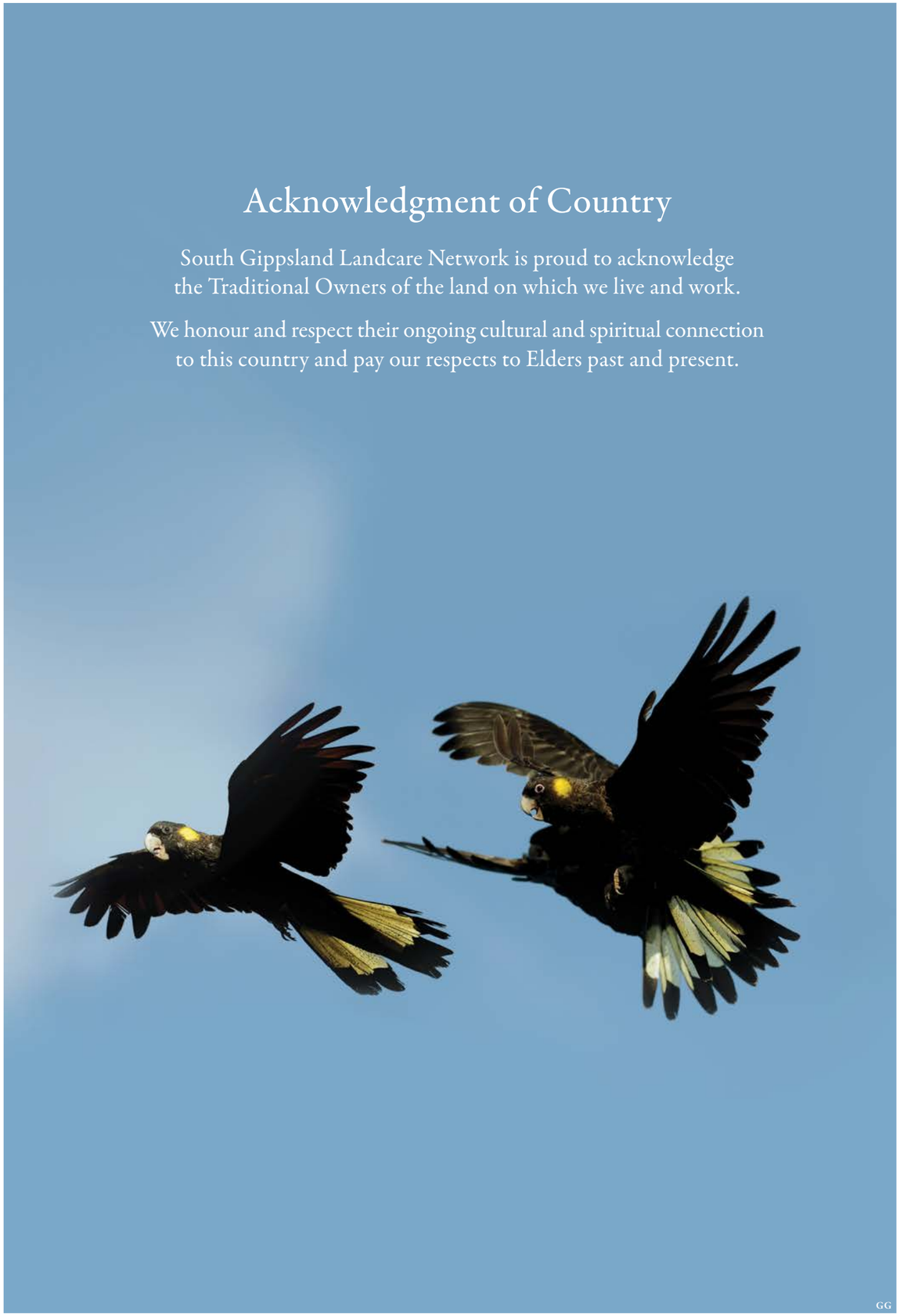
South Gippsland Biodiversity Protection Plan

Acknowledgment of Country

South Gippsland Landcare Network is proud to acknowledge the Traditional Owners of the land on which we live and work.

We honour and respect their ongoing cultural and spiritual connection to this country and pay our respects to Elders past and present.



SGLN is grateful for the support of the Helen Macpherson Smith Trust which funded the first stage of the development of this Biodiversity Protection Plan.

The BPP has been developed with the following groups and organisations:

Department of Energy, Environment and Climate Action

Department of Transport and Planning

Gippsland Threatened Species Action Group

Greenfleet

Greening Australia

Melbourne Water

Parks Victoria

Prom Coast Ecolink

South Gippsland Landcare Network groups and their members

South Gippsland Shire Council

Trust for Nature

West Gippsland Catchment Management Authority

Thank you to the organisations and individuals who provided valuable feedback on our public consultation draft.

Abbreviations

BOM	Bureau of Meteorology
CMA	Catchment Management Authority
DEECA	Department of Energy, Environment and Climate Action
DELWP	Department of Environment, Land, Water and Planning (now DEECA)
DEPI	Department of Environment and Primary Industries (now DEECA)
EPBC	Environment Protection Biodiversity Conservation [Act, 1999]
ESO	Environmental Significance Overlay
EVC	Ecological Vegetation Class
FFG	Flora and Fauna Guarantee [Act, 1987]
ha	hectare(s)
MW	Melbourne Water
NRM	Natural Resource Management
PV	Parks Victoria
RCP	Representative Concentration Pathway (used in Greenhouse Gas scenarios)
RCS	Regional Catchment Strategy
SGLN	South Gippsland Landcare Network
SGSC	South Gippsland Shire Council
SGW	South Gippsland Water
SLO	Significant Landscape Overlay
TfN	Trust for Nature
VBA	Victorian Biodiversity Atlas
WGCMA	West Gippsland Catchment Management Authority

Photo credits

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1. The South Gippsland Biodiversity Protection Plan area

The South Gippsland Biodiversity Protection Plan (BPP) is set in the South Gippsland region, in south-eastern Victoria, located around 130 kilometres south-east of Melbourne. It is an area known for its rolling green hills, stunning coastline and famous views of Wilsons Promontory. Its range of landscapes - from coastal through to tall wet forests - makes it home to a wide variety of native species.

The South Gippsland BPP area lies within the boundaries of the South Gippsland Landcare Network (SGLN) which initiated and now leads the development of this plan on behalf of regional stakeholders (Figure 1).

The majority of the South Gippsland BPP area lies within the South Gippsland municipality with small sections falling into Baw Baw Shire in the north, Cardinia Shire in the north-west and Bass Coast Shire in the west.

The South Gippsland BPP area covers 262,000 ha and extends from the Strzelecki Ranges in the north to the coast in the south. Although Wilsons Promontory is a major feature and natural asset for this landscape, it is not explicitly included in the South Gippsland BPP area, largely due to the fact that it is already under intense and specific management. It is worth noting however that Wilsons Promontory adds significantly to the natural values and habitat for the wider region. It is 50,512 ha in area, most of which comprises native vegetation.

The south-western portion of the South Gippsland BPP area lies within the Gippsland Plains Bioregion, characterised by lowland coastal and alluvial plains rising to the Strzelecki Ranges Bioregion to the north and north-east. The Strzelecki Ranges comprises foothills and steep terrain with forest. Major towns are Leongatha, Korumburra, Mirboo North and Foster.

The Traditional Owners of the area are the Bunurong, Boon Wurrung and Gunaikurnai people who have shared an intimate spiritual and cultural connection to the land for many thousands of years.

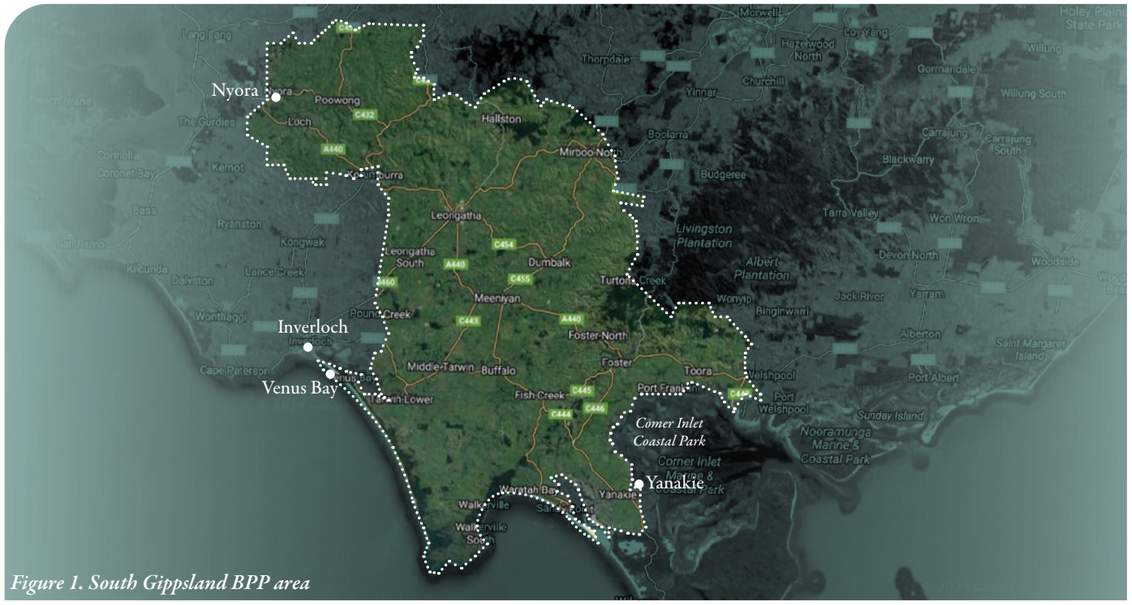


Figure 1. South Gippsland BPP area

2. Background and context

2.1 Purpose of this plan

To guide the development and implementation of collaborative and coordinated action including on-ground works, research, monitoring, education and engagement to achieve measurable improvements in native biodiversity in South Gippsland over the next 10+ years.

2.2 Benefits of a healthy natural environment

A healthy natural environment in South Gippsland benefits people, nature, our community and farm businesses (Figure 2).

The benefits of a healthy natural environment include:

- clean air and water
- climate regulation
- disease resistance
- food security
- tourism values
- high aesthetic, social, recreational, cultural and spiritual values.

Figure 2. Benefits directly related to agricultural environments such as South Gippsland (Photo: WGCMA)

2.3 Vision and Strategic Directions

Vision

That South Gippsland's native biodiversity is valued, protected, and enhanced through collaborative and coordinated action across government, industry and community.

Strategic Directions

The objectives, actions and proposed measures of success that make up the South Gippsland BPP have been developed in line with the following nine Strategic Directions.

Strategic Directions

1. Protect our remaining native biodiversity
2. Enhance the quality, quantity, resilience and functionality of native ecosystems
3. Improve the connectivity of native biodiversity across the landscape
4. Educate and engage to encourage care of and investment in native biodiversity
5. Take informed, targeted action for priority threatened species
6. Work with and alongside Traditional Owners
7. Strengthen climate resilience in our landscape
8. Collaborate and coordinate to deliver effective biodiversity outcomes
9. Continue to build and share knowledge to inform better biodiversity outcomes

2.4 Document structure

- **Section 2 – background information** on the development of the South Gippsland BPP.
- **Section 3 – information on the natural environment** of South Gippsland. Content includes natural values, potential threats and priorities for improvement.
- **Section 4 – South Gippsland Biodiversity Protection Plan.** Content includes objectives, actions and measures.

2.5 Why is this Biodiversity Protection Plan necessary?

The natural environment is a major feature of South Gippsland. Its undulating landscape provides spectacular and diverse views of forest, waterways, lowland plains, inlets and coastlines. It is home to unique flora like the Strzelecki gum and bog gum and it provides habitat for a myriad of wildlife.

Elements like South Gippsland's rainfall, waterways and soils have also made it an attractive landscape for agriculture and forestry. This means that today, 64% of the landscape is used for agriculture which has impacted the native vegetation, waterway health and the diversity of flora and fauna.

Now, only 22% of the former native vegetation remains (DELWP 2017a) and 10% of the region's flora and fauna are threatened (DEECA 2023d). Waterways are in average or poor condition (Figure 21) which not only threatens local wildlife such as platypus but also migratory species which rely on the region's nationally and internationally-recognised estuarine and inlet environments.

South Gippsland has seen a strong focus on agriculture and forestry, with 94% of the landscape privately owned. This leaves only 6% of the landscape in public hands, much lower than the overall percentage for Victoria at 38%. The great majority of native vegetation (77%) is now found on private land. This places more reliance on private landholders to engage in conservation efforts on their properties.

The Victorian State of the Environment Biodiversity Update 2021 (CES 2021) found that Victoria's natural environment is in serious decline. Background research into the natural environment for South Gippsland (summarised in Section 3) reflects the findings of that report. Most biodiversity health indicators (67%) were found to be in poor condition, 18% were in fair condition and for the rest the status was unknown. Of the 43 indicators considered for their trend trajectory, only one was improving, with the rest deteriorating or unclear.

Climate change threatens all elements of our natural environment and agricultural landscape. The effects of climate change will exacerbate the environmental degradation that is underway, adding pressure to natural systems and native species.

However, South Gippsland is also uniquely placed, due to the diversity of its landscape and relatively reliable rainfall, to play a significant role as a natural refuge in the face of climate change. This increases the value of the habitat that South Gippsland retains and poses the challenge, particularly to private landholders and those organisations that work on private land, to engage in activities that will improve the natural environment. This will require significantly more funding, engagement and coordination between existing natural resource managers in the region. It will also require new networks, relationships and innovative ideas to challenge current methods and modes of action. A plan such as this South Gippsland BPP is an opportunity to set direction to achieve this.

Australia has set priorities for action on biodiversity via its Strategy for Nature, updated in 2023. The Victorian Government produced an updated Biodiversity Strategy in 2017 and this in turn guides regional plans for land management authorities like the West Gippsland Catchment Management Authority (WGCMA), Melbourne Water and Trust for Nature (TfN). Parks Victoria has undertaken its own conservation planning process for its Parks Estate and the state Department of Environment Energy and Climate Action (DEECA) works to deliver the Biodiversity Strategy and has developed tools such as State Management Prospects which direct how it will operate and fund on-ground activity.

In addition to plans and strategies, there is federal and state legislation that guides the management and conservation of natural biodiversity values. These are shown in Table 1.

Federal	Australia's Strategy for Nature (2019-2030)
State	Protecting Victoria's Environment – Biodiversity 2037 (2017)
Regional	West Gippsland Regional Catchment Strategy 2021-27 Port Phillip and Westernport Regional Catchment Strategy 2021-27 Parks Victoria, Conservation Action Plan: Gippsland Plains and Strzelecki Ranges Parks and Reserves Managed by Parks Victoria, 2021 Trust for Nature Statewide Conservation Plan 2021-2030 Biodiversity Response Planning Fact Sheets (DELWP 2018) Strategic Management Prospects (Version 4) (DEECA 2023)
South Gippsland	**South Gippsland Biodiversity Protection Plan** South Gippsland Shire Council Environmental Sustainability Strategy Framework, 2021

Figure 3. Hierarchy of strategies and plans related to biodiversity and nature

Legislation	Comment
Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)	Federal legislation that identifies and protects 'Matters of National Environmental Significance' including places of National or World Heritage, wetlands of international importance, listed flora, fauna and ecological communities and the Commonwealth marine environment.
Flora and Fauna Guarantee Act 1988 (FFG Act)	Key piece of Victorian legislation for the conservation of threatened species and communities and for the management of potentially threatening processes. Identifies and lists threatened native plants, animals and ecological communities in Victoria and identifies threatening processes that impact on biodiversity. Includes a number of mechanisms which aim to protect flora, fauna and listed communities. A permit is required if proposed works may kill, injure or disturb protected flora species. Public authorities have a responsibility to ensure that their operations have regard to the objectives of the FFG Act.
Wildlife Act 1975	Seeks to ensure: • the protection and conservation of wildlife • the prevention of taxa of wildlife from becoming extinct • the sustainable use of and access to wildlife. Prohibits and regulates the conduct of persons involved with activities related to wildlife and provides a framework for regulating activities concerning wildlife. It also provides a framework for the rescue and rehabilitation of wildlife undertaken by authorised volunteers, wildlife shelters and foster carers.
Conservation and Land Protection Act 1994 (CaLP Act)	Regulates land degradation including detrimental environmental or economic impacts of declared noxious weeds and pest animals. All landowners, including the Crown, public authorities and licensees of Crown lands, must, in relation to their land, take all reasonable steps to: • avoid causing or contributing to land degradation which causes or may cause damage to land of another landowner • eradicate regionally prohibited weeds • prevent the growth and spread of regionally controlled weeds on their land • prevent the spread of, and as far as possible, eradicate established pest animals.
Planning and Environment Act 1987	Provides a framework for planning the use, development and protection of land in Victoria. It sets out: • the procedures for preparing and amending the Victoria Planning Provisions and municipal planning schemes • the process for obtaining permits under schemes, settling disputes and enforcing compliance with planning schemes and permits. Clause 52.17 is the principal clause under the Victorian Planning Provisions and municipal planning schemes that regulates native vegetation protection and permitted removal. The *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP 2017a) (referred to as the *Native Vegetation Guidelines*) is the primary reference document under this clause.
Victorian Conservation Act Trust 1972	The Victorian Conservation Trust Act 1972 established the Trust for Nature and enabled its role in establishing covenants to assist in conserving areas of natural values.

Table 1. Legislation relevant to the management and conservation of natural biodiversity values

2.5.1 Development of the South Gippsland BPP

There is no provision in state or federal legislation, plans or strategies for a coordinated approach to conserving biodiversity in South Gippsland.

In 2020, SGLN initiated the development of a Biodiversity Protection Plan to meet this need. SGLN sought the support and involvement of key regional stakeholders (Figure 4) to both develop the Biodiversity Protection Plan and form a working group to implement the plan going forward.

The South Gippsland BPP has been developed in three stages:

Stage 1 Completion of the *South Gippsland BPP Foundation Document*. This was a dedicated research project that collated significant amounts of information on the region's ecosystems, species and natural processes. It resulted in a document that can be used as a resource on the natural values of the region, particularly providing summarised information for values on public land. Development of the Foundation Document involved a collaborative working relationship with a Scientific Advisory Committee and was overseen by a subcommittee of the SGLN.

Stage 2 Review and Scoping Phase. The review and scoping phase considered relevant regional strategies, plans and data from stakeholders to provide context and strategic relevance for the plan. This resulted in a summary of values and threats, information on regional stakeholders and relevant policy, strategies and plans and a set of Strategic Directions. Summary information on the strategies and plans that informed this plan is included as Appendix 1.

Stage 3 Drafting and Engagement. This stage was guided by a Stakeholder Engagement Plan and included three key stakeholder workshops and a survey to determine Landcare members' activities and interest in future action on nature conservation. Regular updates and news items were shared via SGLN newsletters and social media. Key stakeholders provided feedback on an early draft and the final draft was presented for broad community consultation in May 2024. A community workshop was held in June 2024. The community was able to provide feedback at the workshop and online. All feedback was considered when drafting this plan.

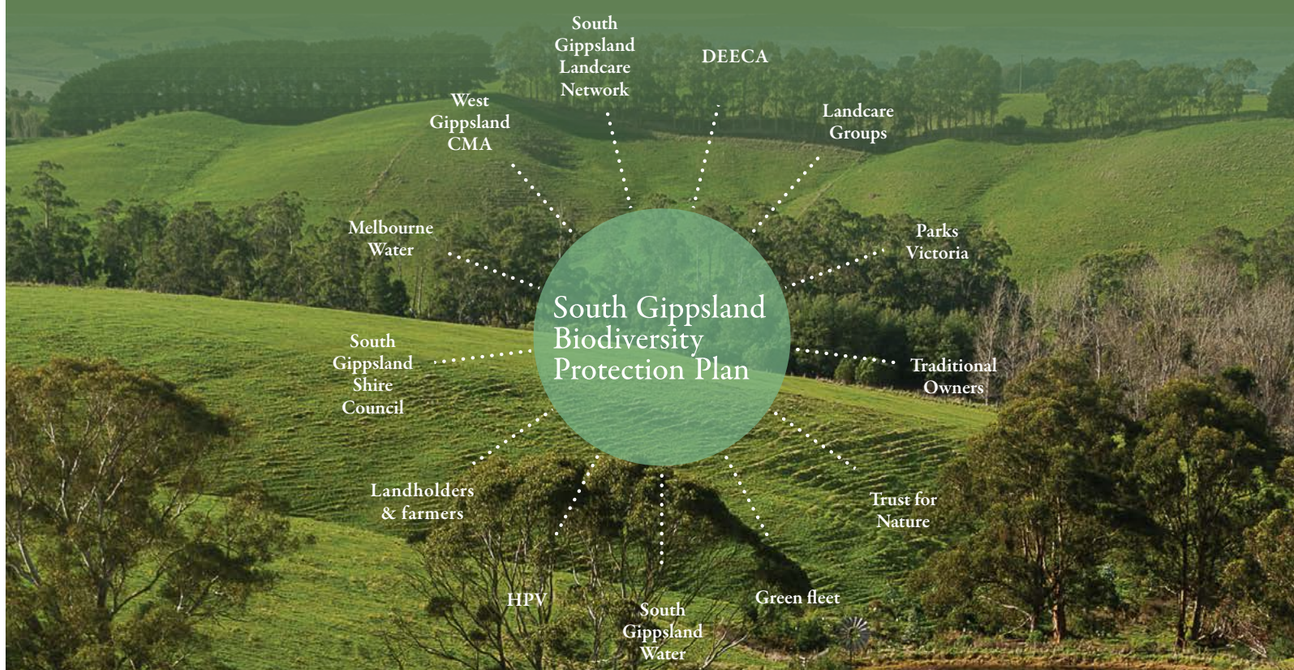


Figure 4. Regional land managers and key stakeholders for the SG BPP (Photo: WGCMA)

2.5.2 Traditional Owners

An important goal for SGLN is to progress learning about Traditional Owner culture, values and aspirations with the aim of working together as true partners in the future.

The two recognised Registered Aboriginal Parties (RAPs) within the South Gippsland BPP area are:

- Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC)
- Bunurong Land Council Aboriginal Corporation (BLCAC).

The Boonwurrung Land and Sea Council is an additional representative Aboriginal Corporation within this area.

The extent for the RAP boundaries is shown in Figure 5. A large portion of the land located centrally within the South Gippsland BPP area does not currently have a RAP appointed.

The South Gippsland BPP seeks to ensure that Traditional Owner aspirations are included in the long-term management of the region's landscapes. This goal is expressed in Strategic Direction 6 (*Work with and alongside Traditional Owners*), and the necessary actions and measures are contained in Section 4.6.

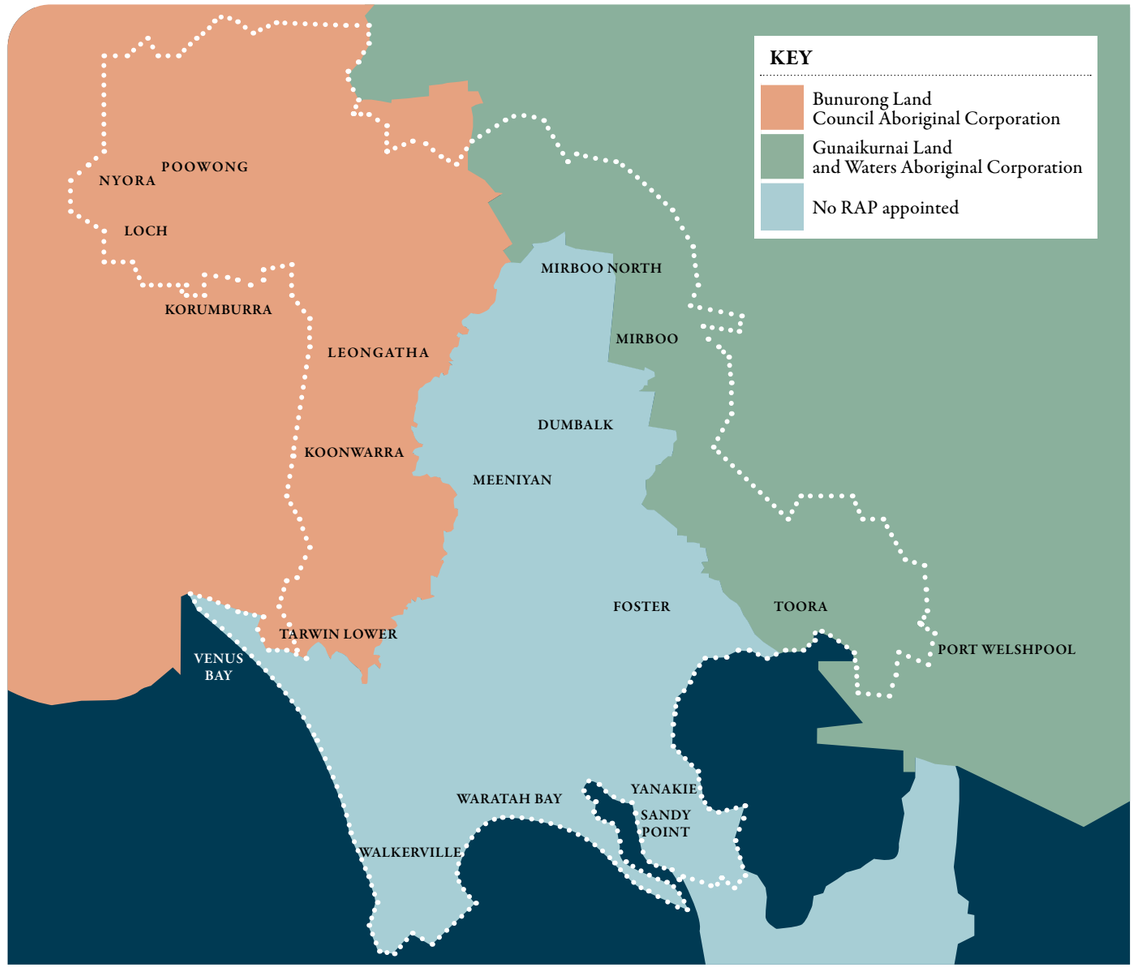


Figure 5. Extent of Registered Aboriginal Parties for the Region (WGCMA 2021)

3. The natural environment

3.1 Native vegetation, flora and fungi

3.1.1 Native vegetation

The South Gippsland BPP area includes the Gippsland Plains and Strzelecki Ranges bioregions. Prior to colonisation these areas were characterised by a diverse range of vegetation types which have been classified into Ecological Vegetation Class (EVC) groups (Figure 7a & b). They include Heathy Woodlands, Coastal Scrub, Swamp Scrub, Grasslands, Woodlands and Riparian vegetation on the plains and Wet Forest, Damp Forest and Rainforests in the ranges.

DEECA's Native Vegetation Extent Mapping (DELWP 2017a) shows that of the original native vegetation present within the South Gippsland BPP area in 1750, only 22% remains. Figures 7a & b show the historic and current distribution of vegetation by EVC group.

Of further concern, landcover data for of the South Gippsland Shire area for the past 40 years (DEECA 2023b) shows that most elements of native vegetation and other natural landscape features such as wetlands have reduced in cover from 1985 to 2020 (Figure 8).

The distribution of remaining native vegetation across the landscape is not consistent. Some locations with high coverage of native vegetation include the most elevated parts of the Strzelecki Ranges and the coastal fringes, leaving the remainder of the landscape with, in some cases, very low cover. Almost 75% of the region's remaining native vegetation is found in the Strzelecki Ranges Bioregion compared to just over 25% on the Gippsland Plains.

The native vegetation across the landscape is quite diverse with 56 BioEVCs (EVCs by Bioregion) mapped within the South Gippsland BPP area (DELWP 2005). Summary details for these are provided in Appendix 2.

As the majority of EVCs across both bioregions are classified as being depleted, vulnerable or endangered, the native vegetation that still exists is extremely important:

- Gippsland Plains: endangered 18%; vulnerable 22%; depleted 49%; least concern 11%
- Strzelecki Ranges: endangered 19%; vulnerable 6%; depleted 75%; rare 0.01%.

On the Gippsland Plains, endangered EVCs include most vegetation types associated with swamps, waterways, freshwater wetlands and grassy environments such as Swamp Scrub and Swampy Riparian Woodland. Those that are considered least concern by the same measure are many of the coastal EVCs. Their classification as least concern is misleading as tidal, estuarine and coastal environments are some of the most vulnerable in our landscape and will also serve as first defence systems in the face of climate change impacts.

For the Strzelecki Ranges, endangered EVCs include a mix of forest types, notably Cool and Warm Temperate Rainforest as well as Damp Forest. The two rainforest types are similarly important as potentially being impacted by climate change but also valuable in mitigating climate impacts. Damp Forest is still relatively well-represented in the South Gippsland BPP area. Its endangered status indicates that South Gippsland is an important area for conserving this formerly more widespread vegetation type.

Many landholders in South Gippsland have been progressively protecting their native bushland and undertaking enhancement and revegetation work.

In the South Gippsland BPP area, 753 ha of native vegetation is permanently protected with a Trust for Nature covenant, across 39 properties. A further 370 properties are registered with Land for WIldlife, with approximately 1250 ha being managed for wildlife.

There are also many landholders who have protected and are actively managing their bushland voluntarily under past government schemes like EcoTender or through Landcare or Greening Australia grants or programs.

Figure 6. Cool Temperate Rainforest (photo: WGCMA)

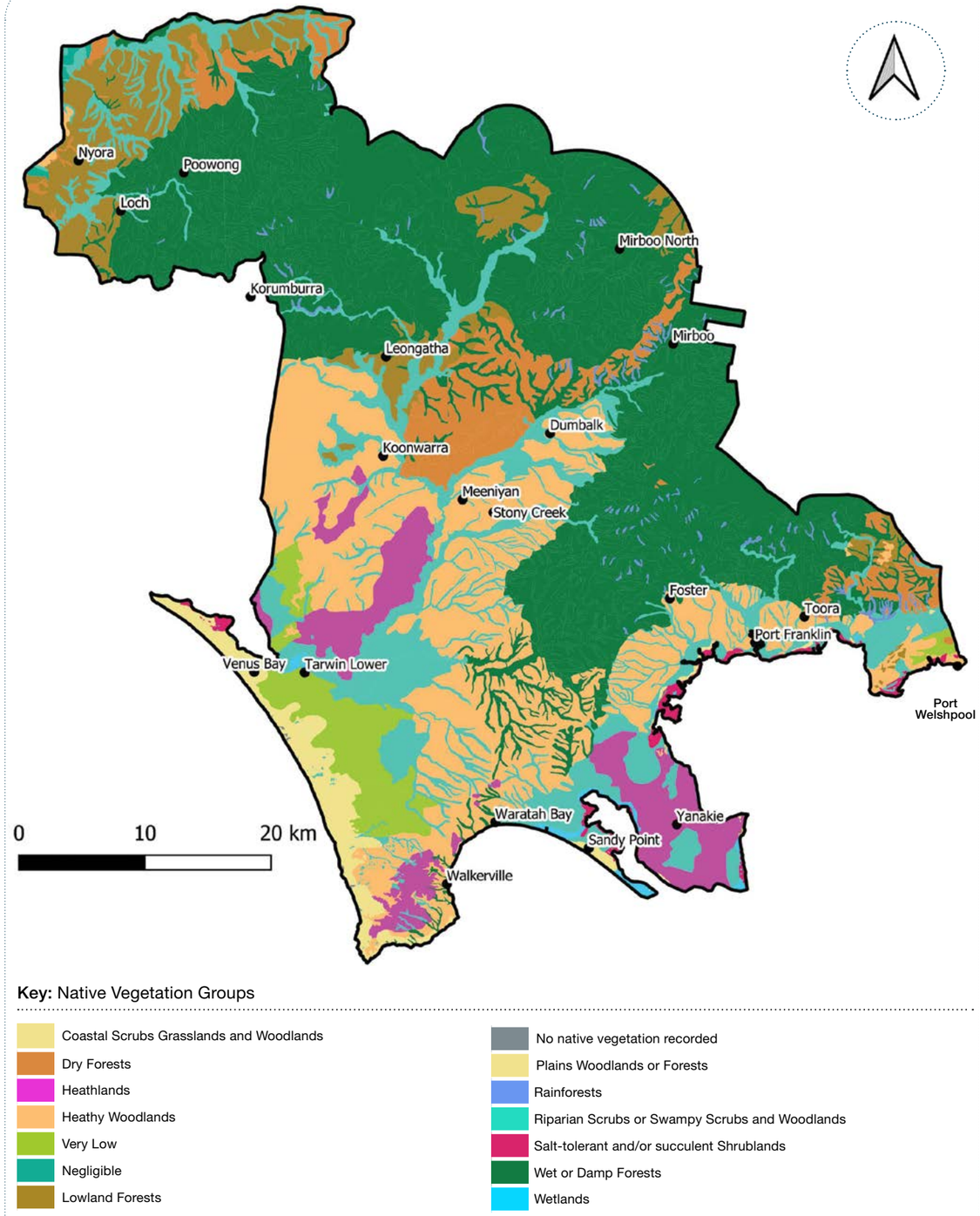


Figure 7a. Pre-1750 vegetation distribution by EVC group

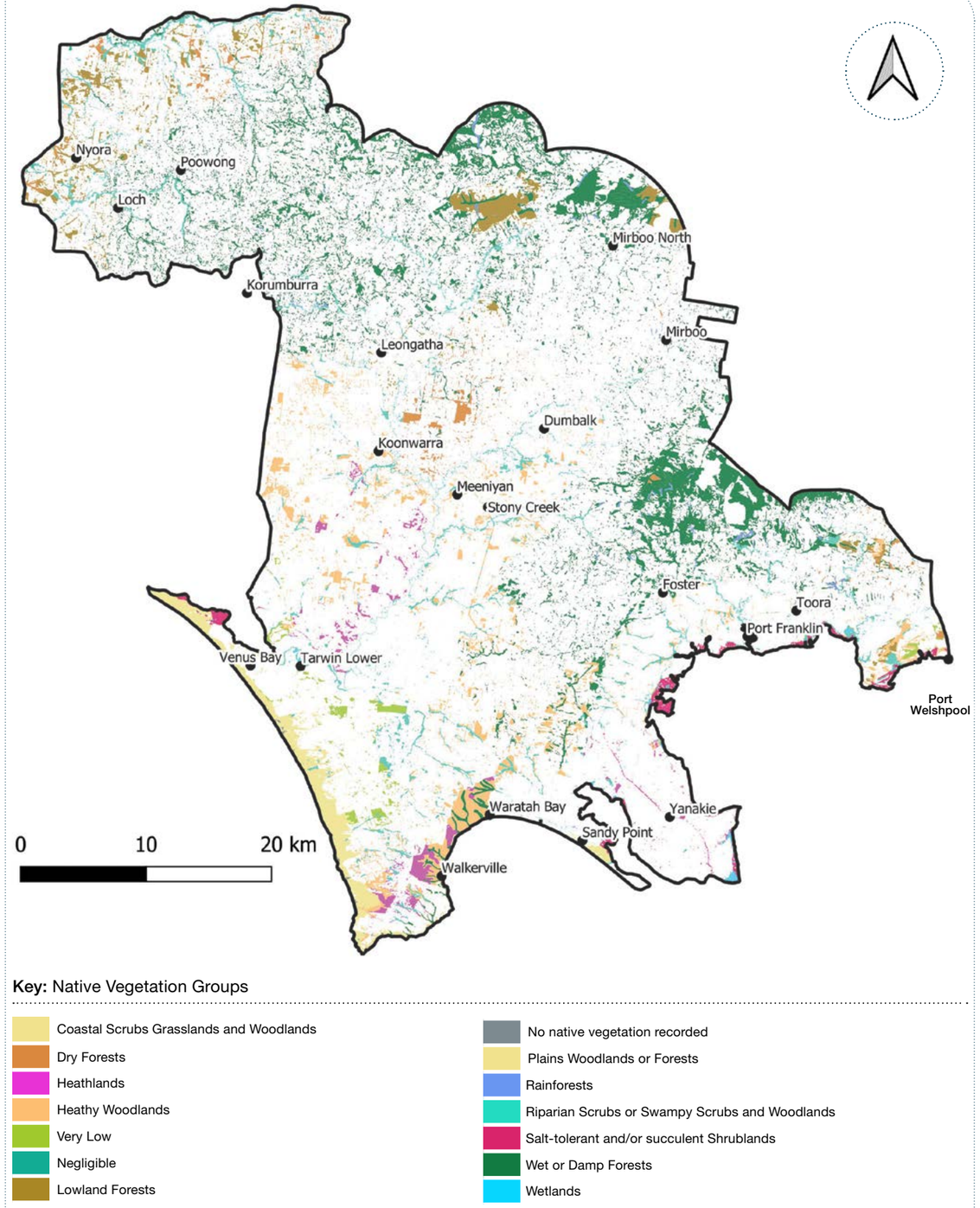


Figure 7b. Current vegetation distribution by EVC group

Information on landcover patterns for the past 40 years mapped by DEECA (shown in Figure 8 and Figure 9) shows an overall picture of native vegetation decline in most of the natural features categories mapped by this dataset. However, in two categories - native trees (Figure 10) and mangroves - a different trend is shown with the cover in each category increasing in that same period.

Landcover information for native tree cover has shown a generally positive trend which is likely attributed to the work of private landholders over the past 40 years. Some declines in every second five-yearly episode may indicate land-use changes associated with farm forestry or commercial forestry activity.

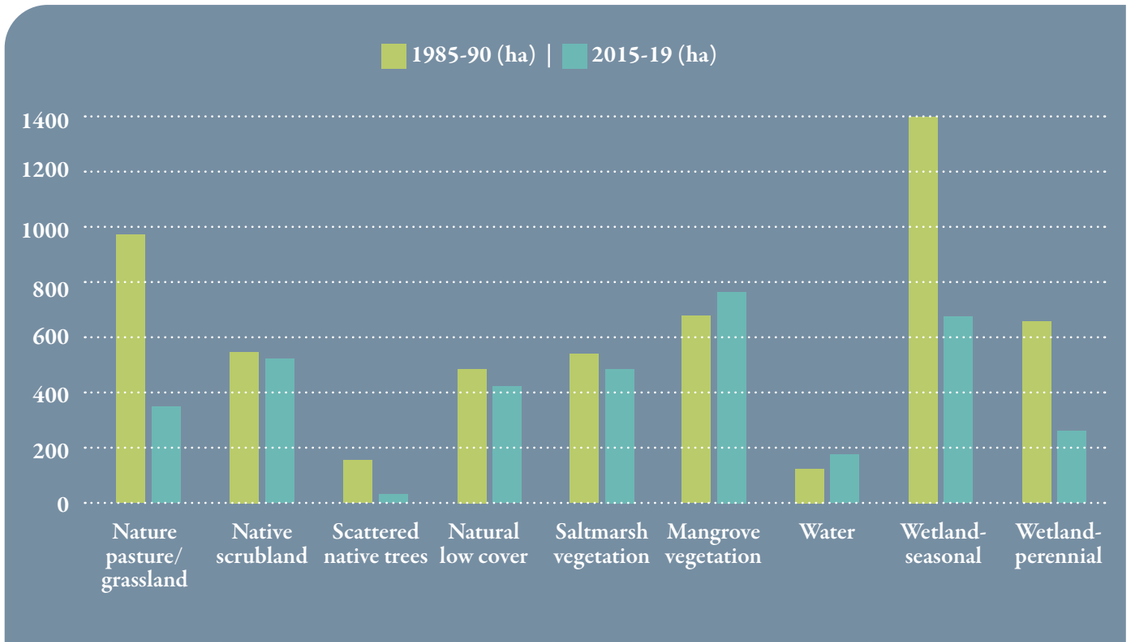


Figure 8. Change in landcover in South Gippsland Shire Council Area in the past 40 years — natural features (ha)

Figure 9. Landcover in South Gippsland Shire Council Area — native trees (ha)

3.1.2 Native flora and fungi

The South Gippsland BPP area is home to 1431 species of native flora (28% of the state total) of which 126 are considered threatened. Additionally, there are 475 plants identified as exotic or located outside of their natural range (DEECA 2023d). Most of these are environmental weeds which are recognised as impacting on native plants and animals. Of these, 14 are Weeds of National Significance.

The most commonly recorded flora for South Gippsland are austral bracken, prickly tea-tree, common heath, messmate stringybark and silver banksia.

South Gippsland's high rainfall and varied landscapes support a diversity of fungi and micro-organisms that are essential for healthy ecosystems, including agriculture.

Thirteen species of fungi are listed in the VBA, of which four are considered threatened (DEECA 2023d). One of these - the two-toned vibrissea - is a pin-shaped species found only in wet forest, and associated with wood located in running water (Murray 2023). Many more have been identified via other sources such as iNaturalist indicating that there is still much to learn about these important organisms.

Some key flora strongly associated with South Gippsland include southern blue gum, strzelecki gum and bog gum.

The *South Gippsland BPP Foundation Document* is a resource for exploring more detail on the flora and fungi of South Gippsland.

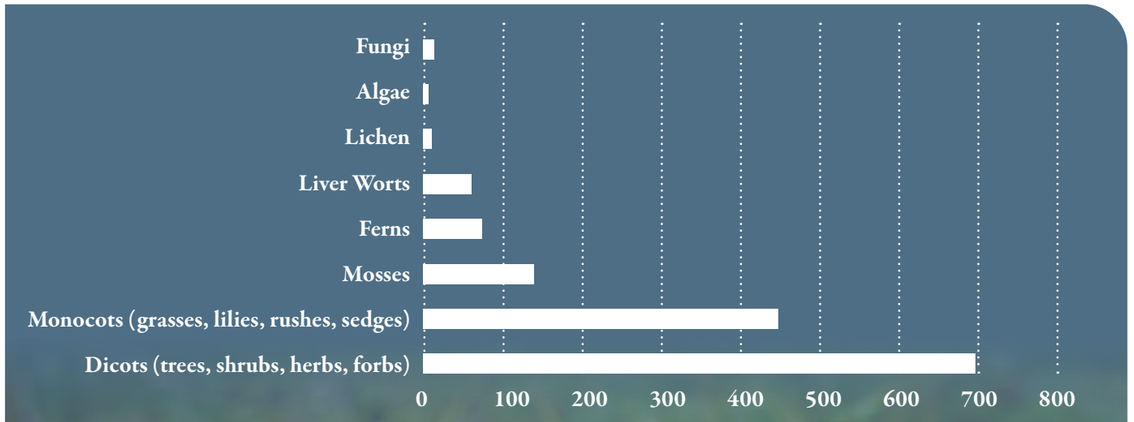


Figure 10. Number of flora and fungi species recorded in South Gippsland (Victorian Biodiversity Atlas 25 August 2023)

Threats facing native vegetation, flora, fauna and fungi	
Clearing	Permitted clearing of native vegetation in South Gippsland occurs in accordance with Clause 52.17 and 52.16 of each council's planning scheme. In many cases when vegetation is cleared an offset for the impact is required, but this may not always occur locally. Additionally, there are a number of exemptions to requiring a permit including for some farming purposes. Unpermitted clearing occurs when native vegetation is removed without seeking a permit. The state government has found that unpermitted clearing is responsible for large areas of native vegetation removal. For example, in Baw Baw Shire from 2018-2020 only nine permits for clearing were issued but at the same time satellite imagery analysis showed more than 100 instances of vegetation removal (VAGO 2021). This is often difficult to prove and to prosecute. Without better means of regulating clearing South Gippsland risks losing more valuable vegetation.
Stock access	Unrestricted stock access to native vegetation and waterways results in direct damage to plants via trampling, grazing or rubbing against bark. Grazing pressure also creates soil compaction and increased nutrient loads from manure, introducing and supporting weed growth. Public authorities have a responsibility to ensure that their operations have regard to the objectives of the FFG Act.
Weeds	Weeds compete with native plants for resources, altering the structure and function of habitat. In South Gippsland there has been extensive effort over decades to manage weeds and while some cumulative positive impact is being seen in some locations, like the removal of willows from waterways and targeted Spartina control in Anderson Inlet, other weed problems are constant or increasing. Planned, ongoing, cross-tenure management, targeting new and emerging weeds, as well as established weeds' priority habitat will be of most benefit for maintaining and improving the region's natural values.
Introduced herbivores	Introduced herbivores such as rabbits, deer and hares degrade natural environments via grazing, browsing or trampling. This decreases plant diversity, causes erosion and allows weeds and pathogens to spread. These species have been the subject of extensive management by private landholders and public authorities. Recent projects focusing on the Bunurong Coast resulted in reductions in rabbits and deer. If lasting results are to be realised, this work should be ongoing, via cross-tenure projects across the landscape.
Climate change	The outcomes of climate change will exacerbate the pressures already faced by native vegetation, flora and fauna.
Inappropriate fire regimes	European settlement has disrupted Traditional Owner fire management. Without fire in appropriate seasons, some vegetation communities, especially those that require more frequent fire for germination like grasslands, grassy woodlands, heathlands and near-coastal vegetation, will lose their plant species diversity and change their character.

Table 2. Threats facing native vegetation, flora, fauna and fungi

Threats facing native vegetation, flora, fauna and fungi	
Pathogens and parasites	*Phytophthora* is a water-borne mould that affects the root systems of susceptible plant species, causing dieback. Plants that have proven to be particularly susceptible include grass trees and banksias. Myrtle rust, caused by the native fungus *Chalara australis*, affects myrtle beech trees. Myrtle Wilt has been recorded in the Strzelecki Ranges including Tarra–Bulga National Park and Gunyah Rainforest Scenic Reserve (PV 2021). Chytrid Fungus, affecting amphibians, can cause death and has impacted species worldwide. Not all species are equally susceptible. The growling grass frog, once widespread in South Gippsland, is susceptible to this disease (Heard et al 2014). There have been no records of growling grass frogs in South Gippsland outside of Wilsons Promontory since 1982 (DEECA 2023d). Mange, caused by small mites is a painful and potentially lethal disease that particularly afflicts bare-nosed wombats. An increasing number of reports of mange affecting (and killing) koalas, possums and wallabies are being received. Treatment methods can be found via: https://mangemanagement.org.au/
Loss of fauna	The loss of small and medium-sized digging vertebrates and invertebrates, in particular species such as potoroos, bandicoots and lyrebirds, has altered ecological function in the landscape. These animals fulfil many roles like soil aeration and construction, pollination, seed and spore spread, enhancing natural processes such as decomposition.
Forestry practice	South Gippsland has been a focus area for forestry since European colonisation. Forestry practice, which in recent decades has involved harvesting regenerated native vegetation and the subsequent reliance on lower diversity single species plantings, reduces the quality and extent of important areas of what are now some of the larger patches of natural values in the region. Concerns also exist around pest plant and animal management in these areas, and fauna habitat and waterway impacts around harvest time. A recent trend to replace former eucalypt plantations with Radiata Pine further reduces the habitat value of these areas.
Lack of data	There are large gaps in knowledge on threatened species distribution in South Gippsland.
Introduced predators	Foxes and feral cats are widespread and have a significant impact on native wildlife. Easy targets include ground-dwelling mammals and birds such as bandicoots, shorebirds (e.g. hooded plovers) and the superb lyrebird. Other birds, possums, gliders, amphibians, lizards and insects are also consumed. Feral pigs, while not as widespread, similarly prey on smaller ground-dwelling animals. Dedicated fox control undertaken during the Bunurong Project led to measurable improvements in hooded plover breeding results. Wildlife carers also report many instances of domestic dogs killing or maiming wildlife entering backyards.
Vehicle impact	Local wildlife carers report that at least 75% of animals in their care are injured by vehicles on roads. Most roadkill occurs at night and during migration and breeding seasons.

Table 2. Threats facing native vegetation, flora, fauna and fungi

3.2 Priorities for protecting, enhancing and connecting

3.2.1 Protecting remnant native biodiversity

In keeping with the ecological principle of 'protect the best', priority is given to patches of native biodiversity (vegetation and/or habitat) greater than 10 ha in area that comprise endangered EVCs or priority ecological communities or provide important habitat for a threatened species.

Protect larger patches

The size threshold of 10 ha recognises that the best outcomes for the resources available will be seen when larger areas are targeted. This is not to say that areas less than 10 ha should not or cannot be protected, but the aim is to see an agreed regional approach that focuses on larger remnant patches and devises methods to engage with landholders for their protection. Smaller areas may be a priority for protection if they provide important habitat for threatened species or incorporate other natural values like a waterway or wetland. Smaller areas may also play an important role in facilitating connectivity, for example via biolinks across the landscape where it's not practical to increase the extent of the native vegetation. When prioritising larger patches for protection, other ecological principles regarding the shape of the remnant patch (edge to area ratio) and its location in proximity to other natural values may be considered.

Patches of native vegetation greater than 10 ha are shown in Landscape Zone maps in Section 3.8.

Threatened or vulnerable ecosystems

While the retention and enhancement of all ecosystems is important, it is important to prioritise the protection of those ecosystems which are most vulnerable to climate change and will contribute to biodiversity resilience. Some of these ecological communities are also listed as threatened, either at the national or state level. Priority ecosystems may be less than 10 ha in extent. These priority ecological communities include:

- coastal saltmarsh (EPBC-listed, important for climate change mitigation)
- mangroves (important for climate change mitigation)
- seagrass meadows (important for climate change mitigation, associated with internationally or nationally recognised wetlands and estuaries)
- warm temperate rainforest (FFG-listed, important for climate change mitigation)
- cool temperate rainforest (FFG-listed, important for climate change mitigation)
- wetlands (support listed migratory shorebirds, important for climate change mitigation).

In the past, projects run by regional authorities and organisations have focused on coastal saltmarsh and seagrass, particularly in Corner Inlet, and to a lesser extent mangrove communities. Larger estuarine and marine wetlands have also received focus; terrestrial wetlands and rainforest communities less so.

Reduce clearing

In addition to permanent protection and fencing to exclude stock, there are other activities that can be undertaken increase protection for remnant native vegetation. These include:

- Increasing incentives for landholders to protect and manage their native biodiversity in perpetuity. There are currently two incentives available to landholders in South Gippsland who have a Trust for Nature Covenant:
  - South Gippsland Shire Council provides an annual assistance payment to landowners with a Trust for Nature Covenant. Other adjoining councils provide similar payments.
  - From 1 January 2024, land protected with a conservation covenant through Trust for Nature will be exempt from land tax.
- Applying other on-title agreements via local government (under section 173 of the Planning and Environment Act 1987) or state government (under section 69 of the Conservation, Forests and Lands Act 1987 (CFL Act).
- Addressing instances of permitted and non-permitted clearing via improved transparency around decision-making, increased reporting, monitoring and compliance.

3.2.2 Enhancing

Much of our remnant native vegetation and waterways are degraded. Their condition can be improved by activities such as managing pest plants and animals, retaining logs and preserving hollow-bearing trees. Other activities include encouraging natural regeneration from remnant seed stock to improve the diversity of species or to expand the extent of a remnant patch.

The BPP includes a proposal to develop management programs to protect remnant vegetation, with priority placed on larger patches. Increased planning is encouraged for all on-ground works involving remnant vegetation.

Ecological burning

One important element of habitat enhancement which has been largely lacking from private land in South Gippsland is the use of ecological burning.

The presence of regular, controlled fire is integral to the ecology of South Gippsland and its relative absence in the past centuries has impacted the health of local vegetation and habitat. Parks Victoria and DEECA have conducted planned burns with varying regularity on some areas of public land, but these have not necessarily been undertaken for ecological purposes, nor has there been any comprehensive landscape plan or strategy for identifying priority locations for ecological burning. Considering that the majority of remnant native vegetation is on private land, and has not been the subject of much focus for ecological burning, there is ample opportunity for this to be addressed.

Some vegetation types, like grasslands and heathlands, require burning at more frequent intervals while others, like wet forests, require much longer intervals between fire. Ecological burns need to be well-informed by appropriate scientific information to ensure they will result in positive outcomes.

In past decades there have been attempts by various groups and organisations to conduct burns on private land. One example in 2023 on Merran Wilde's property near Fish Creek, was undertaken as a planning and learning exercise for regional stakeholders including the CFA, DEECA and others. This burn was not only successful from an ecological perspective, it also generated enthusiasm to see more.

Other regions across the state have built capacity in ecological burning, often in association with Traditional Owners. With a coordinated effort between private landholders, land management organisations and Traditional Owners, South Gippsland has potential to build capacity in ecological burning, ultimately resulting in a regular schedule of cross-tenure ecological burns in priority locations.

3.2.3 Connecting

Improving the connection between existing native biodiversity is an important element in ensuring that species can move safely through the landscape with the resources that they need. Landscape connectivity is even more important under climate change for species sustainability and supporting ecological processes.

Revegetation is a key activity that can help to improve connectivity in the landscape. Revegetation that aims to plant species that would naturally have occurred in the local landscape is important for reconnecting larger patches of native vegetation, waterway protection, erosion control and providing on-farm benefits. As revegetation is costly in both time and resources, it will be important to target effort and to look for options to achieve good revegetation outcomes by capitalising on other benefits such as carbon sequestration and improved catchment outcomes. There is enthusiasm in the region to establish biolinks and the carbon sequestration market is also gaining traction.

Biolinks

In recent years there has been keen interest in seeing progress on a series of regional biolinks in South Gippsland. This interest builds on the previous and ongoing efforts associated with the Strzelecki Koala Project, instigated in 2014, which identified priority focus areas for the re-creation of koala habitat, particularly across the northern parts of the South Gippsland BPP area.

In 2020 the Prom Coast Ecolink Group was formed, with the aim of establishing a wildlife corridor along the Hoddle Range from Walkerville to the Strzeleckis, linking large patches of vegetation along its length. This group now sits under the umbrella of the SGLN. The Gippsland Threatened Species Action Group aims to connect remnant patches of native vegetation in priority areas based on threatened species habitat, initially in the Bass Coast region, extending eastwards to South Gippsland.

To the north, the identified Strzelecki Alpine Biolink stretches from south of Boolara northwards across the Latrobe Valley to join the foothills of the Great Dividing Range west of Tyers.

To the west, there is great motivation from groups associated with the Western Port Woodlands to formalise a biolink to connect and protect a series of bushland reserves from sand mining. This biolink extends from Grantville in the south to the Adams Creek Nature Conservation Reserve and Wutach Reserve in the north, just west of Nyora. Additionally, Bass Coast Shire Council developed its Biodiversity Biolinks Plan in 2018 which identifies a large network of potential biolinks across the municipality.

Biolinks mean different things to different people. The biolink projects mentioned above generally focus on linking larger remnants, on the basis that this will benefit a diversity of species. This principle provides a relatively sound basis, but if all biolink projects were to only link existing remnants, important opportunities to address a wider range of ecosystems and species that rely on different habitats would be missed. This would include habitats that have been preferentially cleared or are not associated with remnant vegetation. In some cases the locations that have been preferentially cleared also provide habitat for threatened species.

It is recommended that, to complement the existing work underway in the region, a Biolinks Plan for South Gippsland be developed which takes a species-led, tenure-blind approach and considers all key environments across the region, not just those where larger remnants exist. Similar biolink plans have been developed for a number of municipalities across the state, including the nearby Cardinia Shire region, utilising the *General Approach to Planning Connectivity from Local Scales to Regional (GAPCLoSR)* method.

The GAPCLoSR method considers each ecosystem in the landscape. A set of species is chosen for each ecosystem which best represents the main ecological niches for the fauna typically present. Information about the habitat requirements of each species is used to analyse landscape conditions and determine the best possible pathways for recreating or enhancing habitat. This is then collated to create a comprehensive Biolink Plan that considers all parts of the landscape and a wide diversity of species-specific requirements.

Carbon sequestration

South Gippsland is within one of the highest potential carbon sequestering regions in Australia. There are opportunities to sequester and retain carbon which will also directly benefit South Gippsland's natural values, by growing locally native vegetation or conserving areas that naturally hold carbon, such as wetlands.

While mature remnant native vegetation is considered to be relatively carbon neutral, young vegetation will sequester carbon until it reaches maturity. Additionally, the protection of existing vegetation and aquatic systems will assist in reducing carbon release. It is also good farming practice to develop and retain soil carbon to improve agricultural productivity.

There are several options for carbon sequestration. The most effective for capturing carbon and delivering biodiversity benefits will be biodiverse plantings, natural regeneration and potentially blue carbon (WGCMA 2018).

The carbon sequestration market has been driven by carbon policy in Australia and overseas, as well as increased awareness amongst the community and industry of the importance of climate change mitigation. There are several organisations facilitating carbon sequestration mixed-species planting projects and working with landholders for the dual purpose of capturing carbon and seeing biodiversity outcomes. These projects have proven to be most viable if they are larger in size, target areas of marginal farmland or where there are other on-farm or business benefits. Candidate areas include steep, terraced country, erosion prone areas or along waterways.

Early plantings in the 1990s were supported by initiatives such as CarbonTender and Greenfleet. Today, corporate entities and individuals are investing through a variety of organisations and schemes.

The Victorian Government has developed Target Landscapes mapping which predicts the locations in the landscape that will most benefit from planting native species for carbon sequestration and biodiversity outcomes. This mapping is used to prioritise target locations for the government's own projects and can also be an indicative tool for planning regional or local projects (Figure 11).

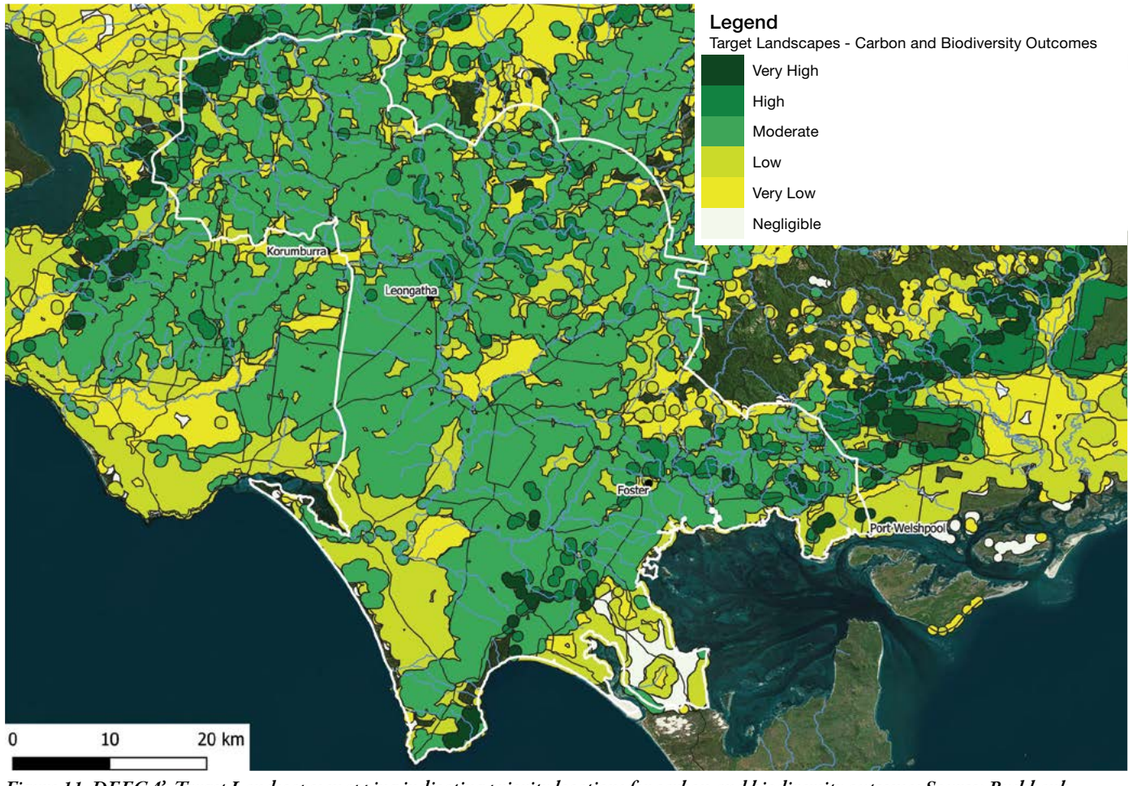


Figure 11. DEECA's Target Landscapes mapping indicating priority locations for carbon and biodiversity outcomes Source: Bushbank Target Landscapes Dataset, 2024

Blue and teal carbon

While largely untested locally, there is potential for the region to participate in 'blue and teal carbon' projects. Blue carbon relates to coastal and marine habitats such as saltmarsh, mangroves and seagrass meadows, which are used to sequester carbon in a similar way to terrestrial ecosystems. A 2017 study sampled organic carbon in sediments associated with saltmarsh, mangroves and seagrass along the Victorian coastline and found that these sediments were effective at sequestering carbon. Conversely it also estimates that the loss of these sediments due to disturbance and impacts on these ecosystems has resulted in carbon release, contributing to global carbon emissions (Ewers, C. et al 2017).

As these environments are themselves under threat from climate change impacts, the long-term stability of any sequestered carbon may be at risk. However, there is no doubt that carbon retention is another good reason to conserve these ecosystems.

Terrestrial wetlands are also thought to operate similarly and sequester carbon. Wetland-sequestered carbon or 'teal carbon' may be limited by the temporal nature of wetting and drying cycles on the stability of the sequestered carbon. Like blue carbon areas, the benefits of retaining and reinstating wetlands for carbon sequestration as well as for biodiversity values should be recognised.

3.3 Fauna

South Gippsland's broad range of habitats and ecosystems - from marine and coastal through to tall wet forests – supports 777 species of native fauna (Figure 12). Summaries on the different groups of fauna listed in the state records (Victorian Biodiversity Atlas (DEECA 2023d)) are provided below.

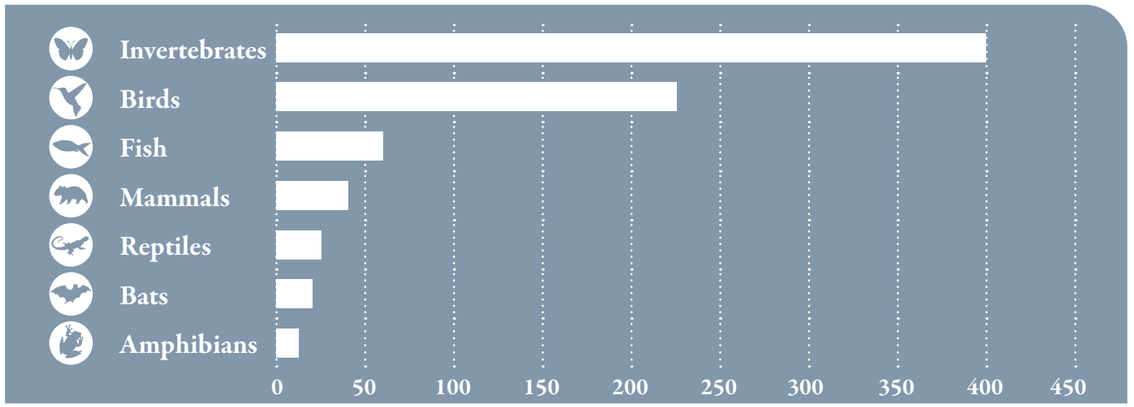


Figure 12. Number of fauna species in South Gippsland. Source Victorian Biodiversity Atlas records (23/11/2023)

Mammals and marsupials

There are 43 mammal species listed for the region, equating to 31% of Victoria's mammal diversity. The heathy and swampy vegetation of the Gippsland Plains supports mammal species such as bandicoots, potoroos, dunnarts, antechinus and pygmy possums. Key threatened mammal species include the white-footed dunnart and swamp antechinus. The region is also fundamentally important for the genetically-significant Strzelecki koala. Tall wet and damp forests associated with the Strzelecki Ranges are home to mammals including the southern greater glider (nationally endangered) and mountain brushtail possum. Common mammal species seen right across the region include the black-tailed wallaby and the bare-nosed wombat. There are also 16 introduced mammals recorded for the region, including the European fox, rabbit and deer.

Birds

Gippsland's range of habitats is reflected in the diversity of birdlife, with 229 species recorded, representing around 55% of Victoria's diversity. The most frequently sighted birds include the Australian magpie, superb fairy-wren, grey fantail and the grey shrike-thrush. South Gippsland is also home to 65 threatened bird species, including the blue-winged parrot, migratory shorebirds, hooded plover, and powerful and barking owls. There are 15 introduced bird species recorded for the region.

Reptiles

There are 25 reptile listings for South Gippsland including lizards, snakes and turtles of which seven are threatened. This is a third of Victoria's reptile diversity. The most reported reptiles are the metallic skink and the tiger snake. The lace monitor, listed as endangered under the FFG Act, is the fifth most reported species indicating that South Gippsland still provides important habitat for this species.

Amphibians

There are 11 amphibian listings for South Gippsland of which two are threatened. The common froglet and southern brown tree frog are the two most commonly heard amphibians and are found region-wide. The two threatened amphibians are the southern toadlet (endangered in Victoria) and the growling grass frog (nationally vulnerable). The growling grass frog was likely present across much of the region but only has a couple of records at Wilsons Promontory within the last decade. The southern toadlet has only been recorded recently at Wilsons Promontory and near Adams Creek Nature Conservation Reserve. The lack of records across the remainder of South Gippsland for these two species may be due to a lack of survey effort or because they are no longer present.

Fish and aquatic vertebrates

For fish and aquatic vertebrates, there are 38 primarily freshwater and estuarine aquatic species and 18 primarily marine species found in South Gippsland, of which six are threatened. The most commonly observed aquatic species are short-finned eels, remarkable animals which undertake an ocean migration - thought to be to the Coral Sea - to spawn (Koster, W. M. et al 2021).

Other native fish include common, spotted and climbing galaxias, tupong, river blackfish, southern pygmy perch and the nationally vulnerable Australian grayling. Most of these species also travel either upstream or downstream to complete their lifecycle.

Several common introduced species are also recorded for the region, including brown trout, European carp, rainbow trout, eastern gambusia and redfin.

Bats

There are 13 bats listed for South Gippsland. The most common is the white-striped freetail, possibly because it is one of the only bats that makes a sound audible to humans.

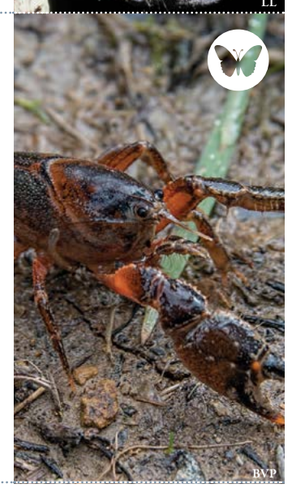
Other commonly recorded bats include the little forest Bat, lesser long-eared bat, Gould's and chocolate-wattled Bats. Three threatened species have been occasionally recorded: the grey-headed flying Fox (nationally vulnerable), eastern bent-wing bat (nationally critically endangered) and yellow-bellied sheathtail bat (nationally vulnerable).

Invertebrates

Invertebrates are critical to the function and health of our natural environment. The 'services' they perform include pollination, seed dispersal, nutrient recycling, soil construction and maintenance, water cleaning and reef construction. There are 96 aquatic invertebrates and 304 terrestrial invertebrates recorded in South Gippsland, 400 species in total, making it the largest fauna group for the region.

The most recorded species by far is the nationally vulnerable giant Gippsland earthworm followed by the ghost moth and shouldered brown butterfly.

Invertebrate monitoring is a useful measure of environmental health and aquatic invertebrates have often been used as a fast measure of waterway health. Terrestrial invertebrate sampling could similarly be utilised. Increased understanding and knowledge of invertebrates can assist all land managers to better understand the values on their properties and the potential changes that they may observe under climate change or varied management regimes.



3.4 Threatened species

Of the 2222 native species (flora, fauna and fungi listed in the VBA (DEECA 2023)) found in South Gippsland, 226 species are listed as threatened either at a federal level under the *Environmental Protection and Biodiversity Conservation Act* 1999 (EPBC Act) or state level under the *Flora and Fauna Guarantee Act* 1988 (FFG Act).

This equates to approximately 10% of South Gippsland's native species diversity.

When this is broken down further, 12% of South Gippsland's fauna, 9% of its flora and 31% of its fungi species are officially under threat (Figure 14).

Since European settlement, Victoria has lost 30 species:

18 species of mammal; two birds, one snake; three freshwater fish; six invertebrates and 51 plants. Today, between one quarter and one third of Victoria's terrestrial plants, birds, reptiles, amphibians and mammals, and many invertebrates and ecological communities, are at risk of extinction (DEECA 2023).

Figure 13. Gang Gang Cockatoos *(photo: Paul Hastings)*

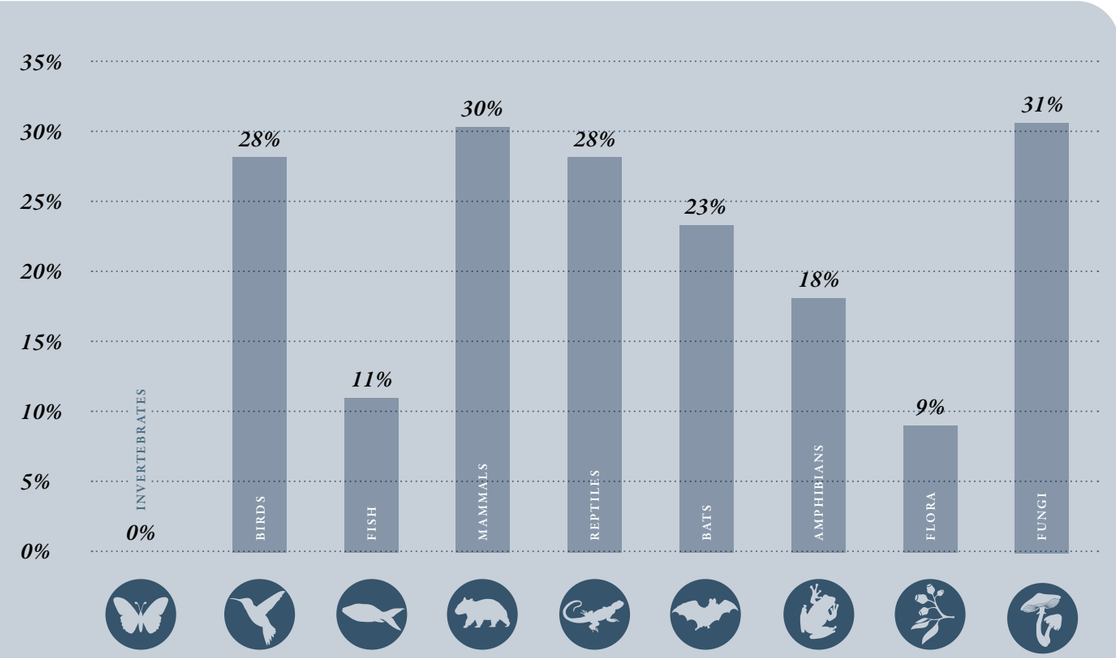


Figure 14. Percentage of threatened species vs total species by group

Figure 16 shows the location of some of the most recorded threatened species in the South Gippsland BPP area. This image demonstrates the importance of data collection and species observation across the region.

Closer analysis of the records shows that although there are relatively high records for some threatened species, many have been recorded in Wilsons Promontory or other highly surveyed locations. Some examples include white-footed dunnart, southern brown bandicoot, new holland mouse, swamp antechinus and long-nosed potoroo.

There is no doubt that Wilsons Promontory provides an important refuge for threatened species in the region, and it is possible that adjoining coastal parks and private land also provide habitat for threatened species. The lack of survey effort means, however, that similar information for these locations is not available.

Other examples include high numbers of Strzelecki gum records seen within the Baw Baw Shire area which are the result of a dedicated project to document the species by the shire. Although there are comparable numbers in similar environments to the south, these have not yet been recorded. Instances of southern blue gum and bog gum have similarly not yet been systematically recorded.

Opportunities for threatened species

South Gippsland's diverse environment places it in a strong position to play an active role in conservation efforts for threatened species, particularly those that have a high proportion of their range or important habitat occurring locally.

Data collection and monitoring

Data on threatened species across the region varies wildly. Locations like Wilsons Promontory and other conservation reserves have higher instances of records, while private land is largely lacking. Good baseline information is required to monitor progress in threatened species' initiatives. Therefore an increase in engagement with all stakeholders and a focus on private land to increase the identification, documentation and monitoring of threatened species will inform and improve conservation efforts.

Figure 15. Bog gum (Photo: Yasmin Kelsall)

New and continued projects

Completed regional projects with a focus on threatened or regionally significant species include the Strzelecki koala, giant Gippsland earthworm, Narracan and Strzelecki burrowing crayfish, southern greater glider, hooded plover, Strzelecki gum and Australian grayling. Projects that continue to focus on threatened species will not only ensure an improvement to their threatened status, but other species that share a similar habitat or ecological niche will also benefit.

The following threatened species are suggested as candidates for continued or new project focus:

Nationally threatened EPBC-listed species:

- Strzelecki gum, giant Gippsland earthworm, southern greater glider, long-nosed potoroo, southern brown bandicoot, gang-gang cockatoo, blue-winged parrot, migratory shorebirds, Australian grayling, dwarf galaxias and swamp antechinus

State threatened, FFG-listed species:

- freshwater burrowing crays, platypus, bog gum, southern blue gum, swamp skink, powerful owl, hooded plover.

Ideas for projects that will build on the efforts of past projects and improve the prospects of priority species include:

- Bunurong Landscape Project – building on the four-year project with continued pest plant and animal management including deer, combined with remnant and wetland protection and linking to protect threatened species and important habitats in this landscape zone.
- Saving South Gippsland's Threatened Eucalypts (focus on Strzelecki Gum, southern blue gum and bog gum) – protecting existing stands of these threatened eucalypts and encouraging natural regeneration in and around larger patches of these species.

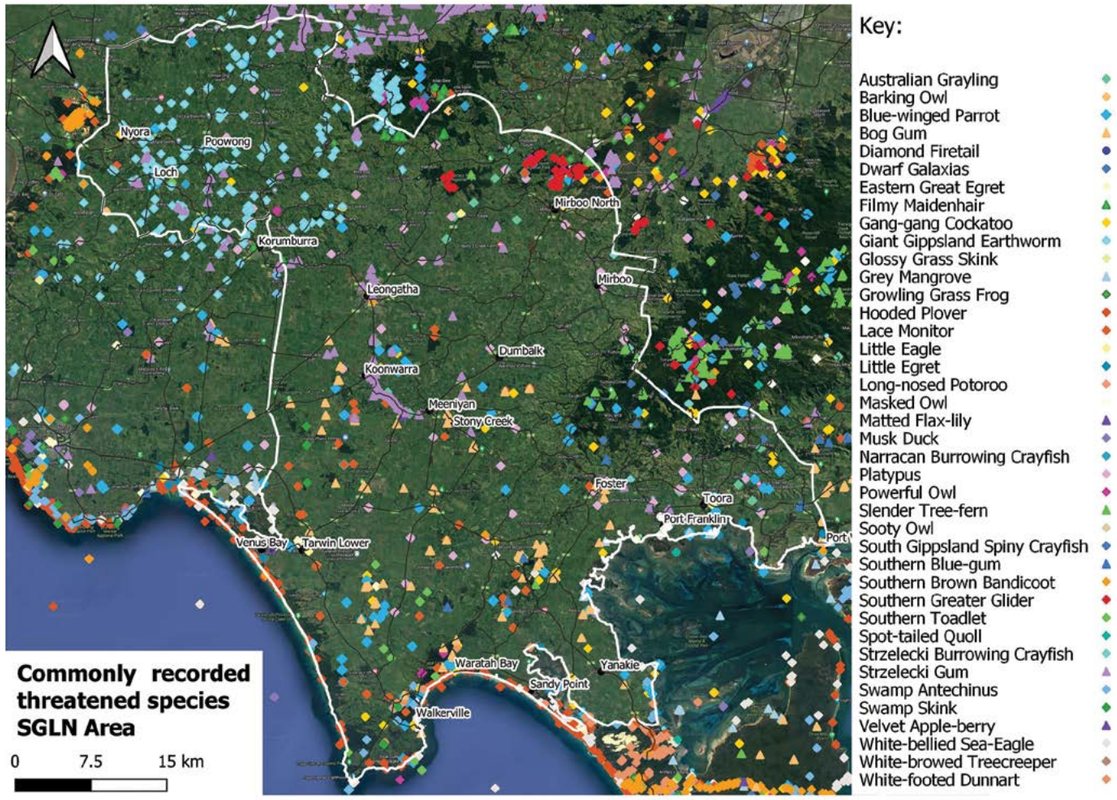


Figure 16. Commonly recorded threatened species across the South Gippsland BPP Area. Source VBA 10/7/2023

- Threatened Invertebrates – giant Gippsland earthworm, burrowing and spiny Crays. Continue the work of recent years with an ongoing project theme and educational information on the conservation of these species.
- Forest Wildlife - focus on a group of forest specialists including threatened species like the southern greater glider (nationally vulnerable), gang-gang cockatoo (nationally vulnerable), lace monitor (state vulnerable), powerful and barking owls, and the genetically significant Strzelecki koala to protect habitat that will collectively benefit these important species. Build on the work of the four-year Friends of Strzelecki Koala project (circa 2012-16) that saw biolinks identified and projects undertaken across the northern portions of the South Gippsland BPP area. On-ground works should be designed to include benefits for multiple species.

Increased use of planning overlays to protect threatened species and habitat values

South Gippsland's Environment Significance Overlay – Schedule 9 (ESO9) *Giant Gippsland Earthworm and Habitat Protection* – has been applied in the north-western portion of the South Gippsland BPP area to indicate locations of giant Gippsland earthworm habitat. A similar overlay (ESO4) has been applied in Baw Baw Shire. Combined, these overlays cover 4% of the South Gippsland BPP area.

Similar ESOs need to be developed for other species or for areas of priority habitat to increase the statutory planning protections for whole groups of species.

Figure 17. Curlew sandpiper (Photo: Paul Hastings)

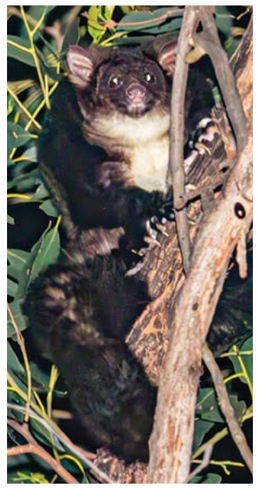


Figure 18. Greater glider (DS) *Figure 19. South Gippsland spiny crayfish (Photo: Beverley van Praagh)*

3.5 Waterways

The South Gippsland BPP area receives relatively high rainfall. For example, Leongatha receives, on average, 941 mm per year compared with Melbourne's 650 mm (BOM 2023). This is despite a decrease in the annual average of 100-200 mm since 1950 (CICA 2023). This rainfall in combination with the region's undulating and hilly landscape means that waterways are an integral feature of the landscape.

There are two main catchments in the region: the Tarwin River Catchment, which extends across much of the South Gippsland BPP area, and the Corner and Nooramunga Inlet Catchment comprising the hill country and narrow plains of the eastern-most section of the South Gippsland BPP area. A number of small waterways run directly to the ocean to the east and west of Cape Liptrap and Shallow Inlet.

The region also contains sections of the upper catchments of the Bass River and the Lang Lang River, Adams Creek and Red Bluff Creek, which flow into Western Port in the far west and the Morwell River in the north-east. All named waterways are shown in Figure 20.

The majority of the upper sections of the Tarwin River Catchment, the Agnes River, Battery Creek and Deep Creek are Proclaimed Water Supply Catchments for local townships.

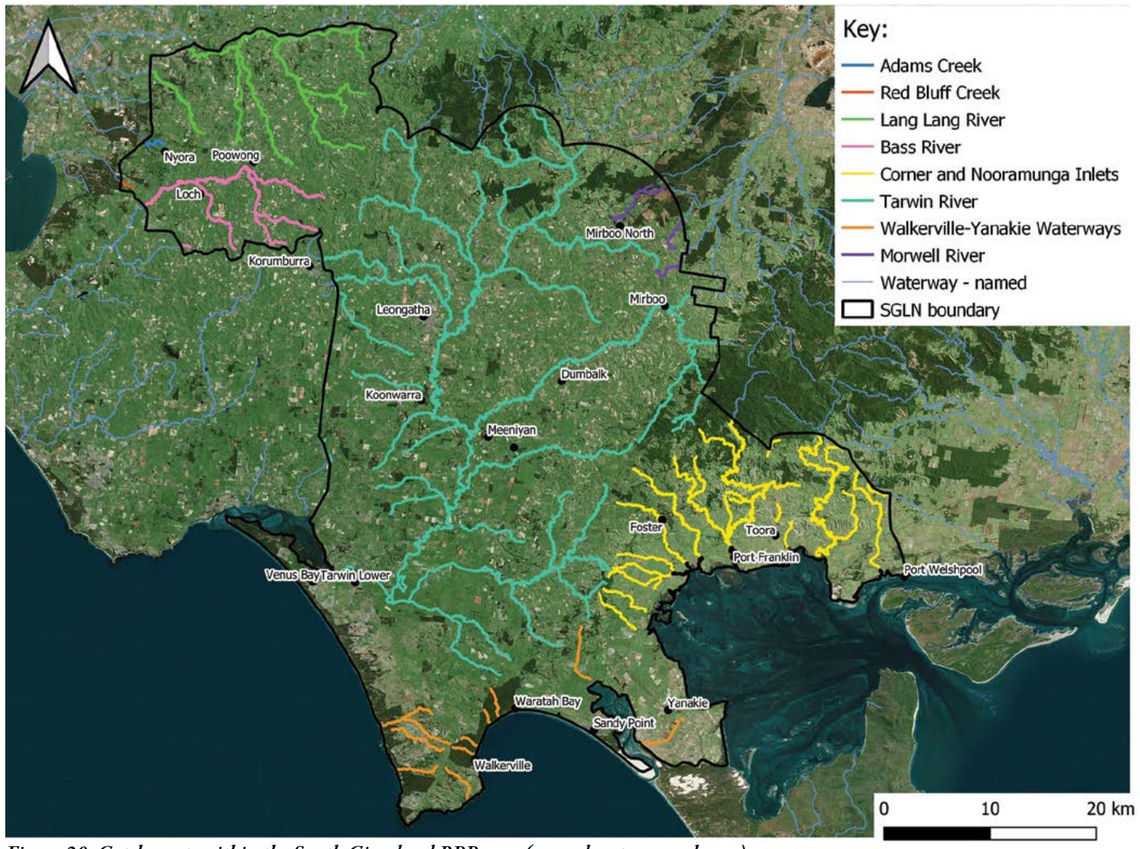


Figure 20. Catchments within the South Gippsland BPP area (named waterways shown)

In 2010 the Index of Stream Condition (ISC) assessment was undertaken for the third time across Victoria. Measuring five aspects of river condition - hydrology, streamside zone, physical form, water quality and aquatic life - it found that only 10.4% of the waterways of South Gippsland were in good condition. The remainder were in moderate (74%) or poor condition (15%) (DEPI 2013b). These results are shown in Figure 21.

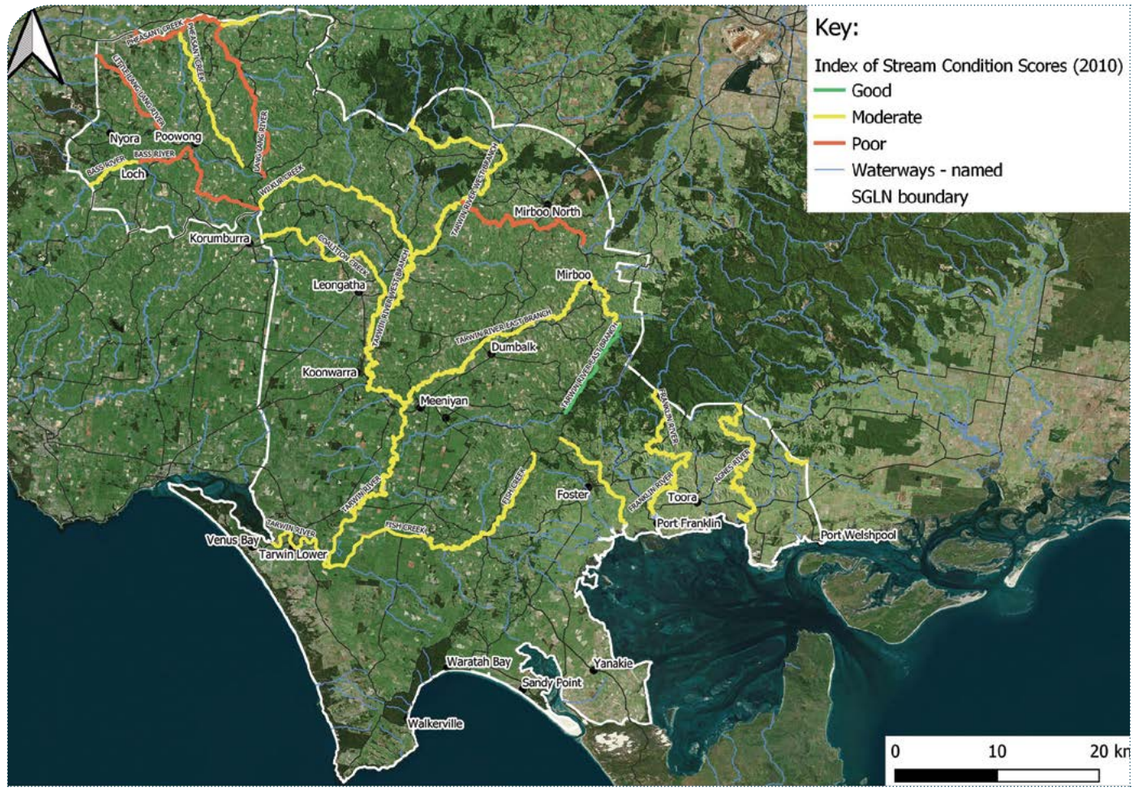


Figure 21. Index of Stream Condition results in the South Gippsland BPP area

Priorities for waterways

Increased scope for waterway conservation work

The West Gippsland CMA has worked extensively with landholders since the 1990s to address the health of waterways across the central and eastern portions of the South Gippsland BPP area. The Port Phillip and Westernport CMA (now Melbourne Water) has also worked with landholders in the Bass and Lang Lang River catchments, undertaking similar works, partially in order to protect the receiving waters of Ramsar-listed Western Port Bay. Figure 22 shows some of the works (WGCMA) and property locations for waterway works (Melbourne Water) that have been undertaken.

To date there has been good progress made on the waterways associated with Corner Inlet with willow removal and revegetation along much of the Agnes River and significant lengths of the Franklin River, Stockyard and Bennison Creeks receiving similar treatment. Attending to these waterways is important as they directly impact the health of Corner and Nooramunga Inlets and are also relatively short in length, so good progress can be made with limited resources.

Despite extending across the majority of the South Gippsland BPP area, most reaches of the Tarwin River Catchment have not yet been a focus for revegetation or willow removal. There is strong community interest for a long-term and coordinated management plan (similar to those implemented in the Corner Inlet Catchment and the Powlett River) to be developed for the Tarwin River Catchment.

Important projects on waterways will include the continued removal of willows and other significant weeds and revegetation. Waterway improvement work should continue to be strategically planned to target higher priority locations for native biodiversity, such as those with habitat values and where waterways provide important links.

Threats for waterways and wetlands	
Vegetation clearance	Native vegetation clearance reduces waterway shading, removes natural filtering systems and habitat for fauna.
Stock access	Stock access exacerbates erosion and water pollution via pugging, trampling and increased nutrients. These each contribute to degradation and loss of habitat.
Altered hydrology	Channelisation, dams, water extraction and the use of culverts has altered the natural flow and structure of some waterways. Significant draining of wetlands and floodplains, particularly on the mid-lower Tarwin River and the lower reaches of Corner Inlet waterways, has contributed to an altered system.
Reduced water quality	Reduced water quality results from fertilisers, nutrients (including effluent), farm chemicals, sediments and fuels entering waterways. This is exacerbated when fringing vegetation is lacking. Urban areas contribute pollutants and nutrients to waterways via stormwater, failing onsite wastewater systems and illegal discharges .
Introduced fish	European carp and eastern gambusia are key species that impact upon native fish and amphibians. Eastern gambusia are known to bite other animals and also to eat their eggs while European carp affect water quality, reduce food availability and affect vegetation structure, also eating the eggs of some species (CISS 2011).

Table 3. Threats for waterways and wetlands

Consistent water quality monitoring

Water quality monitoring projects have been undertaken in South Gippsland for decades. The Waterwatch program has been active for many years and there have been many projects carried out to gather data about the impacts of land management on water quality and seagrass in Corner Inlet. The Corner Inlet Connections Project combined waterway protection works and farm nutrient management with waterway monitoring, while seagrass monitoring has been a long-term focus for Parks Victoria. More recently, SGLN ran a water monitoring project that detected poor water quality in four of the north-western tributaries of Corner Inlet.

A coordinated and consistent approach to effective water monitoring and repeat waterway health monitoring should occur to complement future work to improve waterways, estuaries and inlets across the entire South Gippsland BPP area.

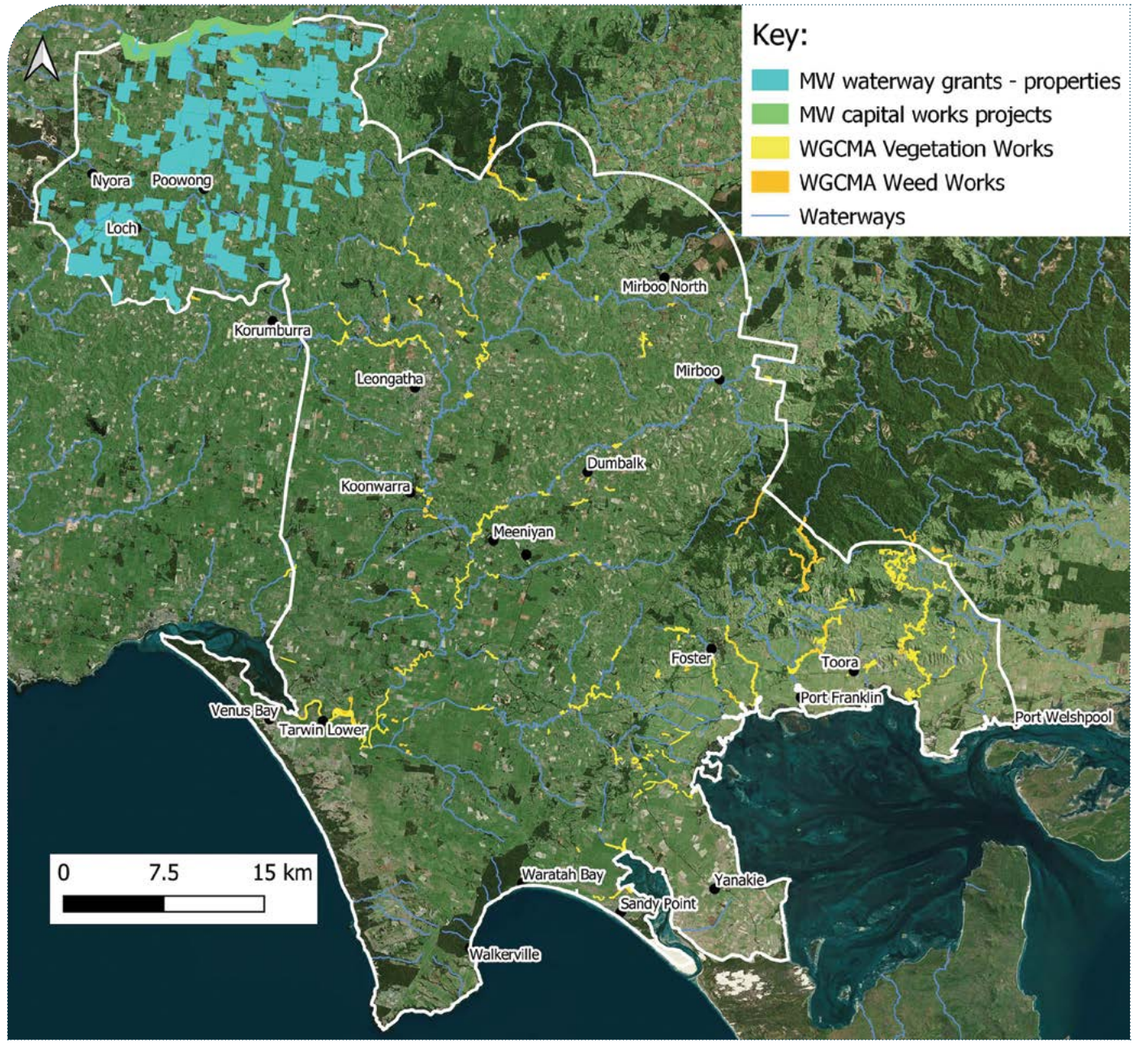


Figure 22. West Gippsland CMA revegetation and weed management works and Melbourne Water waterway grant recipient properties and capital works locations

Figure 23. Eastern yellow robin. (Photo: Paul Hastings)

3.6 Wetlands

South Gippsland contains numerous wetlands, particularly in lowland plain, estuarine and floodplain environments.

Corner Inlet is an internationally-recognised wetland, listed under the Ramsar Convention. Anderson Inlet, Shallow Inlet and Bald Hills Wetland are listed under the Directory of Important Wetlands of Australia and Shallow Inlet is an internationally important shorebird site in the East Asian-Australasian Flyway. Other important wetlands in the region include the Black Spur Creek Wetlands between Koonwarra and Meeniyan.

Wetlands provide unique habitat, particularly for the seasonal proliferation of birds, amphibians, fish, turtles, reptiles and insects. Their changing nature, based on wetting and drying cycles, provides a variety of seasonal habitats. In addition to providing habitat for fauna, estuarine and coastal wetlands also support important and fragile vegetation communities including saltmarsh, mangrove thickets and seagrass meadows, as well as providing important nursery areas for fish and other species.

Traditionally, the low-lying near-coastal and hinterland plains were places of both permanent and seasonal wetlands and swamps, some extensive, particularly in wet seasons. In just the past 40 years, seasonal wetlands have decreased by more than half, from approximately 1900 ha to 880 ha (DEECA 2023b). These figures are further impacted by the extensive practice, at the time of European settlement, of draining, infilling and altering natural waterway systems, which significantly reduced the extent of natural wetlands in the landscape from pre-European times. Today the State Government's 'current wetlands layer' shows that the extent of mapped wetlands across the BPP area is just 2454 ha.

There are significant gaps in the mapping of smaller wetlands (those less than 1 ha). Aerial photography shows evidence of extensive historic wetlands, especially associated with the floodplains of larger river systems like the Tarwin River and also across the coastal plains.

Priorities for wetlands

While there has been effort and investment in seeing improvement in the health of internationally or nationally recognised wetlands, there has been limited focus in South Gippsland on the conservation and management of wetlands which mainly occur on private land. Considering the biodiversity value that wetland environments provide and their dual benefit via the provision of climate refugia, a dedicated focus on terrestrial wetlands is recommended for the future.

As the State Government's current wetlands mapping does not adequately identify all wetlands less than 1 ha in size, a comprehensive mapping project for the region would assist in addressing this gap.

Figure 24. Wetland vegetation (Photo: Yasmin Kelsall)

3.7 Climate change

Long-term observed records show that Victoria's climate is changing under the influence of both natural variability and global warming. The average temperature across the state has warmed by just over 1.0°C since official Bureau of Meteorology records began in 1910.

In South Gippsland:

- On average, rainfall has declined since the 1950s, especially in autumn. In this time, the average annual rainfall has decreased by 100-200 mm.
- Since 1950, average temperatures have increased by 1.2 to 1.4°C.
- Sea level today is approximately 225 mm higher than in 1880. Sea surface temperatures have risen faster here than elsewhere on the Australian coastline. This is already affecting marine life (DELWP 2019b).

The entire Gippsland region has already become warmer and drier – a climate trend likely to continue. Projections include:

- temperatures to continue increasing year round
- more hot days and warm spells
- fewer frosts
- less rainfall in winter and spring
- more frequent and more intense downpours
- harsher fire weather and longer fire seasons
- rising sea level
- increased frequency and height of extreme sea level events
- warmer and more acidic oceans.

In 2050, under a high emissions scenario, the climate of Traralgon and Moe will be more like the climate of Benalla now, and Wonthaggi will be more like Lakes Entrance. In 2090, the climate of Traralgon and Moe will be more like Tamworth, and Wonthaggi will be more like Albury-Wodonga (CCIA 2023).

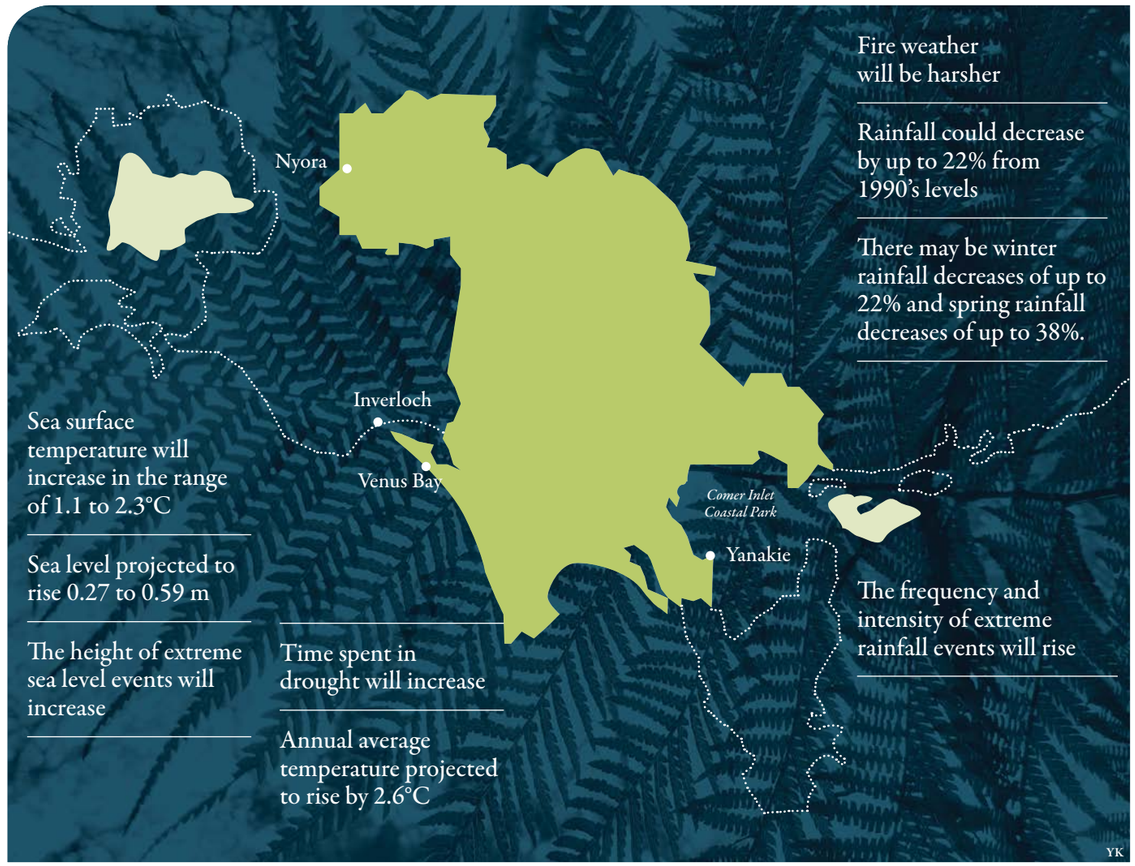


Figure 25. Climate projection for the 2050s under high emissions, compared to 1986-2005 (DELWP 2019b)

Threats associated with climate change

Amplification of existing threats to flora and fauna	Existing threats facing local flora and fauna will be increased by the changing climate, moisture availability, wind and weather patterns, pollinator behaviour, new introduced plants and animals, and increased fire, flood and drought. The result of these changes for some species will include displacement, a shrinking range and reduced breeding or recruitment.
Bushfire: increased risk, longer seasons	Uncontrolled bushfire has the potential to devastate local flora and fauna. In the aftermath of the Black Summer 2019-2020 fires, an unprecedented number of new listings were added to the EPBC Act threatened species list.
Reduced rainfall	Reduced rainfall and increased temperatures will reduce water availability for surface and groundwater systems. This will affect streamflow and wetland habitat, and likely result in gradual changes to vegetation composition.
Increased sea level	High tides are predicted to extend considerably further inland in low lying areas such as Anderson, Shallow, Corner and Nooramunga Inlets. Impacts include loss of habitat for beach-nesting shorebirds and coastal vegetation being pushed further inland. Suitable land for vegetation such as mangrove and coastal saltmarsh communities to colonise may need to be found beyond the current public land areas (PV 2021).
Changing land use	South Gippsland is already seeing changing patterns of land use as a greater diversity of agriculture, including vegetable growing, is occurring. Renewable resource projects are also changing the landscape and some farm enterprises are needing to intensify and expand to meet market demands. These trends are likely to increase in the future, placing greater pressure on natural resources including native vegetation, water and soil.
Changing dynamics of invasive species and diseases	Victoria has already seen changes in the distribution of both native and introduced flora and fauna, driven by a mix of factors including altered weather, changing land use and natural disasters pushing species outside of their former ranges. Examples include grey-headed flying foxes that have moved further south in recent decades as their habitat is increasingly affected by natural disasters.

Table 4. Threats associated with climate change

Priorities for addressing climate change

The CSIRO in its AdaptNRM mapping (Williams, K. et al 2014) shows that, relative to other regions in Australia, South Gippsland will see less impact or variability from the effects of sea change, apart from rising sea levels. This is compared to other locations that are further inland and already have higher average temperatures and receive less rainfall. This places South Gippsland in a position of stronger climate resilience and, with its higher rainfall and wetter environments, the region offers the potential to provide habitat refugia. This position of relative resilience also increases the responsibility on regional organisations and landholders to increase efforts to conserve the natural environment and work to mitigate climate impacts.

Key actions that will assist in mitigating the effects of climate change in South Gippsland, summarised from the *West Gippsland Regional NRM Climate Change Strategy* (WGCMA 2018), include:

- adopt appropriate fire regimes to manage sensitive natural assets and assist the recovery of species and ecological communities from bushfire
- improve the adaptive capacity of remnant vegetation through works to increase connectivity, improve condition and protect high quality remnants
- improve water security for domestic, industrial and agricultural uses while protecting flows for environmental outcomes

Figure 26: Tidal erosion undercutting the shoreline near Port Franklin (Photo: Yasmin Kelsall)

- support carbon sequestration through the establishment of targeted biodiverse plantings in areas that address priorities for biodiversity, land and waterway health
- reduce impacts to water quality following extreme events (e.g. flood, fire)
- plan for adaptation or retreat in areas impacted by sea level rise and storm surge
- consider climate change impacts from sea level rise, storm surge and catchment processes in management of estuaries
- improve hydrological regime of floodplain and fringing wetlands
- manage impacts to sensitive coastal and Strzelecki Ranges ecosystems from future pressures of increased recreational use
- preserve Indigenous cultural heritage sites.

In addition to the actions listed above, South Gippsland Shire Council's Coastal Strategy (2023) identifies improved hazard mapping for the coastline and implementing nature-based solutions as actions in response to climate change impacts.

The *AdaptNRM framework*, developed by CSIRO (Prober, S. et al 2015), provides guidance for land management organisations planning for climate adaption. It adopts a landscape-scale approach, aims to minimise species loss and includes a series of datasets to assist regional land managers to prioritise their actions. In particular it will be important to identify locations which have the best refugial potential and identify species which have the greatest need for assisted dispersal. This could be via improving landscape connectivity, or in extreme cases human intervention such as assisting with pollination for plants or translocating individuals to enhance genetics.

This will help guide decisions around prioritising particular locations for native biodiversity protection and biolinks. A series of *posters and datasets has been created by the CSIRO* to enable regional decision making for species groups.

Refugia for biodiversity

Protecting and managing refugia – places where biodiversity will retreat to and persist but be rarer than at present – is one of the ways to help some species and ecological communities survive the changing climate. For example, under drier conditions, species may retreat to wetter areas such as gullies, and if the climate warms they may move to cooler sites at higher altitudes or on south-facing slopes.

Refugia can arise where the climate remains relatively stable compared with other places, so species are able to persist in those locations. Areas projected to undergo low levels of ecological change, such as South Gippsland, are potentially valuable refugia for the species they presently support and those that may move in.

To be effective as refugia under climate change, these also need to be places that species are likely to reach through their own dispersal capabilities, such as animals that are able to fly longer distances or naturally disperse beyond their home range as part of their life cycle. Plants that are spread by animals, wind or water are more likely to establish outside their current ranges.

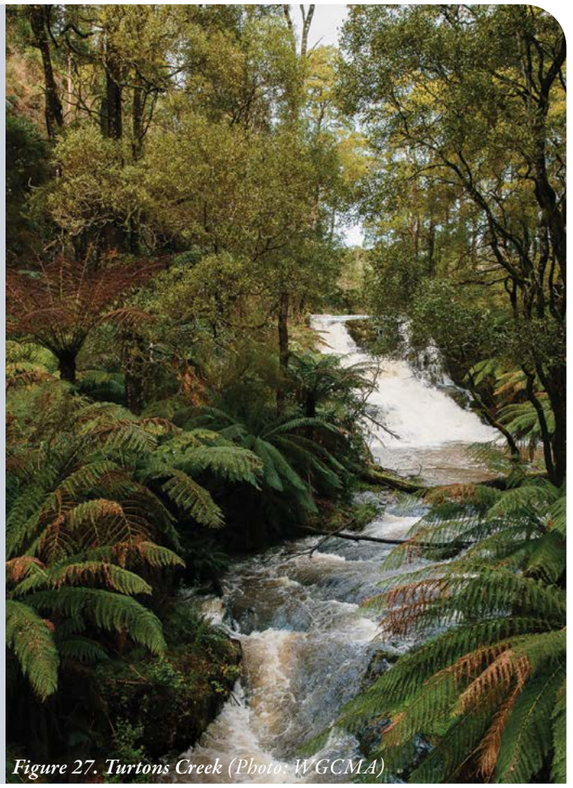


Figure 27. Turtons Creek (Photo: WGCMA)

3.8 Biodiversity values by local area or landscape zone

The five Landscape Zones adopted by the South Gippsland BPP to summarise natural values and analyse priorities for management are:

- Bunurong Coast
- Corner and Nooramunga Coast
- Strzelecki Forests
- Western Strzeleckis
- Western Port Hills.

These Landscape Zones are largely based on the State Government's Biodiversity Response Planning and the West Gippsland CMA's landscape zones. The area that sits within the Port Phillip and Western Port Catchment has been allocated as its own landscape zone (Western Port Hills).

These Landscape Zones are shown in Figure 28, and summary information for each zone is provided in the following tables.

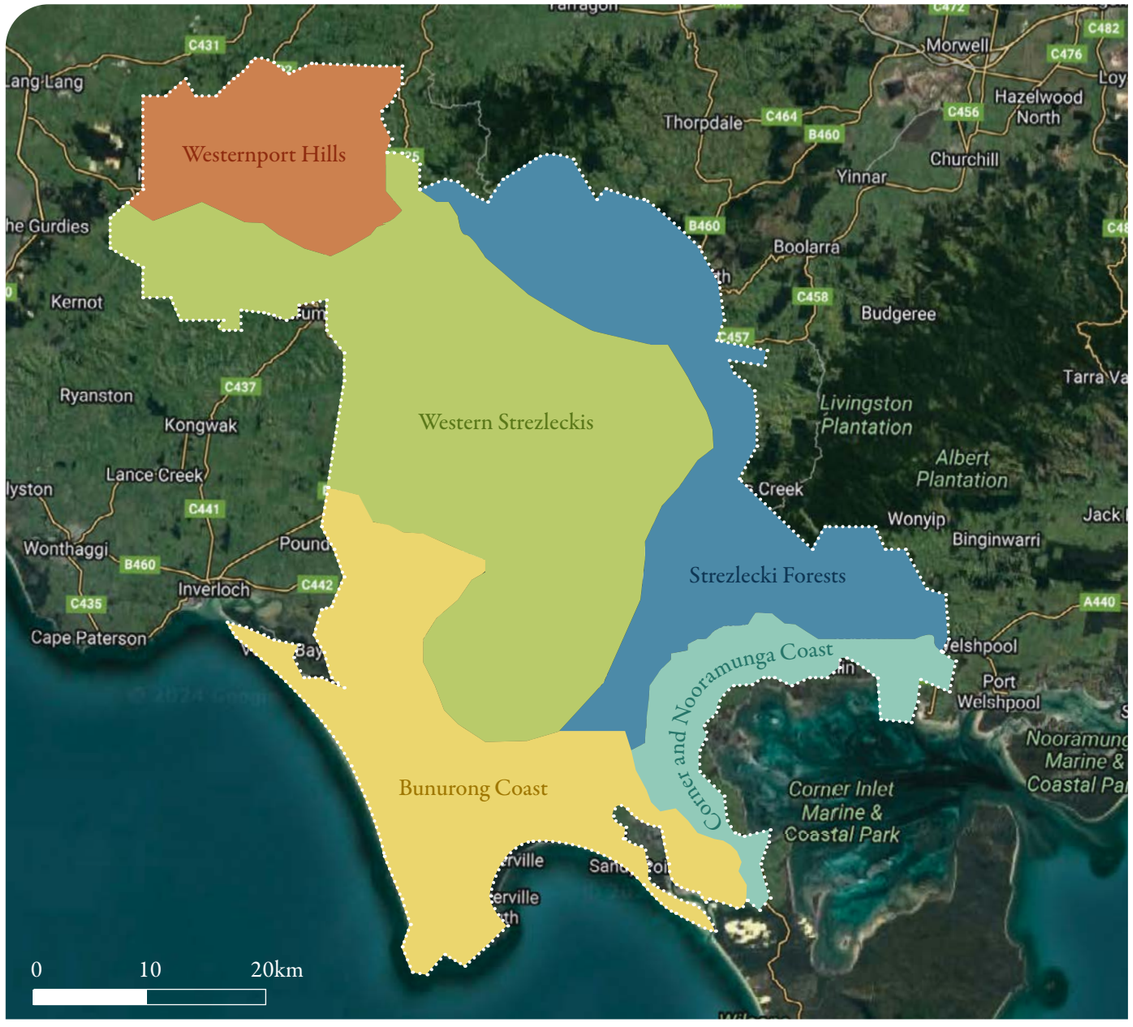
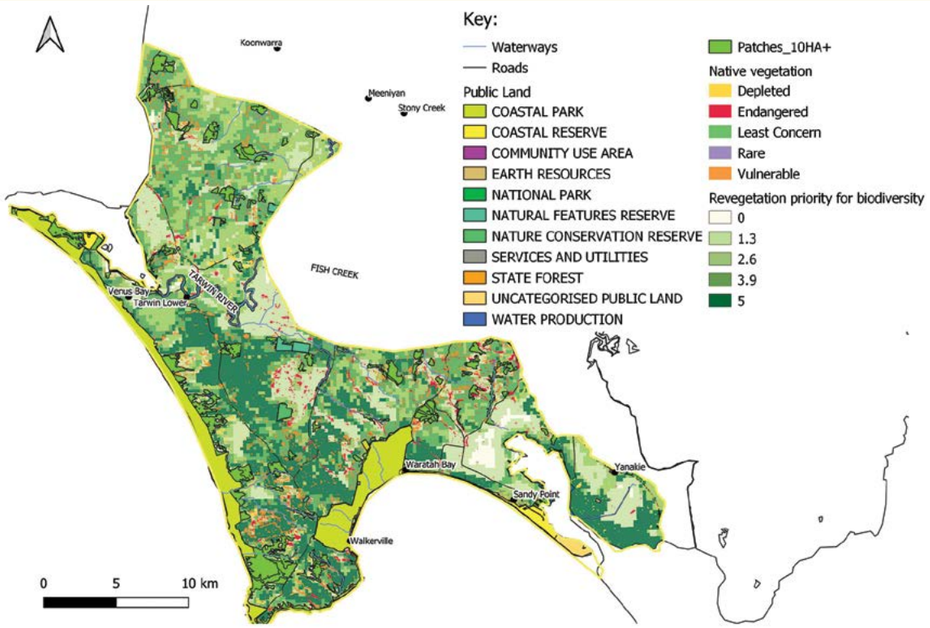


Figure 28. Landscape Zones in the South Gippsland BPP Area

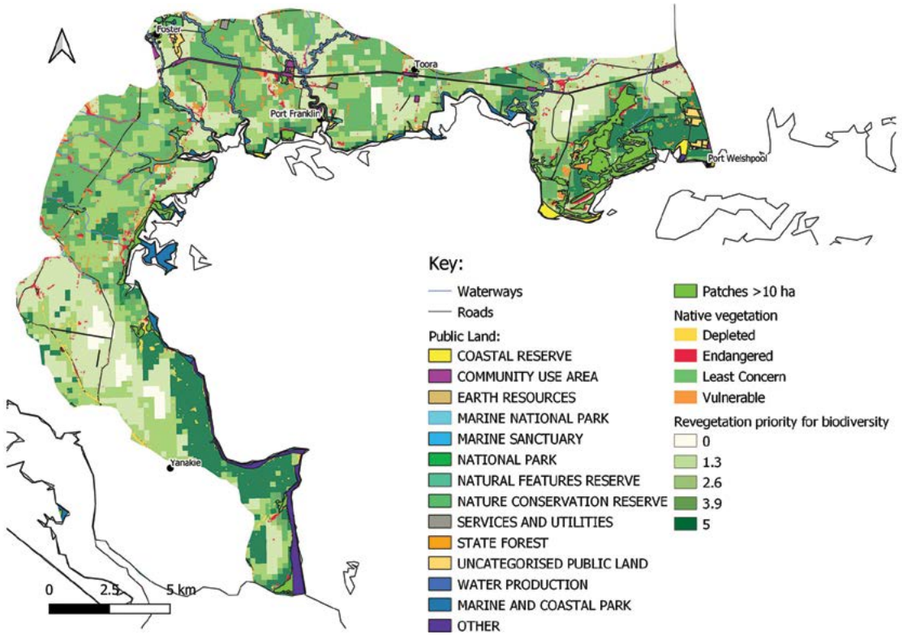
BUNURONG COAST



Private and public land	• 89% private land, 11% public land • 5794 ha public land: mainly coastal parks, coastal reserves, some stream frontage and nature conservation reserves
Habitat priorities	9242 ha of native vegetation patches > 10 ha, mainly along the coastline but also associated with the Hoddle Range, around Pound Creek and south of Koonwarra. Areas of the highest revegetation priority extend south-east from Tarwin Lower through to Waratah Bay, down to Cape Liptrap and around the coast to Wilsons Promontory.
Key threatened species	Grey goshawk, chestnut-rumped heathwren, gang-gang cockatoo, orange-bellied and blue-winged parrots, barking and powerful owls, white-bellied sea-eagle. Migratory and resident shorebirds including hooded plover, eastern curlew, caspian and fairy terns. Waterbirds including eastern great and little egrets, hardhead, musk, blue-billed and freckled ducks, Australasian bittern, Australasian shoveler. Swamp antechinus, swamp skink, eastern bent-winged bat, platypus, southern toadlet, yellow-bellied sheathtail bat, white-footed dunnart, lace monitor. Broad-leaf prickly moses, coast bitter-bush, silver everlasting, grey mangrove, velvet apple-berry, leafy twig-sedge, bog gum, coast ballart, rough blown-grass, currant-wood, dune wood-sorrel, rush lily.
Key threats	• Sea level rise, storm surges and inundation in low-lying areas • Introduced herbivores and predators: rabbits, deer, foxes, cats • Reduction in water quality to estuarine wetlands • Reduction in extent of terrestrial wetlands • Lack of fire in priority vegetation types.

Corner and Nooramunga Coast

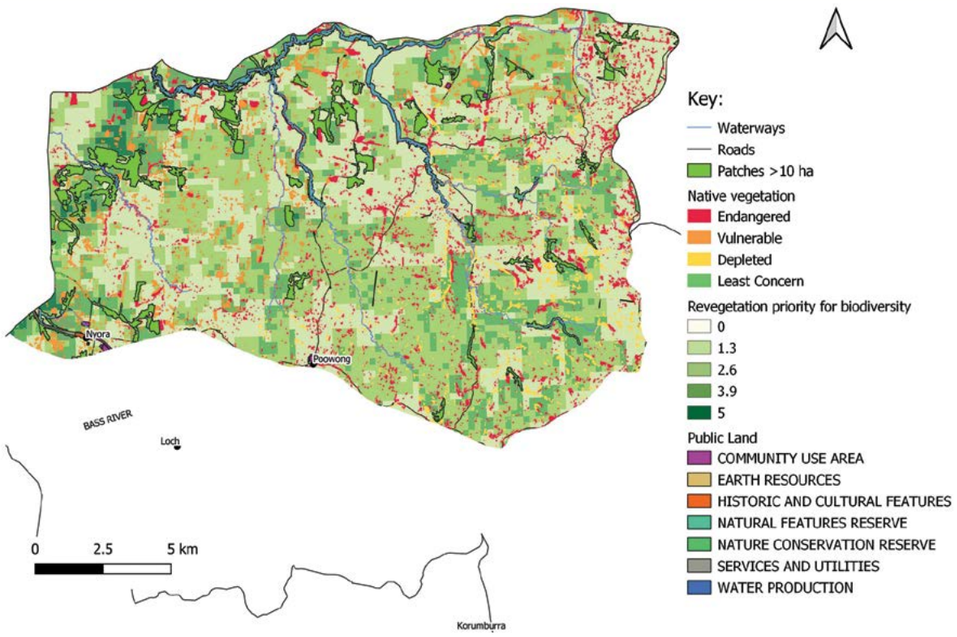
CORNER AND NOORAMUNGA COAST



Private and public land	• 94.2% private land, 5.8% public land • 1131 ha public land: a mix of coastal reserve, marine and coastal park, stream frontage, community use and other
Habitat priorities	2245 ha of native vegetation patches > 10 ha, mainly located between Barry Beach and Welshpool as well as in locations around the coast. Areas of the highest revegetation priority are to the west of Port Welshpool, linking larger patches of vegetation to remnants around the town, also along the western shoreline of Corner Inlet, at Yanakie and through to Wilsons Promontory.
Key threatened species	Gang-gang cockatoo, blue-winged parrot, powerful owl, white-bellied sea-eagle, caspian and fairy tern. Migratory shorebirds and waterbirds such as eastern great, plumed and little egrets, hardhead, Lewin's rail. Strzelecki burrowing crayfish, South Gippsland spiny crayfish, dwarf galaxias, Cox's gudgeon, Australian grayling, yellow-bellied glider, southern toadlet, lace monitor, platypus. Grey mangrove, slender tree-fern, southern blue gum, Strzelecki gum, bog gum, threatened orchids.
Key threats	• Sea level rise, storm surges and inundation in low-lying areas • Introduced herbivores and predators: rabbits, deer, foxes, cats • Reduction in water quality to inlets • Lack of fire in priority vegetation types

Western Port Hills

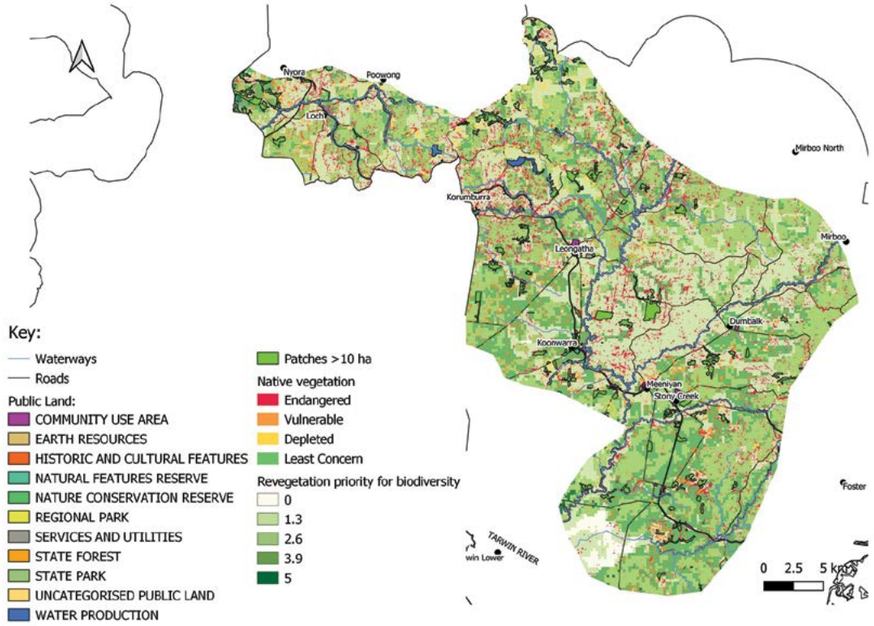
WESTERN PORT HILLS



Private and public land	• 98.3% private land, 1.7% public land • 464 ha public land: a mix of community use, stream frontage and uncategorised Crown land
Habitat priorities	1728 ha of native vegetation patches > 10 ha, mainly located within the northern and western portions of the landscape zone. Areas of high revegetation priority are most prevalent in the western portion of the zone north of Nyora, linking larger patches of remnant vegetation and waterways.
Key threatened species	Gang-gang cockatoo, little eagle, Narracan corrugated mussel, giant Gippsland earthworm, platypus, Narracan burrowing crayfish, black falcon, blue-winged parrot, barking owl, powerful owl, southern toadlet. Strzelecki gum, green scentbark.
Key threats	• Loss of paddock trees, fragmented remnant vegetation • Altered waterway hydrology and pollution • Introduced herbivores and predators: rabbits, deer, foxes, cats • Lack of fire in priority vegetation types.

Western Strzeleckis

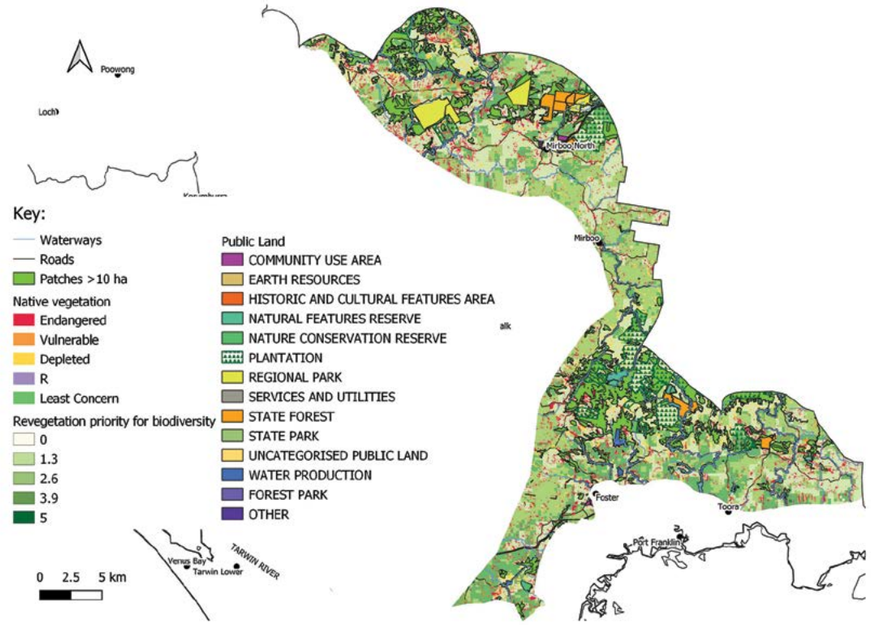
WESTERN STRZELECKIS



Private and public land	• 97.5% private land, 2.5% public land • 2543 ha public land: a mix of community use, stream frontage and uncategorised Crown land
Habitat priorities	3832 ha of native vegetation patches > 10 ha, located across the landscape zone with a higher proportion in the hilly country to the north and west of Leongatha. Areas of the highest revegetation priority occur across the zone and there are many smaller vegetation patches that could be targeted for protection and enhancement.
Key threatened species	Gang-gang cockatoo, Strzelecki burrowing crayfish, Australian grayling, blue-winged parrot, barking owl, powerful owl, platypus, southern greater glider, lace monitor, southern blue gum, Strzelecki gum, bog gum, velvet apple-berry.
Key threats	• Loss of paddock trees and isolated remnant vegetation • Altered waterway hydrology and pollution • Introduced herbivores and predators: rabbits, deer, foxes, cats.

Strzelecki Forests

STRZELECKI FORESTS



Private and public land	• 83% private land, 17% public land, although much of this is State forest and plantation • 9483 ha public land: a mix of community use, State forest, stream frontage, plantation and uncategorised Crown land
Habitat priorities	11,063 ha of native vegetation patches > 10 ha, mainly located in two clusters. One in the vicinity of Turtons Creek, eastwards to Gunya, the other surrounding Mirboo North. Areas of the highest revegetation priority are shown in the vicinity of these larger patches of remnant vegetation and blocks of public land.
Key threatened species	Gang-gang cockatoo, Strzelecki burrowing crayfish, little eagle, blue-winged parrot, powerful owl, platypus, southern greater glider, lace monitor, slender tree-fern, southern blue gum, Strzelecki gum.
Key threats	• Loss of paddock trees and isolated remnant vegetation • Forestry impacts on habitat in sensitive upper catchments and priority environments • Altered waterway hydrology and pollution • Introduced herbivores and predators: rabbits, deer, foxes, cats.

4. The South Gippsland Biodiversity Protection Plan

Vision

That South Gippsland's native biodiversity is valued, protected, and enhanced through collaborative and coordinated action across government, industry and community.

Strategic Directions

1. Protect our remaining native biodiversity
2. Enhance the quality, quantity, resilience and function of native ecosystems
3. Improve the connectivity of native biodiversity across the landscape
4. Educate and engage to encourage care of, and investment in, native biodiversity
5. Take informed, targeted action for priority threatened species
6. Work with and alongside Traditional Owners
7. Strengthen climate resilience in our landscape
8. Collaborate and coordinate to deliver effective biodiversity outcomes
9. Continue to build and share knowledge to inform better biodiversity outcomes.

Strategic Directions

Nine Strategic Directions were formulated to guide the development of the objectives, actions and measures that make up the South Gippsland BPP. The objectives and actions were informed by the values, threats and opportunities for action in the region.

The objectives, actions and proposed measures of success after 10 years are provided in the subsections below. The proposed measures of success reflect the aspirations of the key stakeholders and community and range from very specific to quite general. Some measures recognise that simply taking action is an important first step in achieving an outcome while others are difficult to quantify at this period in time. For these reasons, the South Gippsland BPP gives the South Gippsland BPP Implementation Committee flexibility to clarify further methods of evaluation. There are also opportunities for the objectives and measures of success to be reviewed at Years 3, 6 and 9 as detailed in Section 5.

The proposed measures of success reflect the aspirations of the key stakeholders and community and range from very specific to quite general.

4.1 Protect our remaining native biodiversity

In keeping with the ecological principle of 'protect the best,' the following objectives focus on patches of native biodiversity (vegetation or habitat) that are greater than 10 ha in area and comprise 'endangered' EVCs, priority ecological communities or provide important habitat for a threatened species. The size threshold of 10 ha recognises that the best outcomes for the resources available will be seen when larger areas are targeted. This is not to say that areas less than 10 ha should not be protected, but a focused effort should be on larger patches. A smaller area may be deemed a priority for protection if it provides important habitat for a threatened species.

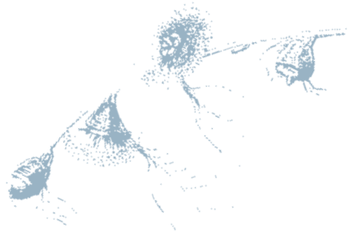
There are 19,000 ha of remnant native vegetation, in patches exceeding 10 ha, in the South Gippsland BPP area that are not yet protected via an on-title covenant or in a conservation reserve or equivalent.

The South Gippsland BPP proposes that within 10 years, at least 75% of this land will be protected from threats, including by installing stockproof fencing and/or by permanent on-title protection (Table 5).

In addition to permanent protection and fencing to exclude stock, other measures that aim to achieve increased protection for remnant native vegetation include addressing instances of permitted and non-permitted clearing and increasing incentives for landholders to protect and manage their native biodiversity.

Objective	Action	Measure
At least 75% of all areas of priority* remnant native biodiversity permanently protected within 10 years. The remainder to follow	Coordinate with Trust for Nature to engage target landholders to consider covenanting areas of priority* remnant native biodiversity.	At least 50% of priority* remnant native biodiversity on private land permanently protected with TfN covenants.
	Establish programs for other forms of on-title protection for priority* remnant native biodiversity. For example, via Section 173 or Section 69 agreements.	25% of priority* remnant native biodiversity on private land protected by other forms of on-title agreement.
75% of priority* remnant native biodiversity protected from stock grazing	Seek funding to ensure that 75% of priority* remnant native biodiversity is protected from stock grazing via fencing where required.	75% of priority* remnant native biodiversity protected from stock grazing.
Increase the protection of biodiversity values through planning policy	Work together and strengthen the partnership between SGLN and SGSC (including planning division). This could include considering an ESO review if required and developing a policy and/or guidelines to link Biolinks Project outcomes with planning policy, which could influence and inform planning decisions.	ESO review considered and policy, or similar strategic document, completed.
Improve compliance with planning regulations through education and engagement	SGSC continue to educate landholders on their obligations related to planning controls for biodiversity via developing fact sheets, information on website, and pre-application meetings.	Increased access to online information, i.e. downloads of fact sheets and visits to webpage/s.
	Reporting episodes of illegal clearing or damage to conservation values is easy, accessible and encouraged.	SGSC records show that all instances of illegal clearing have been effectively responded to.

Table 5. Protect our remaining native biodiversity – objectives, actions and 10-year measures



Objective	Action	Measure
CONTINUED **Improve compliance with planning regulations through education and engagement**	Responsible Authorities (Councils and DEECA) investigate and enforce compliance in line with policies and protocols.	
	Where appropriate, compliance actions are publicised.	The results of compliance actions are publicised.
Improve incentives for protection of native biodiversity	Seek improved incentives for landholders to protect native biodiversity.	A greater range of incentives for the protection of native biodiversity are in place resulting in improved protection.

Table 5. Protect our remaining native biodiversity – objectives, actions and 10-year measures
**priority = greater than 10 ha and comprising endangered EVCs or priority ecological communities or providing important habitat for a threatened species.*

4.2 Enhance the quality, quantity, resilience and function of native ecosystems

Once remnant native biodiversity is protected, the next step involves enhancing or improving its condition and function. This process should be informed by appropriate management plans that set priority actions to improve the condition of protected areas. Management activities should be tailored to the patch or property and ongoing funding provided to assist landholders to complete management tasks.

Objective	Action	Measure
Increase in condition for areas of priority native biodiversity*	Management plans are developed for mapped areas of priority native biodiversity*.	All areas of priority native biodiversity* have management plans developed or current management plans in place.
	Dedicated funding is sought for implementation of the management plans on areas of priority native biodiversity*.	Of those areas of protected priority native biodiversity* with management plans in place, at least 75% are being implemented.
	Increase investment in biodiversity management programs for habitat improvement across the region, including environmental weed control and pest animal management.	Sufficient investment has been sought via efforts by all regional key stakeholders to achieve at least 80% of the on-ground works components of this South Gippsland BPP.
Conserve biodiversity along waterways and wetlands	Develop Tarwin River Catchment Enhancement Plan.	Tarwin River Catchment Enhancement Plan developed.
	Undertake waterway protection and revegetation work in sections of the Tarwin and Corner Inlet catchments that have not yet received works. Prioritise work in areas closest to larger remnants.	40% more of these waterways are fenced and revegetated. 10% of existing waterway works areas are widened.
	Undertake a mapping project for wetlands <1ha to inform regional project focus and establish baseline levels. Include a component to map farm dams at the same time.	All wetlands mapped across South Gippsland BPP area. Farm dams mapped across the region.
	Establish a project dedicated to wetland protection and enhancement.	Wetland project established and 10% of South Gippsland's wetlands are fenced and managed for conservation.
	Continue engagement with landholders to improve the biodiversity values of their farm dams.	Projects to improve the native biodiversity values of farm dams have been undertaken in 10% of farm dams.

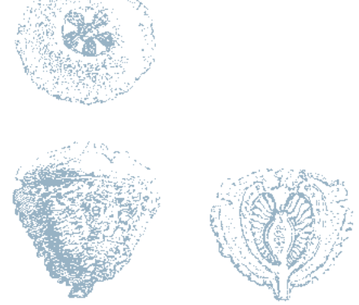
Table 6. Enhance the quality, quantity, resilience and function of native ecosystems – objectives, actions and 10-year measures
** Priority areas include those identified for climate resilience and patches greater than 10 ha that comprise endangered EVCs or priority ecological communities or provide important habitat for a threatened species.*

4.3 Improve the connectivity of native biodiversity across the landscape

Landscape connection for priority native biodiversity is essential for ecosystem function, especially in the face of climate change. Ensuring that regional activities are informed by an appropriate plan will see the most suitable projects implemented, resulting in the greatest benefit for priority species.

Objective	Action	Measure
Improve the connectivity of native biodiversity across the landscape	Develop a regional biolink plan for the South Gippsland BPP area to inform coordinated activity. Use a multi-species, cross-landscape approach that considers the importance of all key ecosystems.	An appropriate regional biolink plan is developed.
	Coordinate a regional biolink group or facilitate enhanced collaboration between groups to progress connectivity priorities in the region.	Biolink group established and active and/or increased collaboration between biolink-interested groups resulting in increased connectivity.
	Once biolink locations are confirmed via an appropriate regional study, key stakeholders adopt and seek options to implement. For example, SGSC adds this layer to its online mapping portal.	Biolinks are recognised by key stakeholders and each has taken measures to recognise and implement them.
	Seek ongoing funding for remnant enhancement and connection projects.	Biolink project funded for multiple years and ongoing.

Table 7. Improve the connectivity of native biodiversity across the landscape – objectives, actions and 10-year measures



4.4 Educate and engage to encourage care of and investment in native biodiversity

A community that is more informed and engaged will be more likely to care for and about native biodiversity. South Gippsland's broader community includes individuals of all ages who are also part of smaller communities that exist in the region, including agricultural and business communities. As the wider community's appreciation and value of nature increases, this will lead (either directly or indirectly) to more personal and financial investment in conserving native biodiversity.

Objective	Action	Measure
Increase public awareness of native biodiversity values and threats	Develop a communication and engagement strategy to support the implementation of the South Gippsland BPP. Include strategies to engage with: • young people • landholders/farmers • industry groups for different farm and land use enterprises	Communication and engagement strategy developed and updated annually.
	Appropriate resources developed as required on a range of relevant topics for identified target audiences.	Suitable resources developed and positive feedback received.
	Run regular communications and media that focus on biodiversity values and conservation projects.	Key stakeholder communications regularly include items with a biodiversity or conservation focus.
	Establish a portal or website for public engagement on biodiversity-related topics. Include access to vegetation mapping, flora and fauna data and more.	Portal created and maintained. Evidence of use via online monitoring.
	Increase awareness of biodiversity values via publicly accessible information for important public land (generally Parks Victoria and SGSC managed land).	All existing conservation reserves (managed for their natural values by state or local government) to have fact sheets developed and publicly accessible.
Increase public participation in local biodiversity conservation initiatives	Run events to encourage target audiences to engage with biodiversity or achieve positive biodiversity outcomes.	At least twelve events focused on biodiversity engagement/outcomes held by key stakeholder organisations per year.
	Encourage formation of groups that seek to progress conservation initiatives such as 'Friends of' groups, nature observation/monitoring groups, threatened species advocates and more.	At least four new groups active in the South Gippsland area.

Table 8. Educate and engage to encourage care of and investment in native biodiversity – objectives, actions and 10-year measures

4.5 Take informed, targeted action for priority threatened species

South Gippsland is in a strong position to play an active role in conservation efforts for threatened species, particularly those that have a high proportion of their range or important habitat within the region. Section 3.4 provides a list of candidate species for continued or new regional project focus.

Increased survey effort would assist in informing future actions for threatened species. Considering the large proportion of private land in the region, landholder participation will be important.

Objective	Action	Measure
Address data gaps for threatened species	Support landholder involvement in the identification and recording of threatened species.	A 50% increase in data on private land for threatened species. Records for large perennial threatened flora such as eucalypts, increased by 500%, especially on private land.
	Work with researchers to gain more information on requirements for key threatened species.	At least five relevant studies undertaken resulting in better informed practice.
Threatened species are considered in all future projects	Appropriate headline* projects are scoped, developed and implemented for key regional threatened species.	At least four projects are established and monitored.
	Develop a checklist for project planning that includes threatened species considerations. .	Project checklists developed by Year 1 and then completed for each subsequent regional project completed by key stakeholders.

Table 9. Educate and engage to encourage care of and investment in native biodiversity – objectives, actions and 10-year measures
** A headline project is a long-term, regionally-focused project involving input and collaboration from more than one regional stakeholder.*

Figure 29. Orange bellied parrot (Photo: Paul Hastings)

4.6 Work with and alongside Traditional Owners

The South Gippsland BPP Implementation Committee will work with Traditional Owners in the spirit of self-determination within the South Gippsland BPP area. This will include being ready to accept ideas and information that may be offered by Traditional Owners. It will also participate in projects that are identified by Traditional Owners in ways that are deemed appropriate.

Objective	Action	Measure
Support Traditional Owners in the spirit of self-determination.	South Gippsland BPP Implementation Committee is ready and open to ideas and information that may be offered by Traditional Owners.	The South Gippsland BPP Implementation Committee incorporates ideas and information from Traditional Organisations in its activities, and supports Traditional Owner initiatives, where appropriate.
Support Traditional Owner aspirations with employment opportunities in the region	Ensure this is a permanent agenda item for the South Gippsland BPP Implementation Committee. Include a meaningful percentage of Traditional Owner procurement in line with State Government levels in local or regional projects.	Measurable increase in employment of Traditional Owner staff in conservation and land management work in South Gippsland.
Increase organisational cultural awareness	Key stakeholders involved in natural values management seek to increase their own cultural awareness via appropriate opportunities as relevant.	Demonstrable increase in cultural awareness among BPP key stakeholder organisations.

Table 10. Work with and alongside Traditional Owners – objectives, actions and 10-year measures

4.7 Strengthen climate resilience in our landscape

South Gippsland's location, climate and topography mean that it will see relatively less change due to climate impacts than many other regions in Australia. Its high level of rainfall is predicted to be more stable than many other regions making South Gippsland important for its potential to provide habitat for a relatively diverse range of species, including those that are threatened. Actions identified to best achieve this are listed in Section 3.8.

Objective	Action	Measure
Plan for climate resilience	Confirm areas of highest importance for climate change resilience.	Areas of highest importance for climate change resilience are mapped and the focus of at least one headline* project
	Develop a suitable natural disaster response plan for native biodiversity in South Gippsland.	Natural disaster response plan for native biodiversity developed and successfully implemented if/when required. Includes specific provisions for wildlife and also for conservation of habitat values.
Act to improve climate resilience	Develop appropriate headline* projects focused on areas of highest importance for climate change resilience and priority ecosystems. For example, projects focused on strengthening the coastal interface including coastal saltmarsh, mangroves, seagrass, rainforests, and the establishment of appropriate biolinks.	Headline* projects established, with ongoing funding resulting in measurable improvement in target ecosystem extent or health.
	Support implementation of local carbon sequestration projects that combine biodiversity benefits with carbon offsets. This will include exploring the viability of blue and teal carbon locally.	Increased uptake in carbon sequestration projects. At least 200% more than the 2023 area.

Table 11. Strengthen climate resilience in our landscape – objectives, actions and 10-year measures

** A headline project is a long-term, regionally-focused project involving input and collaboration from more than one regional stakeholder.*

4.8 Collaborate and coordinate to deliver effective biodiversity outcomes

Everyone has responsibility to care for the native biodiversity of South Gippsland. The success of this plan will rely on the collective and individual actions of regional stakeholders who manage or own large areas of land, businesses, and individuals who live and work in the region as well as those who visit. An Implementation Committee for the South Gippsland BPP will be formed by regional stakeholders. Its role will be to oversee the delivery of the plan. The South Gippsland BPP sets ambitious targets. This will challenge the Implementation Committee and others in the region to contribute to its success.

Objective	Action	Measure
Ensure a collaborative and coordinated approach	Formalise the South Gippsland BPP Implementation Committee to work with the aim of achieving the objectives and monitoring delivery of the plan.	South Gippsland BPP Implementation Committee established and successfully achieving the majority of the objectives of the plan.
	Develop a Terms of Reference for the South Gippsland BPP Implementation Committee.	Terms of Reference in place and adhered to.
	Collaborate with stakeholders in adjoining regions and more widely as appropriate.	Projects in South Gippsland align with those in neighbouring areas. Knowledge and resource sharing with neighbouring stakeholders is active and ongoing.

Table 12. Collaborate and coordinate to deliver effective biodiversity outcomes – objectives, actions and 10-year measures

Figure 30. Members of the key stakeholder working group for the BPP (Photo: Cassie Wright)

4.9 Continue to build and share knowledge to inform better biodiversity outcomes

South Gippsland has the opportunity to be a leader in developing its own knowledge and capacity in local native biodiversity management. This will take the form of establishing partnerships with experts, actively identifying and addressing data gaps, improving the skills and knowledge of regional staff and the local community and sharing knowledge with others.

Objective	Action	Measure
Build knowledge of native biodiversity to inform decision-making	Establish a register of data gaps and ensure regular discussions are held to identify methods of addressing them.	Data gaps register established and promoted. Ideas from the register result in at least five research projects.
	Establish partnerships with research organisations and experts to advise on options for research and monitoring.	Partnerships with experts established (possibly forming a Technical Reference Group) and these partners actively engaged on a variety of projects.
	Partner with conservation and research organisations to undertake local biodiversity-related citizen science projects.	At least three new citizen-science projects established and ongoing.
Share knowledge on native biodiversity to increase innovation and improve management approaches	Promote the results of any research projects to the local community, key stakeholders and more widely, e.g. via field days and/or at seminars.	For each research project, at least two local promotional pieces and one wider promotional episode have been shared. Results promoted to key stakeholders in South Gippsland and beyond.
Seek knowledge on new ideas and innovative methods for biodiversity management	Actively seek new information and ideas to improve innovation in biodiversity management in the region.	Staff and/or committee members from key stakeholder organisations in South Gippsland have attended seminars, courses or exchanges resulting in at least five new innovations applied locally.
	Ensure a budget is in place to finance organisational capacity in developing and trialling innovative ideas.	Key stakeholder organisations have annual budget for innovation in biodiversity and this is expended annually.

Table 13. Continue to build and share knowledge to inform better biodiversity outcomes – objectives, actions and 10-year measures

5. South Gippsland Biodiversity Protection Plan implementation

The South Gippsland BPP has been developed with ambitious targets in recognition that the region's native biodiversity is facing a crisis due to climate change and historical degradation. It also recognises that South Gippsland is likely to be a more resilient environment than many other parts of Victoria and may form part of important conservation strategies.

The success of the South Gippsland BPP will depend on a coordinated approach between all key regional stakeholders involved in biodiversity and land management in South Gippsland. It will require significantly more funding for on-ground work than is currently dedicated to biodiversity conservation and more staff and on-ground resources for implementation.

5.1 Governance

A committee will be established to implement and monitor the South Gippsland BPP. SGLN will lead the South Gippsland BPP Implementation Committee, however this may change by mutual agreement if another regional stakeholder is deemed a more appropriate lead organisation.

The Implementation Committee will comprise organisations that either manage or have direct influence over areas of native biodiversity values in South Gippsland. Members of the inaugural Implementation Committee will be drawn from the group of key stakeholders that developed the South Gippsland BPP.

On finalisation of the South Gippsland BPP, the Implementation Committee will set the first Annual Implementation Plan to deliver the first round of priority activities and identify the role that each organisation can play in its delivery.

Terms of Reference will be developed to guide how the members of the South Gippsland BPP Implementation Committee will work together to achieve the objectives of the plan.

Figure 31. South Gippsland BPP working group during a planning workshop (Photo: Cassie Wright)

5.2 Planning action and measuring implementation

To maintain the relevance of this strategy, priority actions, resources, stakeholder roles and training requirements will be determined annually via an Annual Implementation Plan (AIP). All key stakeholders involved in the Implementation Committee will contribute to the AIP.

Important elements of the AIP include:

- annual targets and activities for the upcoming year
- funding requirements, funding sources, activities and role allocation for relevant stakeholders to deliver the proposed annual outcomes
- measures of success for each activity
- how these annual targets contribute to achieving the overall South Gippsland BPP objectives.

The Implementation Committee will hold regular meetings throughout the year to monitor its progress towards achieving AIP targets.

The AIP planning and review process should be iterative where approaches can be reviewed and adjusted accordingly.

It is recommended that in addition to annual implementation planning, a more detailed review process and report on the progress towards delivering the objectives of the South Gippsland BPP is prepared at the end of Year 3, Year 6 and Year 9. This will also be an opportunity to adjust objectives and measures as required.

This proposed process is illustrated in Figure 32.

5.3 Development of supporting documents

In order to support the implementation of the South Gippsland BPP, a series of plans or guidance documents will need to be developed. These are indicated in Figure 32 and further documented in the following subsections.

5.3.1 Funding strategy

The greatest challenge for the South Gippsland BPP Implementation Committee will be to source sufficient funds to deliver the on-ground action needed. A business-as-usual approach will not result in any significant difference in on-ground activity and a new approach involving strategic thinking and exploration of new funding sources will be required. On this basis, the development of a funding strategy is a priority action for Year 1 to ensure that the implementation committee has a clear plan with options for sourcing adequate funding to implement this plan. The aim is to have sourced sufficient, ongoing sources of funding by Year 3 to begin implementation of priority on-ground projects.

While the funding strategy is under development and implementation, actions that do not involve significant funding should be prioritised for the first year or two of the life of this plan. They include engagement, education, research and collaboration activities. If funding becomes available during this time, it should be channelled towards on-ground activity that is well-informed and not dependent on the development of other plans or guidance documents

5.3.2 Addressing data gaps to determine the success of South Gippsland BPP actions

Some of the measures for actions within the South Gippsland BPP are relatively straightforward as there is current or baseline data from which progress can be measured. In other cases, baseline data is not available or is insufficient to inform action or measure success. Addressing data gaps will need to be an initial action for the effective delivery of the plan. Examples include mapping the extent of smaller wetlands across the region and addressing gaps in threatened species records. A project to address known data gaps should form part of the suite of initial documents to support the successful implementation of the South Gippsland BPP Strategy.

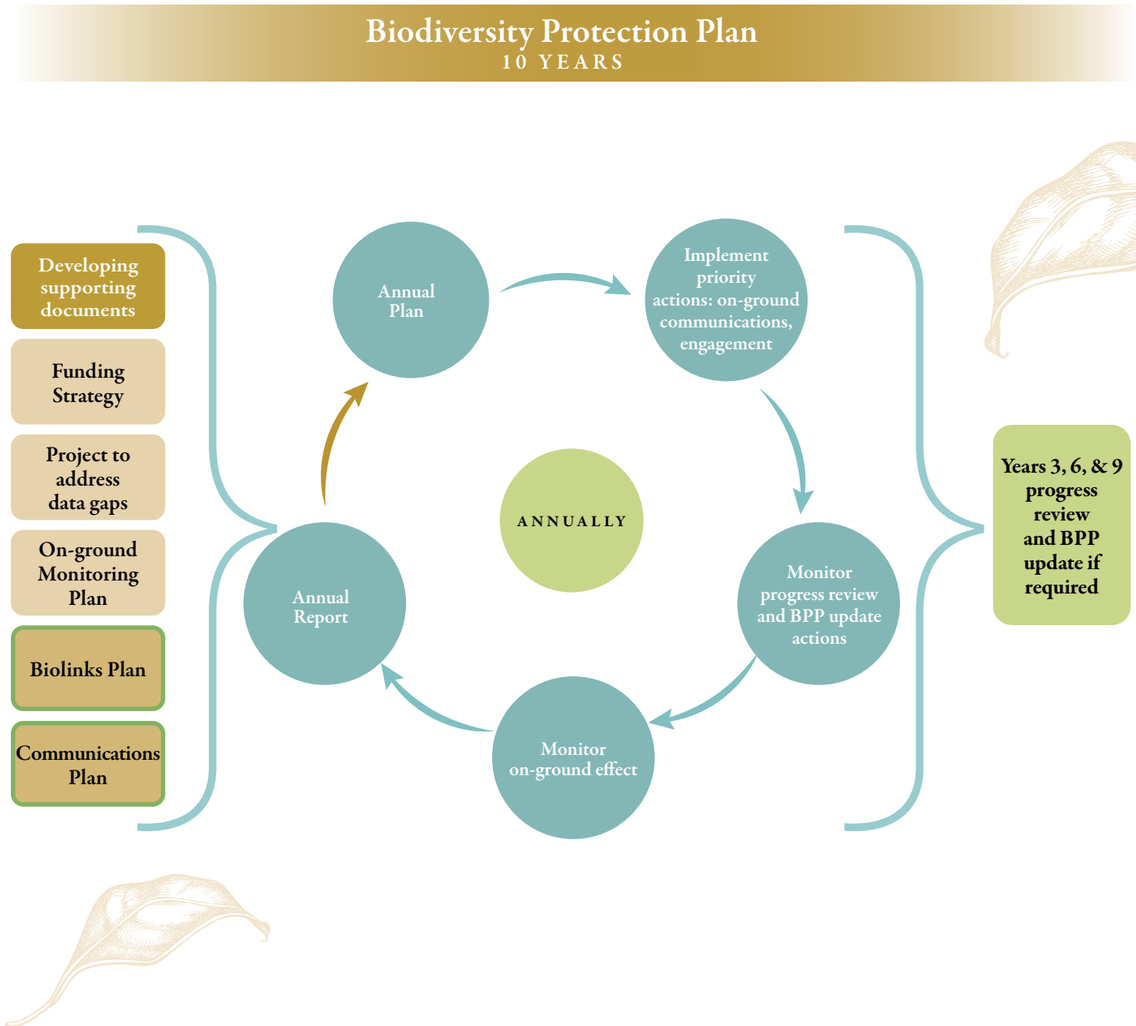


Figure 32. Proposed implementation process for the South Gippsland BPP Strategy

5.3.3 On-ground monitoring plan

In addition to monitoring the progress against the objectives and actions of the South Gippsland BPP, it will be important to measure on-ground improvement in the health of the natural environment. In most cases this will involve establishing a monitoring program that is meaningful for the environment or target species.

An appropriate on-ground monitoring plan should be developed with experts and feature:

- Identification of a series of locations on both private and public land focusing on areas that are a high priority for action and those that contain known habitat for threatened species or communities
- a recommended list of measures and monitoring to be undertaken to obtain meaningful information on the baseline status of each site, progress throughout the implementation phase of the plan and to identify any thresholds for intervention
- measures for all environments (terrestrial, waterway and estuarine) should be considered. For example, it is expected that water quality monitoring is included in the measures to determine that water quality is improving as a result of on-ground work
- a list of relevant species' variables, prepared in line with current or revised standards
- a prescribed timetable for each monitoring activity, reporting and iterative review
- monitoring activities and methods appropriate for citizen scientists, as the majority of the landscape is privately owned
- monitoring options that allow for more efficient or engaging methods. For example, eDNA, eco-acoustics and drone technology may be useful in some circumstances

5.3.4 Communications Plan

The South Gippsland BPP will require a communications plan to be developed to provide guidance and direction for all key regional stakeholders. This will enable a coordinated approach and consistent and clear messaging. The development and updating of a communications plan will provide an opportunity for the communications staff from all key regional stakeholders to work together to develop communications resources, creating efficiencies in approach.

A communications plan was developed by the SGLN for the delivery and launch of this plan. This may provide the basis for a communications plan for the Implementation Committee moving forward.

5.3.5 Biolinks Plan

The development of a biolinks plan was identified early on as a key output of the South Gippsland BPP, due to strong community support. During development of the South Gippsland BPP, a concurrent project to develop a South Gippsland biolinks plan has been scoped and funding sought. It is hoped that a biolinks plan will be an early initial output. If achieved, the biolinks plan will require adoption by key regional stakeholders and it will be used to direct on-ground projects that focus on linking priority native biodiversity.

6. Glossary

Alien (species): Not native (also referred to as exotic).

Anthropogenic: Resulting from or produced by human beings.

Biodiversity: A word derived from biological diversity. The variety of all life forms: the different plants, animals and micro-organisms, their genes, and the communities and ecosystems of which they are part. Biodiversity is usually recognised at three levels: genetic diversity, species diversity and ecosystem diversity. Biodiversity is often called the 'web of life' because it shows how all species work together to support life and ecological balance on earth. In referring to native biodiversity in this plan we mean biodiversity that originally occurred prior to European arrival in the region.

Bioregion: A landscape-scale approach to classifying the environment using a range of attributes such as climate, geomorphology, geology, soils and vegetation. There are 28 bioregions identified within Victoria.

Biosphere: The part of the Earth system comprising all ecosystems and living organisms in the atmosphere, on land (terrestrial biosphere) and in the oceans (marine biosphere). It includes derived dead organic matter, such as litter, soil organic matter and oceanic detritus.

Canopy: Layer of vegetation elevated above the ground, usually of tree branches and epiphytes. In tropical forests, the canopy may be more than 100 feet above the ground.

Climate: The average weather in a region over a long period of time. Average weather may include average temperature, precipitation, wind patterns, ultraviolet (UV) levels and other physical measurements.

Climate change: Any long-term significant change in the 'average weather' that a given region experiences. In recent usage, the term 'climate change' often refers to changes in modern climate due to global warming.

Community or Ecological community: A naturally co-occurring biological assemblage of species that occurs in a particular type of habitat.

Connectivity: The extent to which particular ecosystems are joined with others of similar kind; the ease with which organisms can move across the landscape. Also applies to the extent to which populations of a species are able to interact with each other through gene flow (interbreeding).

Conservation reserves: national, state and regional parks, marine sanctuaries, coastal reserves, coastal parks, nature conservation reserves, natural features reserves, forest parks, state forest, and reserves managed for nature by Local Government.

Corridor (for wildlife): A strip of habitat of varying width that facilitates animal movement between otherwise isolated patches of habitat.

Dispersal: The movement of organisms from one place to another. This differs from migration, which is a cyclical event due to seasonal changes in resources.

Disturbance (ecological): A temporary change in average environmental conditions that causes a pronounced change in an ecosystem. Ecological disturbances include fires, flooding, windstorm, insect outbreaks, as well as anthropogenic disturbances such as forest clearing and the introduction of exotic species.

Driver: A process that changes the trajectory of a species or ecosystem. Most ultimate drivers of biodiversity loss in Australia are human activities associated with consumption or development.

Ecological community: see Community.

Ecological processes: Actions or events that shape ecosystems.

Ecological Vegetation Class (EVC): An indigenous vegetation type classified on the basis of a combination of its floristics, lifeforms, and ecological characteristics.

Ecology: The scientific study of the distribution and abundance of life on Earth, and the interactions between organisms and their environment.

Ecosystem: An ecosystem includes all the living things (plants, animals and organisms) in a given area, interacting with each other, and with their non-living environments (weather, earth, sun, soil, climate, atmosphere). In an ecosystem each organism has its own niche or role to play (Australian Museum 2023). Healthy ecosystems are those that have all the elements they need to successfully function and be sustainable in the long-term.

Endemic (noun: endemism): Occurring only in a stated area.

Environment: The place in which an organism lives, and the circumstances under which it lives. Environment includes measures like moisture and temperature, as much as it refers to the actual physical place where an organism is found.

Exotic (species): Introduced (see alien).

Extinction: The global disappearance of an entire species (as distinguished from extirpation).

Fire regime: The combination of fire frequency, intensity, interval and season.

Fragmentation: Removal (usually by land clearing) of large parts of a natural area, resulting in the retention of only small fragments (or remnants).

Genera: See genus.

Genus (plural genera): A taxonomic category ranking below a family and above a species, and generally consisting of a group of species exhibiting similar characteristics. In taxonomic nomenclature the genus name is used – either alone or followed by a Latin adjective or epithet – to form the name of a species.

Global warming: The increase in the average temperature of the Earth's near-surface air and oceans since the mid-20th century, and its projected continuation.

Habitat: The locality or natural home in which a particular plant, animal or group of closely associated organisms lives.

Indigenous: Originating or occurring naturally in a particular locality; not introduced; native.

Litter: Leaf litter, is the detritus of fallen leaves, bark and other plant material which accumulates in terrestrial systems.

Monitoring: Sampling and analysis designed to ascertain the extent of change from an expected or defined norm, or from past conditions.

Native vegetation: Native vegetation is defined in Clause 72 of the Victoria Planning Provisions and all local planning schemes as 'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses.

Niche: The total range of conditions within which a species can survive, grow and produce viable offspring.

Nutrient: Any element or simple compound necessary for the health and survival of an organism. This includes air and water, as well as food.

Organism: An individual form of life, such as a plant, animal, bacterium, protist or fungus.

Patch: A patch of native vegetation is an area of vegetation where at least 25 per cent of the total perennial understorey plant cover is native, or any area with three or more native canopy trees where the drip line of each tree touches the drip line of at least one other tree, forming a continuous canopy, or any mapped wetland included in the 'current wetlands' map, available in DEECA systems and tools.

Phytophthora: A genus of water moulds, many species of which damage plants. Several species of Phytophthora have been introduced to Australia, the most damaging of which is P. cinnamomi, which causes root rot and which may cause the death of the plant due to water stress.

Pollinator: Animal which carries pollen from one seed plant to another, unwittingly aiding the plant in its reproduction. Common pollinators include insects, especially bees, butterflies, and moths, birds, and bats.

Population (biological): The collection of individuals of a particular species in a stated area; they may or may not interact with other populations (see gene flow).

Refugium (plural: refugia): An area that has escaped or will escape changes occurring elsewhere and so provides a suitable habitat for relict species.

Resistance: The degree to which a system does not respond to a shock (as opposed to resilience, which describes the extent to which it changes).

Predator: Organism which hunts and eats other organisms. This includes both carnivores, which eat animals, and herbivores, which eat plants.

Prey: Organism hunted and eaten by a predator.

Restoration: renewing a degraded, damaged or destroyed ecosystem through active human intervention.

Riparian: Having to do with the edges of streams or rivers.

Salinity: A measure of the salt concentration of water. Higher salinity means more dissolved salts.

Seed bank: The collective name for seeds, often dormant, that are stored within the soil of many terrestrial ecosystems.

Spatial/Spatially (scale): Pertaining to area.

Species: A species is usually defined as a group of organisms capable of interbreeding and producing fertile offspring. While in many cases this definition is adequate, more precise or differing measures are often used, such as those based on similarity of morphology or DNA. Presence of locally adapted traits may further subdivide species into subspecies.

Stress (ecological): Factor(s) that reduce ability of an organism or ecosystem to thrive, e.g. drought, lack of nutrients, high temperature.

Substrate: 'Supporting surface' on which an organism grows. The substrate may simply provide structural support, or may provide water and nutrients. A substrate may be inorganic, such as rock or soil, or it may be organic, such as wood.

Symbiotic: A situation where two organisms (symbionts) live together in a close, mutually beneficial relationship.

Taxa: See taxon.

Taxon (plural: taxa): A taxonomic category or group, such as a phylum, order, family, genus, species or subspecies.

Temperate: Region in which the climate undergoes seasonal change in temperature and moisture. Temperate regions of the earth lie primarily between 30 and 60 degrees latitude in both hemispheres.

Temporal (scale): Pertaining to time.

Threatened (species): Likely to become extinct, threatened with extinction. A threatened ecological community is one that is likely to be destroyed. In the IUCN Red List of Threatened Species, threatened is a collective term including, from most to least threatened with extinction: critically endangered, endangered and vulnerable. This terminology is widely used in Australia.

Threatening process: Actions, either human or otherwise induced, that threaten the survival, abundance or evolutionary development of a species, population or ecological community, e.g. land clearing, introduced predators, weeds, pollution, fishing by-catch.

Traits: Characteristics or properties of an entity. In biology it refers to a distinct phenotypic character of an organism that may be inherited, environmentally determined or somewhere in between.

Transformation: See resilience.

Vertebrate: An animal with a backbone (spinal column). A member of the subphylum Vertebrata of the phylum Chordata. Vertebrates comprise sharks and rays, bony fish, amphibians, reptiles, birds and mammals (including humans).

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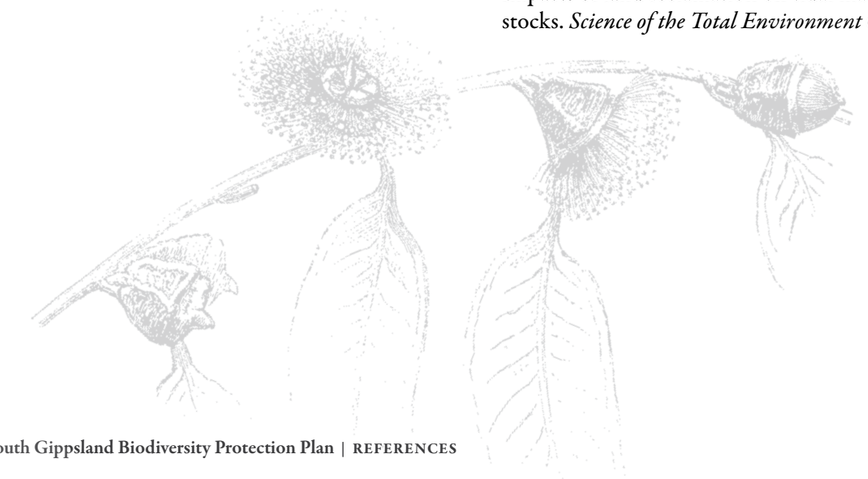

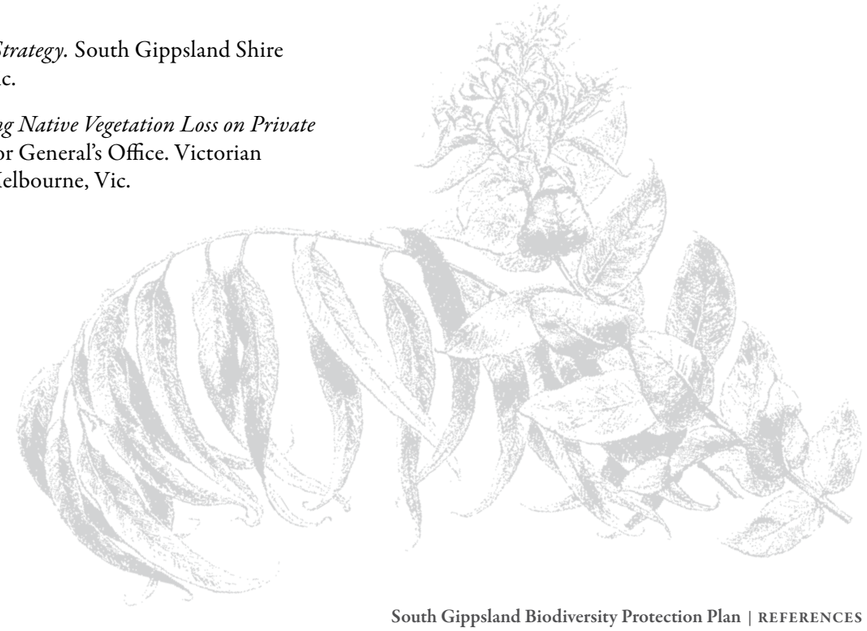

Appendix 1

Relevant strategies and plans.

Key strategies and plans of relevance are provided below.

FEDERAL

- Australia's Strategy for Nature (2019-2030)
- Australian Pest Animal Strategy (2007)
- Australian Weeds Strategy (2017-27)
- National Biosecurity Strategy (2022-2032)
- National Soil Strategy (2021-2031)

STATE

- Protecting Victoria's Environment – Biodiversity 2037 (2017)
- Invasive Plants and Animals Policy Framework (2010)
- Advisory list for environmental weeds (DELWP, 2018)
- Victoria's Climate Change Strategy (2021)
- Victorian Traditional Owner Cultural Landscapes Strategy (2021)

REGIONAL

- West Gippsland Regional Catchment Strategy 2021-27
- West Gippsland Waterway Strategy 2014-2022
- Port Phillip and Westernport Regional Catchment Strategy 2021-27
- Melbourne Water Healthy Waterways Strategy 2018-2028
- Gunaikurnai Whole of Country Plan 2015
- Parks Victoria, Conservation Action Plan: Gippsland Plains and Strzelecki Ranges parks and reserves managed by Parks Victoria, 2021
- Trust for Nature Statewide Conservation Plan 2021-2030
- South Gippsland Shire Council Environmental Sustainability Strategy Framework, 2021
- South Gippsland Shire Coastal Strategy, 2023
- West Gippsland Invasive Plants and Animals (IPA) Strategy (WGCMA 2010)
- Biodiversity Action Plans for Landscape Zones (various: WGCMA 2008, DSE)
- Biodiversity Response Planning Fact Sheets (DELWP 2018) and
- Strategic Management Prospects mapping (DEECA 2023)

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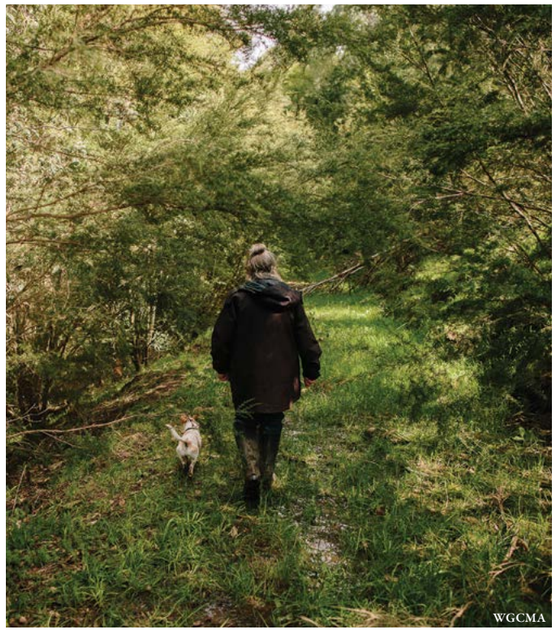
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Appendix 2

EVC information for the South Gippsland BPP area

EVC CODE	EVC BCS	BIOREGION	EVC NAME	TOTAL HA
1	D	GipP	Coastal Dune Scrub/Coastal Dune Grassland Mosaic	3185.4
2	V	GipP	Coast Banksia Woodland	395.3
3	V	GipP	Damp Sands Herb-rich Woodland	537.8
8	D	GipP	Wet Heathland	1168.2
9	LC	GipP	Coastal Saltmarsh	596.8
10	LC	GipP	Estuarine Wetland	285.7
16	V	GipP	Lowland Forest	2234.6
18	V	GipP	Riparian Forest	73.2
23	V	GipP	Herb-rich Foothill Forest	349.8
29	E	GipP	Damp Forest	332.7
30	D	GipP	Wet Forest	8.6
32	E	GipP	Warm Temperate Rainforest	7.3
45	E	GipP	Shrubby Foothill Forest	82.7
48	LC	GipP	Heathy Woodland	1084.1
53	E	GipP	Swamp Scrub	2208.8
74	E	GipP	Wetland Formation	13.4
83	E	GipP	Swampy Riparian Woodland	1220.9
123	E	GipP	Riparian Forest/Warm Temperate Rainforest Mosaic	5.4
126	E	GipP	Swampy Riparian Complex	3.7
128	E	GipP	Grassy Forest	78.0
140	LC	GipP	Mangrove Shrubland	748.3
151	V	GipP	Plains Grassy Forest	0.7
161	D	GipP	Coastal Headland Scrub	289.2
163	V	GipP	Coastal Tussock Grassland	48.4
175	E	GipP	Grassy Woodland	71.0
191	V	GipP	Riparian Scrub	300.6
307	D	GipP	Sand Heathland/Wet Heathland Mosaic	84.2
637	E	GipP	Swamp Scrub/Damp Sands Herb-rich Woodland/ Wet Heathland Mosaic	3.9

EVC CODE	EVC BCS	BIOREGION	EVC NAME	TOTAL HA
638	E	GipP	Swamp Scrub/Wet Heathland Mosaic	182.9
686	D	GipP	Wet Heathland/Damp Heathland Mosaic	327.0
687	E	GipP	Swamp Scrub/Plains Grassland Mosaic	44.6
858	V	GipP	Coastal Alkaline Scrub	2776.7
878	V	GipP	Damp Sands Herb-rich Woodland/Swamp Scrub Complex	470.4
935	D	GipP	Estuarine Wetland/Estuarine Swamp Scrub Mosaic	85.3
937	E	GipP	Swampy Woodland	5.2
985	na	GipP	Sandy Beach	151.5
992	na	GipP	Water Body - Fresh	11.6
1106	V	GipP	Damp Heathy Woodland/Lowland Forest Mosaic	4433.2
16	V	Strz	Lowland Forest	1998.9
18	V	Strz	Riparian Forest	242.2
23	E	Strz	Herb-rich Foothill Forest	373.2
29	E	Strz	Damp Forest	9742.2
30	D	Strz	Wet Forest	51380.2
31	E	Strz	Cool Temperate Rainforest	5.4
32	E	Strz	Warm Temperate Rainforest	562.4
45	E	Strz	Shrubby Foothill Forest	1055.9
53	E	Strz	Swamp Scrub	205.7
83	E	Strz	Swampy Riparian Woodland	384.6
123	E	Strz	Riparian Forest/Warm Temperate Rainforest Mosaic	364.1
126	E	Strz	Swampy Riparian Complex	90.0
128	E	Strz	Grassy Forest	14.6
161	V	Strz	Coastal Headland Scrub	217.0
163	D	Strz	Coastal Tussock Grassland	5.2
233	R	Strz	Wet Sands Thicket	57.9
793	D	Strz	Damp Heathy Woodland	102.6
1106	V	Strz	Damp Heathy Woodland/Lowland Forest Mosaic	1926.9

Appendix 3

Planning provisions and protections for biodiversity values

There are 15 planning zones of which eight are applicable to the rural environment outside of townships, and 16 planning overlays within the South Gippsland BPP area, most of which are not linked to land management or conservation purposes.

The majority (89%) of the region is zoned as Farming Zone. Areas that apply to conservation reserves or parkland make up less than 10%.

Zones

Most of the region comprises zones applicable to the rural setting. The distribution of planning zones across the South Gippsland BPP area is shown in Figure 33.

As mentioned earlier, Farming Zone (FZ) covers most of the region at 89% or 232,768 ha followed by Public Conservation and Resource Zone (PCRZ) at 4.6% or 11,956 ha. Other zones in the rural area include Public Park and Recreation Zone (PPRZ), Rural Activity Zone (RAZ), Special Use Zone (SUZ), Rural Living Zone (RLZ), Green Wedge Zone (GWZ) and Rural Conservation Zone (RCZ).

PCRZ is generally applied to conservation areas on public land. In South Gippsland these include Cape Liptrap Coastal Park, Bald Hills NCR, Kings Flat NCR, Hoddle Range NCR, several smaller conservation reserves across the landscape, stretches of the Tarwin, Franklin and Agnes Rivers, Stockyard and Bennison Creeks; and some sections of public land used as plantations in the Strzelecki Ranges. Land managers for these areas include Parks Victoria, DEECA and Councils.

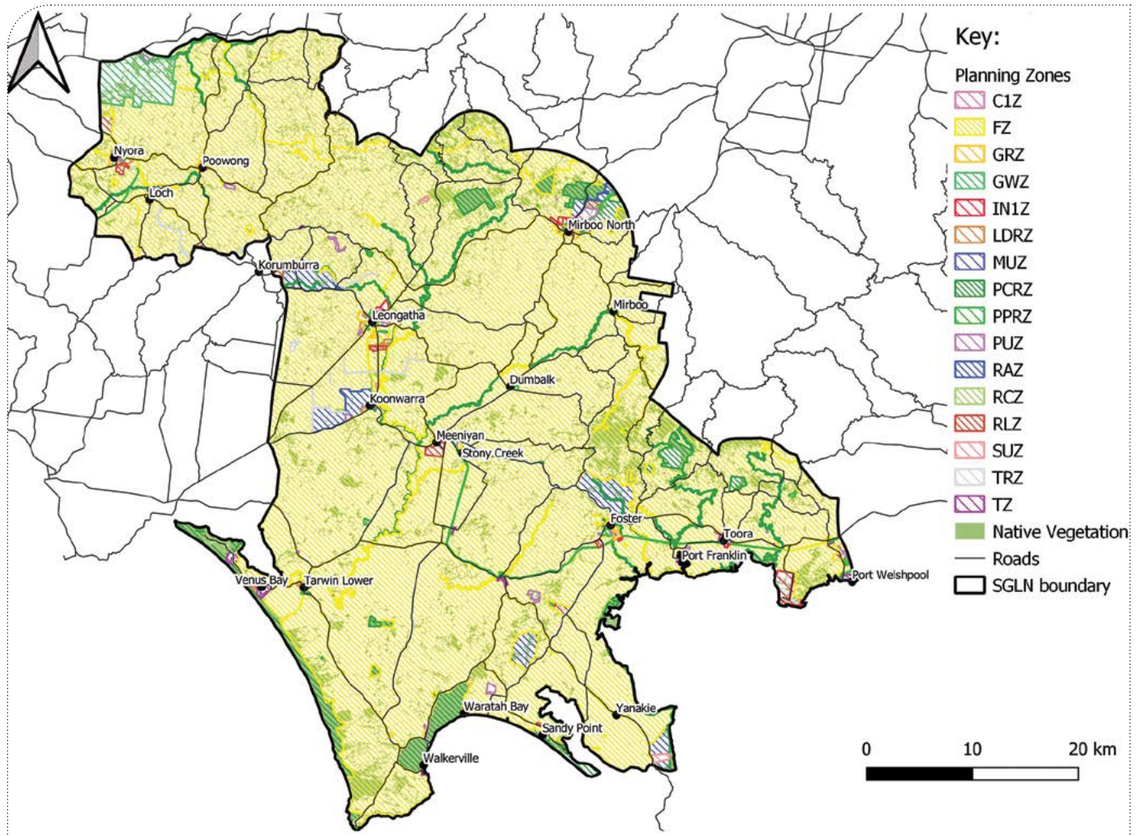


Figure 33. Planning Zones across the South Gippsland BPP area

Overlays

There are three key overlay types of relevance to environmental or land management purposes in South Gippsland:

- Environmental Significance Overlay – of which there are eight Schedules
- Significant Landscape Overlay – of which there are three Schedules
- Vegetation Protection Overlay.

The distribution of environmental or land management overlays is shown in Figure 34.

Environmental Significance Overlay

Of the eight ESO Schedules there are four which are used consistently for a land management or environmental outcome:

- **ESO1 Areas of natural significance.** ESO1 is applied to areas of public land that are allocated as national parks, conservation reserves and similar. The objectives of this overlay are to preserve and enhance existing indigenous flora and fauna, wildlife habitats and allow for the generation and regeneration of habitats, ensure development minimises adverse environmental impact, encourage the revegetation of valleys and drainage lines, and protect the views of significant vistas. This overlay is allocated to just 1% of land in the South Gippsland BPP area.
- **ESO2 Special water supply catchment areas.** ESO2 is used extensively across the region in the upper catchments of water supply areas. It covers 38% of the South Gippsland BPP area. Its objective is to ensure the quality of the water supply in the catchment. This has benefits for biodiversity in that it aims to limit activities that will adversely affect water quality and supply.
- **ESO5 Areas susceptible to erosion.** ESO5 is the most extensively applied of these overlays at 54% of the South Gippsland BPP area, focusing on the foothills and Strzelecki Ranges. ESO5 aims to protect areas prone to erosion by minimising land disturbance and vegetation loss and to prevent increased surface runoff or concentration of surface water runoff leading to erosion or siltation of watercourses.
- **ESO9 giant Gippsland earthworm and habitat protection.** ESO9 is most extensively applied in the north-western portion of the South Gippsland BPP area where it has been used to indicate locations where the presence of giant Gippsland earthworm (GGE) a nationally vulnerable species, is possible based on its habitat requirements. The objective of this overlay is to consider the GGE's habitat requirements in any permit application process. A similar overlay is applied in Baw Baw Shire allocated as ESO4. Combined these overlays cover 4% of the South Gippsland BPP area.

Other ESOs for South Gippsland Shire Council include ESO3 Coastal settlements – non-residential zones, ESO4 Sewage Treatment Plant and Environs, ESO7 Coastal Settlements and ESO8 Manufacture of Milk Products Amenity Buffer.

Significant Landscape Overlays

The three Significant Landscape Overlays (SLOs) within the South Gippsland Shire Council area are:

- SLO1 Venus Bay Peninsula and Anderson Inlet
- SLO2 Cape Liptrap to Waratah Bay
- SLO3 Corner Inlet Amphitheatre.

Two more SLOs are shown in Figure 34 below: SLO3 – Cardinia Shire Council (Lang Lang/Heath Hill) and SLO1 – Bass Coast Shire Council (Strzelecki Foothills and Bass Valley).

In each case, the SLO aims to ensure that any future development will not negatively impact on the landscape values of the area. These values include indigenous vegetation, significant views and vistas, natural landscape character and cultural heritage (including indigenous cultural heritage).

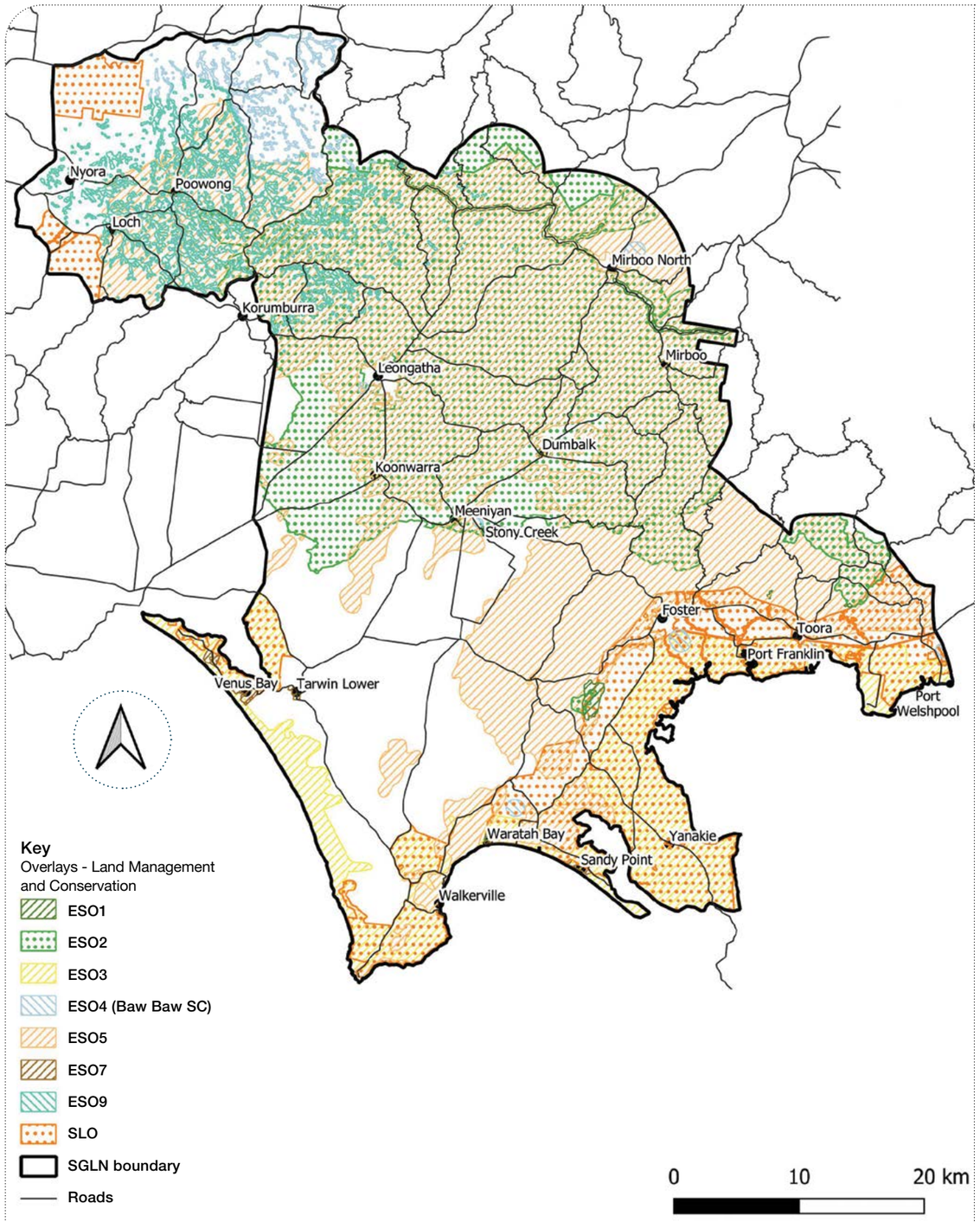
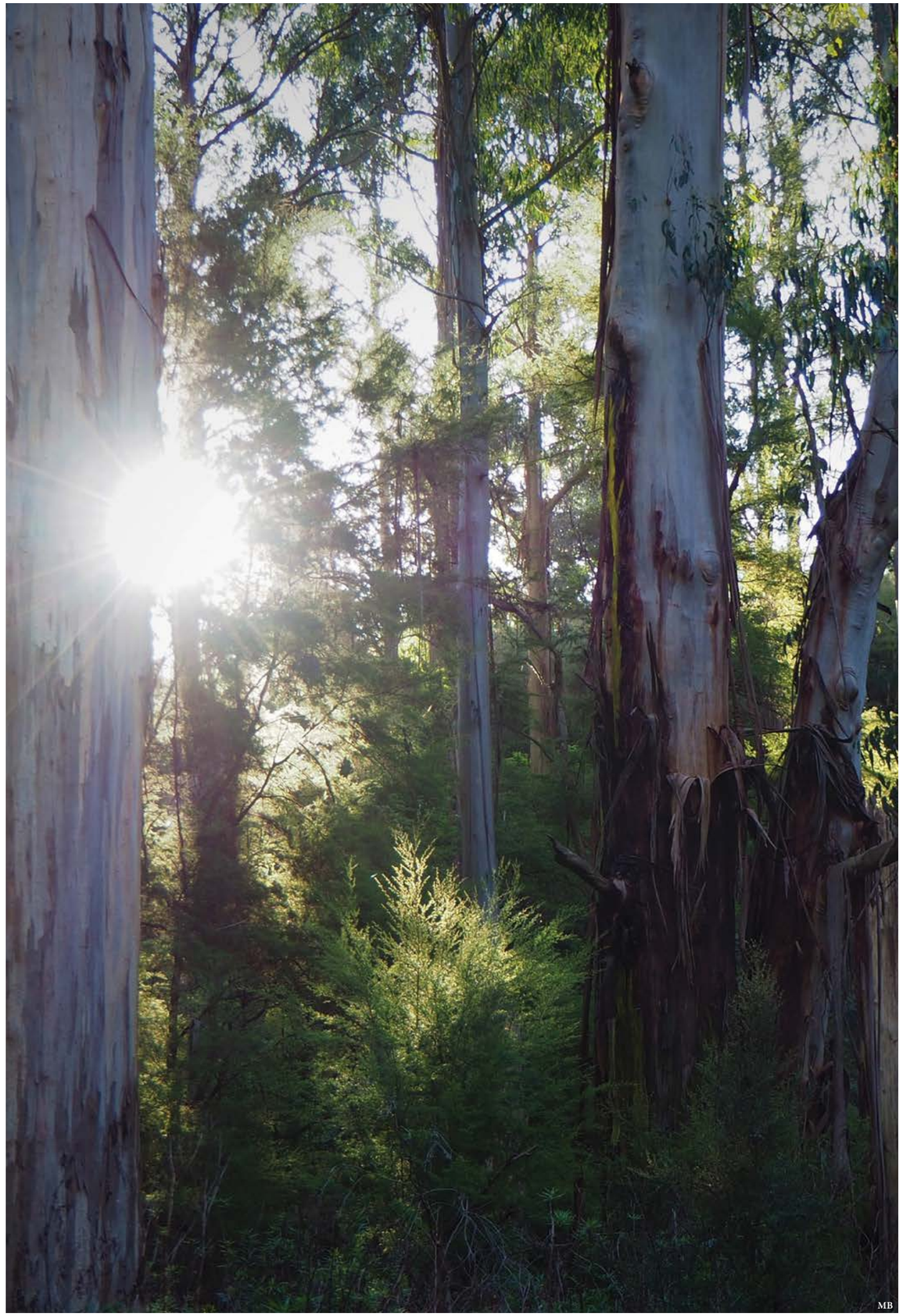


Figure 34. Planning Overlays across the South Gippsland BPP area



SOUTH GIPPSLAND
LANDCARE NETWORK