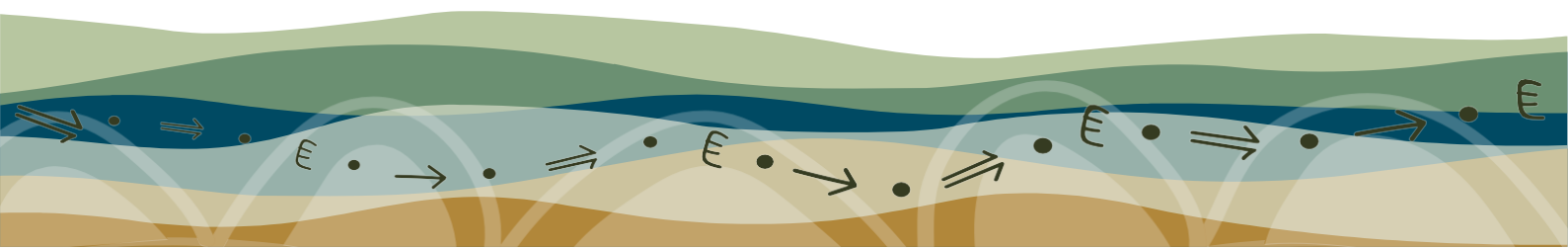




# Rapid Biocultural Expressions Assessment of the State Forests within the Central Highlands Regional Forest Agreement (CHRFA) area occurring on Taungurung Country.

Taungurung Nation Forest and Fire Knowledge Circle, M. Hansby, L. Riches and M. Nurse.

Taungurung Land and Waters Council. December 2023





## Taungurung Land and Waters Council Project Code: **DEECA-2023-01-CHRFA Rapid Biocultural Assessment**

Report prepared by the Cultural Land Management Division, Taungurung Land and Waters Council

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### Version control

Date	Comments	Distribution
04/12/2023	Draft 1 for revision	TLaWC internal
08/12/2023	Final draft for release	External

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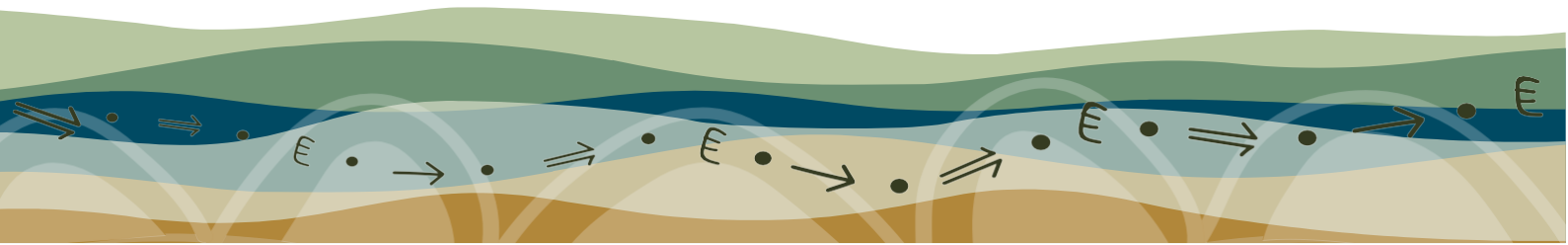
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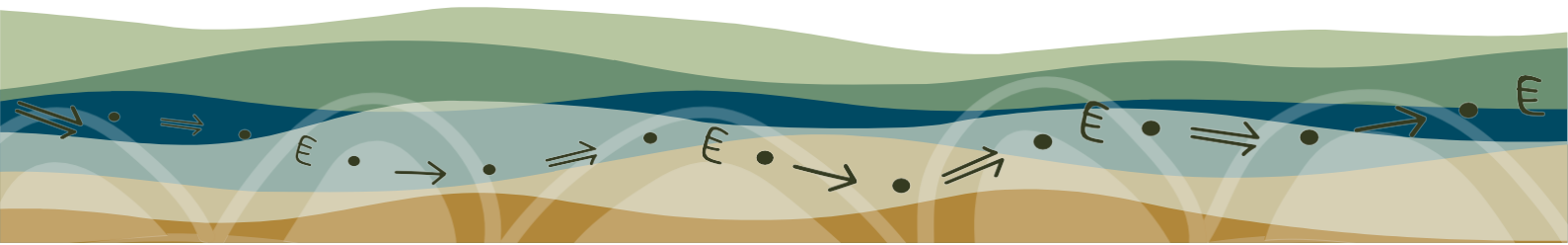
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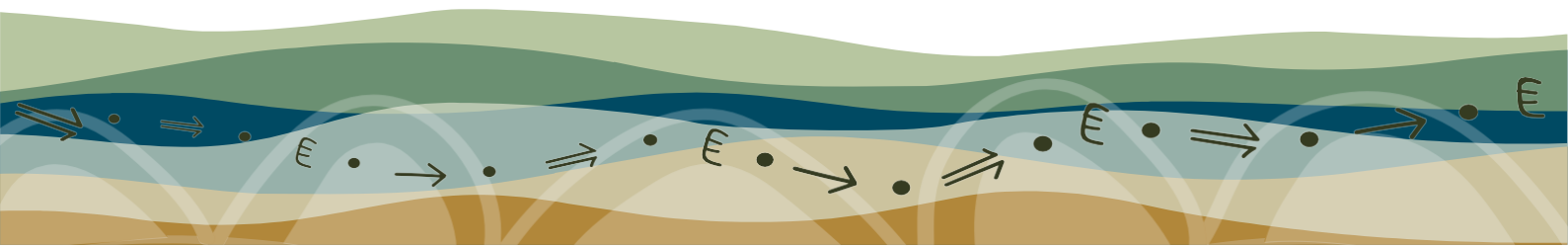


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## Part A – Country Speaks





## 1. Country Speaks

### *Taungurung people have always cared for Taungurung Forests.*

Taungurung forests are diverse, flowing from and into Waring. Waring (the Goulburn River) is the lifeblood of Taungurung biik. Banit ngarrap (thick forest) protects the headwaters of Waring where they emerge in the high places in the south and east. The open forests of Yawang (Stone Country) lie to the north and west. When the forests are healthy, they are full of life and food and medicine can grow in abundance. The plants and the weather show when the time is right to travel next. In the hot months, the high forests offer refuge from the heat and the abundance of debera (bogong moth) supports gathering and ceremony.

All forests are places of people. Before colonisation, people applied right fire to Country creating open grassy woodlands to provide the conditions for new plants and animals to grow and thrive. Ceremony, initiation, connection, dance and stories all flow when forests are managed by Taungurung according to lore. Country must be known from bottom to top.

Taungurung people showed the invaders our Country and what was important to us only to have it stolen. The invaders tried to stop Taungurung from caring for Country in the right way. Taungurung suffer from this theft. Country is badly damaged. Right fire has gone. Nothing is in balance. Forests are stripped bare through logging or suffocated by neglect, choked and overrun with the wrong plants and animals. Fire is wrong. Everything is disturbed. No-one is managing Country properly and she is sick.

Forests will return to the care of Taungurung. Cultural practice and connection will heal Country and forests will thrive from right management. Cool, healing fire will move across the landscape once again providing light and space for all the entities. When others visit Country, it is Taungurung languages, names and stories that they will hear. Taungurung will stand strong in cultural authority. Country will guide and, one day, others will come to Taungurung to learn the right ways.



## 2. Introduction and background

*This report acknowledges Taungurung Elders past and present who have fought to maintain their rights and responsibility to care for our Country, Culture and People.*

### 2.1. Understanding Biocultural expressions and contexts

Taungurung ancestral connections stretch back tens of thousands of years and will be carried forward by future generations. This continuous and evolving relationship is understood as a biocultural knowledge system. Biocultural knowledge and biocultural expressions emphasise the importance of the cultural interconnection of biophysical, social, spiritual and cosmological manifestations of Country. Biocultural expressions describe the web of interconnected relationships between entities that are continuously creating Country as a relational and dynamic manifestation of the Taungurung worldview. Country is the sum of her biocultural expressions, which persist and exist whether or not they are tangible, intangible, present or absent. Taungurung knowledges have been diminished and ignored for too long, and now Country and people are sick (TLaWC, 2023).

This report summarises biocultural expressions associated with the area known for the purposes of this report as the Central Highlands Regional Forestry Agreement (CHFRA) area. These expressions are situated within their cultural landscape context. The concept of a cultural landscape is a bridging tool, in this case one that aims to bridge the ontological differences between Indigenous and 'western' world views. This is required to take steps towards preventing the ongoing ontological violence that is perpetuated by the dominance of 'western' approaches to managing Country. It enables a dialogue between Traditional owners and government land managers with a framework that does not exclude one worldview or another (VFTOC/DELWP, 2021).

Taungurung Cultural Landscapes reflect the management and modification of Country over many thousands of generations to provide maximum benefit to all of the inhabitants of Country, both human and non-human. Cultural landscapes are the 'planning units' of choice for Traditional owners and are blind to colonial tenure boundaries and arrangements. When biocultural expressions are framed within their broader cultural landscape contexts, we are better to able to understand what we need to do to better care for Country.

Biocultural expressions and cultural landscapes were identified during this report using internally developed methodologies which centre cultural governance process to inform research design, data collection and analysis. These methodologies are outlined in sections below.



## 2.2. Taungurung Rights and Obligations to Country

### ***Nganga-ngala biik-nganjin yaraga-ngala burndap gerr ngarrnga bak wilanja-nganjin***

*We look after Country because we have an intimate relationship with Country like thousands of generations of Taungurung before us.*

#### **2.2.1. Legislation and Agreements**

Taungurung Land and Waters Council (TLWC) was registered as the Registered Aboriginal Party (RAP) to represent the interest of the Taungurung people on 16 July 2009. TLWC protects the cultural heritage of Taungurung people by performing the functions of a RAP under the *Victorian Aboriginal Heritage Act 2006*.

On 26 October 2018 Taungurung executed a suite of settlement agreements under the *Traditional Owner Settlement Act 2010* and related legislation. The settlement includes a Recognition and Settlement Agreement (RSA), which recognises the Taungurung peoples' Traditional Owner rights and provides measures to promote that recognition.

The Central Highlands RFA State Forests lie within the Taungurung RAP and RSA area.

The Recognition and Settlement Agreement acknowledges:

#### ***Waydjak bunbunarik liwik-nganjin yaraga-ngala dhumbali daada gurnap biik-nganjin yulendj-nganjin***

We are the descendants of our old people and we have an ongoing responsibility to look after our inheritance, which is our Country and our culture.

#### ***Nganga-ngala biik-nganjin yaraga-ngala burndap gerr ngarrnga bak wilanja-nganjin***

We look after Country because we have an intimate relationship with Country like thousands of generations of Taungurung before us.

#### ***Ngala barra gerr-nganjin gilbruk biik-nganjin yarang bak daada gurnap dhumbali biik-dhan bak wilanja-dhana***

We will continue our relationship with respect for our Country and teach the new generations that they have the same inheritance and responsibility to their Country as every generation before them has had.

The Recognition and Settlement Agreement progresses Taungurung rights for Governance of Country by granting Aboriginal Title over areas of Parks and Reserves and providing funding for employment and delivering works on Aboriginal Title Land. The Agreement granted Aboriginal Title of nine parks within the Agreement area, to be jointly managed with the State pursuant to the *National Parks Act 1975*.

Within the broader assessment landscape, such Aboriginal Title Parks include Cathedral Ranges National Park, Mt. Disappointment National Park and Lake Eildon National Park; all of which exist within Cultural Landscapes defined in the section above.

The Victorian Government is developing proposals to reform Victoria's public land legislation, including





the creation of a new Public Land Act. The replacement of three existing Crown Land Acts (the *Crown Land (Reserves) Act 1978*, *Forests Act 1958* and *Land Act 1958*) with a new Public Land Act will be the biggest change to public land legislative arrangements in multiple generations. The *National Parks Act 1975* will also be amended.

Through the process of reforming Victoria's public land legislation, the Victorian Government is considering ways for Traditional Owners to be appointed public land managers. Consistent with the principle of self-determination, it is not proposed to mandate any single way for Traditional Owners to be public land managers, but provide a range of pathways.

### 2.2.2. Policies and Strategies

The Victorian Traditional Owner Cultural Landscapes Strategy, incorporated into State of Victoria policy in 2021, addresses Traditional Owner Cultural Landscape Management in component 5. This component recognises Cultural Landscape Management will be undertaken by Traditional Owners as land managers. The strategy suggests reformed public land legislation will facilitate this<sup>1</sup>.

Other components of the Cultural Landscapes Strategy suggest appointment of Traditional Owner Corporations as Committees of Management over public land. The arrangements for appointment of TLaWC as a Committee of Management over CHRFA areas will be discussed later in this report.

Other policies and strategies relevant to Taungurung rights and interests in the Central Highlands include:

- Taungurung Country Plan 2016
- Taungurung Cultural Land Management Strategy 2023
- Taungurung Biocultural Diversity Strategy 2023
- Victorian Traditional Owner Cultural Fire Strategy 2020
- Victorian Traditional Owner Game Management Strategy 2021
- Victorian Aboriginal Affairs Framework 2018-2023
- Protecting Victoria's Environment - Biodiversity 2037

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<sup>1</sup> New Wildlife legislation in Victoria may also enable provisions in the Cultural Landscapes Strategy, including provisions for culturally valued species management and collaborative governance.



## 2.3. Understanding this Report

This document provides the results of a rapid biocultural assessment of the State Forest assets within the Central Highlands Regional Forestry Agreement (CHRFA) area that falls within Taungurung Country, totaling 198,662.8ha. This report is a synthesis of different components involved in the rapid assessment of biocultural values. It is structured to address the terms of reference for the assessment of values in State Forest areas across the CHRFA within Taungurung Country.

Given the large size of the assessment Area of Interest (AOI), and its surrounding landscape (both described below), where possible, this report aims to consider the biocultural values of the assessment AOI not in isolation, but in context with their surrounding cultural landscape. This framing supports Taungurung approaches to understanding Country in which biocultural expressions can only meaningfully be situated within their broader cultural landscapes.

The results of this assessment are reported using bridging language, where both biophysical values and biocultural values and expressions are considered in parallel, aiming to reveal the importance of the relationships of people, Culture and Country. These interconnected relationships are largely missing as a result of the ongoing colonial paradigm of land management.

By practical necessity, the assessment of biophysical values is largely a desktop exercise. Relevant geospatial datasets were used to broadly describe the biophysical systems present across the landscape, and to support biocultural values and expressions determined through Taungurung co-designed and lead Reading Country methods. Biocultural values and expressions described below are self-determined and co-designed by the Taungurung Nation.

## 2.4. Project Terms of reference and status of the 'Immediate Protection Area's (IPA's)

The Terms of Reference (TOR) for this project 'Eminent Panel for Community Engagement on the future uses of State Forest in eastern Victoria' state in Section 3 'Study Areas' that, 'The study area includes all State Forest in the following:

- Strathbogie Ranges IPA
- Mirboo North IPA
- IPAs and relevant adjacent State Forest in the Central Highlands.

As previous work performed by the Eminent Panel for Community Engagement (EPCE) focused on an assessment of both the Strathbogie Ranges and Mirboo North IPA's (points 1 and 2), this assessment reports on point three (3) of the TOR, *IPAs and relevant adjacent State Forest in the Central Highlands*. This was interpreted to mean 'all State Forest areas within the Central Highlands Regional Forestry Agreement (CHRFA) area, including the IPA areas. Area breakdown is shown in Table 1 and extent in Figure 1. This assessment only concerns the portion of the CHRFA area (and State Forests therein) that fall on Taungurung Country. A large area (22849 ha) of State Forest was discovered to be 'unnamed' during the development of the AOI. Given its location at the headwaters of the Goulburn River, for reporting purposes, this State Forest was named 'Waring SF' Given the expanded scope of this assessment (from IPAs within State Forests, to all State Forests within the CHRFA), Central Highlands IPA's will be shown on Figure 1 for context, but not referred to again in this assessment report.

Table 1. Area breakdown of State Forests covered by this assessment report.

State Forest Area	Area (ha)
Tallarook State Forest	4915.17
Mt. Robertson State Forest	5517.01
Mt. Disappointment State Forest	13456.30
Black Range State Forest	21705.90
Marysville State Forest	22272.40
Waring State Forest	22849.68
Toolangi State Forest	25231.00
Rubicon State Forest	29870.69
Big River State Forest	52844.65
<b>Total</b>	<b>198662.81</b>

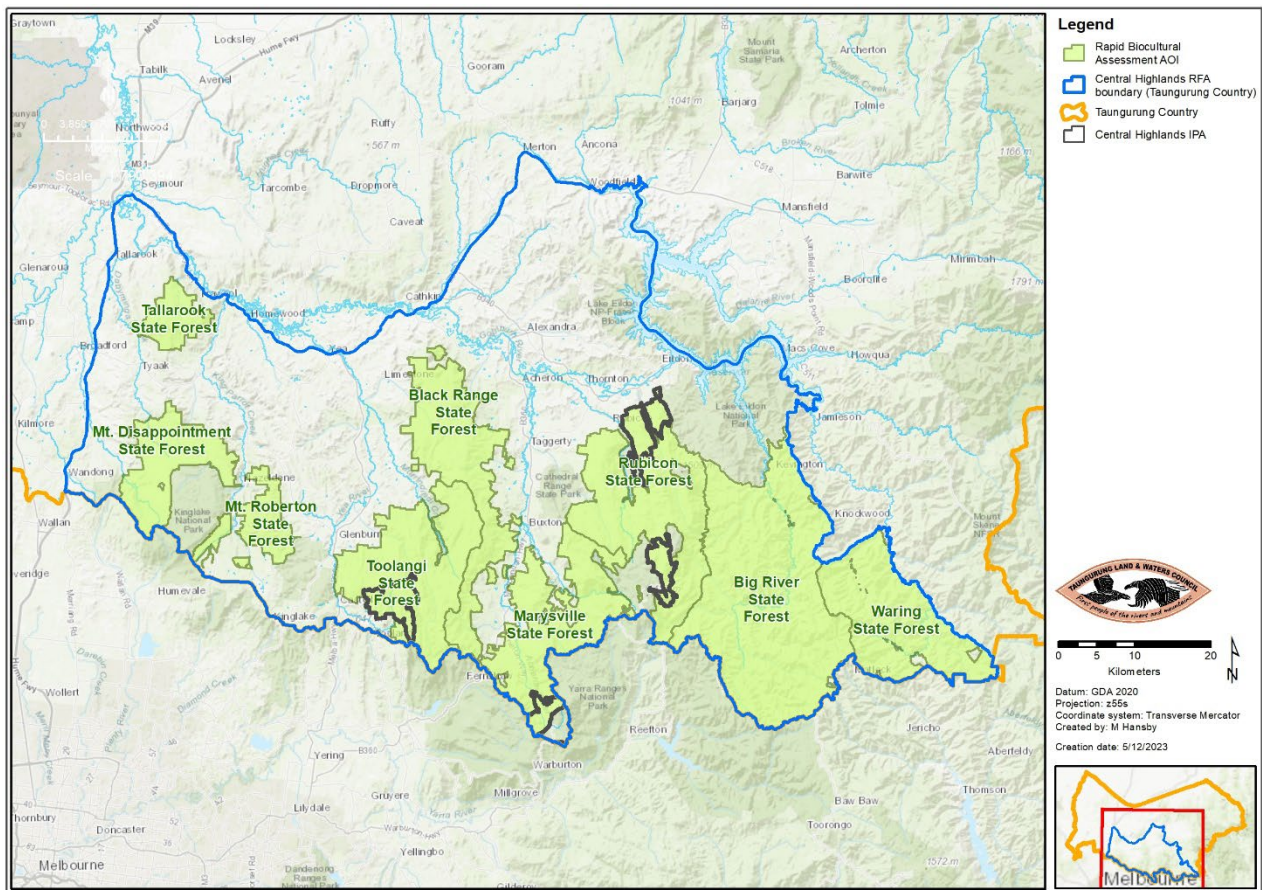


Figure 1. State Forest areas considered for this assessment, in relation to the Central Highlands RFA boundary and the Central Highlands Immediate Protection Areas.



### 3. Statement of Cultural Landscapes and associated Biocultural Expressions

The Statement of Cultural Landscapes and associated Biocultural Expressions was developed using two internally developed and integrated methodologies:

- Reading Country
- Biocultural Expressions Assessment

The detailed process and structure of Reading Country and Biocultural Values Assessments is sensitive and protected Indigenous Cultural and Intellectual Property and is shared here only in high level detail.

#### 3.1. Reading Country

Reading Country is an end-to-end process that describes the process of co-designing research with the Taungurung Nation and affirming the results of that research before interpretation and potential application in a management context. The Reading Country process supports and protects the following goals of the Taungurung Nation when asserting Taungurung rights and interests in Country to external stakeholders:

- Correct cultural governance processes are followed.
- Correct pathways for the expression and transfer of Taungurung knowledges are implemented.

The Reading Country Methodology was applied for this project as follows;

##### 3.1.1. Secondary Knowledge Collection and affirmation

Secondary (i.e: non-Taungurung knowledge) collected and analysed at project inception included anthropological, ethnographic, ethnohistoric, historic and archaeological data. Biophysical data sets such as geomorphological, hydrological, vegetation and disturbance data such as bushfire and logging history are also considered.

This research collection was affirmed with the Taungurung Forest and Fire Knowledge Circle.

##### 3.1.2. Primary Knowledge Collection

Primary knowledge describes the collection of Taungurung knowledges about Country. Primary Knowledge Collection was undertaken with the Taungurung Forest and Fire Knowledge Circle during two On-Country visits. Each visit was held over a full weekend on multiple locations in the study area. Locations were chosen to ensure that a broad sample of different forest types in their associated cultural landscape context were assessed (Figure 23).

Knowledge was collected as notes and audio files. Notes were taken on Livescribe devices that enable field notes to be geo-tagged to their On Country locations, and facilitate efficient digital transcription.

Collected data was transcribed into Biocultural Expressions Statements for each location visited.



### 3.1.3. Analysis

Secondary and Primary data sources were combined to generate the following products:

- Draft Cultural Landscapes Map. It should be noted that Cultural Landscape Mapping is a dynamic process that changes in response to Reading Country processes – this a core truth of the complex relationality that is understood as “Country”. That is to say, Taungurung Biik (Country) always has been and always will be a dynamic entity in a dynamic relationship with Taungurung people. All mapping at all times is considered contingent and provisional. Cultural Landscape Mapping is also supported by spatial analysis of biophysical data.
- Statement of Cultural Landscapes. Brief descriptions of mapped cultural landscapes. Cultural Landscape descriptions contained in this document are the results of detailed discussions between TLaWC staff and Taungurung Elders and other Taungurung knowledge holders. These descriptions do not include information that is considered culturally sensitive or restricted knowledge.
- Biocultural Expressions Statement. The Biocultural Expressions statement describes biocultural themes associated with the study area and are developed from the Biocultural Expressions Assessment process. Biocultural expressions may be associated with multiple landscapes, and may express more strongly in relation to specific landscapes. Biocultural Expressions contained in this document do not include information that is considered culturally sensitive or restricted knowledge.

### 3.1.4. Affirmation

Products affirmed with the Forest and Fire Knowledge Circle and cultural authority provided to proceed.

## 3.2. Biocultural Expressions Assessments

Biocultural Expressions Assessments are undertaken in the field with Taungurung Elders and Knowledge Holders. They provide a framework for the collection and interpretation of Taungurung knowledges across a number of domains including but not limited to:

- The presence of culturally identified species
- Known language elements
- Family connections
- Cultural practice on Country
- Health of entities on Country
- Sensitive / protected knowledge



### 3.3. Statement of Cultural Landscapes

Taungurung people always have been and always will be connected to Taungurung Forest Biik (Country). Taungurung Forests connect low country and high-country places, connected by the rivers that flow north from the Great Dividing Range and provide the lifeblood of Country. The Settler State divides and manages these places according to use, tenure and other means. The place that is now being described as the Central Highlands is an intersection of multiple cultural landscapes.

The Cultural Landscapes presented have been identified as part of this project in collaboration with Taungurung Elders, other Taungurung knowledge holders and the Taungurung Forests and Fire Knowledge Circle. The mapping units presented here represents the output of Reading Country methods that combines both biocultural and biophysical information. Cultural Landscapes represent more than 'planning units of choice', but represent a contemporary expression of Traditional Owners rights and obligations to heal, manage and care for Country.

The Cultural Landscape areas presented here have been defined and subsequently represented in the geo-spatial environment by combining biophysical attributes such as topography, geomorphology, elevation and vegetation with biocultural attributes such as presence of culturally identified species flora and fauna species, known Language, cultural stories, cultural practice and the health of entities of Country. Where practicable and in the context of this assessment, Cultural Landscapes have been fully considered, irrespective of the boundaries of the assessment Landscape or AOI in order to demonstrate the importance of interconnectedness across Taungurung Country. Taungurung statements of Cultural Landscapes are provided below and draft spatial representations in Figure 2 to Figure 6, with a summary of all Landscapes shown in Figure 7.

#### 3.3.1. Banit Ngarrap Cultural Landscape

Banit Ngarrap is the thick forest that rises south of Waring (the Goulburn River). Taungurung are the First People of the Rivers and Mountains. Baan (water) is among the most important and vital entities on Taungurung biik (country). The thick damp and wet forest country of the ridgeline of the Great Dividing Range is the source of *baan*. Rivers and streams that rise in the wet forest ultimately flow north into Waring, the lifeblood of all Taungurung biik.

This Country needs to be known from low country to high country. It is known by our old people moving through it, for meetings and gatherings, during initiation and for the collection of its rich resources: ochre, stone, medicine, food and fibre. Pathways were kept open by the application of right fire and people camped on the saddles as they moved between the high places. Austral mulberry (*Hedycarya angustifolia*) lives in this Country. It is a fire drill, used in conjunction with Bagap (*Xanthorrhoea spp*) and the story of these two plants from such different parts of Country demonstrates the relational connections across biik. Wet Forest Country holds caves and rocky outcrops that sheltered the old people. This cultural landscape sits on the border of Woiwurrung and Gunai/Kurnai Country – it is the northern watershed that marks the southern boundary of Taungurung Biik. Journeys were taken across the range between Taungurung and Woiwurrung Country and many of the roads followed today follow the pathways of the ancestors. These pathways supported the transmission of deeply powerful knowledge held by Taungurung *Ngarangetti* (leaders) from *Darriwin* (the Alps) down to multi-nation gatherings in Naarm. Later, these same paths were taken by Taungurung as they were removed from Country and down to Corranderk.



### 3.3.2. Nun nun tun Greater Cultural Landscape

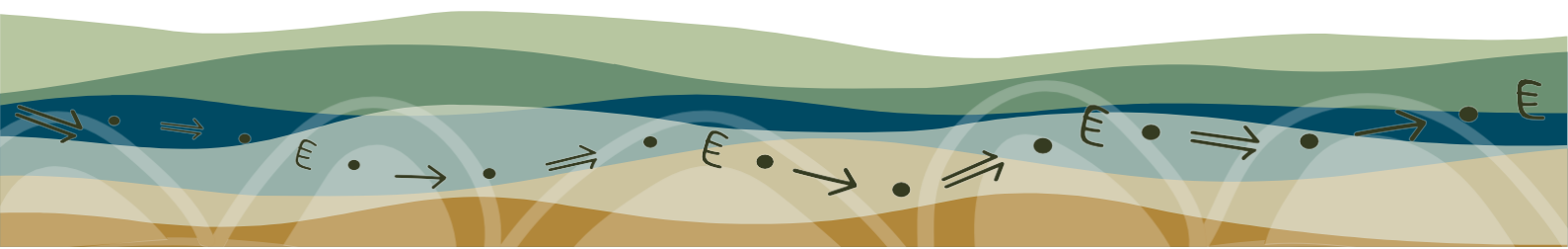
Nun nun tun is the Taungurung name for Cathedral Range and is the centre of a significant Cultural Landscape from which creation stories and ancestral and historic connections flow. It is the heart of the current study area. To the south, it merges into the Banit Ngarrap Cultural Landscape, the source of Taungurung waterways and the location of important Taungurung journey-lines. At the very highest elevations, the Nun nun tun cultural landscape joins with *Debera biik* (Bogong Moth Country), the high-altitude home of the Bogong Moth.

Nun nun tun sits within the centre of three Taungurung clan groups. The importance of this area is reflected in the many Taungurung place names still known from across this landscape. Nun nun tun has everything that is needed. Food and medicine are found in diverse forest types that range from Alpine Ash down to Redgum plains. Dagurdi (Taggerty) is a place of blue pipe clay and Nuru Nuru which flows from the Black Range into Acheron is a source of red Ochre. Right fire was applied to Country to maintain its health and abundance. Bunjil, Baliyang (bat), Dhara (Hawk) and Yurt Yurt (Nankeen Kestrel) hold fire stories. Gawarn (Echidna) uses thunder against evil spirits. The landscape as a whole offers multiple views and connection points across vast areas of Taungurung Biik, linking stories, people and ancestors across the landscape.

### 3.3.3. Debera Biik Cultural Landscape

Debera is the Taungurung name for Bogong Moth (*Agrotis infusa*). Debera Biik is a high elevation cultural landscape and protects the summer aestivation sites for Debera. As the moths migrate to cool granite and basalt outcrops in summer, many other entities follow. Birds, animals and humans congregate in large numbers to feed on this nutritious resource. The Debera migration is the source of significant energy flows, dispersing nutrients from high to low places and building soils. Debera are a key pollinator of the sub-alpine and alpine zones (Coates *et al.*, 2023), and the health of *Darriwin* (alps) is linked to the health of Debera.

Debera Biik exists as a range of high, rocky elevated islands that extend into the deeply culturally significant *Darriwin*. The granitic outcrops of Gee-barr (Mt Torbreck) are among the southernmost Debera traditional harvest sites in Taungurung country. Following Waring, the journey to Gee-barr follows Bunyarrambite (Snobs Creek). Debera Biik is not just about the moth harvest – this is a significant season marking the call for the Taungurung clans and neighbouring mob to gather. This is a landscape of journey, connection and ceremony.



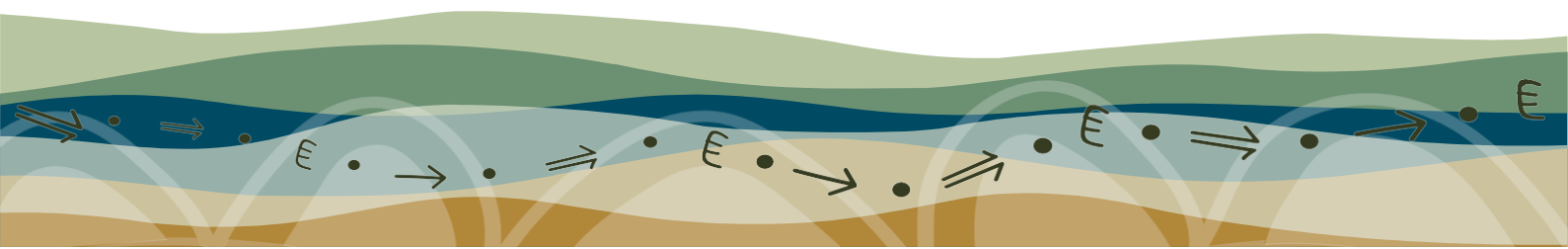


### 3.3.4. Waring Cultural Landscape

Waring is the lifeblood of all of Taungurung Country and links all things. Waring is a Living Entity of extraordinary significance and its critical importance in the connection of all systems cannot be understated. Its biocultural expressions are held by *Baan Ganalina* (Taungurung Water Knowledge Group). This report is not the appropriate place to provide a detailed statement of the Waring Cultural Landscape. The areas presented here incorporates the middle/upper reaches of Waring, with the landscape to the north of the Trawool choke possessing a different character.

### 3.3.5. Yawang Cultural Landscapes

The Tallarook's are Yawang (Stone Country), and link through to the Strathbogies. From Yawang, views open out across vast areas of Taungurung Biik. From here you can see where Waring passes through the range. During times of gathering, the progress of camp fires would mark who was travelling across Country and when they might be expected to arrive. Yawang is rich in expressions of culture: archaeological material, culturally modified trees, quarries and grinding grooves all characterise this landscape. Yawang is also abundant. When the forests here are healthy, they are open and rich with plants and animals that provide food and medicine. This supports gathering for ceremony and other business.





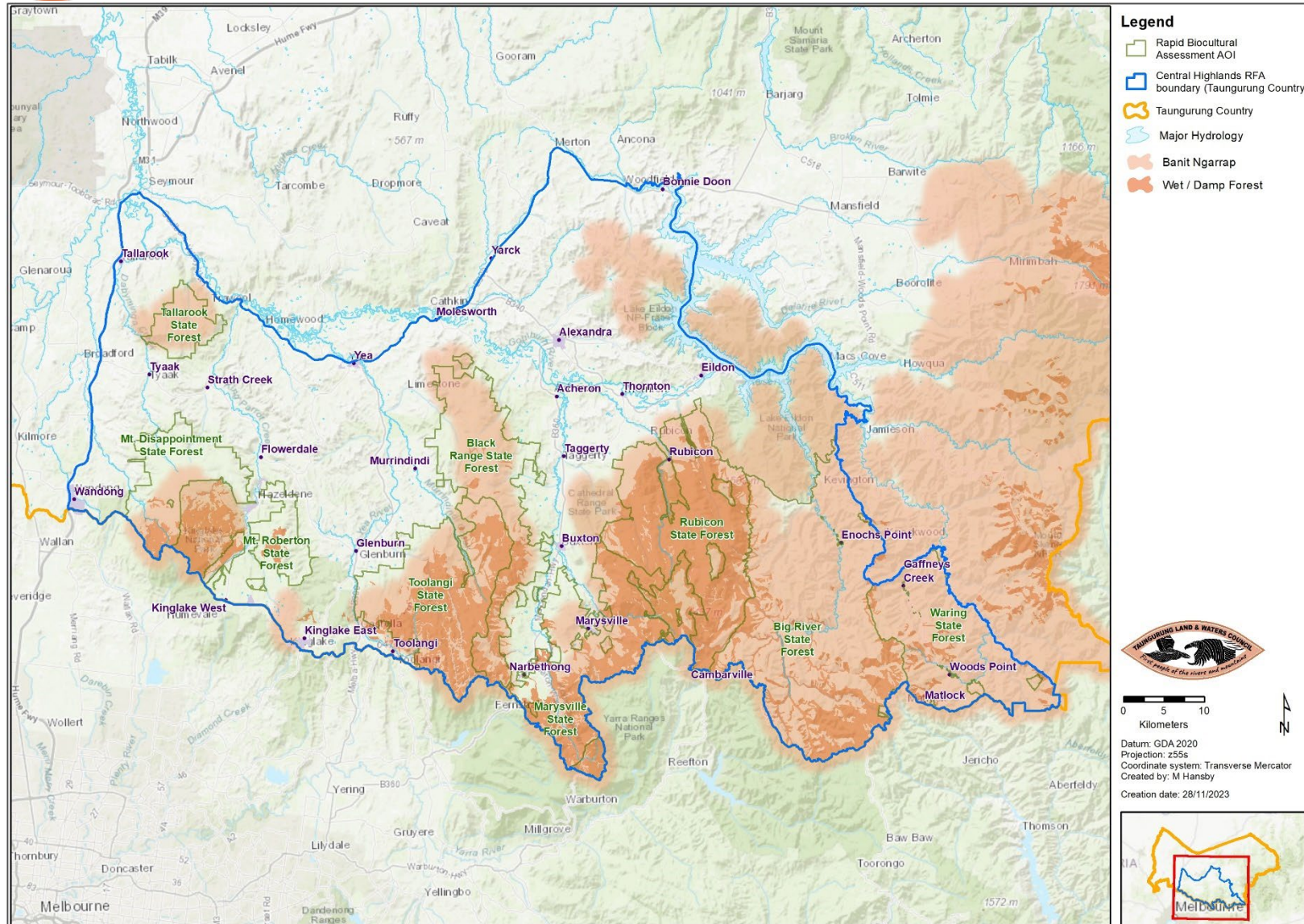


Figure 2. Spatial representation of the 'Banit Ngarrap Cultural Landscape', and its association with the assessment landscape and AOI.

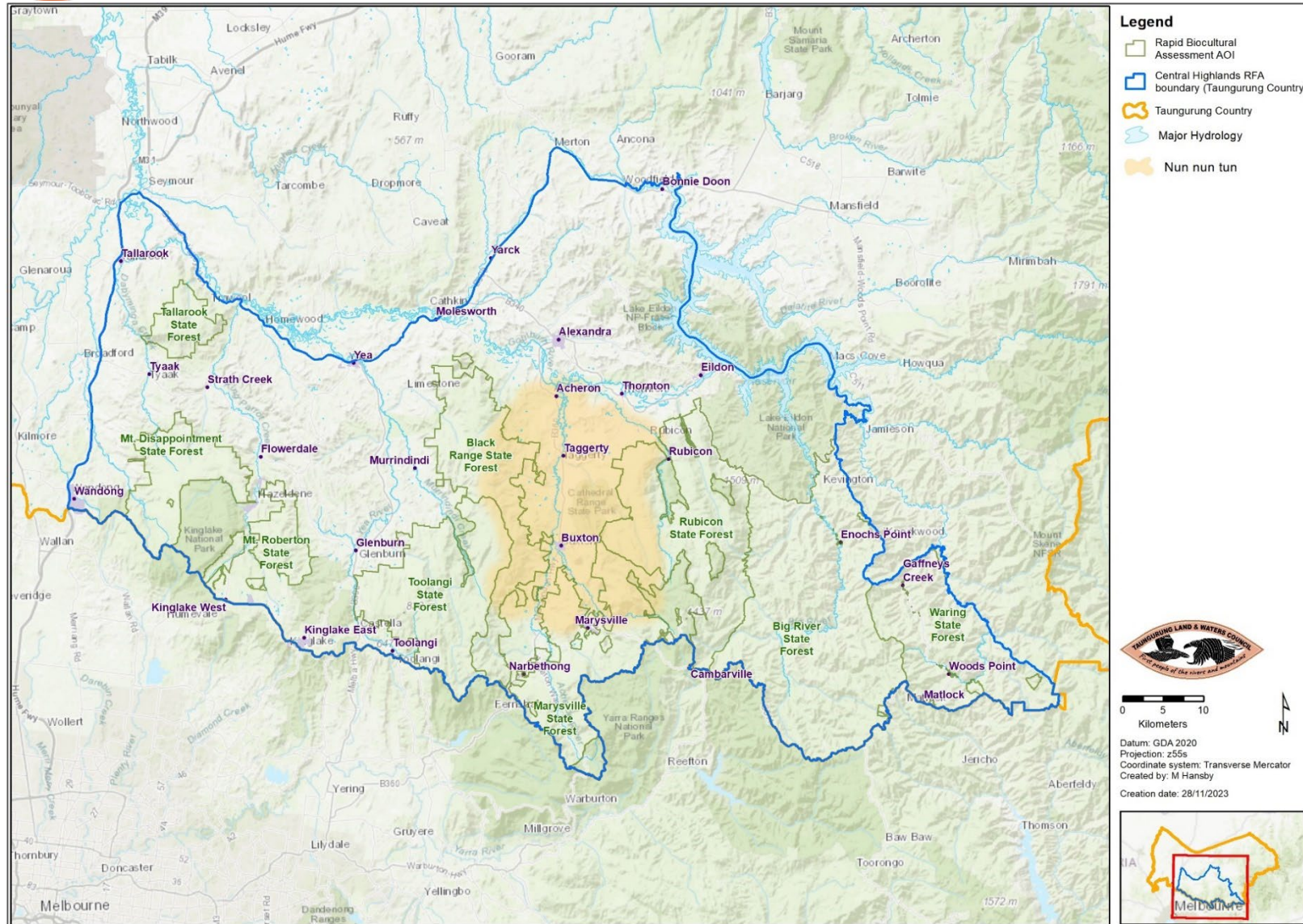


Figure 3. Spatial representation of the 'Nun Nun Tun Greater Cultural Landscape', and its association with the assessment landscape and AOI

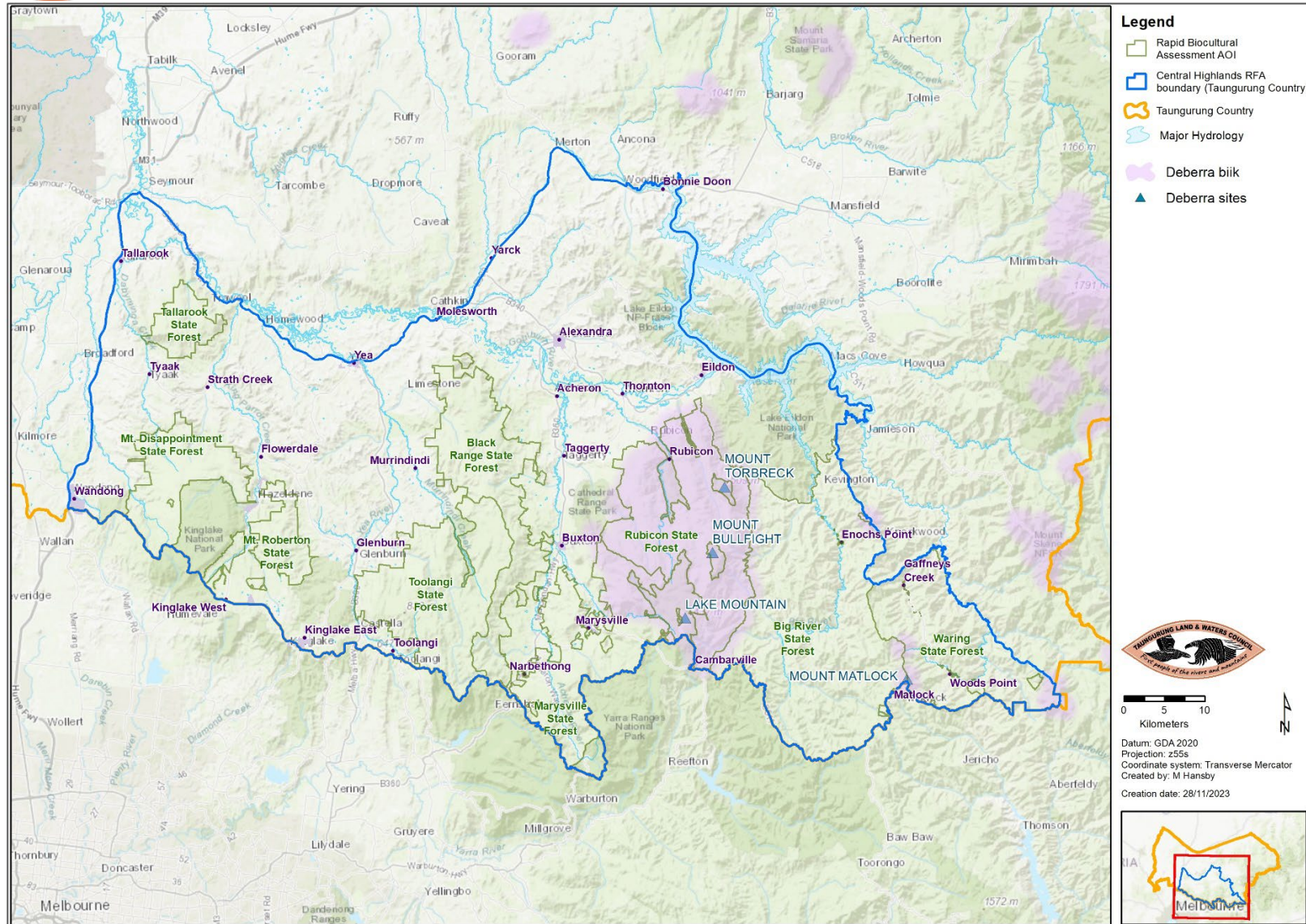


Figure 4. Spatial representation of the 'Deberra Biik Cultural Landscape', and its association with the assessment landscape and AOI

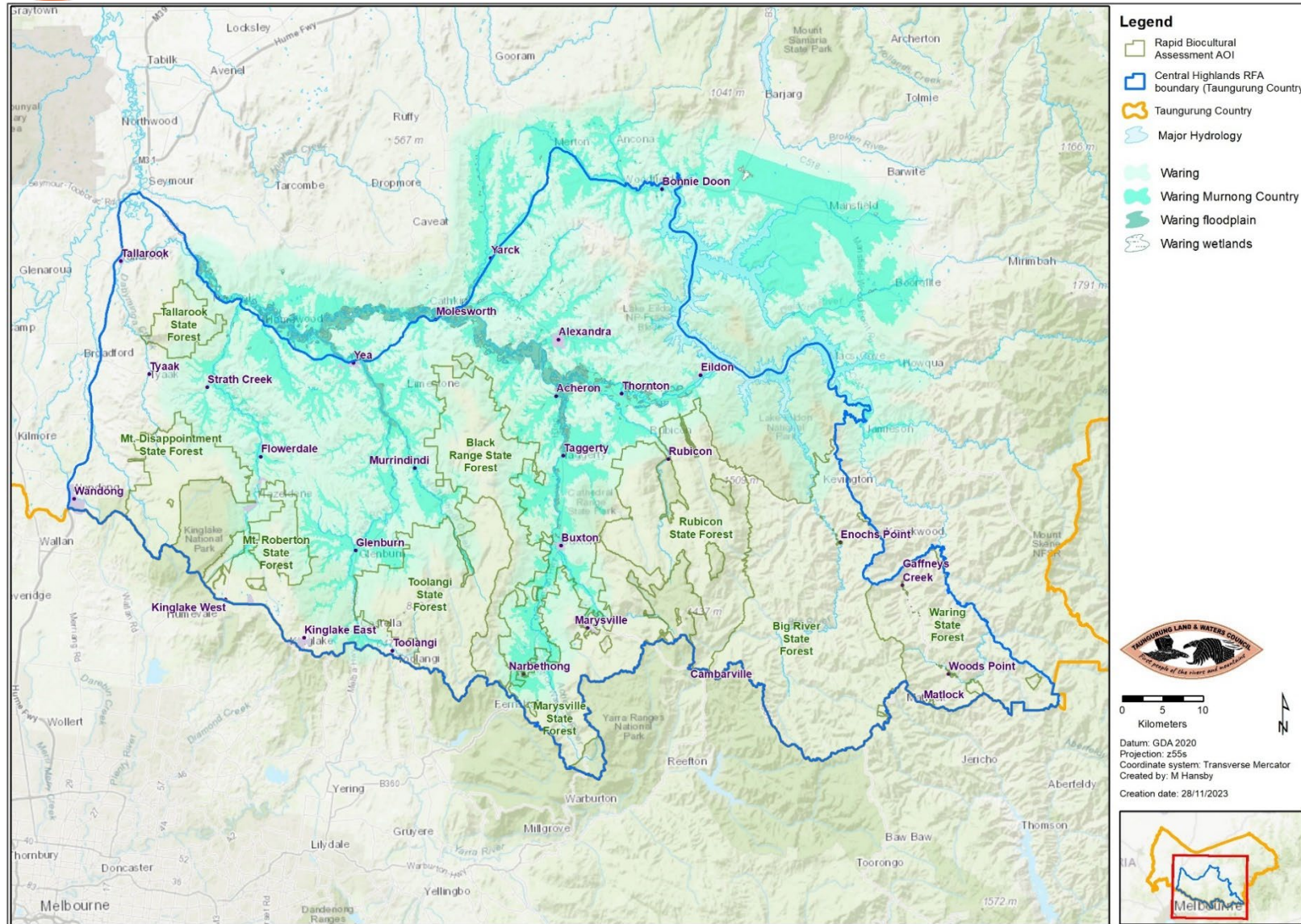


Figure 5. Spatial representation of the Waring Cultural Landscape', and its association with the assessment landscape and AOI

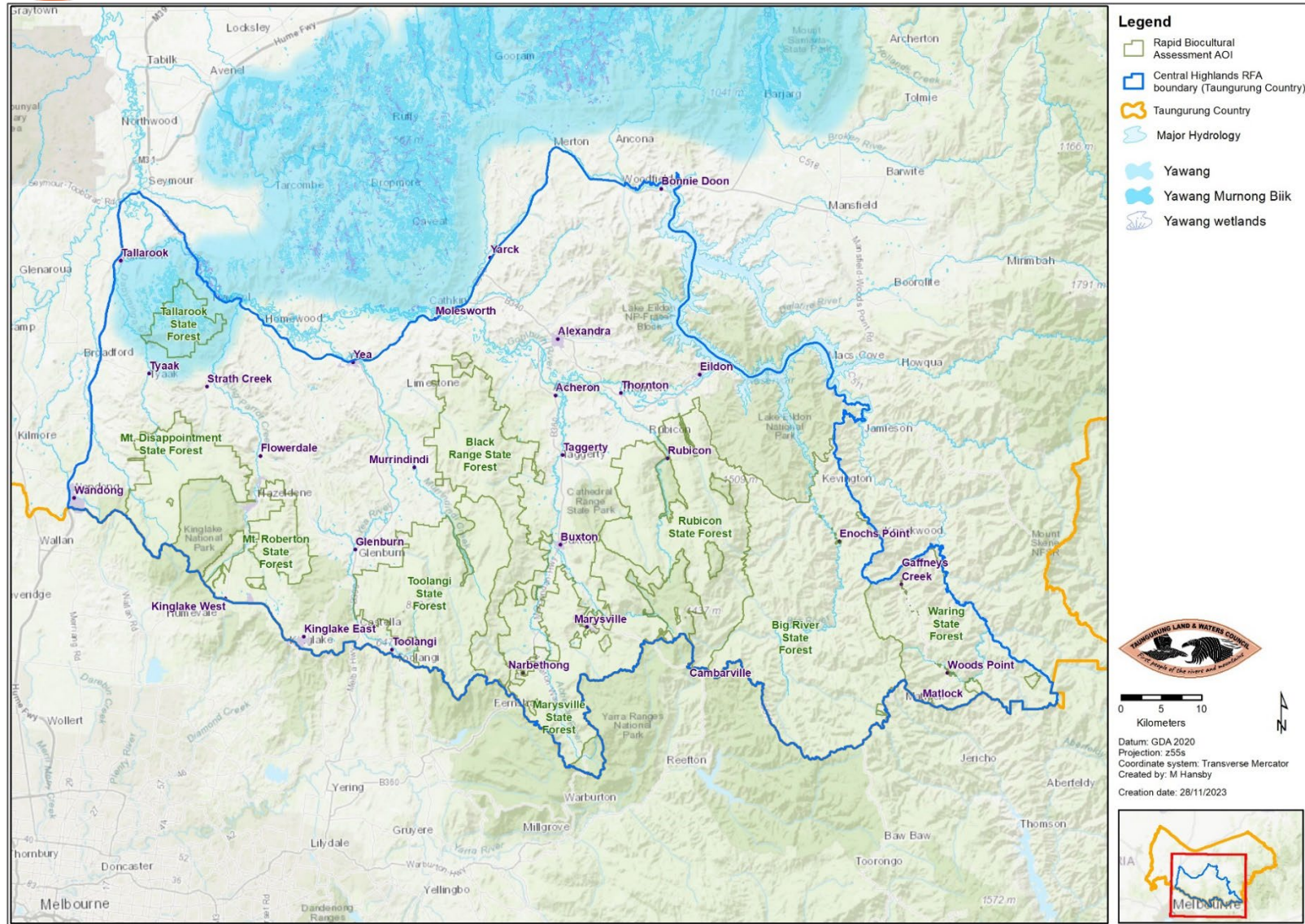


Figure 6. Spatial representation of the 'Yawang Cultural Landscape', and its association with the assessment landscape and AOI.

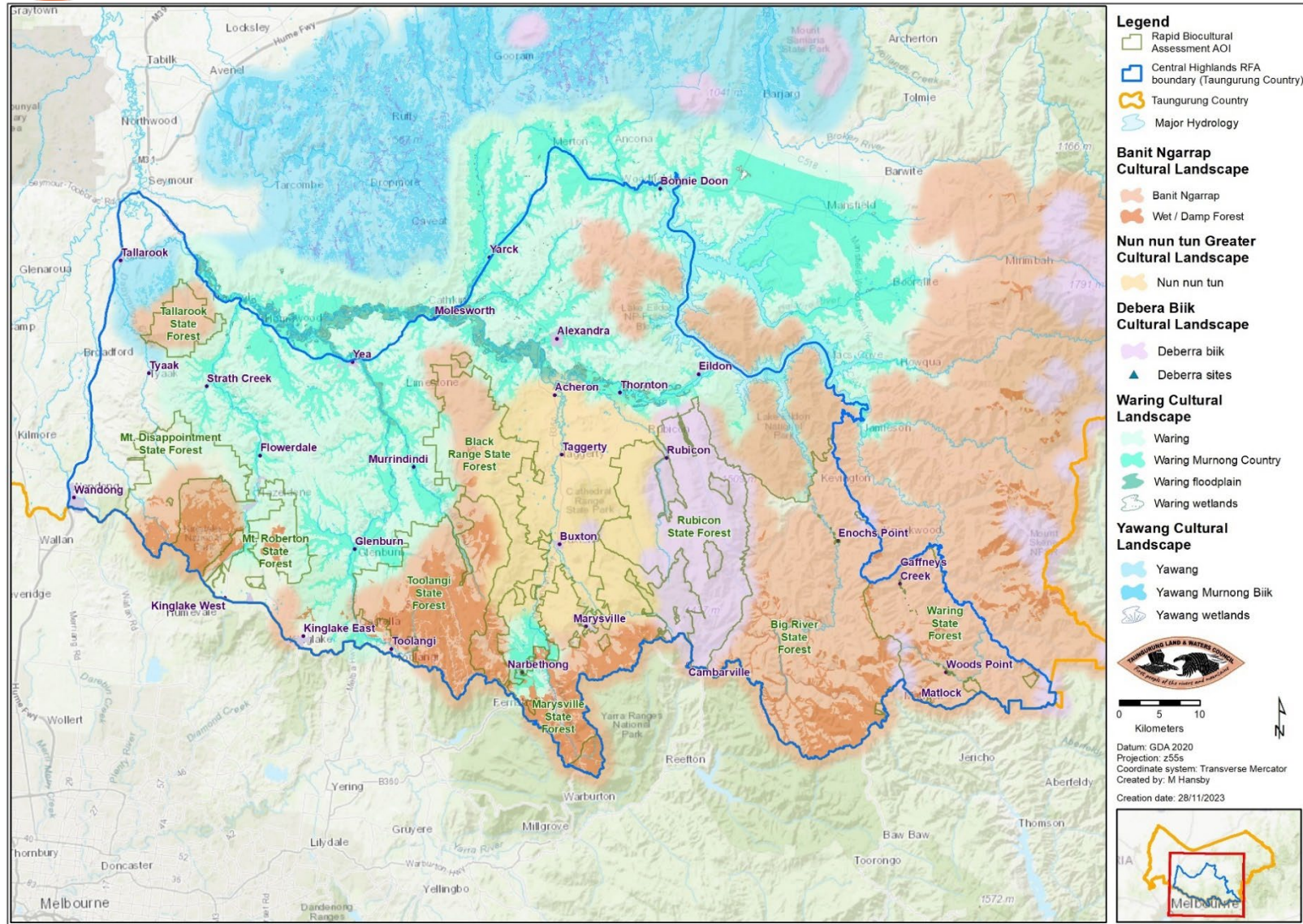


Figure 7. Spatial representation of the interconnectedness of Taungurung Cultural Landscapes associated with the assessment landscape and AOI



### 3.4. Statement of Biocultural Expressions

Biocultural expressions exist within and across these landscapes. As discussed above, biocultural expressions cannot be easily reduced to their component parts. Whereas the colonial state speaks to individual, and typically tangible, entities (plants, animals, archaeological materials etc), correctly framed biocultural expressions necessarily describe a more connected system of knowledge.

The following biocultural expressions as articulated by the Taungurung Nation characterise the study area. Data sets such as lists of cultural plants and archaeological sites are provided elsewhere in this report.

#### 3.4.1. Relationality

Relationality describes a state of connectedness which results in Country as biocultural entity. All human and non-human entities (including plants, animals and physical aspects of the landscape) are connected to create Country.

Relationality is apparent in the Central Highlands area through the many connections between the three Cultural landscapes. Journeys and pathways are a key aspect of this landscape, from the journey of waterways to the journeys of people carrying knowledge. The diverse forest types are interdependent and point to the fact that managing one aspect of Country cannot meaningfully be undertaken without consideration of the whole.

The Central Highlands connects people. It is the intersection of three clan groups and contains a large number of historic and contemporary places of gathering. Taungurung people made strong and early expressions of their rights and interests in this Country through the original (but ultimately stolen) selection of the Acheron Station, which continue to this day through the implementation of the RSA and the active engagement of the Taungurung Nation in the future of Taungurung forests.

#### 3.4.2. Ceremony

The Central Highlands is rich with ceremonial places and knowledge. This relates to the values of connectedness of both people and Country and includes known ceremonial gathering sites associated with powerful cultural landscapes and ancestral knowledge systems. Ceremonial grounds and gathering places, historic and contemporary exist through the area.

Ceremony links to ancestral knowledge systems. It is held by the Taungurung Nation and is not to be shared.

#### 3.4.3. Fire

In Taungurung Nun nun tun (the Cathedral Range) is the source of ancestral journeys, creation stories and knowledge associated with fire. This ancestral knowledge flows out of Nun nun tun carried by Bunji (Wedge Tailed Eagle), Baliyang (Bat), Dhara (hawk) and Yurt yurt (kestrel). This knowledge guides management of the Cultural Landscapes of the Central Highlands.

Cultural burning maintains Country the right way depending on forest type and culturally determined need. The application of fire is key to practicing obligations towards the more open woodland forests of the Nun nun tun cultural landscape, and to supporting journey pathways through Banit Ngarrap. When right fire is applied the forests support plants for food, fibre and medicine and human and non-human



entities can build healthy Country together. Since invasion, Taungurung have been limited in their ability to apply right fire, negatively impacting relationships between Taungurung people and Country.

#### 3.4.4. Reciprocity

Strong biocultural relations are found in the ongoing use of the food, fibre, medicine and ceremonial resources that are found in abundance throughout the Central Highlands. Country gives, and care for Country must be reciprocated in return.

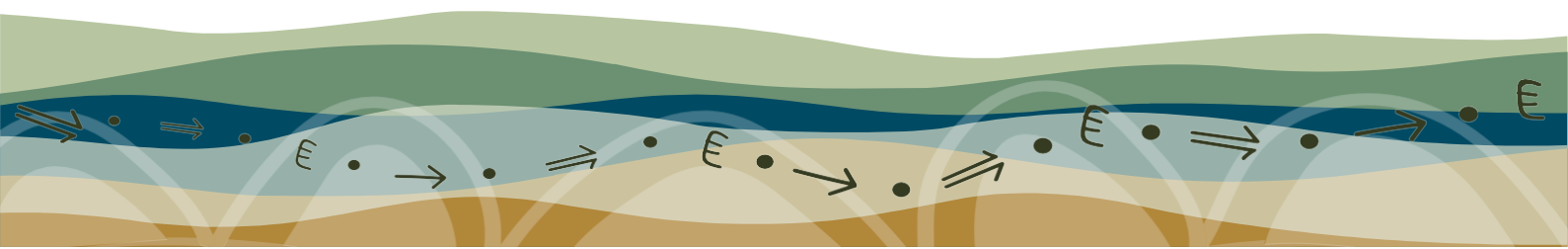
Taungurung people collect and use multiple resources from Country including tea tree, burls and bracket fungus which support cultural and ceremonial activities. Nuru Nuru and Dagurdi are places names reflecting the pigments red ochre and blue pipe clay associated with ceremonial use

Reciprocity and care for Country are supported by healing fire (among other cultural practices) which in some Country types provides the enabling conditions for Taungurung biocultural relationships with Country.

#### 3.4.5. Water

Taungurung are the first people of the rivers and mountains. Baan (water) is a cultural entity of profound importance. The northern fall of the Great Dividing Range marks the Southern Boundary of Taungurung Country. The wet forests and the high places of Debera biik are the water sources that feed north into the entity *Waring* (the Goulburn River).

Protecting the health of the water is a core obligation of Taungurung's obligations to Country. The stewardship of clean water on Country is additionally part of Taungurung's obligations to mobs downstream.







## 4. Biocultural Health of Country.

Ecosystem health is traditionally defined within the realm of the biophysical environment, commonly by spatial and temporal comparisons of a range of performance criteria and indicators. For example, the Victorian five-yearly 'State of the Forests', the latest being that published in 2018 (CES, 2018), reports against 7 Criteria, 45 Indicators and 7 sub-Indicators. While useful (and a legal requirement under the Sustainable Forests (Timber) Act 2004), it is the result of western reductionist epistemology (knowledge systems), and fails to properly consider the health of the biocultural relationships that have been crucial to the shaping of the Australian landscape or 'Country' over millennia.

The concept of 'Country' is broader than simply an 'ecosystem'. Country is the term often used by Aboriginal peoples to describe the lands, waterways and seas to which they are connected. The term contains complex ideas about lore, place, custom, language, spiritual belief, cultural practice, material sustenance, family and identity (AIATSIS, 2023)<sup>2</sup>. This being the case, the concept of 'Country Health' is a broader discussion that considers the presence or intactness of biocultural relationships across the assessment AOI, and importantly, within the context of the cultural landscapes in which they are nested.

The biocultural lens that is at the center of indigenous ways of knowing, being and doing perceives only holistic relationships. Plants, people, animals, food, fibre, waterways, snow, seasons, Language, Cultural Heritage, ceremony; these and all things are related and we cannot approach one without approaching all (TLaWC, 2023). Thus, in the context of this assessment, biocultural 'health' describes how intact such connections or relationships are both within a specific Country Type, and across the Cultural Landscapes more broadly.

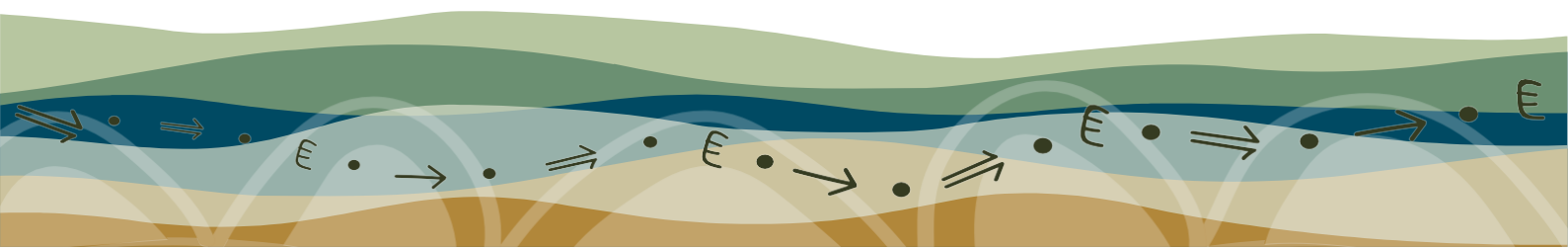
***It is important in this context to understand that 'health' is not synonymous with 'significance'.*** That is, lower health indicators do not necessarily mean that a given area of Country is of less importance, rather it provides a framework that supports culturally informed decision making, and may simply represent our current state of knowledge.

It is also likely that currently accepted indicators of positive ecological health (e.g., age class distribution, time since high intensity fire, understory weediness or presence of requisite habitat components/structures) will present an incomplete picture of biocultural health. It is only through the more complete inclusion of the interconnection between ancestro-spiritual, socio-cultural and biophysical values, i.e., the elements of biocultural relationality, that a more complete view of 'biocultural health' may be emerge.

This assessment aims to use the analysis presented below in Part B – Supporting Information to discuss the biocultural health of the forest Country present within the AOI. As this is a rapid assessment covering a large geographical area, much of the analysis is desktop in nature, however, where possible and practicable, Taungurung Elders and other Taungurung Knowledge Holders have been engaged on Country to ground truth assumptions.

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<sup>2</sup> <https://aiatsis.gov.au/explore/welcome-country>



## 4.1. Methods

Readily identifiable proxies of biophysical health were analysed to broadly understand the condition of the forests extant across the AOI. This included;

- Extant forest cover
- Disturbance history (fire and logging history)
- Ecological vegetation classes (in context with the assessment landscape)
- Presence of Rare, Threatened or Endangered (RTE) fauna and/or flora
- Estimated age class of the forest areas.
- Extent of modelled old growth

Basic analysis was performed on publicly available spatial datasets relevant to the assessment. All data was obtained from data.vic<sup>3</sup>.

Current forest cover was extracted from Sentinel 2 imagery, using ArcGIS spatial analyst and ENVI version 5. Imagery was mosaicked and classified into dominant landcover classes. The 'native forest class' was extracted, cleaned and smoothed before conversion to vector format for further use. The output of this is the updated forest cover dataset for the assessment landscape (Figure 16). Vegetation datasets, such as EVCBCS\_2005 and SVeg100 were intersected with the updated forest cover to provide a consistent and current representation of these datasets across the assessment landscape.

Fire History was derived from 'FireHistoryScar', with data used for visual purposes (i.e., the map) showing the fire history extent across Taungurung Country and the dataset intersected with the assessment AOI (State Forest boundaries) for further analysis. Logging history was derived from 'LogHist' with the silvicultural systems adapted from Flint and Fagg (2007) and VicForests (2019). Forest age class descriptions are derived from Ashton (1975).

Forest 'relative age' classes reported in Section 9.2.3 are derived from two datasets. Forest 'relative age' is derived from the 'Statewide Forest Resource Inventory (SFRI). This dataset was intersected with EVC BCS to provide an estimate of the relative age classes of EVCs across all state forest areas within the AOI.

Modelled old growth (MOG) data was intersected with both AOI and EVC BCS to understand the extent and type of modelled old growth present across the AOI.

The results of these spatial analyses and relevant discussion are presented below in the section 'Part B-Supporting Information', and are briefly summarised below (Table 2).

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<sup>3</sup> <https://www.data.vic.gov.au/>



Table 2. Summary of Country health of the AOI

State Forest	Biophysical value summary	Cultural landscape context	Biocultural health of Country
<b>Tallarook State Forest</b>	<ul style="list-style-type: none"> <li>Minimal intensive harvesting history</li> <li>Not affected by either 1939 or 2009 fire events</li> <li>Uneven-aged forest structure common</li> <li>Threatened species refuge</li> <li>Old growth absent</li> </ul>	<ul style="list-style-type: none"> <li>Yawang</li> <li>Banit Ngarrap</li> <li>Waring</li> </ul>	<p>POOR</p> <p>No current TO led governance or management within this forest area. Critical outlier of Yawang CL. Cultural land management critical to re-establish biocultural relationships.</p>
<b>Black Range State Forest</b>	<ul style="list-style-type: none"> <li>Mixture of both selective and intensive harvest systems, including salvage harvesting</li> <li>Uneven-aged forest structure present</li> <li>Affected by both 1939 and 2009 fire events</li> <li>A range of threatened spp present</li> <li>Modelled old growth virtually absent</li> </ul>	<ul style="list-style-type: none"> <li>Nun nun tun</li> <li>Banit Ngarrap</li> <li>Waring</li> </ul>	<p>POOR</p> <p>No current TO led governance or management within this forest area. Strong, overlapping biocultural expressions for area Critical forests of Nun nun tun, Banit Ngarrap and Waring CL. Cultural land management critical to re-establish biocultural relationships.</p>
<b>Rubicon State Forest</b>	<ul style="list-style-type: none"> <li>High levels of intensive timber harvesting systems</li> <li>Even-aged 'regenerating' forest structure dominant</li> <li>Severely impacted by both 1939 and 2009 bushfire events</li> <li>High concentrations of a range of threatened species</li> <li>Modelled old growth virtually absent</li> </ul>	<ul style="list-style-type: none"> <li>Nun nun tun</li> <li>Banit Ngarrap</li> <li>Waring</li> <li>Debera Biik</li> </ul>	<p>POOR</p> <p>No current TO led governance or management within this forest area. Strong, overlapping biocultural expressions for area Critical forests of Debera Biik, Nun nun tun, Banit Ngarrap and Waring CL. Cultural land management critical to re-establish biocultural relationships.</p>
<b>Marysville State Forest</b>	<ul style="list-style-type: none"> <li>High levels of intensive timber harvesting systems</li> <li>Even-aged 'regenerating' forest structure dominant</li> <li>Severely impacted by both 1939 and 2009 bushfire events</li> <li>High concentrations of a range of threatened species</li> <li>Modelled old growth virtually absent</li> </ul>	<ul style="list-style-type: none"> <li>Nun nun tun</li> <li>Banit Ngarrap</li> <li>Debera Biik</li> </ul>	<p>POOR</p> <p>No current TO led governance or management within this forest area. Strong, overlapping biocultural expressions for area Critical forests of Debera Biik, Nun nun tun and Banit Ngarrap CL. Cultural land management critical to re-establish biocultural relationships.</p>



<p><b>Big River State Forest</b></p>	<ul style="list-style-type: none"> <li>• Low levels of intensive timber harvesting systems</li> <li>• High concentration of mature aged dry forest communities</li> <li>• Impacted by 1939 bushfire event, but less impacted by 2009 event</li> <li>• High concentrations of a range of threatened species in the south</li> <li>• Greatest extent of modelled old growth across the AOI</li> </ul>	<ul style="list-style-type: none"> <li>• Banit Ngarrap</li> <li>• Debera Biik</li> </ul>	<p>POOR</p> <p>No current TO led governance or management within this forest area. Strong, overlapping biocultural expressions for area Critical forests of Debera Biik, and Banit Ngarrap CL. Cultural land management critical to re-establish biocultural relationships.</p>
<p><b>Toolangi State Forest</b></p>	<ul style="list-style-type: none"> <li>• High levels of intensive timber harvesting systems</li> <li>• Even-aged 'regenerating' forest structure dominant</li> <li>• Impacted by 1939 bushfire event, but less impacted by 2009 event</li> <li>• High concentrations of a range of threatened species in the south</li> <li>• Modelled old growth extent low</li> </ul>	<ul style="list-style-type: none"> <li>• Nun nun tun</li> <li>• Banit Ngarrap</li> <li>• Waring</li> </ul>	<p>POOR</p> <p>No current TO led governance or management within this forest area. Strong, overlapping biocultural expressions for area Critical forests of Nun nun tun, Banit Ngarrap and Waring CL. Cultural land management critical to re-establish biocultural relationships.</p>
<p><b>Mt Disappointment State Forest</b></p>	<ul style="list-style-type: none"> <li>• High levels of intensive timber harvesting systems focused in the SE (i.e., ash-type forest)</li> <li>• Forest structure mixed with regenerating to the SE and mature (fire effected) elsewhere</li> <li>• Severely impacted by 2009 bushfire event</li> <li>• Moderate concentrations of threatened spp observed</li> <li>• Modelled old growth extent absent</li> </ul>	<ul style="list-style-type: none"> <li>• Banit Ngarrap</li> </ul>	<p>VERY POOR</p> <p>No current TO led governance or management within this forest area. Biocultural expressions not well understood. Cultural land management critical to re-establish biocultural relationships. Further investigation required</p>
<p><b>Mt Roberston State Forest</b></p>	<ul style="list-style-type: none"> <li>• Low levels of timber harvesting</li> <li>• Forest structure mainly mature, but fire effected.</li> <li>• Severely impacted by 2009 bushfire event</li> <li>• Low concentrations of threatened spp observed</li> <li>• Modelled old growth extent absent</li> </ul>	<ul style="list-style-type: none"> <li>• Banit Ngarrap</li> </ul>	<p>VERY POOR</p> <p>No current TO led governance or management within this forest area. Biocultural expressions not well understood. Cultural land management critical to re-establish biocultural relationships. Further investigation required</p>



<p><b>Waring State Forest</b></p>	<ul style="list-style-type: none"> <li>• Low levels of timber harvesting</li> <li>• Forest structure mixed, but high levels of mature (fire effected) forest</li> <li>• Severely impacted by 1939 and 2006/07 bushfire events</li> <li>• Moderate concentrations of threatened spp observed</li> <li>• Modelled old growth extent moderate</li> </ul>	<ul style="list-style-type: none"> <li>• Banit Ngarrap</li> <li>• Debera Biik</li> </ul>	<p>VERY POOR</p> <p>No current TO led governance or management within this forest area. Biocultural expression present. Key forest areas with Debera Biik CL. Cultural land management critical to re-establish biocultural relationships.</p>
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## 5. Threats

The Central Highlands have experienced significant change since the arrival of Europeans invaders. Even before Taungurung people were removed from their land by settlers, the spread of disease, passage of early explorers, changes in patterns of trade, the arrival of new animals and displacement of people from surrounding areas disrupted traditional practices, amplifying the effects once direct contact occurred between Taungurung people and European settlers.

Taungurung People, like other Aboriginal people throughout Australia, were severely impacted by dispossession and colonisation. The removal of Taungurung people from their traditional lands across the Central Highlands Landscape from the late 1830s created a significant disruption to the environment and Taungurung way of life. As policies of removal were introduced, such as the *Victorian Aboriginal Protection Act in 1869*, Taungurung People were prevented access to Country, cultural sites and practices, medicines, food, language and eventually their own family members. Since this time a range of activities have eliminated values and created persistent threats to remaining values:

- The assumption of Crown Sovereignty and theft of Country
- Clearing native ecosystems for agriculture.
- Conversion of native ecosystems to introduced plantations for timber production.
- Introduction of foreign plants and animals.
- Establishment of pest plants and animals.
- Increased population pressure.
- Capture of water for agricultural use.
- Erection of fences.
- Construction of roads.
- Inappropriate fire regimes.
- Operation of extractive industries, like mining and timber harvesting.

These processes have resulted in direct impacts on values and indirect threats that continue across the Central Highlands forests.

**However, at this point in time, the Taungurung Nation considers the most imminent and pervasive threat to the continual practice of their rights and obligations to heal, manage and care for Country to be the imposition of Public Land tenure categories that are restrictive by their nature.**

**The imposition of restrictive land tenure categories will serve to diminish the rights of Traditional Owners and further diminish the health of Country as biocultural relationships are prevented from being re-established.**

Pathways to resolve these existing legal, institutional and policy barriers are outlined below in Synthesis and Recommendations.

## 6. Synthesis

### 6.1. The case for healing and caring for Country through the biocultural lens of Cultural Landscapes

Since colonial invasion, and the subsequent dispossession of Taungurung people from their ancestral lands, the assessment landscape has undergone significant change. Since the first permanent colonial dwelling on Devils Creek (Delatite River) was established in 1838, the careful stewardship of Taungurung Country expressed by intact biocultural relationships between people and Country has significantly altered, but is still present.

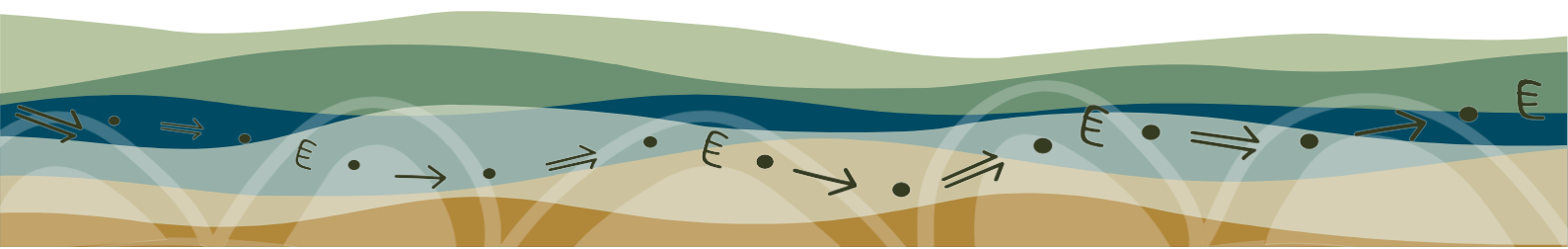
The ecological degradation is briefly described in Section 8.5 'occupation and disturbance' demonstrating a 35% reduction in forest cover across the landscape has occurred post- colonisation (Figure 16), with an almost complete loss of woodlands and some of the drier forest communities (Table 12). While the forested areas across the AOI are still present and retain their 'essential character', (i.e., they are still native forest) they have been continually degraded by various combinations of the effects of bushfire (and associated preparedness and suppression and recovery operations), weed and feral species invasions, timber harvesting, fragmentation by roading and exploitation by mining. Many of these forests are 'culturally unrecognisable' to the ancestors of the contemporary Taungurung Nation. This situation is not unique to the AOI, with recent research indicating the lack of biocultural relationships present across much of eastern Australia (Fletcher *et al.*, 2021a; Fletcher *et al.*, 2021b; Fletcher *et al.*, 2021c; Laming *et al.*, 2022) being at the heart of many of our most wicked contemporary ecological challenges.

The relative age classes described in Section 9.2.3 (Figure 29) indicate that large areas of the AOI are in a young, densely stocked condition, concentrated within the productive, tall wet forest communities that have been the focus of the timber industry since the early 1900's. While the effect of timber harvesting cannot be denied, the destructive force of landscape-scale, high intensity fire events, such as that seen in 1939 and 2009 across the assessment landscape can be understood as the most potentially pervasive contemporary impact, from colonial history, across the landscape. The situation of a changing climate and the observed increase in the number of extreme fire days (CES, 2018 pp 112), suggests that such fire events will likely reoccur, and fact demands that innovative and adaptive approaches to active forest management be embraced, a paradigm incompatible with the imposition of Land Tenure categories that inhibit or exclude Traditional Owners exercising their rights and obligations to heal and care for Country.

The case for healing and caring for Country through the biocultural lens of Cultural Landscapes is also compelling. This assessment has identified that five cultural landscapes that intersect the assessment landscape and AOI. Biocultural relationships, such as culturally identified flora and fauna, cultural stories, kinship with landscape entities, song lines, travel routes, lore and obligation are all encompassed by the biocultural expressions presented above. The statements of biocultural expressions and cultural landscapes in this document are the result of restricted time on Country with community and should not be considered exhaustive, but as the starting point for a new way to engage with our forested landscape.

This point is best illustrated by means of two small case studies:

- The Nun nun tun (Cathedral Ranges) Greater Cultural Landscape (Box 1)
- The Debera Biik Cultural Landscape (Box 2)



### 6.1.1. Case Studies

#### Box 1. Nun nun tun (Cathedral Ranges) Cultural Landscape

The Nun nun tun Cultural Landscape is centred on Nun nun tun (Cathedral Ranges), and takes the broader Ngaragon (Acheron River) valley and the surrounding forests into account. As described above in Section 3.3.2, the Taungurung Nation has a deep, ancestral, historic and contemporary connection with this landscape. The concentration of ancestral stories related to this geomorphological feature, the self-selected location of the historic Acheron Station, the location of the Nyagaroon property and the concentration of the material cultural record in the ACHRIS database illustrate this point well (Figure 8).

This assessment considers that all forest areas within this landscape (Black Range, Rubicon, Marysville and parts of Toolangi State Forests) require a new paradigm of culturally lead land management. The young forest condition that is dominant in the wide arc from west, south to the east of the Cultural Landscape (Section 9.2.3) require protection from wrong fire in order to fulfil their supporting, regulating and provisioning ecosystem service potential. A management paradigm that puts Country first and reestablishes the currently missing biocultural relationships within this area is a viable way forward.

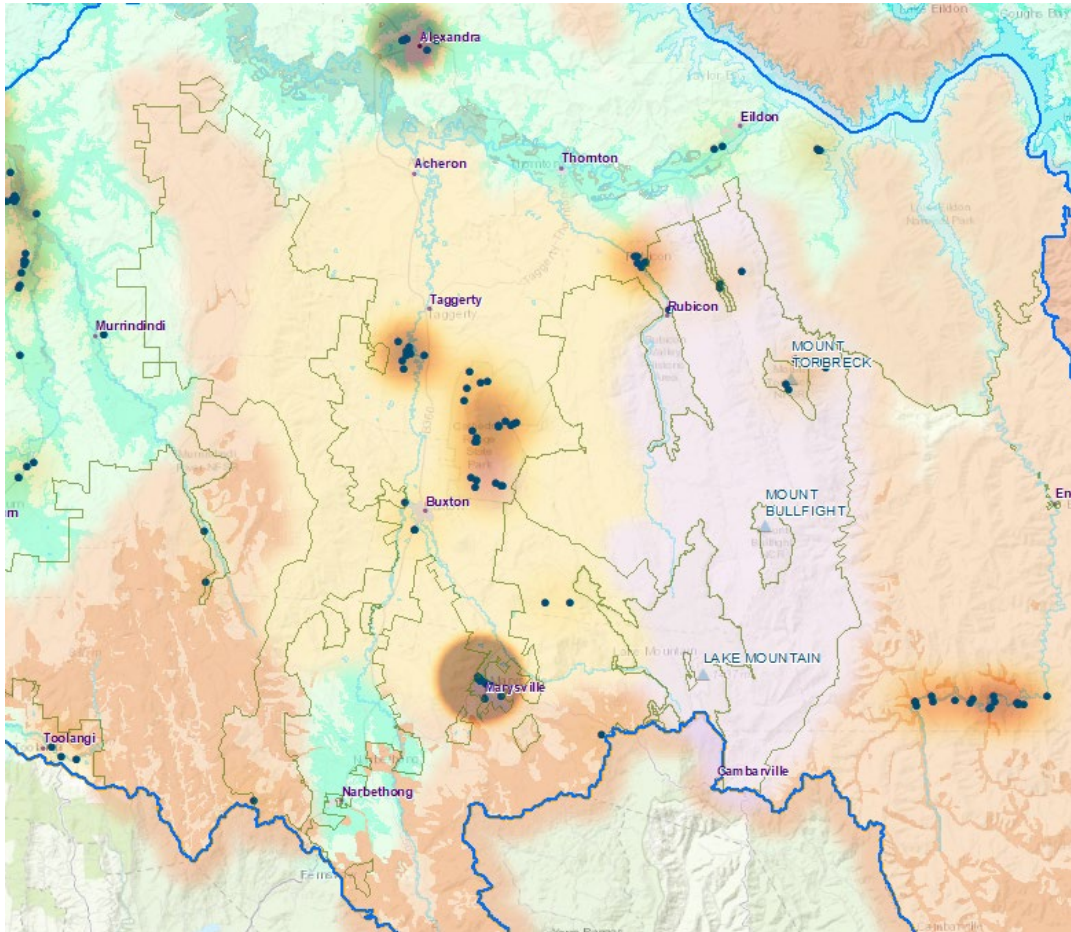


Figure 8. Nun nun tun Cultural Landscape area in context with surround State Forests, other Cultural Landscapes and material cultural record data from the ACHRIS database.



## Box 2. Debera Biik Cultural Landscape

Debera Biik, situated with Victoria Alps bioregion (Section 8.3), covering much of the Rubicon and Marysville State Forests, supports important Debera (Bogong Moth / *Agrotis infusa*) populations, a key culturally identified species for the Taungurung Nation. The aestivation (summer form of 'hibernation') sites along the high places within Debera Biik (Mt Torbreck, Mt. Bullfight and Lake Mountain) are key sites for ceremony and seasonal resource use.

The biocultural expression for Debera Biik is strong (see above), with the annual energy / nutrient flow (see Green (2011)) from the Murnong Country / woodlands to the north and west of Taungurung Country into Debera Biik being an physical representation of the biocultural relationships discussed throughout this document.

Recent research (Coates *et al.*, 2023) indicates that Debera has a potentially significant role as a key pollinator within the alpine and sub-alpine landscape, with the large, landscape-scale nectar flows produced by Myrtaceous plant genera (such as Eucalyptus and Leptospermum) being key food sources for Debera during the summer months.

Managing for this biocultural relationship is holistic by nature, as Debera quite literally connects the People to the woodlands of the northern Waring to Debera Biik through Banit Ngarrap.

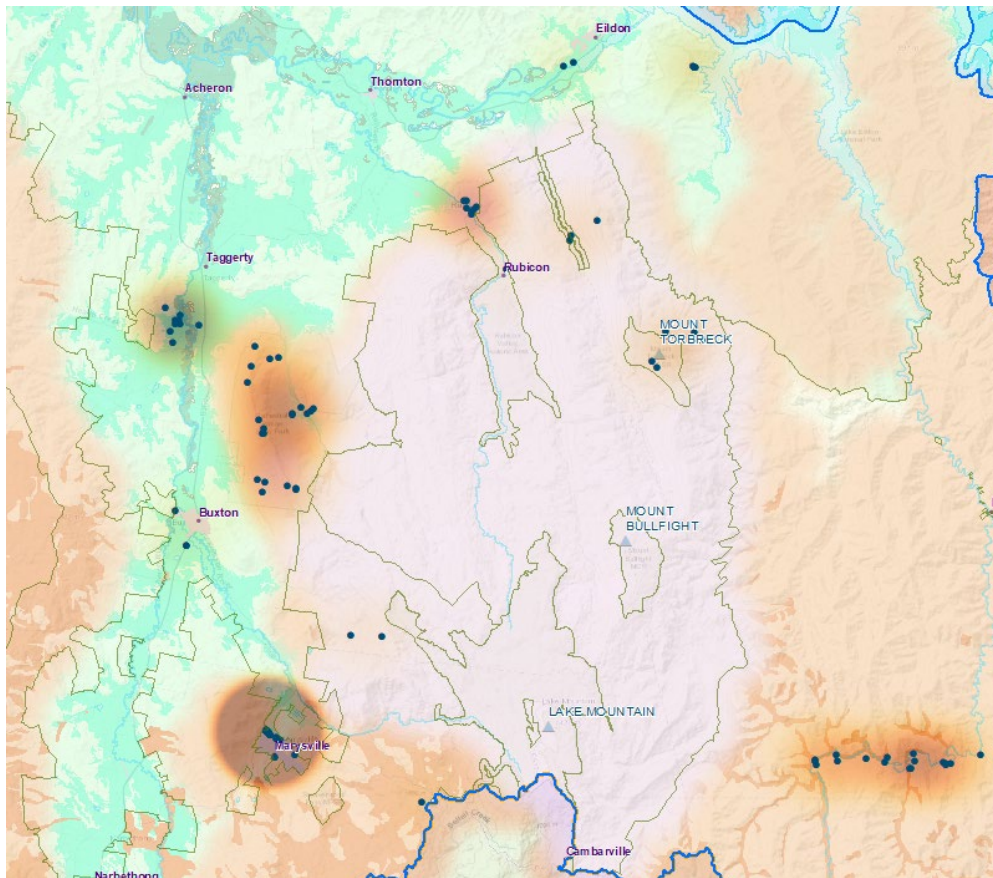


Figure 9. Debera Biik (lilac), currently known Debera aestivation sites (green stars) and material culture records from the ACHRIS database



## 6.2. Rights and obligations: the trajectory of change in policy and legislation to meet Taungurung's pathway and develop the conditions for healthy Country

We make connection points to directly relevant or dependent Victorian government law and policies, including connections through current policy and legal processes that are in development or review (including the forthcoming Public Land bill).

The Cultural Landscapes Strategy (2021) provides a framework for the planning, management and governance of public land (forests and parks) across the State. It provides core principles, tangible actions and a common language that can underpin the Department of Energy, Environment and Climate Action and Parks Victoria's approach to future forest and parks management decisions including policy and legislative reform<sup>4</sup>.

Parks Victoria Land Management Strategy (2022) Aligns with the framework of the Cultural Landscapes Strategy. The Land Management Strategy seeks to support a self-determination approach. Parks Victoria will work in partnership with Traditional Owners to restore and care for healthy cultural landscapes in all aspects of park management<sup>5</sup>.

Traditional Owner Game Management Strategy (2021) sets out how Victorian Government departments and agencies will partner with Traditional Owners to deliver practical actions to build Traditional Owner participation in hunting, land management and conservation. This includes new arrangements for the management of State Game Reserves under collaborative management, consistent with provisions in the Cultural Landscapes Strategy.

The Taungurung Cultural Land Management Strategy (2022) outlines a pathway for returning right-way management to Country. It describes coordinated strategic action designed to activate the Country Plan and other TLAWC priorities related to the planning, management and governance of Country.

The Public Land Bill (circa 2026). The new legislation will enable the framework for the planning, management and governance of public land in the Cultural Landscapes Strategy.

Figure 10 below illustrates the trajectory of change in public land management that will be required to support the recommendations in this report and the governance, planning and management arrangements that will enable the Taungurung vision for healthy Country.

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<sup>4</sup> <https://www.deeca.vic.gov.au/futureforests/what-were-doing/victorian-cultural-landscapes-strategy>

<sup>5</sup> [www.prod.aws-dce-prod.ext.parks.vic.gov.au/-/media/project/pv/main/parks/documents/land-management/parks-victoria-land-management-strategy-2022.pdf](http://www.prod.aws-dce-prod.ext.parks.vic.gov.au/-/media/project/pv/main/parks/documents/land-management/parks-victoria-land-management-strategy-2022.pdf)

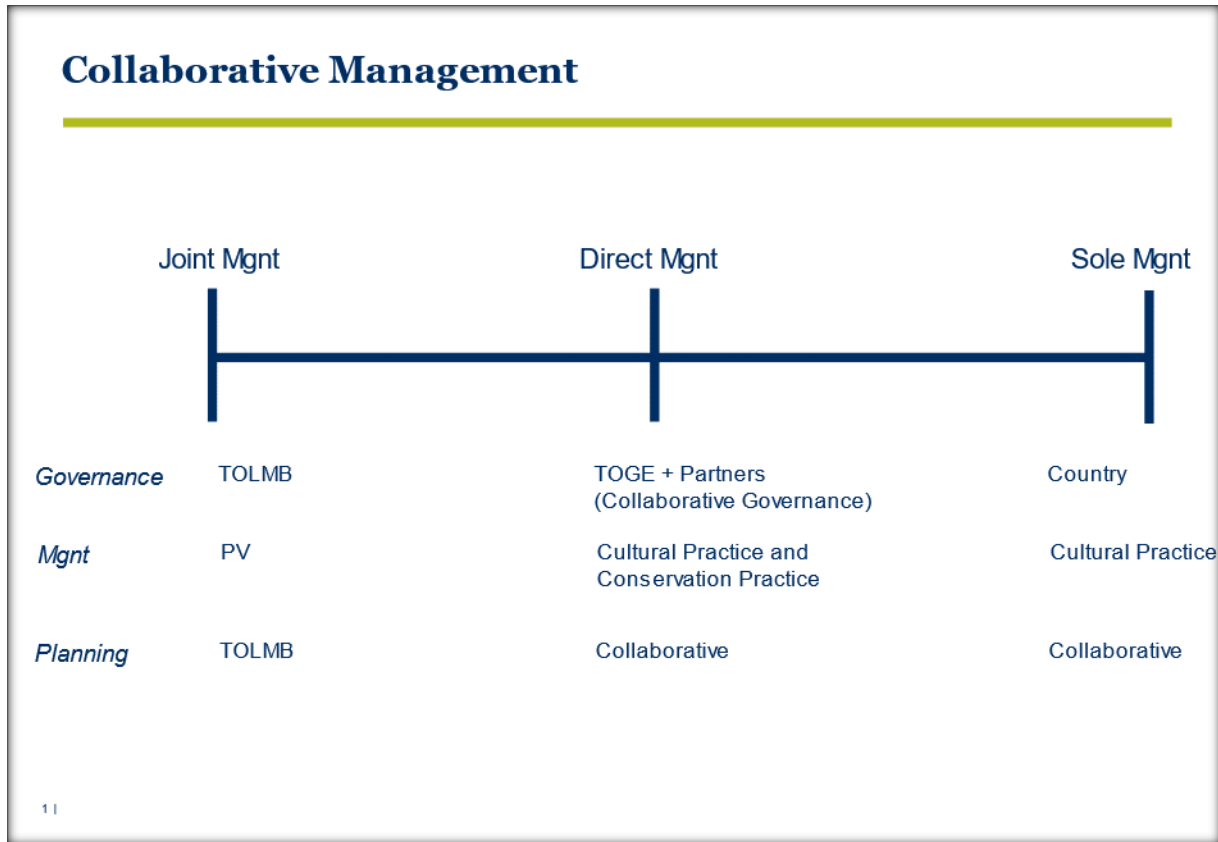


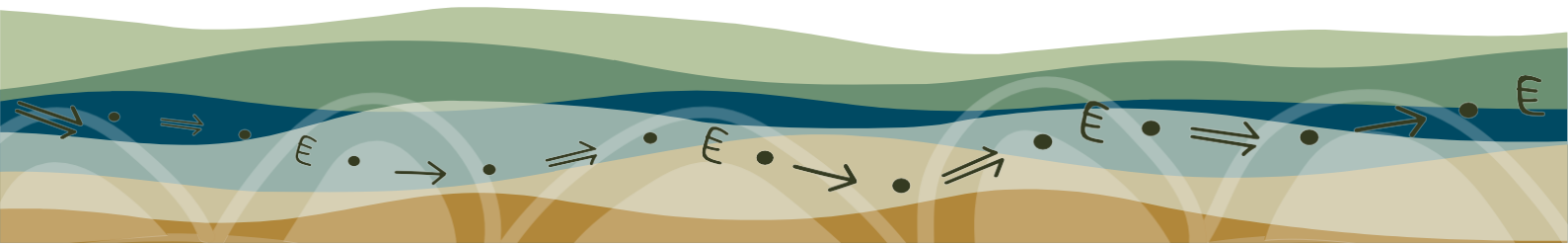
Figure 10. The chart illustrates a sequence of long term (approx. 100 year) change, as a collaborative management<sup>6</sup> regime is applied, healing Country is undertaken in parallel with enabling legal, policy and institutional reform.

The chart illustrates a sequence of long term (approx. 100 year) change, as healing Country is undertaken in parallel with enabling legal, policy and institutional reform.

The left-hand side of the chart illustrates contemporary rights under Recognition and Settlement Agreements, including Joint Management of Parks and Reserves (ref: Taungurung RSA). A Traditional Owner Land Management Board is established to guide a planning process, with land management authority remaining with Parks Victoria. The centre of the chart identifies Direct Management arrangements as outlined in the proposed Public Land bill. Under Direct Management arrangements, the Traditional Owner Group Entity will engage with partners in collaborative governance, undertake a collaborative planning process and heal Country through a both worlds approach. This regime is suitably enabled through development of a new public land category called Cultural Reserve. This meets the current pathway needs for Taungurung.

Piloting of cultural landscape development programs on Taungurung Country; e.g., within the Corop Cultural Waterscape, propose that a 100-year timeline will be required to achieve sufficient healing of

<sup>6</sup> Collaborative management is a partnership in which government agencies, local communities and resource users, non-governmental organisations and other stakeholders negotiate, as appropriate to each context, the authority and responsibility for the management of a specific area or set of resources. Collaborative management arrangements are described in the framework on page 46 of the Cultural Landscapes Strategy.





Country and knowledge to be able to activate sole management arrangements. Sole management is applied when Country is healed and cultural governance able to be fully activated. At this point, Country is once again governing (speaking through the Nation). In recognition of the reality of those relying on Country for a range of contemporary uses (e.g., tourism, farming), collaborative governance (equitable participation in decision making amongst partners) and collaborative planning processes will likely remain in place, with Country providing direction through the Nation, to ensure system balance and health.

### 6.3. Nation capacity and resourcing

Table 2 describes the current values and biocultural health of Country of specific state forest assets in the Central Highlands RFA region. Biocultural health of all assets has been assessed as poor or very poor.

Table 3 below describes the enabling provisions for planning, management and governance once Nation capacity, government law, policy and operating systems, sufficient ongoing resourcing and effective partnerships are in place.

Table 3. Trajectory of change

Theme	Phase (100-year timeframe)		
	Now	Interim (activated once Nation capacity; an authorising environment and sufficient resourcing for pilots exists)	Enduring arrangements (activated once Nation capacity; enabling legal, policy and institutional arrangements and sufficient ongoing resourcing exists)
Planning	Tallarook State Forest; Big River State Forest; Toolangi State Forest; Mt Disappointment State Forest; Mt Robertson State Forest; Waring State Forest; private land parcels; Cathedral Range State Park; Kinglake National Park; Lake Eildon National Park  Forest Management Plan for the Central Highlands.	Incorporation of Tallarook State Forest in Cultural Landscape Overlay for Yawang (Stone Country).  Activation of Tallarook SF as a Cultural Reserve, once Nation Capacity and resourcing exists  Incorporation of other State Forests, Parks and Reserves in cultural landscape overlays, with Direct Management arrangements, once Nation Capacity and resourcing exists	Cultural Reserves for each State Forest asset, under Direct Management (collaborative planning process).  Cultural Reserve Management Plan.  Cultural Landscape Overlay.  Cultural Landscape Management Plan.  Direct Management arrangements for Parks and Reserves (Joint Management Plan prepared by agreement) <sup>7</sup>
Management	Protections implemented through Immediate Protected Area designation for sites within Rubicon State Forest, Toolangi State Forest and Marysville State Forest.  Roading, recreation, pest plant and animal control, provision of firewood.  Fire management activities.	Continue forest and fire management.  Support recreation and tourism opportunities (where consistent with healing and caring for Country).  Consider application of IUCN Category 5 and 6 Protected Areas, for the reserve and landscape, respectively (consistent with the Indigenous Protected Area program).  Enable active management to heal Country, using a both worlds approach.	Continue to support forest and fire management until Country is healed.  Support recreation, tourism and other economic development opportunities (where consistent with healing and caring for Country).  Consider cultural covenants and/or credits with support of private landowners.  Embed Indigenous management practices to care for Country.
Governance	DEECA (Parks Victoria for Parks and Reserves)	TLaWC appointed Committee of Management of public land.  Development and establishment of Collaborative Governance.	Collaborative management (including sole management) of public land.  Collaborative Governance of Cultural Landscape.

<sup>7</sup> New arrangements include inclusion in the Public Land Act of a clear process to re-categorise public land that is in another public land category to Cultural Reserve.



## 7. Recommendations

### 7.1. Policy and Institutional change

At a Nation (policy and program) level, we seek to activate provisions in the Cultural Landscapes Strategy, the Game Management Strategy and The Taungurung Cultural Land Management Strategy for Taungurung to develop and apply a framework to heal and manage public land on Taungurung Country, in partnership with existing land managers. We seek to develop suitable provisions (including an enabling environment) and resourcing, to be able to apply the bridging tools of collaborative planning, collaborative governance and a both worlds approach to management to support this objective.

This will enable a long term (in perpetuity) and holistic, respectful integration of two world views, across whole of Country, through a cultural landscape lens.

We seek development of an authorising environment that will support equitable decision making and potential adjustments to existing processes, agency partner roles and/or institutional arrangements to enable positive action based on cultural direction and scientific evidence, in a *walking both worlds* approach.



## 7.2. Specific recommendations

### Specifically, we seek:

1. With reference to the Cultural Landscape Strategy (CLS) as public policy (launched by the Minister for Environment and Climate Change in August 2021); **we seek the Minister's authority to designate all the State Forests within the Central Highlands RFA (Regional Forest Agreement) Region that falls on Taungurung Country for activation under collaborative management**, according to the framework outlined in the Cultural Landscape Strategy (see CLS: p46). This will be activated upon the advice of Taungurung Land and Waters Council to DEECA (and to the Minister for the Environment in the interim while the Public Land legislation is being prepared) and will be provided by TLaWC when resourcing and Nation capacity exists for each state forest and for the collective of state forests within the landscape, respectively.

Specific arrangements for management, planning and governance for each reserve (e.g., whether DEECA management, joint management, direct management or sole management) will be negotiated with partners based on information revealed through Reading Country (including a Country Speaks Statement), together with scientific data and analysis. This will ensure that conditions are being created to meet the needs of Country at that time and place. We will also seek to ensure consistency with the strategic objectives and shared vision for the cultural landscape.

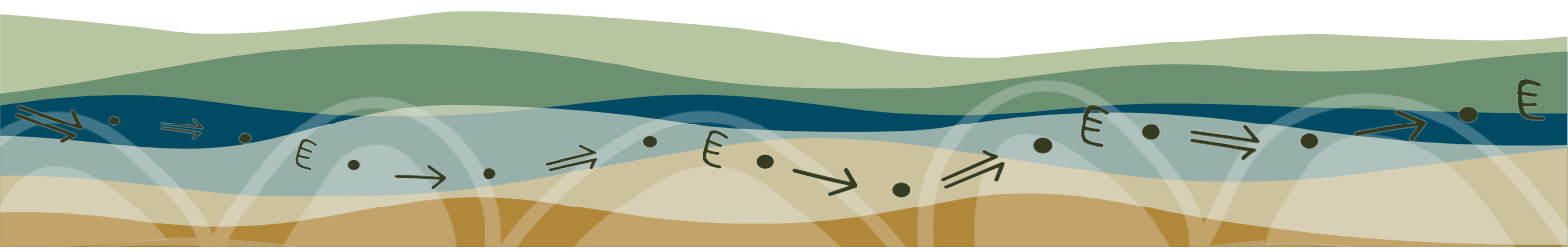
2. We refer to the framework outlined in the Cultural Landscapes Strategy (see CLS: p46) and the Eminent Panel phase 1 report (August 2022). Strathbogies State Forest has been identified by the Eminent Panel as a pilot for the development of new governance, planning and management arrangements for state forests within the Yawang (Stone Country) cultural landscape. **We seek authority to immediately extend these arrangements for Tallarook State Forest**, to be activated once sufficient resourcing and Nation capacity exist. **We also seek to extend the arrangements to Mount Wombat-Garden Range Nature Conservation Reserve**, which is a Reserve within the Yawang landscape that is under Aboriginal Title and currently managed by Parks Victoria. We seek enabling of Direct Management rights consistent with new arrangements for Joint Management of Parks and Reserves in the Public Land bill. To be activated once sufficient resourcing and Nation capacity exists<sup>8</sup>.
3. Nun nun tun (Greater Cathedrals Cultural Landscape) has been identified as central to Taungurung rights and interests. **We seek authority to activate Nun nun tun as a pilot for development, and to immediately extend new governance, planning and management arrangements for state forests within the Greater Cathedrals Cultural Landscape**, once sufficient resourcing and Nation capacity exists. **We also seek to extend the arrangements to Parks and Reserves within the landscape that currently managed by Parks Victoria**. We seek enabling of Direct Management rights consistent with new arrangements for Joint Management of Parks and Reserves in the Public Land bill. To be activated once sufficient resourcing and Nation capacity exists<sup>8</sup>.

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<sup>8</sup> New arrangements include inclusion in the Public Land Act of a clear process to re-categorise public land that is in another public land category to Cultural Reserve.



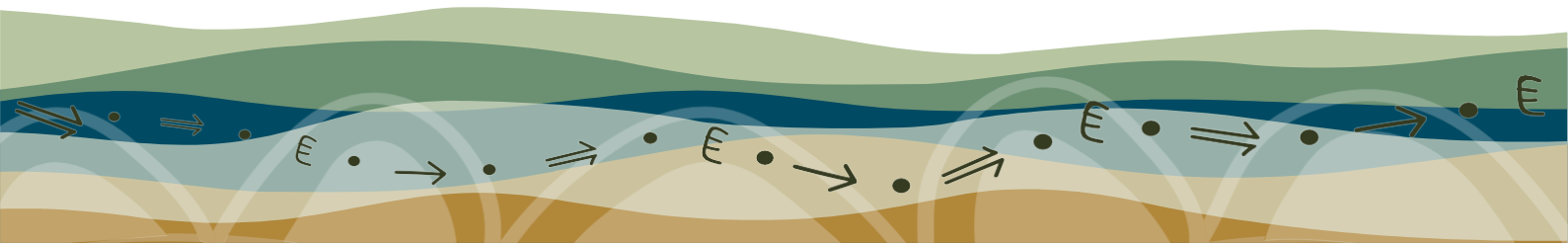
4. Debera Biik Cultural Landscape has also been identified as central to Taungurung rights and interests. **We seek authority to activate Debera Biik Cultural Landscape as a pilot for development, and to immediately extend new governance, planning and management arrangements for state forests within the Debera Biik Cultural Landscape,** once resourcing and Nation capacity exists. **We also seek to extend the arrangements to Parks and Reserves within the landscape that currently managed by Parks Victoria.** We seek enabling of Direct Management rights consistent with new arrangements for Joint Management of Parks and Reserves in the Public Land bill. To be activated once sufficient resourcing and Nation capacity exists<sup>8</sup>.







## Part B. Supporting information





## 8. Biophysical description of the assessment Landscape and Area of Interest (AOI)

### 8.1. Broad geographical context

The Central Highlands Regional Forestry Agreement area covers the high-rainfall mountain forests east of Melbourne that occur both north and south of the Great Dividing Range and is 1,131,505.3ha in size. The CHRFA that occurs on Taungurung Country is 465,634.7 ha and is bounded by coordinates 145°1'31.539"E / 36°57'53.044"S at the north west corner and 146°24'27.642"E / 37°41'38.247"S in the south east corner.

This area is considered the assessment 'landscape', and is the portion of the CHRFA area that falls within Taungurung Country. The area of State Forest falling within the assessment landscape is 198,662.8 ha, with the sum total of the nine State Forest assets being considered the 'Area of Interest' (AOI) for the assessment, with broad context given for the landscape, and more detailed analysis presented later in this document being confined to the AOI.

The landscape falls on the northern side of the Great Dividing Range and represents some 23% of the Taungurung RAP area (Taungurung Country). The 198662.8 ha assessment AOI amounts to almost 10% of Taungurung Country. Geographically the landscape is bounded by the Great Dividing Range in the south, the Goulburn Valley and Maroondah Highways in the north, Sunday Creek in the west and Lake Eildon and the headwaters of the Waring (Goulburn River) in the east.

### 8.2. Administration and current Land Tenure

The assessment landscape covers five Local Government Areas or LGA's (Figure 11), with the majority by area being the Murrindindi Shire (Table 4). The landscape falls across two Department of Energy, Environment and Climate Action (DEECA) Regions, with the Hume Region covering most of the Landscape, and a small area of Port Phillip found on the southern boundary (Figure 11, Table 4).

While the assessment AOI is entirely State Forest, a range of other Public Land Tenures exist across the assessment landscape, with the highest % pf public lands being the State Forest in the DEECA Murrindindi District. (Figure 12 and Table 5).

**Table 4. Area breakdown of administration units relevant to this assessment.**

Location Government Area (LGA)	Area (ha)
Murrindindi Shire	326875.6
Mitchell Shire	57542.1
Mansfield Shire	53263.7
Yarra Ranges Shire	27500.4
Lake Mountain Alpine Resort (ARC)	338.4
DEECA Region	
Hume	438091.7
Port Phillip	27527.85

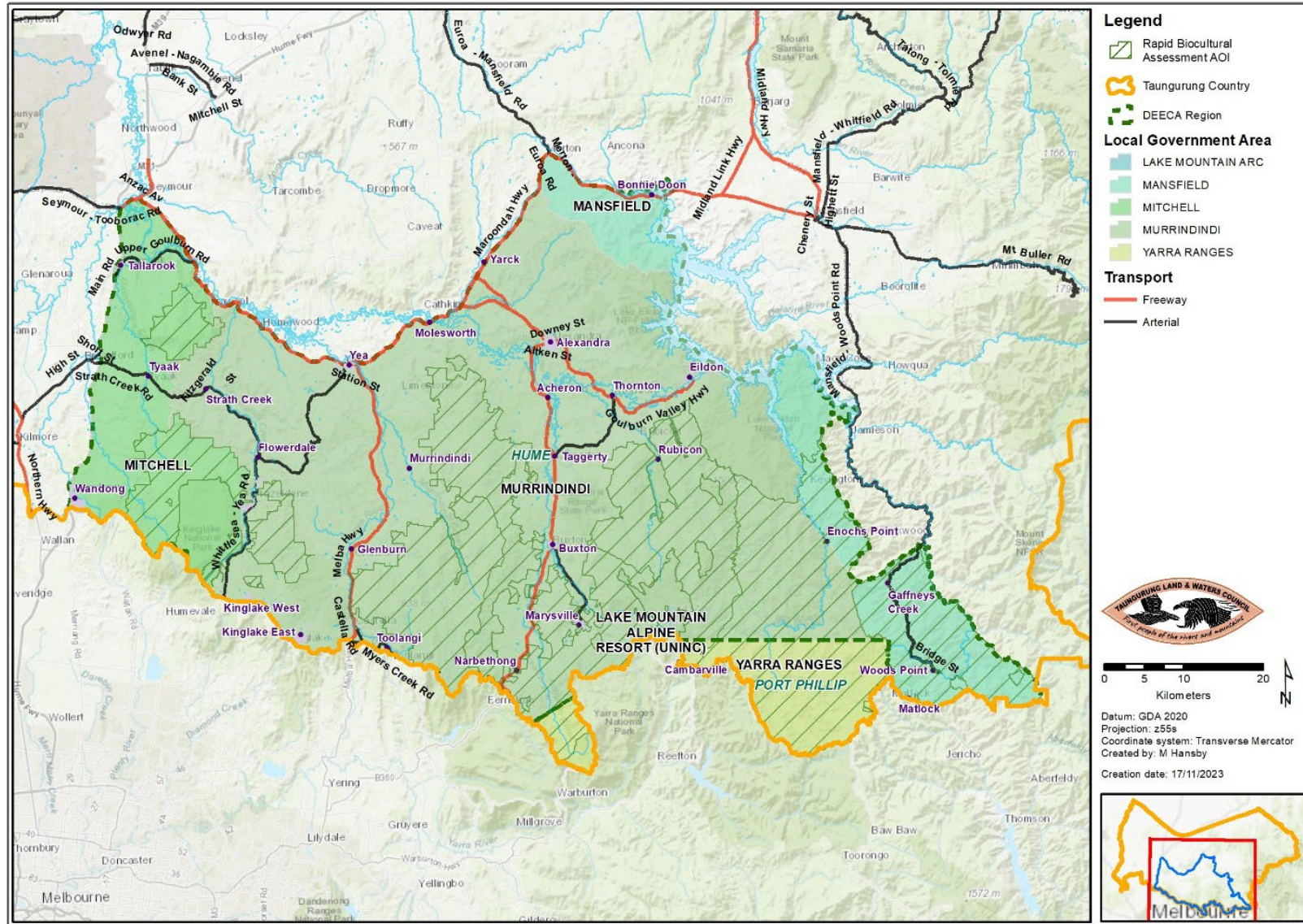


Figure 11. Administration boundaries relevant to both the assessment Landscape and the AOI.

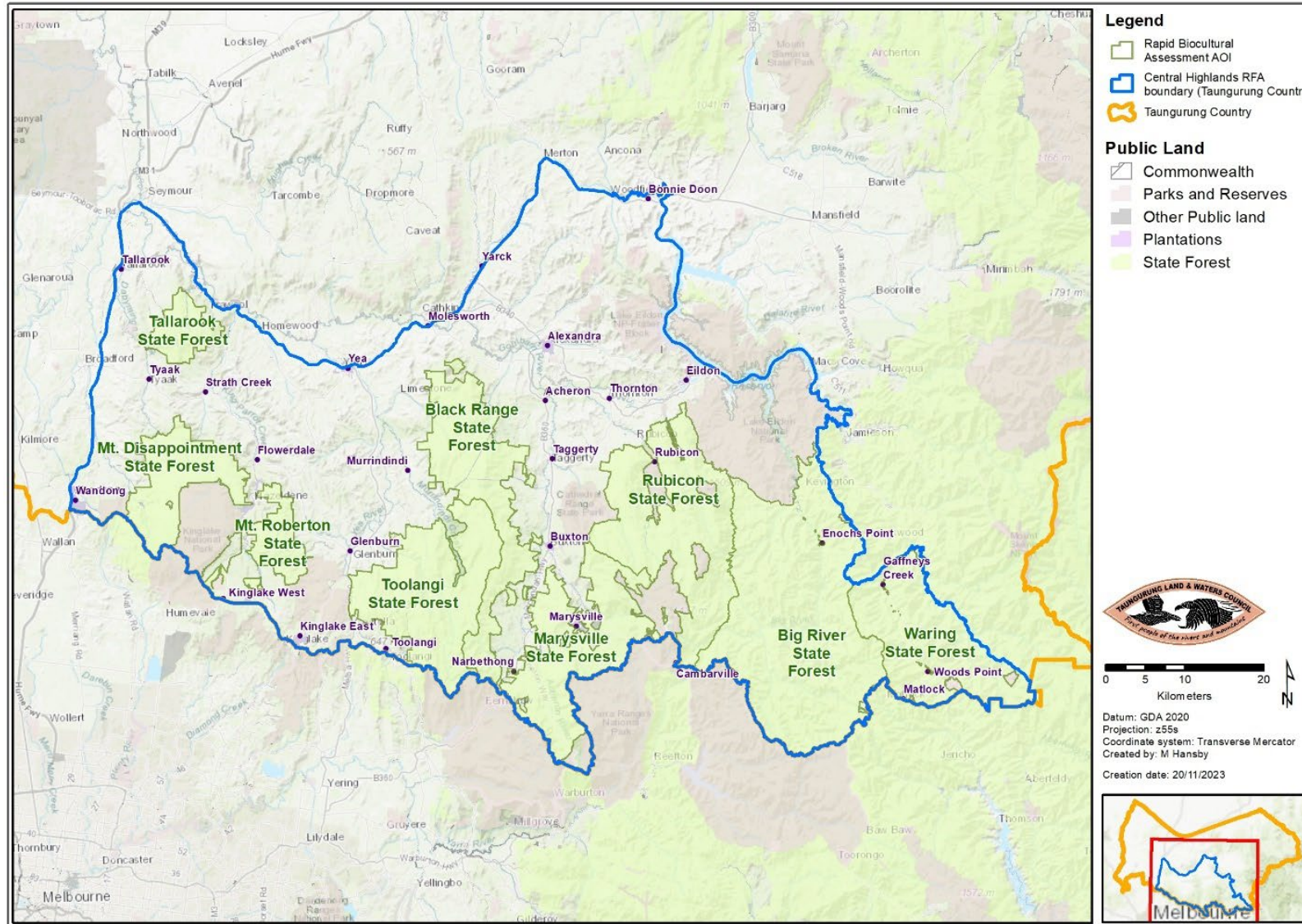


Figure 12. Public Land Tenure across the assessment landscape area.

Table 5. Public Lands by area across the assessment landscape

Management (general) Label	Area (ha)
No Label	10.8
Parks and Reserves	51986.7
Other Public Lands	12261.3
Plantations	5323.4
State Forest	198514.7
<b>Grand Total</b>	<b>268096.9</b>

### 8.3. Bioregional context

The concept of a 'bioregion' is well established in literature and represents large-scale planning units, classifying the environment by a range of attributes, such as climate, geomorphology, soils, geology and vegetation.

The assessment landscape is diverse, occurring across four distinct Victorian (and corresponding IBRA) Bioregions, notably the occurrence of Highlands – Northern Fall, Victorian Alps and Central Victorian Uplands in close proximity (Table 6 and Figure 13). The assessment AOI occurs almost entirely within the Highlands – Northern Fall and Victorian Alps Bioregions, with the Rubicon State Forest showing high levels of diversity due to its broad elevational range and the occurrence of three diverse bioregions in very close proximity.

Table 6. Assessment landscape Bioregional context.

Victorian Bioregion	IBRA (National)	Area (ha)
Central Victorian Uplands	Victorian Midlands	153333.0
Highlands - Northern Fall	South-eastern Highlands	264449.9
Highlands - Southern Fall	South-eastern Highlands	1193.9
Victorian Alps	Australian Alps	44834.6
Victorian Riverina	Riverina	1823.3
<b>Grand Total</b>		<b>465634.7</b>

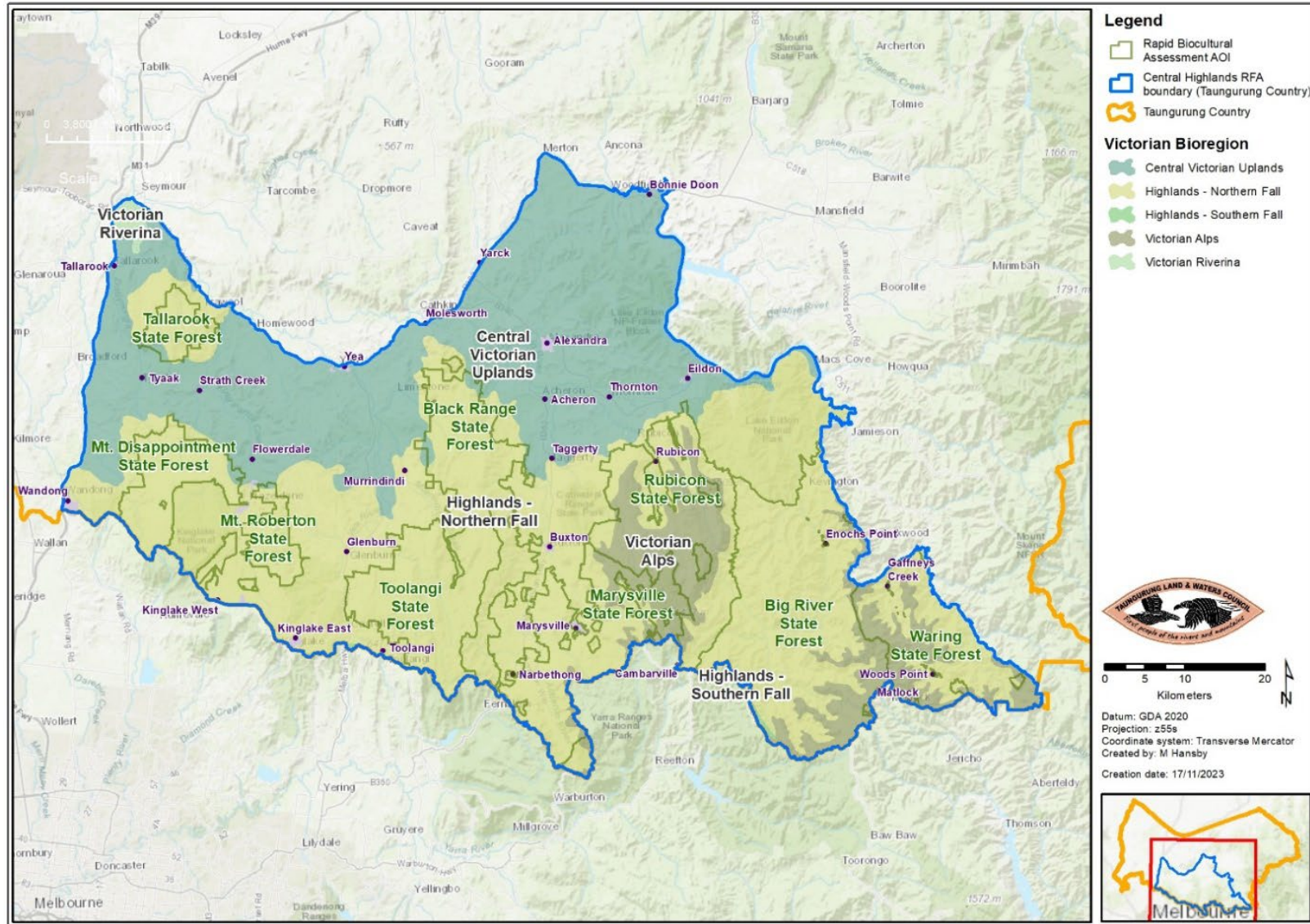
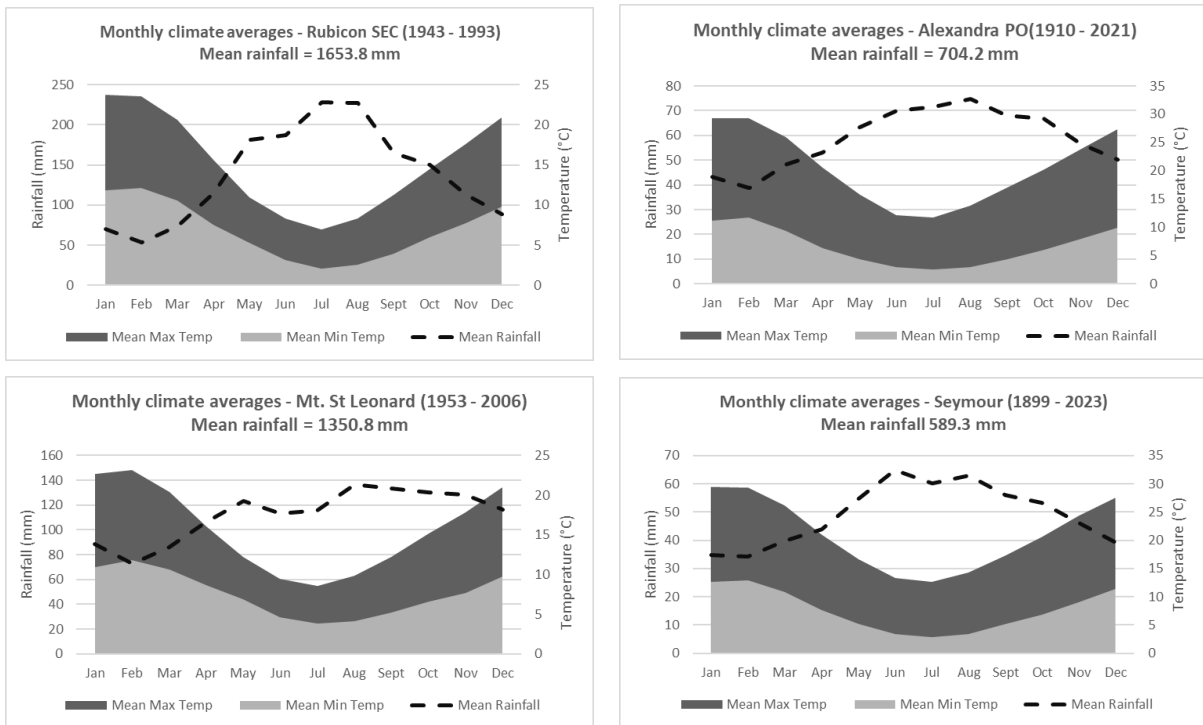


Figure 13. Victorian Bioregions in relation to the assessment landscape and AOI.

### 8.4. Climate and Hydrology

The climate of the landscape shows the average monthly temperature seasonality and winter dominated rainfall patterns consistent with a cool temperate climate (Figure 14). Precipitation is generally driven by elevation or by proximity to the main ridge of the Great Divide. This can be seen in Figure 14, with the Mt. St. Leonard (Toolangi) and Rubicon SEC AWS (595m and 838m elevation respectively) showing the high mean annual rainfall patterns typical of montane environments in Victoria. Rainfall declines as one moves north into the dry forest country common near the Alexandra Post Office (221m) and to the woodlands in the far north-west of the landscape near Seymour (145m). This phenomenon can also be seen graphically in Figure 15, where rainfall is unevenly distributed across the assessment landscape, and follows an elevational gradient with rainfall broadly decreasing from the south east to the north west of the landscape, with a maximum (1649mm) at Lake Mountain at the highest point of the great divide within the landscape and a minimum of 598 at the junction of the Waring and Sunday Creek.



**Figure 14. Climate diagrams for four automatic weather stations (AWS) from across the assessment landscape and relevant to the AOI (data source BOM). Average monthly min and max temperatures are shaded areas (right axis) and average monthly rainfall totals indicated by the dashed line (left axis).**

The Waring (Goulburn River) is the dominant hydrological feature of the assessment landscape, and is a key entity within the Cultural Landscapes described above. All major rivers and tributaries draining northward, contribute substantial flows into the mid to upper Waring catchment, above and below Lake Eildon.

The state forests that form the AOI are key recharge areas for the Waring system and associated Cultural Landscape. These forests provide a range of key supporting, regulating, provisioning and cultural ecosystem services that will be enhanced by re-establishing biocultural relationships. Major waterways are the upper Waring, Big River, Snobs Creek, Rubicon River, Little River, Acheron River, Home Creek, Murrindindi River, Yea River, The King Parrot Creek, Dabyminga Creek and Sunday Creek (Figure 15).

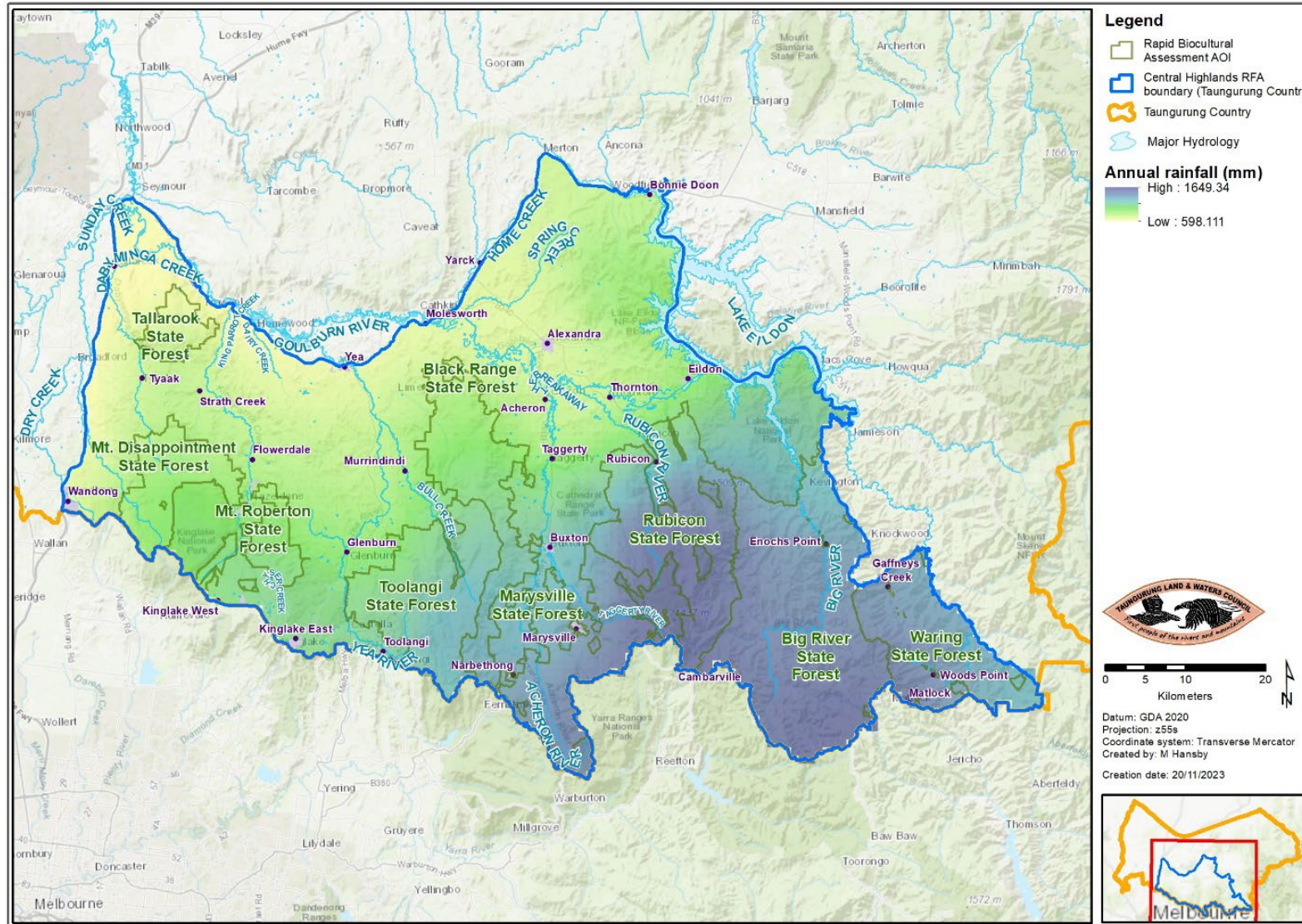


Figure 15. Rainfall distribution and major hydrology for the assessment landscape. Purple and blue colours indicate higher rainfall, green indicates moderate and yellow colours indicate lower rainfall.



## 8.5. Occupation and disturbance

Historically, the entire study area, with the exception of small areas of sub-alpine vegetation on the southern boundary and woodlands of the far north-west of the landscape was forested (White, 1990). This situation soon changed upon colonial occupation and exploitation.

The upper Waring (Goulburn River) Valley was first occupied at Devils (Delatite) River in 1838, and by the 1840's, most of the Waring Valley had been divided into pastoral leases (White, 1990; Evans, 2019). Initial squatter occupation and subsequent exploitation of Taungurung Country was focused on the lower elevation woodlands and dry forests of the Waring Valley, with ring-barking being the chief means by which large areas of forest were cleared to promote conditions suitable for pastoralism.

From the mid 1850's, payable alluvial gold at the Ultima-Thule (UT) Creek near present day Alexandra, Enochs Point and Darlingford on the Big River (Mul Mul Lang) and at Woods Point and Matlock on the headwaters of the Waring facilitated the establishment of permanent dwellings at these and other locations across the landscape (White, 1990; Evans, 2019; Pilkington, 2020). Where the squatters and diggers went, deforestation and land degradation soon followed.

By 1864, the 'Yarra Track' connecting Healesville to the Woods Point goldfields had been established along a Kulin travel route following the main ridgeline of the Great Divide, eventually providing access into the tall, montane forests on the southern boundary (Evans, 2022). By 1867, sawmilling for local markets had commenced on the eastern fall of the Black Range at Crystal Creek (Evans, 2019), and the 1870's to 1890's saw heavy exploitation of the dry forest communities within the assessment landscape as villages grew to townships and surrounding forests were cleared for agriculture and pasture or mined for timber. The early 1900's saw the opening of the Rubicon Forest for sawmilling and increased exploitation of the timber resources in the upland and mountainous areas to the south of the AOI of this assessment.

The occupation and settlement of the upper Waring valley followed a pattern of resource 'frontier' exploitation, with pastoralism, gold mining and timber harvesting being the three key agents of landscape change. This exploitation represents an almost 40% loss of forest cover across the assessment landscape, with remnant forest outside of the public land estate being fragmented and degraded (Figure 16).

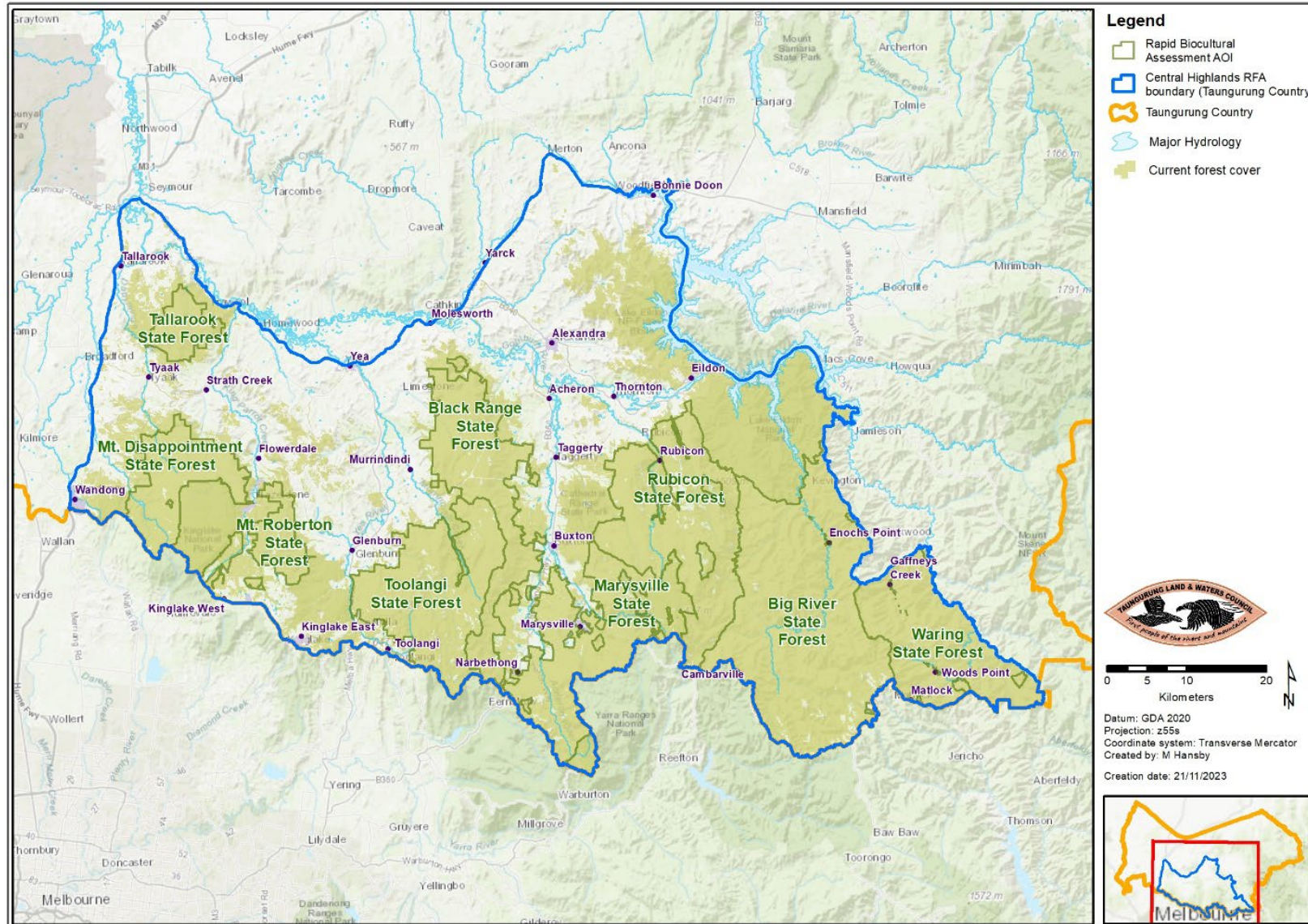


Figure 16. Native forest extant across the assessment landscape and AOI.

## 8.6. Bushfire

The combination of highly productive mountain forests and summer weather conditions where ‘blow-up days’ (when high temperatures and low relative humidities coincide with high wind speeds) are a yearly occurrence, renders the assessment landscape a fire prone environment. Indeed, some of the most destructive bushfire events in our recorded history have occurred across the assessment landscape, notably those in 1851, 1926, 1939 and 2009 (Figure 17).

Accurate recording keeping of the spatial extent of bushfire events is a relatively recent phenomenon, with those occurring prior to the 1970’s being rather inaccurate, and the more sophisticated fire severity mapping from satellite imagery (i.e., mapping of the spatial variation of the effect of fire on vegetation) becoming commonplace from 2002-2003, as with use of GPS. Acknowledging prior to the 1939 fire event, publicly available fire history dataset is almost non-existent and where present, unreliable, Table 7 compares the decadal rate of area burnt by bushfire (i.e., unplanned fire events) across both the assessment landscape and the State Forests that comprise the AOI. Figure 18 focuses on the AOI, and compares the decadal area burnt by bushfire compared to that burnt by prescribed burning.

The breakdown of biocultural relationships and complete removal of Taungurung Cultural land management practice has left the landscape in a condition that enables the propagation of landscape scale bushfire events, as evidenced by the very large areas burnt in both 1939 and 2009 (90% and 67% of the AOI respectively), a condition replicated across many other forested public land areas with SE Australia (Laming *et al.*, 2022).

Table 7. Decadal rate of areas burned by bushfire across the assessment landscape and AOI.

Decade	Total decadal area (ha) burnt by bushfire (1939 - 2019) across the whole assessment landscape	% of landscape burnt	Total decadal area (ha) burnt by bushfire (1939 - 2019) across the assessment AOI	% of AOI burnt
<b>1930 - 1939</b>	<b>292858</b>	<b>62.9</b>	<b>179487.8</b>	<b>90.3</b>
1940 - 1949	2017	0.4	1760.5	0.9
1950 - 1959	2692	0.6	1292.0	0.7
1960 - 1969	8015	1.7	7011.6	3.5
1970 - 1979	18	0.0	0.0	0.0
1980 - 1989	26822	5.8	14617.6	7.4
1990 - 1999	2517	0.5	2504.7	1.3
<b>2000 - 2009</b>	<b>219964</b>	<b>47.2</b>	<b>133305.7</b>	<b>67.1</b>
2010 - 2019	1637	0.4	1433.0	0.7
<b>Grand Total</b>	<b>556539</b>		<b>422034</b>	

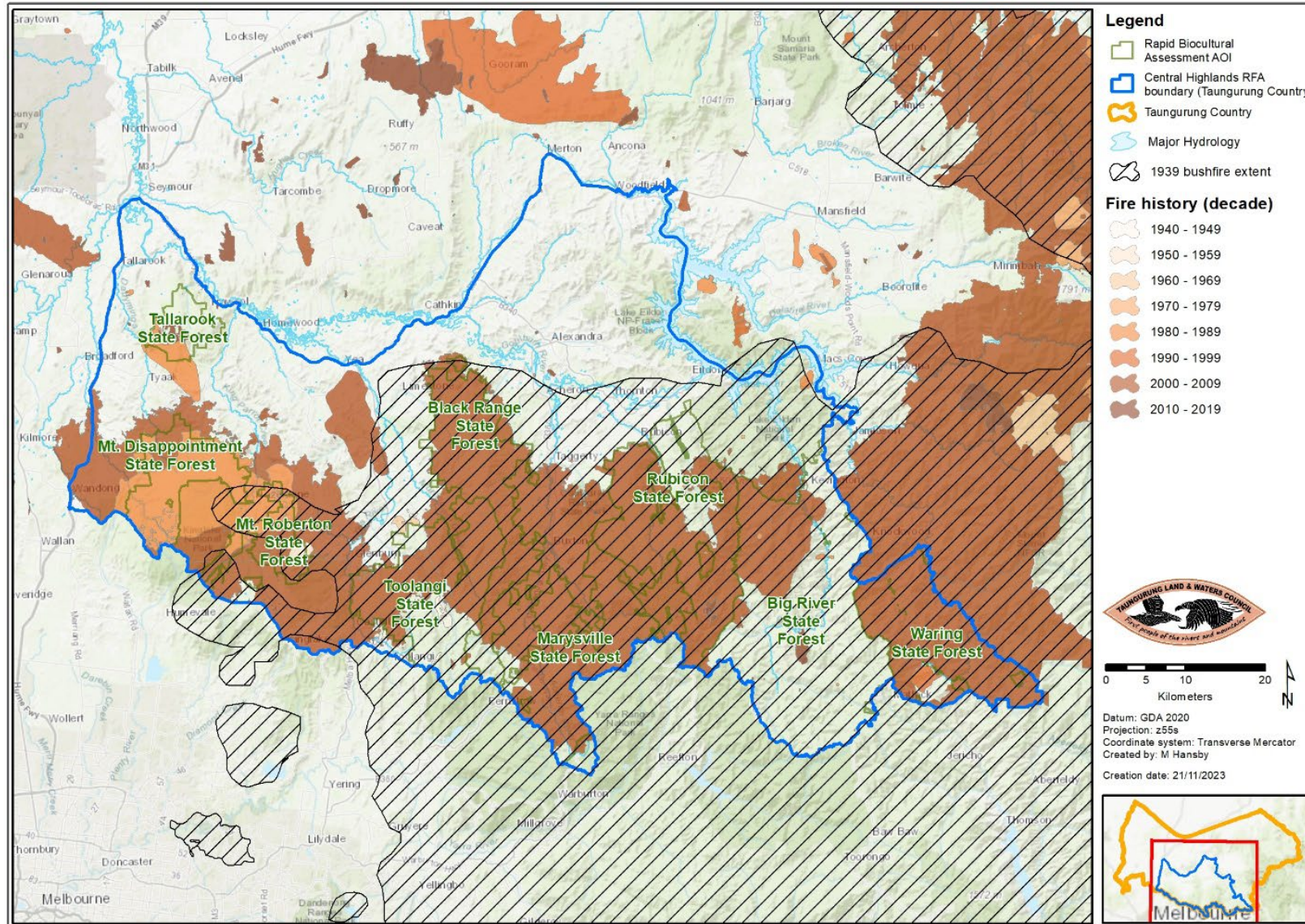


Figure 17. Area burnt by bushfire across the assessment landscape and AOI.

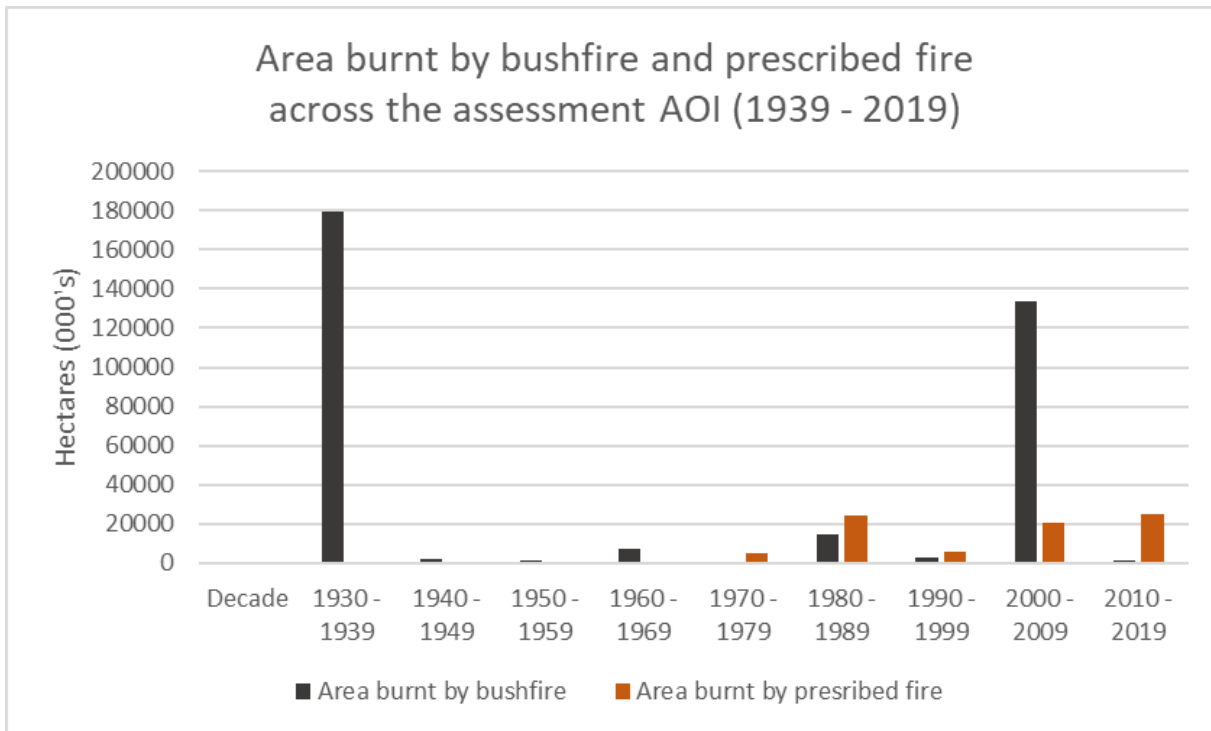


Figure 18. Decadal rate of area burned by both bushfire and prescribed fire across the Central Highland AOI.

### 8.7. Native Forest Timber Harvesting

From as early as the mid-1860's native forest timber harvesting has been an ever-present source of both industry and disturbance across the assessment landscape and AOI.

Timber resource exploitation across the AOI can be summaries and grouped into three main phases;

1. The initial settler exploitation phase, where harvesting was largely un-regulated, the use was mainly local and regeneration practices were absent. This initial phase focussed on the lower elevation, drier forests, with mountain forest exploitation commencing after about 1910., lasting until the 1939 fire. Many mills were located throughout the forest, connected by a series of narrow-gauge tramways.
2. Post 1939 mechanisation and salvage. The impact of the 1939 fire cannot be overstated and saw the demise of the 'bush mill' era. The post WW2 saw introduction of ground-based 'tracked' machinery and the introduction of the chainsaw. These events facilitated the increase in timber resource exploitation of the mountain forests. Matlock forests utilised for 'pulpwood' from 1938, with the first 50 year 'legislated supply agreement' (LSA) in place for Australian Paper Mills (APM) in Maryvale from 1936 (Taylor, 2018).
3. Contemporary mechanised, intensive harvesting systems. From the 1960's, the use of mechanised harvesting to extract timber became commonplace, as did the 'integration' of both 'sawlog' and 'residual log (pulpwood)' operations. The 1960's saw increased research into silvicultural systems and the greater understanding of regeneration requirements in Victorian tall-wet forests, and the late 1990's saw the even-aged cohort of 1939 fire origin become available for harvest, with this

age class forming the foundation of the current industry. Table 8 indicates silvicultural systems commonly used across the assessment AOI.

Analysis of the Victorian logging history dataset (LogSeason) was performed to understand the annual rate of harvesting by intensive silvicultural systems (as defined in Table 8), with annual harvested area generally being below 800ha / year, but sharply rising after the 2009 fire event, where over 1600ha of fire-killed ash-type forest was 'salvaged'. While annual harvest rates have generally being < 0.5% of the assessment AOI, this is an under-representation of the impact, as the vast majority of timber harvesting exploitation has occurred within the tall wet forest communities within. the assessment AOI.

This fact has left much of the AOI subject to timber harvesting below the reproductive age of approximately 20 yrs. Logging history data was assigned a 'growth stage' consistent with those defined by Ashton (1975), with an area analysis shown in Figure 20. Not considering the effects of the 2009 bushfire vent, this analysis indicates that approximately 15,000ha of harvested native forest is currently below sexual maturity, thus at risk from forest 'type change' resulting from further landscape-scale bushfire events.

It is acknowledged that this analysis is simplistic and does not factor the effect of the condition of the forest outside harvested areas (protection zones, harvesting exclusion areas etc etc) nor does it consider the effect of the 2009 fire event both in extent or severity. Analysis such as this should be considered a future priority to better understand the health of Banit Ngarrap (forest county).

**Table 8. Silvicultural systems common across the CHRFA (adapted from VicForests (2019))**

Broad type	Silvicultural System	Description	Impact type
Non - selective (intensive) systems	CFE	Clear-fell harvesting	Non-selective, high impact
	CFS	Clear-fell harvesting (bushfire salvage)	Non-selective, high impact
	STR	Clear-fell with retained seed trees	Non-selective, high impact
	RRH	Regrowth retention harvesting	Non-selective, high impact
	VR 1	Variable retention 1	Non-selective, high impact
	VR 2	Variable retention 2	Non-selective, high impact
	GSE	Australian group selection	Non-selective, moderate impact
Selective systems	THA	Thinning from 'above'	Selective, moderate impact
	THB	Thinning from 'below'	Selective, moderate impact
	STS	Single tree selection	Selective, low impact
	REF	Reforestation	Reforestation
	XXX	Unknown silvicultural system	Unknown

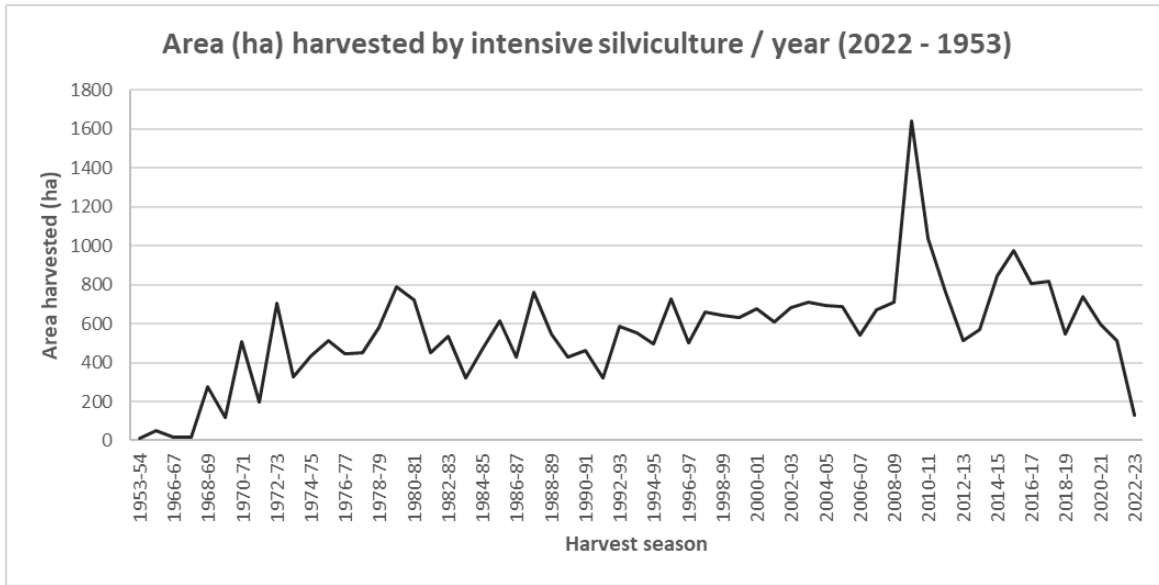


Figure 19. Annual area harvest by intensive silvicultural systems across the AOI.

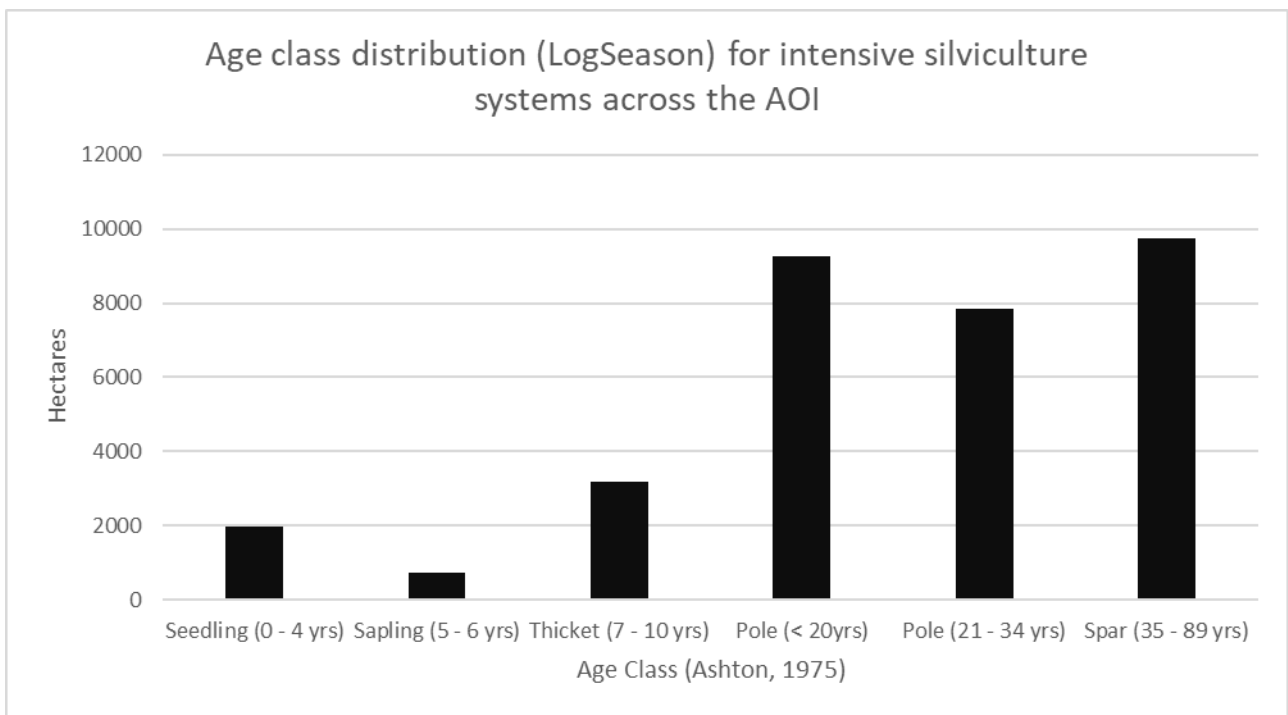


Figure 20. Age class distribution of areas harvested by intensive silvicultural systems.

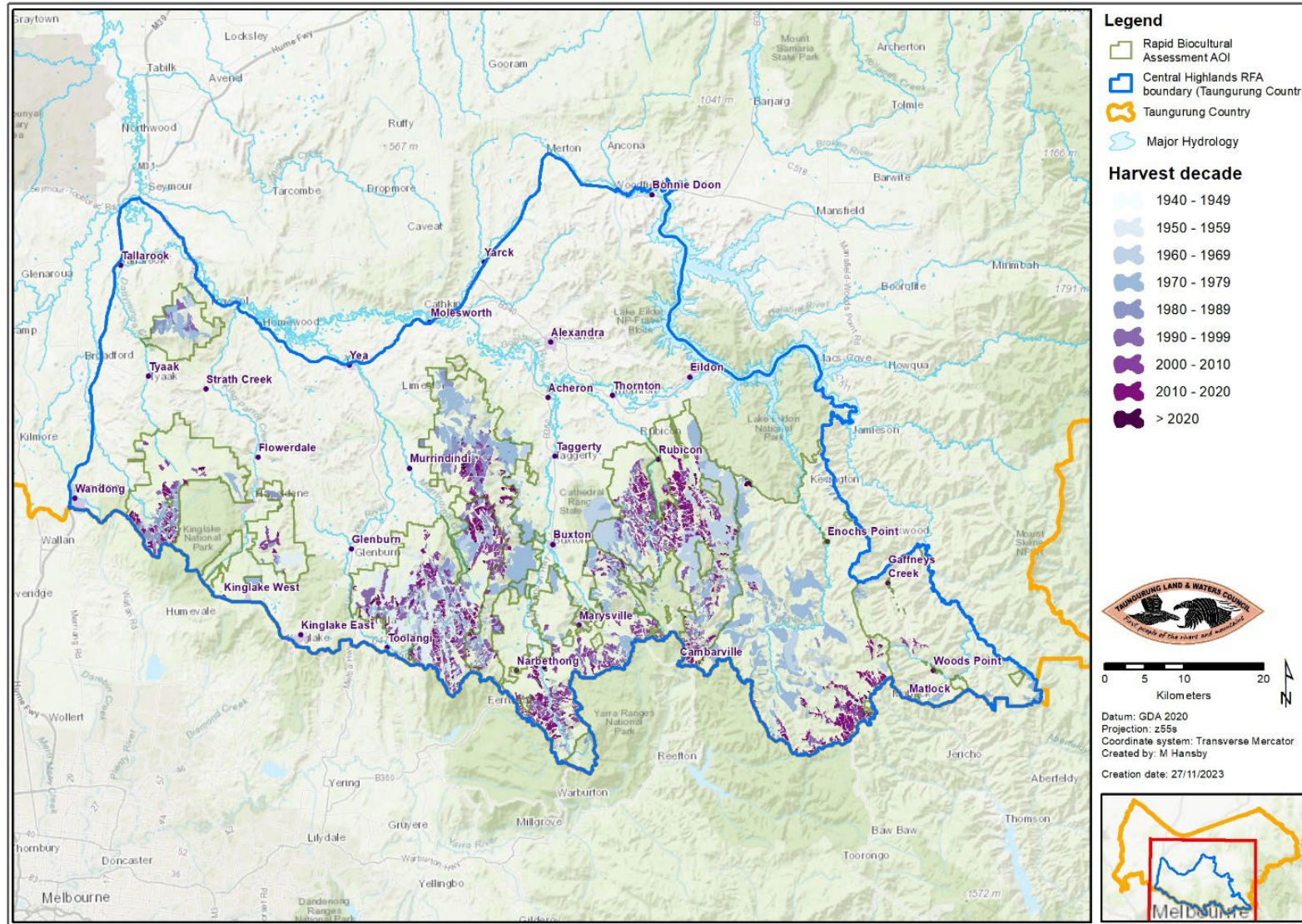


Figure 21. Spatial extent by decade of all native forest timber harvesting across the AOI.



## 8.8. Vegetation structure.

While retaining their essential character (i.e. native species are still present), the vegetation communities extant across the assessment landscape today are vastly different to that which existed prior to colonisation (White, 1990), with timber harvesting, fire events, introduction of weeds and exotic animals all factors serving to alter the structure and broad composition of surviving vegetation communities.

The chapter on Vegetation found in White (1990) provides an excellent overview of structural vegetation formations found across the assessment landscape. This classification is based on Specht (1970), using both height and cover of the tallest stratum to characterise dominant vegetation associations. The spatial dataset 'structural vegetation' (SVeg100) was interpreted to the scheme employed by White (1990) as shown in Table 9. The major vegetation structural formations are presented in Table 10 and Figure 22.

**Table 9. Structural classification scheme adapted for this assessment. Adapted from Specht (1970)**

Life form and height of tallest stratum	Canopy Cover (%)		
	Dense (70-100%)	Mid-dense (30-70%)	Sparse (10-30%)
Trees > 40 m		Open forest IV	
Trees 28-40 m		Open forest III	
Trees 15-28 m	Closed forest II	Open forest II	Woodland II
Trees 5-15 m	Closed forest I	Open forest I	Woodland I
Shrubs 0-2 m	Closed-heathland	Open-heathland	
Herbs (including moss, ferns and lichens)		Grassland	

**Table 10. Brief descriptions of structural vegetation classes extant across the assessment landscape.**

Formation	Climate	Character canopy species
Closed forest	>600m elevation >1100mm rainfall	<i>Nothofagus cunninghamii</i> <i>Atherosperma moschatum</i>
Open forest IV	>600m elevation >1100mm rainfall	<i>Eucalyptus delegatensis</i> (above 950m) <i>Eucalyptus regnans</i> (below 950m)
Open forest III	<900m elevation >1100mm rainfall	<i>Eucalyptus obliqua</i> <i>Eucalyptus radiata</i> <i>Eucalyptus cypellocarpa</i> <i>Eucalyptus viminalis</i>
Open forest II	<600m elevation 700 – 1000mm rainfall	<i>Eucalyptus dives</i> <i>Eucalyptus macrorhyncha</i> <i>Eucalyptus gonicalyx</i>
Open forest I	<600m elevation 700 – 1000mm rainfall	<i>Eucalyptus dives</i> <i>Eucalyptus macrorhyncha</i> <i>Eucalyptus polyanthemos</i> <i>Eucalyptus albens</i>
Woodland II	<300m elevation <650mm rainfall	<i>Eucalyptus macrorhyncha</i> <i>Eucalyptus polyanthemos</i> <i>Eucalyptus albens</i> <i>Eucalyptus microcarpa</i> <i>Eucalyptus melliodora</i>
Woodland I (subalpine)	>1500m elevation >1100mm rainfall	<i>Eucalyptus pauciflora</i>

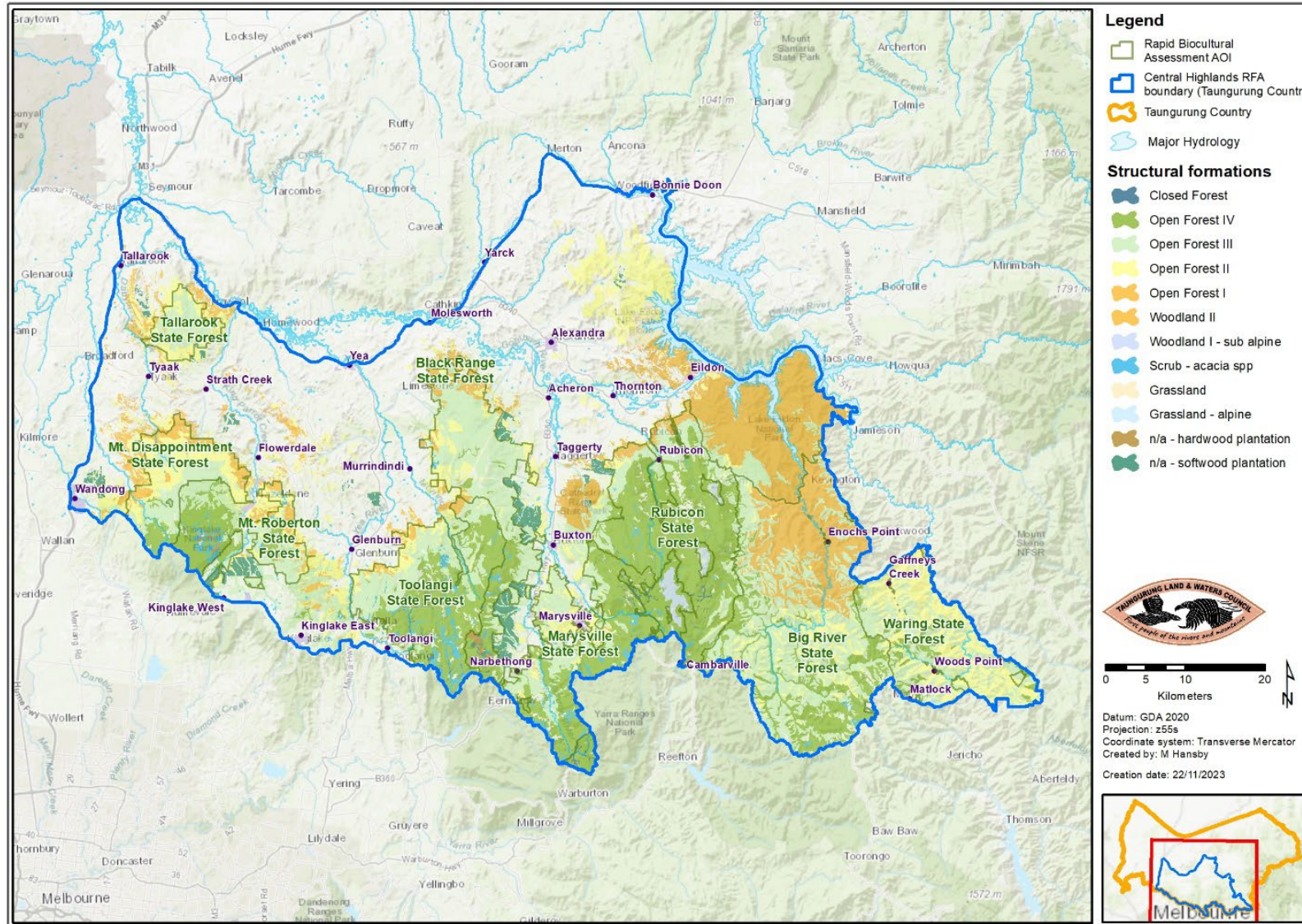


Figure 22. Structural vegetation formations extant across the assessment landscape.

## 9. Value analysis

### 9.1. Biocultural values

#### 9.1.1. Primary data

Primary biocultural data was collected over two weekends in July and October, 2023. The aim of these on country discussions was to utilise Taungurung designed 'Reading Country' methods to reveal the biocultural relationality of the assessment AOI and broader landscape. 14 sites were visited with 20- 25 Taungurung knowledge holders and Elders. Locations (Figure 23) were selected to best represent a range of forest types, conditions and histories so that culturally informed discussion could held and biocultural expressions developed. The Country Speak statement, biocultural expressions and development of cultural landscapes are the direct result of this community lead process.

A plant list indicating the wide range of ancestral, historic and contemporary usage of flora resources was created by cross checking vegetation class (EVC) character species lists with the Taungurung Plant Dictionary (Appendix 1).

#### 9.1.2. Forest assessments

Taungurung lead forest assessments were conducted across the original Central Highlands 'Immediate Protection Areas'. The assessments undertaken in order to both develop and test an observational forest assessment tool, based on the High Conservation Value Resource Networks (HCVRN) 'Forest Integrity Assessment' (HCVRN, 2016). This method shifts the focus from *knowledge-based* approaches (i.e., botanical or detailed field measurements) to the guided *observation* of key structural elements within the forest community. Recent publications, such as (Suggit *et al.*, 2021) indicate that this method is a valid and robust means by which forest conditions can be ascertained, and advocate for this method being adopted by a wide range of forest conservation schemes, sustainability standards, community forestry enterprise and restoration initiatives (Suggit *et al.*, 2021)

The obvious power of such a method lies in its accessibility to non-technical (in terms of science) parties (such as Traditional Owner communities), where potential assessors can become proficient with the method with minimal training, collect meaningful observational data and thus become empowered to make informed, self-determined management decisions on their Country. This tool is still in development, but assessment locations are shown on Figure 23.

#### 9.1.3. ACHRIS data

The Aboriginal Cultural Heritage Register and Information System (ACHRIS) is the repository for a range of cultural heritage information in Victoria. Such information includes; Aboriginal cultural heritage place registrations, Aboriginal Intangible heritage registrations and agreements, approved Cultural Heritage Management Plans, Cultural Heritage Permits, certified preliminary Aboriginal heritage tests and archaeological reports.

Much of the data contained within the ACHRIS database records areas where Cultural Heritage legislation (Aboriginal Heritage Act 2006) has required Cultural Heritage Permits or the development of Cultural Heritage Management Plans. This is to say that ACHRIS generally tracks information gained from disturbance and developments, rather than being the record of systematic archaeological survey of biocultural values assessment. This being the case, the ACHRIS record present across the assessment landscape is heat-mapped and shown on Figure 24

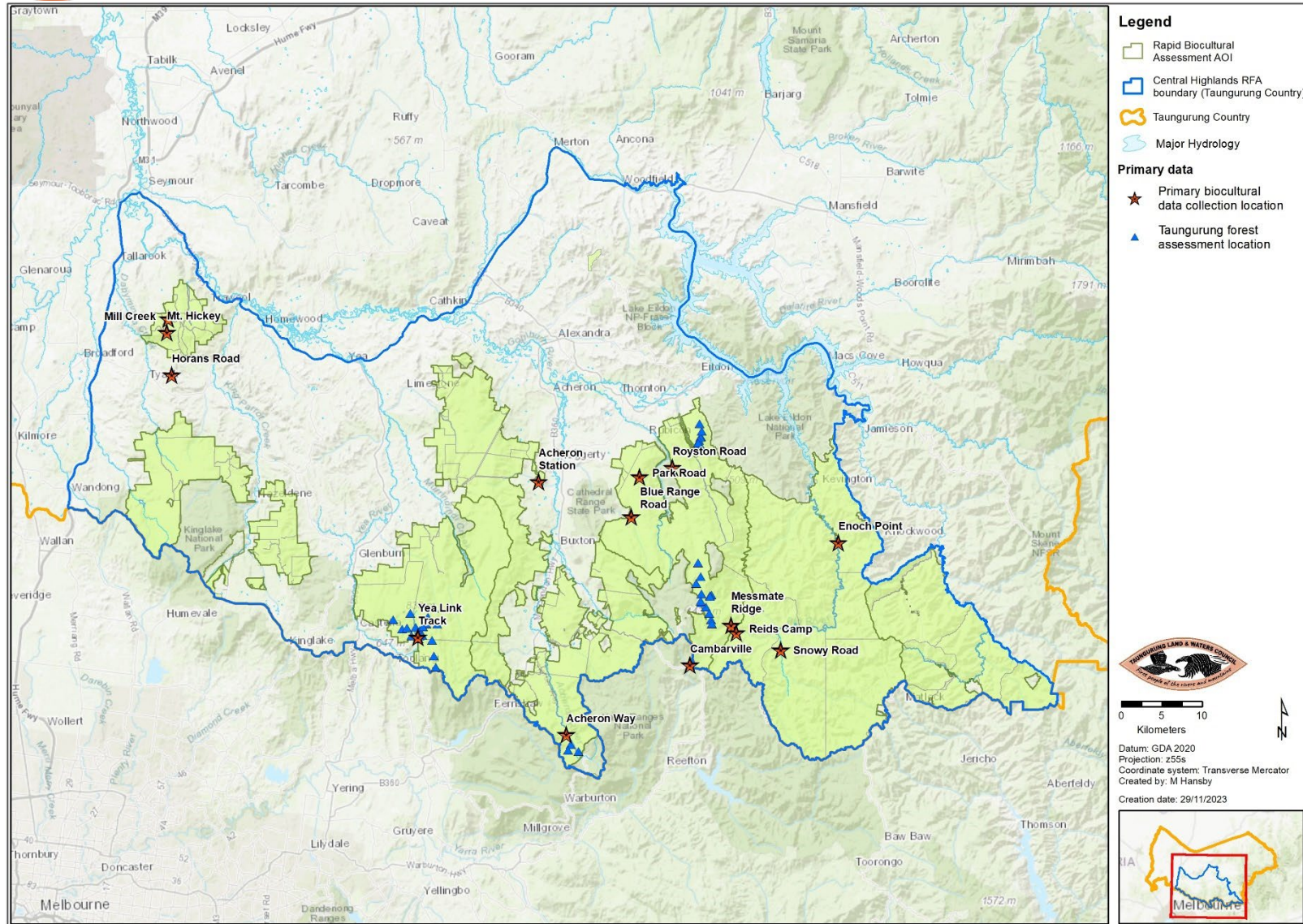


Figure 23. Primary data collection locations for this assessment.

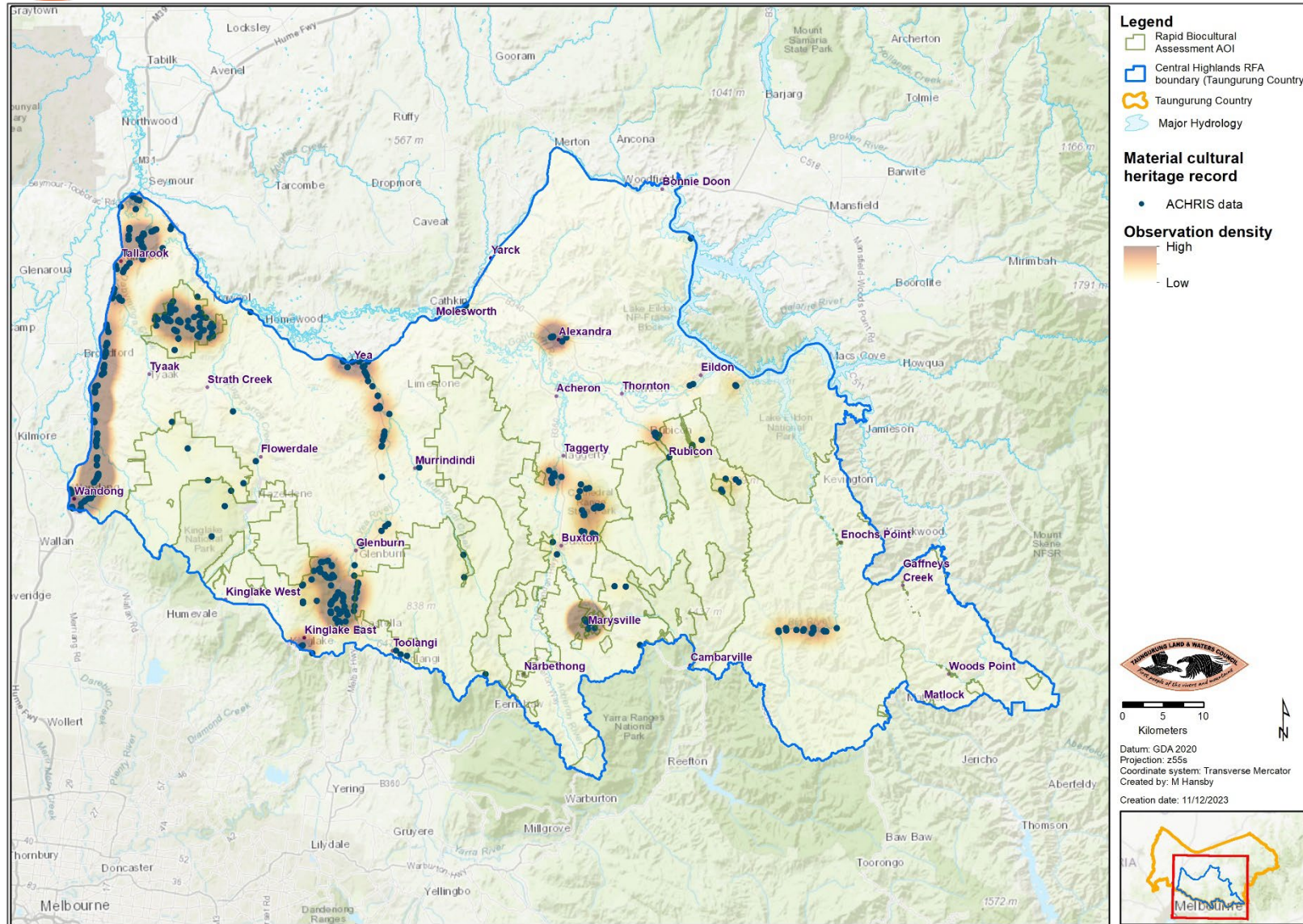


Figure 24. Material cultural heritage records from the ACHRIS database for the assessment landscape.

## 9.2. Biophysical values

### 9.2.1. Rare, threatened or endangered species (RTE's)

Species observations were extracted from the Victorian Biodiversity Atlas (VBA), using the assessment AOI as the extraction mask. All species with a conservation status greater (i.e., of greater conservation significance) than 'Vulnerable' are presented in Table 11. The conservation status under both the Victorian Flora and Fauna Guarantee Act and the Federal Environmental Protection and Biodiversity Conservation Act are considered.

An observation density heat map was created from the VBA point data (Figure 25). This shows the density of species observations across the AOI. Much like the ACHRIS data presented above, the dataset as a whole represents survey effort and not systematic sampling across the AOI, and are largely concentrated in close proximity to timber harvesting operations. Conservation status of all taxa extracted from the VBA for the AOI is provided in Appendix 2.

**Table 11. Critically Endangered Flora and Fauna species from VBA data across the assessment AOI.**

Taxa	Binomial	Common name	EPBC Status	FFG Status
Mammals	<i>Gymnobelideus leadbeateri</i>	Leadbeater's Possum	Critically Endangered	Critically Endangered
	<i>Miniopterus orianae oceanensis</i>	Eastern Bent-winged Bat		Critically Endangered
Birds	<i>Anthochaera phrygia</i>	Regent Honeyeater	Critically Endangered	Critically Endangered
	<i>Falco subniger</i>	Black Falcon		Critically Endangered
	<i>Ninox connivens</i>	Barking Owl		Critically Endangered
	<i>Tyto novaehollandiae</i>	Masked Owl		Critically Endangered
Reptiles and Amphibians	<i>Litoria verreauxii alpina</i>	Alpine Tree Frog	Vulnerable	Critically Endangered
Fish	<i>Galaxias fuscus</i>	Barred Galaxias	Endangered	Critically Endangered
Flora	<i>Pomaderris vacciniifolia</i>	Round-leaf Pomaderris	Critically Endangered	Critically Endangered
	<i>Eucalyptus yarraensis</i>	Yarra Gum	Critically Endangered	
	<i>Grevillea monslacana</i>	Lake Mountain Grevillea	Critically Endangered	

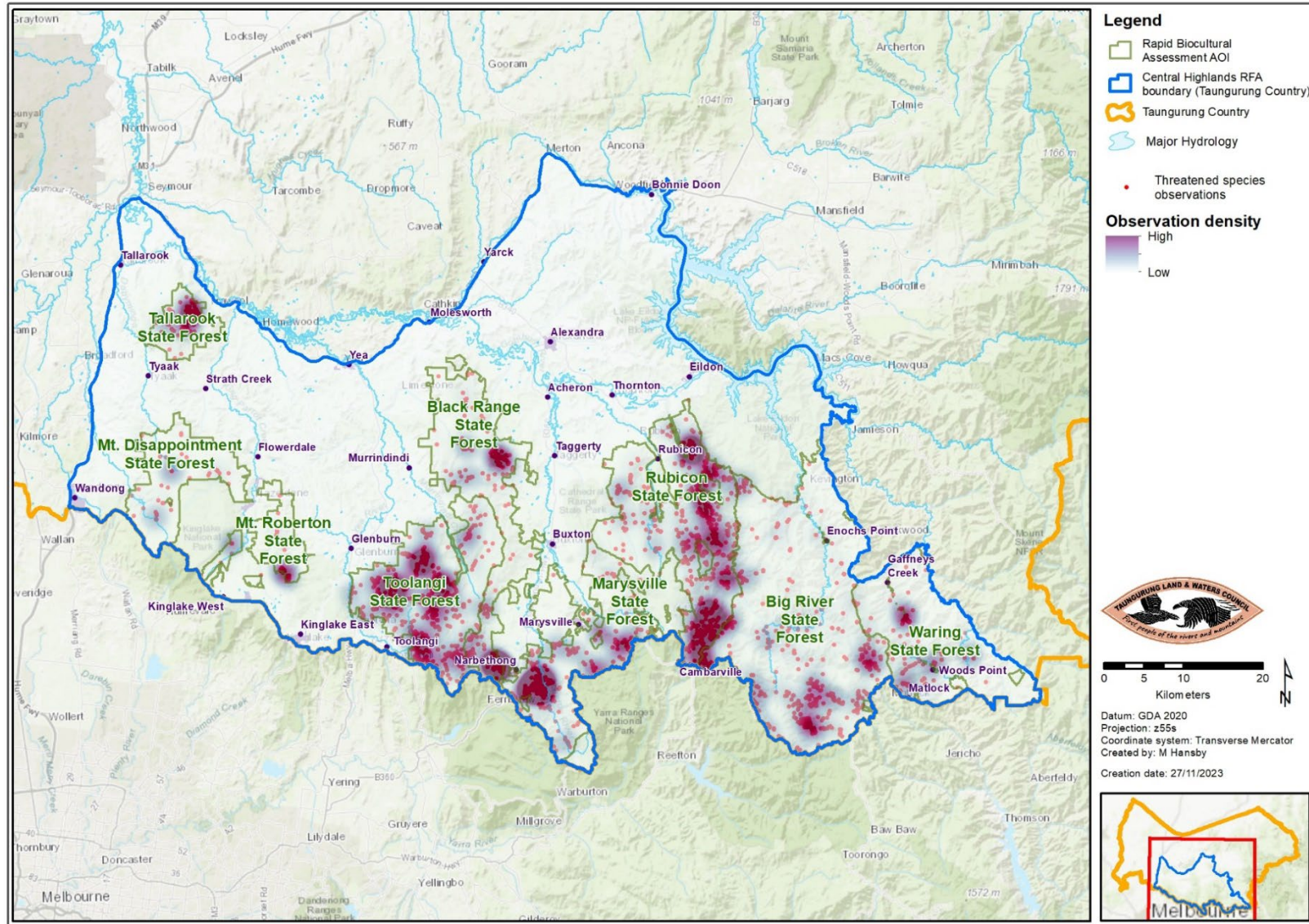


Figure 25. Threatened species observations across the assessment AOI. Heat mapping (kernel density) indicates density of observations.

### 9.2.2. Rare or endangered ecosystems

In Victoria terrestrial vegetation is most commonly classified into ‘Ecological Vegetation Classes’ or EVCs. EVC’s are a classification that considers structural, geomorphological and floristic characteristics to classify terrestrial vegetation across Victoria. EVC ‘Groups’ are comprised of multiple EVCs that share a broadly similar climatic zone and subsequent ecological processes. EVC groups are useful at the landscape level to compare broad ecological patterns.

As reported earlier in this document, prior to colonisation the assessment landscape was almost entirely forested. By comparing an updated<sup>9</sup> EVC BCS dataset with the assumed pre-colonisation extent of EVCs (EVC 1750), the extent of forest loss by EVC was calculated.

This analysis shows very large decreases in extent (up to 97%) across many drier forest or woodland communities across the landscape, with comparatively small (up to 7%) changes in the damp, wet or rainforest communities that characterise much of the AOI. The small percentage change in EVC groups from 1750 to 2019 within the AOI, is likely explained by the general ruggedness of the AOI representing a constraint to exploitation, and the protection afforded by the establishment of the Forest Act in [1958].

The small change in area seen in EVC Groups common across the AOI does not necessarily indicate high levels of forest ecosystem health. While retaining its essential character, the effects of the three waves of exploitation described above are apparent across the AOI. Disturbances such as deforestation for pastoralism and agriculture, degradation from mining exploitation, the increase in landscape scale bushfires and the persistence of intensive native forest silvicultural systems has left the forests of the AOI in a condition that will require ongoing, active management.

**Table 12. Results of comparing the extent of EVC groups assumed to be present prior to colonisation (EVCBCS 1750) with the current extent.**

EVC Group	Hectares (1750)	Hectares (2021)	Percentage change (1750 - 2021)
Box Ironbark Forests or dry/lower fertility Woodlands	2276.1	295.4	-87.0
Dry Forests	234795.8	145011.0	-38.2
Heathlands	37.6	36.7	-2.3
Lower Slopes or Hills Woodlands	22360.8	516.5	-97.7
Lowland Forests	1387.0	1132.3	-18.4
Montane Grasslands, Shrublands or Woodlands	5461.6	5457.2	-0.1
No native vegetation recorded	0.0	93.6	n/a
Plains Woodlands or Forests	23885.3	868.3	-96.4
Rainforests	5269.6	5218.2	-1.0
Riparian Scrubs or Swampy Scrubs and Woodlands	28006.9	14910.4	-46.8
Riverine Grassy Woodlands or Forests	15178.1	729.5	-95.2
Rocky Outcrop or Escarpment Scrubs	306.7	198.6	-35.2
Sub-alpine Grasslands, Shrublands or Woodlands	2655.7	2382.6	-10.3
Wet or Damp Forests	123389.2	114471.7	-7.2
Wetlands	10.3	0.0	-100.0
<b>Grand Total</b>	<b>465020.8</b>	<b>291322.3</b>	<b>-37.4</b>

<sup>9</sup> Extent of ‘EVC BCS 2005’ was intersected with recent forest cover (classified 2019 Sentinel 2 data) to create a current extent of EVC BCS within the assessment landscape.



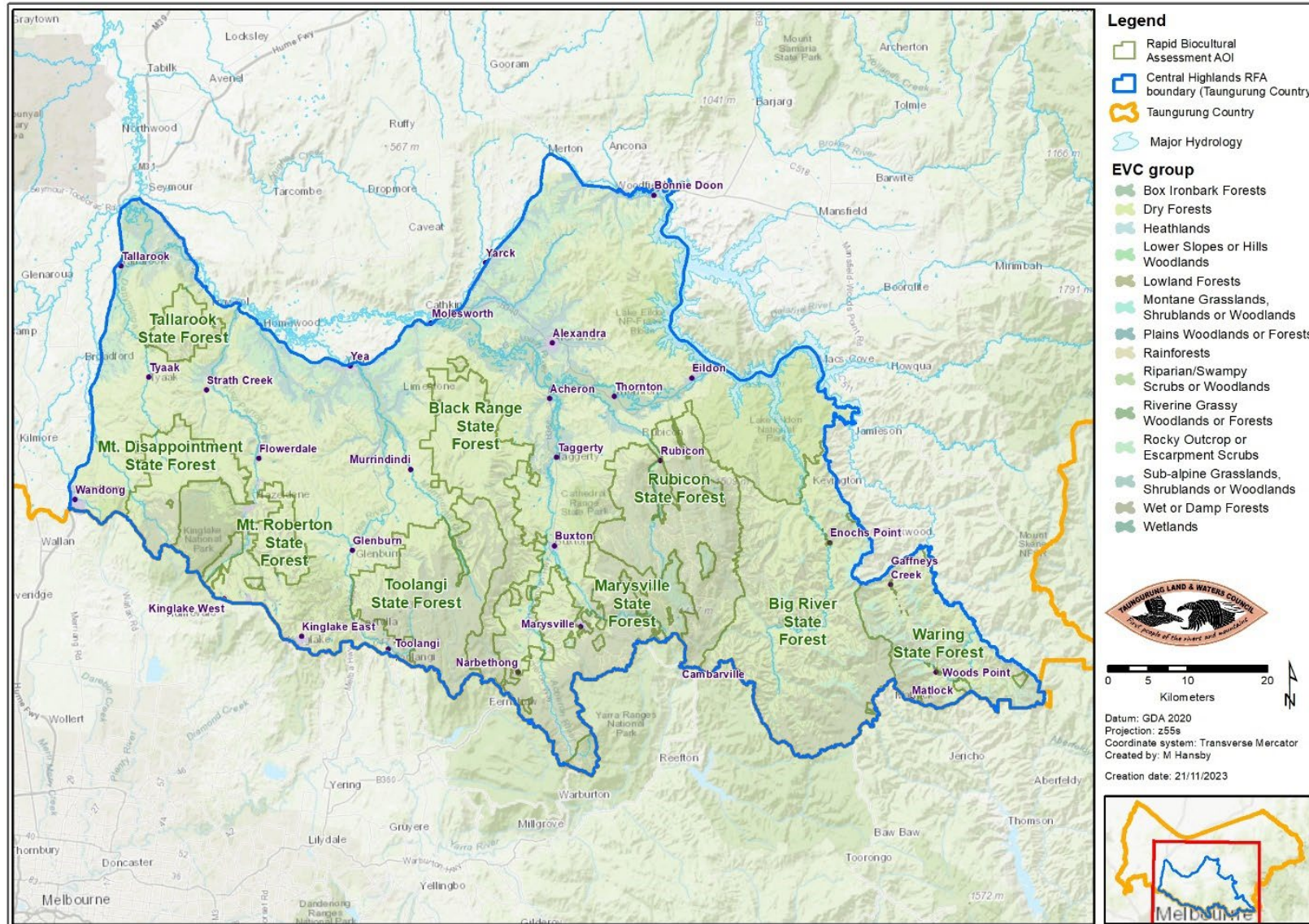


Figure 26. Pre-1750 vegetation across the assessment landscape (EVCBCS 1750)

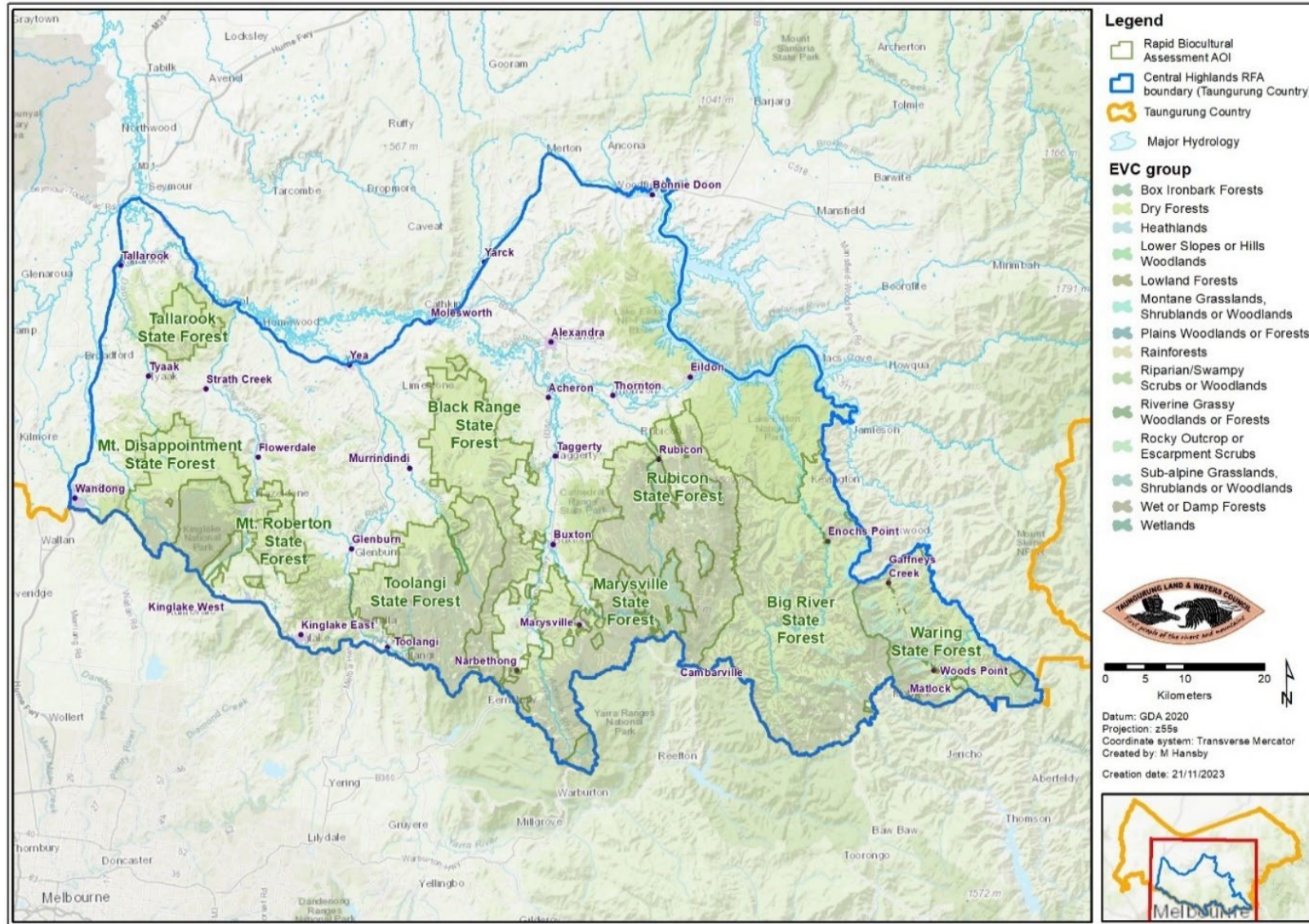


Figure 27. Current extant of EVC BCS 'Groups' across the assessment landscape and AOI

### 9.2.3. Forest age classes

Forest 'relative age' classes reported here are the intersection of two datasets. Forest 'relative age' is derived from the 'Statewide Forest Resource Inventory (SFRI), where an estimated age class is applied to a map unit (forest stand) based on indicators such as crown size, regularity and stand height. It uses absolute measures of age such as fire or logging history as guidance to assign an age class and the class is interpreted from high resolution aerial photography, thus the value is 'relative' This data set is complete for the entire state forest area, making it a useful measure to estimate forest age across the state forest.

This dataset was intersected with the EVCBCS dataset to obtain an estimate of the relative age class of all EVCs (and groups) by state forest area across the assessment AOI.

The breakdown of EVC groups and relative age is presented in Table 13 and a graphical example of this data for three EVC groups commonly found within the AOI is provided in Figure 28 and the entire AOI stratified by State Forest area, EVC Group and SFRI relative age is shown in Appendix 3, Table 18.



Figure 28. SFRI 'relative age' classes for Dry Forests, Wet/Damp Forests and Rainforests EVC groups across the AOI.

Table 13. Breakdown of EVC groups and associated 'relative age'.

EVC Group Name	SFRI 'RELAGE'	Total
Dry Forests	Senescent	219
	Late Mature	3177
	Mature	50146
	Early Mature	419
	Regrowth	1659
	Regenerating	1783
	Uneven aged	8434
	Non-regrowth < 22m	2979
	Non-regrowth < 28m	7548
Dry Forests Total		76363
Lowland Forests	Late Mature	26
	Mature	328
	Regrowth	2
	Uneven aged	57
	Non-regrowth < 28m	45
Lowland Forests Total		459
Montane Grasslands, Shrublands or Woodlands	Senescent	51
	Late Mature	157
	Mature	3277
	Early Mature	101
	Regrowth	84
	Uneven aged	376
	Non-regrowth < 22m	54
	Non-regrowth < 28m	1113
Montane Grasslands, Shrublands or Woodlands Total		5213
Plains Woodlands or Forests	Mature	1
	Non-regrowth < 28m	2
Plains Woodlands or Forests Total		3
Rainforests	Senescent	224
	Late Mature	126
	Mature	797
	Early Mature	725
	Regrowth	1569
	Regenerating	143
	Uneven aged	274
Rainforests Total		3858
Riparian Scrubs or Swampy Scrubs and Woodlands	Senescent	43
	Late Mature	357
	Mature	5558
	Early Mature	538
	Regrowth	829
	Regenerating	90
	Uneven aged	718
	Non-regrowth < 22m	139

	Non-regrowth < 28m	273
Riparian Scrubs or Swampy Scrubs and Woodlands Total		8544
Sub-alpine Grasslands, Shrublands or Woodlands	Senescent	6
	Late Mature	54
	Mature	336
	Early Mature	62
	Regrowth	109
	Regenerating	0
	Uneven aged	44
Sub-alpine Grasslands, Shrublands or Woodlands Total		194
Sub-alpine Grasslands, Shrublands or Woodlands Total		805
Wet or Damp Forests	Senescent	1367
	Late Mature	4023
	Mature	39571
	Early Mature	9808
	Regrowth	23610
	Regenerating	7444
	Uneven aged	6479
	Non-regrowth < 22m	514
	Non-regrowth < 28m	1193
Wet or Damp Forests Total		94009
Grand Total		189253

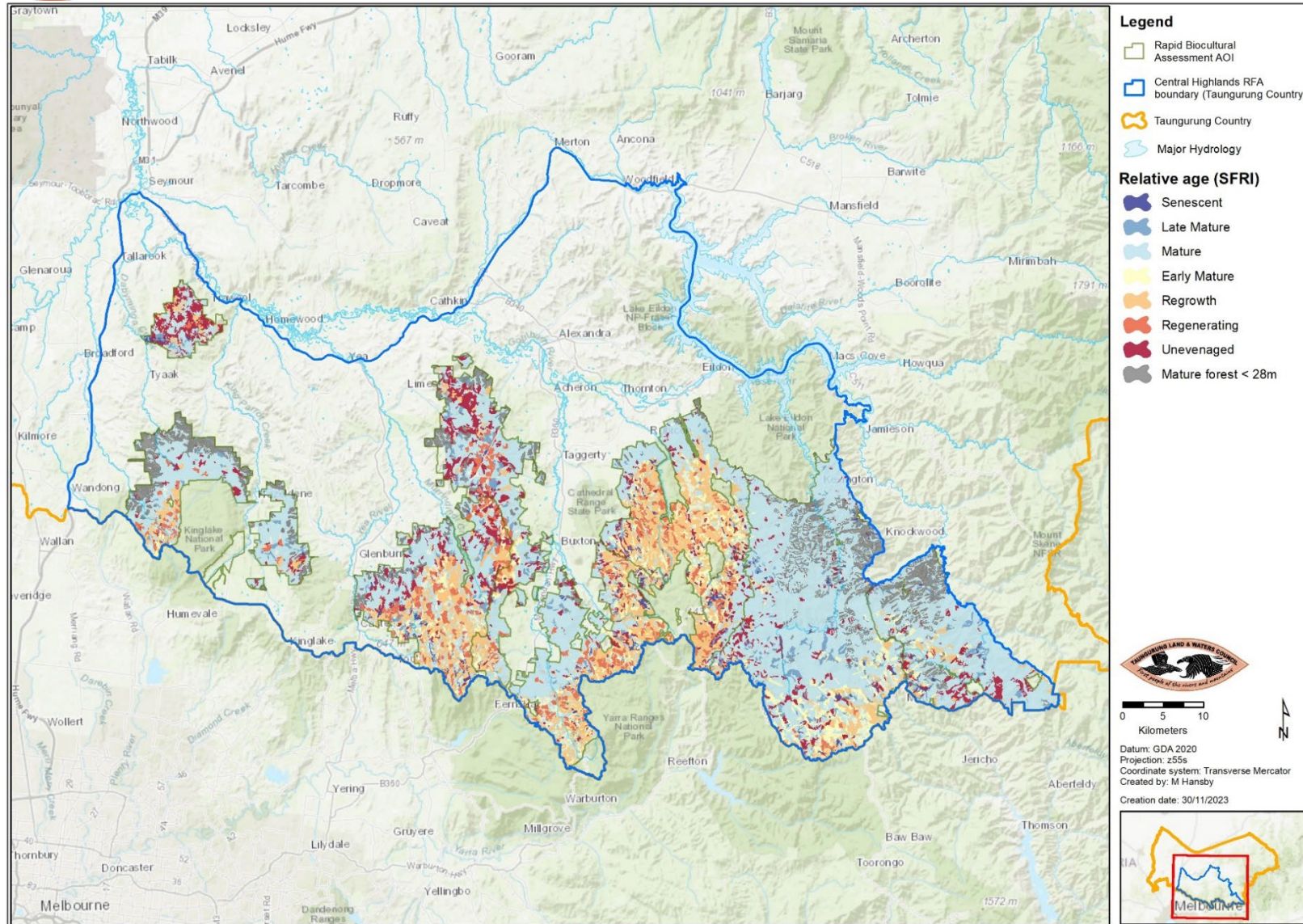


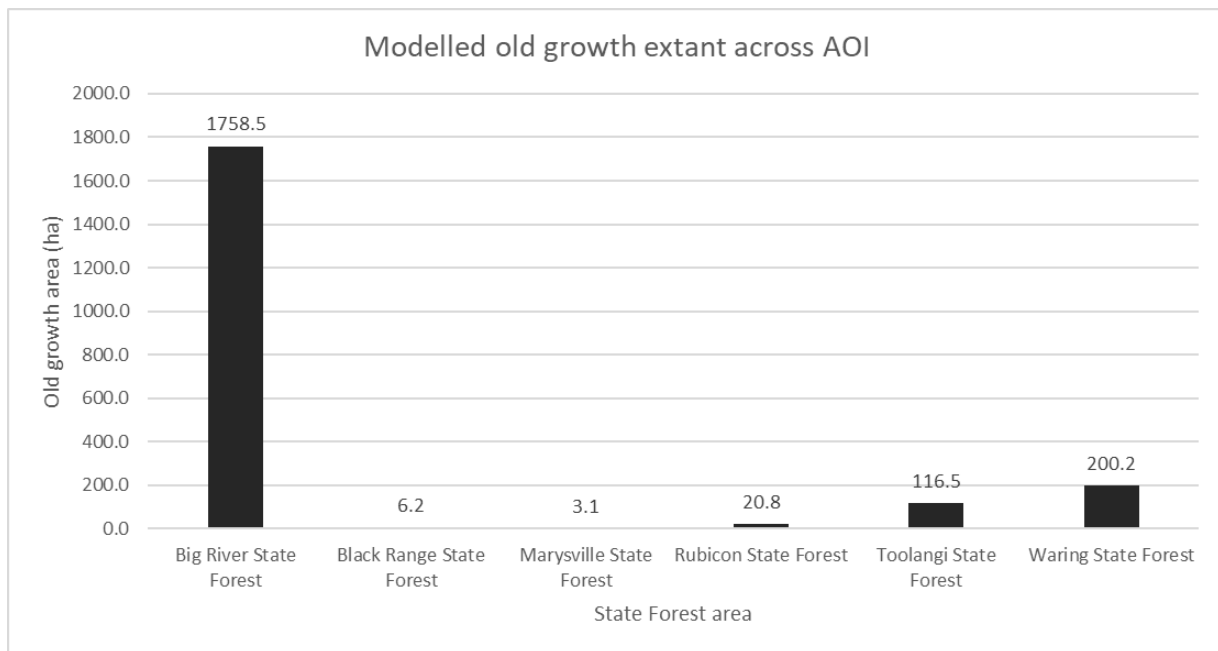
Figure 29. 'Relative age' of forest extant across the AOI.

### 9.2.4. Modelled Old Growth

Modelled old growth extent was derived by the most recent, mapped dataset found within data.vic, 'Modelled Old Growth' or 'MOG'. Given the extensive, landscape scale disturbance history (fire and logging), the extent of MOG across the AOI is low, at 2105.37 ha or 1.05% of the AOI (Table 14). Figure 30 reports the area of 'modelled old growth' by State Forest area.

**Table 14. Modelled Old Growth (MOG) extant across the AOI, stratified by EVC group and State Forest.**

State Forest	EVC Group	Total area (ha)
Big River State Forest	Dry Forests	862.21
	Montane Grasslands, Shrublands or Woodlands	724.67
	Riparian Scrubs or Swampy Scrubs and Woodlands	95.31
	Sub-alpine Grasslands, Shrublands or Woodlands	0.00
	Wet or Damp Forests	76.33
Black Range State Forest	Wet or Damp Forests	6.17
Marysville State Forest	Rainforests	1.63
	Wet or Damp Forests	1.50
Rubicon State Forest	Dry Forests	20.84
Toolangi State Forest	Dry Forests	41.90
	Rainforests	15.68
	Wet or Damp Forests	58.93
Waring State Forest	Dry Forests	56.85
	Montane Grasslands, Shrublands or Woodlands	141.86
	Riparian Scrubs or Swampy Scrubs and Woodlands	0.00
	Wet or Damp Forests	1.49
<b>Total area</b>		<b>2105.37</b>



**Figure 30. Area of modelled old growth per state forest area. Missing State Forests indicate a complete absence of old growth.**

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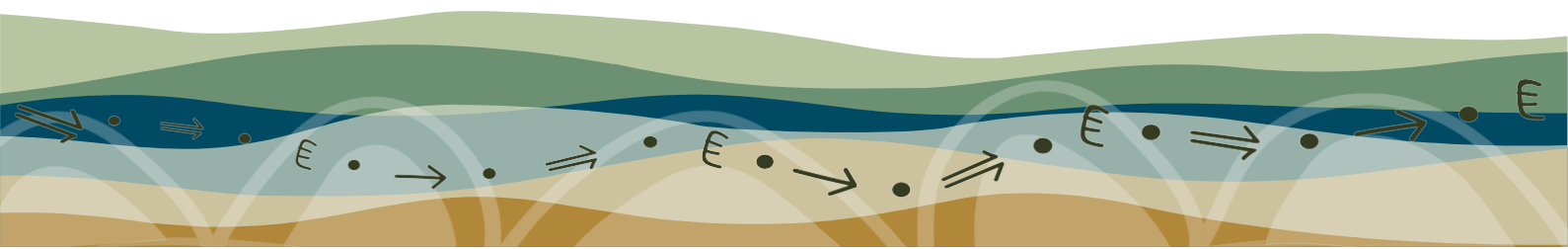
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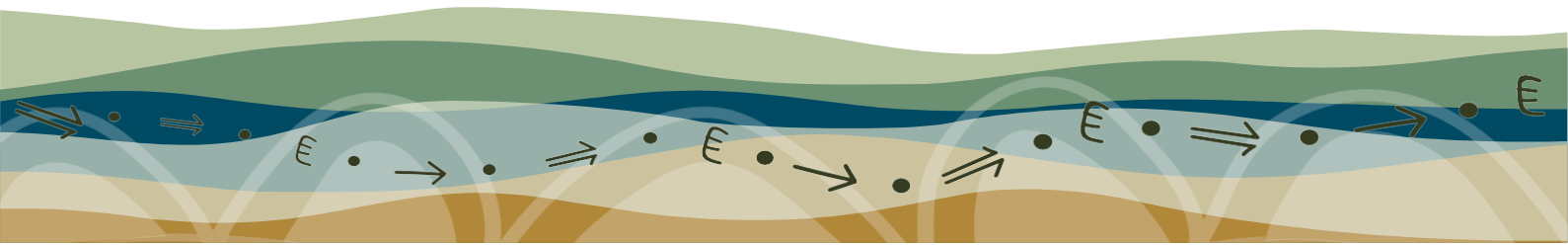
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## Appendices



## Appendix 1.

Table 15. Culturally Identified Species

LF Code	Binomial	Common Name	Culturally Identified	Use Group
LT	<i>Atherosperma moschatum</i>	Southern Sassafras	Yes	Many uses
LT	<i>Eucalyptus camaldulensis</i>	River Red Gum	Yes	Many uses
LT	<i>Eucalyptus dives</i>	Broad-leaved Peppermint	Yes	Medicine plant
LT	<i>Eucalyptus macrorhyncha</i>	Red Stringybark	Yes	Many uses
LT	<i>Eucalyptus melliodora</i>	Yellow Box	Yes	Many uses
LT	<i>Eucalyptus obliqua</i>	Messmate Stringybark	Yes	Fibre plant
LT	<i>Eucalyptus pauciflora</i>	Snow Gum	Yes	Many uses
LT	<i>Eucalyptus pauciflora ssp. niphophila</i>	Alpine Sally	Yes	Many uses
LT	<i>Eucalyptus viminalis</i>	Manna Gum	Yes	Many uses
T	<i>Leptospermum grandifolium</i>	Mountain Tea-tree	Yes	Timber plant
T	<i>Acacia dealbata</i>	Silver Wattle	Yes	Many uses
T	<i>Acacia melanoxylon</i>	Blackwood	Yes	Many uses
T	<i>Exocarpos cupressiformis</i>	Cherry Ballart	Yes	Many uses
T	<i>Leptospermum lanigerum</i>	Woolly Tea-tree	Yes	Many uses
T	<i>Pomaderris aspera</i>	Hazel Pomaderris	Yes	Timber plant
MS	<i>Acacia pycnantha</i>	Golden Wattle	Yes	Many uses
MS	<i>Acacia verticillata</i>	Prickly Moses	Yes	Fibre plant
MS	<i>Banksia marginata</i>	Silver Banksia	Yes	Many uses
MS	<i>Coprosma hirtella</i>	Rough Coprosma	Yes	Food plant
MS	<i>Coprosma quadrifida</i>	Prickly Currant-bush	Yes	Food plant
MS	<i>Hedycarya angustifolia</i>	Austral Mulberry	Yes	Timber plant
MS	<i>Indigofera australis</i>	Austral Indigo	Yes	Many uses
MS	<i>Kunzea ericoides</i>	Burgan	Yes	Many uses
MS	<i>Leptospermum continentale</i>	Prickly Tea-tree	Yes	Many uses
MS	<i>Leptospermum scoparium</i>	Manuka	Yes	Many uses
MS	<i>Persoonia confertiflora</i>	Cluster-flower Geebung	Yes	Food plant
MS	<i>Pimelea axiflora</i>	Bootlace Bush	Yes	Fibre plant
MS	<i>Polyscias sambucifolia</i>	Elderberry Panax	Yes	Timber plant
MS	<i>Prostanthera lasianthos</i>	Victorian Christmas-bush	Yes	Many uses
MS	<i>Tasmannia lanceolata</i>	Mountain Pepper	Yes	Many uses
MS	<i>Tasmannia xerophila</i>	Alpine Pepper	Yes	Many uses
SS	<i>Leucopogon hookeri</i>	Mountain Beard-heath	Yes	Food plant
SS	<i>Rubus parvifolius</i>	Small-leaf Bramble	Yes	Food plant
SS	<i>Wittsteinia vacciniacea</i>	Baw Baw Berry	Yes	Food plant
PS	<i>Acrotriche prostrata</i>	Trailing Ground-berry	Yes	Food plant
PS	<i>Acrotriche serrulata</i>	Honey-pots	Yes	Food plant
PS	<i>Astroloma humifusum</i>	Cranberry Heath	Yes	Food plant
PS	<i>Persoonia chamaepeuce</i>	Dwarf Geebung	Yes	Food plant

LH	<i>Arthropodium milleflorum s.l.</i>	Pale Vanilla-lily	Yes	Food plant
LH	<i>Mentha laxiflora</i>	Forest Mint	Yes	Many uses
LH	<i>Wahlenbergia gracilis s.l.</i>	Sprawling Bluebell	Yes	Food plant
LH	<i>Wahlenbergia stricta</i>	Tall Bluebell	Yes	Food plant
MH	<i>Burchardia umbellata</i>	Milkmaids	Yes	Food plant
MH	<i>Geranium potentilloides</i>	Cinquefoil Cranesbill	Yes	Many uses
MH	<i>Sambucus gaudichaudiana</i>	White Elderberry	Yes	Food plant
MH	<i>Viola betonicifolia ssp. betonicifolia</i>	Showy Violet	Yes	Food plant
MH	<i>Viola hederacea sensu Entwisle (1996)</i>	Ivy-leaf Violet	Yes	Food plant
SH	<i>Oxalis corniculata s.l.</i>	Yellow Wood-sorrel	Yes	Food plant
SH	<i>Oxalis exilis</i>	Shady Wood-sorrel	Yes	Food plant
LTG	<i>Carex appressa</i>	Tall Sedge	Yes	Many uses
LTG	<i>Gahnia sieberiana</i>	Red-fruit Saw-sedge	Yes	Fibre plant
LTG	<i>Juncus usitatus</i>	Billabong Rush	Yes	Fibre plant
LTG	<i>Lomandra longifolia</i>	Spiny-headed Mat-rush	Yes	Many uses
LTG	<i>Lomandra longifolia ssp. exilis</i>	Cluster-headed Mat-rush	Yes	Many uses
LTG	<i>Lomandra longifolia ssp. longifolia</i>	Spiny-headed Mat-rush	Yes	Many uses
LTG	<i>Poa labillardierei</i>	Common Tussock-grass	Yes	Fibre plant
LTG	<i>Xanthorrhoea australis</i>	Austral Grass-tree	Yes	Many uses
LNG	<i>Gahnia radula</i>	Thatch Saw-sedge	Yes	Fibre plant
MTG	<i>Carex alsophila</i>	Forest Sedge	Yes	Fibre plant
MTG	<i>Dianella caerulea var. caerulea</i>	Paroo Lily	Yes	Many uses
MTG	<i>Dianella revoluta s.l.</i>	Black-anther Flax-lily	Yes	Many uses
MTG	<i>Dianella tasmanica</i>	Tasman Flax-lily	Yes	Many uses
MTG	<i>Lomandra filiformis</i>	Wattle Mat-rush	Yes	Many uses
MTG	<i>Lomandra filiformis ssp. coriacea</i>	Wattle Mat-rush	Yes	Many uses
MTG	<i>Poa australis spp. agg.</i>	Tussock Grass	Yes	Fibre plant
MTG	<i>Poa ensiformis</i>	Sword Tussock-grass	Yes	Fibre plant
MTG	<i>Poa hothamensis var. hothamensis</i>	Ledge Grass	Yes	Fibre plant
MTG	<i>Poa labillardierei var. labillardierei</i>	Common Tussock-grass	Yes	Fibre plant
MTG	<i>Poa morrisii</i>	Soft Tussock-grass	Yes	Fibre plant
MTG	<i>Poa sieberiana</i>	Grey Tussock-grass	Yes	Fibre plant
MTG	<i>Poa sieberiana var. sieberiana</i>	Grey Tussock-grass	Yes	Fibre plant
MTG	<i>Themeda triandra</i>	Kangaroo Grass	Yes	Many uses
TRF	<i>Cyathea australis</i>	Rough Tree-fern	Yes	Many uses
TRF	<i>Dicksonia antarctica</i>	Soft Tree-fern	Yes	Many uses
TRF	<i>Todea barbara</i>	Austral King-fern	Yes	Many uses
GF	<i>Pteridium esculentum</i>	Austral Bracken	Yes	Many uses
SC	<i>Billardiera longiflora var. longiflora</i>	Purple Apple-berry	Yes	Food plant
SC	<i>Billardiera scandens</i>	Common Apple-berry	Yes	Food plant
SC	<i>Billardiera scandens var. scandens</i>	Common Apple-berry	Yes	Food plant
SC	<i>Cassytha pubescens s.s.</i>	Downy Dodder-laurel	Yes	Food plant
SC	<i>Clematis aristata</i>	Mountain Clematis	Yes	Many uses

## Appendix 2.

Table 16. Listed Species: Fauna

Taxa	Binomial	Common name	EPBC Status	FFG Status
Mammals	<i>Canis lupus dingo</i>	Dingo		Vulnerable
	<i>Dasyurus maculatus maculatus</i>	Spot-tailed Quoll	Endangered	Endangered
	<i>Gymnobelideus leadbeateri</i>	Leadbeater's Possum	Critically Endangered	Critically Endangered
	<i>Mastacomys fuscus mordicus</i>	Broad-toothed Rat	Vulnerable	Vulnerable
	<i>Miniopterus orianae oceanensis</i>	Eastern Bent-winged Bat		Critically Endangered
	<i>Ornithorhynchus anatinus</i>	Platypus		Vulnerable
	<i>Petauroides volans</i>	Southern Greater Glider	Endangered	Endangered
	<i>Petaurus australis</i>	Yellow-bellied Glider	Vulnerable	Vulnerable
	<i>Petaurus norfolcensis</i>	Squirrel Glider		Vulnerable
	<i>Phascogale tapoatafa</i>	Brush-tailed Phascogale		Vulnerable
	<i>Pseudomys fumeus</i>	Smoky Mouse	Endangered	Endangered
	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Vulnerable	Vulnerable
	<i>Rhinolophus megaphyllus</i>	Eastern Horseshoe Bat		Endangered
	<i>Sminthopsis crassicaudata</i>	Fat-tailed Dunnart		Vulnerable
	<i>Sminthopsis leucopus</i>	White-footed Dunnart		Vulnerable
<i>Sminthopsis murina murina</i>	Common Dunnart		Vulnerable	
Birds	<i>Accipiter novaehollandiae</i>	Grey Goshawk		Endangered
	<i>Anthochaera phrygia</i>	Regent Honeyeater	Critically Endangered	Critically Endangered
	<i>Aphelocephala leucopsis</i>	Southern Whiteface	Vulnerable	
	<i>Aythya australis</i>	Hardhead		Vulnerable
	<i>Calamanthus pyrrhopygius</i>	Chestnut-rumped Heath-wren		Vulnerable
	<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	Endangered	Endangered
	<i>Climacteris picumnus</i>	Brown Treecreeper	Vulnerable	
	<i>Climacteris affinis</i>	White-browed Treecreeper		Endangered
	<i>Falco subniger</i>	Black Falcon		Critically Endangered
	<i>Hieraaetus morphnoides</i>	Little Eagle		Vulnerable
	<i>Hirundapus caudacutus</i>	White-throated Needletail	Vulnerable	Vulnerable
	<i>Lophoictinia isura</i>	Square-tailed Kite		Vulnerable
	<i>Melanodryas cucullata</i>	Hooded Robin	Endangered	Vulnerable
	<i>Neophema chrysostoma</i>	Blue-winged Parrot	Vulnerable	

	<i>Ninox connivens</i>	Barking Owl		Critically Endangered
	<i>Ninox strenua</i>	Powerful Owl		Vulnerable
	<i>Pycnoptilus floccosus</i>	Pilotbird	Vulnerable	Vulnerable
	<i>Pyrrholaemus sagittatus</i>	Speckled Warbler		Endangered
	<i>Spatula rhynchotis</i>	Australasian Shoveler		Vulnerable
	<i>Stagonopleura guttata</i>	Diamond Firetail	Vulnerable	Vulnerable
	<i>Tyto novaehollandiae</i>	Masked Owl		Critically Endangered
Reptiles and Amphibians	<i>Litoria raniformis</i>	Growling Grass Frog	Vulnerable	
	<i>Litoria verreauxii alpina</i>	Alpine Tree Frog	Vulnerable	Critically Endangered
	<i>Pseudophryne bibronii</i>	Brown Toadlet		Endangered
	<i>Pseudophryne semimarmorata</i>	Southern Toadlet		Endangered
	<i>Varanus varius</i>	Lace Monitor		Endangered
Fish	<i>Galaxias fuscus</i>	Barred Galaxias	Endangered	Critically Endangered
	<i>Maccullochella peelii</i>	Murray Cod	Vulnerable	Endangered
	<i>Macquaria australasica</i>	Macquarie Perch	Endangered	Endangered
	<i>Nannoperca australis</i> (Murray-Darling lineage)	Southern Pygmy Perch (Murray-Darling lineage)	Vulnerable	Vulnerable
Invertebrates	<i>Austroaeschna</i> ( <i>Austroaeschna</i> ) <i>flavomaculata</i>	Alpine Darner Dragonfly		Vulnerable

Table 17. Listed Species: Flora

Binomial	Common name	FFG	EPBC
<i>Acacia howittii</i>	Sticky Wattle	Vulnerable	
<i>Acacia leprosa</i> var. <i>uninervia</i>	Large-leaf Cinnamon-wattle	Endangered	
<i>Acacia nanodealbata</i>	Dwarf Silver-wattle	Vulnerable	
<i>Acacia stictophylla</i>	Dandenong Wattle	Endangered	
<i>Asterophora mirabilis</i>	Grey Jockey	Endangered	
<i>Australina pusilla</i> subsp. <i>pusilla</i>	Small Shade-nettle	Endangered	
<i>Baeckea latifolia</i>	Subalpine Baeckea	Endangered	
<i>Bartramia mossmaniana</i>	Tall Apple-moss	Vulnerable	
<i>Billardiera scandens</i> s.s.	Velvet Apple-berry	Endangered	
<i>Bossiaea cordigera</i>	Wiry Bossiaea	Endangered	
<i>Brachyscome obovata</i>	Baw Baw Daisy	Endangered	
<i>Calyptrochaeta brownii</i>	Brown's Mitre-moss	Endangered	
<i>Cardamine papillata</i>	Forest Bitter-cress	Endangered	
<i>Carex alsophila</i>	Forest Sedge	Endangered	
<i>Carex blakei</i>	Alpine Sedge	Endangered	

<i>Chlorovibrissea bicolor</i>	Two-tone Vibrissea	Endangered	
<i>Corybas aconitiflorus</i>	Spurred Helmet-orchid	Endangered	
<i>Corybas grumulus</i>	Mountain Helmet-orchid	Endangered	
<i>Corymbia maculata</i>	Spotted Gum	Vulnerable	
<i>Craspedia sylvestris</i>	Mountain Forest Billy-buttons	Endangered	
<i>Dicranoloma platycaulon</i>	Wavy Fork-moss	Endangered	
<i>Dracophyllum victorianum</i>	Serpent Heath	Endangered	
<i>Epacris petrophila</i>	Snow Heath	Endangered	
<i>Epacris rhombifolia</i>	Mountain Coral Heath	Endangered	
<i>Eucalyptus alligatrix subsp. alligatrix</i>	Silver Stringybark	Endangered	
<i>Eucalyptus crenulata</i>	Buxton Gum	Endangered	Endangered
<i>Eucalyptus denticulata</i>	Errinundra Shining Gum	Endangered	
<i>Eucalyptus neglecta</i>	Omeo Gum	Endangered	
<i>Eucalyptus perriniana</i>	Spinning Gum	Endangered	
<i>Eucalyptus yarraensis</i>	Yarra Gum	Critically Endangered	
<i>Euchiton umbricola</i>	Cliff Cudweed	Endangered	
<i>Euphrasia collina subsp. muelleri</i>	Purple Eyebright	Endangered	Endangered
<i>Fissidens strictus</i>	Water Pocket-moss	Endangered	
<i>Goodia pubescens</i>	Silky Golden-tip	Endangered	
<i>Grevillea monslacana</i>	Lake Mountain Grevillea	Critically Endangered	
<i>Grevillea repens</i>	Creeping Grevillea	Endangered	
<i>Grevillea victoriae subsp. victoriae</i>	Royal Grevillea	Endangered	
<i>Hampeella alaris</i>	Arc Moss	Endangered	
<i>Herpolirion novae-zelandiae</i>	Sky Lily	Endangered	
<i>Huperzia australiana</i>	Fir Clubmoss	Endangered	
<i>Lachnagrostis meionectes</i>	Alpine Blown-grass	Endangered	
<i>Notogrammitis angustifolia subsp. nothofageti</i>	Beech Finger-fern	Endangered	
<i>Olearia asterotricha</i>	Rough Daisy-bush	Endangered	
<i>Oxalis magellanica</i>	Snowdrop Wood-sorrel	Endangered	
<i>Persoonia arborea</i>	Tree Geebung	Endangered	
<i>Persoonia subvelutina</i>	Velvety Geebung	Endangered	
<i>Phebalium squamulosum subsp. squamulosum</i>	Forest Phebalium	Endangered	
<i>Platylobium reflexum</i>	Victorian Flat-pea	Endangered	
<i>Pomaderris helianthemifolia subsp. minor</i>	Blunt-leaf Pomaderris	Endangered	
<i>Pomaderris vacciniifolia</i>	Round-leaf Pomaderris	Critically Endangered	Critically Endangered
<i>Pultenaea williamsonii</i>	Highland Bush-pea	Endangered	

<i>Ranunculus collinus</i>	Strawberry Buttercup	Endangered	
<i>Sticherus tener s.s.</i>	Tasman Fan-fern	Endangered	
<i>Tasmania vickeriana</i>	Baw Baw Pepper	Endangered	
<i>Tetradlea stenocarpa</i>	Long Pink-bells	Endangered	
<i>Trochocarpa clarkei</i>	Lilac Berry	Endangered	
<i>Veronica nivea</i>	Milfoil Speedwell	Endangered	
<i>Wittsteinia vacciniacea</i>	Baw Baw Berry	Vulnerable	
<i>Xanthosia leiophylla</i>	Parsley Xanthosia	Endangered	



## Appendix 3.

Table 18. EVC Groups, SFRI relative age and State Forest area.

State Forest	EVC Group	Relative Age (SFRI)	Total (ha)
Big River State Forest	Dry Forests	Senescent	58
		Late Mature	1074
		Mature	16818
		Early Mature	217
		Regrowth	67
		Regenerating	1
		Unevenaged	1093
		Non-regrowth < 22m	2144
		Non-regrowth < 28m	1074
		Montane Grasslands, Shrublands or Woodlands	Senescent
	Late Mature		104
	Mature		1201
	Early Mature		40
	Regrowth		48
	Unevenaged		33
	Non-regrowth < 22m		54
	Non-regrowth < 28m		538
	Riparian Scrubs or Swampy Scrubs and Woodlands	Senescent	2
		Late Mature	179
		Mature	2503
		Early Mature	285
		Regrowth	25
		Unevenaged	241
		Non-regrowth < 22m	137
		Non-regrowth < 28m	35
	Sub-alpine Grasslands, Shrublands or Woodlands	Senescent	1
		Late Mature	4
		Mature	63
		Early Mature	6
		Regrowth	50
		Unevenaged	1
		Non-regrowth < 28m	103
	Wet or Damp Forest	Senescent	318
		Late Mature	1197
		Mature	14114
		Early Mature	3033
		Regrowth	2376
		Regenerating	203
		Unevenaged	1402
		Non-regrowth < 22m	338
Non-regrowth < 28m		454	

Black Range State Forest	Dry Forests	Senescent	27
		Late Mature	732
		Mature	7038
		Early Mature	32
		Regrowth	460
		Regenerating	916
		Unevenaged	2621
		Non-regrowth < 28m	1525
	Plains Woodlands or Forest	Mature	1
		Non-regrowth < 28m	2
	Rainforests	Late Mature	1
		Mature	39
		Early Mature	3
		Regrowth	0
		Regenerating	0
	Riparian Scrubs or Swampy Scrubs and Woodlands	Late Mature	99
		Mature	535
		Early Mature	1
		Regrowth	11
		Regenerating	10
		Unevenaged	133
		Non-regrowth < 28m	21
	Wet or Damp Forests	Senescent	17
		Late Mature	331
		Mature	3011
		Early Mature	466
		Regrowth	1210
		Regenerating	398
Unevenaged		667	
Non-regrowth < 28m		90	
Marysville State Forest	Dry Forests	Senescent	28
		Late Mature	199
		Mature	3824
		Early Mature	50
		Regrowth	103
		Regenerating	154
		Unevenaged	277
		Non-regrowth < 28m	189
	Rainforests	Senescent	75
		Late Mature	37
		Mature	213
		Early Mature	217
		Regrowth	396
		Regenerating	39
		Unevenaged	49
	Riparian Scrubs or Swampy Scrubs and Woodlands	Senescent	1
		Late Mature	21

		Mature	559
		Early Mature	33
		Regrowth	89
		Regenerating	10
		Unevenaged	20
		Non-regrowth < 28m	2
	Sub-alpine Grasslands, Shrublands or Woodlands	Late Mature	5
		Mature	20
		Early Mature	3
	Wet or Damp Forests	Unevenaged	0
		Senescent	281
		Late Mature	514
		Mature	4451
		Early Mature	1688
		Regrowth	4758
Regenerating		2009	
Mt. Disappointment State Forest	Dry Forests	Unevenaged	768
		Non-regrowth < 28m	6
		Late Mature	169
		Mature	4904
		Early Mature	3
		Regrowth	188
		Regenerating	246
		Unevenaged	402
	Riparian Scrubs or Swampy Scrubs and Woodlands	Non-regrowth < 22m	224
		Non-regrowth < 28m	2348
		Late Mature	21
		Mature	199
		Unevenaged	3
		Non-regrowth < 28m	107
		Wet or Damp Forest	Senescent
Late Mature	95		
Mature	1468		
Early Mature	158		
Regrowth	699		
Regenerating	411		
Unevenaged	90		
Non-regrowth < 22m	60		
Non-regrowth < 28m	193		
Mt. Robertson State Forest	Dry Forests	Senescent	10
		Late Mature	117
		Mature	2475
		Regrowth	168
		Regenerating	93
		Unevenaged	160
		Non-regrowth < 22m	417
		Non-regrowth < 28m	146

	Riparian Scrubs or Swampy Scrubs and Woodlands	Mature	65
		Regrowth	4
		Unevenaged	6
		Non-regrowth < 22m	1
	Wet or Damp Forests	Late Mature	147
		Mature	1160
		Regrowth	48
		Regenerating	49
		Unevenaged	71
		Non-regrowth < 22m	108
		Non-regrowth < 28m	5
Rubicon State Forest	Dry Forests	Senescent	20
		Late Mature	90
		Mature	3864
		Early Mature	49
		Regrowth	123
		Regenerating	3
		Unevenaged	350
		Non-regrowth < 22m	194
	Montane Grasslands, Shrublands or Woodlands	Late Mature	3
		Mature	12
		Regrowth	4
		Unevenaged	3
	Rainforests	Senescent	84
		Late Mature	53
		Mature	323
		Early Mature	445
		Regrowth	1084
		Regenerating	88
		Unevenaged	195
	Riparian Scrubs or Swampy Scrubs and Woodlands	Senescent	35
		Late Mature	10
		Mature	304
		Early Mature	149
		Regrowth	527
		Regenerating	50
		Unevenaged	64
		Non-regrowth < 22m	1
	Sub-alpine Grasslands, Shrublands or Woodlands	Senescent	0
		Late Mature	1
		Mature	15
		Early Mature	10
		Regrowth	28
		Regenerating	0
	Wet or Damp Forests	Senescent	268
		Late Mature	477
Mature		4547	

		Early Mature	2593
		Regrowth	8297
		Regenerating	2184
		Unevenaged	1368
		Non-regrowth < 22m	8
Tallarook State Forest	Dry Forests	Senescent	42
		Late Mature	142
		Mature	1374
		Regrowth	448
		Regenerating	35
		Unevenaged	1676
	Riparian Scrubs or Swampy Scrubs and Woodlands	Senescent	0
		Mature	71
		Regrowth	3
		Unevenaged	26
	Wet or Damp Forests	Senescent	55
		Late Mature	109
		Mature	327
		Regrowth	48
		Regenerating	7
Unevenaged		204	
Toolangi State Forest	Dry Forests	Senescent	34
		Late Mature	208
		Mature	3808
		Early Mature	43
		Regrowth	82
		Regenerating	335
		Unevenaged	1195
		Non-regrowth < 28m	555
	Lowland Forests	Late Mature	26
		Mature	328
		Regrowth	2
		Unevenaged	57
		Non-regrowth < 28m	45
	Rainforests	Senescent	64
		Late Mature	35
		Mature	222
		Early Mature	61
		Regrowth	89
		Regenerating	16
		Unevenaged	29
	Riparian Scrubs or Swampy Scrubs and Woodlands	Senescent	5
		Late Mature	11
		Mature	482
		Early Mature	58
Regrowth		168	
Regenerating		21	

		Unevenaged	93
		Non-regrowth < 28m	4
	Wet or Damp Forests	Senescent	241
		Late Mature	778
		Mature	4611
		Early Mature	1125
		Regrowth	5312
		Regenerating	2179
		Unevenaged	1304
		Non-regrowth < 28m	93
Waring State Forest	Dry Forests	Late Mature	445
		Mature	6040
		Early Mature	26
		Regrowth	20
		Unevenaged	659
		Non-regrowth < 28m	1712
	Montane Grasslands, Shrublands or Woodlands	Senescent	13
		Late Mature	50
		Mature	2064
		Early Mature	60
		Regrowth	32
		Unevenaged	340
		Non-regrowth < 28m	575
	Riparian Scrubs or Swampy Scrubs and Woodlands	Late Mature	16
		Mature	840
		Early Mature	11
		Regrowth	1
		Unevenaged	131
	Sub-alpine Grasslands, Shrublands or Woodlands	Non-regrowth < 28m	104
		Senescent	5
		Late Mature	43
		Mature	238
		Early Mature	43
		Regrowth	31
		Regenerating	0
		Unevenaged	43
	Wet or Damp Forests	Non-regrowth < 28m	91
		Senescent	175
		Late Mature	375
		Mature	5882
		Early Mature	746
		Regrowth	862
		Regenerating	5
		Unevenaged	606
		Non-regrowth < 28m	351

## Appendix 4.

Table 19. Glossary of Terms

Cultural Landscape	Cultural landscapes reflect the management and modification of Country over many thousands of generations. Cultural landscapes are both material and symbolic and include Traditional Owner societies' unique worldview, ontology, history, institutions, practices and the networks of relationships between human and non-human animals, plants, ancestors, song lines, physical structures, trade routes and other significant cultural connections to Country <sup>10</sup>
Country	Country includes all of the sentient and non-sentient parts of the world and the interactions between them, according to Aboriginal lore. Indigenous lore and life originates in and is governed by Country. Country must be respected. In a western conservation context, this is more aligned to a systems and resilience approach to thinking and to an active, adaptive management approach to practice <sup>11</sup> .
Joint management	Hand back of Aboriginal Title under Traditional Owner Settlement Act Agreement. A Traditional Owner Land Management Board is established by the Minister, with Traditional Owner majority, including as chair. Rights conveyed for the TOLMB to prepare a Joint Management Plan. Parks Victoria is the Land Manager.
Collaborative governance	Arrangements in which ultimate decision-making authority resides with a collaborative body exercising devolved power – where power and responsibility are shared between government and local stakeholders <sup>12</sup> Successful governance arrangements include: multiple, nested Indigenous and other institutions; common pool resource management principles <sup>13</sup> that are embedded; and with accountability mechanisms that are monitored to provide learning and adjustment in the application of principles in practice.
Collaborative management	Collaborative management (also referred to as co-management, or joint, participatory or multi-stakeholder management) as a partnership in which government agencies, local communities and resource users, non-governmental organizations and other stakeholders negotiate, as appropriate to each context, the authority and responsibility for the management of a specific area or set of resources <sup>14</sup> .
Cooperative agreements	A bundle of rights over designated Parks from Native Title Determinations. Native Title holder has an advisory role on a committee.
Sole management	Indigenous Nation's leadership in the planning, management and governance of public land. Planning through codesign, governance by the Indigenous Nation and management that enables the application of Indigenous knowledge and practice.
IUCN Category VI	Indigenous knowledge and practice led. Asset managed to cultural objectives, with ecological, social and economic co-benefits. TOs as land manager. Governance by

<sup>10</sup> Victorian Traditional Owner Cultural Landscapes Strategy.

<sup>11</sup> Victorian Traditional Owner Cultural Landscapes Strategy.

<sup>12</sup> Dodson, G. (2014), "Co-Governance and Local Empowerment? Conservation Partnership Frameworks and Marine Protection at Mimiwhangata, New Zealand" in Society & Natural Resources (2014) Volume 7, Issue 25, available at [www.tandfonline.com](http://www.tandfonline.com)

<sup>13</sup> Ostrom, Elenor. Governing the Commons: The Evolution of Institutions for Collective Action (Cambridge Univ. Press, New York, 1990).

<sup>14</sup> World Conservation Council Recommendation 42. Collaborative Management for Conservation.



	Indigenous Nation.
IUCN Category V	Indigenous knowledge and practice led. Landscape managed to cultural objectives, with ecological, social and economic co-benefits. TOs as land manager. Shared (collaborative) governance.

