices Authority. These programs are ongoing, which in some instances have involved re-configuring some forestry operations in space and time to allow research to continue. Forico is committed to continuing these research partnerships and exploring new ones.

Vegetation

Forico has implemented a program to field-validate and update TASVEG to improve the accuracy of this dataset. The focus has been on parts of the FMU assessed for other reasons (e.g. vegetation condition assessments) but also on strategic parts of the FMU, specifically the larger consolidated areas including the Surrey Hills (French et al. 2018), Woolnorth (French & Wapstra 2020), Armitstead (Spicer & Wapstra 2018c) and Evercreech areas. Data is progressively provided to NRE TAS to improve this public database for all users.

Forico contributes to TASVEG updates annually by sharing the re-mapping information which arises from its vegetation condition assessment program.

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 Forico 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 (see Table 4 below).

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

In Tasmania the *Natural Values Atlas*, a spatial database maintained by the Department of Primary Industries, Parks, Water & Environment (NRE TAS), 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. An important component of HCVF assessment at Forico is the checking of this database to ensure all known values within the FMU are identified.

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 a vital tool for biodiversity research and monitoring, land use planning and sustainable management of Tasmania's unique natural resources. TasVeg is continually revised and updated, a process in which Forico is actively involved (see section 2.3.4 above).

3.2 Geographic Information Systems

Forico's GIS mapping software incorporates detailed site records and other information captured by employees during management operations. The internal datasets are maintained, updated and audited to demonstrate that the spatial coverage is continually improved.

External databases consulted, and included into the operational planning process, include:

- threatened species distributions (administered by NRE TAS);
- Digital Vegetation Map of Tasmania (TasVeg administered by NRE TAS);
- *Biodiversity Values Database* (administered by FPA);
- *Threatened Species Adviser* (administered by FPA) [FPA 2014)];
- *Forest Botany Manuals* (administered by FPA) [FPA 2005];
- *Natural Values Atlas* database (administered by NRE TAS);
- *Aboriginal Heritage Register* (administered by Aboriginal Heritage Tasmania (AHT); and
- *Tasmanian Heritage Register* (administered by Heritage Tasmania).

These external sources are also imported into the Forico GIS framework to provide planning staff with a comprehensive tool when undertaking natural resource assessments. These datasets enable a landscape-level approach to biodiversity management. Use of the Forest Practices Authority's *Threatened Fauna Adviser* (TFA) and *Biodiversity Values Database*, NRE TAS's *Natural Values Atlas* database, Aboriginal Heritage Tasmania's (AHT) *Aboriginal Heritage Register* (AHR) and Sustainable Timber Tasmania's (STT) *Conserve* database enable Forico to adopt a landscape-level approach to threatened species and cultural heritage management.

3.3 References

Published reports, papers and information on websites can also provide valuable information on the presence, or potential suitable habitat, of HCVF or a HCV element within the FMU. A list of reference material used in this HCVF assessment and as further sources of information regarding the management of HCV elements in Tasmania is included in Section 12.

3.4 Stakeholders

The involvement of a range of stakeholders in the assessment of HCVs and HCVF 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:

(i) affected parties – those directly affected by activities within the FMU; and

(ii) 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 HCVFs, Forico 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).

It is recognised that further stakeholders may be identified or be interested in becoming involved in coming years. As a component of the review process for this plan, and in alignment with the *Stakeholder Engagement Management Plan*, opportunity will be provided for involvement of further stakeholders or stakeholder groups.

Contributions from stakeholders are valued at any time.

3.5 Stakeholder engagement

Forico has prepared a *Stakeholder Engagement Standard*, a *Stakeholder Engagement Plan* and associated procedures that describe the process of stakeholder engagement. In summary, the approach is as follows:

- 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;
- stakeholders with interests in HCVs will be invited to participate in consultation via email or phone with sufficient notice;
- records of these invitations and subsequent consultation will be maintained in a stakeholder engagement register;
- the consultation process will be open to parties claiming an interest in or affected by the implementation of this plan;
- all identified stakeholders will be provided access to sufficient information; and
- stakeholders will be provided copies of the final plan.

4. SUMMARY OF HCVs WITHIN THE FMU

Table 4 provides a summary of the HCVs identified with the FMU. Sections 5-10 of this plan should be referred to for information on the assessment and management of HCVs 1-6, including all sub-values.

Table 4. Summary of area of HCVs identified within FMU

HCV category	Description	Present	Area (ha)
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.		**Yes**	**3189.1**
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	Yes	2157.8
HCV 1.2	Areas that contain centres of endemism	No	
HCV 1.3	Areas that contain significant concentrations of rare species that are poorly reserved at the IBRA (version 7) bioregional scale	Yes	1789.3
HCV 1.4	Areas with mapped significant seasonal concentrations of species	Yes	183.2
HCV 1.5	Areas of high species/communities diversity	No	
HCV 1.6	Refugia	No	
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.		**No**	
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	No	
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	No	
HCV 2.3	Forests that provide regionally significant habitat connectivity between larger forest areas and/or refugia	No	
HCV 2.4	Intact Forest Landscapes, wilderness areas, forests that are roadless, and/or have not been affected by forest management activity	No	
HCV 3 **Ecosystems and habitats.** Rare, threatened, or endangered ecosystems, habitats or refugia.		**Yes**	**9265.3**
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	Yes	6412.8

HCV category	Description	Present	Area (ha)
HCV 3.2	Areas for conservation of important genes or genetically distinct populations	No	
HCV 3.3	Old-growth forest	Yes	2971.6
HCV 3.4	Remnant vegetation in heavily cleared landscapes and mature forest in degraded landscapes	No	
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.		**No**	
HCV 4.1	Areas that provide protection from flooding	No	
HCV 4.2	Areas that provide protection from erosion	No	
HCV 4.3	Areas that provide barriers to the spread of destructive fires	No	
HCV 4.4	Areas that provide clean water catchments	No	
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.		**No**	
HCV 5.1	Unique / main sources of water fundamental for drinking and other daily uses	No	
HCV 5.2	Unique / main sources of water fundamental for the irrigation of subsistence food crops	No	
HCV 5.3	Food and medicines fundamental for local and traditional indigenous uses	No	
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.		**Yes**	**4296.5**
HCV 6.1	Aesthetic value	Yes	594.6
HCV 6.2	Historic values of global or national cultural or archaeological significance	Yes	949.2
HCV 6.3	Long-term research sites	Yes	2652.7
HCV 6.4	Social (including economic) values	Yes	378
HCV 6.5	Spiritual and cultural values	No	509
TOTAL			**13,202.3**

**With respect to (i) the sub-total area allocated to HCV categories 1 - 6 of and (ii) the total area allocated to all HCVs, it is noted that the total of the HCV sub-values do not add to the total area of the over-arching HCV category (the same applies to the total of HCV categories 1 - 6 in the overall total area). This is because there is considerable overlap both within HCV sub-values (e.g. between HCV 1.1, 1.2 and 1.4) and between sub-values in different HCV categories (e.g. between HCV 1.1, 3.1 and 3.4).*

The area allocated to various HCVs (and sub-values within the broader HCVs) will be progressively adjusted. Some areas may be varied for a range of reasons. For example, mapping of vegetation types will be verified in the field and may lead to increases or decreases in area of several threatened vegetation communities and old growth forest coverage.

Forico is currently maintaining the entire natural forest zone within the FMU as a conservation and biodiversity asset, which will not be harvested. Within the FMU, **76,976** hectares are classified as natural vegetation areas.

The HCV categories 1–6 (totalling **13,202.3** hectares), identified above, are predominantly contained within remnant natural forest or other remnant native vegetation of the FMU, and are excluded from harvesting activities. Some HCVs have also been identified within operational areas and reserved from harvesting activities.

Annex G (Framework for Assessment, Management and Monitoring of High Conservation Values) of the *FSC National Forest Stewardship Standard of Australia FSC-STD-AUS-01-2018 EN* provides more detailed definitions and guidelines that pertain to all six categories of HCVs.

For some HCV values, Item 1.5 of Annex G requires “a minimum threshold for identifying what constitutes an HCV Area. This applies particularly to HCV values relating to specific vegetation types or habitat requirements. In the identification of HCV Areas, the minimum size threshold will be the smallest area in which the viability and integrity of that particular value can be maintained, based on the best available scientific information, including recognised government and expert definitions and research”.

Foricos’ FMU supports several HCVs to which the “minimum area threshold” is useful for defining HCV Areas. These include HCV 1 and HCV 3, and some of their sub-categories. The application of the “minimum area threshold” concept is described in more detail below for HCV 1.1, 1.4, 3.1, and 3.3.

Note that Forico takes a conservative approach to defining HCV Areas, and that these are progressively updated and refined based on ground-truthing and new information. Forico employs an adaptive management approach to its HCVs, with ongoing monitoring and re-mapping done in a systematic manner, and the outcomes used to improve management policies and practices.

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, as per Table 5.

Table 5. 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

Annex G of FSC-STD-AUS-01-2018 EN includes the following relevant definitions:

> **Significant concentrations**: concentrations of species that are considered significant at a global, regional or national scale". For the purposes of this management plan, scale is considered as global (i.e. of some level of international significance), national (i.e. Australia-level significance) or regional (i.e. Tasmanian-level significance at either a whole-of-State or bioregional level).

AND

> **Areas that contain significant concentrations of rare and threatened species**: may include specific areas where there are a significant number of multiple species, or where there is a proportionately large population of an individual species…[and]…concentrations of species are often linked to one stage of a species' life history and associated with activities such as breeding, staging, feeding or over-wintering.

HCV 1.1 includes several terms and phrases that have some level of legislative definition/association in Tasmania. For example, the terms "rare" and "threatened" both have specific meaning and intent under the FSC – refer to glossary to *FSC-STD-AUS-01-2018 EN*, as follows:

> **Rare species**: Species that are uncommon or scarce, but not classified as threatened. These species are located in geographically restricted areas or specific habitats, or are

sparsely scattered on a large scale. They are approximately equivalent to the IUCN (2001) category of Near Threatened (NT), including species that are close to qualifying for, or are likely to qualify for, a threatened category in the near future. They are also approximately equivalent to imperiled species (Source: Based on IUCN. (2001). IUCN Red List Categories and Criteria: Version 3.1. IUCN Species Survival Commission. IUCN. Gland, Switzerland and Cambridge, UK).

AND

Threatened species: Species that meet the IUCN (2001) Criteria for Vulnerable (VU), Endangered (EN) or Critically Endangered (CR), and are facing a high, very high or extremely high risk of extinction in the wild. These categories may be reinterpreted for FSC purposes according to official national classifications (which have legal significance) and to local conditions and population densities (which should affect decisions about appropriate conservation measures). (Source: Based on IUCN. (2001). IUCN Red List Categories and Criteria: Version 3.1. IUCN Species Survival Commission. IUCN. Gland, Switzerland and Cambridge, UK)

Within Tasmania, flora and fauna species can be listed as “threatened” under the categories of rare (Schedule 5), vulnerable (Schedule 4), endangered (Schedule 3.2) and presumed extinct (Schedule 3.1) of the Tasmanian *Threatened Species Protection Act 1995* (TSPA),with the categories approximately equivalent to some of the IUCN categories. However, the TSPA category of “rare” does not equate in a direct manner to the FSC use of the term, although this depends on the species.

Within Australia, flora and fauna species can also be listed as “threatened” under the categories of Vulnerable (VU), Endangered (EN), Critically Endangered (CR) and Extinct (EX) under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA), categories effectively equivalent to the IUCN categories.

For the purposes of describing HCV 1.1 within the FMU, “rare and threatened species” are taken to refer to those listed under any status on the TSPA and/or the EPBCA. While Forico 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 prone to subjective interpretation, and therefore any species considered as “threatened” is classified herein as potentially significant. However, it is challenging to then allocate parts of the FMU to HCV 1.1 in an equitable manner. For example, a site supporting a plant species listed as rare on the TSPA (i.e. lowest formal conservation status) may not be equivalent in value to a site supporting a breeding site of a Critically Endangered migratory species. In addition, the description of HCV 1 (and specifically 1.1) does not formally include the concept of “potential habitat”, which is a term widely applied in Tasmania in the commercial forestry/conservation management sector. This concept has significant implications for allocating parts of the FMU to HCV 1.1. For example, the tree supporting a nest of the Endangered wedge-tailed eagle could easily be allocated to HCV 1.1, as could a management reserve established around the nest to minimise the likelihood of disturbance causing breeding failure. However, whether seasonally applied management zones such as a nominal 500 m exclusion zone around active nest sites during the breeding season can be reasonably allocated to HCV 1.1 is open to interpretation. Furthermore, allocating all areas of potential nesting habitat (i.e. areas of forest not yet determined as supporting a nest site, and which may never support a nest site), or indeed potential foraging habitat (which is virtually the entire State), is not tenable. These are realistic, Tasmanian examples of the challenges of allocating parts of the Forico FMU to HCV 1.1.

The “minimum area threshold” used to determine a HCV Area in relation to threatened fauna was as per Section 5.1.3, with particular reference to Table 7 (threatened flora) and Table 9 (threatened fauna). These allocations are based on a combination of factors including recommendations for management delivered through the Tasmanian forest practices system (e.g. minimum reserve size for management of wedge-tailed eagle, white-bellied sea-eagle, grey goshawk, masked owl nests; Tasmanian devil dens) and/or specialist-defined management areas (e.g. management of colonies of Marrawah skipper; grasslands supporting ptunarra brown butterfly; nominal locations of swift parrot nest sites).

5.1.3 Analysis of HCV 1.1 in FMU

Database review

NRE TAS's *Natural Values Atlas* (NVA) is the most appropriate database to source point locations of threatened flora and fauna as it includes data held by the Tasmanian Herbarium (all vascular plant species), the *Atlas of Living Australia* (manual update undertaken by NRE TAS staff for threatened flora), and data from the Forest Practices Authority's *Biodiversity Values Database* (BVD). As part of the 2020 update of this plan, a new download from the NVA was done in August 2022. This was cross-referenced to the FMU to determine point locations of threatened flora and fauna known from the FMU.

The Forest Practices Authority's BVD includes range boundary maps of forest-dependent threatened fauna, which were co-developed and endorsed by NRE TAS in consultation with relevant specialists. These range boundaries were also cross-referenced to the FMU to determine the coincidence of possible occurrence of threatened fauna (independent of point locations) within the FMU. Similar range boundary maps are not available for threatened flora.

The BVD also includes detailed descriptions of potential habitat of threatened fauna and flora, which were used to assess the likelihood of occurrence of such species within the FMU, where a range boundary indicated possible presence.

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

Table 6 indicates threatened flora known to occur within the FMU. 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 FMU. Most species are not allocated a defined area value as part of their allocation to HCV 1.1 because they occur as relatively discrete populations and they do not meet the intent of "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". It has not been assumed that threatened flora species will be restricted to native vegetation within the FMU – it is known that some species occur in monoculture plantations within the FMU, for example *Hovea montana* (mountain purplepea) at Surrey Hills (Spicer 2016), . Populations which have been visited and verified by ecological consultants engaged by Forico are also indicated in Table 6.

However, two sites are allocated as HCV 1.1 management areas (Table 7) on the basis that they contain several species (i.e. approaching "significant concentrations" and/or type locations/monitoring sites (i.e. approaching "habitat critical to the survival and long-term viability").

Table 6. Summary of listed flora species within FMU

Scientific nomenclature follows A Census of Vascular Plants of Tasmania, including Macquarie Island (de Salas & Baker 2022), except where NRE TAS-maintained lists recognise alternative infrataxa; vernacular nomenclature follows The Little Book of Common Names for Tasmanian Plants (Wapstra et al. 2015, updated online annually)

Species listed below are listed as rare (r), vulnerable (v), endangered (e), or extinct (x) on the Tasmanian *Threatened Species Protection Act 1995* (TSPA); vulnerable (VU), endangered (EN), critically endangered (CR) or extinct (EX) on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA); e = endemic to Tasmania

Within allocated HCV1.1 area: SHGL = Surrey Hills Grasslands; HSR= Henry Somerset Reserve. All other species records consist of point locations defining very small areas only. See Table 7.

Species	TSPA EPBCA	Endemic?	No. of populations	No. of populations verified in field	No. Periodic Monitoring Checks	Within allocated HCV 1.1 area?
Amphibromus neesii southern swampgrass	r		2	1		
Aphelia pumilio Dwarf aphelia			1	1		
Argyrotegium poliochlorum greygreen cottonleaf	r -		1	1		SHGL
Asperula scoparia subsp. *scoparia* prickly woodruff	r -		4	3		
Asperula subsimplex water woodruff	r -		1	1	1	
Australopyrum velutinum velvet wheatgrass	r -		1	0		SHGL
Barbarea australis riverbed wintercress	e EN	e	4	2		
Bossiaea tasmanica spiny bossia	r -		1	1	1	
Brunonia australis blue pincushion	r -		2	2	3	HSR
Caladenia caudata tailed spider-orchid	v VU	e	2	1	3	HSR
Caladenia congesta blacktongue finger-orchid	e -		4	3	6	HSR
Caladenia pallida rosy spider-orchid	e CR	e	1	1		HSR
Caladenia tonellii robust fingers	e CR	e	2	2	5	HSR
Carex capillacea	r		1	1		SHGL
Carex longebrachiata drooping sedge	r -		1	1	1	
Chiloglottis trapeziformis broadlip bird-orchid	e -		1	1	1	
Colobanthus curtisiae grassland cupflower	r VU		2	2		
Corunastylis nuda tiny midge-orchid	r -		2	2	2	HSR
Desmodium gunnii southern ticktrefoil	v -		1	1	1	
Deyeuxia brachyathera	r		3	3	1	

Species	TSPA EPBCA	Endemic?	No. of populations	No. of populations verified in field	No. Periodic Monitoring Checks	Within allocated HCV 1.1 area?
short bentgrass	-					
Epacris moscaliana		e	1	1	1	
Gratiola pubescens hairy brooklime	r -		2	2		
Gynatrix pulchella fragrant hempbush	r -		3	2	1	
Haloragis heterophylla variable raspwort	r -		2	2	3	
Hovea montana mountain purplepea	r -		7	6	6	SHGL
Hypolepis muelleri harsh groundfern	r -		2	2	1	
Isolepis habra wispy clubsedge	r -		2	1		
Isolepis stellata star clubsedge	r -		1	0		
Juncus vaginatus clustered rush	r -		1	1	1	
Leucochrysum albicans subsp. *tricolor* grassland paperdaisy	e EN		1	1		
Lythrum salicaria purple loosestrife	v -		3	3	4	
Machaerina gunii	r		1	1	1	
Odixia achlaena golden everlastingbush	r -	e	1	1	0	
Olearia hookeri crimsontip daisybush	r -	e	1	1	1	
Paraprasophyllum crebriflorum crowded leek-orchid	e EN	e	19	17	44	SHGL
Pimelea curviflora var. *gracilis* slender curved riceflower	r -		5	5	5	
Pomaderris intermedia lemon dogwood	r -		3	3		
Pomaderris phylicifolia subsp. *ericoides* revolute narrowleaf dogwood	r		1	1	1	
Pterostylis ziegeleri grassland greenhood	v VU	e	1		0	
Rhodanthe anthemoides chamomile sunray	r -		25	18	11	SHGL
Rhytidosporum inconspicuum alpine appleberry	e -		1	1	0	SHGL
Scleranthus fasciculatus spreading knawel	v -		6	6	4	
Senecio squarrosus	r -		1	1	1	SHGL

Species	TSPA EPBCA	Endemic?	No. of populations	No. of populations verified in field	No. Periodic Monitoring Checks	Within allocated HCV 1.1 area?
Spyridium parvifolium var. *parvifolium* coast dustymiller	r -		2	2		
Stackhousia pulvinaris Alpine candles	e -		3	3	6	SHGL
Stylidium despectum	r -		1	1	0	
Taraxacum aristum			1	1	0	
Teucrium corymbosum			1	1	0	
Uncinia elegans handsome hooksedge	r -		2	2	0	
Vallisneria australis			1	1	0	
Veronica plebeia trailing speedwell	r -		1	1	0	
Viola cunninghamii alpine violet	r -	t	9	4	1	SHGL
Xerochrysum palustre Swamp paperdaisy	v VU		1	1	1	
53 species			**149**	**123**	**118**	

Table 7. Allocation of parts of the FMU to HCV 1.1 – threatened flora values

Location [bioregion]	Description and rationale	Area (ha)
Surrey Hills [Central Highlands, West, Northern Slopes]	The native grasslands on Surrey Hills where listed flora species are known to be located have been allocated as HCV 1.1 because they contain "significant concentrations" of threatened flora, which includes the type locations of several species, as well as long-term monitoring sites for one species. Refer to Forico (2016) for more details.	475.4
Henry Somerset Conservation Area [Northern Slopes]	The Henry Somerset Conservation Area has been long-recognised as a "biodiversity hotspot", especially with respect to native orchids, which were the primary reason for the allocation of the area to formal reserve status in the early 1980s. This site supports: • the type (and core) population of the endemic robust fingers (*Caladenia tonellii*), listed on the EPBCA/TSPA; • a key northern Tasmanian population of the endemic tailed spider-orchid (*Caladenia caudata*), listed on the EPBCA/TSPA (the reserve is important because it probably includes the westernmost population of the species in Tasmania, as well as being the type of the taxon, at some level); • a population of the broadlip bird-orchid (*Chiloglottis trapeziformis*), listed on the TSPA (and considered near-extinct on mainland Tasmania, with this reserve being the southern limit of the species in Australia); • a population of blue pincushion (*Brunonia australis*), listed on the TSPA (and while widespread in Australia and northern Tasmania, this reserve represents the western limit of the species in the State); and • populations (most now long-unverified) of *Caladenia congesta* (TSPA), *Corunastylis nuda* (TSPA) and *Caladenia pallida* (TSPA/EPBCA).	36.4
		511.8

A total of **511.8** hectares of the FMU are allocated formally to HCV 1.1 for threatened flora values. This area will be adjusted progressively as the extent of habitat values becomes better known.

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

Table 8 indicates threatened fauna known to occur, or likely to occur (based on predicted range), within the FMU. Information is provided on the likelihood of occurrence based on descriptions and published mapping of potential habitat.

While some threatened fauna species have defined ranges in well-described habitat, but their precise distribution is not fully understood. Allocation of all areas of potential habitat for these species to HCV1.1 is impractical. For example, the ptunarra brown butterfly may occur in the highland *Poa* grasslands of Surrey Hills, but is only confirmed from a subset of the grassland areas.

Table 8. Summary of listed fauna species within FMU

Scientific and vernacular nomenclature follows information in FPA's *Biodiversity Values Database* and NRE Tas's *Natural Values Atlas*, except where otherwise indicated.

Species listed below are listed as rare (r), vulnerable (v), endangered (e), or extinct (x) on the Tasmanian *Threatened Species Protection Act 1995* (TSPA); vulnerable (VU), endangered (EN), critically endangered (CR) or extinct (EX) on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA);Status e = endemic to Tasmania; be = breeding endemic

Range boundaries are as defined by FPA's *Biodiversity Values Database* as Potential, Core or Known.

Species	TSPA EPBCA	Status	Known sites	Range boundaries
Accipiter novaehollandiae grey goshawk	e -		2 nest sites. [sighting records excluded]	CORE: yes POTENTIAL: yes
Antipodia chaostola tax. *leucophaea* chaostola skipper	e EN	e	-	CORE: yes POTENTIAL: yes
Aquila audax subsp. *fleayi* wedge-tailed eagle (Tasmanian)	e EN	e	86 nest reserve sites identified in SMV [sighting records excluded]	POTENTIAL: yes
Astacopsis gouldi giant freshwater crayfish	v VU	e	28 sites.	POTENTIAL: yes
Attenborougharion rubicundus [syn. *Helicarion rubicundus*] burgundy snail	r -	e	-	KNOWN: yes POTENTIAL: yes
Beddomeia briansmithi freshwater snail (Fern Creek)	v -	e	2 sites.	KNOWN: yes
Beddomeia camensis freshwater snail (Cam River)	e -	e	1 site.	KNOWN: yes
Beddomeia capensis freshwater snail (Table Cape)	e -	e	-	POTENTIAL: yes
Beddomeia fallax freshwater snail (Heathcote Creek)	r -	e	-	KNOWN: yes POTENTIAL: yes
Beddomeia fromensis freshwater snail (Frome River)	e -	e	-	KNOWN: yes POTENTIAL: yes
Beddomeia hallae freshwater snail (Buttons Rivulet)	e -	e	-	KNOWN: yes POTENTIAL: yes
Beddomeia krybetes freshwater snail (St Pauls River)	v -	e	-	POTENTIAL: yes
Beddomeia lodderae freshwater snail (Upper Castra Rivt)	v -	e	-	KNOWN: yes POTENTIAL: yes
Beddomeia minima freshwater snail (Scottsdale)	r -	e	-	KNOWN: yes
Beddomeia protuberata freshwater snail (Emu River)	r -	e	2 sites.	KNOWN: yes POTENTIAL: yes
Beddomeia ronaldi freshwater snail (St Patricks River)	e -	e	1 site.	KNOWN: yes POTENTIAL: yes
Beddomeia tasmanica freshwater snail (Terrys Creek)	r -	e	-	KNOWN: yes
Beddomeia topsiae freshwater snail (Williamson Creek)	r -	e	1 site.	KNOWN: yes POTENTIAL: yes
Beddomeia turnerae	r	e	-	KNOWN: yes

Species	TSPA EPBCA	Status	Known sites	Range boundaries
freshwater snail (Minnow River)	- 			
Beddomeia wilmotensis freshwater snail (Wilmot River)	r -	e	1 site	KNOWN: yes POTENTIAL: yes
Beddomeia wiseae freshwater snail (Blizzards Creek)	v -	e	-	KNOWN: yes POTENTIAL: yes
Botaurus poiciloptilus australasian bittern	- EN		-	POTENTIAL: yes
Catadromus lacordairei green-lined ground beetle	v -		-	POTENTIAL: yes
Ceyx azureus subsp. *diemenensis* azure kingfisher (Tasmanian)	e EN	e	-	CORE: yes
Charopidae sp. "Skemps" skemps snail	r -	e	-	POTENTIAL: yes
Dasyurus maculatus subsp. *maculatus* spotted-tailed quoll	r VU		0 den sites. [sighting records excluded]	CORE: yes POTENTIAL: yes
Dasyurus viverrinus eastern quoll	- EN		0 den sites. [sighting records excluded]	CORE: yes
Engaeus granulatus central north burrowing crayfish	e EN	e	2 sites.	KNOWN: yes POTENTIAL: yes
Engaeus orramakunna mt Arthur burrowing crayfish	v VU	e	5 sites.	KNOWN: yes POTENTIAL: yes
Engaeus spinicaudatus scottsdale burrowing crayfish	e EN	e	-	POTENTIAL: yes
Engaeus yabbimunna burnie burrowing crayfish	v VU	e	2 sites.	KNOWN: yes POTENTIAL: yes
Galaxias auratus golden galaxias	r EN	e	-	POTENTIAL: yes
Galaxias fontanus swan galaxias	e EN	e	-	CORE: yes POTENTIAL: yes
Galaxiella pusilla eastern dwarf galaxias	v VU		1 site	CORE: yes POTENTIAL: yes
Haliaeetus leucogaster white-bellied sea-eagle	v -		2 nest sites. [sighting records excluded]	POTENTIAL: yes
Hickmanoxyomma gibbergunyar cave harvestman (Mole Creek)	r -	e	-	KNOWN: yes POTENTIAL: yes
Hoplogonus simsoni simsons stag beetle	v VU	e	14 sites.	KNOWN: yes
Hoplogonus vanderschoori vandeschoors stag beetle	v VU	e	1 site	KNOWN: yes
Hydrobiosella sagitta caddisfly (St Columba Falls)	r -	e	-	POTENTIAL: yes
Lathamus discolor swift parrot	e CR	be	3 nest sites. [sighting records excluded]	CORE: yes POTENTIAL: yes
Leucopatus anophthalmus [syn.*Tasmanipatus anophthalmus*] blind velvet worm	e EN	e	-	KNOWN: yes POTENTIAL: yes
Limnodynastes peroni striped marsh frog	e -		-	CORE: yes POTENTIAL: yes
Lissotes latidens	e	e	12 sites.	KNOWN: yes

Species	TSPA EPBCA	Status	Known sites	Range boundaries
broad-toothed stag beetle	EN			POTENTIAL: yes
Lissotes menalcas mt mangana stag beetle	v -	e	-	KNOWN: yes POTENTIAL: yes
Litoria raniformis green and gold frog	v VU		6 sites	CORE: yes POTENTIAL: yes
Micropathus kiernani southern sandstone cave cricket	e CR	e	1 site.	KNOWN: yes POTENTIAL: yes
Oreisplanus munionga tax. *larana* marrawah skipper	e VU		22 sites	CORE: yes POTENTIAL: yes
Oreixenica ptunarra ptunarra brown butterfly	v EN	e	10 sites.	KNOWN: yes POTENTIAL: yes
Pardalotus quadragintus forty-spotted pardalote	e EN	e	-	POTENTIAL: yes
Pasmaditta jungermanniae Cataract Gorge pinhead snail	v -	e	-	POTENTIAL: yes
Perameles gunnii subsp. *gunnii* eastern barred bandicoot	 VU		6 den sites.	CORE: yes POTENTIAL: yes
Phrantela pupiformis freshwater snail (Tyenna River)	r -	e	-	KNOWN: yes
Plesiothele fentoni Lake Fenton trapdoor spider	e -	e	-	POTENTIAL: yes
Prototroctes maraena Australian grayling	v VU		-	POTENTIAL: yes
Pseudalmenus chlorinda tax. *myrsilus* Tasmanian hairstreak butterfly	r -	e	-	POTENTIAL: yes
Pseudemoia pagenstecheri tussock skink	v -		-	CORE: yes POTENTIAL: yes
Pseudemoia rawlinsoni glossy grass skink	r -		1 site.	CORE: yes
Pseudomys novaehollandiae New Holland mouse	v EN		40 sites	POTENTIAL: yes
Sarcophilus harrisii Tasmanian devil	e EN	e	27 den sites	POTENTIAL: yes
Thylacinus cynocephalus thylacine	x EX	e	-	Not applicable.
Tasmanipatus barretti giant velvet worm	r -	e	-	KNOWN: yes
Tasmaphena lamproides	r		11 sites	CORE: yes POTENTIAL: yes
Tyto novaehollandiae subsp. *castanops* masked owl (Tasmanian)	e VU	e	-	CORE: yes POTENTIAL: yes

While all threatened fauna species are recognised as HCV 1.1, only certain areas of the FMU have been allocated an area extent for confirmed or suitable habitat for threatened fauna. Some species have landscape-scale distributions and wide habitat preferences, meaning allocating an area figure in hectares to HCV 1.1 is not practical. Examples include the Tasmanian devil, spotted-tailed quoll, eastern quoll, eastern barred bandicoot, grey goshawk, wedge-tailed eagle and masked owl. However, these species may have particular habitat elements that can be allocated an area extent, such as permanent nest reserves for the wedge-tailed eagle or buffer zones around a Tasmanian devil den site. Table 9 describes the area figures allocated to HCV 1.1 within the Forico FMU.

These areas are adjusted as the extent of habitat values are refined, and new sites are located by Forico staff and ecological consultants, or added to publicly available databases.

Table 9. Allocation of parts of the FMU to HCV 1.1 – threatened fauna values and habitat

Species	Description and rationale	Area (ha)
Accipiter novaehollandiae grey goshawk	Within the FMU, there are 2 reported nest sites. Nest reserves are required for the species through the management recommendations delivered through the FPA's *Threatened Species Adviser*.	5.5
Aquila audax subsp. *fleayi* wedge-tailed eagle (Tasmanian)	Within the FMU, there are 86 reported nests for this species. Nest reserves are required for the species through the management recommendations delivered through the FPA's *Threatened Species Adviser*. A minimum reserve based on a 180 m radius around the nest site (10 ha) is allocated to each nest unless a site-specific nest reserve had been designed already during planning processes. Forico recently undertook a project to review nest reserve sites allocated across its estate. Where applicable, more specific reserve areas were allocated for some nests.	1007.6
Haliaeetus leucogaster white-bellied sea-eagle	Within the FMU, there are 2 reported nests for this species. Nest reserves are required for the species through the management recommendations delivered through the FPA's *Threatened Species Adviser*. A minimum reserve based on a 180 m radius around the nest site (10 ha) is allocated to each nest unless a site-specific nest reserve had been designed already during planning processes. Forico recently undertook a project to review nest reserve sites allocated across its FMU. Where applicable more specific reserve areas were allocated for some nests.	11.7
Lathamus discolor swift parrot	Within the FMU, there are 3 reported nest sites. Nest reserves are required for the species through the management recommendations delivered through the FPA's *Threatened Species Adviser*. For habitat analysis refer to HCV 1.4.	7.0
Oreisplanus munionga tax. *larana* Marrawah skipper	Within the FMU, there are 22 reported sites either where the species is known to occur or that are recognised as significant habitat.	31.5
Oreixenica ptunarra ptunarra brown butterfly	Within the FMU, this species is essentially restricted to the Surrey Hills area, where it occupies native grasslands. While all native grasslands on Surrey Hills are potential habitat for the species, only those "core" grasslands where the species is known to be present (Bell 2022) have been allocated to HCV 1.1. Further grasslands may be added as the species' distribution and occurrence is confirmed elsewhere.	374.0
Sarcophilus harrisii Tasmanian devil	Within the FMU, there are 27 reported den site for this species. Den reserves are required for the species through the management recommendations delivered through the FPA's *Threatened Species Adviser*. A minimum nominal reserve based on a 50 m radius around the den sites is allocated to each den.	21.2

Species	Description and rationale	Area (ha)
Micropathus kiernani southern sandstone cave cricket	The Southern Sandstone Cave Cricket (*Micropathus kiernani*) is endemic to Tasmania, and is restricted to a single gully system within the Bates Creek catchment, it occurs on Forico's GT147, Swans property.	13.5

5.1.4 Management

All sites and species

From a strategic perspective, the size and location of the FMU, 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 FMU. Most threatened species within the FMU 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. Forico does not undertake conversion of natural vegetation to plantation or a non-forest use. In addition, Forico does not undertake natural forest harvesting; therefore, natural ecosystems supporting these threatened species will be maintained, and where appropriate enhanced, and conserved as natural ecosystems.

Example: giant freshwater crayfish

The Inland Fisheries Service (IFS; State government) is responsible for protecting the giant freshwater crayfish against illegal poaching. Forico and the IFS routinely collaborate in reference to potential breaches of regulations and poaching activity within the FMU.

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	Database will be reviewed as part of FPP development, including but not necessarily restricted to NRE Tas's *Natural Values Atlas* database, primarily through the inclusion of all relevant data in the Forest Practices Authority's *Biodiversity Values Database* and Forico's internal GIS through data exchange with NRE Tas.
Field assessment	The presence of threatened flora and/or fauna and potential habitat will be field verified by Forico staff and/or relevant specialists.
Specialist advice	Management actions will be included in the FPP as available through the *Threatened Species Adviser* decision-support systems, or where not available through consultation with FPA staff and/or other relevant specialists.
Implementation	Actions related to threatened flora and fauna will be implemented through the FPP, and subject to compliance monitoring (see other sections of this plan).

Henry Somerset Conservation Area

The ecological values of the Henry Somerset Conservation Area will continue to be managed according to the existing Henry Somerset Conservation Area Fire Management Plan. A broader environmental management plan will be produced to guide all other management activities. Forico intends to maintain the Memorandum of Understanding with Threatened Plants Tasmania (Wildcare Inc.) in relation to monitoring and reporting on populations of threatened orchids.

Surrey Hills grasslands

The ecological values of the Surrey Hills grasslands will continue to be managed according to the *Surrey Hills Grassland Management Plan* (Forico 2022).

Research into the interactions of ptunarra brown butterfly, European wasps and plantations will continue to be undertaken, informed by new information such as that in Bell (2022).

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”.

In the FSC Australia *Directory of Information Sources*, the only refence to the concept of endemism refers to a paper titled “An assessment of endemism and species richness patterns in the Australian Anura” (Slatyer et al. 2007), which does not identify Tasmania, or parts of Tasmania, as a specific centre of endemism. In fact, the paper disputes previous suppositions of southeast Australia being a "centre of endemism" for amphibians.

The FSC *Australia Directory of Information Sources* also refers to floral endemism. This subject has received some attention, with Tasmania broadly recognised as a “centre of endemism” for many flora groups (e.g. Kirkpatrick & Brown 1984a; Hill & Orchard 1999). At a more local scale, there are also “centres of endemism” within the State e.g. the east coast “dolerite endemics”, Mt. Wellington, Mt Field, etc. (e.g. Kirkpatrick & Brown 1984b&c; Hill & Orchard 1999). More recently, this issue has been examined (Crisp et al. 2001; Laffan & Crisp 2003), and Tasmania confirmed as a “centre of endemism”, although it was concluded that the far northeast and northwest were excluded from this “centre”, consistent with the findings of Kirkpatrick & Brown (1984a). Findings are variable, however, with Boden & Given (1995) suggesting only the State’s southwest as a significant “centre of endemism”.

Most recently, Tasmania has also been identified as a site of “super-endemism: in relation to species of *Eucalyptus* (González-Orozco et al. 2016), which has long recognised (e.g. Williams & Potts 1996) and is discussed further in relation to HCV 3.2 below.

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).

During the *Regional Forest Agreement* assessment process, “centres of endemism” were described (Mesibov 1996; PLUC 1997a).

5.2.3 Analysis of HCV 1.2 in FMU

The occurrence of HCV 1.2 within the FMU was assessed by reference to available literature describing areas of the State (see list of references in section above). In most cases, “centres of endemism” are strongly associated with threatened flora and/or fauna or particular vegetation associations (e.g. forests and woodlands on dolerite on the central east coast; vegetation on ultramafic soils).

Essentially all sites putatively identified as “centres of endemism” are not associated with the production parts of the FMU. No parts of the FMU 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

See preamble to HCV 1.1 for definitions of “rare” and “significant concentrations”.

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.

The *Common Guidance for the Identification of High Conservation Values* (Brown et al. 2017) provides additional guidance on the concept of “rare”, as follows:

Rare is scale dependent and includes species that are:

- naturally rare, existing only at very low densities in undisturbed habitat, or
- rare because of human activities e.g. habitat destruction, overhunting, climate change; or
- at the limit of their natural distribution (even if they are common elsewhere.

This description could potentially imply that many species that naturally occur in Tasmania but are not listed on the TSPA as rare (or having other conservation status) are HCV 1.3 because they occur at the natural limit of the species’ distribution, simply because Tasmania’s geographic location means that most species reach their southern distributional limit in the State. However, distributional/demographic information is limited for many species, and it is not considered practical to review the potential occurrence of such species within the FMU using available datasets.

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. The key issue is then to determine if any part of the FMU contains “significant concentrations of rare species” at this scale. If “rare” species are interpreted broadly to include any species that are listed on the TSPA and/or EPBCA, the extent of the FMU allocated to HCV 1.3 would be equivalent to HCV 1.1. However, HCV 1.3 considers these matters at a finer scale. On this basis, two parts of the FMU are considered to support “areas that contain significant concentrations of rare species that are poorly reserved at the IBRA region scale”, namely the grassland areas of the Surrey Hills part of the FMU and the forests within the Henry Somerset Conservation Area (Table 10).

5.3.3 Analysis of HCV 1.3 in FMU

A total of **1,800.9** hectares of the FMU are allocated formally to HCV 1.3 for threatened flora values. This area will be adjusted annually as the extent of habitat values.

Table 10. Allocation of part of the FMU to HCV 1.3

Location [bioregion]	Description and rationale	Area (ha)
Surrey Hills [Central Highlands, West, Northern Slopes]	Native grasslands on the Surrey Hills part of the FMU are globally recognised for their conservation value. These grasslands support highland *Poa* grassland, a State-level listed threatened vegetation type. Such grasslands identified here as HCV 1.3 are those that contain known sites for one or more of the following:	475.4

	• the endemic ptunarra brown butterfly (*Oreixenica ptunarra*), listed on the EPBCA/TSPA; • the key (and type) populations of the endemic crowded leek-orchid (*Prasophyllum crebriflorum*), listed on the EPBCA/TSPA; • several other EPBCA- and/or TSPA-listed threatened flora and fauna species; and • several flora species that have their geographic limit in this part of the State.	
Henry Somerset Conservation Area [Northern Slopes]	The Henry Somerset Conservation Area has been long-recognised as a "biodiversity hotspot", especially with respect to native orchids, which were the primary reason for the allocation of the area to formal reserve status in the early 1980s. This site supports: • the type (and core) population of the endemic robust fingers (*Caladenia tonellii*), listed on the EPBCA/TSPA; • a key northern Tasmanian population of the endemic tailed spider-orchid (*Caladenia caudata*), listed on the EPBCA/TSPA (the reserve is important because it probably includes the westernmost population of the species in Tasmania, as well as being the type of the taxon, at some level); • a population of the broadlip bird-orchid (*Chiloglottis trapeziformis*), listed on the TSPA (and considered near-extinct on mainland Tasmania, with this reserve being the southern limit of the species in Australia); • a population of blue pincushion (*Brunonia australis*), listed on the TSPA (and while widespread in Australia and northern Tasmania, this reserve represents the western limit of the species in the State); and • numerous other endemic flora, fauna and fungi.	36.4
		511.8

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 document analysed the then available point locations of all vascular flora, irrespective of their status on the Tasmanian *Threatened Species Protection Act 1995*, and compared their distributions to the statewide reserve estate. The analysis developed 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 from the report and shown in Table 11 with commentary on relevance to the FMU. It is noted that the Lawrence report is based on an analysis of NVA data from 2005.

Table 11. Poorly reserved vascular flora species: categories 3b & 4 as per Lawrence et al. (2008)

[list does not consider species already listed on the TSPA and/or EPBCA as these are considered under HCV 1.1; list below uses updated nomenclature as per de Salas & Baker (2018) and deletes species no longer considered valid taxa or native in Tasmania]

Species	Status reserve category	Relevance to FMU	HCV?
Acacia derwentiana derwent wattle	4	Present in FMU. Not present as "significant concentrations of rare species" (localised to riparian zones).	NO
Aphanes australiana australian piert	3b	Unlikely to occur in FMU. If present, will not occur as "significant concentrations of rare species".	NO
Caesia parviflora var. *vittata* dark-blue grasslily	3b	Unlikely to occur in FMU. If present, will not occur as "significant concentrations of rare species".	NO
Cardamine astoniae spreading bittercress	4	Reported from FMU on Surrey Hills in native grassland (Gilfedder et al. 2018, Wapstra & Spicer pers. obs.). Already considered under this HCV (see Table 7).	YES
Cardamine tryssa delicate bittercress	4	Unlikely to occur in FMU. If present, will not occur as "significant concentrations of rare species".	NO
Carex barbata tasmanian alpine sedge	3b	Unlikely to occur in FMU. If present, will not occur as "significant concentrations of rare species".	NO
Carex bichenoviana plains sedge	3b	Unlikely to occur in FMU. If present, will not occur as "significant concentrations of rare species".	NO
Chiloglottis valida large bird-orchid	3b	Unlikely to occur in FMU. If present, will not occur as "significant concentrations of rare species".	NO
Crassula exserta largefruit stonecrop	4	Unlikely to occur in FMU. If present, will not occur as "significant concentrations of rare species".	NO
Diuris x *palachila* hybrid donkey-orchid	3b	Unlikely to occur in FMU. If present, will not occur as "significant concentrations of rare species".	NO
Elatine gratioloides waterwort	3b	May occur in FMU. If present, will not occur as "significant concentrations of rare species".	NO
Epacris petrophila central snowheath	3b	Unlikely to occur in FMU. If present, will not occur as "significant concentrations of rare species".	NO
Gentianella polysperes early forestgentian	3b	Unlikely to occur in FMU. If present, will not occur as "significant concentrations of rare species".	NO
Hovea magnibractea sheath purplepea	4	Unlikely to occur in FMU (poorly-understood species). If present, will not occur as "significant concentrations of rare species".	NO
Isachne globosa swamp millet	4	Unlikely to occur in FMU. If present, will not occur as "significant concentrations of rare species".	NO
Leiocarpa supina coast ploverdaisy	4	Unlikely to occur in FMU.	NO

Species	Status reserve category	Relevance to FMU	HCV?
		If present, will not occur as “significant concentrations of rare species”.	
Lepidosperma globosum stiff swordsedge	3b	May occur in FMU. If present, will not occur as “significant concentrations of rare species”.	NO
Lepidosperma neesii stiff swordsedge	4	Unlikely to occur in FMU. If present, will not occur as “significant concentrations of rare species”.	NO
Malva preissiana australian mallow	3b	Unlikely to occur in FMU. If present, will not occur as “significant concentrations of rare species”.	NO
Oxalis radicosa stoutroot woodsorrel	4	Unlikely to occur in FMU. If present, will not occur as “significant concentrations of rare species”.	NO
Persicaria praetermissa arrow waterpepper	3b	May occur in FMU. If present, will not occur as “significant concentrations of rare species”.	NO
Portulaca oleracea common purslane	4	May occur in FMU (occurs as a “weed” of disturbed ground in Tasmania). If present, will not occur as “significant concentrations of rare species”.	NO
Rytidosperma carphoides short wallabygrass	- - 3b	Unlikely to occur in FMU. If present, will not occur as “significant concentrations of rare species”.	NO
Schizaea asperula rough combfern	3b	May occur in FMU. If present, will not occur as “significant concentrations of rare species”.	NO
Schoenus absconditus hidden bogsedge	3b	May occur in FMU. If present, will not occur as “significant concentrations of rare species”.	NO
Senecio prenanthoides common fireweed	3b	Occurs in FMU. This is a widespread and common species but at the time of Lawrence et al. (2008), it was under-recorded.	NO
Senecio vagus subsp. *vagus* sawleaf groundsel	4	Unlikely to occur in FMU. If present, will not occur as “significant concentrations of rare species”.	NO
Thelymitra imbricata broad sun-orchid	4	Unlikely to occur in FMU. If present, will not occur as “significant concentrations of rare species”.	NO
Thelymitra polychroma rainbow sun-orchid	3b	Unlikely to occur in FMU. If present, will not occur as “significant concentrations of rare species”.	NO
Thelymitra silena madonna sun-orchid	3b	Unlikely to occur in FMU. If present, will not occur as “significant concentrations of rare species”.	NO
Thelymitra simulata collared sun-orchid	3b	May occur in FMU. Species poorly understood – may be of hybrid origin (M. Wapstra pers. comm.). If present, will not occur as “significant concentrations of rare species”.	NO
Thelymitra viridis green sun-orchid	4	May occur in FMU. This is a widespread, 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”.	NO
Thelymitra x *irregularis* crested sun-orchid	3b	May occur in FMU. This is a hybrid taxon of low conservation concern. If present, will not occur as “significant concentrations of rare species”.	NO

Species	Status reserve category	Relevance to FMU	HCV?
Triglochin rheophilum stream waterribbons	3b	Unlikely to occur in FMU. If present, will not occur as “significant concentrations of rare species”.	NO
Typha domingensis slender cumbungi	3b	May occur in FMU (mainly in farm dams and fire-fighting ponds). If present, will not occur as “significant concentrations of rare species”.	NO
Typha orientalis broadleaf cumbungi	3b	May occur in FMU (mainly in farm dams and fire-fighting ponds). If present, will not occur as “significant concentrations of rare species”.	NO
Wolffia australiana tiny duckweed	3b	May occur in FMU (mainly in farm dams and fire-fighting ponds as a component of “duckweed”). If present, will not occur as “significant concentrations of rare species”.	NO

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

Annex G of FSC-STD-AUS-01-2018 EN includes the following relevant definition:

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

The “minimum area threshold” used to determine a HCV Area in relation to potential foraging and breeding habitat of the swift parrot was as per Section 5.4.3, with particular reference to Table 13 The allocation is currently based on the overlap of the mapped range of the species and TASVEG vegetation mapping, which will be progressively updated to provide a more precisely defined HCV Area.

5.4.3 Analysis of HCV 1.4 in FMU

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). Within the group of seasonally migratory birds, there are five broad groups identified herein, as follows:

1. Elevational seasonal migration within the State

   Several species appear to have strong seasonal migration patterns within the State. For example, *Petroica phoenicea* (flame robin) breeds in montane areas and moves to more open areas in winter (e.g. Wakefield & Wakefield 2016). Several other species, such as *Glossopsitta concinna* (musk lorikeet), may form nomadic flocks following food resources (e.g. Watts 2007).

   These within-State migratory patterns are not considered to have high significance in relation to the FMU and are not considered further.

2. Migratory shorebirds (breeding in Tasmania)

   Some species of migratory shorebirds may breed in Tasmania but overwinter in the northern hemisphere. Such species, such as *Puffinus tenuirostris* (short-tailed shearwater, muttonbird), are most strongly associated with islands and very near-coastal areas such as headlands and dunes (e.g. Watts 2007).

   These migratory species are not considered further as their life history does not coincide with any part of the FMU.

3. Migratory waders and shorebirds (non-breeding in Tasmania)

   Several species of migratory shorebirds/wading birds breed in the northern hemisphere but migrate to Australia (and other southern hemisphere regions) in the Australian summer. These species are almost wholly associated with the mudflats and associated coastal habitats (e.g. Watts 2007).

   These migratory species are not considered further as their life history does not coincide with any part of the FMU.

4. Migratory species other than swift parrot

   Neophema chrysogaster (orange-bellied parrot) and *Neophema chrysostoma* (blue-winged parrot) are breeding migrants to Tasmania and are considered here because the former is listed as threatened at both the State and Commonwealth level and the latter is becoming increasingly recognised as of potential conservation significance (Newman & Ashby 2018). Refer to Table 12 for more information.

   Other migratory bird species may use part of the FMU as part of their migratory habitat (Table 12). Several species of bird are recognised as (mainly) spring-summer migrants to Tasmania (e.g. Watts 2007), but are not considered further as activities within the FMU are not likely to impact on the breeding, foraging or other life history aspects as native vegetation will not be subject to commercial harvesting.

5. *Lathamus discolor* (swift parrot)

   The FMU includes 3 nest sites identified on the Natural Values Atlas (NVA), known and potential breeding and foraging habitat (refer to HCV 1.1). This species is considered in detail below.

Table 12. List of migratory birds to Tasmania

[table does not include occasional vagrants; most information from Bryant & Jackson (1999) & Watts (2007)]

Species	Status	Migratory behaviour	Reason not considered HCV 1.4
Little egret (*Egretta garzetta*)	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 FMU unlikely to impact on habitat.
Great egret (*Ardea alba*)	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 FMU unlikely to impact on habitat.
Cattle egret (*Ardea ibis*)	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 FMU unlikely to impact on habitat.
Swamp harrier (*Circus approximans*)	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 FMU unlikely to impact on habitat.

Species	Status	Migratory behaviour	Reason not considered HCV 1.4
Lathams snipe (*Gallinago hardwickii*)	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.	Species has been recorded on Surrey Hills (e.g. Naarding 1982) but activities (such as ecological burning) unlikely to affect individuals at anything other than a highly temporary and extremely localised level.
Blue-winged parrot (*Neophema chrysostoma*)	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).	Substantial parts of the native vegetation within the FMU 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 FMU unlikely to impact on habitat.
Orange-bellied parrot (*Neophema chrysogaster*)	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 FMU unlikely to impact on habitat.
Pallid cuckoo (*Cuculus pallidus*)	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 FMU unlikely to impact on habitat.
Fan-tailed cuckoo (*Cacomantis flabelliformis*)	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 FMU unlikely to impact on habitat.
Horsfields bronze-cuckoo (*Chrysococcyx basalis*)	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 FMU unlikely to impact on habitat.
Shining bronze-cuckoo (*Chrysococcyx lucidus*)	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 FMU unlikely to impact on habitat.
White-throated needletail (*Hirundapus caudacutus*)	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 FMU unlikely to impact on habitat.

Species	Status	Migratory behaviour	Reason not considered HCV 1.4
Fork-tailed swift (*Apus pacificus*)	TSPA: not listed EPBCA: Migratory Marine Species	Extremely rare vagrant to Tasmania.	Activities within any part of FMU unlikely to impact on habitat.
Striated pardalote (*Pardalotus striatus*)	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 FMU unlikely to impact on habitat.
Flame robin (*Petroica phoenicea*)	TSPA: not listed EPBCA: not listed	Partial spring migrant to Tasmania. Habitat is dry forest and woodland.	Activities within commercial parts of FMU unlikely to impact on habitat.
Satin flycatcher (*Myiagra cyanoleuca*)	TSPA: not listed EPBCA: Migratory Terrestrial Species	A common spring-summer migrant. Breeds in Tasmania. Habitat is forest.	Activities within commercial parts of FMU unlikely to impact on habitat.
Grey fantail (*Rhipidura fuliginosa*)	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 FMU unlikely to impact on habitat.
Black-faced cuckoo-shrike (*Coracina novaehollandiae*)	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 FMU unlikely to impact on habitat.
Dusky woodswallow (*Artamus cyanopterus*)	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 FMU unlikely to impact on habitat.
Welcome swallow (*Hirundo neoxena*)	TSPA: not listed EPBCA: not listed	A common summer migrant. Breeds in Tasmania (generally under artificial structures). Habitat variable.	Activities within commercial parts of FMU unlikely to impact on habitat.
Tree martin (*Hirundo nigricans*)	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 FMU unlikely to impact on habitat.
Clamorous reed-warbler (*Acrocephalus stentoreus*)	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 FMU unlikely to impact on habitat.
Silvereye (*Zosterops lateralis*)	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 FMU unlikely to impact on habitat.

Swift parrot

In terms of the FMU, 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).

The Forest Practices Authority provides the most detailed and up-to-date description of potential foraging and nesting habitat (FPA 2017), as follows:

> *Potential breeding habitat for the Swift Parrot comprises potential foraging habitat and potential nesting habitat, and is based on definitions of foraging and nesting trees (see Table A in swift parrot habitat assessment Technical Note). Potential foraging habitat comprises E. globulus or E. ovata trees that are old enough to flower. The occurrence of foraging-habitat can be remotely assessed, although only to a limited extent, by using mapping layers such as GlobMap (NRE Tas 2010). Due to the scale and inadequacies in current foraging-habitat mapping, potential foraging-habitat density within operational areas may need to be largely identified by ground-based surveys as per Table B in the swift parrot habitat assessment Technical Note. For management purposes potential nesting habitat is considered to comprise eucalypt forests that contain hollow-bearing trees. The FPA mature habitat availability map (see Technical Note 2) predicts the availability of hollow-bearing trees using the relevant definitions of habitat provided in Table C of the swift parrot habitat assessment Technical Note. The mature habitat availability map is designed to be used to make landscape-scale assessments and may not be reliable for stand-level assessments required during the development of a Forest Practices Plan. At the stand-level the availability and distribution of hollow-bearing trees across a coupe or operation area is best determined from a ground-based assessment (see Table C in the swift parrot habitat assessment Technical Note).*
>
> *Significant habitat is all potential breeding habitat within the SE potential breeding range and the NW breeding areas.*

The Forest Practices Authority also provides maps of the core breeding range, potential range (southeast Tasmania and northwest Tasmania) and indicative maps of Swift Parrot Important Breeding Areas (SPIBAs). The combination of the habitat description and range maps provides a means to initially allocate parts of the FMU to HCV 1.4 in relation to the swift parrot. For this analysis, the potential and core breeding range was overlaid with the FMU to determine any overlap of these layers. Within the overlapping areas, the most up-to-date TASVEG vegetation mapping was used to allocate any area mapped as *Eucalyptus globulus* dry forest and woodland (TASVEG code: DGL) and *Eucalyptus ovata* forest and woodland (TASVEG code: DOV) to define as potential foraging habitat and the RFA old-growth layer to define potential breeding habitat (Table 13). It is acknowledged that both the extent of DGL/DOV and old-growth forest will be progressively field-checked and the area allocated as potential foraging/nesting habitat adjusted accordingly. It is also recognised that these broad layers will not necessarily capture some of the finer scale occurrences of potential foraging/nesting habitat e.g. highly localised patches of old-growth forest. However, given that no native forest communities within the FMU are subject to commercial wood production, until these local occurrences of potential habitat are identified, the use of available mapping is considered appropriate.

The habitat description for swift parrot provided jointly by the FPA and the Threatened Species section of NRE Tas describes potential foraging habitat as comprising "*E. globulus* or *E. ovata* trees that are old enough to flower" but explicitly state that "for management purposes, this applies to native forest only" (FPA 2020). Given the transient nature of flowering *E. globulus* plantations in its production forest areas, Forico has also chosen to adopt this approach.

The FPA also provides a method of assessing the availability of mature habitat (FPA 2016), which includes a "mature habitat availability map", which classifies such habitat into High, Medium, Low and Negligible classes. The extent of the High class was overlaid with the parts of the FMU within the core or potential breeding range of the swift parrot, as a surrogate for mature forest potentially suitable for breeding for the species. While the area extent values provided by the mature habitat model have been considered, only the old-growth layer is used to allocate potential HCV 1.4 because the mature habitat model is still under development.

Table 13. Parts of the FMU allocated to HCV 1.4 (swift parrot habitat; hectares)

Part of range	Extent of potential foraging habitat (ha) (DGL & WGL)	Extent of potential foraging habitat (ha) (DOV & DOW)	Extent of potential foraging habitat (ha) (WBR)	Total Core breeding range and foraging habitat (ha)
Potential breeding range	145.5	246.4	235.1	627.0
Core breeding range	**75.4**	**24.9**	**2.2**	**102.5**

At this stage of allocation of parts of the FMU to HCV 1.4, only the core breeding and foraging range of the swift parrot is considered, i.e. **102.5** hectares. The areas allocated to HCV 1.4 will be progressively adjusted as the extent of potential breeding and foraging habitat of the species is verified through field assessment, mainly in relation to the extent of forests and woodlands dominated by *Eucalyptus globulus* (blue gum), *Eucalyptus brookeriana* (Brooker's gum) or *Eucalyptus ovata* (black gum), and confirmation of areas associated with actual breeding locations.

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 in FMU

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 FMU 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

Annex G of FSC-STD-AUS-01-2018 EN provides the following definition:

> **Refugia***:* an area identified in formally recognised reports or peer-reviewed journals as performing a significant function in maintaining species during, for example, periods of climate variability and extremes; human-induced causes such as disease; or population fluctuations from natural or human-induced causes.

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

5.6.3 Analysis of HCV 1.6 in FMU

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 14), noting that none of these broadly-defined areas coincide with any part of the FMU.

Table 14. Identified glacial refugia areas within Tasmania [based on Kirkpatrick & Fowler (1998)]

Area	Comment in relation to FMU
Apsley River	No part of the FMU is within the catchment of the Apsley River.
Blue Tier	A small part of the FMU is to the northeast-east of Platts Lookout, which is sometimes considered the eastern fringe of the “Blue Tier”. However, no part of the FMU is associated with the “Blue Tier” proper i.e. the higher elevation parts.
Cape Pillar/Cape Hauy	Three small parts of the FMU are on the Tasman Peninsula but all are west of Port Arthur (i.e. not near Cape Pillar or Cape Hauy).
Denison River	No part of the FMU is within the catchment of the Denison River.
Douglas-Aspley	While no part of the FMU is within the broad area known as the Douglas-Apsley, E Road that accesses the northern part of the Douglas-Apsley National Park is technically part of the FMU. These first few kilometres of road are all on the lowland coastal terrain and not part of an area considered to be the glacial refuge.
Elephant Pass	No part of the FMU is within the general Elephant Pass area.
Esperance	Small parts of the FMU are in the greater Port Esperance area but all are lowland near-coastal sites, not the glacial refuge site in the higher reaches of the Esperance River system.
Franklin River	No part of the FMU is within the catchment of the Franklin River.
Henty River	No part of the FMU is within the catchment of the Henty River.
middle Weld Valley	No part of the FMU is within the catchment of the Weld River (southwest).
Mt St John	No part of the FMU is within the general Mt St John area.
Murchison River	No part of the FMU is within the catchment of the Murchison River.
New River Lagoon	No part of the FMU is within the World Heritage Area near New River Lagoon.
Old River	No part of the FMU is within the catchment of the Old River.

Area	Comment in relation to FMU
Pieman River mouth	No part of the FMU is within the catchment of the Pieman River.
Port Davey	No part of the FMU is within the World Heritage Area near Port Davey.
South of Macquarie Harbour	No part of the FMU is in the greater Macquarie Harbour area.
St Marys Pass	No part of the FMU is within the general St Marys Pass area.

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 15). None of these coincide substantially with any part of the FMU except for limited parts of Surrey Hills and sites around Mole Creek.

Table 15. Identified contemporary refugia areas within Tasmania [based on PLUC (1997a)]

Refuge type	Nature of refuge	Community or species	Mapped sites	Comment in relation to FMU
Sub-alpine plateaus and mountain peaks	Bogs, rocky sites, including blockstreams and craggy areas, lake and river banks, and islands within these water bodies	Open montane rainforest and alpine communities. *Athrotaxis cupressoides*, *Nothofagus gunnii* and other species, including endemic conifers	Central Plateau, mountains of the Central Highlands, Precipitous Bluff, Mt Anne, Frenchmans Cap, West Coast Range, Western Arthurs	Parts of the FMU on the Surrey Hills area could be considered as a contemporary refugia, specifically the subalpine vegetation associations on Valentines Peak and Mt Pearse, although neither of these sites support the indicative species or communities intended by this category so a specific area has not been allocated to HCV 1.6.
Montane to subalpine slopes and mountain peaks in central, western and southern Tas.	Cool, wet climatically protected areas	Cool temperate rainforest dominated by *Athrotaxis selaginoides* or *Lagarostrobos franklinii*	Great Western Tiers, King Billy Range, Mt Algonkian, slopes of Mt Bobs, Teepookana, Pine Valley	No part of the FMU meets these criteria.
Riverine habitats in western and southern Tas.	Cool, wet, regularly inundated areas	Cool temperate rainforest dominated by *Lagarostrobos franklinii*	Gordon, Pieman, Davey, and Huon Rivers	No part of the FMU meets these criteria.
Moist sites in dissected hills of eastern and northern Tas. and the Bass Strait islands	South-easterly slopes, wet gullies with protection from sun and wind and increased soil moisture from run-off. Occasionally bog sites	Primarily rainforest and wet scrub communities dominated by *Nothofagus cunninghamii*, *Atherosperma moschatum*, *Notelaea ligustrina* and *Pomaderris apetala*. On occasions *Asterotrichion discolor*, *Phyllocladus aspleniifolius* and	The Thumbs, Yarlington Tier, Windred Creek, Fergusons Gully, Dazzler Range, Platform Peak, Mt Cameron	No part of the FMU meets these criteria.

Refuge type	Nature of refuge	Community or species	Mapped sites	Comment in relation to FMU
		Elaeocarpus reticulatus.		
Dry sites in dissected hills of eastern and northern Tas.	Dry rocky slopes, gorges and scree slopes	*Callitris rhomboidea*, *Notelaea ligustrina*, *Melaleuca virens*	*C. rhomboidea* – Sellars Lagoon, outer Furneaux Islands, Taillefer Rocks, Allans Road	No part of the FMU meets these criteria. Limited sites within the FMU supports vegetation allocable to the listed *Notelaea – Pomaderris – Beyeria* forest vegetation community but these are captured under HCV 3.1, noting that all such occurrences are limited in extent and wholly protected due to their association with riparian slopes or exposed ridges/slopes, so a specific area has not been allocated to HCV 1.6.
Riparian habitats in eastern and north-eastern Tas.	High soil moisture and closed canopy	*Nothofagus cunninghamii*, *Atherosperma moschatum*, *Acacia melanoxylon*, *Pomaderris. apetala*, *Callitris oblonga* and *C. rhomboidea*	*C. oblonga* – all upstream populations. Callidendrous rain forest – Forester, Great Musselroe and Brid Rivers	No part of the FMU meets these criteria.
Mountain summits on Flinders, Cape Barren and Maria Islands	Cloud forests	*Atherosperma moschatum*, *Pomaderris racemosa*, *P. apetala*, *Tasmannia lanceolata*, *Bedfordia arborescens*, *Cyathea cunninghamii*, *C.* x *marcescens*	Mt Munroe, Mt Strzelecki, Mt Maria	No part of the FMU is on Flinders, Cape Barren or Maria islands.
Cool moist mountain plateaus and summits in eastern and south-eastern Tas.		*Nothofagus cunninghamii*, *Atherosperma moschatum*, *Phyllocladus aspleniifolius* and other associated rainforest species	Mt Mangana	No part of the FMU meets these criteria.
Sinkholes and collapse features in karst and coastal sediments	Topographic protection and shading	Rainforest species, bryophytes and lichens. At present poorly understood	Mole Creek area, Cape Hauy	Small parts of the FMU occur on karst topography (e.g. Caroline Creek area, Union Bridge area), although neither of these areas are strongly associated with the indicative features so a specific area has not been allocated to HCV 1.6.
Phytophthora refugia		Various	Maria Island, Wielangta Hill, Heazlewood River, Celery Top Islands, Alum Cliffs State Reserve, Southport Bluff, Grey Mountain	No part of the FMU meets these criteria.

Fire refugia

The concept of “fire refugia” was explored in the *Report for the Independent Verification Group of the Tasmanian Forests Intergovernmental Agreement on Forest Fire Refugia* (c. 2012). This work produced a “Fire Refugia Index” based on variables of Fire Sensitivity, Topographic Fire Protection and Ignition Probability. In subsequent major revisions of the HCV Assessment and Management Plan, Forico intend to obtain the Fire Refugia Index layer, and consider its utility for analysing the Forico FMU spatially. If possible occurrences of fire refugia are identified within the FMU, their location and extent will then be taken into consideration and a decision made as to which areas may warrant allocation as HCV 1.6.

5.6.4 Management

While no areas of HCV 1.6 have been formally identified from the FMU, Forico acknowledges that management activities within the FMU have the potential to contribute to various risk factors that may affect glacial and contemporary refugia. To maintain and/or enhance HCV 1.6 values outside the FMU, Forico will:

- undertake prescribed burning and maintain fire management assets (e.g. firebreaks) across the FMU as part of strategic planning to contribute to overall risk reduction of unplanned fires affecting areas of glacial and contemporary refugia;
- collaborate with other land managers and agencies in relation to Statewide fuel management; and
- continue to implement the Forico *Weed & Hygiene Management Plan* (Forico 2021).

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.

HCV 2 targets regionally significant large landscape-level forests that are generally 1,000s to 10s of 1,000s of hectares in extent and contain the various sub-values, as per Table 16.

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

Annex G of FSC-STD-AUS-01-2018 EN includes the following relevant definitions:

> **Intact Forest Landscape**: A territory within today's global extent of forest cover which contains forest and non-forest ecosystems minimally influenced by human economic activity, with an area of at least **500** km^2 (**50,000** hectares) and a minimal width of 10 km (measured as the diameter of a circle that is entirely inscribed within the boundaries of the territory) (Source: Intact Forests / Global Forest Watch. Glossary definition as provided on Intact Forest website. 2006-2014).
>
> **Intact Forest Landscape Core Areas**: The portion of an Intact Forest Landscape that contains the most important ecological and cultural values.
>
> **Large landscape-level native forests**: Relatively contiguous areas of forest (which may be crossed by land management roads or public roads). At the minimum these forests are likely to be thousands or tens of thousands of hectares in size. However, “large” is relative to regional landscape context (particularly the size of forested blocks in the bioregion) and might be smaller or larger than this figure as indicated by consultation with regional experts. In regions where native forests are heavily fragmented by forest type conversion or land use conversion, the increased value of smaller occurrences of remaining natural forest should also be included in the assessment. The forest may be in single or multiple ownerships.

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 in FMU

No areas of HCV 2.1 have been identified from the FMU. This is consistent with the context of the FMU being on private land, generally surrounded by other private land, and substantial parts having been modified through various land use practices (mainly commercial wood production). The Surrey Hills part of the FMU is the largest consolidated part of the FMU and at some level is a “landscape-level” native forest and non-forest area. However, this area is substantially disturbed by various activities including land clearing, grazing and plantation establishment and is dissected by an extensive road/track network.

6.1.4 Management

While no areas of HCV 2.1 have been formally identified from the FMU, Forico acknowledges that management activities within the FMU have the potential to contribute to the maintenance and/or enhancement of “landscape-level native forest”. To maintain and/or enhance HCV 2.1 values within and adjacent to the Surrey Hills part of the FMU, Forico will:

- manage all native vegetation types on Surrey Hills for their conservation value i.e. no harvesting will be undertaken;
- manage the non-forest vegetation of Surrey Hills in accordance with the *Surrey Hills Grassland Management Plan* (Forico 2022);
- undertake collaborative research on threatened flora (with notable reference to the crowded leek-orchid) and fauna (with notable reference to the Tasmanian devil and ptunarra brown butterfly) and other native grassland values in the Surrey Hills area;
- consider sites suitable for restoration to native vegetation that are no longer suitable for commercial plantation; and
- implement the *Weed & Disease Management Guidelines* (Forico 2015).

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

Annex G of FSC-STD-AUS-01-2018 EN includes the following relevant definitions:

> **Regionally Significant**: The forest is significant in the region 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 in FMU

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

6.2.4 Management

While no areas of HCV 2.2 have been formally identified from the FMU, refer to HCV 2.1 regarding management on the Surrey Hills part of the FMU.

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

Annex G of FSC-STD-AUS-01-2018 EN includes the following relevant definition:

> ***Connectivity****: A measure of how connected or spatially continuous a corridor, network, or matrix is. The fewer gaps, the higher the connectivity. Related to the structural connectivity concept; functional or behavioural connectivity refers to how connected an area is for a process, such as an animal moving through different types of landscape elements. Aquatic connectivity deals with the accessibility and transport of materials and organisms, through groundwater and surface water, between different patches of aquatic ecosystems of all kinds. (Source: Based on R.T.T. Forman. 1995. Land Mosaics. The Ecology of Landscapes and Regions. Cambridge University Press, 632pp).*

The *Forest Practices Code 2020* (and preceding versions) required that:

> *Wildlife habitat strips (WHSs) should be retained to maintain habitat diversity. As a guide, strips of uncut forest 100 m in width, based on streamside reserves but including links up slopes and across ridges to connect with watercourses in adjoining catchments, should be provided every 3-5 km. These strips should connect any large patches of forest which are not to be harvested, such as formal and informal reserves. [p. 62]*

WHSs were extensively established on State forest during the 1990s. These were designed to meet the requirements of the *Forest Practices Code*. It was also recognised that some privately-owned forest areas might also meet the threshold for requiring WHSs, principally larger properties such as Forico's Woolnorth and Surrey Hills. During the late 1990s and 2000s, a network of WHSs were established on these properties through collaboration between the landowner at the time and the Forest Practices Authority. Guidance was received from threatened fauna zoologists, principally in relation to species such as the grey goshawk and spotted-tailed quoll. Forico have inherited this network of WHSs on Woolnorth and Surrey Hills, which is still categorised as a special management zone on company planning maps.

An example of the type of WHS establishment that occurred on Woolnorth was in relation to the grey goshawk, listed as endangered on the TSPA. Woolnorth supports extensive forests dominated by blackwood, which is prime habitat for the goshawk. WHSs of various widths were established at rate higher than that required by the *Forest Practices Code* (see above), capturing as much potential habitat as possible and creating links between more intact forest patches. This facilitated provision of advice and management of smaller areas of potential grey goshawk habitat that could be included in sites proposed for native forest silviculture or conversion to hardwood plantation by the then owner.

In the context of HCV 2.3, these WHSs do not meet the intent of "landscape-level ecosystems and ecosystems mosaics", although the potential habitat reserved for a species such as the grey goshawk could be considered to meet the intent of HCV 1.1 (see Table 9).

6.3.3 Analysis of HCV 2.3 in FMU

No areas of HCV 2.3 have been identified from the FMU.

6.3.4 Management

While no areas of HCV 2.3 have been formally identified from the FMU, the WHS network will be maintained and managed as such on Surrey Hills and Woolnorth.

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

Refer to preamble to main section on HCV 2 for definition of Intact Forest Landscape.

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 in FMU

The global map of IFL areas maintained by the Intact Forest Landscapes website group (IFL 2017) was downloaded as a GoogleEarth file, converted to an ESRI GIS shape file and clipped to the FMU to determine if any parts of the IFL area coincided with the FMU. On this basis, no areas of HCV 2.4 have been identified from the FMU.

This process is repeated on an annual basis to maintain FSC certification.

6.4.4 Management

Not applicable.

7. HCV 3 – ECOSYSTEMS AND HABITATS

HCV 3 is fully described as:

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

HCV 3 targets forests that are rare and/or threatened at a global, national or regional level. Distinctiveness in terms of size, quality (particularly lack of human disturbance), or location within the ecosystem's geographic range may be considered in assessing ecosystem rarity in rare, threatened or endangered ecosystems, or that contain such ecosystems, and contain the various sub-values, as per Table 17. 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

Annex G of FSC-STD-AUS-01-2018 EN includes the following relevant definitions:

> **Ecosystem**: A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit. (Source: Convention on Biological Diversity 1992, Article 2).
>
> **Habitat**: The place or type of site where an organism or population occurs. (Source: Based on the Convention on Biological Diversity, Article 2).

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 fully 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

In Tasmania, there have been several classifications of broad vegetation types, described in *From Forest to Fjaeldmark: Descriptions of Tasmania's Vegetation* (Kitchener & Harris 2013+). The current vegetation classification system applied at virtually all levels of government administration is referred to as TASVEG, the current version of which is TASVEG 3.0 (updated online through TASVEG Live). Forico consider 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 Primary Industries, Parks, Water & Environment (NRE Tas) 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, Forico 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*.

For the purposes of this analysis, Forico has used vegetation mapping units as a practical surrogate for "ecosystems and habitat" (in a broad sense). The concept of "threatened, depleted or poorly reserved at the bioregion scale" has been interpreted as applying at the scale of the whole of Tasmania (i.e. the Tasmanian bioregion), except where otherwise stated in text and tables. The more generic interpretation of "threatened" is taken to refer to any vegetation type listed on Schedule 3A of the Tasmanian *Nature Conservation Act 2002* or any threatened ecological community listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. This is because the formal listing process on these Acts considered the concepts of "depletion" and "reservation levels".

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 equivalent to native vegetation communities formally listed as threatened under Schedule 3A of the Tasmanian *Nature Conservation Act 2002* (and none equate to threatened ecological communities listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*). However, the analysis described below has included all rainforest (and related mapping units), irrespective of their formal threat status.

The method used for determining the "minimum area threshold" to define HCV Areas in relation to polygons of threatened vegetation was as per Section 7.1.3 below, with particular reference to Table 18 (State-listed communities), Table 20 (Commonwealth-listed communities) and Table 21 (rainforest).In general, the principles outlined in the introductory section of *From Forest to Fjaeldmark: Descriptions of Tasmania's Vegetation* (Kitchener & Harris 2013+) has been used as a guide for defining HCV Areas for HCV 3.1:

"The minimum patch size for a viable vegetation community has not previously been defined in this manual. In relation to cartographic standards, advice from other jurisdictions and review of relevant publications (e.g. Neldner et al, 2012) suggests that for 1:25,000 scale mapping, a minimum polygon size of about 0.25 ha (or 25 m width for linear polygons) is appropriate. This includes features smaller than 0.25 ha where these are contiguous (i.e. their perimeters are separated by a distance of no greater than 12.5 m) and their combined area is 0.25 ha or greater.

The TASVEG minimum resolution of homogenous vegetation patches within continuous native vegetation is generally larger than 1 ha, however this varies depending on context. TASVEG also maps native vegetation in patches of smaller than 1 ha, though these have not been consistently mapped by the methods employed. Analysis of TASVEG shows that these smaller patches are both forest/woodland and non-forest vegetation. Regardless of whether they have been captured by TASVEG mapping, it is recognised that native vegetation communities can occur naturally or as

remnants in a cleared or disturbed landscape in patches smaller than 1 ha. Patches (or contiguous patches) of vegetation as small as 0.1 ha may be valid for forest and woodland communities of high conservation significance where they are assessed as viable. For example, the threatened community Eucalyptus ovata forest and woodland (Schedule 3A Nature Conservation Act 2002) commonly occurs as small but viable patches in an undisturbed matrix of other forest types (e.g. Eucalyptus amygdalina forests on gravels and on sands in the midlands and north of Beaconsfield (North and Barker, 2002)). Important non-forest vegetation communities can be viable as patches of less than 0.1 ha in area. Appropriate mapping to 0.1 ha includes communities occupying clearly defined but localised environments distinct from the surrounding vegetation. Likely examples are wetland and saltmarsh communities, Alkaline pans, Rockplate grasslands, Cushion moorland and Lichen lithosphere".

7.1.3 Analysis of HCV 3.1 in FMU

As a starting point (further rationale below), the extent of every TASVEG mapping unit within the FMU was analysed by overlaying the FMU with the most up-to-date TASVEG layer. In most cases, this is TASVEG 4.0/TASVEG Live, but in some cases, internal Forico vegetation mapping updates were used, for example in Surrey Hills. Forico is committed to improving the vegetation mapping of its natural vegetation areas and has made good progress towards this, particularly in relation to threatened vegetation communities. The area extent of any vegetation mapping unit may change as NRE Tas updates TASVEG live and Forico undertakes further field verifications.

The area of native vegetation allocated to HCV 3.1 is divided into three broad categories (Tables 18-21): (1) State-listed vegetation types; (2) EPBCA-listed threatened ecological communities; and (3) all rainforest and related TASVEG mapping units.

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. That is, any polygon of a threatened TASVEG mapping unit has been considered to be HCV 3.1 until it has been field-verified as absent.

State-listed Vegetation Types

Table 18. Area of all TASVEG mapping units of natural vegetation and other natural environments within the FMU [bold type = threatened vegetation communities]

NCA = Nature Conservation Act 2002 (Tas)
EPBCA = Environment Protection Biodiversity and Conservation Act (Aus)

TASVEG code	TASVEG name	TASVEG group	Area (ha)	NCA	EPBCA
AHL	**lacustrine herbland**	**Saltmarsh and wetland**	**2.0**		
ASF	**freshwater aquatic sedgeland and rushland**	**Saltmarsh and wetland**	**47.3**	**threatened**	
ASP	***Sphagnum* peatland**	**Saltmarsh and wetland**	**202.1**	**threatened**	**EN**
AWU	**wetland (undifferentiated)**	**Saltmarsh and wetland**	**0.6**	**threatened**	
DAC	*Eucalyptus amygdalina* coastal forest and woodland	Dry eucalypt forest and woodland	928.2		
DAD	*Eucalyptus amygdalina* forest and woodland on dolerite	Dry eucalypt forest and woodland	4127.4		
DAM	*Eucalyptus amygdalina* forest on mudstone	Dry eucalypt forest and woodland	2242.0		
DAS	***Eucalyptus amygdalina* forest and woodland on sandstone**	**Dry eucalypt forest and woodland**	**591.4**	**threatened**	
DAZ	***Eucalyptus amygdalina* inland forest and woodland on Cainozoic deposits**	**Dry eucalypt forest and woodland**	**625.6**	**threatened**	
DCO	*Eucalyptus coccifera* forest and woodland	Dry eucalypt forest and woodland	108.0		
DCR	*Eucalyptus cordata* forest	Dry eucalypt forest and woodland	7.8		
DDE	*Eucalyptus delegatensis* dry forest and woodland	Dry eucalypt forest and woodland	2604.9		
DDP	*Eucalyptus dalrympleana* - *Eucalyptus pauciflora* forest and woodland	Dry eucalypt forest and woodland	1.2		
DGL	***Eucalyptus globulus* dry forest and woodland**	**Dry eucalypt forest and woodland**	**48.3**	**threatened**	
DGW	*Eucalyptus gunnii* woodland	Dry eucalypt forest and woodland	105.1		
DNI	*Eucalyptus nitida* dry forest and woodland	Dry eucalypt forest and woodland	387.5		
DOB	*Eucalyptus obliqua* dry forest	Dry eucalypt forest and woodland	3691.1		
DOV	***Eucalyptus ovata* forest and woodland**	**Dry eucalypt forest and woodland**	**483.0**	**threatened**	**CR**
DOW	***Eucalyptus ovata* heathy woodland**	**Dry eucalypt forest and woodland**	**8.2**	**threatened**	**CR**
DPD	*Eucalyptus pauciflora* forest and woodland on dolerite	Dry eucalypt forest and woodland	209		
DPO	*Eucalyptus pauciflora* forest and woodland not on dolerite	Dry eucalypt forest and woodland	111.2		

TASVEG code	TASVEG name	TASVEG group	Area (ha)	NCA	EPBCA
DPU	*Eucalyptus pulchella* forest and woodland	Dry eucalypt forest and woodland	2272.4		
DRO	*Eucalyptus rodwayi* forest and woodland	Dry eucalypt forest and woodland	385.9		
DSC	*Eucalyptus amygdalina* - *Eucalyptus obliqua* damp sclerophyll forest	Dry eucalypt forest and woodland	3053.5		
DSO	*Eucalyptus sieberi* forest and woodland not on granite	Dry eucalypt forest and woodland	278.8		
DTD	*Eucalyptus tenuiramis* forest and woodland on dolerite	Dry eucalypt forest and woodland	157.4		
DTO	***Eucalyptus tenuiramis* forest and woodland on sediments**	**Dry eucalypt forest and woodland**	**134**	**threatened**	
DVG	*Eucalyptus viminalis* grassy forest and woodland	Dry eucalypt forest and woodland	282.5		
GCL	lowland grassland complex	Native grassland	132.4		
GPH	**highland *Poa* grassland**	**Native grassland**	**1946.7**	**threatened**	
GPL	**lowland *Poa labillardierei* grassland**	**Native grassland**	**98.3**		**CR**
GRP	**Rockplate grassland**	**Native grassland**	**0.7**		
GSL	lowland grassy sedgeland	Native grassland	34.6		
GTL	**lowland *Themeda triandra* grassland**	**Native grassland**	**0.0**		**CR**
HHE	eastern alpine heathland	Highland and treeless vegetation	34.2		
HHW	western alpine heathland	Highland and treeless vegetation	15.0		
HSE	eastern alpine sedgeland	Highland and treeless vegetation	12.0		
MBE	eastern buttongrass moorland	Moorland, sedgeland, rushland and peatland	660.2		
MBP	pure buttongrass moorland	Moorland, sedgeland, rushland and peatland	198.4		
MBS	buttongrass moorland with emergent shrubs	Moorland, sedgeland, rushland and peatland	413.7		
MBU	buttongrass moorland (undifferentiated)	Moorland, sedgeland, rushland and peatland	0.8		
MBW	western buttongrass moorland	Moorland, sedgeland, rushland and peatland	784.9		
MDS	**subalpine *Diplarrena latifolia* rushland**	**Moorland, sedgeland, rushland and peatland**	**220.2**	**threatened**	
MGH	**highland grassy sedgeland**	**Moorland, sedgeland, rushland and peatland**	**244.9**	**threatened**	
MRR	Restionaceae rushland	Moorland, sedgeland, rushland and peatland	310.1		
NAD	*Acacia dealbata* forest	Non eucalypt forest and woodland	2767.6		
NAF	*Acacia melanoxylon* swamp forest	Non eucalypt forest and woodland	443.3		
NAL	***Allocasuarina littoralis* forest**	**Non eucalypt forest and woodland**	**5.0**	**threatened**	

TASVEG code	TASVEG name	TASVEG group	Area (ha)	NCA	EPBCA
NAR	*Acacia melanoxylon* forest on rises	Non eucalypt forest and woodland	1935.4		
NAV	*Allocasuarina verticillata* forest	Non eucalypt forest and woodland	13.4		
NBA	*Bursaria - Acacia* woodland and scrub	Non eucalypt forest and woodland	39.9		
NLE	*Leptospermum* forest	Non eucalypt forest and woodland	404.1		
NLM	*Leptospermum lanigerum - Melaleuca squarrosa* swamp forest	Non eucalypt forest and woodland	343.9		
NME	***Melaleuca ericifolia* swamp forest**	**Non eucalypt forest and woodland**	**101.1**	**threatened**	
RFE	**rainforest fernland**	**Rainforest and related scrub**	**4.1**	**threatened**	
RKP	*Athrotaxis selaginoides* rainforest	Rainforest and related scrub	13.6		
RKX	highland rainforest scrub with dead *Athrotaxis selaginoides*	Rainforest and related scrub	1.7		
RML	*Nothofagus - Leptospermum* short rainforest	Rainforest and related scrub	1639.1		
RMS	*Nothofagus - Phyllocladus* short rainforest	Rainforest and related scrub	1149.1		
RMT	*Nothofagus - Atherosperma* rainforest	Rainforest and related scrub	10116.3		
RMU	*Nothofagus* rainforest (undifferentiated)	Rainforest and related scrub	491.1		
RSH	highland low rainforest and scrub	Rainforest and related scrub	181.6		
SBR	**broad-leaf scrub**	**Scrub, heathland and coastal complexes**	**54.3**	**threatened**	
SHS	subalpine heathland	Scrub, heathland and coastal complexes	72		
SHW	wet heathland	Scrub, heathland and coastal complexes	138.7		
SLL	*Leptospermum lanigerum* scrub	Scrub, heathland and coastal complexes	179.6		
SLS	*Leptospermum scoparium* heathland and scrub	Scrub, heathland and coastal complexes	36.1		
SMR	*Melaleuca squarrosa* scrub	Scrub, heathland and coastal complexes	113.5		
SRE	**eastern riparian scrub**	**Scrub, heathland and coastal complexes**	**4.9**	**threatened**	
SRF	*Leptospermum* with rainforest scrub	Scrub, heathland and coastal complexes	130		
SSW	western subalpine scrub	Scrub, heathland and coastal complexes	26.0		
SWW	western wet scrub	Scrub, heathland and coastal complexes	212.2		
WBR	***Eucalyptus brookeriana* wet forest**	**Wet eucalypt forest and woodland**	**1344**	**threatened**	**CR**
WDA	*Eucalyptus dalrympleana* forest	Wet eucalypt forest and woodland	158.9		

TASVEG code	TASVEG name	TASVEG group	Area (ha)	NCA	EPBCA
WDB	*Eucalyptus delegatensis* forest with broad-leaf shrubs	Wet eucalypt forest and woodland	3583.7		
WDL	*Eucalyptus delegatensis* forest over *Leptospermum*	Wet eucalypt forest and woodland	1424.9		
WDR	*Eucalyptus delegatensis* forest over rainforest	Wet eucalypt forest and woodland	4204.7		
WDU	*Eucalyptus delegatensis* wet forest (undifferentiated)	Wet eucalypt forest and woodland	464.6		
WGL	*Eucalyptus globulus* wet forest	Wet eucalypt forest and woodland	97.4		
WNL	*Eucalyptus nitida* forest over *Leptospermum*	Wet eucalypt forest and woodland	1679.6		
WNR	*Eucalyptus nitida* forest over rainforest	Wet eucalypt forest and woodland	463.5		
WNU	*Eucalyptus nitida* wet forest (undifferentiated)	Wet eucalypt forest and woodland	5.8		
WOB	*Eucalyptus obliqua* forest with broad-leaf scrub	Wet eucalypt forest and woodland	5071.1		
WOL	*Eucalyptus obliqua* forest over *Leptospermum*	Wet eucalypt forest and woodland	1098.8		
WOR	*Eucalyptus obliqua* forest over rainforest	Wet eucalypt forest and woodland	472.6		
WOU	*Eucalyptus obliqua* wet forest (undifferentiated)	Wet eucalypt forest and woodland	1898.4		
WRE	*Eucalyptus regnans* forest	Wet eucalypt forest and woodland	957.4		
WSU	*Eucalyptus subcrenulata* forest and woodland	Wet eucalypt forest and woodland	35.3		
WVI	***Eucalyptus viminalis* wet forest**	**Wet eucalypt forest and woodland**	**335.3**	**threatened**	

Based on available vegetation mapping, the FMU includes **6246.9** hectares of native vegetation mapped as threatened under Schedule 3A of the *Tasmanian Nature Conservation (NCA) Act 2002* (Table 19). At this stage of analysis, Forico is allocating all mapped areas of NCA-listed vegetation types to HCV 3.1. However, extensive vegetation condition assessments (VCAs) conducted across the FMU has indicated substantial variation in the ecological condition of confirmed areas of threatened native vegetation. For the purposes of the VCAs being undertaken across the Forico FMU, the following conditional categories have been assigned:

>80 very good (vegetation in an essentially unmodified state with all, or most, components present)

70-80 good

55-70 average

45-55 below average

<45 poor (vegetation in a highly altered state with numerous components missing and/or highly modified).

In future, analysis of HCV 3.1 may include a consideration of the vegetation condition assessment score to only include patches of threatened vegetation that meet a particular threshold, for example a VCA score of 55 and above, and to exclude sites classified as being in below-average or poor condition.

Table 19. Area of threatened TASVEG mapping units within the FMU

TASVEG code	TASVEG name	Area (ha)	Comments
AHL	**lacustrine herbland**	**2.0**	This community has been mapped by TasVeg 4.0 and needs field verification.
ASF	freshwater aquatic sedgeland and rushland	**47.3**	Extent within FMU likely to be modified with further vegetation mapping. Some areas (e.g. Coarse Marsh) have been confirmed.
ASP	*Sphagnum* peatland	**202.1**	Forico has undertaken detailed mapping of *Sphagnum*-dominated areas on Surrey Hills.
AWU	wetland (undifferentiated)	**0.6**	Areas of AWU are unconfirmed and will be re-allocated to other wetland (or non-wetland) mapping units.
DAS	*Eucalyptus amygdalina* forest and woodland on sandstone	**591.4**	Field verification is indicating that the area allocated to DAS in TASVEG tend to be over-estimates so this value is likely to continue to decrease.
DAZ	*Eucalyptus amygdalina* inland forest and woodland on Cainozoic deposits	**625.6**	Most DAZ mapped in the FMU has been field-verified. Some inaccuracies may still be present within this mapping unit but these are not expected to result in a significant alteration to the area of this community within the FMU.
DGL	*Eucalyptus globulus* dry forest and woodland	**48.3**	As above. This mapping unit has particular relevance as it has a strong association with the Critically Endangered (EPBCA) swift parrot. Forico is aware of a substantial mapping error of DGL on part of the FMU (122.6 ha) but cannot adjust individual polygons – this will be corrected as part of broader adjustments to the mapping layer utilised in this analysis.
DOV	*Eucalyptus ovata* forest and woodland	**483.0**	As above.
DOW	*Eucalyptus ovata* heathy woodland	**8.2**	This unit may be better mapped as DOV but field verification will be required.
DTO	*Eucalyptus tenuiramis* forest and woodland on sediments	**134**	Field verification is indicating that the area allocated to DTO in TASVEG tend to be over-estimates so this value is likely to continue to decrease.
GPH	highland *Poa* grassland	**1957.2**	This area is relatively well-mapped because it relates almost completely to the areas of native grassland on Surrey Hills which have been extensively studies (e.g. French et al. 2018).
MDS	subalpine *Diplarrena latifolia* rushland	**233.8**	Field verification of vegetation on Surrey Hills indicated that the extent of MDS was over-estimated so this value is likely to continue to decrease.
MGH	highland grassy sedgeland	**244.7**	As above.
NAL	*Allocasuarina littoralis* forest	**5**	This area has been partly field-verified. Forico is aware of another 2.9 ha in the FMU (see comments under DGL).
NME	*Melaleuca ericifolia* swamp forest	**101.1**	Extent within FMU likely to be modified with further vegetation mapping. Some areas have been confirmed.
RFE	rainforest fernland	**4.1**	It is likely that all areas mapped as RFE will be subsumed into surrounding wet eucalypt/rainforest (all non-threatened) mapping units because it is known that RFE is vastly over-estimated and infrequently correct when ground-truthed.
SBR	broad-leaf scrub	**54.3**	SBR can equate to the vegetation community referred to as *Notelaea–Pomaderris-Beyeria* forest, listed as threatened under Schedule 3A of the Tasmanian *Nature Conservation Act 2002*. However, there is not a simple one-to-one relationship between the listed entity and the TASVEG mapping unit. The official notesheet for the listed community (DPIPWE 2017) indicates that the community "is scattered across the east, north and north-west of the State, typically

TASVEG code	TASVEG name	Area (ha)	Comments
			within rocky gullies, on steep scree slopes, talus pediments at the base of sea cliffs and some inland dolerite cliffs". Field assessments to date have indicated that most areas mapped as SBR are better allocated to other (usually non-threatened) mapping units, although small patches have been confirmed in the Woods Quoin and East Tamar areas.
SRE	eastern riparian scrub	**4.9**	Field assessment is indicating that most areas allocated to SRE are better subsumed into other (usually non-threatened) mapping units. The area allocated to SRE has thus decreased.
WBR	*Eucalyptus brookeriana* wet forest	**1344**	WBR is almost wholly restricted to the Woolnorth part of the FMU, with other occurrences being examples of erroneous vegetation mapping. The extent of WBR on the Woolnorth part of the FMU is under review and is expected to decrease.
WVI	*Eucalyptus viminalis* wet forest	**335.3**	Vegetation condition assessments have targeted WVI across the FMU and resulted in substantial changes to the extent of WVI at a local (e.g. within property) and regional scale (e.g. larger properties such as Armistead contributing a significant proportion of WVI to the regional extent).
	Total	**6246.9**	

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 (i.e. it is not possible to cross-reference the Forico FMU with a specific layer). Therefore, the most appropriate TASVEG equivalent mapping units are used to consider sites that may support the EPBCA-listed entities. There is generally a 1:1 relationship (or at least 1:few) relationship between the TASVEG units and the EPBCA-listed entities. However, 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.

Table 18 indicated the TASVEG mapping units that may be allocable to an EPBCA-listed threatened ecological community (TEC). Table 20 provides more detail on all TECs from Tasmania with commentary on their possible extent within the FMU, currently estimated at approximately **2,100** hectares.

Table 20. Possible occurrences of Commonwealth-based threatened ecological communities (TECs)

Vegetation nomenclature follows listings as per schedules of the EPBCA for threatened ecological communities; TASVEG refers to equivalent mapping units under TASVEG 3.0 classification, if available
(+ suggests it may occur in more than one TASVEG mapping unit)

Full name	Status	possible TASVEG equivalents	Present
Eucalyptus ovata-Callitris oblonga Forest	VU	DOV, SRI+	Unconfirmed from FMU but considered highly unlikely to be present because the TEC is highly restricted to riparian zones of a small number of river systems outside the FMU.
Tasmanian Forests and Woodlands Dominated by Black Gum or Brookers Gum (*Eucalyptus ovata* / *E. brookeriana*)	CR	DOV & DOW & WBR	This TEC comprises two broad forest types: those dominated by *Eucalyptus ovata* (equivalent to DOV and perhaps DOW), and those dominated by *Eucalyptus brookeriana* (equivalent to WBR). Using TASVEG mapping and field verification, limited areas of the 483 ha of DOV in the FMU will qualify as the TEC (mainly because of patch size). It is therefore unlikely that substantial areas of the FMU will be allocated to the TEC. Note that all patches of DOV are already allocated as HCV 3.1. Using existing TASVEG mapping and recent field verification, the FMU includes ca. 1344 ha of WBR, primarily the Woolnorth part of the FMU. Unlike patches of DOV that vary considerably in condition and will rarely meet the EPBCA condition thresholds, it is likely that almost all areas mapped as WBR will qualify as the TEC because most will exceed 0.5 ha and support the required species composition. Note that all patches of WBR are already allocated as HCV 3.1.
Tasmanian White Gum (*Eucalyptus viminalis*) Wet Forest	CR	WVI	Approximately 335.3 ha of WVI have been mapped in the FMU.
Alpine Sphagnum Bogs and Associated Fens	EN	ASP	Approximately **202.1** ha of ASP have been mapped in the FMU (mainly on Surrey Hills). The degree to which most of the patches will meet the TEC requires confirmation because most are small and would not meet at least one of the condition thresholds. Note that all ASP is already allocated to HCV 3.1.
Lowland Native Grasslands of Tasmania	CR	GPL, GTL+	While some small areas of GPL (98.3 ha) have been identified from the FMU, most mapped occurrences remain unverified. Field verification of some patches has usually resulted in either re-allocation to a non-threatened mapping unit or confirmation as the mapping unit but not meeting the condition thresholds to qualify as the TEC (usually because of area and/or condition).

<u>Rainforest</u>

The full description of HCV 3.1 is “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”. In Tasmania, rainforests are classified within the TASVEG

classification system in the category of “rainforest and related scrub”, which includes 16 individual mapping units. Several units equate to vegetation types classified as threatened under Schedule 3A of the Tasmanian *Nature Conservation Act 2002*, viz. *Athrotaxis cupressoides-Nothofagus gunnii* short rainforest (RPF), *Athrotaxis cupressoides* open woodland (RPW), *Athrotaxis cupressoides* rainforest (RPP), *Athrotaxis selaginoides-Nothofagus gunnii* short rainforest (RKF), *Athrotaxis selaginoides* rainforest (RKS), and rainforest fernland (RFE). Of these, only RFE has been mapped within the FMU (Tables 18 & 19), and as discussed, is considered highly unlikely to be present (pending field verification).

Table 21 separates all TASVEG “rainforest and related scrub” mapping unit identified from the FMU. A total of **13592.5** hectares is mapped, mainly comprising the widespread (and non-threatened) community RMT (*Nothofagus* – *Atherosperma* rainforest). Note that vegetation mapping across Surrey Hills (and other sites) has indicated that much of the mapped extent of units such as RML, RMS and RMU are better subsumed within RMT.

Mapped areas of rainforest and related scrub vegetation types have not been allocated to HCV 3.1 because they do not meet the intent of ecosystems 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”.

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

TASVEG code	TASVEG name	Area (ha)	Comments
RKP	*Athrotaxis selaginoides* rainforest	13.6	
RKX	highland rainforest scrub with dead *Athrotaxis selaginoides*	1.7	May not be present – requires field verification (may be other forms of higher elevation scrub types).
RML	*Nothofagus - Leptospermum* short rainforest	1639.1	Some areas will be better mapped as RMT.
RMS	*Nothofagus - Phyllocladus* short rainforest	1149.1	Some areas will be better mapped as RMT.
RMT	*Nothofagus - Atherosperma* rainforest	10116.3	Most extensive rainforest mapping unit in the FMU, mainly centred on the Surrey Hills area.
RMU	*Nothofagus* rainforest (undifferentiated)	491.1	Areas of RMU will be allocated to other mapping units (most likely RMT) with field verification.
RSH	highland low rainforest and scrub	181.6	May not be present – requires field verification (may be other forms of higher elevation scrub types).
TOTAL		**13,592.5**	

Stakeholder Input : Enquiry into Bioregional under-Reservation

Stakeholder input during the 2020 review of this HCV Assessment and Management Plan highlighted the potential merit of analysing the reservation status of native vegetation communities at a bioregional level, to address JANIS criterion 2: “Where forest ecosystems are recognized as vulnerable, then at least 60% of their remaining extent should be reserved”. Forico obtained June 2020 reservation and community extent figures from NRE Tas to facilitate this exercise. Forico then conducted a comparison of the current extent and current reserved extent of individual native vegetation communities, within each IBRA region, and also quantified the extent of these communities present in the Forico Forest Management Unit (FMU).

Several vegetation communities were identified where areas managed by Forico solely for ecological values, when added to areas already formally reserved, contributed substantially to the total area of

that community managed for conservation purposes. Summary results are shown in Table 22 below, based on the most recent General Vegetation Reserve Report (June 2020, NRE Tas) and Forico data as at June 2021.

Table 22. Vegetation communities where reserved percentages of R, V, and E communities are markedly increased by the addition of their extent on Forico land

IBRA Region	TasVeg Code	NCA* R,V,E status	% community reserved	Forico FMU as % of total extent	% reserved plus Forico contribution
Ben Lomond	DAZ	V	1.5	71.1	72.5
	DAS	V	22.3	6.0	28.3
	SRE	V	12.5	7.8	20.3
	DOV	E	12.7	6.9	19.6
Central Highlands	GPH	R,E	23.2	9.1	32.3
	MDS	R	50.2	49.5	99.7
King	SBR	R,E	3.3	5.5	8.8
	WBR	V	19.2	22.9	42.1
Northern Midlands	DOV	E	16.5	5.7	22.2
	WVI	E	53.3	5.7	59.0
Northern Slopes	GPH	R,E	20.7	31.2	52.0
	WVI	E	19.4	5.8	25.1
West	ASP	R	6.7	58.8	65.5
	GPH	R,E	29.9	67.9	97.8

*Rare, Vulnerable, or Endangered status under the *JANIS criteria*.

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 (e.g. native grasslands on Surrey Hills), 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 FMU 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. The effects of a changing climate and additional stresses imposed by drought and heat, as well as the pathogen *Chalara australis* (myrtle wilt) will be periodically monitored within Forico's rainforest communities as part of the VCA process (see section 2.3.4).

7.2 HCV 3.2

7.2.1 Preamble

HCV 3.2 is fully 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.

For the purposes of this analysis, consideration of important genes or genetically distinct populations will be restricted to *Eucalyptus* because there is sufficient information available on this genus. Forico acknowledges that there may be genetically distinct populations of species of fauna and other flora genera within Tasmania.

Williams & Potts (1996), Duncan (1996) and several other authors (e.g. González-Orozco et al. 2016) have discussed the genetic significance within Tasmanian eucalypts, highlighting the presence of clines, hybrid zones and genetically isolated populations, some of which may be described as unique taxa.

7.2.3 Analysis of HCV 3.2 in FMU

The potential presence of HCV 3.2 within the FMU was analysed by reviewing information in Williams & Potts (1996) and cross-referencing *Eucalyptus* species with the possible presence within the FMU and likely impacts of management activities within the FMU (Table 23).

Table 23. Possible genetic conservation issues within Tasmanian Eucalyptus species within the FMU [species nomenclature follows de Salas & Baker (2022)

Species	**Status** EPBCA TSPA endemic	Present in FMU	HCV
Eucalyptus amygdalina Labill.	- - e	Widespread in eastern and northern part of FMU. Intergrades with several species. Form on dolerite in the Eastern Tiers recognised as the "half-barked peppermint" (Kirkpatrick & Potts 1987).	Some areas of dry sclerophyll forests dominated by *Eucalyptus amygdalina* will be mapped as the TASVEG units DAS and DAZ, which are classified as HCV 3.1.
Eucalyptus archeri Maiden & Blakely	- - e	Unlikely to occur in FMU.	NO
Eucalyptus barberi L.A.S.Johnson & Blaxell	r - e	Unlikely to occur in FMU.	Any occurrences, if present, will be classified as HCV 1.1.
Eucalyptus brookeriana A.M.Gray	- - -	Extensive in Woolnorth part of FMU; may also occurs in limited parts of southeastern and eastern part of FMU. Eastern and western occurrences may be genetically distinct. Hybridises with *Eucalyptus nitens*.	Areas of forest dominated by *Eucalyptus brookeriana* will be mapped as the TASVEG unit WBR, which are classified as HCV 3.1.
Eucalyptus coccifera Hook.f.	- - e	Limited occurrences in northwest part of FMU (southern part of Surrey Hills).	NO
Eucalyptus cordata Labill. subsp. *cordata*	- - e	Limited potential within FMU. All occurrences considered important due to limited distribution and usually highly localised extent.	NO
Eucalyptus cordata subsp. *quadrangulosa* D.Nicolle, B.M.Potts & McKinnon	- - e	As above.	NO
Eucalyptus dalrympleana Maiden subsp. *dalrympleana*[1]	- - e?	Limited extent in higher elevation parts of FMU. Intergrades with *Eucalyptus viminalis*.	NO
Eucalyptus delegatensis R.T.Baker subsp. *tasmaniensis* Boland	- -e	Widespread in FMU.	NO

Species	Status EPBCA TSPA endemic	Present in FMU	HCV
Eucalyptus globulus Labill. subsp. *globulus*	- - -	Within eastern parts of FMU.	Some areas of dry sclerophyll forests dominated by *Eucalyptus globulus* will be mapped as the TASVEG unit DGL, which are classified as HCV 3.1.
Eucalyptus globulus Labill. subsp. *pseudoglobulus* (Naudin) J.B.Kirkp. [2]	r - -	Not present in FMU.	NO
Eucalyptus gunnii Hook.f. subsp. *divaricata* (McAulay & Brett) B.M.Potts	E EN e	Highly unlikely to occur in FMU.	Any occurrences, if present, will be classified as HCV 1.1.
Eucalyptus gunnii Hook.f. subsp. *gunnii*	- - e	Present in limited parts of FMU (Surrey Hills), where it occurs as scattered trees and small patches mappable as DGW. Far northwestern limit may be reached on Surrey Hills.	NO
Eucalyptus johnstonii Maiden	- - e	Unlikely to occur in FMU.	NO
Eucalyptus morrisbyi Brett	E EN e	Not present in FMU.	NO
Eucalyptus nebulosa A.M.Gray	e	Not present in FMU.	NO
Eucalyptus nitida Hook.f.	- - e	Widespread in northwestern part of FMU (Surrey Hills and Woolnorth).	NO
Eucalyptus obliqua L'Hér.	- - -	Widespread throughout FMU.	NO
Eucalyptus ovata Labill. var. *ovata*[3]	- - -	Widespread in eastern and northern parts of FMU. Hybridises with *Eucalyptus nitens*.	Areas of forest dominated by *Eucalyptus ovata* will be mapped as the TASVEG unit DOV, which are classified as HCV 3.1.
Eucalyptus pauciflora Sieber ex Spreng. subsp. *pauciflora*	- - -	Limited occurrences in FMU.	NO
Eucalyptus perriniana F.Muell. ex Rodway	r - e?	Occurs outside the FMU in the Duckhole Lagoons formal reserve. Hybridises with *Eucalyptus nitens*.	NO
Eucalyptus pulchella Desf.	- - e	Widespread in eastern part of FMU.	NO
Eucalyptus radiata Sieber ex DC. subsp. *radiata*	r - -	Not present in FMU.	NO
Eucalyptus regnans F.Muell.	- - -	Appears to be highly localised within FMU.	NO
Eucalyptus risdonii Hook.f.	r - e	Not present in FMU.	NO

Species	Status EPBCA TSPA endemic	Present in FMU	HCV
Eucalyptus rodwayi R.T.Baker & H.G.Sm.	- - e	Localised in FMU. Populations in far northwest and Eastern Tiers may be genetically distinct.	NO
Eucalyptus rubida H.Deane & Maiden subsp. *rubida*	- - -	Localised within FMU.	NO
Eucalyptus sieberi L.A.S.Johnson	- - -	Unlikely to occur in FMU.	NO
Eucalyptus subcrenulata Maiden & Blakely	- - e	Limited occurrences in northwest part of FMU (southern part of Surrey Hills). Far northwestern limit may be reached on Surrey Hills.	NO
Eucalyptus tenuiramis Miq.	- - e	Widespread in eastern and central parts of FMU. FMU does not coincide with recognised genetically interesting sites such as Randalls Bay, Alma Tier, Tasman Peninsula and south coast.	Some areas of dry sclerophyll forests dominated by *Eucalyptus tenuiramis* will be mapped as the TASVEG unit DTO, which are classified as HCV 3.1.
Eucalyptus urnigera Hook.f.	- - e	Unlikely to occur in FMU.	NO
Eucalyptus vernicosa Hook.f.	- - e	Not present in FMU.	NO
Eucalyptus viminalis Labill. subsp. *hentyensis* Brooker & Slee4	- - e	Not present in FMU.	NO
Eucalyptus viminalis Labill. subsp. *viminalis*	- - -	Widespread in FMU.	Areas of wet sclerophyll forest dominated by *Eucalyptus viminalis* will be mapped as the TASVEG unit WVI, which are 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 FMU 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 from the FMU, Forico acknowledges that management activities within the FMU 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 FMU, Forico will:

- maintain the structure and composition of all areas of *Eucalyptus*-dominated vegetation (this does not preclude management such as prescribed burning and weed management);

- 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); and
- undertake an assessment of the occurrence of *Eucalyptus* hybrids in native vegetation adjacent to *Eucalyptus nitens* plantations including continued input into research/surveys in the Strickland area (*Eucalyptus perriniana* population). See also *Hybridisation and Eucalyptus Wildling Monitoring Procedure* (Forico 2016).

7.3 HCV 3.3

7.3.1 Preamble

HCV 3.3 is fully described as:

Old-growth forest.

7.3.2 Interpretation

Annex G of FSC-STD-AUS-01-2018 EN includes the following relevant definitions:

> **Mature Forest**: Mature Forests are forests that contain overstorey trees typically greater than 100 years old and beginning to develop structural features typically found in older forests, including large spreading crowns, tree hollows and stages of senescence.
>
> **Mature forest in degraded landscapes**: A forest area containing mature forest where mature forest is rare in the surrounding landscape and/or is reduced in extent such that it is inadequate in maintaining landscape or ecological functions. Thresholds for determining rareness and degradation shall be based on assessments by government agencies, peer reviewed literature, or assessments by recognised experts, and be considered at the landscape level.
>
> **Old-growth forest**: Ecologically mature forest where the effects of disturbances are now negligible.

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

The method used for determining a “minimum area threshold” to define HCV Areas in relation to polygons of old-growth forest was as per Section 7.3.3 below, with particular reference to Table 24. Old-growth forest extent is being progressively reviewed across the FMU as part of a program of annual ecological surveys. The allocation of HCV Areas for old-growth values was orginally based on available mapping, “truthed” by expert review of aerial imagery and/or field verification as described below in section 7.3.3. In the absence of an Australia-wide definition of the minimum patch size for old-growth forest, and recognising significant variability between broad vegetation types in the manner in which old-growth definitions and descriptions are applied (e.g. wet forest vs dry forest vs rainforest vs swamp forest), Forico has taken a conservative approach and applied a “minimum area threshold” of 1 ha for old-growth forest, unless field verification indicates a smaller area can be practically defined. The adoption of this 1 ha threshold has been made with the recognition that all areas of old-growth forest within the Forico FMU lie within larger areas of natural forest managed for conservation purposes only, and thus their viability and integrity is protected within this broader intact landscape. This context lessens the importance of defining minimum areas solely for the purposes of viability and integrity.

7.3.3 Analysis of HCV 3.3 in FMU

Forico has recently field-verified and updated its old-growth mapping layers using the process explained below.

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

subsequent updates (version used dated: 10 December 2001) as the base layer. The old-growth layer was overlaid on the Forico FMU to create a potential old-growth map for the FMU. This was further refined by utilising the experience of experts familiar with particular parts of the FMU, e.g. Surrey Hills (French et al. 2018), Woolnorth (French & Wapstra 2020) and the balance of the FMU (K. Spicer 2016-2020). These experts allocated each old-growth mapping polygon into one of four categories (Yes = confirmed as old-growth; No = confirmed as not old-growth; Unknown = unsure, further assessment required). These allocations were based on field assessments and/or aerial imagery, and notes recorded (e.g. date of assessment, rationale, etc.). Applying the precautionary principle, areas in the Yes and Unknown categories were mapped as HCV 3.3.

Based on the available old-growth mapping and the revision process, **2,971.6** hectares of the FMU is allocated to HCV 3.3 (Table 24).

The extent of the FMU allocated to HCV 3.3 will be progressively updated once areas allocated to the Unknown category are further assessed.

7.3.4 Management

With the exception of roadside maintenance works, Forico will not undertake clearance and conversion or native forest harvesting in any forests within the FMU 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).

Table 24. Extent of old-growth forest within the FMU, by IBRA (version 7) bioregion

Bioregion	Area (ha)
Southern Ranges	10
South East	86.4
Ben Lomond	
Northern Slopes	580.6
Northern Midlands	
Central Highlands	1594.5
West	235.7
King	
Total	**2971.6**

7.4 HCV 3.4

7.4.1 Preamble

HCV 3.4 is fully 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.

In Tasmania, various definitions of “remnant vegetation” have been proposed, as follows:

> ***From Forest to Fjaeldmark: Descriptions of Tasmania’s Vegetation*** **(Kitchener & Harris 2013+)**
>
> *“The native vegetation remaining from the 'original' forest or non-forest vegetation in a landscape after land clearance/alteration. A native vegetation remnant can be of any size or condition, but excludes modified forest, modified non-forest or paddock trees”.*
>
> ***Forest Botany Manual*** **(FPA 2005)**
>
> *“Remnant forests and woodlands comprise stands that are: greater than 1 ha in area, and separated by more than 2 km from the closest area of native forest or woodland that exceeds 20 ha in area”.*
>
> ***Review of the Biodiversity Provisions of the Tasmanian Forest Practices Code*** **(BRP 2008)**
>
> *The remaining vegetation (>1 ha) in a landscape after land clearance/alteration. A remnant can be of any size (above 1 ha) or condition. Anything that is native and remaining from the ‘original’ forest or non-forest vegetation is a remnant—including individual trees, both live and dead (dead trees are often important in supplying nesting hollows and rotten wood habitat for invertebrates and reptiles). Individual trees (live or dead) are important in an agricultural landscape as they provide stepping-stones for movement of native animals across the landscapes (Salt et al. 2004). Based on the conclusions of Salt et al. (2004), it is hard to argue that the position of a remnant relative to larger tracts of native forest is important in determining its value. The context of a remnant is important because the presence of surrounding remnants affect its value as a habitat or ‘stepping stone’. In one sense remnants near large tracts of native forest or other remnants are more valuable because they can harbour greater biodiversity. Remote remnants may be important if they are repositories of rare species or communities for that region, although isolation often results in species loss (particularly if they are small).*

Forico recognises that there is no specific definition of “remnant vegetation” that can be easily applied to the FMU 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 in FMU

No specific analysis of the potential presence of HCV 3.4 within the FMU has been undertaken because any patch of native vegetation, irrespective of its size or condition, that forms part of the FMU will be managed for its conservation value - i.e. it will not be subject to clearance and conversion or native forest silviculture.

Forico recognises that some patches of remnant vegetation may have a higher priority for conservation management because they support particular values such as threatened flora, fauna and/or vegetation types, old-growth forest, or rainforest but notes that these values are captured mainly under HCVs 1.1, 3.1 and 3.3.

Therefore, no areas of the FMU have been allocated to HCV 3.4.

7.4.4 Management

While no areas of HCV 3.4 have been formally identified from the FMU, Forico acknowledges that management activities within the FMU 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 FMU, Forico will not undertake clearance and conversion or native forest silviculture in any forests within the FMU 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 fully described as:

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

HCV 4 includes four sub-values, as per Table 25.

Table 25. 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

Annex G of FSC-STD-AUS-01-2018 EN provides the following definition:

> ***Critical situation**: An ecosystem service is considered to be "critical" where a disruption of that service is likely to cause, or poses a threat of, severe negative impacts on the welfare, health or survival of local communities, on the environment, on High Conservation Values, or on the functioning of significant infrastructure (roads, dams, buildings, etc.). The notion of criticality here refers to the importance and risk for natural resources and environmental and socioeconomic values*

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. In most cases, these forests are located within critical catchments. Under this HCV category, a forest area may be considered a HCVF if it has a critical role in the protection of the catchment, particularly where the catchment is not largely forested, and the forest area covers a large proportion of the catchment.

Although Forico acknowledges the importance of protecting catchments and waterways, standard forestry practices have generally been considered sufficient to ensure that river health downstream of our operations is not negatively affected. Given this, and the definition of critical" above, no areas within the FMU have historically been allocated to HCV 4.

However, stakeholder feedback in the 2025 Review of this Plan demonstrated significant interest in Forico's approach to water quality management. Since 2023, Forico has employed an independent consultant to sample waterways within the Forest Management Unit for various water quality measures using AusRivAS (ausrivas.ewater.org.au) methodology. As this dataset builds up, and trends emerge, consideration will be given to inclusion of streamside vegetation buffers and headwater areas in one or more categories of 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. Consensus has been reached in regard to water yield and 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).

A number of studies have been conducted to quantify both the water use of plantations and the effect of plantations on stream flows; the results of these studies show some variability. While it is generally accepted that the conversion of non-irrigated pasture or crops to forest can result in reduced streamflow, there remain uncertainties as to the extent to which these changes are influencing water availability in particular catchments (Almeida et al. 2010).

Brown et al. (2005) suggested that at least 20% of a catchment needs to be planted before detectable changes in water yield occur. However, this figure may vary depending on catchment size, topography and the position of the plantation in the catchment. Almeida et al. (2010) determined a percentage cover of plantations on more than 25% of the catchment was necessary in order to detect potential changes in water yield. Some argue that lower percentages of plantations in catchments (around 15% and some as low as 7% (D. Leaman, 2007 unpublished)) are more than enough to lead to significant reductions to the amount of water available.

Based on the review of the catchment related literature and expert opinion, Forico 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 in FMU

NRE Tas has defined 48 planning and management water catchment boundaries within Tasmania (DPIW [now NRE Tasmania] 2005). Forico manages plantations within 36 of these catchments.

6 of these 36 catchments have a total plantation area (i.e. managed by Forico or by other managers) of greater than 15% (Table 26). These are the Emu, the Cam, the Leven, the Inglis, the Little Forester, and the Great Forester-Brid River catchments.

The Emu, Cam, Inglis, and Leven catchments are located along the north-west coast of Tasmania near Burnie, while the Little Forester and Great Forester-Brid catchments are along the north-east coast near Bridport and Scottsdale.

Table 26. Plantation areas (ha) in Tasmanian catchments containing Forico Plantations (2024)

Catchment	Total Catchment Area (ha)	Total Plantation Area in Catchment (ha)	Total Plantation Area as % of Catchment	Forico-Managed Plantation Area in Catchment (ha)	Forico Managed Area as % of Catchment	Forico plantation area as % of total plantation area
Emu	24,983	7,987	32.0	6682	26.7	83.7
Cam	29,219	9,883	33.8	7172	24.5	72.6
Leven	72,392	11,647	16.1	7087	9.8	60.8
Inglis	61,286	12,040	19.6	4547	7.4	37.8
Little Forester	35,283	9,080	25.7	2009	5.7	22.1
Great Forester-Brid	78,842	14,201	18.0	962	1.2	6.8

This analysis has focussed on the areas where Forico plantation management activities have the greatest potential for impact. Smaller catchments and sub-catchments may also be important at a local

level for individual users. Forico planning activities for individual forest operations require assessment of catchment users including domestic and town water intake points.

Emu

The Emu catchment has a high proportion of plantation cover, with the majority of the plantation managed by Forico. The plantation is concentrated within the upper part of the catchment (Surrey Hills). Rainfall is high with average annual rainfalls of between 800 mm on the coast to 2,500 mm in the upper part of the catchment.

One town water intake point is located within the catchment, intake number 9 (Burnie) and is not likely to be significantly impacted by forestry activities. There are numerous age groups within the plantations allowing for dispersal of forestry activities over time within the catchment. Water quality mitigation strategies will need to be considered to protect water related values.

The three water quality sampling sites in the Emu catchment have consistently yielded samples scoring in the 'A' category in the AusRivAS system, indicating similar levels of biodiversity to reference sites.

Cam

The Cam catchment has the highest proportion of plantation area within a single catchment, and lies directly to the east of the Inglis catchment. The regional centre of Burnie is located within the Cam catchment, along with several smaller towns.

Forico manages most of the plantation within the Cam catchment and as such has potential to impact upon water values. There is a distinct concentration of plantations within the upper catchment (Surrey Hills) which is also the area of greatest rainfall within the catchment. There is a range of age classifications across the catchment, which will in turn lead to some dispersal of harvesting and re-establishment activities.

Two water intake points are present within the catchment, intake numbers 10 (Burnie) and 8 (Somerset/Wynyard). The Guide Reservoir intake is within the Cam catchment, in close proximity to the Forico resource and receives additional scrutiny to ensure no adverse impact. High annual rainfalls are likely to result in potential water issues being related to quality rather than water quantity. Water quality mitigation strategies will need to be considered to protect water values.

The two water quality sampling sites in the Cam catchment have consistently yielded samples scoring in the 'A' category in the AusRivAS system, indicating similar levels of biodiversity to reference sites.

Leven

Forico-managed plantations make up more than half of the plantation area in the Leven catchment, and are largely concentrated in the hills in the upper part of the catchment adjacent to Surrey Hills. As in the Cam and Emu catchments, these areas have high rainfall and a range of plantation age classes present.

The Leven catchment contains three drinking water intakes, all located in the coastal flats near the coastal settlements. An intake on the Leven River itself supplies the town of Penguin, while two other intakes on the Gawler and West Gawler Rivers supply Ulverstone and Turners Beach.

Three water quality sampling sites in the Leven catchment have yielded samples scoring in the 'X' or 'A' categories in the AusRivAS system, indicating higher or similar levels of biodiversity to reference sites. A fourth site has yielded samples scoring in the 'B' range, indicating that approximately 16-45% of macro-invertebrate diversity has been lost, while a fifth site has been intermittently dry and thus under-sampled.

Inglis

Forico-managed plantations within the Inglis catchment are concentrated within the upper catchment, which has a high annual rainfall (1400−2000 mm/year). The concentration of plantations within the upper catchment elevates the importance of water values within this catchment. Significant areas of plantation have been established within short timeframes.

The large town of Wynyard is located within the Inglis catchment on the coast, with numerous small towns further inland.

One water intake point is located within the Inglis catchment, supplying the town of Yolla. Planning for the harvest and re-establishment of plantations in this catchment must consider the potential impacts

of these activities upon water quality (given the high rainfall, water quantity is unlikely to be an issue) and implementation of mitigation or management measures where required.

Great Forester–Brid

The Great Forester–Brid catchment is situated in northeast Tasmania and encompasses the towns of Scottsdale in the south of the catchment and Bridport, on the northern coast. Forico-managed plantations are dispersed throughout the catchment area with a slight concentration of plantations towards the lower end of the catchment.

There are several water intakes across the catchment. High in the catchment there are water intakes for both the town of Scottsdale and an aquaculture facility. Lower in the catchment, a water intake is situated for the town of Bridport. Rainfall is moderate with a range of 800 mm per year on the coast to around 1400 mm in the upper part of the catchment.

Given the dispersal of Forico-managed plantations throughout the catchment, staggered planting years and the small area under Forico management, it is reasonable to conclude that Forico activities within the Great Forester–Brid catchment will not significantly affect catchment water values.

Little Forester

The Little Forester catchment lies directly to the west of the Great Forester–Brid catchment in northeast Tasmania. The Little Forester catchment includes the small towns of Nabowla and Wyena.

Forico plantations in the FMU are dispersed throughout the Little Forester catchment without appreciable concentrations in the upper or lower parts of the catchment. Planting years are evenly distributed and as a result, only a relatively small area would experience harvesting or establishment within any particular year. There are no major water intakes noted within the catchment. Rainfall varies across the catchment between 800 mm on the coast and 1400 mm at the upper part of the catchment.

The dispersal of plantation operations both spatially and temporally indicate that Forico activities will not significantly impact upon water values within the Little Forest catchment.

8.1.4 Management

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

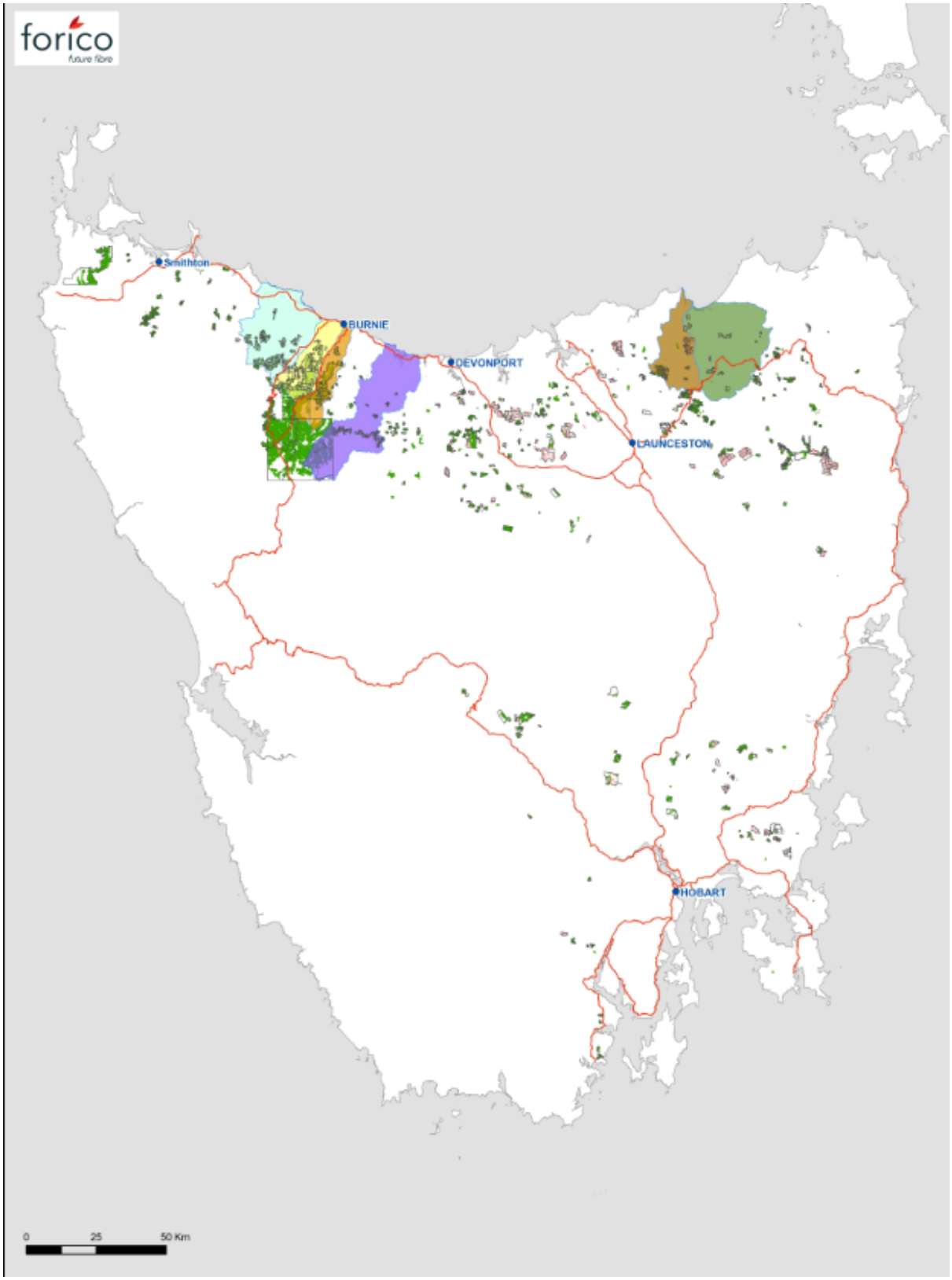
Although not classified as HCV, Forico has identified that components of the FMU need to be managed appropriately for water quantity and quality protection and enhancement. Forico has implemented internal protocols and procedures to manage operational impacts throughout the landscape for water catchment improvements.

Of the six catchments that exceed the nominated 15% plantation area trigger point for further analysis and consideration, four catchments are considered to have a heightened potential for impact upon water values, as follows (see also Figure 2): **Inglis, Cam and Emu and Leven**.

High concentrations of Forico-managed plantations in the upper reaches of these catchments suggest that harvesting dispersal and planting strategies may be required to protect and maintain water values.

Measures and management prescriptions have been developed to mitigate the impact of Forico operations and activities within these three identified catchments. These include undertaking an annual catchment-based analysis for Forico-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.

Figure 2. Identified susceptible catchments within FMU



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, landslides and avalanches. Under this HCV classification a forest area may be considered to be HCVF where it is critical in protecting against severe erosion and instability.

8.2.3 Analysis of HCV 4.2 in FMU

The FMU is generally not located in areas where there are risks of severe erosion, landslides or avalanches. There are localised areas across the FMU 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.

8.2.4 Management

The FMU 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.

Based on this analysis, and the management strategies available to Forico to manage their impacts on erodible soils, no areas within the FMU have been allocated to HCV 4.2.

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 HCVF 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 in FMU

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.

The FMU contains areas of rainforest, wet forest and gullies which offer localised resistance to fire due to the fuel moisture differential between them and adjacent areas. No area within the FMU has been identified as a barrier in an area of high risk of uncontrolled destructive wildfire, i.e. a critical situation.

Forico is currently involved in an internal strategic project to identify high risk fire-prone areas on its FMU, with specific consideration given to climate change and the protection of vulnerable communities and asset protection. The areas identified by this project will highlight the areas for which effective barriers to fire are most important, and if such barriers are present, may result in updates to the areas allocated as HCV 4.3.

Forico also utilises the spatial data layers behind NRE Tas's Bushfire Risk Assessment Model (BRAM), which combines spatial grids representing bushfire likelihood and consequence to define classes of bushfire risk at a landscape level across Tasmania. This will provide Forico with an additional tool to assess the risks to our FMU and identify areas that provide barriers to the spread of destructive fires.

8.3.4 Management

The approach of the Forico 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 Action Plan (FAP), 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.

Based on this analysis, and the management strategies available to Forico to manage the impacts of planned and unplanned fire within the FMU, no areas within the FMU have been allocated to HCV 4.3.

8.4 HCV 4.4

8.4.1 Preamble

HCV 4.4 is fully described as:

Areas that provide clean water catchments.

Watercourses within the FMU provide sources of water for domestic consumption, town water catchments and irrigation. Therefore, understanding water quality and water yield is important.

Key issues raised in relation to forestry activities within water catchments are the use of chemicals (fertilisers and pesticides), and issues relating to the quality and quantity of water for the environment, agriculture, domestic use and aquaculture.

Forico's forest operations in Tasmania are required to comply with the *Agricultural and Veterinary Chemicals (Control of Use) Act 1995* and FPC when applying chemicals. Forico also complies with the *Code of Practice for Aerial Spraying 2000* (NRE Tas) and *Code of Practice for Ground Based Spraying 2001* (DPIPWE).

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 in FMU

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.

Vegetation within streamside reserves or machinery exclusion zones adjacent to watercourses must remain intact during and after forest operations. These practices protect sedimentation and other water quality characteristics of these important ecosystems. Water quality could potentially also be affected during plantation establishment operations when using pesticides. Forico ensures applications exceed all legislative responsibilities for pesticide handling and application. Only qualified operators are permitted to carry out spraying operations.

8.4.4 Management

Forico and its contractors operate under a set of standard procedures that describe how operations must be conducted, how hazards are managed appropriately. If chemical spills occur, procedures are in place for spill clean-up and management, and notification of appropriate authorities occurs in prescribed timelines.

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. Forico ensures that the threshold of 5% of a given catchment being harvested in a given year 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 within the FMU 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.

Forico 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 throughout the FMU.

Harvesting of plantation species within a streamside buffer requires revegetation over subsequent rotations. This technique permits continued mitigation of forestry impacts associated with improved stream stability and shading requirements and therefore sustained water quality.

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

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).

HCV 5 targets “basic human needs” through consideration of various sub-values, as per Table 27.

Annex G of FSC-STD-AUS-01-2018 EN includes the following relevant definitions:

> **Basic human needs**: Local people use the area to obtain resources on which they are critically dependent. Potential fundamental basic needs include but are not limited to: unique sources of water for drinking and other daily uses; food, medicine, fuel, building and craft resources; the production of food crops and subsistence cash crops; protection of “agricultural” plots against adverse microclimate, and traditional farming practices.
>
> **Fundamental**: Loss of the resources from this area would have a significant impact in the supply of the resource and decrease local community well-being.

Table 27. 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 HCVF 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.

Natural vegetation resources within the FMU have been assessed as being not critical to meeting the basic needs of local communities. However, the sustainable management and production of certified product 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.

Forico has comprehensively reviewed socio-economic data specific to Tasmania, as presented in the Forico Forest Management Plan.

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 in either the Forico or Tasmanian context. However, a more detailed analysis is presented below.

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

The definitions relating to HCV 5 were reviewed, with the use and availability of potential HCV 5.1, 5.2 & 5.3 resource considered in the Tasmanian and Forico context. Engagement with interested and affected stakeholders was also considered when reaching this determination.

9.1.3 Analysis of HCV 5.1, 5.2 and 5.3 in FMU

HCV 5.1 & 5.2

With specific reference to water meeting the basic fundamental needs within the FMU (HCVs 5.1 & 5.2), commercial extraction of water is primarily drawn downstream of the FMU through the issuing of licences by NRE TAS's Water Management Branch. Quantities allocated are based on calculated sustainable flow methodologies incorporating rainfall, terrain and land use in each catchment. Town water schemes extract water for domestic household consumption.

HCV 5.3

All harvesting of products within the FMU is subject to formal commercial agreements, licences, or contracts issued by Forico.

Throughout the Forico FMU, it is confirmed that:

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

9.1.4 Management

HCV 5.1 & 5.2

Forico strategically manages dispersal of plantation areas within a catchment to ensure water quantity availability is not materially impacted. Prescriptions are included within operational plans. Examples include limitations to scale and disturbance and extension of streamside reserves are implemented through the FPC to mitigate operational effects on water availability. Private, domestic water supplies (as with commercial licences) are managed through NRE Tas's Water Management Branch. Infrastructure associated with pipelines, dam construction and licence and other associated management responsibilities are overseen internally by Forico.

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 within the FMU 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 (primarily leatherwood), is managed sustainably within the FMU for commercial endeavours, rather than providing a fundamental source for local consumption.

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

10. HCV 6 – CULTURAL VALUES

HCV 6 is fully 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.

HCV 6 targets "cultural significance" through consideration of various sub-values, as per Table 28.

Table 28. 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

Annex G of FSC-STD-AUS-01-2018 EN includes the following relevant definition, taken from the Australia ICOMOS Burra Charter (International Council on Monuments and Sites, 2013):

> ***Cultural Significance**: means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Places may have a range of values for different individuals or groups.*

10.1 HCV 6.1

10.1.1 Preamble

HCV 6.1 is fully described as:

Aesthetic values.

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.

For recreational and other users of Forico's FMU, places have a range of values for different individuals and groups. For example, anglers seek solitude, natural beauty and healthy environments. As part of its Reconciliation Action Plan initiative (see 10.2.3 below), Forico hopes to identify landscape-level places of significance for Aboriginal communities.

10.1.3 Analysis of HCV 6.1 in FMU

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

(i) are integrated into the landscape;

(ii) ensure that the degree of visual change is appropriate to the character of the scenery and the public viewing circumstances; and

(iii) try to avoid visual exposure and impact.

The area within Forico's FMU considered important for aesthetic values, and meeting the objectives of HCV 6.1, is **594.6 hectares** (Table 29).

Table 29. Allocation of part of the FMU to HCV 6.1 –aesthetic values

Cultural Value	Area (ha)
Aesthetic values	594.6

10.1.4 Management

The risk-based evaluation visual analysis process for operational planning within the FMU follows a structured framework to:

- analyse visual landscape issues and their importance and determine the landscape management objective and allowable level of change this is a basic level review considering the visual sensitivity of the landscape;
- analyse the design aspects of the operation and their compatibility with the visual landscape character: this stage requires a more detailed site analysis;
- determine the effects and level of impact on the visual landscape and the need for notification to the FPA: determining which operations are likely to have strong public sensitivity and / or conflict with the landscape values; and
- ensures comprehensive visual analysis, data and effective prescriptions are provided to ensure aesthetic values are prescribed: adjustments may be warranted to modify the design.

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

Under this HCV category an area may be considered HCVF if forest management may cause an irreversible change to traditional cultures of local communities, or if the forest contains a cultural value that is unique or irreplaceable, or if the forest area is traditionally used by a community.

Forest areas critical to traditional communities are those that contain features of high cultural significance for those people and communities, Cultural and archaeological sites are further categorised as having importance as Aboriginal cultural heritage or European cultural heritage.

Aboriginal cultural heritage

Tasmania has been a homeland for Aboriginal people for thousands of years. Forico recognises the importance of land and traditional sites to these Aboriginal people.

Forico recognises that Aboriginal people may have interests in the FMU 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 FMU.

European cultural heritage

European historic cultural heritage sites refer to significant sites dating from British occupation since 1802. These may include homes, work places, roads, bridges and the like. Forico has recognised that much of the land under its management contains places of significance in Tasmania's history.

Forico has both historic and Aboriginal cultural heritage sites within its FMU.

10.2.2 Interpretation

The *Forest Practices Code 2015* (and preceding versions) requires that:

> *The cultural heritage of all ethnic groups (e.g. Aboriginal and other Australians) will be considered in all stages of forest management. Protection of cultural heritage should be achieved through identification, recording and assessment, and subsequent management by prescription or reservation*

Forico has chosen to include all known heritage sites, of both Aboriginal and European origin, that are of local and/or state significance in their HCV 6.2 mapping.

10.2.3 Analysis of HCV 6.2 in FMU

Areas of HCV 6.2 have been identified throughout the FMU, selected from among the wider range of cultural heritage sites known from database searches, operational planning, and externally-prepared management plans. Databases accessed include the *Tasmanian Heritage Register* (managed by Heritage Tasmania) and the *Aboriginal Heritage Register* (managed by Aboriginal Heritage Tasmania) and from internal databases.

Forico is committed to consultation and engagement with the Aboriginal people/communities of Tasmania and with local communities affected by its forest management activities. The company has recently begun the process of drawing up a Reconciliation Action Plan (RAP) in conjunction with Reconciliation Tasmania, and will continue this process into the future. stakeholder engagement of this type may help to identify other areas of HCV 6.2 within the FMU.

The extent of HCV 6.2 within the FMU is **949.6 hectares** (Table 30). 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. In some instances, there are overlaps between areas of Aboriginal cultural heritage values and areas of European cultural heritage values. Therefore, the total area allocated to HCV 6.2 is less than the sum of these two categories.

Table 30. Allocation of part of the FMU to HCV 6.2

Cultural heritage value	Total Area (ha)	Cultural heritage areas in natural forest (ha)
Aboriginal cultural heritage	509	184.2
European cultural heritage	440.6	342.1

Some stakeholders have expressed the view that Aboriginal cultural heritage sites are also important for their *spiritual* value. In response, Forico has classified areas containing these values as both HCV 6.5 and HCV 6.2 in its 2025 revision of this plan. Ongoing engagement with stakeholders representing

Aboriginal peoples and communities of Tasmania will enable this dual classification to be re-considered and refined over time for specific sites.

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 FMU contains a range of Aboriginal heritage sites including isolated artefacts, small and large artefact scatters, cave shelter sites and chert quarries. Engagement occurs with traditional Aboriginal groups to develop mutually beneficial protocols and outcomes. Aboriginal Heritage Tasmania (AHT) – a division of NRE Tas – 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 an FPA document used to address Aboriginal cultural heritage aspects of forest management in Tasmania. The PACH was jointly developed by a Forestry Working Group made up of representatives from Aboriginal Heritage Tasmania and the Forest Practices Authority,and was endorsed by the Aboriginal Heritage Council at the time of publication.

Where any legal rights, cultural responsibilities and contested rights are identified, Forico will work with both the regulator (if appropriate) and the Aboriginal community to ensure mutually beneficial outcomes are achieved.

European cultural heritage is regulated through Tasmanian cultural heritage legislation, primarily the *Historic Cultural Heritage Act* and through the *Forest Practices Code*. Trapper's huts, and a historic homestead, have been identified within the FMU, with management plans and 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 Forico GIS database. The Tasmanian Heritage Council (THC) manages the Tasmanian Heritage Register (THR), that presents an inventory of those places that have been assessed against criteria outlined in the *Historic Cultural Heritage Act 1995* and identified as being important to Tasmania. Each place listed on the THR can offer unique and special insights into Tasmania's history. Places entered on the Register are protected through the Act.

At this time, one place on Forico land is listed on this register, namely the VDL Hampshire Hills Station and Brick Pits (Place # 11919). By being entered in the THR, this place is formally recognised as having historic cultural heritage values of a **State** level of significance. Assessment of this place for **national** or **global** values has not been undertaken by the THC, as the *Historic Cultural Heritage Act* (1995) only require State-level significance to be considered.

Other early colonial sites associated with the Van Diemen's Land Company are known to exist in the FMU, but have not yet been formally documented and assessed by responsible agency. Forico has acknowledged the desirability of ensuring that their values are protected through appropriate land management. As an interim measure the company commissioned a private consulting firm to prepare management plans for the earliest sites associated with the Van Diemen's Land Company pastoral land grant in 1824. The recommendations of these reports have been integrated into the Forico planning systems to manage these significant early colonial places on the Surrey Hills property.

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

Unanticipated discoveries of Aboriginal heritage items or sites, or European 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

Forico undertakes numerous examples of long-term research throughout the FMU that is captured within internal datasets within both the plantation and natural vegetation areas. Collaboration with identified experts is also undertaken.
Some of the research findings have been published in national and international journals.

10.3.3 Analysis of HCV 6.3 in FMU

Collaborative research with identified experts (and often enthusiastic stakeholders) has ensured Forico can gain knowledge complementary with sustainable management principles throughout the FMU.
Examples of long-term research include:

- plantation optimisation trials to better understand that for each establishment site, what is (i) the preferred plantation species; and (ii) what is the optimal silvicultural treatment to be applied;
- tree improvement research;
- monitoring the condition of vegetation communities throughout the FMU;
- Henry Somerset Conservation Area (formal reserve) monitoring of *Caladenia caudata* (tailed spider-orchid) and *Caladenia tonellii* (robust fingers), two TSPA/EPBCA-listed species, with Threatened Plants Tasmania (Wildcare Inc.);
- Surrey Hills monitoring of *Prasophyllum crebriflorum* (crowded leek-orchid), a TSPA/EPBCA-listed species, with Threatened Plants Tasmania (Wildcare Inc.);
- Tasmanian devil research with the University of Tasmania and Save the Tasmania Devil Program throughout the FMU; and
- ptunarra brown butterfly research with an independent expert and other collaborators.

The area of the FMU allocated to various long-term research projects such as these is **2,652.7**hectares, excluding the much larger area designated for Tasmanian Devil Research (Table 31).

Table 31. Allocation of part of the FMU to HCV 6.3 – long term research sites

HCV 6.3 Value	**Area** [1] (ha)
Long term research sites	2652.7

[1] The area allocated to HCV 6.3 excludes the area designated for Tasmanian Devil Research within the FMU.

10.3.4 Management

Forico actively consider 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.

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 FMU. Forico has internal documented public access guidelines to safely ensure activities are undertaken whilst encouraging stakeholder participation within the FMU that will not compromise sustainable forest management outcomes.

10.4.3 Analysis of HCV 6.4 in FMU

Forico interact with the community through numerous social engagements, e.g. phone calls, face-to-face meetings, email communication, workshops and public forums.

All harvesting of non-timber forest products within the FMU is subject to formal commercial agreements, licences, or contracts issued by Forico. Collection of native pepper berries, and nectar, from natural vegetation (primarily leatherwood), is managed sustainably within the FMU for commercial endeavours.

Stakeholder input during the 2025 review of this HCV Assessment and Management Plan suggested that the role of healthy forests, especially those that support leatherwood (*Eucryphia lucida*), had been overlooked in the previous versions of the Plan. The publication "*From Forest to Fjaeldmark – Descriptions of Tasmania's Vegetation*" – by the Department of Primary Industries, Water and Environment (https://nre.tas.gov.au/conservation/flora-of-tasmania/from-forest-to-fjaeldmark-descriptions-of-tasmanias-vegetation) indicates that ten TasVEG communities are likely to support leatherwood. Eight of these forest communities are present on the Forico FMU:

- **WDR** (*Eucalyptus delegatensis* forest over rainforest)
- **WOR** (*Eucalyptus obliqua* forest over rainforest)
- **RSH** (Highland low rainforest and scrub)
- **RKP** (*Athrotaxis selaginoides* rainforest)
- **SRF** (Leptospermum with rainforest scrub)
- **RMT** (*Nothofagus – Atherosperma* rainforest)
- **RML** (*Nothofagus – Leptospermum* short rainforest)
- **RMS** (*Nothofagus – Phyllocladus* short rainforest)

None of these communities are classified as threatened at a state or national level, and all are protected from operational activities on the Forico FMU by virtue of being natural forest communities. The TasVEG Communities indicated above have been selected because their descriptions indicate likely or typical presence of leatherwood; this does not necessarily mean that leatherwood is present or evenly distributed. Forico has mapped the extents of these communities and shared this information with a key apiary industry body. As Forico is made aware of particularly rich stands of leatherwood of importance to this stakeholder group, consideration will be given to their inclusion in HCV 6.4 Social (including economic) values, in recognition of the importance of nectar harvesting for honey production as a longstanding, ecologically low-impact activity in Tasmanian forests. Healthy forests also play an important role in supporting pollination services and maintaining ecosystem resilience.

Hunting within targeted properties in the FMU is undertaken for recreational purposes in a safe, structured fashion. A small number of huts and walking tracks are also accessed by the public for recreational use.

Numerous recreational activities are actively encouraged by Forico throughout the FMU. Recreational trout fishing provides important social, well-being and economic benefits to local communities. It is a significant participation sport with around 25,000 licensed anglers in Tasmania. Forico has entered into a Memorandum of Understanding with the Inland Fisheries Service (State government) to support and enhance recreational trout fishing at several locations within the FMU. These actions have increased local participation, supported angling clubs and associations and provided opportunities for trout guides to diversify their businesses. Accommodation, transport, tackle, and angling supply businesses all benefit from the additional economic activity, particularly in regional and rural areas. Sections of the Mersey, Meander and South Esk rivers and the significant still-water fisheries of Talbots Lagoon and Four Springs Lake. Angler access areas are managed by Forico on the Mersey, South Esk, and Meander Rivers, and Talbots Lagoon, to maintain healthy ecosystems, landscape values and water quality.

Education/school visits are actively encouraged to assist in promoting sustainable forest management principles throughout the community.

Two tourism operators lease areas within the FMU from Forico, one offering horse-riding experiences, and the other offering fully guided wildlife photography and camping experiences.

A total of **378.0** hectares of the FMU are allocated formally to HCV 6.4.

10.4.4 Management

Where recreational / community sites are identified within the FMU, Forico will work proactively with the relevant stakeholder group to ensure that, where possible, mutually beneficial outcomes can be achieved as defined in the Forico Freehold Public Access Procedure.

Forico provides access to non-timer forest product stakeholders (e.g. apiarists and native pepper berry harvesters) in a structured and fair manner.

The sustainable management and production of certified product 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.

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 within the FMU have been classified as solely HCV 6.5.

10.5.3 Analysis of HCV 6.5 in FMU

Some stakeholders have expressed the view that Aboriginal cultural heritage sites are also important for their *spiritual* value. In response, Forico has classified areas containing these values as both HCV 6.5 and HCV 6.2 in its 2025 revision of this plan. Ongoing engagement with stakeholders representing Aboriginal peoples and communities of Tasmania will enable this dual classification to be re-considered and refined over time for specific sites.

10.5.4 Management

Not applicable.

11. PLAN REVIEW

This plan will be subject to a major review by the Sustainability Manager every five years, next due in 2030. However, if Forico becomes aware through new information or legislative changes that may affect known HCVFs or add additional values within the FMU, then the HCV Assessment and Management Plan will be updated accordingly. This includes changes to the conservation status of flora and fauna (e.g.: new or changed listing). Recognising that this is a dynamic process, as new species are listed, and information is provided by the relevant State agency (e.g. point locations, range boundaries), Forico's GIS system will be updated to ensure the new values are incorporated.

The review process will include consulting with stakeholders that have expressed an interest in the management of HCVs within the FMU, to ensure the adequacy and completeness of this assessment and management of HCVFs within the FMU. Stakeholders will be provided a copy of the updated plans for input and comment.

The review process will be enhanced through the completion of internal and external independent third-party related audit programmes. Audit findings will be carefully considered during the review process. Any results from operational and/or environmental monitoring will be taken into account.

12. REFERENCES

Brown, E., Dudley, N, Lindhe, A., Muhtaman, D.R., Stewart, C. & Synnott, T. (eds.). (2017). *Common Guidance for the Identification of High Conservation Values*. HCV Resource Network.

Almeida, A.C., Siggins, A., Smethurst, P., Silva, C.V.J. & Baillie, C. (2010). Establishment of experimental catchments to quantify water use by different vegetation types. *Ambiência Guarapuava* 6: 137−150.

Bell, P. (2022). *Ptunarra Brown Butterfly Conservation in Native Grasslands at Surrey Hills, Northwest Tasmania*. Progress report 2021-22 prepared for Forico Pty Limited, Launceston.

Benyon, R.G. & Doody, T.M. (2004). *Water Use by Tree Plantations in South East South Australia*. CSIRO Forestry and Forest Products, Mt Gambier.

Boden, R. & Given, D.R. (1995). *Regional Overview: Australia and New Zealand*. IN: Centres *of Plant Diversity: A Guide and Strategy for their Conservation, Vol. 2. Asia, Australasia and the Pacific.* (Eds. S.D. Davis, V.H. Heywood & A.C. Hamilton), pp. 433–518. World Wide Fund for Nature & IUCN, Cambridge.

Brown, A.E., Zhang, L., McMahon, T.A., Western, A.W. & Vertessy, R.A. (2005). A review of paired catchment studies for determining changes in water yield resulting from alterations in vegetation. *Journal of Hydrology* 310(1): 28−61.

Bryant, S.L. & Jackson, J. (1999). *Tasmania's Threatened Fauna Handbook: What, Where and How to Protect Tasmania's Threatened Animals*. Threatened Species Unit, Parks & Wildlife Service, Hobart.

CofA (Commonwealth of Australia) (2012). *Interim Biogeographic Regionalisation for Australia, Version 7.* Map (and supporting data) available at: https://www.environment.gov.au/system/files/pages/5b3d2d31-2355-4b60-820c-e370572b2520/files/bioregions-new.pdf [accessed 30 August 2019].

Crisp, M.D, Laffan, S., Linder, H.P. & Monro, A. (2001). Endemism in the Australian flora. *Journal of Biogeography* 28: 183–198.

de Salas, M.F. & Baker, M.L. (2022*). A Census of the Vascular Plants of Tasmania, including Macquarie Island*. Tasmanian Herbarium, Hobart.

DPIW (Department of Primary Industries & Water) (2005). *Conservation of Freshwater Ecosystem Values Project: CFEV Database v1.0*. Water Resources Division, Department of Primary Industries & Water, Hobart.

DPIPWE (Department of Primary Industries, Parks, Water & Environment) (2017). *Tasmanian Threatened Native Vegetation Communities Notesheet: Notelaea – Pomaderris – Beyeria forest*. Department of Primary Industries, Parks, Water & Environment, Hobart.

Duncan, F. (1996). A field key to Tasmanian species of eucalypts. *Tasforests* 8: 27–38.

Forico Pty Limited (2021). *Weed & Hygiene Management Plan*. Forico Pty Limited, Tasmania, Australia.

Forico Pty Limited (2015). *Action Plan: Management of Nests of the Wedge-tailed Eagle (*Aquila audax *subsp.* fleayi*) and White-bellied Sea-eagle (*Haliaeetus leucogaster*) across the Forico Estate*. Forico Pty Limited, Tasmania, Australia.

Forico Pty Limited (2016). *Hybridisation and Eucalyptus Wildling Monitoring Procedure*. Forico Pty Limited, Tasmania, Australia.

Forico Pty Limited (2022). *Surrey Hills Grassland Management Plan.* Forico Pty Limited, Tasmania, Australia.

FPA (Forest Practices Authority) (2005). *Forest Botany Manual*. Forest Practices Authority, Hobart.

FPA (Forest Practices Authority) (2009). *Management of Gene Flow from Plantation Eucalypt Species. Flora Technical Note No. 12.* Forest Practices Authority, Hobart.

FPA (Forest Practices Authority) (2014). *Threatened Fauna Adviser*. http://www.fpa.tas.gov.au/fpa_services/planning_assistance/advisory_planning_tools/TFA.

FPA (Forest Practices Authority) (2016). *Mature Habitat Availability Map. Fauna Technical Note No. 2*. Forest Practices Authority, Hobart.

FPA (Forest Practices Authority) (2017). *Table 1. Threatened Fauna Species Range Boundaries and Habitat Descriptions.* Available at: https://www.fpa.tas.gov.au

/__data/assets/pdf_file/0011/111404/Threatened_fauna_range_and_habitat_descriptions.pdf [accessed 30 August 2019].

FPA (Forest Practices Authority) (2020). *Threatened fauna species range boundaries and habitat descriptions*, version 1.25 February 2020.

French, B., Wapstra, M. & Spicer, K. (2018). *Surrey Hills Estate Revised Vegetation Community Mapping: Data Source Review, Field Mapping and Future Mapping Recommendations*. Report to Forico Pty Limited, Tasmania, Australia.

French, B. & Wapstra, M. (2020). *Woolnorth Estate Revised Vegetation Community Mapping: Data Source Review, Field Mapping and Future Mapping Recommendations*. Report to Forico Pty Limited, Tasmania, Australia.

FSC (Forest Stewardship Council – Australia) (2019). High Conservation Values (HCVs) Evaluation Framework. Responsible Forest Management Australia Limited, North Melbourne.

Gilfedder L., Duncan F. & Kirkpatrick J.B. (2018). *Ecology and Management of Native Grasslands at Surrey Hills, Northwest Tasmania*. An unpublished report to Forico Pty Limited.

González-Orozco, C.E, Pollock, L.J., Thornhill, A.H., Mishler, B.D., Knerr, N., Laffan, S.W., Miller, J.T., Rosauer, D.F., Faith, D.P., Nipperess, D.A. & Kujala, H. (2016). Phylogenetic approaches reveal biodiversity threats under climate change. *Nature Climate Change* 10: 1–6.

Hill, R.S. & Orchard, A.E. (1999). *Composition and Endemism of Vascular Plants*. IN: Reid, J.B., Hill, R.S., Brown, M.J. & Hovenden, M.J. (eds). *Vegetation of Tasmania*. Flora of Australia Supplementary Series Number 8.

IFL (Intact Forest Landscapes Mapping Team). (2017). *Intact Forest Landscapes* web site with link to global IFL map at: http://www.intactforests.org/data.ifl.html [accessed 21 August 2019].

Independent Verification Group (c. 2012). Report 3D: Fire refugia. https://www.environment.gov.au/system/files/resources/eefde0e6-0f83-486d-b0c3-8b1d25abc497/files/ivgconservation3dfirerefugia.pdf

International Council on Monuments and Sites (ICOMOS) (2013). The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance. ISBN 0 9578528 4 3.

Johnson, M., McFarlane, I., and Reynolds, H. (2015) Van Diemen's Land: An Aborignal history. Sydney, NewSouth Publishing.

Jordan, G.J., Harrison, P.A., Worth, J.R.P., Williamson, G.J. & Kirkpatrick, J.B. (2016). Palaeoendemic plants provide evidence for persistence of open, well-watered vegetation since the Cretaceous. *Global Ecology and Biogeography*, 25: 127–140.

Kirkpatrick, J.B. & Brown, M.J. (1984b). A numerical analysis of Tasmanian higher plant endemism. Botanical *Journal of the Linnean Society* 88: 165–183.

Kirkpatrick, J.B. & Brown, M.J. (1984b). The palaeogeographic significance of local endemism in Tasmanian higher plants. *Search* 15: 112–113.

Kirkpatrick, J.B. & Brown, M.J. (1984c). The palaeogeographic significance of local endemism in Tasmanian higher plants. *Australasian Science*, 15(3-4): 112-113.

Kirkpatrick, J.B. & Fowler, M. 1998. Locating likely glacial refugia in Tasmania using palynological and ecological information to test alternative climatic models. *Biological Conservation* 85: 171–182.

Kirkpatrick, J.B. & Potts, B.M. (1987). Isolated intermediates – products of long distance gene dispersal, phantom hybrids or convergent evolution? The case of the half-barked *Eucalyptus amygdalina*. *Proceedings of the Royal Society of Tasmania* 121: 15–22.

Kitchener, A. & Harris, S. (2013+, online version). *From Forest to Fjaeldmark: Descriptions of Tasmania's Vegetation*. Department of Primary Industries, Parks, Water & Environment, Hobart.

Knight, R.I. & Cullen, P.J. (2009). *Review of Strategies for Planning and Management of the Natural Resources of Biodiversity, Freshwater, Land and Soils in the Tasmanian Midlands*. Natural Resource Planning, Hobart.

Knight, R.I. & Cullen, P.J. (2010). *Using Landscape Ecology to Prioritise Property Management Actions in Tasmania. Activity 3.2 – Regional Ecosystem Model Specifications*. Natural Resource Planning, Hobart.

Laffan, S.W. & Crisp, M.D. (2003). Assessing endemism at multiple spatial scales, with an example from the Australian vascular flora. *Journal of Biogeography* 30: 511–520.

Lawrence, N., Storey, D. & Whinam, J. (2008). *Reservation Status of Tasmanian Higher Plants*. Biodiversity Conservation Branch Report 07/1. Department of Primary Industries and Water, Hobart.

Mesibov, R. (1996). *Invertebrate Bioregions in Tasmania*. Report to Tasmanian RFA Environment and Heritage Technical Committee, December 1996.

Michaels, K. (2006). *A Manual for Assessing Vegetation Condition in Tasmania, Version 1.0*. Resource Management and Conservation, Department of Primary Industries, Water & Environment, Hobart.

Naarding, J.A. (1982). *Latham's Snipe (*Gallinago hardwickii*) in Tasmania*. Wildlife Division Technical Report. 82/1. Tasmania National Parks & Wildlife Service, Hobart.

Newman, M. & Ashby, R. (2018). Case study 3: status of blue-winged parrot (pp. 9–10). IN: Newman, M., Ramshaw, N., Drake, S., Woehler, E.J., Walter, A. & Webber, W. (2018). State of Tasmania's birds, 2015–16. *Tasmanian Bird Report* 39: 1–20.

Nicolle, D. & Jones, R.C. (2018). A revised classification for the predominantly eastern Australian *Eucalyptus* subgenus *Symphyomyrtus* sections Maidenaria, Exsertaria, Latoangulatae and related smaller sections (Myrtaceae). *Telopea* 21: 129–145.

PLUC (Public Land Use Commission) (1997a). *Tasmania-Commonwealth Regional Forest Agreement, Background Report. Part H, National Estate Report*. Tasmanian Public Land Use Commission in conjunction with Commonwealth Forests Taskforce, Hobart.

PLUC (Public Land Use Commission) (1997b). *Tasmania Comprehensive Regional Assessment: High Quality Wilderness Areas*. Tasmanian Public Land Use Commission in conjunction with Commonwealth Forests Taskforce, Hobart

Saunders, D.L. & Tzaros, C.L. (2011). *National Recovery Plan for the Swift Parrot* Lathamus discolor. Birds Australia, Melbourne.

Slatyer, C., Rosauer, D. & Lemckert, F. (2007). An assessment of endemism and species richness patterns in the Australian Anura. *Journal of Biogeography* 34: 583–596.

Spicer, K. (2016). *Threatened Flora Population Report, HM103HH:* Hovea montana *(mountain purplepea), Surrey Hills: Black Marsh & Burghley Park, HM103 AFH-Hummocks-Leven & LV102 AFH-Leven-Middlesex Sp 7, Guildford*. Report to Forico Pty Limited.

Spicer, K. & Wapstra, M. (2018a). *Assessment of the Natural Forest Estate and Associated High Conservation Values: Protocol for Vegetation Condition Monitoring – Round 4*. A report to Forico Pty Limited.

Spicer, K. & Wapstra, M. (2018b). *Vegetation Condition Monitoring of the Forico Estate: All Projects Summary and Future Monitoring*. A report to Forico Pty Limited.

Spicer, K. & Wapstra, M. (2018c). *Armitstead Intensive Vegetation Condition Monitoring*. A report to Forico Pty Limited.

Spicer, K. & Wapstra, M. (2020). *ADDENDUM Surrey Hills Estate Revised Vegetation Community Mapping: Data Source Review, Field Mapping and Future Mapping Recommendations. Update 26 March 2020*.

Wakefield, B. & Wakefield, E. (2016). Monitoring of flame robins *Petroica phoenicea* and scarlet robins *Petroica multicolor* flocks April to July 2009-2014. *The Tasmanian Naturalist* 138: 29–32.

Wapstra, M. (2017). *Threatened Flora Population Report, NG166EV:* Epacris virgata *'Kettering' (pretty heath), NG166, Jacobsons Freehold, Kellevie*. Report to Forico Pty Limited.

Wapstra, M. & Spicer, K. (2019a). *Threatened Flora across the Forico Estate: Long-term Monitoring, Extension Surveys, Population Census and Management*. Report to Forico Pty Limited, Tasmania, Australia.

Wapstra, M. & Spicer, K. (2019b). *Threatened Flora on Surrey Hills: Documentation of Knowledge, Long-term Monitoring, Extension Surveys, Population Census and Management*. Report to Forico Pty Limited, Tasmania, Australia.

Wapstra, H., Wapstra, A., Wapstra, M. & Gilfedder, L. (2005+, updated online at www.dpipwe.tas.gov.au). The Little Book of Common Names for Tasmanian Plants. Department of Primary Industries, Water & Environment, Hobart.

Watts, D. (2007). *Field Guide to Tasmanian Birds*. Reed New Holland, Sydney.

Williams, K.J. & Potts, B.M. (1996). The natural distribution of *Eucalyptus* in Tasmania. Tasforests 39–165.

ABBREVIATIONS

BVD	*Biodiversity Values Database* (FPA)
CFEV	Conservation of Freshwater Ecosystem Values (NRE Tas)
DPIPWE	Tasmanian Department of Primary Industries, Parks, Water & Environment (old name)
EPBCA	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
FPA	Tasmanian Forest Practices Authority
FPC	Forest Practices Code 2020
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 (version 7)
NRE Tas	Tasmanian Department of Natural Resources and Environment Tasmania (new name)
NVA	*Natural Values Atlas* (NRE Tas)
REM	Regional Ecosystem Model
RFA	Commonwealth – Tasmanian *Regional Forest Agreement*
TSPA	Tasmanian *Threatened Species Protection Act 1995*

Signatures:

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