# Coastal Vegetation Strategy 2022

## PART ONE: OVERVIEW AND ASSESSMENT

GREAT OCEAN ROAD
COAST & PARKS AUTHORITY

Continue the story.
www.greatoceanroadauthority.vic.gov.au

We acknowledge and respect the separate and distinct Wadawurrung and Eastern Maar as the Traditional Owners of the Great Ocean Road's land, waters, seas and skies and acknowledge their Cultural knowledge that has led to sustainable practices and has cared for Country over tens of thousands of years.

We honour Elders past and present and express gratitude for their sharing of wisdom that has ensured the continuation of Culture and Traditional practices.

We are committed to genuinely partner and meaningfully build relationships that reflect self-determination and enable us to work together with the Traditional Owners and Aboriginal communities to support the protection of Country, the maintenance of spiritual and Cultural practices, and together deliver on their broader aspirations in the 21st century and beyond.


Report Version: FINAL 10 August 2022
Field assessment: Luke Hynes
Report: Luke Hynes

**Disclaimer**

The author advises that the information presented in this report, including any management advice, has been prepared with all due diligence and care, and based on the best available knowledge and research.

However, the author takes no responsibility for any loss, injury or financial damage resulting from the reliance and/or application of management advice provided in the report.

# Table of Contents

# Foreword

The Great Ocean Road Coast and Parks Authority (the Authority) was established as part of the *Great Ocean Road and Environs Protection Act 2020* (the Act) and came into being on 1 December 2020.

The Authority was established to deliver better protection and management, and a new way of doing business, across the iconic coast and parks of Victoria's Great Ocean Road. In partnership with the Traditional Owners, we manage, protect and foster resilience of the natural, cultural and heritage values of coastal Crown land and marine waters along the Great Ocean Road.

As a public land manager for the Great Ocean Road coast and parks, together with our communities we manage a wide variety of public land from National Parks to coastal beaches and town foreshores.

As we undertake this journey, I am pleased to introduce our Coastal Vegetation Strategy 2022. The first Native Vegetation Weed Action Plan (NVWAP) was developed by the Great Ocean Road Coast Committee in 2009 as a strategic environmental management plan to specifically address weed invasion on the coast. Since then, the Authority's Conservation Team has implemented the plan to improve native vegetation through targeted weed removal works on all terrestrial coastal Crown land from Point Impossible to Marengo.

An independent review of the previous 2015 plan was conducted on behalf of the Authority to evaluate the long-term effectiveness of our weed management activities. Part One of this Strategy aims to assess and quantify our on-ground performance for native vegetation and weed management over the last five years. Part Two sets practical on-ground weed control and biodiversity objectives for the next five years.

The data from this year's assessment indicates an overall 54% decrease in weed coverage for the previous study area from Torquay to Lorne. This huge achievement has been led by our Conservation Team and could not have been achieved without the ongoing and significant contribution from our volunteers, community groups and schools. This result demonstrates what can be achieved in the long-term with a whole of community effort. By partnering with our community, based on our engagement principles of leading by example, collaboration, connectedness, evidence-based decision making and trust, there is no challenge too great.

The Authority's principles form the backbone of this plan, and over the next five years it will shape and guide our conservation actions and provide technical guidance for our goal setting to improve conservation outcomes along the Great Ocean Road. The plan will ensure our on-ground works complement the wonderful efforts carried out by volunteers and the community to achieve the best conservation outcomes possible.

As the Authority-managed land expands over the coming years, I am excited to see this plan come to life. We will continue to work closely with dedicated environmental volunteers and the Traditional Owner groups to protect and manage the iconic coastal Crown land and marine waters along the Great Ocean Road for the benefit of future generations.

**Jodie Sizer**
Chief Executive Officer
Great Ocean Road Coast and Parks Authority

# Summary

The Authority's Coastal Vegetation Strategy 2022 (the Strategy) guides on-ground management to protect and enhance terrestrial ecological values within Authority-managed Crown land over the next five years. This plan updates, reviews and builds on the previous Great Ocean Road Coast Committee (GORCC) Native Vegetation and Weed Action Plan 2015-2020 (Beacon Ecological 2015a).

The Strategy is presented in two volumes:

- Part One: Overview and Assessment
- Part Two: Recommended Management Actions.

**Methodology**

Crown land managed by the Authority was traversed to map weed infestations and assess the condition, challenges or threats to ecological values. Where appropriate, the collected data was used to review the objectives from the GORCC Native Vegetation and Weed Action Plan 2015-2020: Management Recommendations (Beacon Ecological 2015b).

Local community environmental groups that work across Authority-managed land were consulted to determine the effectiveness of the previous plan where applicable, discuss mapping results and contribute to management objectives.

**GORCC Weed and Management Review**

Overall, there has been a marked reduction in weed level cover on land previously managed by GORCC from approximately ***224 hectares in 2015*** compared to approximately ***102 hectares in 2021***, with the Anglesea Management Area providing the largest decrease in woody weed cover. This is likely a result of significant woody weed works at Melba Parade, Soapy Rocks and the Anglesea Family Caravan Park clifftops.

A review of the management zone objectives showed that 83% of objectives were completed with 18 of the 37 management zones (49%) achieving all objectives. Two zones, Split Point East and Lorne Point, achieved a significantly low number of objectives. Both sites received little to no resources over the past two years, and this was reflected in the cover of weed species which had generally increased.

There was a similar range of completed objectives (80% to 87%) across the three levels of service:

- Conserve and enhance
- Conserve and rehabilitate
- Maintain and monitor.

Comparing the completion of objectives against individual weed species showed that several species with seasonal growth patterns were not able to be assessed adequately given the survey time (Angled Onion, Asparagus Fern, Bridal Creeper, Purple Groundsel). Two species, Dolichos Pea and Twiggy Mullein, had high levels of unachieved objectives indicating that control of these species may require additional

resources. Coast Tea-tree also revealed a higher proportion of unachieved objectives, likely due to this species requiring significant resources to control and remove infestations, and the large areas that it covers.

### Recommended Management Actions

The Authority is responsible for management across the Eastern Zone (Point Impossible, Torquay to Teddys Lookout, Lorne) and the Central Zone (Wye River to Marengo) which incorporates seven Management Areas: Torquay, Anglesea, Aireys Inlet, Lorne, Wye River, Kennett River and Apollo Bay. These areas were split into 45 *Management Zones* to identify and set objectives at a suitable scale. Management Zones have been prioritised using ecological values, landscapes, ease of access and weed control, and community group input to allow for accurate allocation of resources.

**Eastern Zone (Torquay to Lorne)**

Management Areas:

- Torquay (eight management zones)
- Anglesea (nine management zones)
- Aireys Inlet (seven management zones)
- Lorne (nine management zones)

**Central Zone (Wye River to Marengo)**

Management Areas:

- Wye River (two management zones)
- Kennett River (two management zones)
- Apollo Bay (eight management zones).

### Key Recommendations

Recommendations to address a range of ecological threats are provided in this document and include the following themes:

- Marram Grass, Sea Wheat Grass
- Sea Spurge
- Climate change
- Changes in community structure
- Native fauna monitoring
- Fire
- Domestic dogs
- Domestic and feral cats
- Litter
- Illegal rubbish dumping
- Garden escapees
- Supporting volunteers.

Detailed recommendations and actions for each of the Management Zones are provided in Part Two as a separate technical document.

### Monitoring and Evaluation

This plan is to be reviewed in 2026 to ensure objectives are completed and new objectives are set.

Management Zone prioritisation is to be reviewed in 2026 to ensure that resources are allocated effectively.

Work plans are to be reviewed annually to ensure that estimated resources are sufficient to achieve objectives.

# 1. Introduction

The Authority currently manages 65 kilometres of terrestrial coastline between Torquay and Marengo. This area supports significant native vegetation with high social, biodiversity and economic value.

The Strategy guides on-ground management to protect and enhance ecological values over the next five years within these areas.

The transfer of coastal public land parcels to the Authority will transition progressively over several years, with the Authority committed to working with existing land managers and volunteer groups to ensure valued local community assets continue to be maintained. This includes the transfer of intertidal and marine environs, and further work will be required to manage and incorporate these areas into our plans.

This plan reviews and builds on the first GORCC Native Vegetation and Weed Action Plan prepared in 2009 (Coomes 2009) and the subsequent GORCC Native Vegetation and Weed Action Plan 2015 – 2020 (Beacon Ecological 2015). Key strategic objectives are aligned and captured through the Authority's Coastal and Marine Management Plan 2020-2025 (CMMP); which currently serves as the Authority's overarching strategic management document.

The Strategy is presented as two volumes. Part One of this document provides an overview, condition assessment and review of conservation and weed management work undertaken in the last five years. Part Two includes site maps and outlines the recommended on-ground management actions for the next five years for each zone.

## 1.1 VISION

The Authority's vision is:

> *The Great Ocean Road region is thriving as one integrated living entity.*

The Authority's purpose is:

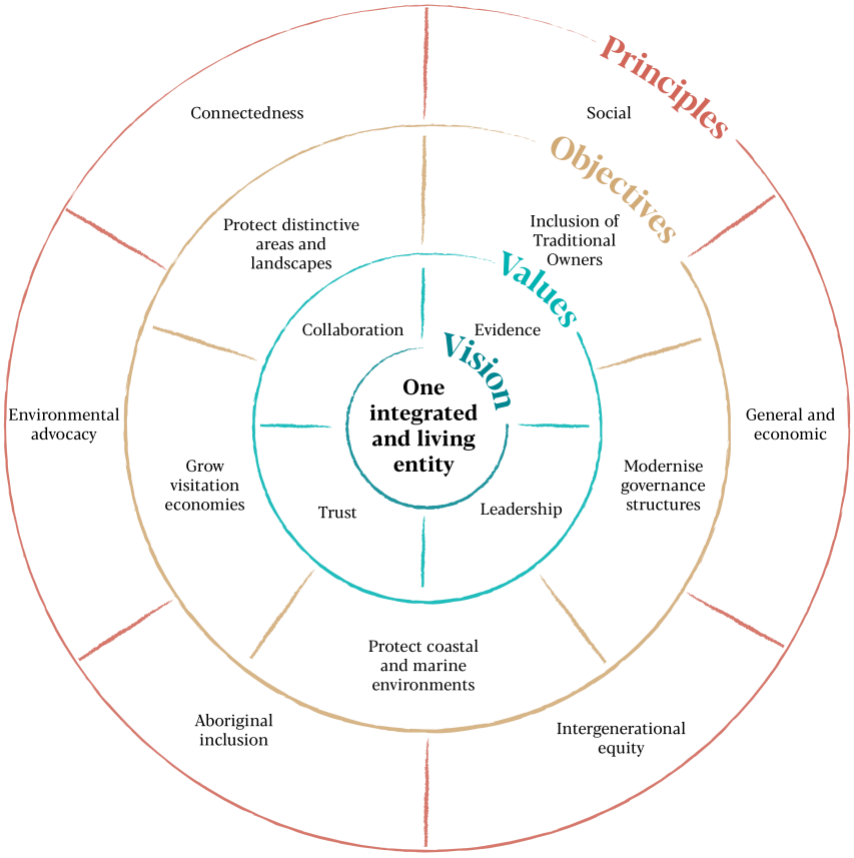
> *We exist to care for, protect and manage the coast and parks traversed by the Great Ocean Road so that they can be enjoyed by all, now and for generations to come.*

The vision of the Strategy is to:

> *Protect and enhance ecological values within Authority-managed land through effective resource management, particularly relating to weeds.*

This sits within the *Great Ocean Road and Environs Protection Act 2020* principle:

> *Natural, cultural and ecological values should be protected, and cumulative impacts on the environment should be considered in decision-making (GOREP Act 2020).*



## 1.2 GREAT OCEAN ROAD COAST AND PARKS AUTHORITY

The Authority is a statutory authority governed by a Board of directors and operates under the *Great Ocean Road and Environs Protection Act 2020* (the Act).

On 1 December 2020, the Great Ocean Road Coast Committee (GORCC) and the Otway Coast Committee (OCC) transitioned to the Great Ocean Road Coast and Parks Authority (the Authority). Simplifying the complex and fragmented governance of the Great Ocean Road was a key priority issue for establishing the Authority. Prior to the reforms, there were 30 responsible organisations with accountabilities along the Great Ocean Road. This management model created challenges in planning and delivering for the future in a coordinated manner.

The reforms have expanded our functions and powers to manage public land of all types within the Great Ocean Road coast and parks. Our role is to simplify these fragmented and conflicting management arrangements and deliver on a shared vision for the future of the entire Great Ocean Road region.

This includes:

- Guiding sustainable tourism, supporting local employment, and enhancing the visitor experience
- Strengthening the protection of land and seascapes from the impacts of climate change
- Improving economic development for a prosperous and liveable region.

As a public land manager for the Great Ocean Road coast and parks, we manage a wide variety of public land from National Parks to coastal beaches and town foreshores.

The Authority has a broad range of functions for the management of public land. We also lead visitation policy and planning for the scenic landscapes along the Great Ocean Road, managing visitation 'hot spots' and providing a great visitor experience.

Sections 48 and 49 of the Act establish the Authority as the lead agency to deliver this work, and set out the mechanisms to achieve its overarching objective: 'to protect, conserve, rehabilitate and manage Crown land and coastal assets within the Great Ocean Road coast and parks' (Section 47) and all the requirements that flow from this objective.

### Current estate

Land management of coastal reserves is being progressively transferred to the Authority over several years. The Authority is currently the appointed committee of management for the land previously managed by GORCC (four linear foreshore management areas, within the townships of Torquay, Anglesea, Aireys Inlet and Lorne) and OCC (foreshore areas of Wye River, Kennett River and from Wongarra to Marengo) (see Figure 1).

These Management Areas cover approximately 1,090 hectares and support significant landscapes such as sandy beaches, dune systems, cliffs, heathlands, shore platforms and estuaries. We also currently manage several caravan parks including Torquay Foreshore Caravan Park, Anglesea Family Caravan Park, Lorne Foreshore Caravan Park, Wye River Beachfront Campground, Apollo Bay Recreation

Reserve, Kennett River Family Caravan Park, Skenes Creek Foreshore Caravan Park and Marengo Family Caravan Park.

**Future estate**

Over the next three years from 1 September 2022 to 1 November 2025, the Authority will transfer land parcels from key partners at local government, DELWP and Parks Victoria. A total (approximate) 60,000 hectares will come under the remit of the Authority through a structured transfer process.

The ongoing management of these transferred parcels will be incorporated into existing works plans and assessed through the lens of all existing Authority strategies and plans. To this end, the Strategy will be revisited annually to adapt and expand conservation activities as necessary, and to ensure the same best practice standards are applied to our entire management area.

A 're-zoning' may be required by 2025, at the completion of this Strategy.


***Figure 1.*** *Current Great Ocean Road Coast and Parks Authority management areas.*

## 1.3 THE NATURAL ENVIRONMENT OF THE GREAT OCEAN ROAD

We manage a diverse range of terrestrial coastal environments along the Great Ocean Road, encompassing both the Surf Coast and the Otway Coast. Habitats ranging from sandy beaches and rocky headlands, dominated by coastal scrub vegetation and grasslands, to dry eucalypt forests and coastal lagoons supporting a wide variety of terrestrial and marine flora and fauna.

Several different vegetation communities such as heathy woodland, eucalypt forests, dune and headland scrub provide habitat for plants of national and state significance, including over 100 native orchid species. There are several significant endangered vegetation communities including Coastal Alkaline Scrub, Coastal Moonah Woodland, Coastal Saltmarsh and Grassy Woodlands scattered along the Great Ocean Road. Some significantly threatened fauna species known to inhabit these ecosystems include Swamp Antechinus, Southern Brown Bandicoot, Grey Goshawk and the Long-nosed Potoroo.

The region provides high-energy, wave-dominated marine and intertidal habitat including rocky headlands, sublittoral reef and sediments, rhodolith beds, coastal lagoons, and several creeks and estuaries. These environments provide important habitat for shorebirds and seabirds including the Hooded Plover, Sooty Oystercatcher, Shy Albatross, Black-faced and Pied Cormorants and Pacific Gull.

The intertidal platforms, pools and fissures support colourful sponges, impressive bull kelp forests and encrustations of invertebrates. Our reefs, like the Marengo Reefs Marine Sanctuary, support leafy sea dragons, molluscs, sea stars, sea urchins, crabs, and more than 100 species of algae and more than 90 species of opisthobranchs (sea slugs, cucumbers, hares and nudibranchs).

A list of *Flora and Fauna Guarantee Act 1988* (FFG) and *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC) threatened fauna species known to be present within the management area are provided in Appendix 3.

To protect the unique characteristics that form the Great Ocean Road's natural environment, we will apply ecosystem-based management to enable these ecosystems to be healthy, functioning and resilient.

# 2. Strategy context and guiding principles

Weeds are plants that occur beyond their natural range and have the potential to cause significant adverse economic, environmental and social impacts. For the purposes of this plan, the definition of a weed is taken from the *Australia Weeds Strategy 2017-2027* (Invasive Plants and Animals Committee 2016a):

> *A weed is considered as a plant that requires some form of action to reduce its harmful effects on the economy, the environment, human health and/or amenity.*

## 2.1 STRATEGY CONTEXT

This plan applies to Authority-managed land and is in accordance with relevant federal and state legislation and policy (Table 1).

**Table 1.** Relevant legislation and policy applicable to the Authority Coastal Vegetation Strategy 2022

| Level | Legislation | Strategies, plans and policies |
|---|---|---|
| **Federal:** Australian Government | • *Environment Protection and Biodiversity Conservation Act 1999* | • Australia's Biodiversity Strategy 2010 - 2030<br>• Australia's Strategy for Nature 2019-2030<br>• Australian Weeds Strategy 2017-2027<br>• Australian Pest Animal Strategy 2017-2027<br>• Weeds of National Significance<br>• National Alert List for Environmental Weeds<br>• National Heritage Management Principles 2008 |
| **State:** Victorian Government | • *Great Ocean Road and Environs Protection Act 2020*<br>• *Marine and Coastal Act 2018*<br>• *Catchment and Land Protection Act 1994*<br>• *Flora and Fauna Guarantee Act 1988*<br>• *Planning and Environment Act 1987*<br>• *Local Government Act 1989*<br>• *Environment Protection Act 1970* | • Invasive Plants and Animals Policy Framework<br>• Guidelines for the removal, destruction or lopping of native vegetation<br>• Victorian Coastal Strategy 2014 |

| Level | Legislation | Strategies, plans and policies |
|---|---|---|
| **Regional:** Corangamite Catchment Management Authority | | • Corangamite Catchment Regional Catchment Strategy 2013 - 2020<br>• Corangamite Invasive Plant and Animal Strategy 2010 |
| Great Ocean Road Coast and Parks Authority | | • Native Vegetation & Weed Action Plan 2015-2020<br>• Individual Great Ocean Road Authority management plans<br>• Coastal and Marine Management Plan 2020-2025 |
| Traditional Owners | | • Meerreengeeye Ngakeepoorryeeyt Country Plan (Eastern Maar Aboriginal Corporation, 2015)<br>• Paleert Tjaara Dja – Let's make Country good together 2020-2030 (Wadawurrung Traditional Owners Aboriginal Corporation) |

**Note:** Legislation refers to laws, which serve to legally prohibit certain actions and ensure others are carried out. Strategies are plans of action, which act as a guide to ensure legislation is complied with.

## 2.2 WEED MANAGEMENT PRINCIPLES

The following management principles were developed and adapted from the relevant strategies, plans and policies detailed in Table 1, and align with our overarching organisational principles. These principles guide the management actions developed in this plan, particularly about the prioritisation of weed control at a management zone scale.

### Biosecurity approach

Australia's federal and Victorian state governments have adopted a biosecurity approach to pest plant and animal management. Informed by the pest invasion curve (Figure 2), this approach adopts a risk-based strategy to intervention featuring four key responses: prevention, eradication, containment and asset protection.

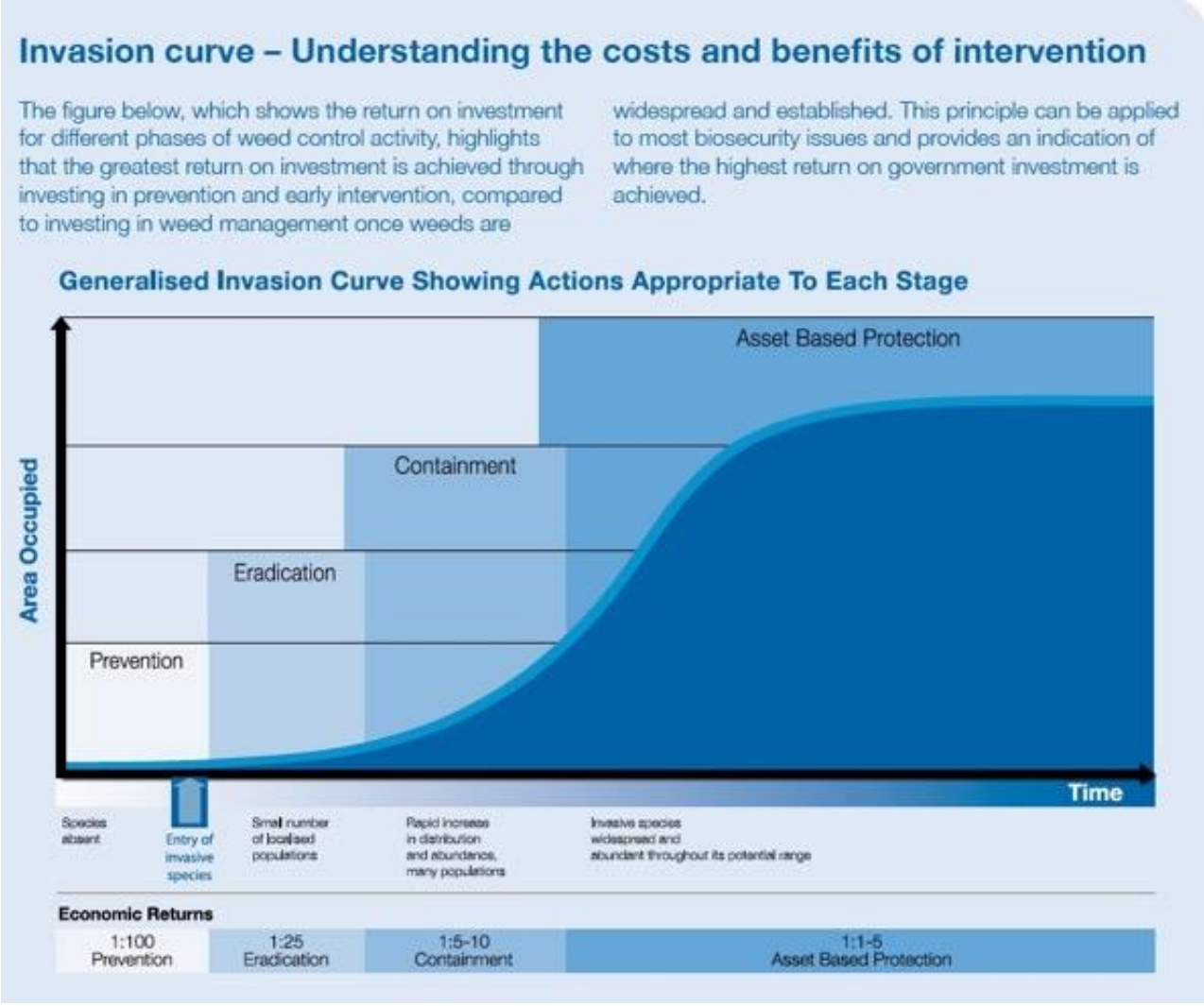



***Figure 2.*** *Invasion curve (DPI 2009)*

Using this approach, higher priority is directed to prevention of any new pest species, then new and emerging species and small infestations, before moving on to more established and widespread species. Once a pest becomes so widespread that its containment is no longer possible, the management

approach focuses on protecting strategically identified assets. Assets may have environmental, economic and/or social value to the region. The biosecurity approach can be applied at local to regional scales.

**Transparent strategic approach**

Transparent, scientific, evidence-based decision-making tools for setting priorities must be employed to ensure the most efficient use of resources. Management actions will be directed by adequate levels of information to make informed decisions. When necessary, additional data collection may be required. In this case, a prioritisation matrix was developed to prioritise management zones using desktop analysis and field work data (Section 3.4).

**Cross tenure landscape approach**

The ability to foster effective partnerships and implement projects across all land tenures results in efficient use of resources, successful outcomes, and increases success. The Authority aims to integrate works with adjacent land managers such as the local government, Parks Victoria and the Department of Environment, Water, Land and Planning (DELWP) where possible.

**Integrated land management**

Integrated pest plant and animal management actions into other broader management activities where possible, such as fuel load management, recreation, amenity and capital works.

**Address cause**

Effective solutions must address the cause of pest invasion, not just the symptoms. This may require developing an understanding of local pest pathways and dispersal mechanisms. In the case of many weed infestations, this may mean implementing community awareness programs to prevent garden escapees from entering Authority-managed land.

**Ongoing commitment**

Pest plant and animal control programs are generally only effective if sustained resources are available over a prolonged period. When investing in programs and control activities it is essential to ensure that ongoing resources will be available for follow up work.

**Community engagement and volunteers**

Active involvement by the community is one of the greatest resources available in managing pest plants and animals across landscapes. The Authority will build on working relationships with community environmental volunteer groups active within the Authority's-managed land. Weed control programs should increase community awareness and the capacity of community groups where possible.

**Monitoring and review**

An outcomes-based approach to monitoring, evaluation and reporting should be adopted. Monitoring and review are to be undertaken periodically, particularly as new parcels of land are transferred to the Authority's management and assessed against pre-determined measurable objectives. Each zone will be reviewed on a bi-annual basis to ensure all land parcels are captured in work plans, and that the objectives of this strategy are consistently applied.

## 2.3 TRADITIONAL OWNER CONNECTION TO COUNTRY

The Authority is committed to working in partnership with the Traditional Owners and Aboriginal communities along the Great Ocean Road towards a shared goal of improving the health of our coastal environment.

### Eastern Maar Country

*Meerreengeeye Ngakeepoorryeeyt* is the Country Plan for the Eastern Maar Aboriginal Corporation (EMAC, 2015). Eastern Maar's Country includes the land, water, air, plants and animals, stories and spirits, citizens, cultural heritage and so much more.

Eastern Maar's coastal Country from Painkalac Creek at Aireys Inlet to Marengo forms part of the Authority's current management area. The flora of these areas has been studied and mapped as part of this vegetation assessment. Moving forward, the Authority aims to embed cultural knowledge into our current conservation and land management approaches.

The forest and coast contain many rare and threatened species. Abundant middens along the coastline tell a rich story of their past. Eastern Maar citizens have always had a close connection with the sea and its resources, which is central to their culture, economy and survival.

The Coastal Vegetation Strategy defines a range of actions that directly contribute to the key goals of the Country Plan. Specifically, goal four sets a vision where our Country is healthy, and our natural resources are managed and used sustainably.

The Country Plan has identified that natural and cultural values within the landscapes of the Eastern Maar nation are threatened by weeds. The objectives of the Coastal Vegetation Strategy at each site significantly contribute to addressing the threat of weeds within the coastal landscape and will support the long-term improvement to a healthy and sustainable landscape.

Representatives from the Eastern Maar Aboriginal Corporation (EMAC) were engaged during consultation. EMAC are supportive of the Strategy and emphasised the importance of restoring grassland species as part of the coastal landscape.

The Authority is working together with EMAC to develop a long term partnership approach and agreement.

### Wadawurrung Country

Wadawurrung coastal dunes are layered with living places and hearths from the many generations of their ancestors living, harvesting, sharing meals, trading in these living places and practising ceremony here.

*Paleert Tjaara Dja – Let's make Country good together 2020-2030*, is the Wadawurrung Country Plan developed by the Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC). The Wadawurrung's Country Plan states that caring for Country is essential for maintaining relationships and connections, for passing on cultural knowledge and practices to our younger generations and maintaining our cultural identity (WTOAC, 2020).

Part of the Wadawurrung Country covered by this Coastal Vegetation Strategy includes coastal lands along the Surf Coast from Point Impossible, near Torquay, to Mangowak, or Aireys Inlet.

The coastal woodlands and Anglesea heathlands hold stories that teach Wadawurrung about cultural practices, like the woodlands which are disappearing, putting their marriage stories at risk. The Anglesea Heathlands are one of the few places Wadawurrung still find Spotted-tailed Quolls. The Wadawurrung have identified weeds as a high threat to Sea Country, Coastal Country, Inland Country, rivers, estuaries and wetlands, and a risk to bushtucker, medicines and other resources.

Rabbits are also identified as a high threat to Wadawurrung cultural sites and places, and a medium threat to rivers, estuaries and wetlands.

As part of the consultation phase for the development of the Strategy, Authority staff met with representatives from WTOAC. Key areas of interest as part of a long-term partnership for WTOAC included increasing Traditional Owner work opportunities on Wadawurrung Coastal Country (such as the development of an Aboriginal Coastal Ranger or Conservation Ranger program), sharing of land-based technical conservation knowledge, skills development and protection of cultural heritage.

By contributing to significant weed control along the coast, the Strategy closely supports the Wadawurrung values and strengthens the conservation objectives from the Wadawurrung Country Plan.

The Authority is working together with WTOAC to develop a long term partnership approach and agreement.

## 2.4 GREAT OCEAN ROAD COMMUNITIES AND VOLUNTEERS

The Great Ocean Road is home to hundreds of dedicated environmental volunteers, community groups, schools, students and individuals who have dedicated years and sometimes decades to the long-term protection of coastal ecosystems.

Volunteers are the backbone of our ongoing conservation work with more than 20 active volunteer groups on the coast. The volunteer efforts along the Great Ocean Road continue to play a vital role in the holistic management and long-term protection of the Authority's managed lands. Volunteer groups along our coast carry out a variety of roles in many different areas. Activities include:

- Weeding (e.g., hand weeding, cut and paint)
- Revegetation
- Developing facilities such as walking tracks and signage
- Monitoring native birds and animals
- Monitoring of environmental conditions such as emerging weed infestations
- Preventing erosion
- Protection of threatened fauna species and enhancement of habitat for threatened mammals

- Promoting Hooded Plover protection
- Initiating funding proposals and managing coastal projects
- Administration activities such as attending meetings and social events
- Supporting longitudinal research projects
- Education within the local community such as participating in informative walks
- Coordination and delivery of citizen science initiatives
- Inspiring intergenerational stewardship of the coast.

The Authority is currently developing a Community Engagement Framework (CEF) that will allow a more formalised structure for community involvement in the Authority's direction. Using the principles of the CEF, we will continue to strengthen relationships with volunteers by:

- Working collaboratively
- Learning from local knowledge and expertise
- Sharing information and resources
- Inviting participation in the review process
- Continuing to plan and evolve our work together.

# 3. Survey methodology

## 3.1 LITERATURE REVIEW

The following documents and databases were reviewed as part of the investigation:

- GORCC Native Vegetation and Weed Action Plan (Coomes 2009)
- Native Vegetation and Weed Management Plan Review (Beacon Ecological 2015a)
- Native Vegetation and Weed Management Plan: Management Zone Recommendations (Beacon Ecological 2015b)
- NatureKit for native vegetation modelling and previous rare or threatened flora and fauna records within the local area (DELWP 2021).

## 3.2 FIELD ASSESSMENT

Native vegetation and weeds within Authority-managed land were assessed on foot and mapped between November 2020 and May 2021. A GIS mapping layer of transects traversed during the mapping is available from the Authority.

### Native vegetation assessment

A rapid condition assessment of native vegetation was undertaken within vegetation previously managed by the OCC using criteria based on Keighery (1994). This is a six-point scale with vegetation ranked from near pristine to completely degraded (Table 2). Land previously managed by GORCC was assessed during the previous assessment.

**Table 2.** Summary of vegetation condition scale adapted from Keighery (1994)

| Condition scale | Description |
|---|---|
| Near pristine (6) | Pristine or nearly so, no obvious signs of disturbance. |
| Excellent (5) | Vegetation structure intact, disturbance affecting individual species and weeds are isolated infestations, relatively easy to control. |
| Very good (4) | Vegetation structure altered, obvious signs of disturbance. Weed cover is up to 25% but capable of being controlled. |
| Good (3) | Vegetation structure significantly altered, obvious signs of multiple disturbance.<br>Generally greater than 25% weed cover and difficult to control. |

| Condition scale | Description |
|---|---|
| Degraded (2) | Basic vegetation structure severely impacted by disturbance. Scope for rehabilitation but not to a state approaching good condition without intensive management. Examples may include greater than 50% weed cover or basic overstorey species remaining with little to no remnant understorey. |
| Completely degraded (1) | The structure of the vegetation is no longer intact, and the area is completely or almost completely without native species. |

Ecological Vegetation Classes (EVC) for the areas of native vegetation within the study area were also mapped. EVCs are the standard unit developed by the Department of Environment, Land, Water and Planning (DELWP) for classifying vegetation types in Victoria. EVCs are described through a combination of floristics, lifeforms and ecological characteristics as per benchmarks provided on the DELWP website.

Each EVC has been assigned a Bioregional Conservation Status (endangered, vulnerable, depleted, least concern or rare) that reflects the current extent and quality when compared to the original (pre-1750) extent and condition modelling.

While in the field the potential presence of national and state significant species was also assessed using observed habitat, previous records from NatureKit (DELWP 2021) and previous reports.

### Weed mapping

Weeds were mapped using the Trimble TerraFlex application using a methodology developed by the Nillumbik Shire Council, Parks Victoria, Melbourne Water and the Department of Environment and Primary Industries as detailed in *Warrandyte to Kinglake Habitat Corridor Network. Environmental Works Toolkit. Contractor Reporting Procedure* (Nillumbik Shire *et al* 2014). Waypoints were taken at the centre of infestations with the radius of infestation, infestation level and life form collected (see Table 3 for data collected for each infestation). Larger infestations were mapped using polygons where appropriate.

**Table 3.** Weed mapping data collected

| Field | Field options | Field description |
|---|---|---|
| Location/GPS point | | Waypoint data collected from the GPS |
| Date | | Date of weed mapping |
| Assessor | | Name of the person collecting the data |
| Organisation | | Name of the organisation collecting the data |
| Common name | | Common name of weed |
| Scientific name | | Scientific name of weed |
| Extent radius | <1 metre | The average radius of the infestation in metres. For data points, the infestation waypoint is in the centre of the infestation. |
| | 1-5 metres | |
| | 6 – 10 metres | |
| | 11 – 25 metres | |
| | Polygon | |
| Infestation cover | <1 % trace | Estimate of the projective foliage cover of the weed infestation. Projective foliage cover is an estimation of the percentage of the ground that would be covered by the shadow of the weed's leaves if the sun was directly overhead. |
| | 1 – 10% light | |
| | 11 – 50% medium | |
| | 50% dense | |
| Age class | Seedling | Age class of the weed infestation. A resprout is a plant that has been previously treated that is showing regrowth. |
| | Juvenile | |
| | Mature | |
| | Resprout | |

### Exceptions

Weeds considered to be part of the common ambient weed cover were generally not mapped. These are weed species that are common across the landscape and are considered too resource intensive to control. Herbaceous weeds considered part of this group include species such as Ribwort *Plantago lanceolata*, Buckshorn Plantain *Plantago coronopus*, Catsear *Hypochoeris radicata*, Red Pimpernel *Lysimachia arvensis*, Clovers *Trifolium* spp, and Ox-tongue *Helminthotheca echioides*. Grasses considered part of this group include Cocksfoot *Dactylis glomerata*, Vulpia spp., Rats-tail Fescue *Sporobolus africanus,* Hares Tail grass *Lagurus ovatus*, Marram Grass *Calamagrostis arenaria,* Sea Wheat Grass *Thinopyrum junceiforme*. Many of these species are present along the edges of tracks and in disturbed areas.

## 3.3 CONSULTATION PROCESS

Consultation was undertaken with community environmental volunteer groups to ensure an integrated approach to objectives was achieved. Meetings with representatives from several groups were facilitated. A list of the environmental volunteers consulted is listed in the Acknowledgements section. Summarised results of the community group consultation are detailed in Section 4. Consultation with each group focused on:

- Group experience and use of the 2015-2020 GORCC Native Vegetation and Weed Action Plan
- Weeds that the group has targeted over the past five years
- Aims for the group over the next five years.

A draft of the field assessment findings and draft recommendations was shared with local volunteer groups including Jan Juc Coast Action, ANGAIR, Friends of Queens Park and others, and government stakeholders including Surf Coast Shire, Colac Otway Shire, DELWP, Parks Victoria and Corangamite Catchment Management Authority.

The draft findings were also shared with the Wadawurrung Traditional Owners Aboriginal Corporation and Eastern Maar Aboriginal Corporation. Both Traditional Owner groups provided their support and approval for the draft findings.

## 3.4 MANAGEMENT ZONE PRIORITISATION

To effectively allocate resources and protect the highest value environmental assets, management zones were ranked by priority using a methodology based on the Nillumbik Shire Council's *Environmental Works. Bushland & Wetland Reserves Prioritisation & Planning Guidelines* (Nillumbik Shire Council 2013). Prioritising management zones ensures strategic management focuses first on areas that have the greatest biodiversity and community values and the best long-term chance of retaining high biodiversity values. Note that while land previously managed by GORCC was prioritised in the *2015-2020 GORCC Native Vegetation and Weed Action Plan,* these were updated using the new methodology which incorporates the level of weed cover.

### Management zone prioritisation

Management zones were ranked by using a prioritisation matrix (Table 4), allocating scores based on ecological values, the width of the zone and the level of community input.

**Table 4** Authority prioritisation matrix data

| Criteria | Data source | Categories | Scores |
|---|---|---|---|
| Vegetation values | Vegetation condition score | Pristine | 24 |
| | | Excellent | 20 |
| | | Very good | 16 |
| | | Good | 12 |
| | | Modified/Revegetation | 8 |
| | | Degraded | 4 |
| | EVC Bioregional Conservation Significance* | Endangered | 5 |
| | | Rare | 4 |
| | | Vulnerable | 3 |
| | | Depleted | 2 |
| | | Least concern | 1 |
| Weed cover and ease of control | Mapping | Very low weed cover or easy to complete control | 20 |
| | | Low weed cover or easy to complete control | 15 |
| | | Moderate weed cover or some difficulty to control | 10 |
| | | High weed cover or very difficult to control | 5 |
| Significant species/ communities** | Victorian Biodiversity Atlas (DEPI 2014) | EPBC Listed Flora | 4 |
| | | EPBC Listed Fauna | 4 |
| | | VROT Flora | 2 |
| | | VROT Fauna | 2 |
| Reserve width | Aerial photography | Wide –80+ metres | 6 |
| | | Medium – 20 – 80 metres | 3 |
| | | Thin – 5 to 20 metres | 0 |
| Community involvement | To be collated from community groups and local community input | Active community or community group within the reserve | 10 |
| | | No active community or community group within reserve or adjacent to the site | 0 |

**Notes:**

*Note that for EVC scores, scores are cumulative for each EVC present within the management zone.

**Note that for EPBC and VROT listed flora scores are cumulative for each species either recorded or with potential habitat.

Each zone is ranked against other zones based on score and allocated one of three levels of priority: High, Medium, or Low. If resources are reduced or not all objectives are able to be met, then resource allocation within management zones will be determined using the priority system.

## 3.5 OBJECTIVE SETTING

When setting five-year objectives for each management zone, care was taken when selecting the language of each objective. Objectives need to be clear on what is intended to be achieved and where. Some example wordings and why they were used are listed below. It should be noted that setting objectives for every single weed noted in a management zone was not considered appropriate and only key weed species have set objectives. It is assumed that while control works are being carried out for key species, all weed species will be controlled appropriately.

**Effectively eradicate all mature plants:** This wording is generally used for woody weeds. Many woody weeds have persistent seed banks and using terms such as total eradication or elimination are not suitable as these seedlings are likely to continue to appear many years after all mature plants have been removed. If the objective of removal of mature plants is continuously achieved, the seed bank will gradually be diminished. A species is considered effectively eradicated from a Management Zone when there are less than 100 square metres of mature plants present within the zone.

**Prevent juveniles from developing into mature specimens:** This wording is generally used for woody weeds in sites where all mature plants have been eradicated, although seed banks persist. This objective is generally set for sites where intensive weed management has already occurred.

**Control annually:** Control is not always successful for some species. Weeds such as Sea Spurge and Bridal Creeper may require several treatments to achieve varied success. For many herbaceous and grassy weeds, the objectives are related to controlling plants. Control means the target infestations are treated using approved control methods each year andtrialling different methods to see which is most effective.

**Contain:** Some infestations require more resources than are likely to be available or may be difficult to treat. For these large infestations, containment lines have been drawn around core infestations or current infestation levels. Infestations outside this containment area are to be controlled and the core infestation reduced over time as resources allow.

**Reduce or effectively eradicate:** Where appropriate, an objective related to the reduction of the cover or number of infestations for a target weed. Generally, if the cover of a species is reduced to less than 100 square metres per zone then it is considered effectively eradicated even if the cover is not reduced by a required percentage.

**Monitor:** For some high threat weed species that are noticeably absent from a management zone there may be a need to monitor the site for new incursions. Further details on field monitoring techniques and conservation operations are discussed in Section 8.

## 3.6 REVIEW OF 2015 MANAGEMENT OBJECTIVES

The 2015 NVWAP set out priorities for each Management Zone. These actions have been reviewed using weed mapping results and discussions with the Authority Conservation Team to determine if actions have been completed. Note that secondary objectives have not been assessed or reviewed.

One of the following categories of achievement was assigned for each objective:

1. Objective achieved
2. Objective not achieved
3. Unknown outcome (used for weed species with seasonal effects where it could not be determined what the current weed level is due to the timing of the survey)
4. Objective changed (in some instances the objective was changed as a different approach was used).

Completion of objectives was then analysed against various parameters. See Appendix 2 for the results of the objective review. Note that objectives with an unknown outcome or where the objective was changed were not included in the analysis.

## 3.7 LIMITATIONS

Field surveys indicate what is present at the time of the survey (i.e., a 'snapshot') and may not include species that may be dormant or absent due to seasonal or climatic conditions. The weed mapping was undertaken during summer. As such, some species may be dormant or not displaying adequate diagnostic characteristics at the time of the survey. Additional weed species and infestations may be recorded within the study area during assessments undertaken at alternative times of the year or during a prolonged time in the field. Some species may be underrepresented if assessed during late summer, particularly Bridal creeper *Asparagus asparagoides,* Asparagus Fern *Asparagus scandens* and Angled Onion *Allium triquetrum.*

In some instances, access was difficult due to steep terrain or dense vegetation. These areas were traversed or observed from a distance as best as possible. GPS tracking and aerial photography were used to ensure that sites were covered as systematically as possible.

The Authority's eight caravan parks and camping grounds are situated adjacent to some of the most spectacular beaches and reserves on the coast. Our caravan parks provide a range of accommodation options for tourists and visitors and are the single largest accommodation provider on the Great Ocean Road with over 750,000 visitor nights annually.

Caravan parks within Authority-managed Crown land were assessed and mapped. These areas generally support highly modified vegetation and sometimes contain weeds. Control of weed infestations in these areas should be detailed in park management plans and weed mapping will assist with these plans.

The Authority's approach to weed management in the caravan parks differs from our conservation approach on other managed lands. The caravan parks are primarily zoned to provide suitable space, facilities and amenities for use by campers and visitors and are typically highly modified or disturbed areas within the landscape.

The five-year management action includes:

- Develop a vegetation site plan for the eight caravan parks and camping ground locations to manage and reduce weeds in line with the amenity and function of the land.
- The survey effort and review of existing relevant information are considered sufficient to provide native vegetation and weed management recommendations within the Authority's managed land.

# 4. Consultation results

*The Great Ocean Road and Environs Protection Act 2020* identifies that "community consultation and participation should play an essential and active role in the protection, improvement and promotion of the Great Ocean Road environment" (Part 3, Section 16 (3)). Consultation with local environmental groups and other stakeholders as part of the plan development was undertaken to promote and foster collaboration where possible.

A summary of stakeholder discussion is included below. Details on works completed by groups over the past five years are included in Part Two: Recommended Management Actions (Beacon Ecological 2022). Group goals were built into the management zone objectives where possible.

Representatives from environmental groups who work on Authority-managed land were consulted during the development of the Strategy. These include:

- Torquay Coast Action
- Jan Juc Coast Action
- ANGAIR
- Friends of Aireys Inlet Coastal Reserve
- Southern Otway Landcare Group
- Friends of the Eastern Otways
- LorneCare
- Lorne Foreshore Conservation Group
- Friends of Queens Park
- Skenes Creek Advancement Association
- Wye to Wongarra Landcare Group
- Apollo Bay Landcare Group
- Otway Barham Landcare Group.

## 4.1 KEY FEEDBACK MESSAGES

### 2015-2020 GORCC Native Vegetation and Weed Action Plan

- The previous plan was referenced positively amongst community groups and many important suggestions for the future document were provided, such as inclusion of vertebrate and/or

invertebrate fauna monitoring objectives; setting higher percentage targets for some objectives; and input on site prioritisation.

- Most groups did not use the plan often nor thought that it needed to be tailored to them. Most groups have a good understanding of weed infestations and issues within their working area and can plan working bees accordingly without requiring a written strategic approach.

**2022 Coastal Vegetation Strategy**

- It was felt that there was no need to have specific weed control objectives for groups. Groups were happy to work together with the Authority to achieve overarching objectives for management zones.
- Input from groups assisted with the determination of five-year objectives for each management zone.
- If possible, it would be good for the naming of management zones to match community recognised names of beaches and places.
- Some groups indicated that they would use the plan strategically to assist with planning their works and as a reference document when applying for grants.
- Concerns were shared about sea level rise and how the Authority could best respond to this challenge.
- Several groups were concerned that the new Authority, with larger management areas, may stretch conservation staff too thin, resulting in some areas reverting to more weedy states.

**Group relationships with the Authority**

- All groups in the Eastern Zone overwhelmingly reported they had a great working relationship with the Authority's staff, particularly the Conservation Team.
- Friends of Queens Park were very happy with the new Lorne based team and have found a local presence very beneficial.
- Communication levels were considered to be good with groups feeling that needs and concerns were heard and acted on where possible by the Authority's staff.
- One group mentioned that some more appreciation by the Authority of environmental volunteer groups would be welcomed.
- Occasional group meetings or forums would be welcomed, inviting all groups on the Authority's managed land. Groups could compare successes and present sites.
- Groups in the Central Zone were enthusiastic to build relationships and work together with the new Authority. Central Zone groups were happy to explore the best ways to work together but assistance with community education and working bee support were noted.

### Traditional Owner and stakeholder feedback on the draft

During December 2021, the draft strategy was shared with EMAC and WTOAC (as the Registered Aboriginal Parties), community groups and government stakeholders who were invited to comment.

The Traditional Owner groups provided positive feedback, and both EMAC and WTOAC endorsed the draft Strategy. EMAC emphasised the importance of restoring grassland species as part of the coastal landscape. Authority staff met with representatives from WTOAC to discuss the draft Strategy and visit conservation sites on Country. Key areas of interest as part of a long-term partnership with the Authority for the WTOAC included increasing Traditional Owner work opportunities on Wadawurrung coastal Country, such as the development of an Aboriginal Coastal Ranger or Conservation Ranger program, sharing of land-based technical conservation knowledge, skills development and protection of Cultural Heritage.

General themes raised in other stakeholder feedback included the need for increased support and acknowledgement of volunteer work, fauna management and monitoring, and concerns about resourcing and prioritisation of conservation work as the Authority expands its land management responsibilities.

Following the receipt of the stakeholder submissions, the project team reviewed the feedback and updated the document where possible including adding further detail on conservation operations, revegetation, pest animal management, fauna monitoring and the contribution of volunteers. A range of other strategic and technical aspects relating to conservation approaches at specific sites was addressed and updated where possible to strengthen the final version.

Government stakeholders consulted during the drafting of the Strategy included: Surf Coast Shire, Colac Otway Shire, Corangamite Catchment Management Authority, Parks Victoria, and the Department of Environment, Land, Water and Planning.

# 5. Field results

The field surveys collected information on vegetation quality, weed infestation levels and general management issues. Results from the field surveys are summarised below.

### Vegetation condition

Vegetation condition varies greatly across Authority-managed land from near pristine environments such as Elliot River, the Marengo Back beaches, Jan Juc Heath, Anglesea Coastal Heath and Anglesea Saltmarsh; to highly modified areas dominated by weeds such as Lorne Foreshore and areas used for recreation such as the Apollo Bay Foreshore, Torquay Foreshore and Spring Creek.

Subtropical and Temperate Coastal Saltmarsh was observed in saltmarsh areas to the west of the Anglesea Family Caravan Park. This vegetation meets the condition thresholds for the EPBC listed community.

Coastal MoonahWoodland was observed in numerous locations within the Torquay, Anglesea and Aireys Inlet management areas. This vegetation meets the condition threshold for the FFG listed community.

### Weeds

Weed infestations of varying levels were mapped in all management zones managed by the Authority. Over 100 were mapped with some species widespread while others were considered new and emerging. The most widespread species in the Eastern Zone include the woody weeds Coast Tea-tree and Sallow Wattle. In the Central Zone, Sweet Pittosporum, Coast Tea-tree and Blackberry were most dominant. These species can dominate coastal vegetation in some locations, radically altering community structure and decreasing biodiversity.

Numerous other species capable of becoming widespread are common in local areas but considered new and emerging across the Authority's management area. Monitoring for these species and taking immediate control is imperative to stop species becoming established in new areas. These species include:

- Asparagus Fern
- Bluebell Creeper
- Boneseed
- Bridal Creeper
- Cape Broom
- Cape Ivy
- Cape Wattle
- Flax-leaf Broom
- Italian Buckthorn
- Mirror Bush
- Myrtle-leaf Milkwort
- Purple Groundsel
- Sea Spurge
- Serrated Tussock
- Sweet Pittosporum.

### Management zones

Management zones were developed using zones previously developed and areas that were considered appropriate to set objectives against. Management zone boundaries were determined due to different management requirements related to:

- Similar management requirements
- Changes in weed level
- Environmental community group effort
- Changing vegetation communities
- Differing land uses.

### Management zone prioritisation

The management zone prioritisation process identified the following number of priority levels:

Eastern Zone (31 management zones)

- *High*: 11 management zones
- *Medium*: 13 management zones
- *Low*: seven management zones

Central Zone (12 management zones)

- *High*: seven management zones
- *Medium*: three management zones
- *Low*: two management zones.

The three levels of priority are spread across all management areas. Higher scoring management zones supported relatively intact native vegetation that has generally not been previously modified.

# 6. GORCC Native Vegetation and Weed Action Plan 2015-2020 review

## 6.1 OVERALL WEED COVER REVIEW

Weed levels were able to be compared for areas previously managed by GORCC only, as these areas were mapped in the 2015 assessment.

A comparison of weed mapping for each management zone between the current assessment, the 2015 assessment and the 2009 NVWAP mapping is detailed in the Coastal Vegetation Strategy. A summary of the overall cover (weed spread) and by each management zone is provided in Table 5 below. Care must be taken when interpreting non-woody weed changes in cover as some of these effects may be seasonal, especially when looking at species such as Bridal Creeper and Angled Onion which have seasonal growth patterns.

**Table 5.** Change in overall weed cover on GORCC managed land between 2015 and 2021

| Location | 2015 mapping (ha) | 2021 mapping (ha) | % Remaining |
|---|---|---|---|
| **Overall** | 224.3 | 102.5 | 45.70% |
| Overall woody | 205.7 | 96.9 | 47.11% |
| Overall non-woody | 18.6 | 5.6 | 30.11% |
| **Torquay Management Area overall** | 57.5 | 34.3 | 59.65% |
| Torquay woody | 50.3 | 31.1 | 61.83% |
| Torquay non-woody | 7.2 | 3.2 | 44.44% |
| **Anglesea Management Area overall** | 29.4 | 6.3 | 21.43% |
| Anglesea woody | 25.8 | 6.1 | 23.64% |
| Anglesea non-woody | 3.6 | 0.3 | 8.33% |
| **Aireys Inlet Management Area overall** | 33.1 | 13.1 | 39.58% |
| Aireys Inlet woody | 29.7 | 12.2 | 41.08% |
| Aireys Inlet non-woody | 3.4 | 0.9 | 26.47% |
| **Lorne Management Area overall** | 104.2 | 48.6 | 46.64% |
| Lorne woody | 99.8 | 47.5 | 47.60% |
| Lorne non-woody | 4.36 | 1.1 | 25.23% |

Woody weeds provide the majority of weed cover in both assessments, approximately 92% of cover in 2015 and 94% in 2021. Overall, there has been a marked reduction in weed level cover from approximately 224 hectares in 2015 compared to approximately 102 hectares in 2021. Woody weed cover has approximately halved and non-woody weeds reduced to a third overall.

The Anglesea Management Area has provided the largest decrease in woody weed cover. This is likely a result of significant woody weed works at Melba Parade, Soapy Rocks and the Anglesea Family Caravan Park Clifftops.

Torquay and Lorne management areas show poorer decreases in woody weed cover, likely a result of large woody weed infestations of Coast Tea-tree at Point Impossible for Torquay and Sweet Pittosporum and Boneseed in Queens Park for Lorne, which have been too large to control with works in these areas focusing on preventing cover of these species from expanding.

Aireys Inlet showed a moderate decrease in woody weed cover. While significant weed reduction has occurred for the majority of the Aireys Inlet Management Zone, significant weed cover remains in the Split Point East and to a lesser extent, Split Point West management zones. Split Point East has not received significant amounts of weed control due to access difficulties.

### 6.2 WEED SPECIES COVER REVIEW

A summary of changes in weed cover by species is provided below in Table 6. Species highlighted in orange are those with overall infestations greater than two hectares at the 2015 assessment.

**Table 6.** Change in weed species cover between 2015 and 2021.

| Species | 2015 mapping (ha) | 2021 mapping (ha) | % Remaining | Woody/ Non-woody |
|---|---|---|---|---|
| **New species within the study area** | | | | |
| Holly | Absent | 0.0003 | NA | Woody |
| South African Weed Orchid | Absent | 0.033 | NA | Non-woody |
| Spiny Rush | Absent | 0.009 | NA | Non-woody |
| **Species now absent from study area** | | | | |
| Apple | 0.0003 | Absent | 0% | Woody |
| Banana Passionfruit | 0.016 | Absent | 0% | Non-woody |
| Japanese Honeysuckle | 0.047 | Absent | 0% | Non-woody |
| Seaside Daisy | 0.008 | Absent | 0% | Non-woody |

| Species | 2015 mapping (ha) | 2021 mapping (ha) | % Remaining | Woody/ Non-woody |
|---|---|---|---|---|
| **Significant reductions (greater than 90%)** | | | | |
| Bushy Yate | 0.807 | 0.001 | 0.12% | Woody |
| Gazania | 2.669 | 0.004 | 0.14% | Non-woody |
| Miniature Pine Tree | 0.356 | 0.002 | 0.53% | Non-woody |
| Green Honey-myrtle | 0.793 | 0.011 | 1.35% | Woody |
| Pampas Grass | 0.231 | 0.003 | 1.36% | Non-woody |
| Sweet Hakea | 1.253 | 0.019 | 1.53% | Woody |
| Hillock Bush | 0.073 | 0.001 | 1.71% | Woody |
| Hollyhock | 0.032 | 0.001 | 1.99% | Non-woody |
| Italian Buckthorn | 3.724 | 0.078 | 2.10% | Woody |
| Montbretia* | 0.072 | 0.002 | 2.19% | Non-woody |
| Red Hot Pokers | 0.064 | 0.002 | 2.96% | Non-woody |
| Willow Myrtle | 0.008 | 0.000 | 3.88% | Woody |
| Pincushion Hakea | 0.211 | 0.008 | 4.02% | Woody |
| Sallow Wattle | 15.262 | 0.882 | 5.78% | Woody |
| Angled Onion* | 0.150 | 0.009 | 5.86% | Non-woody |
| Tree Mallow | 0.227 | 0.016 | 7.07% | Non-woody |
| African Boxthorn | 0.166 | 0.012 | 7.24% | Woody |
| English Ivy | 0.463 | 0.034 | 7.40% | Non-woody |

| Species | 2015 mapping (ha) | 2021 mapping (ha) | % Remaining | Woody/ Non-woody |
|---|---|---|---|---|
| **Species with 10% to 50% reduction** | | | | |
| Giant Honey-myrtle | 0.487 | 0.053 | 10.89% | Woody |
| Agapanthus | 0.700 | 0.077 | 11.00% | Non-woody |
| Watsonia | 0.585 | 0.071 | 12.13% | Non-woody |
| Hottentot Fig | 0.258 | 0.031 | 12.15% | Non-woody |
| Briar Rose | 0.088 | 0.011 | 12.43% | Woody |
| Carpet Weed | 0.259 | 0.033 | 12.87% | Non-woody |
| Mirror Bush | 3.998 | 0.684 | 17.11% | Woody |
| Myrtle-leaf Milkwort | 4.285 | 0.796 | 18.58% | Woody |
| Tree Pelargonium | 0.042 | 0.008 | 19.63% | Woody |
| Red Valerian | 0.048 | 0.009 | 19.68% | Non-woody |
| Bluebell Creeper | 1.786 | 0.386 | 21.61% | Non-woody |
| Golden-wreath Wattle | 0.039 | 0.008 | 21.74% | Woody |
| Spanish Heath | 0.042 | 0.009 | 21.86% | Woody |
| Cape Ivy | 0.531 | 0.127 | 23.89% | Non-woody |
| Sugar Gum | 0.406 | 0.102 | 25.15% | Woody |
| Cape Wattle | 0.152 | 0.039 | 25.56% | Woody |
| Freesia* | 0.120 | 0.033 | 27.58% | Non-woody |
| Flax-leaf Broom | 0.151 | 0.043 | 28.58% | Woody |
| African Daisy | 0.024 | 0.008 | 34.88% | Non-woody |
| Arum Lily | 0.027 | 0.011 | 39.66% | Non-woody |
| Sweet Pittosporum | 46.414 | 20.331 | 43.80% | Woody |
| Monterey Cypress | 0.536 | 0.240 | 44.87% | Woody |
| Nasturtium | 0.283 | 0.128 | 45.16% | Non-woody |
| Climbing Groundsel | 0.055 | 0.025 | 45.42% | Non-woody |
| Boneseed | 41.562 | 19.265 | 46.35% | Woody |
| Blue Periwinkle | 0.751 | 0.361 | 48.08% | Non-woody |
| Purple Groundsel* | 0.575 | 0.285 | 49.59% | Non-woody |
| Toowoomba Canary Grass | 0.063 | 0.032 | 50.55% | Non-woody |

| Species | 2015 mapping (ha) | 2021 mapping (ha) | % Remaining | Woody/ Non-woody |
|---|---|---|---|---|
| **Species with less than 50% reduction** | | | | |
| Fairy Crassula | 0.119 | 0.065 | 54.64% | Non-woody |
| Silver Arctotis | 0.016 | 0.009 | 55.25% | Non-woody |
| Cape Broom | 6.686 | 3.791 | 56.70% | Woody |
| Coastal Tea-tree | 75.033 | 47.530 | 63.35% | Woody |
| Prunus | 0.001 | 0.001 | 67.12% | Woody |
| Sweet Violet | 0.023 | 0.018 | 75.08% | Non-woody |
| Dolichos Pea | 0.246 | 0.186 | 75.44% | Non-woody |
| Bridal Creeper* | 2.163 | 1.709 | 79.02% | |
| Blackberry | 2.541 | 2.084 | 82.00% | Woody |
| Buffalo Grass | 0.368 | 0.313 | 84.99% | Non-woody |
| **Species that remained roughly the same** | | | | |
| Asparagus Fern* | 0.098 | 0.092 | 93.66% | Non-woody |
| Aloe spp. | 0.0003 | 0.0003 | 100.50% | Non-woody |
| Tall Wheat-grass | 0.0003 | 0.0003 | 100.50% | Non-woody |
| Serrated Tussock | 0.059 | 0.059 | 100.70% | Non-woody |
| Loquat | 0.0003 | 0.0003 | 100.73% | Non-woody |
| Spanish Bluebell | 0.009 | 0.009 | 104.16% | Non-woody |
| Sea Spurge | 0.025 | 0.029 | 115.48% | Non-woody |
| **Species with a significant increase** | | | | |
| Desert Ash | 0.001 | 0.001 | 151.09% | Woody |
| New Zealand Cabbage | 0.001 | 0.001 | 151.09% | Woody |
| Cotoneaster | 0.009 | 0.017 | 189.87% | Woody |
| Mustard Weed* | 0.048 | 0.095 | 197.57% | Non-woody |
| Showy Honey-myrtle | 0.008 | 0.017 | 200.60% | Woody |
| Karo | 0.009 | 0.018 | 208.47% | Woody |
| Twiggy Mullein* | 0.047 | 0.105 | 221.44% | Non-woody |
| Tuart | 0.008 | 0.024 | 302.44% | Woody |
| Radiata Pine | 0.157 | 0.680 | 431.79% | Woody |

**Notes:** *Indicates species has seasonal growth, and any results should be treated with caution. Species shaded in orange are those with cover greater than two hectares in 2015.

**New Species:** New species recorded during the 2021 survey includes the following:

- A single (1) Holly Plant located at the Lorne Estuary Management Zone.
- South African Weed Orchid that was recorded at the Jan Juc Clifftops Management Zone and a single (1) plant in the Jan Juc Heath. ***This species is a highly invasive new and emerging species in Victoria and should be controlled aggressively to prevent it becoming established.***
- Spiny Rush recorded in the Anglesea Saltmarsh Management Zone. Note that this species was previously recorded in the adjacent Anglesea Family Caravan Park. This species is highly invasive and successful efforts at control were noted in the Anglesea Family Caravan Park. ***This species must be targeted for control in the Anglesea River Management Zone.***

**Eradicated species:** Several species have been eradicated from the study area, all relatively small infestations less than 500 square metres in the area including Apple (only one plant in 2015), Banana Passionfruit, Japanese Honeysuckle and Seaside Daisy. Notably, the majority of the last three species were from Lorne and were removed as part of significant weed control works in the Stoney Creek to Two Fat Ladies Management Zone.

**Species with a significant increase in cover:** Species with a notable increase (almost twice the original mapped area) are generally species with a small cover (less than 500 square metres in 2015) and are detailed below:

- Mostly uncommon woody weeds (Showy Honey-myrtle, Karo, Desert Ash, New Zealand Cabbage, Cotoneaster and Tuart) which may have been missed for control as they are not common weeds.
- Mustard Weed and Twiggy Mullein were noted in the east of the study area only (Point Impossible and Whites Beach Management Zones) and while may vary in cover depending on the season they should be monitored and controlled.
- Radiata Pine has been removed from the majority of Management Zones from the 2015 survey (Torquay Foreshore, Anglesea Coastal Heath, Eagle Rock Parade and Fat Ladies Carpark) it was noted previously and has increased in cover mostly at the Slaughterhouse Management Zone, which may be a result of a mapping inconsistency as it has not increased noticeably at this site.

**Species with a significant decrease in cover:** Notably the species with the highest reduction percentages of cover (weeds that have been reduced to less than 10% of their original cover) are a mix of species including woody weeds, non-woody weeds and some species considered to have large infestations in 2015 (species with greater than two hectares of cover mapped in 2015). Many of these species are significant weed species which are close to being effectively eradicated across the whole study area.

**Species with less than 50% reduction:** This includes weed types with various reasons as to why they do not have greater reductions in cover.

- Some species such as Coast Tea-tree and Cape Broom are those that cover large areas (Point Impossible for Coast Tea-tree and Queens Park for Cape Broom) and the size of the infestation and

resulting large amounts of resources required to address infestations is preventing greater removal. Note that this did not apply to Sweet Pittosporum and Boneseed which were both mapped as greater than 40 hectares in 2015 but have reduced cover by more than 50% for each species. This is mostly due to significant reductions in the cover of these at Queens Park in Lorne. 2015 mapping showed large areas with light infestations which are now mostly devoid of these species with only isolated specimens.

- For some species, it is the complexity of control techniques that is preventing greater reductions. This is particularly relevant for Sweet Violet, Bridal Creeper and Blackberry which can be difficult to achieve good control results.

## 6.3 OBJECTIVES REVIEW

### Overall objectives review

The 2015 NVWAP set out priorities for each management zone. These actions have been reviewed using weed mapping results and discussions with the Authority Conservation Team to determine if actions have been completed. See Appendix 2 for responses to each action. A summary of these results is detailed in Table 7.

**Table 7.** Review of 2015 GORCC NVWAP Management Actions

| Management Zone | Level of service | Objective achieved | Objective not achieved | Unknown outcome | Objective changed | % achieved |
|---|---|---|---|---|---|---|
| Point Impossible | Conserve and enhance | 12 | 6 | 1 | 2 | 67% |
| Whites Beach | Conserve and enhance | 7 | 4 | | 1 | 64% |
| Zeally Bay | Maintain and monitor | 6 | | | | 100% |
| Yellow Bluff | Conserve and rehabilitate | 7 | | 1 | 1 | 100% |
| Torquay Foreshore | Maintain and monitor | 8 | | 1 | | 100% |
| Spring Creek | Conserve and rehabilitate | 1 | | | | 100% |
| Rocky Point | Conserve and rehabilitate | 5 | | | | 100% |
| Jan Juc Dunes | Maintain and monitor | 6 | | | | 100% |
| Taylor Park | Maintain and monitor | 4 | 2 | | | 67% |

| Management Zone | Level of service | Objective achieved | Objective not achieved | Unknown outcome | Objective changed | % achieved |
|---|---|---|---|---|---|---|
| Jan Juc Clifftops | Conserve and enhance | 9 | | | | 100% |
| Jan Juc Heath | Conserve and enhance | 11 | | | 1 | 100% |
| Anglesea Heath | Conserve and enhance | 8 | 1 | | | 89% |
| Anglesea Caravan Park Clifftops | Conserve and rehabilitate | 10 | | | | 100% |
| Anglesea Caravan Park Dunes | Maintain and monitor | 2 | 1 | 2 | | 67% |
| Anglesea Saltmarsh | Conserve and enhance | 3 | 1 | 1 | | 75% |
| Four Kings Dunes | Conserve and rehabilitate | 7 | 1 | 2 | | 88% |
| Anglesea SLSC Heath | Conserve and enhance | 3 | 1 | | | 75% |
| Anglesea Woodland | Conserve and enhance | 5 | 1 | 1 | | 83% |
| Soapy Rocks | Conserve and rehabilitate | 6 | | | | 100% |
| Point Roadknight | Conserve and enhance | 5 | | | | 100% |
| Melba Parade | Conserve and rehabilitate | 9 | | 1 | | 100% |
| Boundary Road Clifftops | Conserve and enhance | 9 | 1 | | | 90% |
| Eagle Rock Parade | Conserve and rehabilitate | 10 | | | | 100% |
| Split Point East | Conserve and rehabilitate | 2 | 4 | | | 33% |
| Split Point West | Maintain and monitor | 5 | 2 | 1 | | 71% |
| Painkalac Dunes | Conserve and enhance | 3 | 1 | | | 75% |
| Painkalac Estuary | Maintain and monitor | 6 | 2 | | | 75% |
| Fairhaven | Conserve and enhance | 4 | 3 | | | 57% |

| Management Zone | Level of service | Objective achieved | Objective not achieved | Unknown outcome | Objective changed | % achieved |
|---|---|---|---|---|---|---|
| Moggs Creek | Conserve and enhance | 5 | 2 | | | 71% |
| Stony Creek to Two Fat Ladies | Maintain and monitor | 3 | | | | 100% |
| Fat Ladies Carpark | Conserve and rehabilitate | 7 | | | | 100% |
| Lorne Point | Conserve and rehabilitate | 2 | 5 | 1 | | 29% |
| Lorne Backbeaches | Maintain and monitor | 5 | 3 | | | 63% |
| Erskine Estuary | Maintain and monitor | 4 | | 1 | | 100% |
| Queens Park Townside | Conserve and enhance | 8 | | 1 | | 100% |
| Queens Park St George side | Conserve and enhance | 5 | 4 | | | 56% |
| **TOTAL** | | **214** | **45** | **14** | **5** | **83%** |

Table 7 shows that 83% of objectives were completed (unknown and objective changed categories not included, nor are secondary objectives). While not all objectives were completed, this shows that a significant proportion has been achieved. Significantly, of the 37 management zones 18 zones achieved all objectives (49%).

Two zones, Split Point East and Lorne Point, achieved a significantly low number of objectives. While Split Point East was set several aspirational objectives, access and safety concerns meant that most of these could not be met and little management has occurred in this zone. Lorne Point has had some issues around the management of vegetation and the preservation of Cultural Heritage sites and work has halted at this zone for the last two years. Both sites act as an example of poor environmental outcomes if effective management is not implemented.

**Objectives review by level of service**

The 2015 NVWAP determined three priority levels with associated levels of service for each management zone listed below in decreasing order of priority:

1. Conserve and enhance
2. Conserve and rehabilitate
3. Maintain and monitor.

Table 8 shows that there is a similar percentage of objectives achieved across the different levels of service. While it would be hoped that more of the higher levels of service objectives were achieved, often objectives were set in line with the level of service so that lower priority zones may require low levels of input to meet their objectives while some higher level sites may have some difficulty to control weed species.

**Table 8.** Review of 2015 GORCC NVWAP Management Actions by Level of Service

| Level of service | Objective achieved | Objective not achieved | Unknown outcome | Objective changed | % Achieved |
|---|---|---|---|---|---|
| Conserve and enhance | 97 | 25 | 4 | 4 | 79.51% |
| Conserve and rehabilitate | 66 | 10 | 5 | 1 | 86.84% |
| Maintain and monitor | 45 | 8 | | | 84.91% |

Previous discussions with the Authority Conservation Team detail additional possible reasons why lower level of service management zones have as many or more objectives achieved than the highest level. These are detailed below:

**Green Army**

GORCC had three Green Army teams working with them during 2016-2017. Green Army teams provided 10 participants who worked approximately 30 hours per week each on GORCC-managed land. This boost in on-ground labour allowed for some lower level service management zones with large weed infestations to be targeted for removal, as under normal staff conditions these sites would not be feasible. Management Zones such as Soapy Rocks (conserve and rehabilitate) which would have taken many years to remove woody weed infestations, or may not have been removed at all, had large infestations removed and replaced by native species through natural regeneration and revegetation.

**The Environmental Education Program**

The Authority's Environmental Education Program is an important part of the Authority's management of the coast. Weed control, revegetation and litter collections are key components of the school-based

program, particularly the Coast Guardians program, and contributes thousands of volunteer hours to on-ground conservation efforts. The Conservation Team were regularly required to assist with school groups or undertake maintenance activities of revegetation sites such as watering or replacing damaged plants or tree guards. Most of the high priority (conserve and enhance) sites support relatively intact native vegetation and are not suitable for school program works. This has led to higher workloads than expected in management zones such as Spring Creek, North Lorne, Melba Parade (conserve and rehabilitate) and Zeally Bay (maintain and monitor).

### Objectives review by species

When looking at completion of objectives by a species or threat, a few species stand out as potentially problematic and are highlighted in bold below in Table 9.

Note that many species are associated with only one or two objectives and care must be taken when making conclusions from small sample sizes, however some comments are provided below on some key species.

**Table 9.** Review of 2015 GORCC NVWAP Management Actions by species

| Level of service | Objective achieved | Objective not achieved | Unknown outcome | Objective changed | % Achieved |
|---|---|---|---|---|---|
| African Boxthorn | 10 | | | | 100.00% |
| Agapanthus | 14 | 1 | | | 93.33% |
| **Angled Onion** | **2** | | **3** | | **100.00%** |
| **Asparagus Fern** | **2** | | **1** | **1** | **100.00%** |
| Blackberry | 6 | 4 | | | 60.00% |
| Blue Periwinkle | 2 | 2 | | | 50.00% |
| Bluebell creeper | 8 | 2 | | | 80.00% |
| Boneseed | 12 | 2 | | | 85.71% |
| **Bridal Creeper** | **4** | **3** | **5** | | **57.14%** |
| Cape Broom | 2 | | | | 100.00% |
| Cape Wattle | 4 | | | | 100.00% |
| Carpet Weed | 1 | | | | 100.00% |
| Chilean Needle Grass | 1 | | | | 100.00% |
| Climbing Groundsel | 1 | | | | 100.00% |
| **Coast Tea-tree** | **18** | **8** | | **2** | **69.23%** |
| Cotoneaster | 1 | 1 | | | 50.00% |
| **Dolichos Pea** | **4** | **5** | | | **44.44%** |
| English Ivy | 2 | | | | 100.00% |
| Exotic Grasses | 8 | | | | 100.00% |
| Fairy Crassula | 1 | | | | 100.00% |
| False Capers | | 1 | | | 0.00% |
| Flax-leaf Broom | 3 | | | | 100.00% |
| Foxes | 1 | | | | 100.00% |

| Level of service | Objective achieved | Objective not achieved | Unknown outcome | Objective changed | % Achieved |
|---|---|---|---|---|---|
| Freesia | 4 | | | | 100.00% |
| Gazania | 1 | | | | 100.00% |
| Giant Honey-myrtle | 3 | 1 | | | 75.00% |
| Green Honey-myrtle | 1 | 1 | | | 50.00% |
| Hollyhock | 1 | | | | 100.00% |
| Hottentot Fig | 1 | | | | 100.00% |
| Illegal Campers | | | | 3 | Not applicable |
| Italian Buckthorn | 9 | | | | 100.00% |
| Kikuyu | 1 | | | | 100.00% |
| Mirror Bush | 10 | 2 | | | 83.33% |
| Monitor for new | 2 | | | | 100.00% |
| Montbretia | 1 | | 2 | | 100.00% |
| Myrtle-leaf Milkwort | 12 | 2 | | | 85.71% |
| Nasturtium | 1 | | | | 100.00% |
| Non-woody weeds | 2 | | 1 | | 100.00% |
| Woody Weeds | 9 | | | | 100.00% |
| Pin-cushion Hakea | 2 | | | | 100.00% |
| **Purple Groundsel** | | **2** | **3** | | **0.00%** |
| Radiata Pine | 1 | | | | 100.00% |
| Red Hot Pokers | 1 | | | | 100.00% |
| Revegetation | 9 | | | | 100.00% |
| Sallow Wattle | 11 | 2 | | | 84.62% |
| Seaside Daisy | 1 | | | | 100.00% |
| Serrated Tussock | 3 | 1 | | | 75.00% |
| Silver Arctotis | 1 | | | | 100.00% |
| Spanish Bluebell | 1 | | | | 100.00% |
| Spanish Heath | 2 | | | | 100.00% |
| Spear Thistle | | 1 | | | 0.00% |
| Spiny Rush | | 1 | | | 0.00% |
| Sweet Hakea | 2 | | | | 100.00% |
| Sweet Pittosporum | 11 | 1 | | | 91.67% |
| Sweet Violet | 2 | | | | 100.00% |
| Trackwork | 1 | | | | 100.00% |
| Tree Pelargonium | 2 | | | | 100.00% |
| **Twiggy Mullein** | | **2** | | | **0.00%** |
| Watsonia | 8 | | | | 100.00% |
| **TOTAL** | **223** | **45** | **15** | **6** | **83.21%** |

### Angled Onion, Asparagus Fern, Bridal Creeper, Purple Groundsel

These species have seasonal growth patterns and as part of the survey time was during summer, the cover of these species may have been lower than what is accurate and as such often received an objective unknown response. These species can be difficult to control, and new management objectives and resource allocation have taken this into account.

### Dolichos Pea

This species did not achieve five of the nine objectives attributed to it. This species can also be difficult to control, and additional care and resources should be assigned to any objectives associated with it.

### Coast Tea-tree

This species did not achieve eight of the 26 objectives attributed to it. Coast Tea-tree can cover large areas of management zones and requires significant resources for control and removal. New objectives have been written to clearly define when this species is to be effectively eradicated and when it is to be contained to current infestations.

### Twiggy Mullein

While only associated with two objectives, both were not achieved. Additional resources should be allocated to this species in the future.

# 7. General recommendations

While most ecological issues are dealt with in Part Two: Recommended Management Actions of the Coastal Vegetation Strategy 2022 (Beacon Ecological 2022), some general issues should be specifically addressed. These are discussed below and summarised in Table 10.

### 7.1 Primary Dune Introduced Grass: Marram Grass, Sea Wheat Grass

There are several weed species which were very widespread (and intractable) at the time of survey. These species were not mapped as it is perceived that attempting to control them is currently not practical. Two such weeds are Marram Grass *Calamagrostis arenaria* and Sea Wheat grass *Thinopyrum junceiforme*. These species occur along the primary dune in many locations and widespread removal would require vast resources and potentially contribute to unstable dune systems. However, where these weeds are not currently present it has been noted in the relevant sections. Where possible, it is considered appropriate to manage these two weed species to maintain weed-free areas.

### 7.2 Primary Dune Introduced Herb, Sea Spurge

Sea Spurge *Euphorbia paralias* is a highly invasive, toxic weed of primary dunes noted as very isolated infestations along Authority-managed land. This is due to annual control of this species by the Authority's staff and community environmental groups over several years. This species has the capacity to dominate primary dunes, altering sand movement and outcompeting native species. While not mentioned in recommendations for individual management zones, sweeping the primary dunes of all management zones annually is highly recommended to be continued in the Eastern Zone and targeted control of this species completed in the Central Zone.

### 7.3 Climate change

Evidence suggests that climate change will cause more extreme weather events with greater stresses on native species and ecosystems (ISC 2009). These changes and follow-on effects may lead to negative impacts to native vegetation and increased weed infestation. Weed related climate change issues include:

- Extreme weather events: May stress or destroy native vegetation communities opening new opportunities for weed species to invade. Storm surges, increased bushfire events and sea level rise are examples of potential events in Authority-managed areas (VCS 2014).
- Species distribution shifts: Changes in rainfall and temperature may allow some weed species to expand their range into new areas.
- Increased $CO_2$: Increased $CO_2$ may provide some weeds to grow more rapidly and become more competitive.
- Human climate change responses: Hardier pasture and garden plants developed to handle drier conditions are likely to become high weed risks.

- Increased sea levels and storm surges: Climate change impacts may require retreat from the coast in some locations and loss of native vegetation. There may be opportunities for coastal vegetation to move further inland with this process.

Increases in resources for natural resource management of the Authority's managed areas are likely to be required as climate change impacts become more apparent. Strategy objectives and work plans will also align with climate change adaptation plans and hazard assessments, as these are developed.

### 7.4 Coastal Moonah Woodland

There is no formal definition with condition thresholds provided for the *Flora and Fauna Guarantee Act 1988* listed *Coastal Moonah Woodland* within the Otway Plain Bioregion. The *Coastal Moonah Woodland Action Statement* (DSE 2003) identifies this issue and the first management action listed in the statement is to:

> *Refine the description of Coastal Moonah Woodland and determine its relationship to similar communities, in particular Moonah dominated coastal communities occurring on soils other than calcareous sands.*

The Field Guide to Coastal Moonah Woodland in Victoria (DSE 2010) states that:

The vegetation structure and species composition of Coastal Moonah Woodland vary in relation to the landscape position (e.g., dune crest or swale), exposure to coastal influences, and disturbance history. Although the name of the community suggests that Moonah is the dominant canopy component of the community this is misleading as Coast Wirilda, Coast Tea-tree and Coast Beard-heath can also be dominant or co-dominant. The community's name suggests that structurally it is woodland, however, the community generally forms a low open-forest and it also may be considered an open or closed shrubland, woodland, open woodland and open-forest depending on its location in the landscape and exposure to coastal influences.

Moxham *et al.* (2009) provide a description and key for *Coastal Moonah Woodland* in the Gippsland Plain bioregion however they state that the key is not definitive for *Coastal Moonah Woodland* in other bioregions (e.g., Otway Plain). Further the key provided defines vegetation occurring on coastal headland systems as Coastal Headland Scrub (EVC 161) and not *Coastal Moonah Woodland*. Both DSE (2010) and Moxham *et al.* (2009) identify *Coastal Moonah Woodland* occurring predominantly in Coastal Alkaline Scrub (EVC 858) vegetation. Note that these definitions do not consider Moonah dominated Coastal Headland Scrub (EVC 161) vegetation such as noted within the study area.

For the purposes of this assessment, *Coastal Moonah Woodland* is defined as:

> *Vegetation where Moonah Melaleuca lanceolata is the dominant or co-dominant overstorey species. Note that for the Jan Juc Clifftops this includes a variety of vegetation structures from low, exposed scrub on cliffs to sheltered gullies where Moonah trees can be several metres high.*

### 7.5 Changes in vegetation community structure

Within the study area, and within the coastal heathland and grassland vegetation communities in the Eastern Zone (e.g., Anglesea Heathland and Jan Juc Clifftops), a vegetation succession from low heathland or grassland to closed shrubland has been observed (Coomes 2009, ELMP). The indigenous shrub species implicated include species such as Coast Beard Heath *Leucopogon parviflorus*, Prickly Tea-tree *Leptospermum continentale* and Coast Wattle *Acacia longifolia* subsp. *sophorae*.

The succession from species-rich low heathland or grassland to species-poor closed shrubland is related to the frequency of fire events within the heathland communities. Within the study area the vision is to maintain and enhance ecosystem health. Within these communities this equates to preserving species diversity. It is fair to assume that the heathland vegetation is the climax vegetation and that the change to large shrubby vegetation is a response to inappropriate fire regimes (i.e., infrequent fire).

Consequently, the recommendation is to adopt a management regime that maintains health and grassland communities by allowing natural regeneration through either periodic burning or manual removal of any indigenous shrub species that may be becoming dominant.

### 7.6 Fire

Fire is an important part of ecological processes and Cultural practice for Australian Indigenous peoples. Prescribed burning is also important to allow for the regeneration of plant species and communities that are reliant on fire. This is particularly pertinent for some communities where native shrubs are becoming dominant to the detriment of local biodiversity values. Investigation of appropriate prescribed burn regimes should be undertaken where possible within Authority-managed land.

Fire can also promote germination of weed seed banks and any prescribed burn or wildfire must allow for adequate resources for follow up weed control.

### 7.7 Native fauna surveys

Detailed fauna surveys were not undertaken as part of this survey. Consultation with stakeholders identified a need for updated field surveys for the native species in the Great Ocean Road region, especially threatened native mammals. Fauna surveys could include active searches, spotlighting, Elliot trapping, tiling and remote sensor cameras. Further, ongoing monitoring of fauna populations could be initiated to evaluate population health and impacts of management actions.

Five-year management actions to protect native fauna include:

- Undertake a desktop survey of terrestrial native fauna in the Authority's managed lands including a review of threatened species.
- Explore opportunities to expand education or citizen science activities that increase understanding of native fauna on the Authority's managed lands.
- Partner with other agencies, research institutions and stakeholders to support native fauna monitoring on Authority-managed lands including vertebrate and invertebrate monitoring.

### 7.8 Domestic dogs

Domestic dogs may cause injury and death to native fauna if allowed to roam freely. For some species, such as the nationally significant Hooded Plover, the scent or presence of dogs may disrupt natural fauna activities putting species at risk.

Further, dog faeces can increase soil nutrient levels creating conditions more suitable for introduced species. Community engagement to ensure dogs are always under effective control and faeces are removed should be encouraged.

### 7.9 Cats

Predation of native fauna by domestic and feral cats can impact local populations. Control of feral cats can be difficult, particularly adjacent to residential areas. Cat traps should be utilised when cats are reported within native vegetation. Community engagement programs communicating the risks to local fauna of uncontrolled domestic cats should also be implemented.

### 7.10 Litter

Litter levels were generally noted as low throughout Authority-managed land. Litter impacts the amenity of the area but can also pose a risk to fauna species through ingestion or entrapment. Litter is also a direct risk to marine life if it makes its way to the ocean. The Authority currently supplies bins in high visitation areas and it is considered important to continue this practice.

### 7.11 Illegal rubbish dumping

Illegal dumping poses a direct threat to the surrounding environment and to human health. Illegally dumped materials can be hazardous and create a risk of soil and water contamination, fire and toxicity. Dumping of weeds and garden waste can also introduce new garden escapee weeds. While this is not an issue for most of the Authority's managed land, any dumped rubbish should be reported and removed immediately. Signage indicating applicable fines should be installed in locations where rubbish is regularly dumped.

### 7.12 Garden escapees

Residential areas abut Authority-managed land in many areas. Some residential gardens support environmental weeds that are spreading into the Authority's managed areas. Weed control should look at controlling infestation sources where possible. Community awareness campaigns to reduce environmental weeds in local gardens should be implemented in sensitive areas.

### 7.13 Illegal camping and party sites

Numerous illegal campsites and party sites were noted within vegetation around the townships of Torquay and Anglesea. Often these sites had large couches, tarps, tables and chairs dragged through coastal vegetation resulting in significant damage to native vegetation. Several of these campsites had evidence of firepits and cutting of native vegetation to fuel them. Car parks in the Apollo Bay area often displayed evidence that people had been camping in them by way of litter on carpark edges and evidence of people using adjacent native vegetation for toileting. Both practices apply pressure to environmental values. Camp sites should be removed as soon as possible and people camping in car parks moved on.

### 7.14 Celebrating and acknowledging volunteers

Five-year management actions include:

- Collaborate with and support community groups and volunteers in the important work they do in caring for the coast.
- Acknowledge and celebrate the work of environmental volunteers.
- Develop a Volunteer Strategy to support existing volunteers and expand environmental volunteering efforts along the Great Ocean Road.
- Develop a Community Engagement Framework to better engage and support the communities along the Great Ocean Road.
- Work within the new structures and principles of our Community Engagement Framework.

**Table 10.** General Recommendations

| Weed Threat/ Management Action | Five Year Recommendations |
|---|---|
| Marram Grass, Sea Wheat Grass | Monitor and contain to current infestations. |
| Sea Spurge | Control annually. |
| Climate change | Monitor impacts of climate change within Great Ocean Road Authority-managed land including extreme weather events and changes in vegetation distribution. Increase conservation team resources as required. |
| Changes in community structure | Monitor locations where native species may become out of balance (Jan Juc Heath, Anglesea Coast Heath). Implement prescribed burn or manual removal of species as appropriate. |
| Fauna surveys | Implement annual mammal trapping surveys through the school education program and encourage environmental volunteer community groups to implement remote camera monitoring using the Authority's equipment. |
| Fire | Facilitate prescribed burns where appropriate. Ensure that adequate resources are available for follow weed control post planned burn or natural fire. |
| Domestic dogs | Continued community engagement program to ensure dogs are under effective control and dog faeces collection bags are regularly available. Liaise with the Surf Coast Shire local laws to enforce dog faeces littering. |
| Domestic and feral cats | Implement community education program on the risks of uncontrolled domestic cats. |
| Litter | Continue the provision of bins at high visitation sites. Implement community engagement program relating to the risks of litter to the environment and fauna. |
| Illegal rubbish dumping | Any dumped rubbish should be reported and removed immediately. Signage indicating applicable fines should be installed in locations where rubbish is regularly dumped. |

| | |
|---|---|
| Garden escapees | Implement community awareness campaigns to reduce environmental weeds in local gardens adjacent to Great Ocean Road Authority-managed land. |
| Illegal campsites | Remove campsites when located in native vegetation andmove on illegal campers in carparks. |
| Celebrating and acknowledging volunteers | Celebrate and acknowledge the work of the Great Ocean Road environmental volunteers. Develop a Volunteer Strategy to support existing volunteers and expand environmental volunteering efforts along the Great Ocean Road. |

# 8. Implementation of the strategy

The Authority's Conservation Team is tasked with the day-to-day operational implementation of the Strategy, which includes weed management, revegetation works and pest animal control.

### Planning conservation operations

Before conducting weed removal within a management zone, the Authority considers a range of factors, including:

- Goals and prioritisation of matrix data
- Presence of new and emerging noxious weeds
- Remnant indigenous flora
- Seasonal variables and the presence of seed on plants
- Cultural Heritage
- Coastal and human-induced erosion
- Cross tenure management
- Masterplans, overlays and other guiding documents
- Community, volunteer and school group involvement.

The Conservation Supervisor refers to the objectives and priorities set out in the Coastal Vegetation Strategy to create and schedule the planned conservation operations. All conservation operations are logged into a Conservation Works Plan (the Plan) at the beginning of scheduled works, then reviewed monthly. The Plan identifies the zone, weed threat, required works and job status of the proposed works to ensure all actions are completed, recorded and follow-up works are scheduled for intervals of six months, 12 months or two years for established sites. New and emerging weeds are prioritised for immediate follow-up. In addition to biodiversity objectives, weed removal may be undertaken for other purposes including maintenance, visual amenity or safety.

### Vegetation monitoring and sweeping

The Conservation Team routinely undertakes weed monitoring, removal and field surveillance by a technique known as 'sweeping'. This technique involves two or more staff walking in a line across a site spaced 5-10 metres apart. When conducting sweeps of a zone, staff are constantly assessing the presence and condition of flora and fauna around them. During a 'sweep', a team member will use GPS points to mark sites including:

- The re-emergence of targeted weed species
- Emerging weed species that may be a new threat to the area

- The natural regeneration of native species
- Presence of pest animals such as rabbit warrens and fox dens
- General site observations of note (damage, litter, and evidence of party sites, campsites and informal access)
- Depending on the target species, crews may conduct weeding on the spot using:
    - Hand tools such as secateurs or loppers
    - Handsaws and herbicide dabbers
    - Handheld herbicide spray bottles
    - Chainsaws
    - Knapsack or spray tank.

**Natural erosion control**

In areas of high coastal erosion, weeds such as Coast Tea Tree *Leptospermum laevigatum*, Marram Grass *Calamagrostis arenaria* and Sea Wheat-grass *Thinopyrum junceiforme* are often left to minimise coastal erosion. When Coast Tea Tree is cut from the foredune it is laid on the dune, also known as brush matting, to mitigate further coastal erosion. Brush matting can also be utilised to limit informal access to dunes and protect Cultural Heritage. The Authority strives to reintroduce Spinifex sericeous *Hairy Spinifex* to the incipient dunes.

**Minimising herbicide usage**

The Authority continually assesses our methodology against best practice standards to ensure we are delivering our weed management goals in the safest and most environmentally friendly way possible.

To reduce our herbicide application, the Authority continues to:

- Reduce the use of glyphosate-based herbicides, and trial alternative weed control methods
- Increase our use of organic herbicides
- Incorporate steam weeding, particularly in high visitation areas. The method of steam weeding requires heating plant cells to 118 degrees Celsius, however this method requires 50 litres of diesel each day to operate
- Increased our use of selective herbicides
- Use mulch as a weed suppressant wherever possible to decrease weed regrowth and retain moisture for indigenous plant species
- Monitor and comply with guidance on pesticides from the regulators, the Australian Pesticides and Veterinary Medicines Authority and Worksafe Victoria.

### Revegetation

Revegetation is typically undertaken in combination with weed management towards conservation objectives at a particular site. When proposing revegetation of large areas, a revegetation plan may be implemented to review a range of environmental, site condition and management considerations including:

- Ecological Vegetation Class (EVC): The bioregion and EVC of the site will inform the planting design and species selection to ensure the selected plants are suitable for the area.
- Seasonal conditions and rainfall: Most revegetation sites are prepared between early March and late May. Winter and early spring is the ideal time to plant. This allows new plantings to establish a strong root system before the soil dries out in the summer months and minimises the need for watering over this period. Rainfall levels from Lorne to Apollo Bay are typically higher than Torquay to Lorne.
- Natural regeneration or planting: Some sites may be suitable for natural regeneration without the need for additional plantings. Within higher rainfall areas and ideal soil conditions, we often see high rates of natural regeneration. Within these sites, we only plant species that belong in the area but will not naturally regenerate.
- Site-specific purpose: The purpose or use of the area is considered depending on its conservation or amenity purpose. In amenity areas considerations include safety, aesthetics, and useability. Conservation areas are revegetated for ecological reasons, such as restoration of native flora species, habitat retention and erosion controls.
- Cultural Heritage (CH): If CH is present in the area, then identify and locate the distance from the CH site to the work site. Techniques of weed removal and revegetation will alter depending on site proximity. A Cultural Heritage Management Permit may be required (for example, within 50 metres of a CH site).
- Planning and administration: Management of revegetation activities may include ordering plant stock, procurement, permits, scheduling work crews, management of safety and stakeholder engagement.
- Work crews: The revegetation activity needs to match the skills and capacity of the work crews available. Resourcing the field crew may involve a combination of the Authority's Conservation Team, contractors, volunteer groups, or school groups involved in education activities. Planting is a popular activity for the community and school groups working on Authority-managed land.
- Equipment: During planting activities, plants are staked and guarded where appropriate. Guards are removed as soon as the plant is established to reduce the possibility of guards littering the environment.

### Hooded Plover monitoring

Hooded Plovers (aka "hoodies") are beach nesting birds that live only in beach habitats, including sandy dunes, rocky headlands, islands and sandy estuaries. Hoodies are listed as vulnerable under the

*Environment Protection Biodiversity and Conservation Act 1999* and have one of the lowest survival rates of any species in the world.

The Authority has been working with BirdLife Australia, community groups and other partners since 2006 to protect the Surf Coast's known breeding sites. The Hooded Plover program is a critical program, not only raising awareness of the plight of a vulnerable beach-nesting shorebird, but also connecting people with broader issues of the ecosystems that sustain them.

Breeding season is usually between September and March and throughout this time, the team record data relating to the hoodie's nests, eggs, chicks and fledglings to BirdLife Australia. The Conservation Team works alongside volunteers to monitor and track breeding hooded plovers, putting up signs and fencing to help protect them from threats.

**Pest animal monitoring**

Major threats to native fauna are predation, primarily by foxes but also by dogs and cats, and loss of habitat by clearing vegetation which removes patches where they can live and limits their capacity to move between remaining patches. Other threats include loss of habitat and food sources caused by rabbit infestations, other factors include development and altered fire regimes.

Rabbits add pressure to our native fauna by overgrazing our indigenous flora, most significantly seedlings, resulting in a loss of habitat and food source. The Authority currently conducts bi-annual spotlighting of rabbit populations along the foreshore from Point Impossible to Deep Creek and within the Anglesea Family Caravan Park.

The management of rabbits within Torquay is a cross tenure approach, with Surf Coast Shire and The Sands Torquay golf course, conducting rabbit management at a similar timing to improve effectiveness. The Authority currently manages rabbits by fumigating burrows, using Aluminium phosphide tablets in conjunction with shooting.

**Implementation, resourcing and prioritisation**

The Authority, through GORCC and OCC, has invested significantly in responding to the threats posed by weeds to the coast, including preparing its previous NVWAP and establishing the Conservation Team to lead its implementation. Considerable progress has been made; however, much work still needs to be done to fulfil the Coastal Vegetation Strategy and ensure the gains achieved are not lost.

The weed reduction objectives have been determined with consideration of the Conservation Team's staffing resources and other expected on-ground efforts from community groups. The objectives assist the Conservation Team to plan and prioritise their weekly and seasonal schedules. The objectives also help in guiding and prioritising additional resources, funding or grants as they become available.

Implementation of the strategy will be dependent on resourcing. The Authority is committed to working in collaboration with community groups, schools, business and other stakeholders to deliver the strategy's long-term objectives.

# 9. Monitoring and review of the strategy

The conservation team regularly monitors the health and quality of the native vegetation along the coast with quarterly assessments in accordance with the Coastal Vegetation Strategy as outlined in Section 8: Conservation Operations.

This program outlines key priority areas for tackling weeds and protecting native vegetation along the Great Ocean Road coast with annual reviews to ensure projects and conservation objectives remain on track:

- Monthly works scheduling by the Conservation Team
- Bi-annual review of transferred land parcels and conservation management requirements
- Annual qualitative reporting on site management actions
- Reporting on conservation achievements within the Authority's Annual Report
- Five-year field assessment and document review.

**Coastal Vegetation Strategy 2022**

**Part One: Overview and Assessment**

This plan has set five-year objectives and should be reviewed at the end of this period. The review should determine how effectively objectives have been met and set new objectives as required. Remapping of weed infestations is recommended at this time to assist with evaluation of works as well as mapping any new and emerging species.

**Part Two: Recommended Management Actions**

Management zone prioritisation should be repeated every five years to account for improvements in zone quality and any changes in environmental community group focus. New records of significant species may also impact on management zone prioritisation.

# 10. Acknowledgements

The Great Ocean Road Coast and Parks Authority would like to acknowledge the following partners, contributors, community groups and stakeholders for their contribution to the project:

- Chris Fagan and Greg Robinson (Wadawurrung Traditional Owners Aboriginal Corporation)
- John Clarke and Billy Briggs (Eastern Maar Aboriginal Corporation)
- Glenda Shomaly (Torquay Coast Action)
- Rebecca Hull, Graeme Stockton, Chris Liebhardt (Jan Juc Coast Action)
- Carl Rayner (ANGAIR, Friends of the Anglesea Coast)
- Neil Tucker (ANGAIR)
- Lecki Ord, Deborah Penrose, Barry Whelan, Roger Ganly (Friends of Aireys Inlet Coastal Reserve)
- Ellen Doxey, Alison Watson, Kaye Traynor, Margaret MacDonald, Patrick Flanagan, Gretel Lamont, Ross Davey, Peter Crowcroft (Friends of the Eastern Otways)
- Alain Purnell (LorneCare)
- Wendy Wilson, Christina Hayward, Mary Lush, John Wilson, Gary White, St. John Sutton, Lawrie Baker (Friends of Queens Park)
- Karen Ridgeway and Ralph De Bon (Lorne Foreshore Conservation Group)
- Tim Cobb, Chris Straw and Michael Walker (Skenes Creek Advancement Association)
- Sue Twigg, Judi Forrester and Mark Gordon, (Apollo Bay Landcare Group)
- Joanne Tyler (Wye to Wongarra Landcare Group)
- Olly Kerr (Southern Otway Landcare Network)
- Tony Webber, Mikhaila McCann (Otway Barham Landcare Group)
- Stacy Warmuth (Nillumbik Shire Council) for providing advice and sharing the *Nillumbik Environmental Works Toolkit* (Nillumbik 2014). Assessment and prioritisation methodologies from the Nillumbik model were used in this plan.
- Government stakeholders: Surf Coast Shire, Colac Otway Shire, Corangamite Catchment Management Authority, Parks Victoria, Department of Environment, Land, Water and Planning.
- Alex MacDonald, Jude Hassall, Evan Francis, Rachael Beecham, Scott Hives, Hamilton Pearson, Tyler Wilkie, Kim Hammond, Stephanie Maddern (Great Ocean Road Coast and Parks Authority).
- Luke Hynes from Beacon Ecological for undertaking all field work, consultation with community groups, authoring and providing draft reports.

# 11. References


Beacon Ecological 2015a *Native Vegetationand Weed Management Plan 2015-2020. Review*. Unpublished report for GORCC.

Beacon Ecological 2015b *Native Vegetationand Weed Management Plan 2015-2020. Management Zone Recommendations*. Unpublished report for GORCC.

Beacon Ecological 2021 *Native Vegetation andWeed Management Plan 2021-2026. Management Zone Recommendations*. Unpublished report for the Great Ocean Road Authority.

Coomes 2009. *Great Ocean Road Coast Committee – Native Vegetation and Weed Action Plan*. Unpublished report by Coomes Consulting in association with Mark Trengove Ecological Services.

DEPI 2007. *The Aireys Inlet Coastal Reserve WeedAction Plan*. Unpublished report for the Friends of Aireys Inlet Coastal Reserve.

DELWP 2021. *Nature Kit*. Department of Environment, Land, Water and Planningwebsite. www.delwp.vic.gov.au

DPI 2009 *Biosecurity Strategy for Victoria*. Published by the Department of PrimaryIndustries, Victoria.

DSE 2003. *Coastal Moonah Woodland Action Statement. Flora and Fauna Guarantee Act1988 No. 141*. Department of Sustainability and Environment, Victoria.

DSE 2010. *Field guide to Coastal Moonah Woodland in Victoria*. Published by theDepartment of Sustainability and Environment.

Eastern Maar Aboriginal Corporation, 2015. Meerreengeeye Ngakeepoorryeeyt Country Plan.

Invasive Plants and Animals Committee 2016a. *Australian Weeds Strategy 2017 to 2027,* Australian Government Department of Agriculture and Water Resources, Canberra.

Invasive Plants and Animals Committee 2016b, *Australian Pest Animal Strategy 2017 to 2027*,Australian Government Department of Agriculture and Water Resources, Canberra.

ISC 2009. *Weeds and Climate Change FactSheet*. Published by the Invasive SpeciesCouncil.

Keighery, B.J. 1994. *Bushland Plant Survey. A guide to plant community survey for the community*. Wildflower Society of WA (Inc.)Nedlands, Western Australia.

Moxham, C., Cheal, D and Turner, V. 2009. *Defining the floristic community Coastal Moonah Woodland in the Gippsland Plain Bioregion*. Published in the Victorian Naturalist (Vol 126 (2) 2009)

Nillumbik Shire Council 2013. *Environmental Works Bushland and Wetland Reserves Prioritisation and Planning Guidelines*. Reportpublished by the Nillumbik Shire Council.

Nillumbik Shire Council, Parks Victoria, MelbourneWater and the Department of Environmentand Primary Industries 2014. *Warrandyte to Kinglake Habitat Corridor Network Environmental Works Toolkit*.

*Contractor Reporting Procedure*. Published by Nillumbik Shire Council, Parks Victoria, Melbourne Water and the Department of Environment and Primary Industries.

Wadawurrung Traditional Owners Aboriginal Corporation, 2020. Paleert Tjaara Dja – Let's make Country Good Together 2020-2030.

# Appendices

## APPENDIX 1. AUTHORITY MANAGEMENT ZONES RANKED BY PRIORITY

**Table A.1.1.** Eastern Zone Management Zones ranked by priority

| Ranking | Management site | Code | Score | Priority |
|---|---|---|---|---|
| 1 | Jan Juc Heath | A8 | 76 | High |
| 2 | Jan Juc Clifftops | A7 | 72 | High |
| 3 | Queens Park Central | D7 | 71 | High |
| 4 | Anglesea Coastal Heath | B1 | 67 | High |
| 5 | Anglesea Woodland | B6 | 65 | High |
| 6 | Anglesea SLSC Heath | B5 | 56 | High |
| 7 | Point Roadknight | B8 | 56 | High |
| 8 | Eaglerock Parade | C1 | 50 | High |
| 9 | Whites Beach | A2 | 49 | High |
| 10 | Anglesea River | B3 | 49 | High |
| 11 | Anglesea Caravan Park Clifftops | B2 | 47 | High |
| 12 | Queens Park West | D8 | 44 | Medium |
| 13 | Point Impossible | A1 | 44 | Medium |
| 14 | Four Kings Dunes | B4 | 42 | Medium |
| 15 | Spring Creek | A4 | 41 | Medium |
| 16 | Melba Parade | B9 | 41 | Medium |
| 17 | Fairhaven to Moggs Creek | C6 | 40 | Medium |
| 18 | Moggs Creek to Easternview | C7 | 40 | Medium |
| 19 | Torquay Foreshore | A3 | 39 | Medium |
| 20 | Painkalac Dunes | C4 | 39 | Medium |
| 21 | Lorne Point | D5 | 37 | Medium |
| 22 | Soapy Rocks | B7 | 36 | Medium |
| 23 | Painkalac Estuary | C5 | 36 | Medium |
| 24 | Bert Alsop Track | D2 | 36 | Medium |
| 25 | Jan Juc Dunes | A5 | 31 | Medium |
| 26 | Split Point East | C2 | 28 | Low |
| 27 | Split Point West | C3 | 27 | Low |
| 28 | Queens Park Oceanside | D9 | 26 | Low |
| 29 | Taylor Park | A6 | 25 | Low |
| 30 | Erskine Estuary | D3 | 22 | Low |
| 31 | Lorne Backbeaches | D6 | 22 | Low |
| 32 | Stony Creek to Armistead Street | D1 | 17 | Low |
| 33 | Lorne Foreshore | D4 | 9 | Low |

**Table A.1.2.** Central Zone Management Zones ranked by priority

| Ranking | Management site | Code | Score | Priority |
|---|---|---|---|---|
| 1 | Marengo | G7 | 55 | High |
| 2 | Wye River Beach | E1 | 51 | High |
| 3 | Skenes Creek to Wild Dog | G5 | 51 | High |
| 4 | Apollo Bay | G6 | 48 | High |
| 5 | Petticoat Creek | G4 | 48 | High |
| 6 | Marengo Backbeaches | G8 | 42 | High |
| 7 | Kennett River Beach | F1 | 40 | High |
| 8 | Onion Bay | G1 | 40 | Medium |
| 9 | Browns Creek | G3 | 37 | Medium |
| 10 | Kennett River | F2 | 32 | Medium |
| 11 | Von Muellers | G2 | 30 | Low |
| 12 | Wye River Inland GOR | E2 | 15 | Low |

## APPENDIX 2. REVIEW OF 2015 GORCC NATIVE VEGETATION AND WEED ACTION PLAN MANAGEMENT ACTIONS

**Table A.2.** GORCC Native Vegetation and Weed Acton Plan Objectives Assessment

| Weed/objective | Species response |
|---|---|
| **A1.1 Point Impossible** | |
| Coast Tea Tree (50% cover) | Eliminate all outlying mature plants and prevent increase of core infestation - **Not achieved** |
| Woody weeds: Boxthorn, Italian Buckthorn, Myrtle leaf Milkwort, Mirror Bush, Sallow Wattle | Eliminate all mature plants annually (effectively eradicated):<br>• Boxthorn: 6 m² mature cover present - **Achieved**<br>• Italian Buckthorn: 185 m² mature cover - **Not achieved**<br>• Myrtle leaf Milkwort: 948 m² mature cover - **Not achieved**<br>• Mirror Bush: absent - **Achieved**<br>• Sallow Wattle: absent - **Achieved** |
| Bridal creeper, Angled Onion, Agapanthus, Dolichos Pea | Control all infestations annually. Reduce number of infestations by 50%:<br>• Bridal creeper: significant increase from 0.5 ha to 0.13 ha - **Not achieved**<br>• Angled Onion - **Unknown**<br>• Agapanthus: absent - **Achieved**<br>• Dolichos Pea: increase from 0.007 ha to 0.02 ha - **Not achieved** |
| Mustard Weed, Spear Thistle, Twiggy Mullein. Contain to existing infestations. | • Mustard Weed: increase in cover - **Not achieved**<br>• Spear Thistle: increase in cover - **Not achieved**<br>• Twiggy Mullein: increase from 3 m² to 591 m² - **Not achieved** |
| Serrated Tussock | • Control annually. Reduce number of infestations by 50%: reduced from 168 m² to 6.28 m² – **Achieved** |
| Weedy grasses: Kikuyu, Buffalo Grass | • Contain to existing infestations - **Achieved** |
| Revegetation | • Revegetate sites along gravel road with indigenous species – **Achieved** |
| Rabbits | • Fumigation of all rabbit warrens twice annually - **Objective changed (using virus).** |
| Foxes | • Den fumigation annually - **Achieved** |
| Informal access | • Tracks formalised with inappropriate access reduced - **Achieved** |
| Illegal camping | • Contact local laws to move on illegal campers when located - **Objective changed (remove campsites)** |
| **A1.2 Whites Beach** | |
| Coast Tea Tree | • Eliminate all outlying mature plants and prevent spread of core infestation – **Achieved** |
| Woody weeds: | Eliminate all mature plants annually<br>• Myrtle leaf Milkwort: reduced from 319 m² to 81 m² - **Achieved** |

| Weed/objective | Species response |
|---|---|
| Myrtle leaf Milkwort, Sallow Wattle | • Sallow Wattle: absent from zone – **Achieved** |
| Non-woody weeds: False Capers, Agapanthus, Twiggy Mullein | Control all infestations annually. Reduce number of infestations by 50%.<br>• False Capers: area roughly the same - **Not achieved**<br>• Agapanthus: now absent - **Achieved**<br>• Twiggy Mullein: area roughly the same - **Not achieved** |
| Bridal creeper | • Control annually. Reduce number of infestations by 50%: area has increased - **Not achieved** |
| Mustard Weed | • Contain to existing infestations: area roughly the same, 0.048 ha to 0.041 ha - **Achieved** |
| Serrated Tussock | • Control annually. Reduce number of infestations by 50%: area has increased from 240 m2 to 809 $m^2$ - **Not achieved** |
| Weedy grasses: Kikuyu, BuffaloGrass | • Contain to existing infestations. Reduce population sizes in stages to create revegetation sites – **Achieved** |
| Foredune weeds: Marram Grass,Sea Spurge, Sea Wheat Grass | • Monitor for new incursions of these species - **Achieved** |
| Revegetation | • Revegetate sites along gravel track with indigenous species - **Achieved** |
| Illegal camping and fires | • Contact police to move on illegal campers when located. - **Objective changed (remove campsites)** |
| **A2.2 Zeally Bay** | |
| Coast Tea Tree | • Eliminate all mature Coast Tea-tree – **Achieved** |
| Woody weeds: Italian Buckthorn, Mirror Bush. | Eliminate all mature plants annually<br>• Italian Buckthorn - **Achieved**<br>• Mirror Bush - **Achieved** |
| Non-woody Weeds: Carpet Weed, Angled Onion | Control all infestations annually<br>• Carpet Weed - **Achieved**<br>• Angled Onion - **Achieved** |
| Revegetation | • Complete revegetation of primary dune system in zone - **Achieved** |
| **A2.3 Yellow Bluff** | |
| Woody Weeds: Coast Tea Tree, African Boxthorn, Mirror Bush, Italian Buckthorn, Sweet Pittosporum | Eliminate all mature plants<br>• Coast Tea Tree: trees providing amenity value - **Objective changed**<br>• African Boxthorn (where safe) - **Achieved**<br>• Mirror Bush: very small amount remaining - **Achieved**<br>• Italian Buckthorn: no mature plants noted - **Achieved**<br>• Sweet Pittosporum: no mature plants noted - **Achieved** |
| Non-woody weeds: | Control all infestations annually. Reduce number of infestations by 50%. |

| Weed/objective | Species response |
|---|---|
| Angled Onion, Climbing Groundsel | • Angled Onion: not recorded, possibly seasonal effect - **Unknown**<br>• Climbing Groundsel: not noted in zone - **Achieved** |
| Foredune weeds:<br>Marram Grass, Sea Spurge, Sea Wheat Grass | • Monitor for new incursions of these species - **Achieved** |
| Revegetation | • Revegetate sites along gravel track with indigenous species - **Achieved** |
| **A 2.4 Torquay Foreshore** | |
| Coastal Tea-tree | • Reduce population size and replace with Moonah: reduced from 2.4hectares to 0.8 hectares - **Achieved** |
| Woody Weeds:<br>African Boxthorn,Italian Buckthorn, Mirror Bush, Hollyhock | Eliminate all mature plants along Torquay foreshore and Point Danger cliffs.<br>• African Boxthorn: reduced from 631 m² to 15 m² - **Achieved**<br>• Italian Buckthorn: reduced from 950 m² to 3 m² - **Achieved**<br>• Mirror Bush: while reduced from 1651 m² to 241 m² there is still greater than 100 m² - **Not achieved**<br>• Hollyhock: reduced from 316 m² to 3 m² - **Achieved** |
| Non-woody weeds:<br>Angled Onion, Blue Periwinkle | Control all infestations annually. Reduce number of infestations by 50%.<br>• Angled Onion: Reduced from 391 m² to 78 m² although may be seasonal effect - **Unknown**<br>• Blue Periwinkle: Reduced from 313 m² to 6 m² - **Achieved** |
| Grassy Weeds:<br>Kikuyu | • Maintain buffer of Kikuyu control along edge of native vegetation - **Achieved** |
| Revegetation | • Revegetate woody weed removal areas with indigenous species - **Achieved** |
| **A2.5 Spring Creek** | |
| Woody Weeds:<br>Willow Myrtle | • Eliminate all mature plants: absent - **Achieved** |
| **A2.6 Rocky Point** | |
| Woody Weeds:<br>Coast Tea-tree, African Boxthorn, Green Honey-myrtle | Eliminate all mature plants<br>• Coast Tea-tree - **Achieved**<br>• African Boxthorn - **Achieved**<br>• Green Honey-myrtle - **Achieved** |
| Grassy Weeds:<br>Panic Veldt-grass,Prairie Grass and Cocksfoot | • Control all infestations annually. Reduce number of infestations by 50% - **Achieved** |
| Non-woody weeds | • Monitor for new incursions and control as appropriate - **Achieved** |
| **A2.7 Jan Juc Dunes** | |
| Woody Weeds: | • Contain to zone |

| Weed/objective | Species response |
|---|---|
| Coast Tea-tree, Sallow Wattle | • Coast Tea-tree: slight reduction in cover for this species - **Achieved**<br>• Sallow Wattle: significant reduction in cover for this species - **Achieved** |
| Woody Weeds:<br>Italian Buckthorn, African Boxthorn, Boneseed, Myrtle-leaf Milkwort | Eliminate all mature plants<br>• Italian Buckthorn: some seedling cover but only one mature plant noted - **Achieved**<br>• African Boxthorn: only one mature plant noted - **Achieved**<br>• Boneseed: only one mature plant noted - **Achieved**<br>• Myrtle-leaf Milkwort: only one mature plant noted - **Achieved** |
| **A3 Taylor Park** | |
| Woody Weeds:<br>Coast Tea-tree, Sallow Wattle, Sweet Pittosporum, Italian Buckthorn | Eliminate all mature plants.<br>• Coast Tea-tree: reduced from 469 m² to 163 m² - **Not Achieved**<br>• Sallow Wattle: large reduction from 11,253 m² to 499 m² but still over 100 m² - **Not achieved**<br>• Sweet Pittosporum: reduction from 704 m² to mature plants absent - **Achieved**<br>• Italian Buckthorn: only one mature plant noted - **Achieved** |
| Grassy Weeds: Serrated Tussockand Chilean Needle Grass | Control annually. Reduce infestations by 50%.<br>• Serrated Tussock: now absent - **Achieved**<br>• Chilean Needle Grass: now absent - **Achieved** |
| **A5.1 Jan Juc Clifftops** | |
| Woody Weeds: Coast Tea-tree, Italian Buckthorn, Myrtle-leaf Milkwort, Boneseed, African Boxthorn, Sallow Wattle, Sweet Pittosporum | Eliminate all mature plants.<br>• Coast Tea-tree: one mature plant noted - **Achieved**<br>• Italian Buckthorn: no mature plants noted - **Achieved**<br>• Myrtle-leaf Milkwort: while this species has increased in cover from 494 m² to 672 m² there is still only 79 m² of mature plants - **Achieved**<br>• Boneseed: one mature plant noted - **Achieved**<br>• African Boxthorn: no mature plants noted - **Achieved**<br>• Sallow Wattle: 79 m² of mature plants - **Achieved**<br>• Sweet Pittosporum: one mature plant noted - **Achieved** |
| Non-woody weeds:<br>Toowoomba Canary-grass, Cocksfoot, Rats-tail Fescue, Panic Veldt-grass | • Contain to existing infestations - **Achieved** |
| Gazania | • Contain to existing infestations: significant reduction in the cover of this species from 2.6 hectares to 22 m² - **Achieved** |
| Revegetation | • Revegetate small areas as required - **Achieved** |
| **A5.2 Jan Juc Heath** | |
| Woody Weeds: | Eliminate all mature plants. |

| Weed/objective | Species response |
|---|---|
| Coast Tea-tree (and hybrids), Italian Buckthorn, Myrtle-leaf Milkwort, Boneseed, African Boxthorn, Sallow Wattle, Sweet Pittosporum | • Coast Tea-tree (and hybrids): one mature plant noted - **Achieved**<br>• Italian Buckthorn: not noted - **Achieved**<br>• Myrtle-leaf Milkwort: one mature plant noted - **Achieved**<br>• Boneseed: one mature plant noted - **Achieved**<br>• African Boxthorn: no mature plants noted - **Achieved**<br>• Sallow Wattle: reduced from 566 m2 of mature plants to 97 m2 - **Achieved**<br>• Sweet Pittosporum: no mature plants noted - **Achieved** |
| Bridal Creeper | • Control annually, reduction of infestations by 50%: reduced from 159 m² to 3 m²) - **Achieved** |
| Serrated Tussock | • Control annually. Reduction of infestations by 50%: reduced from 168 m² to 9 m² - **Achieved** |
| Non-woody weeds: Toowoomba Canary-grass, Cocksfoot, Panic Veldt-grass, Sweet Vernal-grass | • Control annually to prevent spread along tracks - **Achieved** |
| Illegal camping and fires | • Contact police to move on illegal campers when located - **Objective changed (remove campsites)** |
| **B1.1 Anglesea Coastal Heath** | |
| Woody Weeds: Coast Tea-tree, African Boxthorn, Sallow Wattle, Sweet Pittosporum, Radiata Pine, Green Honey-myrtle, Boneseed | Eliminate all mature plants.<br>• Coast Tea-tree: 25 m² of mature plants recorded - **Achieved**<br>• African Boxthorn: not observed - **Achieved**<br>• Sallow Wattle: 79 m² of mature plants recorded - **Achieved**<br>• Sweet Pittosporum: no mature plants observed - **Achieved**<br>• Radiata Pine: not observed - **Achieved**<br>• Green Honey-myrtle: no mature plants observed - **Achieved**<br>• Boneseed: one mature plant observed - **Achieved** |
| Non-woody weeds: Bridal Creeper,Watsonia, Bluebell Creeper, Freesia | Control annually. Reduction of infestations by 50%.<br>• Bridal Creeper: 78 m² recorded in 2015, 82 m² in 2021 - **Not achieved**<br>• Watsonia: not observed - **Achieved**<br>• Bluebell Creeper: reduced from 91 m² in 2015 to 16 m² - **Achieved**<br>• Freesia: reduced from 705 m² to 320 m² - **Achieved** |
| **B1.2 Anglesea Caravan Park Clifftops** | |
| Coast Tea-tree | • Staged removal of all mature plants over five years: 314 m² of mature plants remain but nearly all in unsafe areas - **Achieved** |
| Woody Weeds: African Boxthorn, Sallow Wattle, Sweet Pittosporum, Boneseed | Eliminate all mature plants.<br>• African Boxthorn: not recorded - **Achieved**<br>• Sallow Wattle: 84 m² of mature plants - **Achieved**<br>• Sweet Pittosporum: no mature plants observed - **Achieved** |

| Weed/objective | Species response |
|---|---|
| | • Boneseed: no mature plants observed - **Achieved** |
| Non-woody weeds: Fairy Crassula, Agapanthus, Freesia | Control annually.<br>• Fairy Crassula: 3 m² observed in 2015 and 20121 - **Achieved**<br>• Agapanthus: no plants observed in 2021 - **Achieved**<br>• Freesia: 3 m² observed in 2015 and 20121 - **Achieved** |
| Asparagus Fern | • Control annually. Eliminate infestation: not observed in 2021 although may be seasonal - **Achieved** |
| Bridal Creeper | • Control annually. Reduce infestations by 50%. Focus on the east end of the infestation: reduced from 1,741 m² to 505 m²) - **Achieved** |
| **B1.3 Anglesea Caravan Park Dunes** | |
| Coast Tea-tree | • Eliminate mature plants: reduced from 315 m² to 88 m² - **Achieved** |
| Bridal Creeper | • Control annually. Reduce infestation risk outside zone: 640 m² in 2015. Not observed in 2021 but possibly due to seasonal effect - **Unknown** |
| Purple Groundsel | • Control annually. Contained to zone: 475 m² in 2015. 3 m² in 2021 but possibly due to seasonal effect - **Unknown** |
| Dolichos Pea | • Control annually: increase from 3 m² to 94 m² - **Not Achieved** |
| Introduced grasses (Hare's Tail-grass, Prairie Grass, Panic Veldt- grass) | • Control annually: contained to zone - **Achieved** |
| **B1.4 Anglesea Saltmarsh** | |
| Woody Weeds (Boneseed, Myrtle-leaf Milkwort, Mirror bush) | Eliminate mature plants.<br>• Boneseed: 3 m² in 2015, not recorded in 2021 - **Achieved**<br>• Myrtle-leaf Milkwort: reduced from 78 m² to not recorded - **Achieved**<br>• Mirror bush: reduced from 78 m² to 6 m² - **Achieved** |
| Bridal Creeper | • Control annually. Reduce infestation by 50%: reduced from 640 m² to 9 m² although may be a seasonal effect - **Unknown** |
| Spiny Rush | • Control annually. Reduce infestation by 50%: not recorded in 2015, 94m2 in 2021 - **Not achieved** |
| **B3.1 Four Kings Dunes** | |
| Coast Tea-tree | • Eliminate all mature plants: reduction from 6,391 m² to 3,976 m² but still high cover - **Not Achieved** |
| Woody Weeds (African Boxthorn, Mirror Bush, Myrtle-leaf Milkwort) | Eliminate mature plants.<br>• African Boxthorn: absent - **Achieved**<br>• Mirror Bush: reduced from 318 m² to 9 m² - **Achieved**<br>• Myrtle-leaf Milkwort: reduced from a total of 402 m² (81 m² mature) to 101 m² (84 m² mature) - **Achieved** |

| Weed/objective | Species response |
|---|---|
| Bridal Creeper | • Control annually. Reduce infestation by 50%: reduced from 434 m² to 9 m² but could be seasonal effect - **Unknown** |
| Dolichos Pea | • Control annually. Reduce infestation by 50%: reduced from 406 m² to 100 m² - **Achieved** |
| Non-woody weeds (Purple Groundsel, Agapanthus, Blue Periwinkle, Bluebell Creeper) | Control annually. Reduce infestation by 50%.<br>• Purple Groundsel: reduced from 82 m² to absent but possibly seasonal effect - **Unknown**<br>• Agapanthus: reduced from 81 m² to 3 m² - **Achieved**<br>• Blue Periwinkle: reduced from 156 m² to 79 m² - **Achieved**<br>• Bluebell Creeper: maintained at3 m² to 9 m² - **Achieved** |
| **B3.2 Anglesea SLSC Heath** | |
| Woody Weeds | • Eliminate all mature plants: all woody weeds controlled where safely accessible except Mirror Bush) - **Achieved**<br>• Mirror Bush: reduced from 312 m² to 157 m² of mature plants - **Not achieved** |
| Watsonia | • Control annually. Reduce infestation by 50%: reduced from 241 m² to 6 m² - **Achieved** |
| Bluebell Creeper | • Control annually. Reduce infestation by 50%: reduced from 801 m² to 113 m² - **Achieved** |
| **B3.3 Anglesea Woodland** | |
| Woody Weeds | • Eliminate all mature plants where access is possible - **Achieved** |
| Asparagus Fern, Bridal Creeper, Watsonia, English Ivy Agapanthus, Seaside Daisy | Control annually. Reduce infestations by 50%.<br>• Asparagus Fern: reduced from 172 m² to 125 m² - **Not achieved**<br>• Bridal Creeper: reduced from 191 m² to 13 m² possibly due to seasonal effect - **Unknown**<br>• Watsonia: reduced from 560 m² to 6 m² - **Achieved**<br>• English Ivy: reduced from 3 m² to absent - **Achieved**<br>• Agapanthus: 9 m² - **Achieved**<br>• Seaside Daisy: 3 m² in 2015, now absent - **Achieved** |
| **B3.4 Soapy Rocks** | |
| Woody weeds | • Eliminate all mature plants outside containment area. Assist community groups with core infestation control: cover of all woody weeds less than 100 m² except for Coast Tea-tree which has some infestations in unsafe locations - **Achieved** |
| Non-woody weeds (Agapanthus, Freesia, Bluebell Creeper, Watsonia) | Control annually. Reduce infestation by 50%.<br>• Agapanthus: reduced from 18 m² to absent - **Achieved**<br>• Freesia: reduced from 162 m² to absent - **Achieved**<br>• Bluebell Creeper: reduced from 6378 m² to 181 m² - **Achieved**<br>• Watsonia: reduced from 81 m² to absent - **Achieved** |

| Weed/objective | Species response |
|---|---|
| Introduced grasses (Kikuyu, Panic Veldt-grass) | • Control annually. Reduce infestation by 50% - **Achieved** |
| **B3.5 Point Roadknight** | |
| Woody weeds | • Eliminate all mature plants: cover of all woody weeds less than 100 m² except for Coast Tea-tree which has some infestations in unsafe locations - **Achieved** |
| Non-woody weeds (Agapanthus, Freesia, Bluebell Creeper) | Control annually. Reduce infestation by 50%.<br>• Agapanthus: reduced from 6 m² to 3 m² - **Achieved**<br>• Freesia: reduced from 78 m² to absent - **Achieved**<br>• Bluebell Creeper: reduced from 175 m² to 25 m² - **Achieved** |
| Introduced grasses (Kikuyu) | • Control annually. Reduce infestation by 50%: reduced from 547 m² to 235 m² - **Achieved** |
| **B3.6 Melba Parade** | |
| Coast Tea-tree | • Eliminate mature plants from outside containment area. Staged removal of larger infestations on top of dunes: significant reduction of Coast Tea-tree except front of dunes - **Achieved** |
| Woody Weeds (Myrtle-leaf Milkwort, Boneseed, Sallow Wattle, Italian Buckthorn) | Eliminate all mature plants<br>• Myrtle-leaf Milkwort: seedling cover reduced from 15,000 m² to 800 m². No mature plants noted - **Achieved**<br>• Boneseed: no mature plants noted - **Achieved**<br>• Sallow Wattle: reduced from 547 m² to no mature plants noted - **Achieved**<br>• Italian Buckthorn: no mature plants noted - **Achieved** |
| Non-woody weeds (Bridal Creeper, Agapanthus, Spanish Bluebell) | Control annually. Reduce infestation by 50%. Aim to eradicate.<br>• Bridal Creeper: reduced from 171m2 to absent. Possibly a result of seasonal effect - **Unknown**<br>• Agapanthus: reduced from 3 m² to absent - **Achieved**<br>• Spanish Bluebell: 3 m² in 2015, 3 m² in 2021 - **Achieved** |
| Purple Groundsel | • Control annually. Reduce infestation by 50%: reduced from 1573 m² to 78 m². Possibly a result of seasonal effect - **Unknown** |
| Revegetation | • Implement supplementary revegetation as required - **Achieved** |
| **C1.1 Boundary Road Clifftops** | |
| Woody Weeds (Coast Tea-tree, Myrtle-leaf Milkwort, Sweet Pittosporum, Boneseed, Pin-cushion Hakea, Giant Honey-myrtle, Flax-leaf Broom) | Eliminate all mature plants.<br>• Coast Tea-tree: significant reduction from 2,276 m² to 178 m² with all mature plants removed that area safely accessible - **Achieved**<br>• Myrtle-leaf Milkwort: no mature plants recorded - **Achieved**<br>• Sweet Pittosporum: no mature plants recorded - **Achieved**<br>• Boneseed: no mature plants recorded - **Achieved**<br>• Pin-cushion Hakea: not recorded - **Achieved** |

| Weed/objective | Species response |
|---|---|
| | • Giant Honey-myrtle: one mature plant recorded - **Achieved**<br>• Flax-leaf Broom: not recorded - **Achieved** |
| Bluebell Creeper | • Control annually. Reduce infestation by 50%: reduced from 737 m² to 449 m² - **Not Achieved** |
| Non-woody weeds (Hottentot Fig, Agapanthus) | Control annually. Reduce infestation by 50%.<br>• Hottentot Fig: no plants recorded - **Achieved**<br>• Agapanthus: no mature plants recorded - **Achieved** |
| **C1.2 Eagle Rock Parade** | |
| Woody Weeds (Coast Tea-tree, Myrtle-leaf Milkwort, Sweet Pittosporum, Boneseed, Pin-cushion Hakea, Giant Honey-myrtle, Flax-leaf Broom) | Eliminate all mature plants.<br>• Coast Tea-tree: significant reduction from 2,276 m² to 178 m² with all mature plants removed that area safely accessible - **Achieved**<br>• Myrtle-leaf Milkwort: no mature plants recorded - **Achieved**<br>• Sweet Pittosporum: no mature plants recorded - **Achieved**<br>• Boneseed: no mature plants recorded - **Achieved**<br>• Pin-cushion Hakea: not recorded - **Achieved**<br>• Giant Honey-myrtle: one mature plant recorded - **Achieved**<br>• Flax-leaf Broom: not recorded - **Achieved** |
| Bluebell Creeper | • Control annually. Reduce infestation by 50%: reduced from 737 m2 to 449 m2 - **Not Achieved** |
| Non-woody weeds (Dolichos Pea, Sweet Violet, Agapanthus) | Control annually. Reduce infestation by 50%.<br>• Hottentot Fig: no plants recorded - **Achieved**<br>• Agapanthus: no mature plants recorded - **Achieved** |
| **C1.3 Split Point East** | |
| Woody Weeds (Cape Wattle, Coast Tea-tree, Myrtle-leaf Milkwort, Boneseed) | Eliminate all mature plants where accessible.<br>• Cape Wattle: slight increase from 3 m² to 6 m² - **Achieved**<br>• Coast Tea-tree: increase from 78 m² to 3,680 m² - **Not achieved** Myrtle-leaf Milkwort: increase from 319 m² to 396 m² - **Not achieved**<br>• Boneseed: remained stable from 6 m² to 6 m² - **Achieved** |
| Non-woody weeds (Dolichos Pea, Agapanthus) | Control annually. Reduce infestation by 50%.<br>• Dolichos Pea: reduced from 3 m² to absent - **Not achieved**<br>• Agapanthus: reduced from 327 m² to 172 m² - **Not achieved** |
| **C2.1 Split Point West** | |
| Woody Weeds (Coastal Tea-tree, Sallow Wattle, Sweet Pittosporum, Boneseed, Myrtle-leaf Milkwort and Sweet Hakea) | Eliminate all mature plants.<br>• Coast Tea-tree: while decreased from 8,523 m² to 6,678 m² significant infestations remain - **Not achieved**<br>• Sallow Wattle: reduced from 2,420 m² mature plants to 166 m². Greater than 100 m² present - **Not achieved**<br>• Sweet Pittosporum: only one mature plant identified - **Achieved** |

| Weed/objective | Species response |
|---|---|
| | • Boneseed: not recorded - **Achieved**<br>• Myrtle-leaf Milkwort: reduced from 156 m² to absent - **Achieved**<br>• Sweet Hakea: not recorded - **Achieved** |
| Non-woody weeds (Bridal Creeper, Agapanthus) | Control annually. Reduce infestation by 50%.<br>• Bridal Creeper: not recorded but possibly seasonal - **Unknown**<br>• Agapanthus: not recorded - **Achieved** |
| **C2.2 Painkalac Dunes** | |
| Coast Tea-tree | • Eliminate outlying infestations. Contain to core infestation. - **Achieved** |
| Sallow Wattle | • Eliminate outlying infestations. Contain to core infestation: no mature plants noted - **Achieved** |
| Myrtle-leaf Milkwort | • Eliminate all mature plants: cover of mature plants reduced from 625 m² to 94 m² - **Achieved** |
| Purple Groundsel | • Control all plants annually. Reduce infestations by 50%: cover remains similar from 1,333 m² to 1,354 m² - **Not achieved** |
| **C2.3 Painkalac Estuary** | |
| Woody Weeds (Coast Tea-tree, Giant Honey-myrtle, Sweet Hakea, Sallow Wattle) | Eliminate all mature plants.<br>• Coast Tea-tree: reduced from 704 m² to 489 m² - **Not achieved**<br>• Giant Honey-myrtle: reduced from 394 m² of mature plants to 160 m² - **Not achieved**<br>• Sweet Hakea: reduced from 81 m² to absent - **Achieved**<br>• Sallow Wattle: slight increase of 81 m² mature plants to 82 m² but a decrease in seedling cover - **Achieved** |
| Bluebell Creeper | • Control all plants annually. Reduce infestations by 50%: significant decrease from 4,073 m² to 565 m² - **Achieved** |
| Blackberry | • Control all plants annually. Reduce infestations by 50%: significant decrease from 2,501 m² to 402 m² - **Achieved** |
| Non-woody weeds (Silver Arctotis Montbretia) | Control all plants annually. Reduce infestations by 50%.<br>• Silver Arctotis: not recorded - **Achieved**<br>• Montbretia: not recorded - **Achieved** |
| **C2.3 Fairhaven** | |
| Coast Tea-tree | • Eliminate outlying infestations. Contain to core infestations. - **Achieved** |
| Woody Weeds (Giant Honey-myrtle, Mirror Bush, Myrtle-leaf Milkwort) | Eliminate all mature plants.<br>• Giant Honey-myrtle: reduced from 81 m² to 3 m² - **Achieved**<br>• Mirror Bush: only one mature plant noted - **Achieved**<br>• Myrtle-leaf Milkwort: reduced from 162 m² of mature plants to 100 m² - **Achieved** |
| Non-woody Weeds (Dolichos Pea, Blue | Control annually. Reduce infestations by 50%.<br>• Dolichos Pea: reduced from 156 m² to 103 m² - **Not achieved** |

| Weed/objective | Species response |
|---|---|
| Periwinkle, Purple Groundsel) | • Blue Periwinkle: cover remains at 78 m² - **Not achieved**<br>• Purple Groundsel: c over remains similar. Reduced from 1,566 m² to 1,413 m² - **Not achieved** |
| **C2.4 Moggs Creek** | |
| Woody Weeds (Coast Tea-tree, Flax-leaf Broom, Cape Wattle, Blackberry) | Eliminate all mature plants.<br>• Coast Tea-tree: reduction from 13,911 m² to 8,744 m² - **Not Achieved**<br>• Flax-leaf Broom: reduced from 6m2 to absent - **Achieved**<br>• Cape Wattle: reduced from 84 m² to 13 m² - **Achieved**<br>• Blackberry: reduced from 1,567 m² to 94,2 - **Achieved** |
| Non-woody Weeds (Dolichos Pea, Tree Pelargonium, Bluebell Creeper) | Control annually. Reduce infestations by 50%.<br>• Dolichos Pea: increase in cover from 315 m² to 990 m² - **Not achieved**<br>• Tree Pelargonium: reduced from 87 m² to 3 m² - **Achieved**<br>• Bluebell Creeper: reduced from 81 m² to 15 m²- **Achieved** |
| **C2.5 Eastern View** | |
| Coast Tea-tree | • Eliminate mature plants outside containment areas. - **Achieved** |
| Woody Weeds (Cape Wattle, Blackberry) | Eliminate all mature plants.<br>• Cape Wattle: one mature plant noted - **Achieved**<br>• Blackberry: reduction from 1,018 m² to 489 m² - **Not achieved** |
| Non-woody Weeds (Dolichos Pea, Tree Pelargonium) | Control annually. Reduce infestations by 50%.<br>• Dolichos Pea: 81 m² recorded - **Achieved**<br>• Tree Pelargonium: reduced from 3m2 to absent - **Achieved** |
| **D1.1 Stony Creek to Two Fat Ladies** | |
| Woody Weeds (Various) | • Remove mature woody weeds around Otway Grey Gums - **Achieved** |
| Woody Weeds (Various) | • Remove mature woody weeds around Stony Creek Rivermouth restoration site - **Achieved** |
| Revegetation | • Implement revegetation at Stony Creek Rivermouth - **Achieved** |
| **D1.2 Fat Ladies Carpark** | |
| Woody Weeds (Coast Tea-tree, Mirror Bush, Spanish Heath) | Eliminate all mature plants.<br>• Coast Tea-tree: only one mature plant recorded - **Achieved**<br>• Mirror Bush: no mature plants recorded - **Achieved**<br>• Spanish Heath: reduced from 81 m² to absent - **Achieved** |
| Non-woody Weeds (Blackberry, English Ivy, Agapanthus, Angled Onion, Red Hot Pokers) | Control annually. Reduce infestations by 50%.<br>• Blackberry: reduced from 1,111 m² to 19 m² - **Achieved**<br>• English Ivy: reduced from 241 m² to absent - **Achieved**<br>• Agapanthus: reduced from 84 m² to absent - **Achieved**<br>• Angled Onion: reduced from 3 m² to absent - **Achieved**<br>• Red Hot Pokers: reduced from 632 m² to 6 m² - **Achieved** |

| Weed/objective | Species response |
|---|---|
| **D2.1 Lorne Foreshore** | |
| Coast Tea-tree | • Prevent spread outside current distribution - **Achieved** |
| Woody Weeds (Blackberry, Mirror Bush) | Eliminate mature all mature plants.<br>• Blackberry: reduced from 3 m² to absent - **Achieved**<br>• Mirror Bush: reduced from 5,138 m² to 3 m² - **Achieved** |
| Non-woody Weeds (Montbretia, Asparagus Fern, Sweet Violet) | • Control annually. Reduce infestations by 20%.<br>• Montbretia: significant reduction, possibly due to seasonal effect - **Unknown**<br>• Asparagus Fern: infestation level appears similar - **Not achieved**<br>• Sweet Violet: partial reduction - **Achieved** |
| **D2.2 Lorne Point** | |
| Woody Weeds (Blackberry, Myrtle-leaf Milkwort, Mirror Bush, Cotoneaster) | Eliminate all mature plants.<br>• Blackberry: increase in cover from 84 m² to 197 m² - **Not achieved**<br>• Myrtle-leaf Milkwort: increase in cover from 81 m² to 163 m² - **Not achieved**<br>• Mirror Bush: increase in cover of mature plants from 78 m² to 82 m² - **Not achieved**<br>• Cotoneaster: similar cover, 82 m² in 2015 and 81 m² in 2021 - **Not achieved** |
| Non-woody Weeds (Watsonia, Montbretia, Blue Periwinkle) | Control annually. Reduce infestations by 50%.<br>• Watsonia: reduction in cover from 572 m² to 170 m² - **Achieved**<br>• Montbretia: reduced from 78 m² to absent. Possibly seasonal effect - **Unknown**<br>• Blue Periwinkle: increase from 860 m² to 1,287 m² - **Not achieved** |
| Revegetation | • Revegetate with locally indigenous species as required - **Achieved** |
| **D2.4 Lorne Backbeaches** | |
| Woody Weeds (Coast Tea-tree, Sweet Pittosporum, Blackberry, Cape Wattle, Boneseed, Mirror Bush) | Remove all mature plants in south of zone.<br>• Coast Tea-tree: increase in cover from 1,837 m² to 2295 m² - **Not achieved**<br>• Sweet Pittosporum: reduction from 29306 m² to 8,867 m² - **Achieved**<br>• Blackberry: slight reduction from 9,051 m² to 6,709 m² - **Not achieved**<br>• Cape Wattle: reduced from 78 m² to 9 m² - **Achieved**<br>• Boneseed: increase from 470 m² to 2487 m² - **Not achieved**<br>• Mirror Bush: reduced from 16,790 m² to 5,044 m² - **Achieved** |
| Watsonia and Nasturtium | Control outlying infestations.<br>• Watsonia: reduced from 81 m² to 6 m² - **Achieved** |

| Weed/objective | Species response |
|---|---|
| | • Nasturtium: reduced from 671 m² to 82 m² - **Achieved** |
| **D3. Erskine Estuary** | |
| Coast Tea-tree | Eliminate all mature plants outside containment area. - **Achieved** |
| Woody Weeds (Cotoneaster, Sweet Pittosporum, Blackberry) | Eliminate all mature plants.<br>• Blackberry: reduced from 81 m² to 6 m² - **Achieved**<br>• Sweet Pittosporum: one mature plant recorded - **Achieved**<br>• Cotoneaster: one mature plant recorded - **Achieved** |
| Non-woody Weeds (Japanese Honeysuckle, Watsonia, FairyCrassula, Montbretia, Agapanthus, Asparagus Fern, Sweet Violet) | Control annually. Reduce infestations by 50%. - **Unknown** |
| **D4.1 Queens Park Townside** | |
| Cape Broom | • Eliminate mature plants in outlying infestations. Reduce core infestation. - **Achieved** |
| Woody Weeds (Boneseed, Sweet Pittosporum, Sallow Wattle, Blackberry) | Eliminate all mature plants.<br>• Boneseed: reduced from 97,344 m² to 414 m² mature plants - **Achieved**<br>• Sweet Pittosporum: reduced from 97,344 m² to 3 m² mature plants - **Achieved**<br>• Sallow Wattle: reduced from 3 m² to absent - **Achieved**<br>• Blackberry: reduced from 563 m² to 100 m² - **Achieved** |
| Non-woody Weeds (Bridal Creeper, Agapanthus, Watsonia) | Control annually. Reduce infestations by 50%.<br>• Bridal Creeper: reduced from 55 m² to 13 m². May be a seasonal effect - **Unknown**<br>• Agapanthus: reduced from 162 m² to 3 m² -**Achieved**<br>• Watsonia: reduced from 1,981 m² to 332 m² - **Achieved**<br>• Asparagus Fern: reduced from 3m2 to absent - **Achieved** |
| **D4.2 Queens Park St George side** | |
| Cape Broom | • Eliminate mature plants in outlying infestations. Reduce core infestation: infestation reduced from 34,924 m² to 14,413 m² - **Achieved** |
| Woody Weeds (Boneseed, Sweet Pittosporum, Blackberry, Spanish Heath) | Eliminate all mature plants<br>• Boneseed: while reduced from 218,000 m² to 94,642 m² significant infestations remain - **Not achieved**<br>• Sweet Pittosporum: while reduced from 218,953 m² to 108,237 m², significant infestations remain - **Not achieved**<br>• Blackberry: slightly reduced from 2,448 m² to 1,898 m² - **Not achieved**<br>• Spanish Heath: reduced from 81m2 to 3m2 - **Achieved** |

| Weed/objective | Species response |
|---|---|
| Non-woody Weeds (Bluebell Creeper, Dolichos Pea, Agapanthus, Watsonia) | Control annually. Reduce infestations by 50%.<br>• Bluebell Creeper: increase from 234 m² to 756 m² - **Not achieved**<br>• Dolichos Pea: decrease from 391 m² to 157 m² - **Achieved**<br>• Agapanthus: decrease from 6 m² to 3 m² - **Achieved**<br>• Watsonia: decrease from 163 m² to absent - **Achieved** |
| **D4.2 Queens Park Oceanside** | |
| Isolated Woody Weeds (Spanish Heath, Cape Broom, Mirror Bush, Blackberry) | • Prevent spread - **Achieved** |
| Non-woody Weeds (AsparagusFern, Agapanthus) | • Control annually. Prevent spread - **Achieved** |

## APPENDIX 3. THREATENED FAUNA SPECIES

The table below lists threatened fauna species that may be found or have likely habitat within the Authority's managed land area. This list has been compiled using the *Flora and Fauna Guarantee Act 1988* (FFG) Threatened List (updated Oct 2021) and the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC) List of Threatened Fauna.

| Scientific name | Common name | FFG | EPBC |
|---|---|---|---|
| **Birds** | | | |
| *Diomedea antipodensis* | Antipodean Albatross | | Vulnerable |
| *Sternula nereis* | Australian Fairy Tern | | Vulnerable |
| *Botaurus poiciloptilus* | Australasian Bittern | Critically Endangered | |
| *Ixobrychus dubius* | Australian Little Bittern | Endangered | |
| *Rostratula australis* | Australian Painted Snipe | Critically Endangered | |
| *Anas rhynchotis* | Australasian Shoveler | Vulnerable | |
| *Ninox connivens* | Barking Owl | Critically Endangered | |
| *Oxyura australis* | Blue Billed Duck | Vulnerable | |
| *Antigone rubicunda* | Brolga | Vulnerable | |
| *Falco subniger* | Black Falcon | Critically Endangered | |
| *Calamanthus pyrrhopygius* | Chestnut Rumped Heath Wren | Vulnerable | |
| *Actitis hypoleucos* | Common Sandpiper | Vulnerable | |
| *Numenius madagascariensis* | Eastern Curlew | Critically Endangered | Critically Endangered |
| *Ardea alba modesta* | Eastern Great Egret | Vulnerable | |
| *Pachyptila turtur subantarctica* | Fairy Prion | | Vulnerable |
| *Stictonetta naevosa* | Freckled Duck | Endangered | |
| *Callocephalon fimbriatum* | Gang Cockatoo | | Endangered |
| *Accipiter novaehollandiae* | Grey Goshawk | Endangered | |
| *Pluvialis squatarola* | Grey Plover | Vulnerable | |
| *Pezoporus wallicus* | Ground Parrot | Endangered | |
| *Thalassarche chrysostoma* | Gull-billed Tern | Endangered | |
| *Aythya australis* | Hardhead | Vulnerable | |
| *Thinornis cucullatus* | Hooded Plover | Vulnerable | Vulnerable |
| *Melanodryas cucullata* | Hooded Robin | Vulnerable | |
| *Thalassarche carteri* | Indian Yellow-nosed Albatross | Endangered | Vulnerable |

| Scientific name | Common name | FFG | EPBC |
|---|---|---|---|
| *Lewinia pectoralis* | Lewins Rail | Vulnerable | |
| *Hieraaetus morphnoides* | Little Eagle | Vulnerable | |
| *Egretta garzetta nigripes* | Little Egret | Endangered | |
| *Anseranas semipalmata* | Magpie Goose | Vulnerable | |
| *Tyto novaehollandiae* | Masked Owl | Critically Endangered | |
| *Biziura lobata* | Musk Duck | Vulnerable | |
| *Neophema chrysogaster* | Orange Bellied Parrot | | Critically Endangered |
| *Pluvialis fulva* | Pacific Golden Plover | Vulnerable | |
| *Pedionomus torquatus* | Plains Wanderer | Critically Endangered | Critically Endangered |
| *Ardea intermedia plumifera* | Plumed Egret | Critically Endangered | |
| *Ninox strenua* | Powerful Owl | Vulnerable | |
| *Calidris canutus* | Red Knot | Endangered | Endangered |
| *Anthochaera phrygia* | Regent Honeyeater | Critically Endangered | Critically Endangered |
| *Dasyornis broadbenti caryochrous* | Rufous Bristlebird | Vulnerable | |
| *Thalassarche cauta* | Shy Ablatross | Endangered | Endangered |
| *Phoebetria fusca* | Sooty Albatross | Critically Endangered | Vulnerable |
| *Diomedea epomophora* | Southern Royal Albatross | Critically Endangered | Vulnerable |
| *Pyrrholaemus sagittatus* | Speckled Warbler | Endangered | |
| *Lathamus discolor* | Swift Parrot | Critically Endangered | Critically Endangered |
| *Diomedea exulans* | Wandering Albatross | Critically Endangered | Vulnerable |
| *Haliaeetus leucogaster* | White Bellied Sea Eagle | Endangered | |
| *Thalassarche steadi* | White-capped Albatross | | Vulnerable |
| *Hirundapus caudacutus* | White-throated Needle Tail | Vulnerable | Vulnerable |
| **Mammals** | | | |
| *Balaenoptera musculus* | Blue Whale | Endangered | |
| *Mastacomys fuscus mordicus* | Broad Toothed Rat | Vulnerable | Vulnerable |
| *Canis lupus dingo* | Dingo | Vulnerable | |
| *Perameles gunnii* | Eastern Barred Bandicoot | Endangered | Endangered |

| Scientific name | Common name | FFG | EPBC |
|---|---|---|---|
| *Carcharodon carcharias* | Great White Shark | Endangered | Vulnerable |
| *Pteropus poliocephalus* | Grey-headed Flying-fox | Vulnerable | Vulnerable |
| *Phascolarctos cinereus* | Koala | | Endangered |
| *Potorous tridactylus trisulcatus* | Long-nosed Potoroo | Vulnerable | Vulnerable |
| *Pseudomys novaehollandiae* | New Holland Mouse | Endangered | Vulnerable |
| *Ornithorhynchus anatinus* | Platypus | Vulnerable | |
| *Dasyurus maculatus* | Spot-Tailed Quoll | Endangered | Endangered |
| *Miniopterus orianae bassanii* | Southern Bent-wing Bat | Critically Endangered | Critically Endangered |
| *Isoodon obesulus* | Southern Brown Bandicoot | Endangered | Endangered |
| *Megaptera novaeangliae australis* | Southern Humpback Whale | Critically Endangered | |
| *Eubalaena australis* | Southern Right Whale | Endangered | Endangered |
| *Antechinus minimus maritimus* | Swamp Antechinus | Vulnerable | Vulnerable |
| *Sminthopsis leucopus* | White Footed Dunnart | Vulnerable | |
| *Petaurus australis* | Yellow-bellied Glider | | Vulnerable |
| **Fish** | | | |
| *Prototroctes maraena* | Australian Grayling | Endangered | Vulnerable |
| *Neochanna cleaveri* | Australian Mudfish | Endangered | |
| *Galaxiella pusilla* | Dwarf Galaxias | Endangered | Vulnerable |
| *Nannoperca obscura* | Yarra Pigmy Perch | Vulnerable | Vulnerable |
| **Reptiles and amphibians** | | | |
| *Pseudophryne bibronii* | Brown Toadlet | Endangered | |
| *Litoria raniformis* | Growling Grass Frog | Vulnerable | Vulnerable |
| *Dermochelys coriacea* | Leathery Turtle | Critically Endangered | Endangered |
| *Pseudophryne semimarmorata* | Southern Toadlet | Endangered | |
| *Delma impar* | Striped Legless Lizard | Endangered | Vulnerable |

**Resources**

Australia, Department of Agriculture, Water and the Environment (2022). EPBC Act List of Threatened Fauna. https://www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl

Victoria, Department of Environment, Land, Water and Planning (2022). Flora and Fauna Guarantee Act Threatened List. https://www.environment.vic.gov.au/conserving-threatened-species/threatened-list

SWIFFT, (2022). State Wide Integrated Flora and Fauna Teams. https://www.swifft.net.au/cb_pages/threatened_fauna_surf_coast_shire.php

## APPENDIX 4. GLOSSARY

| | |
|---|---|
| DELWP | Department of Environment, Land, Water and Planning |
| EMAC | Eastern Maar Aboriginal Corporation |
| EPBC Act 1999 | *Environmental Protection and Biodiversity Conservation Act 1999* |
| EVC | Ecological Vegetation Classes |
| FFG Act | *Flora and Fauna Guarantee Act 1988* |
| GORCC | Great Ocean Road Coast Committee |
| GOREP Act 2020 | *Great Ocean Road and Environs Protection Act 2020* |
| NVWAP | Native Vegetation and Weed Action Plan |
| OCC | Otway Coast Committee |
| SLSC | Surf Lifesaving Club |
| The Authority | Great Ocean Road Coast and Parks Authority |
| VROT | Victorian Rare or Threatened Species |
| WTOAC | Wadawurrung Traditional Owners Aboriginal Corporation |