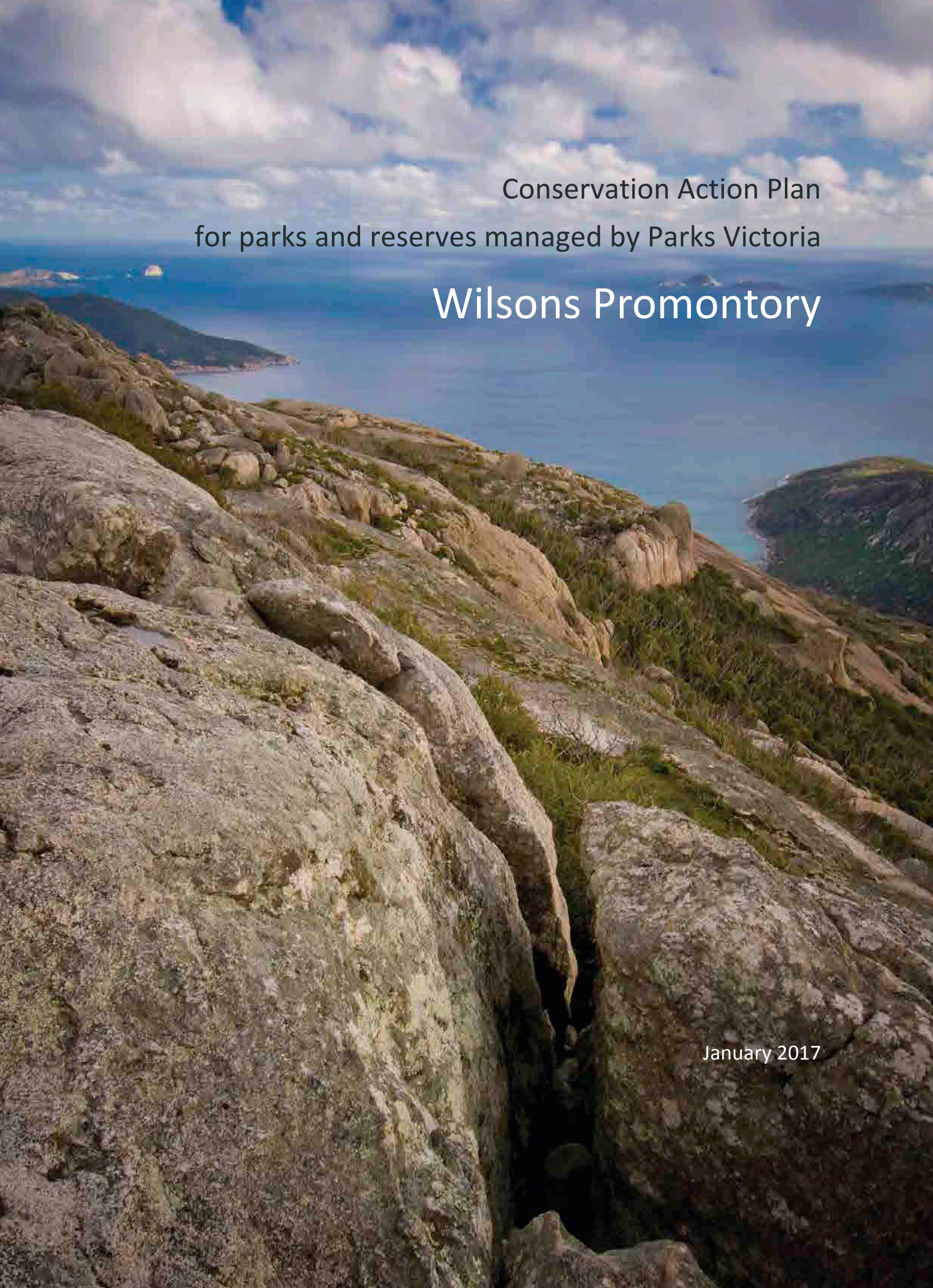

Conservation Action Plan

for parks and reserves managed by Parks Victoria

Wilsons Promontory

January 2017

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This plan is prepared without prejudice to any negotiated or litigated outcome of any native title determination applications covering land or waters within the plan's area. It is acknowledged that any future outcomes of native title determination applications may necessitate amendment of this plan; and the implementation of this plan may require further notifications under the procedures in Division 3 of Part 2 of the *Native Title Act 1993* (Cwlth).
The plan is also prepared without prejudice to any future negotiated outcomes between the Government/s and Traditional Owner Communities. It is acknowledged that such negotiated outcomes may necessitate amendment of this plan.
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Sooty Oystercatchers

Summary

The Wilsons Promontory Park Landscape includes mountains, forests and fern gullies fringed by granite headlands, sandy beaches and sheltered coves backed by coastal dunes, heathlands and swamps. Its topography and unique position also creates a zone of diverse marine habitats. The area covered by this plan forms part of an Aboriginal cultural landscape that contains values and places that are significant to Traditional Owners.

This Conservation Action Plan defines and prioritises conservation strategies for the Wilsons Promontory Park Landscape for the period to July 2021, and broadly describes the expected outcomes of these strategies. The plan outlines what can be realistically achieved to tackle the threats that pose the most risk to conservation assets. The Conservation Action Plan will support Parks Victoria in achieving our vision to:

Increase the resilience of natural assets in the Wilsons Promontory Park Landscape and maintain ecosystem services in the face of climate change and other stressors.

The development, implementation and review of the plan follows Parks Victoria's cyclical ten-step conservation action planning process, which is based on an internationally recognised process developed by The Nature Conservancy. The plan covers the first seven steps in this process:

1 Scope planning, people and resources.
2 Identify conservation assets.
3 Assess the viability of conservation assets and set conservation outcomes.
4 Identify and assess threats to conservation outcomes.
5 Develop action options from situational analysis.
6 Assess and select preferred strategies and actions.
7 Set performance measures.

Six terrestrial and four marine conservation assets have been identified in the Wilsons Promontory Park Landscape: Heathland, Mixed Dry Forest and Woodland, Wet Forest and Rainforest, Coastal Grassy Woodland, Riparian and Wetland, Coastal (including islands), Unvegetated Soft Sediments, Subtidal Reefs, Seagrass Beds, and Water Column. Within each of these assets a range of nested assets, such as threatened species and important ecological assemblages, have also been identified.

The plan also identifies a range of key ecological attributes (components that are believed to best reflect the health of the asset). The plan describes their current condition (very good, good, fair, poor) and the trend in condition (improving, stable, declining), and sets the anticipated future condition of each key ecological attribute. These measures then allow the overall condition of each asset to be assessed:

- Coastal (including islands) and all marine habitats are in very good condition.
- Heathland, ` Forest and Woodland, and Wet Forest and Rainforest are mostly in good condition.
- Riparian and Wetland is in fair condition.
- Coastal Grassy Woodlands assets are in poor condition.

The trends in condition are mostly stable to improving, except in Coastal Grassy Woodland which is in decline. The desired future status of the majority of assets is good to very good, but is dependent on the implementation of all the listed strategies.

Sixteen key threats to the conservation assets in the Park Landscape are identified in the plan. Five of these are considered extreme threats and are therefore the priority threats considered in this plan. They are:

- Total grazing and browsing pressure (by introduced and native animals).
- Inappropriate fire regimes.
- Marine invasive or overabundant species.
- Predation by cats and foxes.
- Weed invasion.

The following conservation strategies will be undertaken to tackle these threats. They have been selected for their impact, feasibility and cost in achieving the desired conservation.

- Coastal Grassy Woodland restoration — burning and grazer control to restore canopy and understorey species so that the full range of native species in this Coastal Grassy Woodland can flourish.
- Landscape-scale control of deer — by volunteer and specialist hunters, to enable the regeneration of key canopy species and increase the diversity and viability of all terrestrial assets.
- Broad-scale fox and cat control — to increase the density, diversity and distribution of predation-sensitive native terrestrial fauna throughout the Wilsons Promontory Park Landscape.
- Marine and estuarine management — to reduce the likelihood of new populations of marine pests establishing in the Park Landscape, ensure that the eradication of populations of new pests is rapid and targeted, and minimise disturbance to fish, invertebrates and other marine-dependent species.
- Integrated weed program — to improve the health of specific conservation assets, particularly Coastal (including islands) through control of high-risk weeds and local eradication where possible.
- Landscape-scale ecological fire program — to improve the structural diversity and distribution of vegetation growth stages in various habitats, ensuring that the condition of all conservation assets improves.
- Establishment of collaborative partnerships to address key knowledge gaps — to enable threats and opportunities to be more readily identified, which will result in an increase in the effectiveness and efficiency of conservation asset management.

For each strategy a results chain has been developed to help guide implementation and monitoring indicators. These chains test the ability of Parks management to achieve the conservation outcomes defined for each of the assets.

Contents

Citadel Island from Dannevig Island

1 Background

1.1 Conservation action planning

Conservation action planning is an important component of Parks Victoria's approach to adaptive management and evidence-based decision making. It involves identifying conservation priorities and then developing and implementing strategies to address those priorities to achieve defined conservation outcomes.

Through conservation action planning, Parks Victoria identifies and focuses on strategies that target clearly defined elements of the natural environment (conservation assets) for which threats have been identified and where success can be measured. Understanding how to best use the resources available for conservation to achieve the greatest improvement in the overall health of ecosystems is a complex challenge for land managers.

Conservation experience, scientific understanding, local environmental knowledge, traditional ecological knowledge, and strategic thinking are all key components of successful conservation action planning.

In this conservation action plan, clearly defined conservation strategies have been developed and prioritised. These strategies are based on the best available knowledge and will enable specific operational activities to be implemented, monitored for success, and further refined. The plan complements the existing park management plans. Conservation strategies detailed in the park management plans have been reviewed during the conservation action planning process, and updated for inclusion where relevant.

1.2 Park Landscapes

Park landscapes are classified according to a combination of ecological attributes, land forms and administrative boundaries. They form a logical unit for conservation action planning and the delivery of specific operational activities in groups of parks and reserves. Parks Victoria has identified 16 park landscapes across Victoria (Figure 1.1).

1.3 Overall approach

Parks Victoria has applied the conservation action planning methodology developed by The Nature Conservancy. This methodology is based on the Open Standards for the Practice of Conservation developed by Conservation Measures Partnership, an international partnership of conservation organisations.

Parks Victoria's approach to conservation action planning is suitable for planning conservation projects with joint management partners, in partnership with all stakeholders, for land managed by Parks Victoria. It is consistent with the approach used by numerous other agencies in Victoria managing conservation lands.

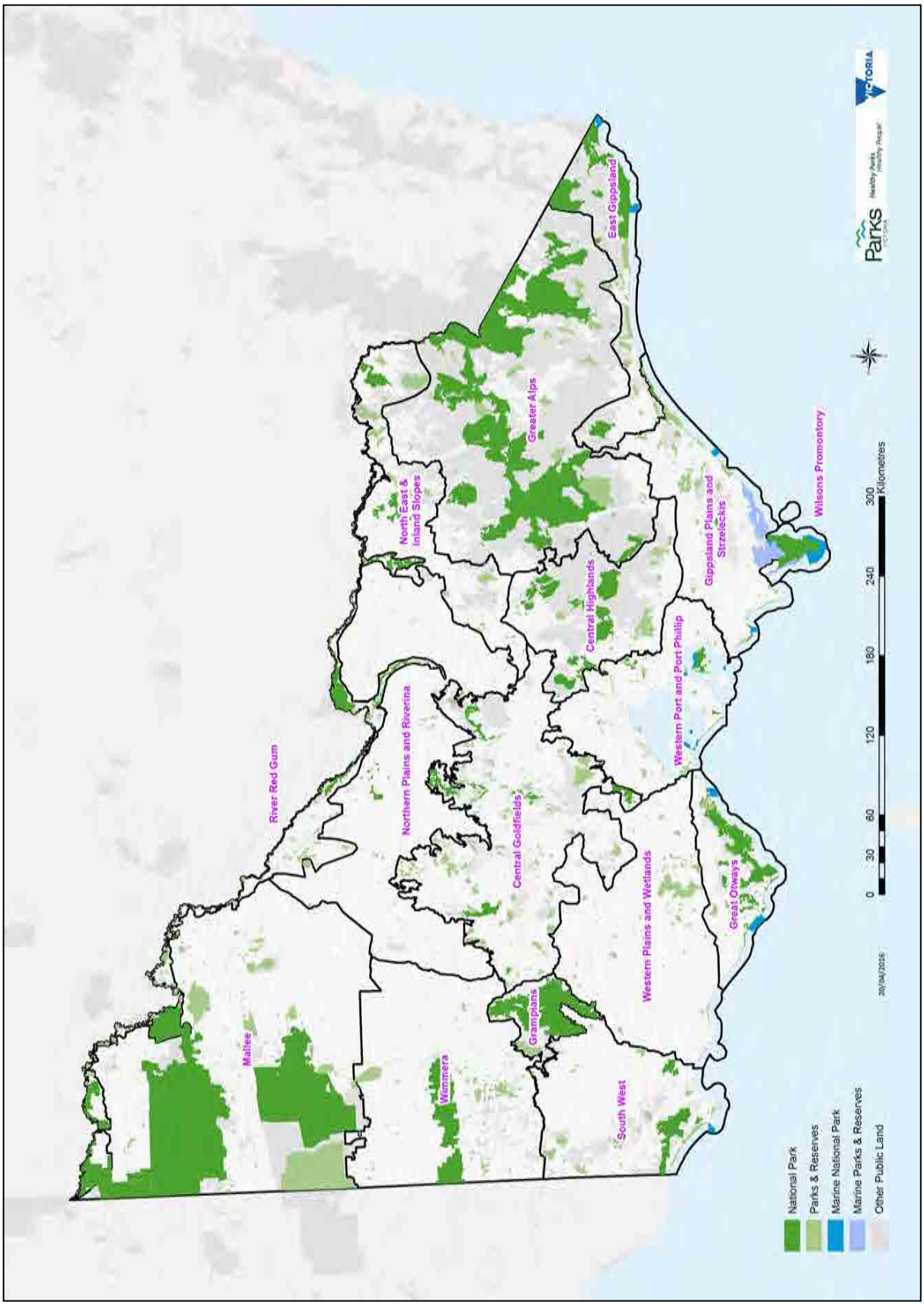


Figure 1.1 Parks Victoria's Park Landscapes.

The emphasis is on identifying strategies that tackle threats that pose the greatest risk to priority conservation assets and key ecological attributes and that will contribute most to meeting the expected conservation outcomes.

Parks Victoria's conservation action planning process involves a series of conservation action planning workshops, with participants from Parks Victoria and other organisations, and follows 10 sequential steps (Figure 1.2):

1 Scope planning, people and resources.
2 Identify conservation assets.
3 Assess the viability of conservation assets and set conservation outcomes.
4 Identify and assess threats to conservation outcomes.
5 Develop action options from situational analysis.
6 Assess and select preferred strategies and actions.
7 Set performance measures.
8 Plan work.
9 Implement operational plans.
10 Evaluate and adapt operational activities and the Conservation Action Plan.

This Conservation Action Plan is an output of steps 1 to 7, and will provide directions for environmental conservation management for the next 15 years. After 5 years the plan will be reviewed, and progress will be evaluated against outcomes identified for the conservation assets, threat mitigation objectives and implementation of identified priority actions, in order to revise the plan.

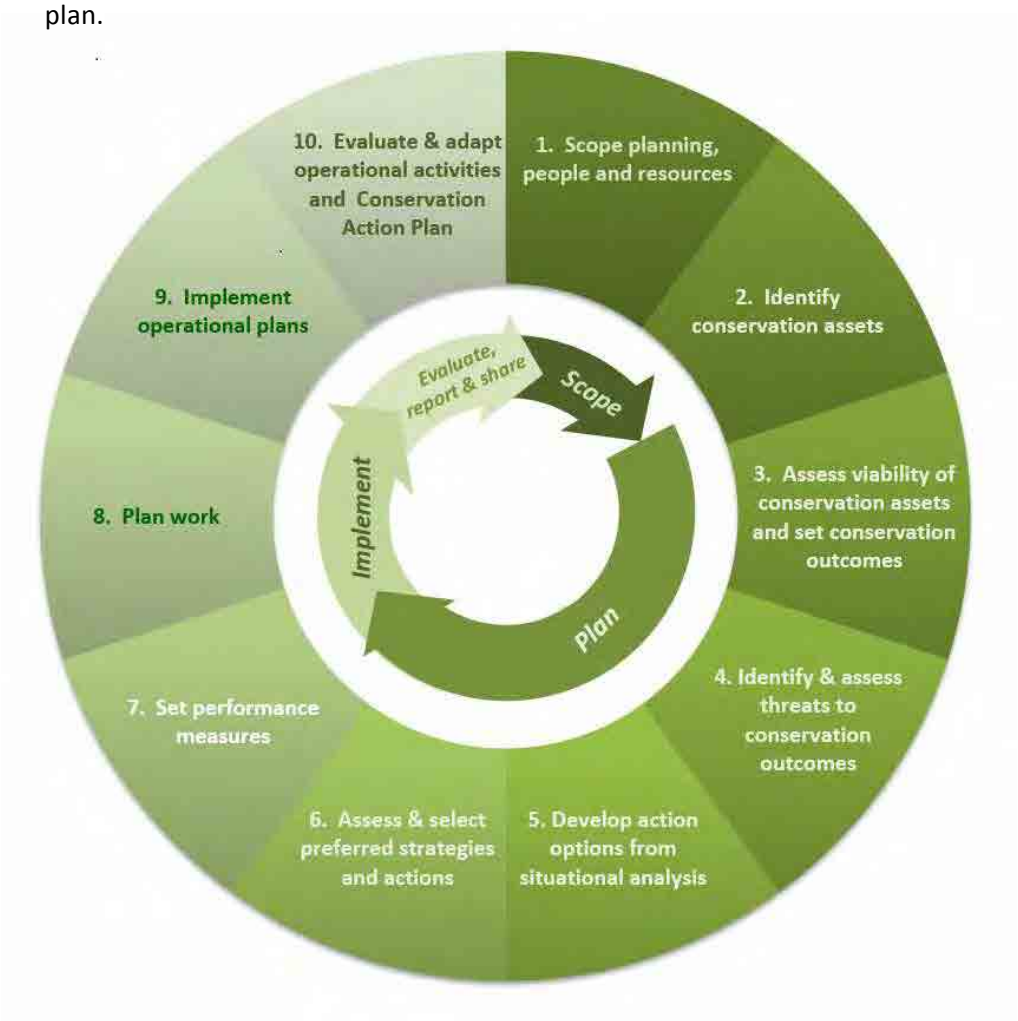


Figure 1.2 Parks Victoria's Conservation Action Planning: the 10-step process.

2 Scope

2.1 Geographic scope

The Wilsons Promontory Park Landscape covers the southern-most part of the Australian mainland. This landscape is characterised by mountains, forests and fern gullies fringed by granite headlands, sandy beaches and sheltered coves backed by coastal dunes, heathlands and swamps. The unique position within the adjoining land and seascapes isolates Wilsons Promontory, creating a zone of diverse marine habitats.

The Wilsons Promontory Park Landscape includes a number of national parks and reserves, including the following areas managed by Parks Victoria:

- Wilsons Promontory National Park
- Wilsons Promontory Marine National Park
- Wilsons Promontory Marine Park
- Wilsons Promontory Marine Reserve
- Seal Islands Wildlife Reserve.

Wilsons Promontory National Park (48 244 ha) was the first national park to be declared in Victoria. It has outstanding conservation, recreation and wilderness values, and has been designated by UNESCO as a Biosphere Reserve. The National Park is surrounded by a number of other areas with high natural values. These include the Corner Inlet and Shallow Inlet Marine and Coastal Parks, Wilsons Promontory Marine National Park, Wilsons Promontory Marine Park, and Wilsons Promontory Marine Reserve. The adjacent Corner Inlet area, up to the high tide mark, which is also a designated Ramsar site, has been included within the Gippsland Plains and Strzeleckis Park Landscape because of its catchment connectivity. The seagrass beds, intertidal mudflats and mangroves associated with this area are therefore not included in this plan.

The natural values of significance identified in the Wilsons Promontory National Park Management Plan (Parks Victoria, 2002) are:

- entire promontory of national geological and geomorphological significance, containing a number of sites of State and regional significance
- diverse vegetation communities, including warm temperate and cool temperate rainforest, tall open forests, woodlands, heathlands, and swamp and coastal communities
- the occurrence of 21% of Victoria's known vascular flora
- several biogeographically significant species, including a number of plant species and communities which have associations with other parts of Australia or are threatened or at the limits of their distribution
- unmodified rivers and streams with no introduced fish species
- several threatened fauna species, including the New Holland Mouse, Long-nosed Potoroo, Ground Parrot, White-bellied Sea-Eagle, Swamp Skink, and the damselfly Hemiphlebia mirabilis
- half of Victoria's bird species
- intertidal mudflats that are an internationally important habitat for migratory wading birds.

Figure 2.1 Geographic scope of conservation action planning for the Wilsons Promontory Park Landscape.

The natural values of significance stated in the Wilsons Promontory Marine Protected Areas Management Plan (Parks Victoria, 2006) are:

- Victoria's southernmost and largest Marine National Park
- the only marine national park within the Flinders marine bioregion
- granite habitats, which are unusual in Victorian marine waters, including extensive heavy reefs with smooth surfaces, boulders and rubble, and low profile reefs
- biological communities with distinct biogeographic patterns, including shallow subtidal reefs, deep subtidal reefs, intertidal rocky shores, sandy beaches, seagrass and subtidal soft substrates
- abundant and diverse marine flora and fauna, including hundreds of fish species and invertebrates such as sponges, ascidians, sea whips and bryozoans
- 126 species of marine flora and fauna at, or presumed to be at, their eastern or western distributional limits
- important breeding populations of several seabird species, Australian Fur Seals and New Zealand Fur Seals, including one of the largest Australian Fur Seal breeding populations in the state
- important habitat for several threatened shorebird species, including species listed under international migratory bird agreements
- part of a nationally significant area for the recovery of Great White Shark populations
- outstanding landscapes, seascapes and spectacular underwater scenery
- opportunities for scientific investigation and learning in an area with minimal human disturbance.

The Atlas of Living Australia (ala.org.au) includes records of more than 4200 species from the Wilsons Promontory Park Landscape, including:

- 14 amphibians
- 359 birds
- 180 fish
- 430 insects
- 76 mammals
- 24 reptiles
- 1633 plants and algae
- 250 fungi
- 404 molluscs
- 662 arthropods
- 191 crustaceans.

These include 864 threatened species and 65 migratory bird species listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

2.2 Cultural significance

Wilsons Promontory National Park has an early history of Aboriginal occupation, dating back at least 6500 years. The area covered by this plan, including the Marine Protected Areas, is significant to many people in the community, especially Traditional Owners, who are traditionally and culturally associated with the area. The land and waters of the planning area form part of an Aboriginal cultural landscape that contains values and places which are significant to Traditional Owners, and there are opportunities to strengthen this connection in the management of the parks.

The park also has a long history of resource use and commerce dating back to the early 19th century, including sealing and whaling, timber harvesting, grazing, and tin and gold mining. Cattle were grazed in parts of the park from the 1850s until 1992.

2.3 Legislative and planning context

Most of Wilsons Promontory National Park is reserved and managed under the provisions of the National Parks Act. The National Park includes Reference Areas at Anser Island (81 ha), Entrance Point (763 ha), and Vereker Creek (2730 ha), which are managed under the *Reference Areas Act 1978* (Vic.). The Wilsons Promontory Wilderness Zone (21 800 ha) is managed under the *National Parks (Wilderness) Act 1992*, and a number of other small areas are managed under the *Crown Land (Reserves) Act 1978*.

Table 2.1 Parks and reserves within the Wilsons Promontory Park Landscape.

Name of park/ reserve	Parks Victoria level of protection*	IUCN classification*	Area (ha)
Wilsons Promontory NP	A1	II	48 244
Wilsons Promontory Marine NP	Marine A	II	15 604
Wilsons Promontory Marine Park	Marine B	IV	5 566
Wilsons Promontory Marine Reserve	Marine B	IV	627
Seal Islands Wildlife Reserve	D	IV	36

* see Appendix A

2.4 Alignment with Regional Catchment Strategies

This plan addresses a number of key assets, objectives and actions from the West Gippsland Regional Catchment Strategy (RCS), in particular the following assets:

- threatened species and communities
- native vegetation
- marine
- rivers and estuaries.

This plan will support the following RCS objectives for these assets by:

- improving conservation status of threatened species and communities
- improving quality of native vegetation
- maintaining extent and quality of significant native vegetation
- maintaining integrity of biota and habitat
- maintaining water quality condition.

2.5 Other sources of information

Information sources which have directly assisted and informed the preparation of this plan include *Victoria's Biodiversity Strategy* (1997), *Wilsons Promontory Management Plan* (2003), *Wilsons Promontory Environmental Action Plan* (2003), *Wilsons Promontory Marine National Park and Wilsons Promontory Marine Park Management Plan* (2006), *Wilsons Promontory Environmental Action Plan* (2003), *Marine Natural Values Study. Volume 2: Marine Protected Areas of the Flinders and Twofold Shelf Bioregions* (2012), and *West Gippsland Catchment Management Authority Regional Catchment Strategy* (2013). Where possible, traditional ecological knowledge has been taken into account in the plan, and opportunities to investigate and apply traditional ecological knowledge will be developed further in future iterations of the plan.

2.6 Participation

A series of conservation action planning workshops were held between 2012 and 2016 to support the planning process for the Wilsons Promontory Park Landscape plan.

A factor that was essential for the success of the workshops was the great depth of experience of participants, including staff from Parks Victoria's head office, regional and district staff, local community group members, traditional owner and stakeholder partner agencies (Table 2.2).

Table 2.2 List of participants in the conservation action planning workshops.

Participant	Organisation	Participant	Organisation
Mike Stevens	Parks Victoria	Stephanie Mahon	Parks Victoria
Phil Pegler	Parks Victoria	Sean Phillipson	Parks Victoria
John Stoner	Parks Victoria	Elaine Thomas	Parks Victoria
Mark Rodrigue	Parks Victoria	Gerard Delaney	Parks Victoria
Fiona Smith	Parks Victoria	Greg Mattingley	Parks Victoria
Simon Marangio	Parks Victoria	Jonathon Stevenson	Parks Victoria
John Wright	Parks Victoria	Craig Mackenzie	Parks Victoria
Steffan Howe	Parks Victoria	Derek Petersen	Parks Canada
Mark Antos	Parks Victoria	Dan Kehler	Parks Canada
Helen Dixon	Parks Victoria	Nathan Wong	Trust for Nature
Brett Mitchell	Parks Victoria	Gheran Steel	Boon wurrung Foundation
Ben Robertson	Parks Victoria	Susan Taylor	DELWP
Matthew Hoskins	Parks Victoria	Don Jewels	Friends of the Prom
Scott Griggs	Parks Victoria	Jan Taylor	Friends of the Prom
Dan Jones	Parks Victoria	Dinah Fawcet	South Gippsland Conserv. Soc.
Emily Green	Parks Victoria	Gary Wallis	South Gippsland Conserv. Soc.
Roger Fenwick	Parks Victoria	Jan Carey	The University of Melbourne
Jim Whelan	Parks Victoria	Mikalea Power	West Gippsland CMA
Matt Holland	Parks Victoria	Paula Camenzuli	West Gippsland CMA
Megan Underwood	Parks Victoria		

3 Conservation assets

3.1 Methodology for identifying conservation assets

For planning and managing the terrestrial environment, Parks Victoria has classified conservation assets in its Park Landscapes according to similarities in biodiversity and natural values, and management drivers. The classification is based on the eight natural ecosystem groups described in Victoria's Biodiversity Strategy:

- Alps
- Coastal
- Dry Forest and Woodland
- Grassland
- Heathland
- Inland Waters and Wetlands
- Mallee
- Wet Forest and Rainforest.

Within each of these ecosystem groups, a number of sub-ecosystems have also been identified, defined by groupings of Ecological Vegetation Classes and Divisions (EVCs and EVDs) (White 2012).

Seven key habitats across marine Victoria have also been identified (Pocklington et al. 2012):

- Estuary
- Intertidal Rocky Reef
- Mangroves and Saltmarsh (Fringing Marshes)
- Seagrass
- Soft Sediments
- Subtidal Rocky Reef
- Water Column (Pelagic).

Conservation assets within the Park Landscapes have been identified by assigning ecosystems, sub-ecosystems and habitats from Parks Victoria's classification system, on the basis that they have similar ecological processes and threats.

Finer-scale assets that are an important focus of conservation efforts have also been identified, to help define each conservation asset more completely. These finer-scale or 'nested' assets are mostly species assemblages and communities, but may also include habitat features and ecosystem services. Individual species are aggregated with others if they co-occur across the landscape and have similar attributes that are important in determining their persistence in the landscape. Keystone species and rare, threatened or endemic species are also included as nested assets if they have unique conservation requirements.

3.2 Conservation assets of the Wilsons Promontory Park Landscape

Six terrestrial ecosystems and four marine habitats were identified for Wilsons Promontory Park Landscape. Each conservation asset was also associated with numerous nested assets. The 10 Conservation Assets and associated nested assets are presented below (Figure 3.1). The Ecological Vegetation Classes and Ecological Vegetation Divisions associated with each terrestrial ecosystem are listed in Appendix B.

Heathland — 13 456 ha

Mixed Dry Forest and Woodland — 12 137 ha

Wet Forest and Rainforest — 8985 ha

Coastal Grassy Woodland — 5335 ha

Riparian and Wetland — 2753 ha

Coastal (including islands) — 4115 ha

Unvegetated Soft Sediments — 13 087 ha*

Subtidal Reefs — 8567 ha*

Seagrass Beds*

Water Column†

* Marine ecosystems are yet to be fully documented; areas are indicative estimates only.

† Water Column overlaps other assets, so an area figure is not provided.

Although there are places and sites within the planning area that have Aboriginal cultural heritage significance, their specific management is not addressed in this plan. However, where rehabilitation is required to protect Aboriginal cultural values in Coastal, Riparian and Wetland ecosystems, requirements are detailed in a separate flood recovery program report (Chamberlain and Luke 2013).

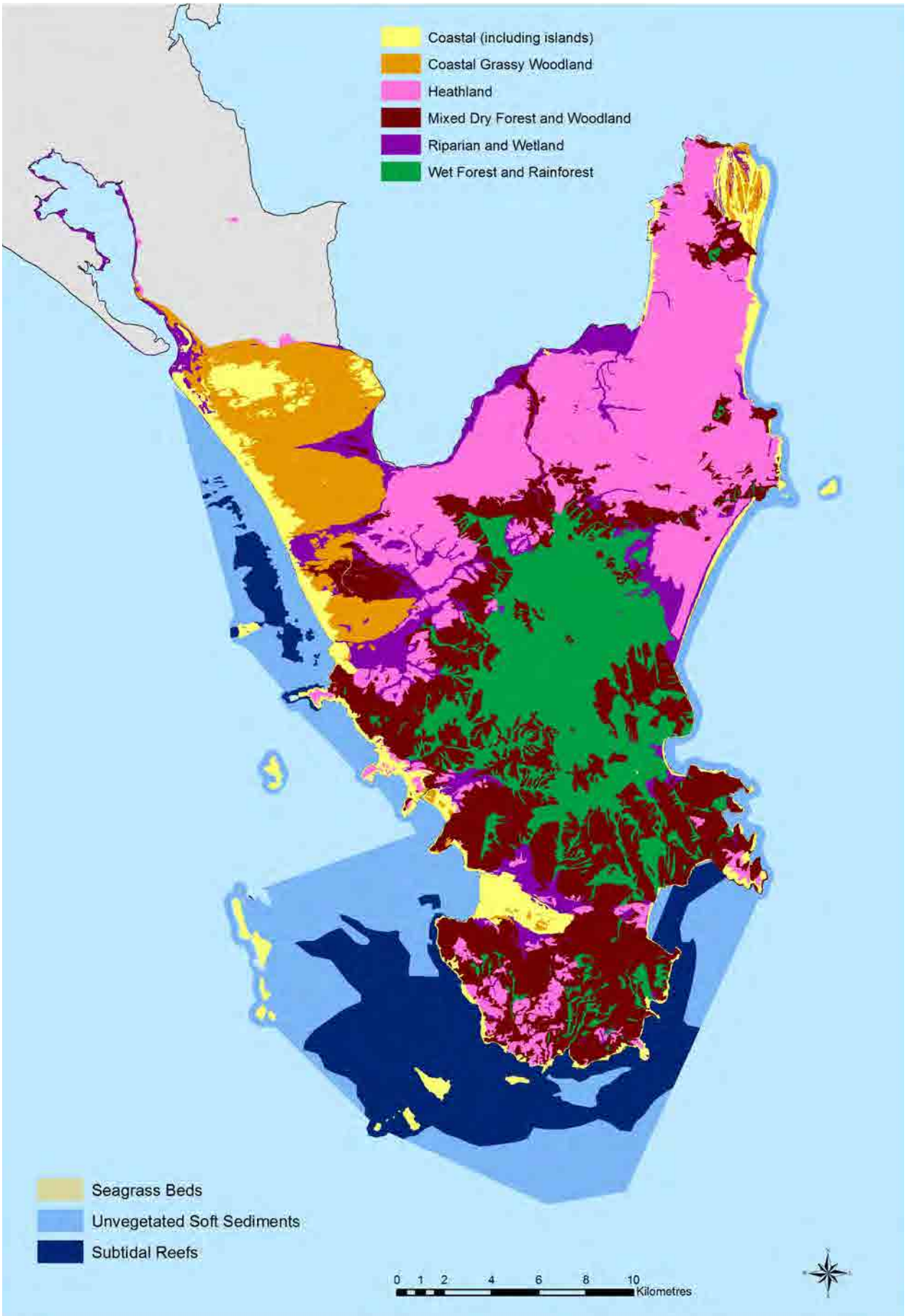


Figure 3.1 Terrestrial ecosystems and marine habitats in the Wilsons Promontory Park Landscape.

4 Conservation outcomes

Setting conservation outcomes involves defining a conservation vision and defining conservation outcomes for each asset. The conservation vision, is based on Parks Victoria's broader vision for conserving its special places, and is an aspirational statement that describes what the Park Landscape should be like in the future.

Conservation outcomes are derived from a comparison of the current and desired condition of the conservation asset overall (Where are we now? Where do we want to be?) and are articulated as SMART goals.[1]

4.1 Viability

Assessing the overall health of a conservation asset involves identifying the critical factors required for its long-term viability, which are called the *key ecological attributes*. These include attributes of structure, composition and process related to the assets. An important characteristic of a key ecological attribute is that it must be readily measurable using one or more indicators. The current and desired condition of the attribute can then be assessed, and the overall viability of the asset can be assigned to a defined category.

The assessment of the viability (or overall health) of a conservation asset is a five-step process utilising key ecological attributes:

1 **Identify a small number of key ecological attributes (typically 3–5) for each conservation asset.**

Some common key ecological attributes are structure (e.g. remnant size or population abundance, distribution of communities, and configuration of patches or age class), composition (e.g. species diversity), and interactions and biotic and abiotic processes (e.g. hydrological regime or water quality).

2 **Identify appropriate indicators for each key ecological attribute.**

An indicator is a readily measurable parameter that can be used to assess the condition of the key ecological attributes. For example, the presence or absence of a particular habitat-sensitive species may be an appropriate indicator for species diversity or habitat condition.

3 **Develop criteria for rating the current value of each indicator.**

The development of criteria for rating the value of each indicator is an iterative process. It typically starts with a simplified qualitative assessment (e.g. many, some, few) and is progressively developed into more refined and measurable numeric values (e.g. 1000 megalitres of water for 3 months during late spring). A value range for the indicator is defined to correspond with a ranking for poor, fair, good, and very good.

[1] Specific, Measurable, Achievable, Relevant, Time-bound.

4 **Rank the current and desired condition of each indicator to determine the overall viability of the conservation assets.**

The final step in assessing the viability of the conservation assets is to rank the current condition of each indicator. The rankings used are poor, fair, good, and very good. Desired condition is assessed over a 15-year period and considers the role, if any, of management intervention to maintain long term viability.

5 **Determine the overall viability of conservation assets.**

The overall current and desired condition is determined for each conservation asset, using the condition rankings for key ecological attributes and their associated indicators. Each conservation asset is rated for the current and desired condition of its key ecological attributes and overall condition.

These key ecological attributes for each asset, including conservation outcomes and asset descriptions, are presented in the following pages, along with assessments of the current and desired status of each asset and its key ecological attributes. These attributes and outcomes have been used to guide the development and prioritisation of conservation strategies.

4.2 Vision

The conservation vision for the Wilsons Promontory Park Landscape is:

The resilience of natural assets in the Wilsons Promontory Park Landscape is increased and ecosystem services are maintained in the face of climate change and other stressors.

The Park Landscape is largely intact and in good to very good condition. There are some exceptions because earlier landscape-scale fires have reduced the structural complexity of some ecosystems such as Wet Forest, and in others such as Coastal Grassy Woodland the long-term absence of fire and extreme grazing pressure have had a similar effect.

In the future, the Park Landscape's conservation assets are maintained in good condition, and ecosystems and processes that have been degraded are being restored. Restoration could include the re-introduction of locally extinct species, including native predators and other species that are important for maintaining ecological processes.

5 Conservation asset descriptions

The following pages provide a description of the conservation assets within the Wilsons Promontory Park Landscape, along with the outcomes sought through management. The descriptions are set out in the following format, and definitions are provided where necessary.

Conservation asset name

Ecosystem or habitat type that is seen as the overarching value that is to be managed, including a description of the ecosystem or habitat type, including its condition, predominant drivers of condition, and their effect on component nested assets.

Nested assets

Nested assets are a series of values that are present within the asset, or that rely on the asset for their health. These are often iconic species for the system, threatened species, ecological (fauna) assemblage and species of particular note. Comprehensive lists of species held on national and Victorian databases are used to inform the selection of nested assets.

Condition

This sets out the key ecological attributes, indicators for those attributes, the current condition and trends in condition of the attribute, and the anticipated future status. An example is shown below.

Key ecological attribute	Indicator	Current condition	Current trend	Future status
Ground-dwelling and arboreal mammals	Species richness and occupancy of suitable habitat	Fair	↘	Good
Vegetation age-class structure, composition and diversity	Tolerable fire interval and distribution of growth stages	Fair	→	Good

Conservation outcome

This statement reflects the key ecological attributes of the asset and includes key improvements in asset viability that will achieve the desired conservation outcome. An example is shown below.

Coastal Grassy Woodland	Current condition	Desired trend	Future status
By 2031, increase the open habitat structure and diverse age-class structure of the canopy species, and develop a diverse ground layer vegetation (including connected native grasses).	Poor	↗	Good

Trends are indicated as follows: Improving ↗ Stable → Declining ↘

The assessment of current condition and desired future status is represented by the following categories. Measures to assess this classification are documented in the Monitoring, Evaluation and Reporting Plan.

VERY GOOD (optimal integrity) — The attribute is functioning at an ecologically desirable status, and requires little human intervention to maintain or improve health.

GOOD (minimum integrity) — The attribute is functioning within its range of acceptable variation; it may require some human intervention.

FAIR (vulnerable) — The attribute is outside its range of acceptable variation and requires human intervention to recover or be restored. If unchecked, the target will be vulnerable to serious degradation.

POOR (imminent loss) — Allowing the attribute to remain in this condition for an extended period of time will make restoration or preventing extinction practically impossible.

Heathland

Heathland in the Wilsons Promontory Park Landscape grows on a range of geologies and soil types which tend to be nutrient-poor, including deep uniform sands. These sands are developed most extensively on Quaternary deposits. The heathlands occur on and near the coastal fringe. They may have a sparse, open woodland canopy generally less than 10 m high. The shrub layer is often dominated by ericoid-leaved shrubs, although Austral Bracken may dominate where fire have been more frequent. Geophytes and annuals are often seasonally abundant, particularly orchids and lilies. Heathlands generally have a very high plant species richness, which in turn supports a wide range of fauna including a diverse heathland bird assemblage and several significant mammal species. Fire is essential for maintaining the diversity of the flora and fauna. Managing the scale, patchiness and heterogeneity of fire within this landscape is essential to ensure that multiple growth-stages exist. Tolerable fire intervals are less than 30 years.

Heathland consists of a number of EVCs, including Coastal Sand Heathland, Heathy Woodland, Sand Heathland, Wet Heathland and Damp Heathland. The main driver of condition within heathland systems is fire, and the timing, intensity and frequency of fire are all determinants of condition.

The conditions of this asset varies across the Park Landscape. Higher-quality examples are associated with the presence of controlled mosaic ecological fire, as opposed to large-scale fires or the long-term absence of fire. The condition of Sand Heathland EVC is declining because of the absence of fire and subsequent invasion of Coast Tea-tree and White Kunzea. Heathy Woodland, Wet Heathland and Damp Heathland EVCs are declining because of the impacts of large-scale wildfire. However, some examples of these EVCs are stable or improving because of the increasing application of ecological fire. All these EVCs are threatened by the fungal pathogen *Phytophthora cinnamomi*. with the noted presence and spread of the pathogen increasing dramatically following the 2011 flood event.

Nested assets

Three nested assets have been identified in this asset (see the table below). All species in these nested assets depend on the structure, composition and health of vegetation, which is maintained by appropriate fire regimes.

Type of asset	Examples of components
Ground-dwelling mammals	New Holland Mouse, Southern Brown Bandicoot
Heathland bird community	Ground Parrot, Southern Emu-wren
Threatened flora	Thick-lipped Spider-orchid

Condition

Key ecological attribute	Indicator	Current condition	Current trend	Future status
Ground-dwelling and arboreal mammals	Species richness and occupancy of suitable habitat	Fair	↘	Good
Bird assemblages	Species richness and occupancy of suitable habitat	Fair	→	Very Good
Vegetation age-class and growth stage structure	Tolerable fire interval and distribution of growth stages	Good	→	Very Good
Composition and health	Dieback percentage of key species Extent of invasion by other shrubs (e.g. Coast Tea-tree)	Good	→	Very Good
Floristic diversity and richness	Species richness at key sites	Good	→	Very Good

Conservation outcome

Heathland	Current condition	Desired trend	Future status
Over the 15 years to 2031, maintain the health of Heathland and improve the distribution of growth-stages to maintain floristic diversity and richness and provide high-quality habitat for ground-dwelling mammals and heathland birds.	Good	↗	Very Good

Mixed Dry Forest and Woodland

Mixed Dry Forest and Woodland grows on a range of soil types and situations throughout the Wilsons Promontory Park Landscape. This asset is generally characterised by the dominance of a eucalypt forest or woodland canopy. The various understorey components are determined largely by aspect, geology, soils, and management history.

Examples include herb-rich woodlands on granitic substrates that tend to have a woodland canopy over a sparse herb-dominated understorey, with few shrub or mid-layer canopy species.

This contrasts with the shrub-dominated forests that can occur on ridges and drier northerly and westerly slopes, in association with Damp Forest EVC (on sheltered slopes), on moderately fertile soils and various elevations. These dry forests have an overstorey dominated by eucalypt species to 25 m tall with an understorey characterised by a distinctive middle strata dominated by a diversity of narrow-leaved shrubs, and there is a paucity of ferns, graminoids and herbs in the ground stratum. All these examples are linked by their similar management requirements, key ecological attributes and threats.

The Mixed Dry Forest and Woodland asset consists of a number of EVCs, including Granitic Hills Woodland, Shrubby Foothill Forest, Lowland Forest, Rocky Outcrop Shrubland, Rocky Outcrop Herbland, Wet Rocky Outcrop Scrub, Bare Rock. The main driver of condition within this system is fire, and the timing, intensity and frequency of fire are all important factors. The condition of this asset varies across the Park Landscape. Higher-quality examples are associated with the absence of large-scale hot fires and the application of lower intensity, more frequent fires. Although a large percentage of this asset is in a good condition, the frequent exposure to fire has resulted in a reduction in canopy height, which has increased the risk of canopy-consuming wildfires. Managing fire to increase canopy height and reduce this risk will increase the health of this system.

Nested assets

Three nested assets have been identified for this asset (see the table below). All species in these nested assets depend on a mixed canopy age with appropriate understory strata, including open patches. This vegetation structure is driven by the appropriate application of ecological fire and the absence of large-scale wildfire. Ground-dwelling mammals are also impacted by exotic predators.

Type of asset	Examples of components
Hollow-dependent fauna	Large forest owls, arboreal mammals, reptiles, bat community, forest birds
Important flora	Rare or threatened ground layer species, terrestrial orchid assemblage
Ground-dwelling mammals	Southern Brown Bandicoot

Condition

Key ecological attribute	Indicator	Current condition	Current trend	Future status
Age-class structure of canopy species	Growth-stage mix of forest systems	Good	→	Very Good
Bird assemblages	Species richness and occupancy of suitable habitat	Good	→	Very Good
Openness of herb forest and woodland understorey	Vegetation strata appropriate for site	Fair	↘	Very Good
Ground-dwelling and arboreal mammals	Species richness and occupancy of suitable habitat	Good	→	Very Good

Conservation outcome

Mixed Dry Forest and Woodland	Current condition	Desired trend	Future status
Over the 15 years to 2031, improve the growth-stage heterogeneity of canopy species and improve floristic diversity and composition, improve (and where needed restore) the open understorey of Granitic Hills Woodland EVC, and provide high-quality habitat for mammals and woodland birds.	Good	↗	Very Good

Wet Forest and Rainforest

Wet Forest and Rainforest is restricted to the foothills, mountain ranges and protected valleys within the Wilsons Promontory Park Landscape where rainfall exceeds 800 mm. Soils are generally clay loams with moderate to high levels of organic matter. The drier examples of this asset are dominated by medium to tall forests of Mountain Ash, Messmate, Mountain Grey Gum, Narrow-leaved Peppermint, Manna Gum, Shining Gum, and Silvertop Ash.

Where this asset grades into warm or cool temperate rainforest (or both) the canopy shifts to non-eucalypt species, including Lilly Pilly, Hazel Pomaderris, Stinkwood, and Myrtle Beech. Tall emergent trees of Blackwood are more likely to be present. The understorey ranges from a herb-rich understorey of pennyworts, starworts, geraniums, woodruffs and tussock grasses to a ferny understorey of Rough Tree-fern, Soft Tree-fern, Fishbone Water-fern, Common Ground-fern, Mother Shield-fern and Bat's Wing Fern. There is generally also a significant shrub layer present which may include Blanket-leaf, Musk Daisy-bush, Snowy Daisy-bush and Austral Mulberry, and understorey trees such as Blackwood and Silver Wattle.

The increase in fire frequency between the arrival of Europeans in the 1850s and the implementation of fire prevention and suppression policies in 1951 continues to influence the condition of this asset. Only the protected gullies that have escaped burning are in good condition. The exclusion of wildfire and planned fire from these areas along with actions to protect key threatened fauna and flora will ensure that this asset can continue to recover and improve its viability over time.

Wet Forest and Rainforest consists of a number of EVCs, including Montane Rocky Shrubland, Cool Temperate Rainforest. Warm Temperate Rainforest, Damp Forest, and Wet Forest. The main driver of condition within this asset is fire and disturbance from events such as flooding and extreme weather. The mitigation or removal of these drivers will result in the maturation of these forests and a marked increase in health and extent over the next century. There are extensive areas of collapsed Damp Forest and Wet Forest because of repeated fire in the first half of the 1900s. Cool Temperate Rainforest and Warm Temperate Rainforest EVCs were affected by the 2011 flood. The remaining areas of Wet Forest and Rainforest are stable or improving because of the exclusion of fire.

Nested assets

Seven nested assets are associated with this asset (see the table below). All these depend on the exclusion of fire to establish mature Wet Forest and Rainforest.

Type of asset	Examples of components
Hollow-dependent fauna	Large forest owls, arboreal mammals, bat communities, wet forest bird assemblage
Amphibians	Victorian Smooth Froglet
Spot-tailed Quoll	Recent unconfirmed sightings; last confirmed sighting in 1960 on the Yanakie Isthmus
Restricted or rainforest-dependent flora species	Myrtle Beech, Southern Sassafras
Invertebrates	South Gippsland Spiny Crayfish
Canopy-forming tall eucalypts	Mountain Ash and Southern Blue Gum
Ground-dwelling mammals	Southern Brown Bandicoot

Condition

Key ecological attribute	Indicator	Current condition	Current trend	Future status
Age-class structure of canopy species	Growth-stage mix of forest systems	Good	→	Good
Ground-dwelling and arboreal mammals	Species richness and occupancy of suitable habitat	Good	→	Good
Bird assemblages	Species richness and occupancy of suitable habitat	Good	→	Good
Rainforest extent	Area	Very Good	→	Very Good
Rare and threatened plants	Presence / absence of populations	Good	→	Very Good

Conservation outcome

Wet Forest and Rainforest	Current condition	Desired trend	Future status
Over the 15 years to 2031, maintain Rainforest extent and increase the extent of older growth-stages of Wet Forest and Rainforest canopy species, increase the capacity to provide critical habitat features (such as hollows), and maintain the diversity of flora and fauna that depend on rainforest and wet forest.	Good	↗	Very Good

Coastal Grassy Woodland

When in good condition, Coastal Grassy Woodland has a grassy understorey dominated by perennial woody plants over 2 m tall. For 4000 years preceding pastoral occupation, the Yanakie Isthmus was covered by well-grassed Drooping She-oak and Coast Banksia woodland. Although both of these overstorey species are still present, litter, logs, mosses and lichens have replaced the grassy understorey in most areas. Many of the grass species, including Kangaroo Grass and Bristly Wallaby Grass, persist in the slashed interdune corridors, but Blady Grass and some other grasses have largely disappeared.

Extensive Coast Banksia dieback has occurred throughout Coastal Grassy Woodland. Along with fire suppression and over-grazing, this has resulted in much of it being degraded through loss of canopy cover and changes in understorey composition. All age classes of canopy have been affected, but the greatest loss has been older trees with a diameter of more than 60 cm. Little or no regeneration of these key canopy species is evident, and most of the trees that are present are senescent. Where seedlings do exist, the dense growth of Coast Tea-tree and browsing by native and introduced herbivores is inhibiting establishment and survival, in many cases preventing these seedlings from reaching maturity.

At present there is little or no regeneration of native grass species. The reintroduction and ecological application of fire in combination with management of grazing pressure will be essential to restore this important asset.

The Coastal Grassy Woodland asset consists of a number of EVCs, including Calcareous Swale Grassland, Coast Banksia Woodland, Coastal Alkaline Scrub and Damp Sands Herb-rich Woodland. The main driver of condition within Coastal Grassy Woodland is fire. The timing, intensity and frequency of fire all affect condition. Grazing pressure is another driver of condition.

The condition of this asset varies in the Park Landscape. Higher-quality examples are associated with the presence of controlled mosaic ecological fire, as opposed to large-scale fires or the long-term absence of fire.

The reasons for the continuing decline of canopy species (especially Coast Banksia) are unclear, although the absence of soil engineers (soil-modifying plants and animals) may be a factor. This may reduce the availability of appropriate niches for regeneration and also reduce soil health, thereby

limiting regeneration canopy species and their long-term survival. In the longer term, reintroducing and supplementing existing populations of soil engineers is likely to be required to increase this capacity. The continuing decline in the condition of these woodlands is also a result of historical and ongoing overgrazing in the absence of fire, with subsequent invasion of Coast Tea-tree and Coast Wattle. This was exacerbated by wildfires in February 2009 that resulted in mass regeneration of Coast Tea-tree. The condition of some examples of these EVCs are stable or improving because of the increasing application of ecological fire, specifically under the Coastal Grassy Woodland Restoration program.

Nested assets

Two nested assets are identified for this system (see the table below). All species in these nested assets depend on a diverse understorey composition and structure, which is driven by appropriate fire and grazing regimes.

Type of asset	Examples of components
Floristically diverse ground layer	Leafy Greenhood, Kangaroo Grass, Blady Grass, wallaby-grasses
Small mammals	New Holland Mouse, Southern Brown Bandicoot, White-footed Dunnart, Eastern Pygmy-possum

Condition

Key ecological attribute	Indicator	Current condition	Current trend	Future status
Diverse age-class structure of canopy species	Presence of different age classes in each of the dominant tree species	Poor	↘	Fair
Vegetation age-class structure, composition and diversity	Extent of canopy cover of mature and senescent canopy species as a percentage of 1750 woodland landscape	Poor	↘	Good
Diverse floristic ground layer	Cover of key functional floristic groups	Poor	↘	Fair
Open habitat structure	Cover of Coast Tea-tree and other invasive shrubs	Poor	↗	Good
Small mammal diversity	New Holland Mouse sites	Poor	→	Fair

Conservation outcome

Coastal Grassy Woodland	Current condition	Desired trend	Future status
By 2031, increase the area of open woodland and the age-class diversity of focal canopy species, and develop a diverse ground layer (including connected native grasses) that provides a varied habitat for ground-dwelling mammals.	Poor	↗	Good

Riparian and Wetland

This asset includes a range of EVCs that occupy seasonally flooded alluvial flats of major rivers and streams under an annual rainfall regime of 700–1000 mm, as well as saltmarsh, mangrove and estuarine habitats. The soils are fertile, well-watered silty loams often high in organic matter. Saltmarsh and estuarine habitats are important feeding grounds for shorebirds and migratory birds, and mangrove and estuarine habitats are important habitats for many fish species.

The Riparian and Wetland asset can be divided into those EVCs driven by tidal (or saline) hydrological regimes and those driven by freshwater regimes. Coastal EVCs are likely to be impacted by changes associated with climate change, including sea level rise, increased surges and changes in water temperature. Freshwater EVCs are also likely to be impacted by changes associated with climate change, such as reduced inflows or increased intensity of inflows. These EVCs were affected by the 2011 floods, which resulted in significant washout and shifting of waterways. Although they are now in a stable or improving condition, they are likely to be adversely impacted by the effects of climate change, especially by increases in the intensity of storms and droughts.

The main driver of condition within this asset is water regimes: timing, duration, frequency and quality are all determinants of condition. The condition of the Riparian and Wetland asset varies across the park landscape. Higher-quality examples are associated with unmodified hydrological regimes. However, hydrological regimes can change dramatically following major flood events (as in 2011), with washouts and shifts of waterways occurring (e.g. in the perched lake behind Five Mile Beach), which may result in the establishment of new hydrological regimes, water bodies and riparian systems.

The asset also includes the Riparian Forest EVC which has been subject to other influences on its condition including the 2009 fire in the Five Mile Beach area, and a combination of historic logging and fire in the Sealers Cove area. Fragmentation of this community is also increased by the establishment of trails by introduced herbivores such as Hog Deer and native herbivores such as Black Wallabies. Managing these impacts is vital to continue to increase water quality and provide drought refugia for a range of terrestrial species.

Nested assets

Six nested assets have been identified for the Riparian and Wetland asset. A diversity of riparian and wetland vegetation types provide drought refugia for a range of species in a largely unmodified riparian system. All these species depend on the naturalness of aquatic and semi-aquatic systems, which provide high-quality water and relatively unaltered hydrological regimes.

Type of asset	Examples of components
Rare and restricted aquatic and semi-aquatic invertebrates	South Gippsland Spiny Crayfish, Lilly Pilly Burrowing Crayfish
Wetland-dependent birds	Lewin's Rail, Intermediate Egret, Eastern Great Egret
Wetland-dependent flora	Wet Heathland EVC
Important aquatic fauna	Threatened fish, including Spotted Galaxias
Estuarine fish assemblages	

Condition

Key ecological attribute	Indicator	Current condition	Current trend	Future status
Connectedness	Game trail extent	Fair	↗	Very Good
Water quality, freshwater fish and invertebrate assemblages	Index of Stream Condition	Good	↗	Very Good
Vegetation composition and diversity	Availability of drought refugia	Fair	↗	Very Good

Conservation outcome

Riparian and Wetland	Current condition	Desired trend	Future status
By 2031, improve water quality and habitat quality to support diverse riparian and wetland flora and fauna.	Fair	↗	Very Good

Coastal (including islands)

This asset includes the vegetated areas of sandy beaches, coastal dune grasslands and scrub, and shrublands and grasslands on exposed coastal cliffs and headlands, including on the 16 coastal islands that surround Wilsons Promontory.

Of particular importance are the Australian Fur Seal and New Zealand Fur Seals which breed on some islands, play a pivotal role as marine apex predators and (along with seabirds) are an important vector for the transfer of marine nutrients to the terrestrial ecosystems of the islands. These seals also represent an important economic resource for ecotourism operators, particularly the breeding population on Kanowna Island, which is one of the four largest such colonies in Victoria. The current extent of the breeding population is expanding, with an additional population now occurring at Rag Island. This recolonisation is indicating that fur seal populations are still recovering from the severe over-exploitation of the commercial sealing era (1798–1825); the current population is only about 30% of its pre-sealing size.

There are also two breeding colonies of the protected Little Penguin on Anser and Wattle Islands, and three of the islands within the Marine National Park are recognised as important breeding sites for a range of other seabird species including the Crested Tern, Silver Gull, Pacific Gull, Short-tailed Shearwater, Fairy Prion and Common Diving-petrel.

The islands also provide refugia from predation for species such as the Swamp Antechinus; abundant populations inhabit a number of islands in the absence of predators.

This asset also includes grasses and halophytes (succulents) that colonise and stabilise the foredunes of ocean beaches which provide important habitat for nesting for Hooded Plover.

The main drivers of condition in this asset are the relative isolation of coastal habitats and the level of disturbance (including weed invasion).

Higher-quality examples of this asset occur on isolated coastal islands, including Shellback, Cleft and Wattle Islands, where habitats are subject to minimal disturbance by humans and there are no introduced predators. The more disturbed areas are generally associated with areas of greater human visitation, such as Norman Bay and Leonard Bay, although a number of islands, including Kanowna, Rabbit and Little Rabbit Islands are in poorer condition because of the invasion of coastal weeds, which are spread by seabirds.

Nested assets

Three nested assets have been identified for this asset (see the table below).

Type of asset	Examples of components
Fur seal breeding populations	Australian Fur Seal, New Zealand Fur Seal
Coastal birds	Colonial nesting seabirds, dune-nesting shorebirds, beach-nesting birds, shorebirds
Ground-dwelling mammals	Swamp Antechinus

Condition

Key ecological attribute	Indicator	Current condition	Current trend	Future status
Fur seal breeding populations	Population trends	Very Good	→	Very Good
Fur seal haul-out sites	Site suitability	Very Good	→	Very Good
Colonial nesting seabirds	Colony extent Condition of nesting habitat	Very Good	↘	Very Good
Species richness of birds on islands	Average richness across a subset of islands	Very Good	→	Very Good
Breeding populations of resident shorebirds	Breeding success of Hooded Plover	Very Good	→	Very Good
Small mammal abundance	Swamp Antechinus abundance	Very Good	→	Very Good

Conservation outcome

Coastal (including islands)	Current condition	Desired trend	Future status
Over the 15 years to 2031, maintain suitable conditions for fur seal haul-outs and breeding, and maintain the extent and heterogeneity of coastal vegetation to provide suitable nesting habitat for colonial nesting seabirds, shorebirds and ground-dwelling mammals.	Very Good	→	Very Good

Unvegetated Soft Sediments

Intertidal and subtidal soft sediments are widespread around Wilsons Promontory and are mostly unvegetated. Soft sediments are predominantly inhabited by infauna (small crustaceans and worms that burrow into the sand), meiofauna (very small animals that live between the sand grains), and a range of bottom-dwelling fish including skates and rays. Drift algae (beach wrack) and algae attached to shells and debris are also common on soft sediments. Beach wrack is a significant source of food for scavenging birds, and contribute to the detrital cycle that nourishes many of the invertebrates, such as bivalves, living in the sand.

In protected and sheltered waters, such as in bays (especially adjacent to estuaries) and behind headlands, fine particles in the water settle out, forming nutrient-rich mud. At low tide some of these fine sediments are exposed, providing opportunities for many shorebirds and waders, including a number of species of high conservation significance that migrate annually from the northern hemisphere, to feed on animals hidden within the sediments. At high tide fish also move in to feed on the intertidal sediments in turn providing food for sea birds and larger fish.

In areas of higher wave energy or strong tidal currents, such as around the southern tip of the Promontory, sediments are much coarser and form vast sandy plains. Tides form ripples of sand along the bottom, appearing as large rolling waves of sand in deep water. These sandy areas include intertidal areas of beaches that are important foraging areas for a range of shorebirds, including the threatened Hooded Plover. Infauna, including marine worms and bivalves such as pipis, can be found in intertidal sandy plains, while animals such as scallops live in deeper waters, and many fish and other larger animals forage in these areas. While there have been some surveys of subtidal soft sediment communities at Wilsons Promontory there are still some considerable knowledge gaps. More information is currently being gathered as part of Parks Victoria's Research Partner Panel program.

As there are very few threats to marine ecosystems in the Wilsons Promontory Park Landscape they are believed to be in good condition. However, during the life of the plan an understanding of the role of the drivers of this asset, its condition, and the nested assets that occur within it, will be established.

Nested assets

Three nested assets have been identified for this asset (see the table below).

Type of asset	Examples of components
Characteristic invertebrate communities	Soldier crabs, moon shells
Characteristic demersal fish communities	Sparsely-Spotted Stingaree, Southern Sand Flathead
Shorebirds	Sooty Oystercatcher, Red-capped Plover

Condition

Key ecological attribute	Indicator	Current condition	Current trend	Future status
Abundance of foraging shorebirds	Population trend of shorebird species	Very Good	→	Very Good
Other KEAs have not yet been identified*	Other indicators have not yet been identified*	?	?	?

*Key knowledge gaps are to be addressed through collaborative partnerships.

Conservation outcome

Unvegetated Soft Sediments	Current condition	Desired trend	Future status
Over the 15 years to 2031, maintain (1) natural wrack deposition patterns and characteristic invertebrate communities in intertidal soft sediments to support foraging shorebirds, and (2) characteristic demersal fish and invertebrate communities associated with subtidal soft sediments, in the Wilsons Promontory marine protected areas.	Very Good	→	Very Good

Subtidal Reefs

The subtidal rocky reefs around Wilsons Promontory are largely extensions of the granitic mass of the terrestrial landscape. They form a complex underwater habitat that includes many areas hidden from sunlight in underwater canyons and caves, or are part of the rocky seafloor.

In areas where there is plenty of sunlight, subtidal reefs are covered in a wide range of marine algae, including large brown algae such as Bull Kelp or Crayweed that form underwater kelp forests. Beneath the larger kelps, smaller soft red algae are abundant where wave exposure is moderate, while in area of high wave energy only encrusting algae grazed by tough molluscs are likely to be seen.

In deeper water or where sunlight is limited, the subtidal reefs are some of the most spectacular and pristine in Victoria. They are largely covered in a wide range of sessile invertebrates such as Yellow Zoanthids, brightly coloured sponges, a range of soft corals, and many other filter feeding organisms like colonial ascidians and hydroids.

Sessile invertebrates such as sponges, as well as the canopy-forming algae, are important habitats and food sources for a range of other invertebrates, including sea urchins, sea stars, and bryozoans, and reef fish such as Old Wife, Bastard Trumpeter, Rosy Perch, Southern Maori Wrasse, Southern Hulafish, Sea Sweep, and many species of leatherjackets.

As with other marine systems, our understanding of the drivers of condition of Subtidal Reefs and the current condition of the asset is incomplete. As there are currently few threats to these systems there has been an assumption that they are in good condition. This assumption will be tested during the life of the plan by establishing an understanding of the role of the drivers of this system, its condition, and the nested assets that occur within it.

Nested assets

Five nested assets have been identified for Subtidal Reefs (see the table below).

Type of asset	Examples of components
Assemblages of species at the limit of their distribution	
Beds dominated by brown macroalgae	
Large mobile fish	Sharks, rays
Mobile macroinvertebrates	
Sessile invertebrate communities	Sponges, gorgonians, zoanthids, ascidians, bryozoans

Condition

Key ecological attribute	Indicator	Current condition	Current trend	Future status
Assemblages of species at the limit of their distribution (eastern, western and northern limits)	Presence and abundance of characteristic species at the edge of their distribution	Very Good	→	Very Good
Beds dominated by brown macroalgae	Total extent, cover and patchiness	Very Good	→	Very Good
Large mobile fish, including sharks and rays	Number and abundance of species per transect	Very Good	→	Very Good
Mobile macroinvertebrates	Size class distribution and abundance	Very Good	→	Very Good
Sessile invertebrate communities (dense sessile invertebrate assemblages such as sponges, gorgonians, zoanthids, ascidians, and bryozoans)	Diversity and cover of sessile invertebrates	Very Good	→	Very Good

Conservation outcome

Subtidal Reefs	Current condition	Desired trend	Future status
Over the 15 years to 2031, maintain the highly productive dense stands of habitat-forming macroalgae that provide cover and food for the diverse assemblage of fish and macroinvertebrates inhabiting subtidal reefs.	Very Good	→	Very Good

Water Column

Many animals and plants live in the open waters of Bass Strait that surround Wilsons Promontory. These waters are affected by strong winds, powerful tidal currents, and large waves. Open waters are inhabited by organisms that can swim strongly, such as larger fish, seals, whales, and dolphins, as well as a myriad of weak swimmers that make up the plankton community, such as the larval stages of fish and invertebrates that drift through these areas.

The open waters of the Wilsons Promontory Marine National Park and its surrounds are notable as a haven for a number of larger fish species, including the endangered Great White Shark that breeds in the waters around the Promontory and uses the area to the east as an important nursery area. These sharks feed on larger fish and also prey on fur seals that breed on the coastal islands.

The open waters within the Park Landscape are also widely used for foraging by seabirds, including Little Penguins, Australasian Gannets, and a number of threatened species, including albatrosses. Many of these species may use coastal islands for breeding but spend long periods of time over open waters.

Because of the often highly transient nature of the fauna occupying the Water Column, it is not always clear what role the Wilsons Promontory environment plays in supporting some species that depend on this asset. Examples of such species include local populations of Kingfish and Bottlenose Dolphins, and require further investigation.

The main drivers of the health of the Water Column are factors that influence the water quality and major oceanic processes, including currents and upwellings. While water quality at locations of higher human activity such as camping areas has been identified as a concern, the very limited alteration to natural habitats on land means that the overall quality of the water is very high. Physical aspects of the water such as temperature and pH are driven largely by factors such as the strength of water currents, especially the East Australian Current. Changes to marine systems associated with climate change are already being observed, including changes in currents and the consequent arrival of species from other regions. The importance of managing anthropogenic impacts, including fishing, are likely to increase in order to ensure the resilience of existing species, many of which are at the limits of their distribution and have nowhere to migrate.

Nested assets

Three nested assets have been identified for the Water Column (see the table below).

Type of asset	Examples of components
Seabirds	Little Penguin, Australasian Gannet
Fur seals	Australian Fur Seals, New Zealand Fur Seals
Great White Shark	

Condition

Key ecological attribute	Indicator	Current condition	Current trend	Future status
Fur seal breeding populations	Population trend	Very Good	→	Very Good
Size of Great White Shark population	Abundance / sightings of Great White Sharks	Very Good	→	Very Good

Conservation outcome

Water Column	Current condition	Desired trend	Future status
Over the 15 years to 2031, maintain a well-connected and highly productive water column ecosystem in the Marine National Park that supports planktonic health and nutrient cycles, to provide the trophic base for higher-order species including the Great White Shark, fur seals, seabirds, whales and dolphins.	Very Good	→	Very Good

Seagrass Beds

Seagrasses are flowering plants that form underwater meadows in the sheltered parts of bays and estuaries. They grow in silt or sand, where their roots help bind the unstable sea bed, as well as on some exposed rocky coasts, where different species are found.

In the Wilsons Promontory Park Landscape only a few areas are dominated by seagrasses, including some patches within Refuge and Sealers Cove, and in some of the estuaries. Seagrass beds of Paddleweed and Dark-stem Eelgrass are restricted to sheltered waters, in particular Waterloo and Oberon Bays. Strapweed has been recorded just outside the Marine National Park in shallow water at Great Glennie Island and Norman Bay. (The extensive seagrass beds in Corner Inlet are not within this Park Landscape.)

Seagrass provides a home and food source for a range of marine life, including many invertebrates such as marine worms, amphipods, snails, and crabs scavenge seagrass detritus. A variety of fish have been recorded on seagrass and associated sand substrate, including the Southern Goatfish, Silverbelly, Wide-bodied Pipefish, Spotted Pipefish, Slender Weed Whiting, Blue-throated Wrasses, gobies, weedfish and Toothbrush Leatherjacket. These in turn attract seabirds that can catch fish in the relatively shallow waters.

Nested assets

Two nested assets have been identified for Seagrass Beds (see the table below).

Type of asset	Examples of components
Seagrass plant communities	Dark-stem Eelgrass, Narrow-leaf Eelgrass, Paddleweed, Strapweed
Pipefish	Wide-bodied Pipefish, Spotted Pipefish (EPBC listed)

Condition

Key ecological attribute	Indicator	Current condition	Current Trend	Future status
Seagrass cover	Percentage cover	Very Good	→	Very Good
Seagrass bed extent	Extent	Very Good	→	Very Good
Seagrass bed patchiness	Patchiness	Very Good	→	Very Good

Conservation outcome

Seagrass Beds	Current condition	Desired trend	Future status
Over the 15 years to 2031, maintain the extent, cover and connectivity of intertidal and subtidal seagrass communities in order to support an abundant and diverse assemblage of invertebrate and fish communities including listed pipefish species in the seagrass beds of the Marine National Park.	Very Good	→	Very Good

6 Threats to conservation outcomes

6.1 Methodology for assessing threats

Parks Victoria's method for assessing threats broadly follows the process outlined in the current standard for risk management (AS/NZS ISO 31000: 2009). Threats to conservation assets are assessed against their impact on achieving the defined conservation outcome for each asset and their direct impact on key ecological attributes. The assessment is a three-step process.

1 **Identify threats to conservation outcomes.**

Threats to conservation assets are identified by assessing the threat agents as well as the impact of the threatening process on key ecological attributes. For example, the effect of foxes (agent) is predation (process), which reduces the abundance and diversity of small ground-dwelling fauna (impact).

2 **Classify threats.**

Threats are classified according to a risk assessment matrix that defines both the likelihood and ecological consequence of the identified threats impacting on key ecological attributes (Carey et al. 2007). Threats are ranked as extreme, high, moderate or low risk. Priority areas for the risk abatement of threats are mapped.

3 **Develop threat management objectives.**

Threat management objectives are developed to mitigate the impact of the threats that are the greatest risk to conservation assets. Threat management objectives specify the change in high risk threats required to achieve a particular conservation outcome for a conservation asset over the next five years.

6.2 Threats to conservation assets

A broad range of key threats to the conservation assets of the Wilsons Promontory Park Landscape were identified by participants in the conservation action planning workshops. These threats have been assessed and ranked using the methodology described above (Table 6.1). The highest-ranked (extreme) threats identified out of this process are discussed in the following sections. These are the high-priority threats that will be directly addressed through this plan.

The key threats to the terrestrial conservation assets relate to impacts on the key ecological attributes, and are generally considered to be those with the greatest impact on the regeneration, recruitment and restoration of species and ecological communities. This focuses management on the need to ensure that species and ecological communities are functioning within acceptable bounds to maintain key species (e.g. Coast Banksia in Coastal Grassy Woodland) and threatened flora and fauna populations (e.g. small mammals, heathland birds, colonial nesting birds).

Key threats to the marine conservation assets of the Wilsons Promontory Park Landscape have been identified using a risk framework similar to that applied to terrestrial assets.

Table 6.1 Key threats to the conservation assets of the Wilsons Promontory Park Landscape.

Key threat	Conservation asset*										Overall threat rating
	Heathland	Coastal Grassy Woodland	Mixed Dry Forest and Woodland	Wet Forest and Rainforest	Riparian and Wetland	Coastal (including islands)	Subtidal Reefs	Water Column	Seagrass Beds	Unvegetated Soft Sediments	
Total grazing and browsing pressure	Mod	Ext	Ext	Ext	Ext	Ext					Extreme
Inappropriate fire regimes	Ext	Ext	Ext	Ext	Ext	Mod					Extreme
Marine invasive or overabundant species					Ext		Ext	Low	Ext	Mod	Extreme
Predation by cats and foxes	Ext		Ext	Ext		High	Low	Low	Low	Low	Extreme
Weed invasion	High	Ext	High	Mod	Ext	Ext					Extreme
Pathogens and diseases	High		Ext	Ext		Mod	High	Low	Mod	Low	High
Pollution					High	High	High	High	High	High	High
Illegal activities					High		High	High	High	High	High
Climate change	Low	Low	Low	Low	High	High	High	Low	High	Low	High
Impacts of management	High	High	High	High	Mod	High					High
Natural resource extraction and access					Mod	High	High	High	High	High	High
Extreme weather events			High	High	Mod	Mod	Low	Low	Low	Low	Moderate
Inappropriate water regime / water quality					Ext						Moderate
Habitat fragmentation					Ext						Moderate
External land use impacts		Low			Ext						Moderate
Physical disturbance (to populations or habitats)					Low		Low	Low	Low	Mod	Low

* blank means not identified as a threat

Total grazing and browsing pressure

Threat description

Total grazing and browsing pressure poses an extreme risk to a range of assets across the Wilsons Promontory Park Landscape. This threat contributes to a range of factors which have a clear and demonstrated impact on the regeneration of Woodland and Forest Ecosystems. Managing this threat is an essential factor in allowing the regeneration of key canopy species (e.g. Coast Banksia) and increase the health of assets through the establishment of diverse age class structures (e.g. Mixed Dry Forest and Woodland) across a range of systems. This will also help to restore canopies and diverse connected ground layers in areas where there has been substantial impact (e.g. canopy loss in Coastal Grassy Woodland).

The effective management of this threat will involve the reduction and effective elimination of grazing and browsing pressure by introduced herbivores, including European Rabbits, Hog Deer and Sambar Deer, and the management of grazing and browsing pressure by native herbivores to support the regeneration of these significant assets .

Threat objective

By 2021, ensure that total grazing pressure in Coastal Grassy Woodland, Mixed Dry Forest and Woodland, Wet Forest and Rainforest, and Riparian and Wetland is managed to improve key ecological attributes.

Inappropriate fire regimes

Threat description

Inappropriate fire poses an extreme risk to a range of assets across the Wilsons Promontory Park Landscape. The primary threat is the over-application of fire or the exclusion of fire. Inappropriate fire regimes skew growth stages and reduce heterogeneity of vegetation and habitat, which affects the ability of many species to persist and survive in the landscape. Applying fire in the landscape to ensure that assets are maintained within tolerable fire Intervals and within appropriate intensity, timing and season will help to ensure that the variability of growth stages is enhanced and that this threat is mitigated.

Fire management can have an impact on conservation assets through activities such as track and control line establishment for bushfire suppression and planned burning. Fire management vehicles can also spread pathogens and weeds. In the Wilsons Promontory Park Landscape, fire should be managed through existing roads and tracks where possible, in order to limit the physical impact of fire management activities and also the spread of pathogens and weeds.

Threat objective

By 2021, increase the area and extent of Heathland, Coastal Grassy Woodland, Mixed Dry Forest and Woodland, Wet Forest and Rainforest, and Riparian and Wetland assets, which are managed in accordance with tolerable fire intervals, and increase the diversity of appropriate growth stages.

Marine invasive or overabundant species

Threat description

Marine invasive or overabundant species pose an extreme risk to a range of marine assets in the Wilsons Promontory Park Landscape. This threat involves a range of factors which have a clear and demonstrated impact on the regeneration health of marine ecosystems. Managing this threat is essential for regenerating key canopy species in Subtidal Reefs (e.g. brown macroalgae) and increasing the health of other marine assets. The effective management of this threat will involve the reduction and effective elimination of a number of key invasive species and the management of grazing pressure by native species to ensure that regeneration of these significant assets can occur.

Threat objective

By 2021, ensure that the impact of marine invasive or overabundant species on the health of marine assets is managed to promote the improvement of key ecological attributes.

Predation by foxes and cats

Threat description

Feral Cats and Red Foxes pose an extreme risk to a range of assets across the Wilsons Promontory Park Landscape. This threat primarily affects a range of ecosystems by degrading faunal assemblages, especially those that support ecological processes. These impacts occur in all terrestrial assets and have contributed to the decline in the population size, abundance and diversity of ground-dwelling fauna and bird assemblages. It also skews populations of species that are more resilient to predation pressures. Programs that focus on single predator species may have undesirable consequences for other predators as well as prey species. For this reason the control of terrestrial predation pressures in an integrated manner is an important step to effectively managing this threat.

There is a gap in our knowledge about the roles of native predators, especially those that have been lost from the Park Landscape. Building this knowledge will support the ongoing effective management of overall predation pressure.

Threat objective

By 2021, reduce the impact of predation sufficiently to ensure that predation-sensitive species occupy the majority of their potential habitat.

Weed invasion

Threat description

The threat of weeds will change over time with shifting climates, the introduction of new weeds, and the spread of existing weeds. It is essential to have an appropriate monitoring program coupled with appropriate resources to directly treat and eradicate new populations of weeds that are likely to affect key ecological attributes.

A number of significant weeds are already having a direct impacting on assets, and limiting recovery and restoration of assets, particularly Coastal (including islands) where species such as Mirror Bush, Sea Spurge and woody weeds are limiting habitat availability and quality. Focusing weed control on existing weed species that are known to be degrading key ecological attributes will result in a significant improvement in the condition of assets.

Threat objective

By 2021, eradicate any new and emerging weeds wherever they occur and control existing weeds at sites where key ecological attributes are at risk.

7 Conservation strategies

7.1 Prioritising conservation strategies

A broad range of conservation strategies have been considered, including those in existing park management plans and regional catchment strategies as well as additional strategies identified by regional staff and conservation partners.

These strategies have been assessed for their impact, feasibility and cost in relation to achieving the conservation outcomes identified in this plan. Through this process, strategies have been ranked as low, medium or high priority. High-priority strategies have been further ranked through a structured decision-making process to establish the greatest overall impact and feasibility within a given resource allocation. A full list of strategies and their prioritisation is presented in Appendix B. Each strategy may be suitable for further refinement or development with conservation partners and stakeholders who wish to further support conservation outcomes in the Wilsons Promontory Park Landscape.

Strategies prioritised through this process are:

- Coastal Grassy Woodland restoration
- Landscape-scale control of deer
- Large-scale fox control and targeted cat control
- Marine management
- Integrated weed program
- Landscape-scale ecological fire program
- Collaborative partnerships to address key knowledge gaps.

7.2 Priority strategies

Priority strategies have been further developed to establish guiding statements around the key implementation components of each strategy. These were tested through the development of results chains, which test the logic of the strategy in a stepwise manner for delivering the desired outcomes. These results chains were used to develop key implementation milestones for each strategy, which include measureable outputs and outcomes that help managers to understand the impacts of management on improving the viability of conservation assets and managing threats.

The following pages provide a description of the priority strategies within the Wilsons Promontory Park Landscape that are required to achieve the desired outcomes. The descriptions are set out in the following format, and definitions are provided where necessary.

Conservation strategy

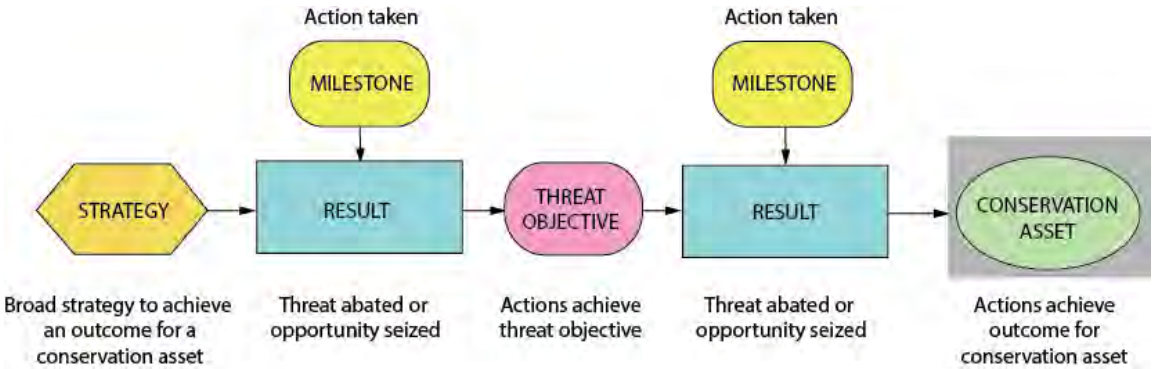
Conservation strategy development has focused on addressing key threats or improving the health of key conservation assets, or both. The development of these priority strategies has been undertaken using results chains to ensure that the actions that are defined within the strategy are those that will lead directly to addressing the objectives and conservation outcomes of this plan. Each strategy is captured in a statement which defines:

- the impacts of the strategy on key threats
- the approaches to be applied
- the measures of success
- the impact of the strategy on conservation outcomes.

Results chain

Results chains have been developed for all conservation strategies. They express the relationship between the conservation strategy, identified threats and an improvement in the desired state of conservation assets, as well as the assumptions that underpin how we think a conservation strategy will contribute to maintaining one or more conservation assets. The results chain helps visualise and identify some initial monitoring indicators and milestones.

Below is a simple example of a results chain.



Implementation milestones

- Milestone from results chain.
  - Statement of what implementation success looks like.

Coastal Grassy Woodland restoration

The Coastal Grassy Woodland restoration program involves the integrated application of fire with management of total grazing pressure to ensure the restoration of canopy and understorey structure. Total grazing management will involve extensive control of introduced herbivores and the management of native herbivores.

The control of introduced grazers will include implementing a landscape-scale deer management plan and increased efforts to control rabbits, to ensure that deer abundance does not compromise the Coastal Grassy Woodland target and rabbit abundance is less than one per spotlight kilometre.

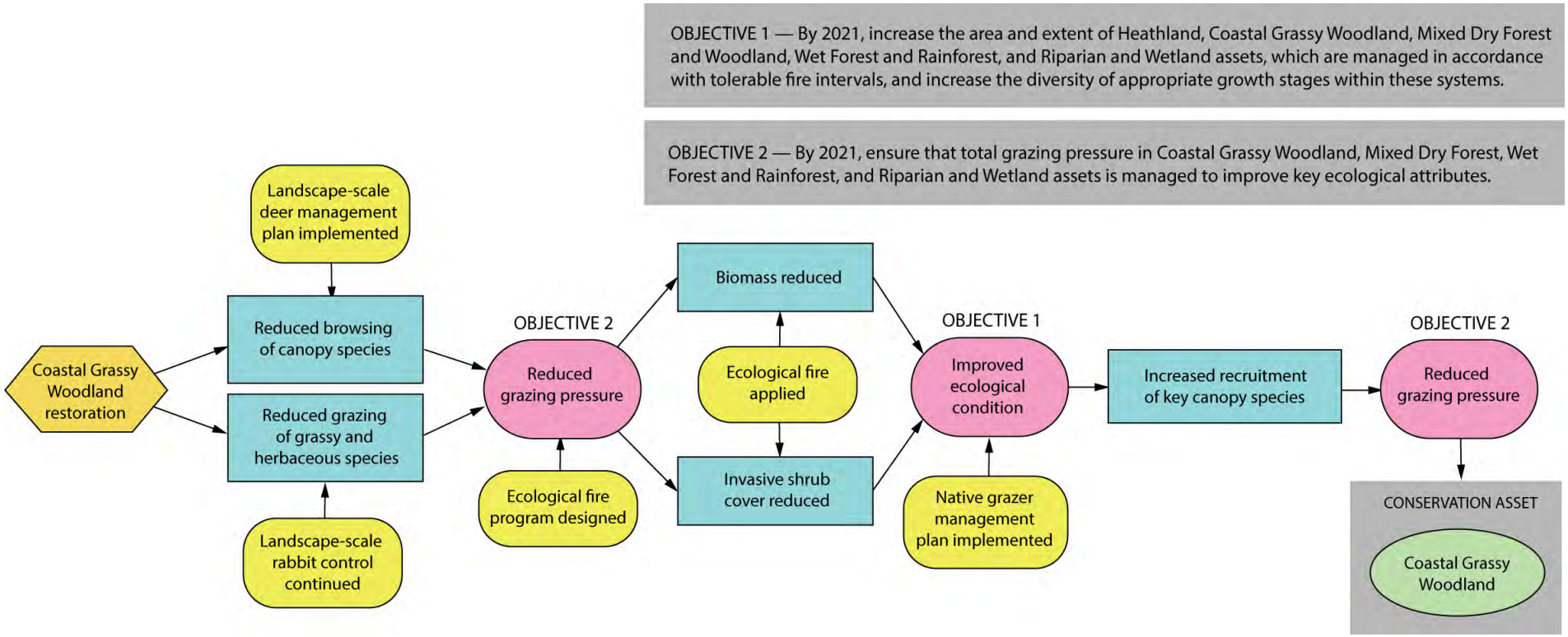
In combination with these programs, ecological fire is to be applied to reduce the cover of Coast Tea-tree, increase the recruitment of canopy species and increase the cover of the grassy ground layer. Fire is to be applied in a mosaic arrangement, with a key outcome being the expansion of New Holland Mouse populations. Where fire is applied, native grazer populations will be managed to levels that ensure that the grassy ground layer and key canopy species are able to regenerate following fire. If regeneration does not occur, canopy species may have to be planted. Despite initial efforts to implement these programs, dieback of Coast Banksia is still occurring, and the cause is not understood. A continuing investigation into the cause of this dieback is needed, in combination with the above approach.

Although beyond the scope of this plan, the reintroduction of native predators such as the Spot-tailed Quoll, Eastern Quoll and Dingo, together with mammals in the critical weight range (including soil engineers) such as the Short-beaked Echidna, New Holland Mouse and Southern Brown Bandicoot, in key locations may be a longer-term outcome following the effective ongoing control of introduced predators. The aim would be to improve the regenerative capacity of the woodlands, including improvements in soil health.

Conservation outcomes

This strategy will ensure that the restoration of canopy and understorey species (including grasses) can occur so that the full range of native species in this Coastal Grassy Woodland can flourish.

Results chain



Implementation milestones

Key milestones (yellow boxes in the results chain) for the implementation of this strategy are listed below:

- Landscape-scale deer management plan implemented.
  - Deer management plan is developed and implemented in Coastal Grassy Woodland to reduce deer abundance to a level that has no measurable detrimental impact on this asset and allows an increase the rate of regeneration of woodland canopy species.
- Landscape-scale rabbit control continued.
  - Rabbit control in Coastal Grassy Woodland is implemented to maintain rabbit numbers under one per spotlight kilometre, to increase the rate of regeneration of woodland canopy species and diverse understorey.
- Ecological fire program designed.
  - The Fire Operations Plan includes an ecological fire program for Coastal Grassy Woodland that aims to expand New Holland Mouse habitat and restore the woodland canopy and a diverse understorey.
- Ecological fire applied.
  - Fire is applied in a mosaic pattern, targeting areas with a closed tea-tree canopy to expand New Holland Mouse populations and restore the woodland canopy and a diverse understorey.
- Native herbivore management plan implemented.
  - Native herbivore management plan is endorsed and implemented, with strategies that will reduce the density of native herbivores to a level that allows the restoration of the woodland canopy and a diverse understorey.

Landscape-scale control of deer

Landscape-scale deer management involves an integrated approach to the control of Hog Deer including building community awareness, continued engagement of volunteer hunters, and the use of specialist contractors to reduce grazing and browsing pressure.

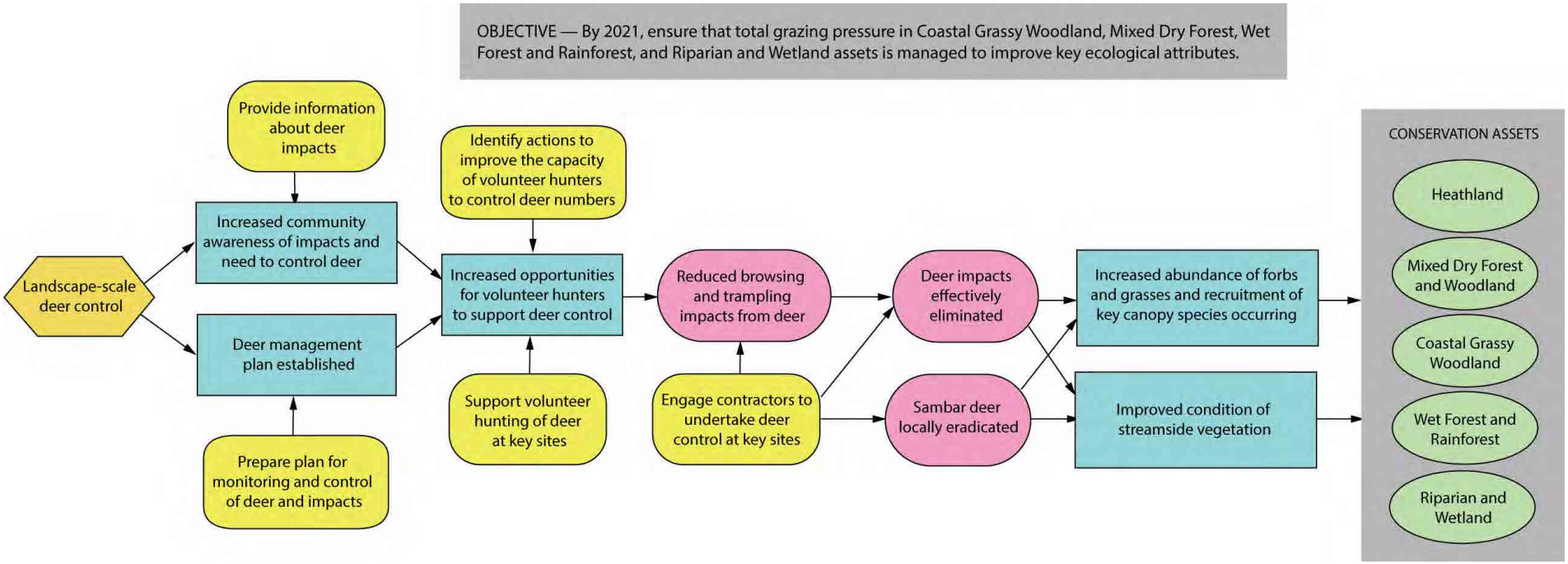
Increasing community awareness of the historical and ongoing impacts of Hog deer on the significant assets of the Wilsons Promontory Park Landscape is an important first step in ensuring that control activities are able to be implemented successfully. Targeting control activities at high-value sites where deer are having the greatest impact will maximise conservation outcomes. In locations where volunteers cannot reduce deer numbers to a level that effectively controls their impact on the recruitment of key canopy species in Coastal Grassy Woodland, Mixed Dry Forest and Woodland, Wet Forest and Rainforest, and Riparian and Wetland assets, additional control by specialist contractors will be needed.

The presence of Sambar Deer has also been confirmed recently, and it is assumed that they are at a level where they can be locally eradicated

Conservation outcomes

The outcome of this strategy will be the regeneration of key canopy species and an increase in the diversity and viability of all terrestrial assets. The strategy needs to be implemented with other strategies that seek to manage other aspects of total grazing and browsing pressure.

Results chain



Implementation milestones

- Provide information about deer impacts.
  - People who visit the Park Landscape will be made aware of the need to effectively manage deer impacts to allow for the regeneration of key canopy species in terrestrial assets.
- Prepare plan for monitoring and control of deer impacts.
  - The density of Hog Deer that effectively eliminates their impacts is determined, and areas suitable for control by volunteers or specialist contractors are identified.
  - The distribution of Sambar Deer is confirmed, with a goal of eradication from the landscape.
- Identify actions to improve the capacity of volunteers to control deer numbers.
  - Barriers that limit the capacity of volunteers to undertake deer control are identified, as well as actions to overcome them.
- Support volunteer hunters at key sites.
  - Actions are implemented to maximise the contribution that volunteer hunters can make to deer control.
- Engage specialist contractors to undertake control activities at key sites.
  - Where volunteers are not able to undertake the required level of deer control, specialist contractors are engaged.

Broad-scale introduced predator control

Broad-scale fox control with targeted cat control involves an integrated approach to the control of introduced predators. It is implemented mainly to increase the abundance, distribution and extent of the range of predation-sensitive fauna. Understanding the location of key hotspots for the remaining fauna populations and targeting control to those areas including cat control is the first step to managing predation pressure in the Wilsons Promontory Park Landscape.

A range of techniques can be utilised at the landscape scale to manage fox populations including shooting, trapping and baiting, whereas cat control is currently limited to trapping. More techniques are needed for effective cat control. The support and engagement of key agencies is needed to develop and deploy alternative approaches to cat control, including targeted baiting programs.

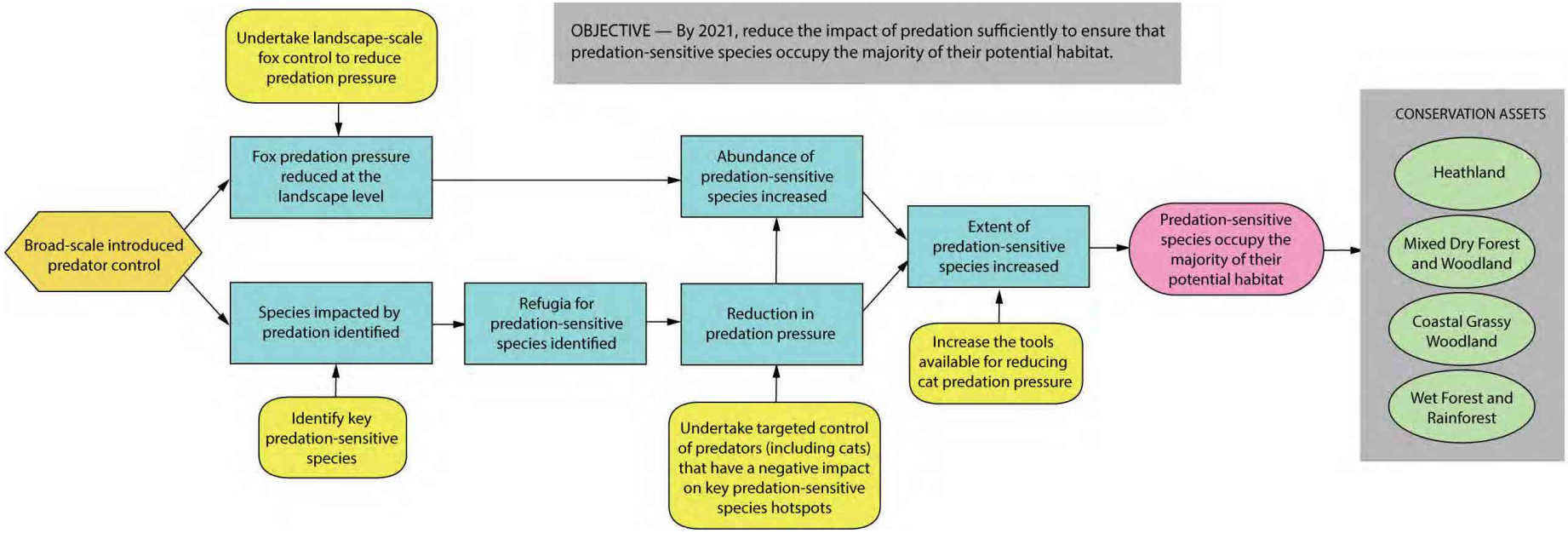
Stronger localised control efforts, which might include the establishment of exclusion fences around existing or reintroduced populations of predation-sensitive species, may also complement this approach. The possibility of establishing a predator-proof fence across the Yanakie Isthmus would greatly reduce the chance of reinvasion once predators are effectively controlled in Wilsons Promontory National Park, but that is beyond the scope of this plan.

Although beyond the scope of this plan, the reintroduction of native predators such as Spot-tailed Quolls in key locations may be possible in the longer-term following the effective control of introduced predators.

Conservation outcomes

The outcome of this strategy will be an increase in the density, diversity and distribution of predation-sensitive terrestrial fauna throughout the Wilsons Promontory Park Landscape. The strategy needs to be implemented with other strategies that seek to improve the quality and extent of available habitat for fauna. To ensure that the effectiveness of this strategy is maintained in the longer term, the presence and population sizes of introduced predators, including wild dogs, will need to be monitored with control reviewed when issues are identified.

Results chain



Implementation milestones

- Identify key sites for predation-sensitive fauna.
  - Key populations of species that are likely to benefit from predator control are identified.
- Undertake broad-scale fox control to reduce predation pressure.
  - Predation pressure from foxes is reduced throughout the Park Landscape. This results in an increase in the breeding success of predation-sensitive fauna and allows the re-establishment and expansion of existing populations.
- Undertake targeted control of predators (including cats) impacting negatively on key predation sensitive fauna hotspots
  - Predation pressure is reduced in key locations. This results in an increase in the breeding success and size and extent of key populations.
- Increase the tools available to reduce predation by cats.
  - More strategies are available for effective cat control. Key agencies are supported and engaged to develop and deploy alternative approaches to controlling predation by cats.

Marine and estuarine management

The marine management strategy involves the continued monitoring of the marine environment to enable managers to identify and respond to new outbreaks of marine pests before they become established in the environment. It also involves complementary actions such as increasing public awareness of marine pests and good boat and equipment hygiene practices, supporting the enforcement of regulations aimed at reducing the likelihood of pest incursions, and assisting in the development or review of regulations to support such work.

Increasing public and agency awareness of marine pest threats through appropriate signage and other communication methods will result in an increased awareness of the issues and will lead to a greater level of support for establishing and complying with good hygiene practices.

Undertaking surveillance for marine pests and monitoring sites where invasions have been reported previously, together with a rapid control response, will result in a lower likelihood of new pest populations becoming established.

Continuing to work with partners to ensure that ballast water is not discharged in areas likely to result in the introduction of marine pests into the Park Landscape will also result in a decrease in the likelihood of the establishment of new marine pest populations.

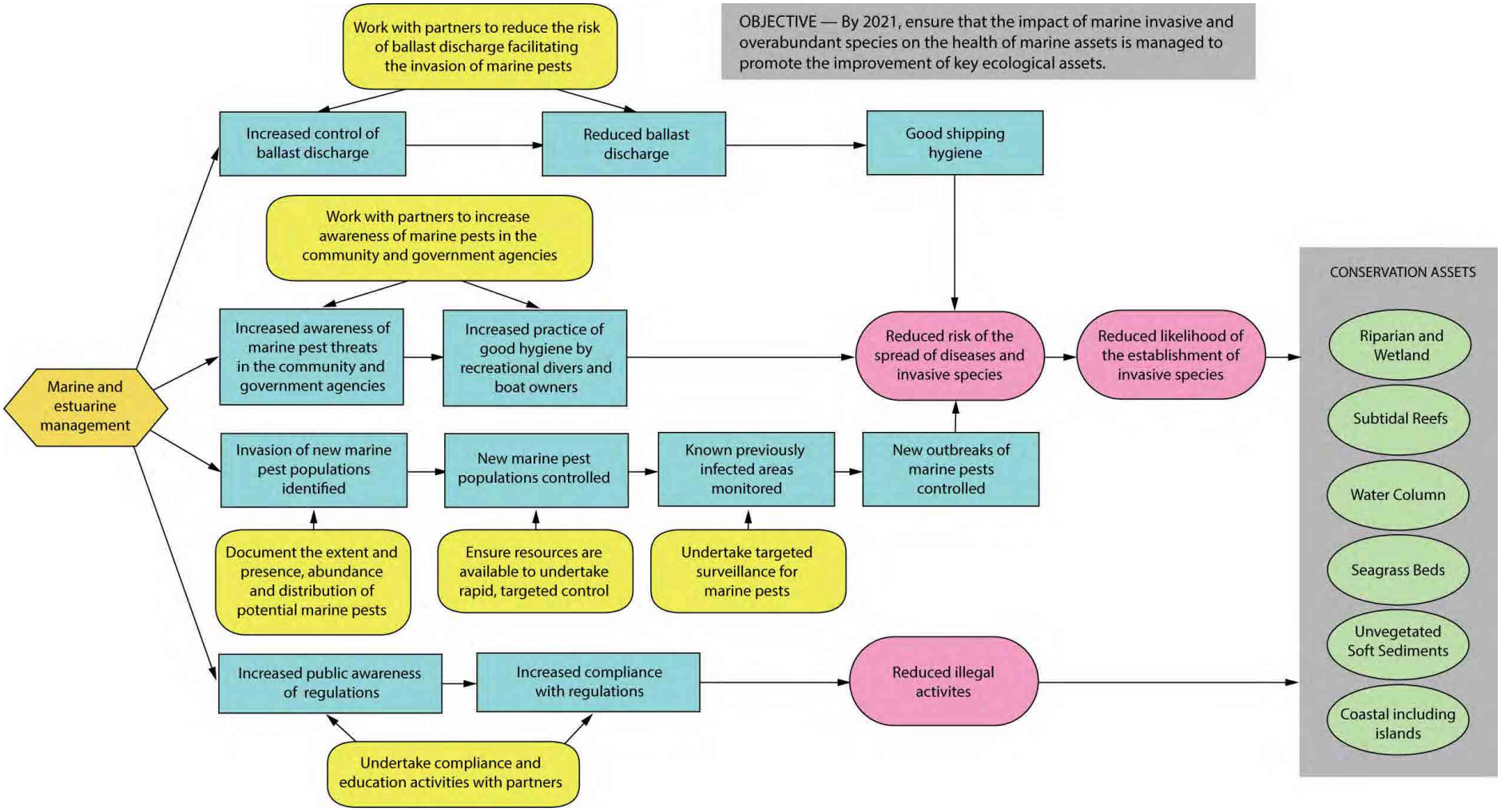
Parks Victoria will work with partners to ensure that natural resource extraction and access activities are undertaken in an appropriate manner and in compliance with regulations (e.g. Go Fish No Fish, monitoring of target species, compliance patrols, compliance education).

Passive surveillance of populations of marine species will be undertaken to ensure that species driven degradation of sites through overpopulation or significant shifts in composition are managed as has been observed in other marine environments (e.g. sea urchin barrens).

Conservation outcomes

This strategy will ensure that marine assets continue to be maintained in very good condition. It will reduce the likelihood of new populations of marine pests establishing in the Park Landscape, and ensure that the eradication of populations of new pests is rapid and targeted. Disturbance to fish, invertebrates and other marine-dependent species will be minimised, and their populations will be allowed to flourish.

Results chain



Implementation milestones

- Document the extent and presence, abundance and distribution of potential marine pests
  - Priority marine pest species and their potential impacts are identified.
- Ensure that resources are available to undertake rapid and targeted control.
  - Populations of newly detected marine pests are quickly eradicated.
- Undertake targeted surveillance for marine pests.
  - Surveillance for marine pests is undertaken in locations where invasions are likely to occur or have previously occurred.
  - Previously detected populations are controlled and reinvasion is not continuing
- Work with partners to reduce the risk of introducing pests via ballast water discharge.
  - Parks Victoria works with partners to minimise ballast water in or near the Wilsons Promontory Park Landscape will greatly reduce the long term cost of marine pests to this environment.
- Increase the level of awareness of marine pests in the community and government agencies.
  - There is an increased awareness of marine pests among the community and government agencies, more support for treating and controlling marine pests, and improved hygiene practices. These have reduced the likelihood of marine pest invasions and increased the ability of managers to respond rapidly to new invasions.
- Undertake compliance activities with partners.
  - Natural resource extraction and access activities are undertaken in an appropriate manner and in compliance with regulations, ensuring that marine assets are maintained in very good condition and not over-exploited or degraded.

Integrated weed program

This strategy involves a range of actions for reducing the spread, establishment and impacts of non-native species that have, or are likely to have, significant impacts on the health and ecological processes that occur within the conservation assets of the Wilsons Promontory Park Landscape.

The initial part of the strategy is to ensure that resources are available to reduce the potential for new and emerging weeds to become established. This will be achieved by identifying the most likely invasion points, which are often vehicle access and parking sites and locations where animals are likely to act as vectors. Any new weed species that are identified within the Park Landscape needs to be dealt with rapidly to prevent its establishment and spread. Locations where incursions have been observed previously are likely to be key invasion points.

Another key component of this strategy is to focus on significantly reducing or eradicating a number of species that are already established (Table 6.2; see also Appendix C). A similar focus on species which are altering ecological processes is likely to result in significant gains.

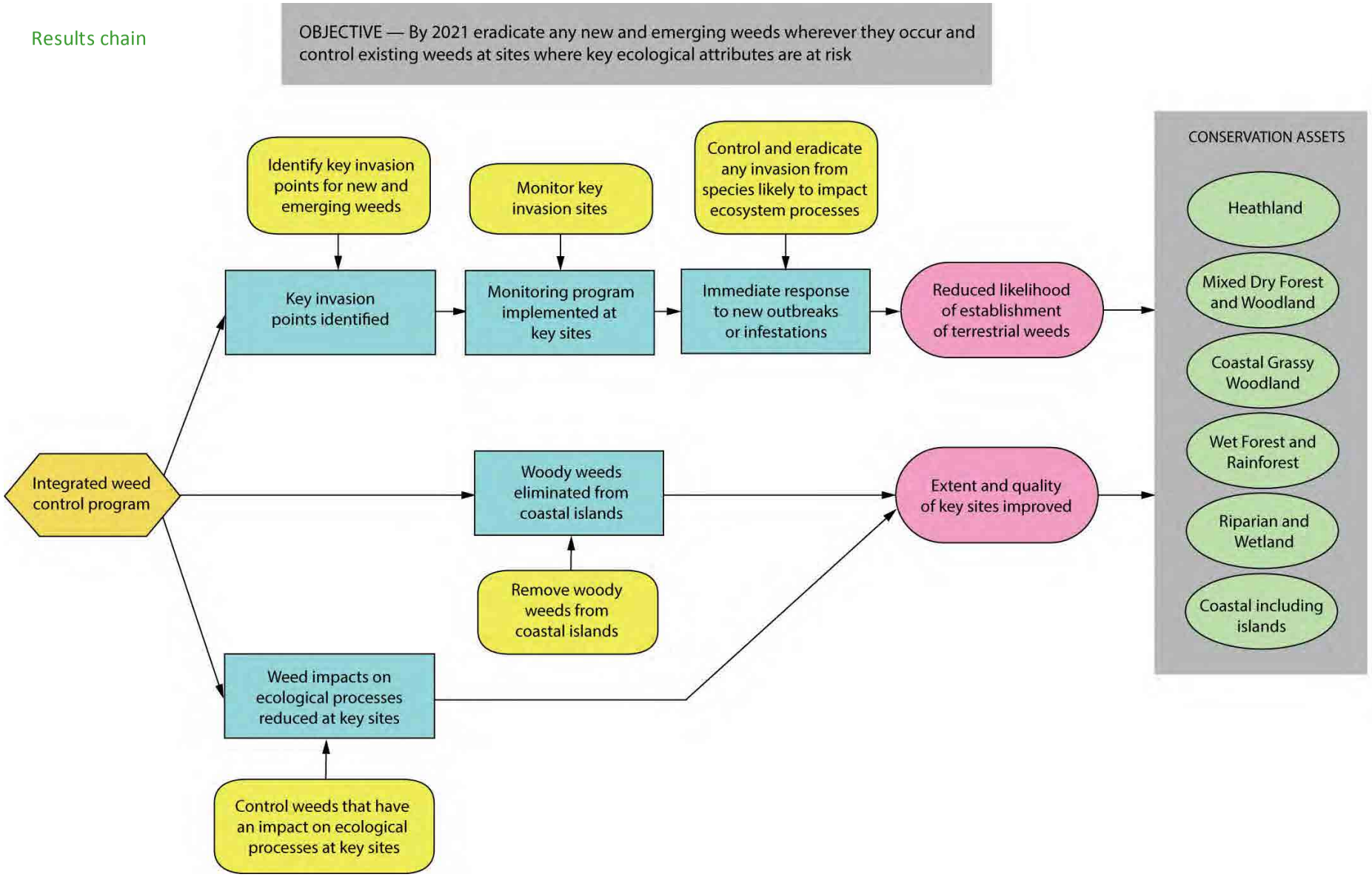
Conservation outcomes

This strategy will improve the health of specific conservation assets, particularly Coastal (including islands).

Table 6.2 Priority species and key locations for weed control or eradication.

Weed	Priority location or species
Sea Spurge	Picnic Bay, Squeaky Bay, Norman Bay
Mirror Bush	Kanowna Island, Doughboy Island, Boundary Track
Cape Wattle	Kanowna island, Doughboy Island
Arum Lily	Doughboy Island, Boundary Track
Blue Periwinkle	Doughboy Island, Tin Pot
Ragwort	Barry Creek, McAlister Creek, Red Hill Track
Thistles	Red Hill Track, Darby River
New and emerging weeds	Spanish Heath, Sweet Pittosporum, Mullein, Kikuyu, Ox-eye Daisy, Cape Ivy

Results chain



Implementation milestones

- Identify likely invasion points for new and emerging weeds.
  - A surveillance program is established to identify locations likely to act as invasion points. New weed species are quickly identified and eradicated.
- Monitor key invasion sites.
  - Monitor continues at sites where invasions are likely to occur, or have occurred, to ensure that there are no reinvasions and new invasions.
- Control and eradicate any invasion from species likely to impact on ecosystem processes.
  - Where multiple species are establishing, the species with the highest potential to alter ecosystem processes are prioritised for eradication.
- Remove woody weeds from islands.
  - Targeted control activities eradicates woody weeds from islands, eliminating the threats posed by such weeds on the islands.
- Control weeds which impact on ecological processes at key sites.
  - Weed species most likely to impact on ecological processes are targeted in high-value areas of the Park Landscape. Complete removal through physical removal, chemical control and targeted application of fire is achieved in specific areas.
  - Sea Spurge is controlled in coastal areas by physical removal in targeted areas. Complete and repeated removal results in a dramatic reduction of the threat posed by this weed to habitats in coastal areas.

Figure 7.1 Key locations for weed control or eradication.

Landscape-scale ecological fire program

This strategy involves the building of a full understanding of the current and desired fire intervals within the Wilsons Promontory Park Landscape. The successful delivery of this strategy will require a significant partnership with the Department of Environment, Land, Water and Planning in planning and delivering a fire program that increases the patchiness of the burn mosaic, as well as ensuring that all conservation assets are burned within tolerable fire intervals.

Because of the nature of previous large-scale wildfires, fire is to be excluded from Mixed Dry Forest until at least 2019 and from Wet Forest and Rainforest indefinitely, to ensure that the minimum tolerable fire intervals for these assets are reached. Significant portions of Wet Forest and Rainforest have been degraded by repeated exposure to fire during the first half of the 1900s, resulting in a collapse in canopy species. The process by which these areas can be restored is unclear, and restoration trials will be undertaken as part of this plan. The aim for all assets is to ensure minimum tolerable fire intervals are reached.

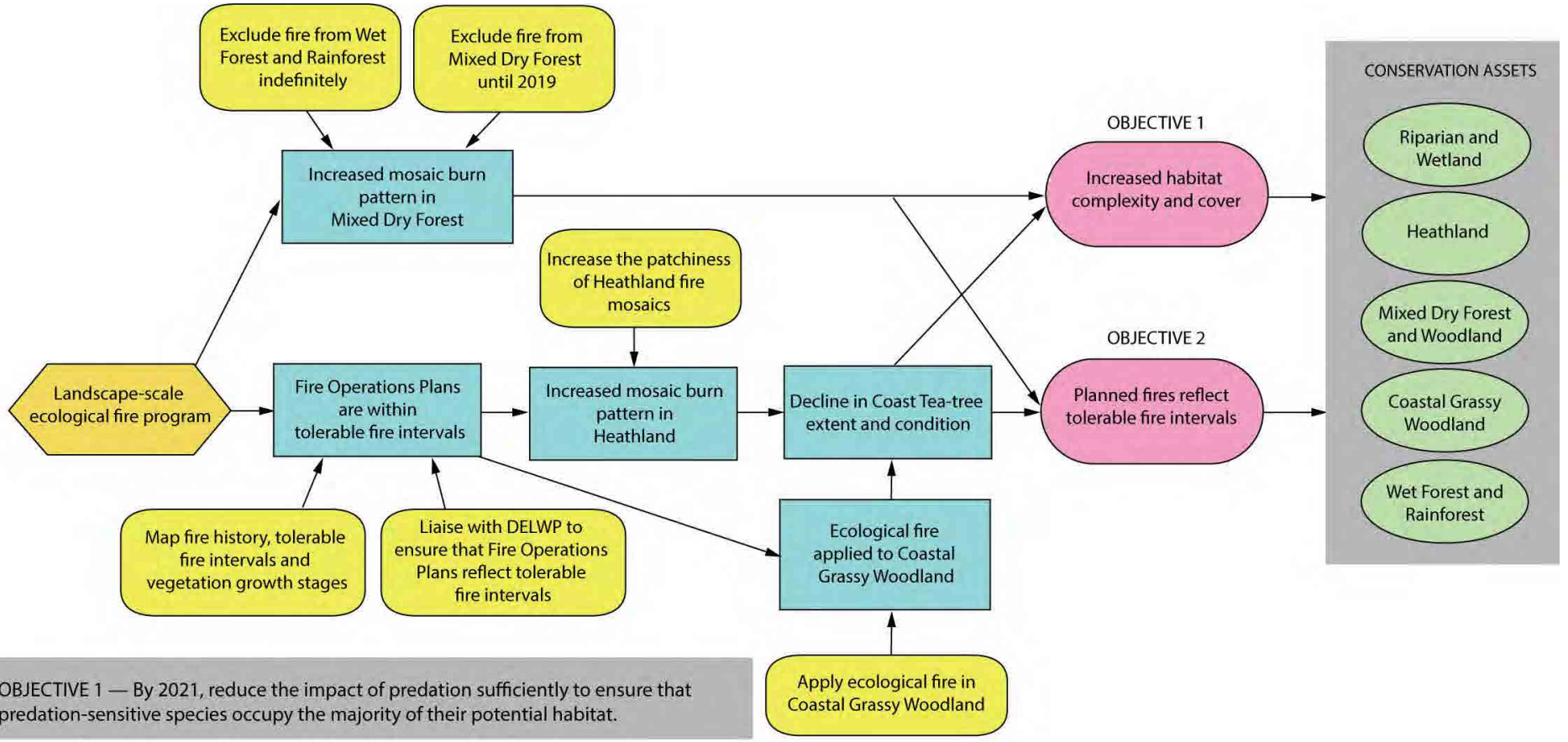
The patchiness of heathlands is related to the diversity and variability of habitat and also to the risk of large wildfires. Within the Heathland asset the patchiness of the burn mosaic needs to be increased to achieve and maintain an appropriate spatial and temporal distribution of vegetation growth-stages, and to deliver burns that result in a decrease in the abundance and cover of Coast Tea-tree and White Kunzea.

Fire management is an important component of the Coastal Grassy Woodland restoration and is to be applied to reduce the cover of shrub species and increase the recruitment of canopy and understorey species to restore this asset. Increasing the patchiness of vegetation will favour the expansion and recovery of species such as New Holland Mouse.

Conservation outcomes

The application of an ecological fire program in the Wilsons Promontory Park Landscape is a key strategy for improving the structural diversity and distribution of vegetation growth stages in various habitats. The expectation is that it will lead to the restoration of assets and species, ensuring that the condition of all conservation assets improves.

Results chain



OBJECTIVE 1 — By 2021, reduce the impact of predation sufficiently to ensure that predation-sensitive species occupy the majority of their potential habitat.

OBJECTIVE 2 — By 2021, increase the area and extent of Heathland, Coastal Grassy Woodland, Mixed Dry Forest and Woodland, Wet Forest and Rainforest, and Riparian and Wetland assets, which are managed in accordance with tolerable fire intervals, and increase the diversity of appropriate growth stages within these assets.

Implementation milestones

- Map fire history, tolerable fire intervals and vegetation growth-stages.
  - The fire history, tolerable fire intervals, vegetation growth-stage distributions and patchiness of fire mosaics are understood, and sites where fire needs to be applied and where fire needs to be excluded are identified. This information is shared with partners and stakeholders to provide a rationale for increasing the patchiness of the landscape
- Liaise with DELWP to ensure that the Fire Operations Plan is compatible with tolerable fire intervals and desirable vegetation growth-stages.
  - The Fire Operation Plan reflects tolerable fire intervals and desired vegetation growth-stages, so that the health of key conservation assets is improving and the ecological application of fire is appropriate.
- Exclude Fire from Mixed Dry Forest until at least 2019.
  - Mixed Dry Forest remains unburnt and is recovering well from previous fires. Plans are formulated for the reintroduction of an appropriate fire regime beyond 2019.
- Exclude fire from Wet Forest and Rainforest indefinitely.
  - No fires have occurred in Wet Forest and Rainforest, which are recovering well from the previous wildfire.
- Apply ecological fire within the Coastal Grassy Woodland asset.
  - The extent and effect of Coast Tea-tree has been reduced, other overstorey species are increasing, and the extent and diversity of ground cover has improved.
- Increase the patchiness of Heathland fire mosaic.
  - Ecological fires in heathlands are more patchy, and the condition of this asset is improving.

Collaborative partnerships to address key knowledge gaps

This strategy involves increasing levels of collaboration and partnerships with researchers and land managers in applying adaptive management approaches. The strategy will also support and facilitate the establishment of a Technical Advisory Group, whose function will be to increase the effectiveness and efficiency of on-ground management by integrating knowledge into on-ground activities and provide support to expand and focus formal research and citizen science activities.

Key activities that are part of this strategy include the coordination and facilitation of a Technical Advisory Group for the Wilsons Promontory Park Landscape, which will be modelled on the Coastal Grassy Woodland Technical Advisory Group. Formal research support and integration with management could include the award of scholarships for targeted research.

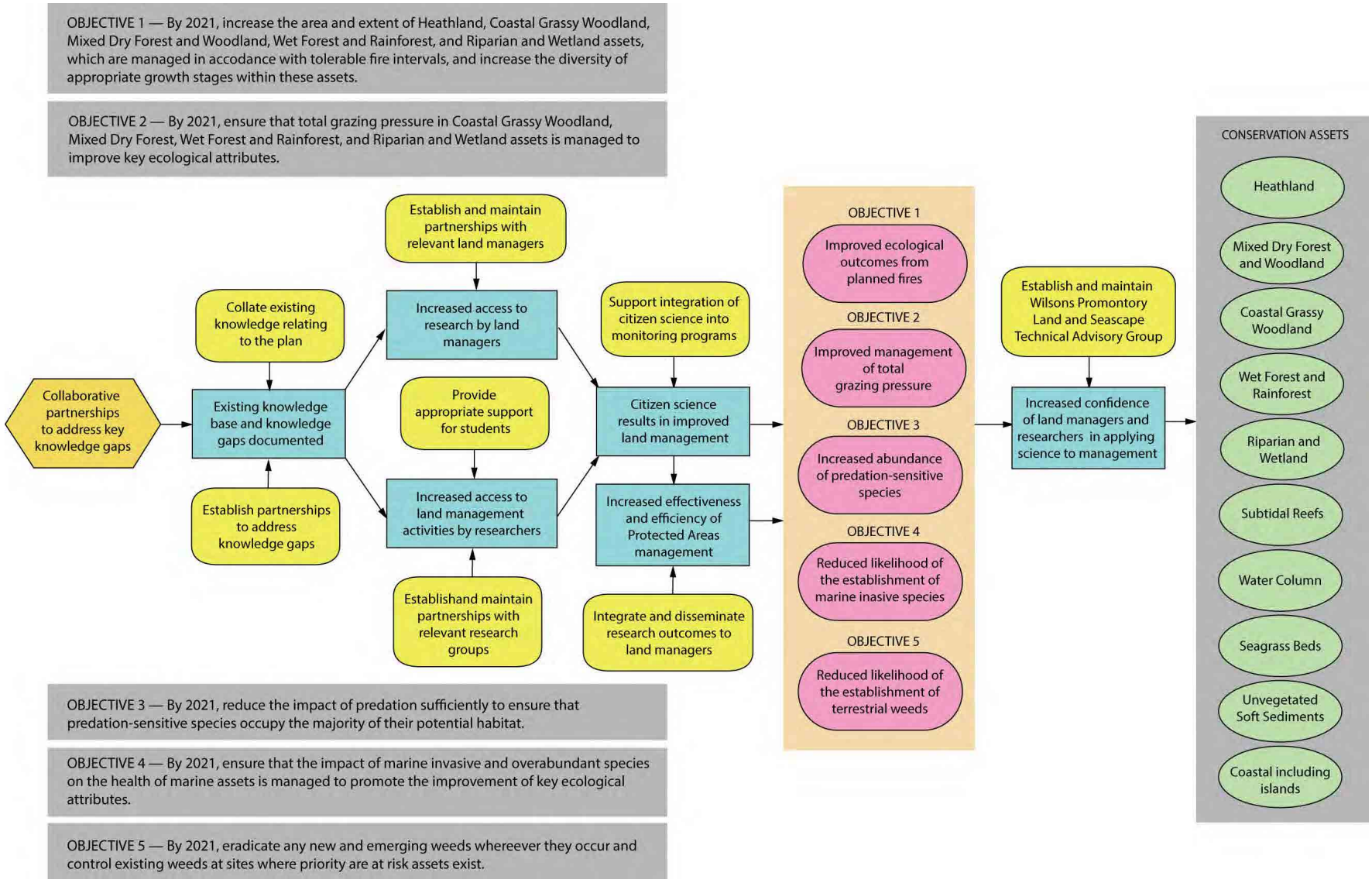
To fast track the integration of research outcomes and to ensure that students are focusing on areas of research that are relevant to land and sea management, students should be helped to spend time supporting park staff in undertaking land management activities for at least one day per month.

A prospectus will be developed to encourage philanthropic support for the redevelopment of the research station. This will greatly enhance on-site support for researchers.

Conservation outcomes

By undertaking this strategy the outcomes for the key conservation assets will be increased. New threats and opportunities will be more readily identified, which will result in an increase in the effectiveness and efficiency of conservation asset management within the Wilsons Promontory Park Landscape and across the broader public and private reserve network.

Results chain



Implementation milestones

- Collate existing knowledge relating to the Conservation Action Plan.
  - Establish a catalogue of reports, papers and data that has informed decisions or statements within this plan.
- Establish partnerships to address knowledge gaps in the following areas:
  - extent of marine assets
  - ability to reseed collapsed wet forest following the application of fire
  - role of game trails in fragmenting wetland systems.
  - role of soil engineers in mitigating Coast Banksia dieback
  - population dynamics of the New Holland Mouse
  - nested assets and key ecological attributes for Unvegetated Soft Sediments
  - drivers of marine condition
  - understanding of fire behaviour, type and fuel loads to establish prescriptions for ecological fire, informed by DELWP's risk landscape approach
  - traditional land management practices.
- Establish and maintain partnerships with relevant research groups.
  - Partnerships with key researchers are maintained, and new and emerging research supports or improve the management of conservation assets.
- Establish and maintain partnerships with key land managers.
  - Partnerships with key land managers are maintained, and knowledge generated through the Technical Advisory Group is applied and adapted to a range of situations that support the management of conservation assets.
  - Traditional ecological knowledge is sought and applied in adaptive management approaches.
- Support the integration of citizen science into monitoring programs.
  - Surveillance and monitoring programs identified in this plan and the subsequent monitoring and evaluation plan are enhanced by the addition of additional data from a growing pool of citizen scientists. They collect data that is most likely to assist in improving park management and provide valuable support for the management of conservation assets.
- Integrate and disseminate research outcomes to land managers.
  - Management-focused papers and communications to other Parks Landscapes and land managers are produced. Communication between land and sea managers is improved, and there is a rapid improvement in management practices across both public and private protected areas.
- Provide appropriate support for students.
  - Students who are interested in improving management effectiveness and efficiency are supported with appropriate resources, including on-site staff. The research station has been redeveloped and is in demand for on-site research.
- Establish and maintain the Wilsons Promontory Park Landscape Technical Advisory Group.
  - The Technical Advisory Group is established and provides a single conduit for knowledge generation and review to directly support, review and adapt natural resource management and to assist in the prioritisation of research.

New Holland Mouse

8 Measuring performance

Monitoring, evaluation and reporting allows Parks Victoria to quantify the effectiveness of implementing the prioritised conservation strategies, and supports continuous improvement through value-based and evidence-informed decision-making.

Measuring performance in conservation action planning involves the assessment of the effects of management actions in relation to the desired state of key ecological attributes and conservation assets. In developing an effective Conservation Action Plan, agreeing on what will be measured and how measurement will be made before works are implemented is a critical step. Performance measures enable an integrated assessment of:

- the quantity and quality of management actions (activity measures)
- the impacts of an activity on threats (threat measures)
- the results of management on the conservation asset (outcome measures).

The following performance measures, developed in collaboration with experts in this field, provide a useful starting point for developing a Monitoring, Evaluation and Reporting Plan for the Wilsons Promontory Park Landscape. This can be used to guide interim assessments of performance until a detailed plan is established.

8.1 Coastal Grassy Woodland restoration

The strategy will result in an improvement in the health of Coastal Grassy Woodland through a range of actions designed to increase in the cover and growth stages of canopy species and improve the structural composition of the understorey. This strategy is most likely to result in long-term restoration of this asset within the Wilsons Promontory Park Landscape.

Activity measures:

- extent and frequency of deer control (number of deer removed)
- extent, frequency and method of rabbit control
- fire applied in accordance with the Fire Operations Plan.

Key threats managed under this strategy are over-grazing and inappropriate fire regimes. These can be measured using the following threat indicators:

- deer abundance
- rabbit abundance
- extent, intensity and timing of ecological fire.

Conservation outcomes resulting from the implementation of the strategy:

- number of sites with multiple age-classes of canopy species (banksias, sheoaks and eucalypts)
- extent of canopy cover, particularly Coast Tea-tree
- diversity, cover and biomass of understorey
- number of populations of New Holland Mouse.

8.2 Landscape-scale control of deer

This strategy will result in an improvement in the health of the range of conservation assets through a range of actions designed to increase the cover and growth-stages of canopy species and improve the structural composition of the understorey. This strategy is most likely to result in the long-term recovery of a range of assets within the Wilsons Promontory Park Landscape.

Activity measures:

- extent, frequency of deer control programs; number of deer removed
- volunteer hunting pressure
- specialist contractor control levels.

The key threat managed under this strategy is over-grazing, which can be measured using the following threat indicators:

- deer numbers (activity or other surrogate).

Conservation outcomes resulting from the implementation of the strategy:

- number of key sites with multiple age classes of canopy species (banksias, sheoaks and eucalypts).

8.3 Broad-scale introduced predator control

This strategy will result in an improvement in the health of a range of nested assets which are predation sensitive in the Wilsons Promontory Landscape. Key actions include the establishment of a targeted predation, including cat, control program at key sites for predation sensitive species and large scale fox control to reduce predation pressure across the Wilsons Promontory Landscape. This strategy is seen as most likely to result in long term recovery of a range of predation sensitive species within the Wilsons Promontory Park Landscape.

Activity measures:

- extent, frequency and method of fox control (number of fox baits laid)
- extent, frequency and method of cat control (number of cat trap-nights).

The key threat managed under this strategy is predation by cats and foxes, which can be measured using threat indicators:

- cat activity (as measured by camera)
- fox activity (as measured by bait take)
- dog activity.

Conservation outcomes resulting from the implementation of the strategy:

- population extent of predation-sensitive species
- population size of predation-sensitive species
- number of predation-sensitive species with increasing populations.

8.4 Marine and estuarine management

This strategy will result in an improvement in the health of a range of marine conservation assets. Key actions include monitoring and surveillance for marine pests. It will ensure that adequate resources are available to rapidly respond to new pest incursions and that awareness of and compliance with good hygiene practices by the general public, agencies and commercial operators is improved. Compliance will also extend to working with partners to ensure that natural resource extraction and access activities are undertaken appropriately. This strategy is seen as most likely to maintain the very good condition of the range of marine assets within the Wilsons Promontory Park Landscape.

Activity measures:
- number of person-days of surveillance for pests and overabundant species
- compliance effort
- number of compliance patrols
- number of activities to improve hygiene practices for the general public
- number of activities to improve hygiene practices for agency staff and commercial operators
- treatment effort (area treated, person-days, invasive and overabundant species removed).

The key threats managed under this strategy are marine invasive or overabundant species and natural resource extraction and access, which can be measured using the following threat indicators:
- number of invasive species detected; trends in populations of invasive and overabundant species
- number of warnings or infringement notices issued per patrol effort.

Conservation outcomes resulting from the implementation of the strategy:
- condition of marine key ecological attributes.

8.5 Integrated weed program

This strategy will result in a significant reduction in the impact of ecosystem altering weeds that are impacting on the Conservation Assets of the Wilsons Promontory Park Landscape. Eradication of woody weed from Coastal Islands will improve the condition of the nested assets of colonial nesting birds and Australian and New Zealand fur seals. Whilst targeting control to focus on ecosystem altering weeds in key areas for the Conservation Assets of the Wilsons Promontory Park Landscape will result in long term improvement of the Landscapes conservation values. The continued program of monitoring and surveillance of new and emerging weeds, coupled with the ability to rapidly respond to new invasions, will minimise future threats from invasive weeds.

Activity measures
- area of woody weeds treated on islands (species, area treated, person-days)
- area of ecosystem altering weeds treated (species, area treated, person-days)
- surveillance effort for new and emerging weeds (area surveyed, person-days)
- treatment effort for new and emerging weeds (species, area treated, person-days).

The key threat managed under this strategy is weed invasion, which can be measured using the following threat indicators:
- cover of woody weeds on islands
- cover of ecosystem-altering weeds
- number of new and emerging weed species identified within the Wilsons Promontory Park Landscape.

Conservation outcomes resulting from the implementation of the strategy:
- population trends of Australian Fur Seals and New Zealand Fur Seals
- extent and condition of populations of colony nesting birds
- health of conservation assets where ecosystem-altering weeds are or were present (e.g. Coastal Grassy Woodland).

8.6 Landscape-scale ecological fire program

This strategy will result in an improvement in the health of the Heathland, Coastal Grassy Woodland, Mixed Dry Forest and Woodland, Wet Forest and Rainforest and Riparian and Wetland assets by ensuring that fire is applied in an ecologically sensitive manner. this will include burning within tolerable fire intervals, and increase the patchiness of the fire mosaic. This strategy is seen as most likely to result in the long-term restoration of appropriate spatial and temporal growth-stage distributions across all the terrestrial conservation assets within the Wilsons Promontory Park Landscape.

Activity measures:

- map of fire history, tolerable fire intervals and vegetation growth-stages prepared
- liaison undertaken with DELWP on Fire Operations Plans
- fire application measures.

The key threats managed under this strategy are over-grazing and inappropriate fire regimes, which can be measured using the following indicators:

- extent and timing of ecological fire
- percentage of the Park Landscape burnt within tolerable fire intervals
- deviation from ideal growth-stage distributions.

Conservation outcomes resulting from the implementation of the strategy:

- age-class structure of canopy species
- spatial and temporal vegetation growth stage structure
- vegetation species composition
- occurrence and diversity of ground-dwelling mammals
- occurrence and diversity of arboreal mammals
- occurrence and diversity of bird assemblages.

8.7 Collaborative partnerships to address key knowledge gaps

This strategy will result in an improvement in the effectiveness and efficiency of Parks Victoria's staff in managing, restoring and improving the health of the Wilsons Promontory Park Landscape. Through the establishment of the Technical Advisory Group, key researchers and stakeholders will be more closely engaged, leading to improved management outcomes within the park Landscape.

This closer collaboration will also increase the number of research partners taking advantage of management interventions to test and assess impacts and improve and refine applications of management, while increasing the confidence of both land managers and researchers in the outcomes and appropriateness of management interventions. This strategy is seen as most likely to result in long-term improvement in the efficiency and effectiveness of land management activities within the Wilsons Promontory Park Landscape.

Activity measures:

- number of research projects supported
- number of student days spent with on-site staff
- number of Technical Advisory Group meetings
- effort of citizen scientists (number of records provided)
- production of a prospectus for the redevelopment of the research station.

This strategy addresses all key threats, which can be measured using the following indicators:

- total effort to manage each threat
- total cost to manage a unit of threat.

Conservation outcomes resulting from the implementation of the strategy:

- confidence of Parks Victoria staff in management actions
- stakeholder confidence in the management of the Park Landscape
- cost–benefits of management.

Trigger plant and daisies

9 Plan implementation

A Monitoring, Evaluation and Reporting Plan will be developed from the interim performance indicators in this Conservation Action Plan. It will include key evaluation questions, more specific monitoring questions, and appropriate metrics, measures and reporting standards. It will be a key component of adaptive management and a more outcomes-focused approach to managing for conservation in parks and reserves. Specifically, the Monitoring, Evaluation and Reporting Plan is essential for:

- determining whether the conservation strategies and specific operational activities are achieving the desired conservation outcomes
- showing trends in the condition of conservation assets and the levels of threat
- demonstrating the effectiveness and efficiency of resources invested in the Conservation Action Plan.

The plan will address the collection, storage and collation of data as well as its analysis and interpretation. The analysis and interpretation of data is the cornerstone of applying a 'learning by doing' approach, in which knowledge gaps are identified and addressed through targeted scientific research. The evaluation of the Conservation Action Plan is an important step in documenting lessons learnt and communicating ideas around the improvement of policy, planning and management within Parks Victoria and to external audiences.

Steps 8, 9 and 10 of the 10-step process for conservation planning follow on from implementing the strategies outlined here, and are beyond the scope of this Conservation Action Plan. Steps 8 and 9 will be carried out at an operational level within the Parks Victoria Region that has responsibility for the Wilsons Promontory Park Landscape. Step 10 will involve a review of the Conservation Action Plan in the light of what is learnt during implementation.

Step 8: Plan work

In planning the work program, prioritised conservation strategies will be converted into operational conservation projects in specific locations. Quality maps generated by Parks Victoria in the conservation action planning process are critical for planning on-ground conservation activities, targeting key threats to conservation assets. They provide a greater understanding of the potential spread or overlap of operational conservation activities physically and in terms of their geographic impact. They also support the detailed consideration of logistic issues including access, cultural heritage and areas of high visitation. Engaging with Traditional owners and investigating opportunities for collaboration will be investigated during this phase. During the organisation of work, local and organisation-wide resource allocation processes should be followed. Detailed project planning within the Parks Victoria District and Region, including the refinement of resource requirements, will be undertaken using standard procedures.

Step 9: Implement operational plans

The Conservation Action Plan will be implemented by a regional team, often in collaboration with other agencies, Friends groups and volunteers. Operational conservation activities will be implemented in accordance with relevant Parks Victoria policies and procedures and legislative obligations.

Step 10: Evaluate and adapt operational activities and the Conservation Action Plan

In the context of adaptive management, the evaluation of the Conservation Action Plan is important in determining and communicating whether or not the conservation strategies and specific on-ground activities have abated threats and achieved the desired conservation outcomes. The Conservation Action Plan is not a static document. It will be reiterated in response to the outcomes of the Monitoring, Evaluation and Reporting Plan and in response to emerging issues. Reiteration of this Conservation Action Plan may lead to a restructure of conservation strategies, including the amendment of results chains and their underlying assumptions and a refinement of specific on-ground activities. The review and reiteration of the plan is likely to be undertaken in part through a small workshop process involving a similar representation of people involved in the development of the original plan.

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Appendix A — Protection categories

Levels of Protection (LoP) for natural values management

Levels of Protection is a tool to aid planning and resource allocation by placing individual parks in a statewide context. Parks have been classified (or grouped) according to composition and representation of attributes classified at the EVC and species scale (Table A.1). A key principle of the framework is that protected area planning is conducted in a bioregional context. The bioregional value, and hence management priority, of biodiversity attributes in parks and reserves has been assessed on the basis of:

- conserving the range of ecosystems and existing biotic diversity
- the occurrence of attributes that depend on a particular park for their security.

The Protected Areas Category System

The protected area management categories of the International Union for Conservation of Nature and Natural Resources (IUCN) classify protected areas according to their management objectives. The categories are recognised by international bodies such as the United Nations and by many national governments as the global standard for defining and recording protected areas, and as such are increasingly being incorporated into government legislation. For further information, see the IUCN website: http://www.iucn.org/theme/protected-areas/about/categories

Category Ia Strict Nature Reserve — strictly protected area set aside to protect biodiversity and also possibly geological/geomorphological features, where human visitation, use and impacts are strictly controlled and limited.

Category Ib Wilderness Area — usually large unmodified or slightly modified area, retaining its natural character and influence without permanent or significant human habitation.

Category II National Park — large natural or near natural area set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area

Category III Natural Monument or Feature — set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove.

Category IV Habitat/Species Management Area — aims to protect particular species or habitats and management reflects this priority.

Category V Protected Landscape/ Seascape — protected area where the interaction of people and nature over time has produced an area of distinct character with significant, ecological, biological, cultural and scenic value.

Category VI Protected area with sustainable use of natural resources — conserves ecosystems and habitats together with associated cultural values and traditional natural resource management systems.

Table A.1 Park groups and their attributes.

Park group	General description of park group attributes
A1	All parks represent at least 2 bioregions. Parks generally greater than 10000 ha (up to 660 000 ha), all scheduled under the *National Parks Act*. Most parks very large or have contiguity with state forest areas (or both), and have very high area to boundary ratios. All have very high diversity in terms of both vegetation communities and species, & represent a high proportion of the bioregions species diversity (about 40–60%). Very large number of threatened species present and important for protecting a relatively high proportion of those species. Internal fragmentation is highly variable across the scale of these parks as is areas of highly disturbing previous land use.
A2	With Park Group A1, captures representation of all bioregions. Park size generally greater than 1000 ha (up to 21 600 ha), mostly parks scheduled under the *National Parks Act* but also includes high value nature conservation reserves. All have relatively high diversity in terms of both vegetation communities and species, and represent a high proportion of the bioregions species diversity (about 40–60%). Large number of threatened species present and important for protecting a relatively high proportion of those species.. A greater degree of exposure to threatening processes at their edge (than A1), as well as from previous disturbing land uses.
A – Marine	Marine National Parks scheduled under the *National Parks Act*.
B	Represents full range of bioregions, except for 3 bioregions completely conserved within parks in A1 and A2. Park size ranges from 50 ha to 40 000 ha, majority of nature conservation reserves. Parks are protecting vegetation communities largely of moderate significance and well represented in the parks system. Parks have relatively lower species diversity, representing a moderate proportion of the bioregions species diversity (about 20–40%). Moderate number of threatened species present and important for protecting a small number of those species.
B – Marine	Marine Sanctuaries scheduled under the *National Parks Act*
C	Park size ranges from 1 ha to 142 300 ha, predominantly nature conservation reserves, with a small number of parks scheduled under the *National Parks Act* that have relatively low or common biodiversity values. Parks are protecting vegetation communities largely of low to moderate significance and that are well represented in the parks system. Generally have moderate to high levels of internal fragmentation and adjacency to non-native vegetation. Parks have relatively lower species diversity, representing a moderate proportion of the bioregions species diversity (about 10–30%). Moderate but variable number of threatened species present and important for protecting a small number of those species.
D	Park sizes range from 10 ha to 15 000 ha, and are conservation reserves. Parks have relatively lower species diversity, representing a moderate proportion of the bioregions species diversity (about 2–15%). Relatively small number of threatened species present.
E	Generally have very low or nil recorded values of low biodiversity conservation significance.

Appendix B — Conservation assets: terrestrial ecosystems

This appendix provides an overview of the area of terrestrial ecosystems (aligned to sub-ecosystems, EVDs and EVCs) within the Wilsons Promontory Park Landscape.

Ecosystem	Sub-ecosystem	EVD	EVC	Total (ha)
Coastal Grassy Woodland	Coastal	Coastal	Calcareous Swale Grassland	557
			Coast Banksia Woodland	655
			Coastal Alkaline Scrub	3561
	Mixed Dry Forest	Forby Forest	Damp Sands Herb-rich Woodland	571
			Coastal Grassy Woodland Ecosystem Total	5344
Coastal	Coastal	Coastal	Bird Colony Shrubland	25
			Coastal Dune Scrub/Coastal Dune Grassland Mosaic	2008
			Coastal Headland Scrub	393
			Coastal Tussock Grassland	141
			Spray-zone Coastal Shrubland	42
			Sandy Beach	1055
		Not a valid EVD	Rocky Shore	348
			Coastal Ecosystem Total	4012
Dry Forest and Woodlands	Mixed Dry Forest	Granitic Hillslopes	Granitic Hills Woodland	3974
		Foothills Forest	Shrubby Foothill Forest	3789
		Tall Mixed Forest (Eastern)	Lowland Forest	3877
		Rocky Knoll	Rocky Outcrop Shrubland/Rocky Outcrop Herbland Mosaic	225
			Wet Rocky Outcrop Scrub	517
			Bare Rock/Ground	77
			Dry Forest and Woodlands Ecosystem Total	12459
Heathland	Heathland	Heathland (sands)	Coastal Sand Heathland	21
			Heathy Woodland	3302
			Sand Heathland	770
			Sand Heathland/Wet Heathland Mosaic	3347
			Wet Heathland	5984
			Wet Heathland/Damp Heathland Mosaic	43
			Heathland Ecosystem Sum	13467

Appendix B (continued)

Ecosystem	Sub-ecosystem	EVD	EVC	Total (Ha)
Inland Waters and Wetlands	Riparian	Damp Scrub	Riparian Scrub	2339
			Swamp Scrub	374
		Riparian (higher rainfall)	Riparian Forest	45
			Riparian Sub-Ecosystem Total	2758
	Wetlands	Freshwater Wetland (ephemeral)	Wet Swale Herbland	175
		Freshwater Wetland (permanent)	Blocked Coastal Stream Swamp	29
			Coastal Lagoon Wetland	59
			Sedge Wetland	70
			Water Body — Fresh	11
			Wetland Formation	79
		Saline Wetland	Coastal Saltmarsh*	147
			Estuarine Wetland	340
			Mangrove Shrubland*	12
			Wetlands Sub-Ecosystem Sum	922
			Inland Waters and Wetlands Ecosystem Total	3680
Wet Forest and Rainforest	Montane	High Altitude Shrubland / Woodland	Montane Rocky Shrubland	115
	Rainforest	Closed-forest	Cool Temperate Rainforest	142
			Warm Temperate Rainforest	1110
			Rainforest Sub-Ecosystem Sum	1367
	Wet Forest	Moist Forest	Damp Forest	3679
		Tall Mist Forest	Wet Forest	3954
			Wet Forest Sub-Ecosystem Sum	7633
			Wet Forest and Rainforest Ecosystem Sum	9006
			TOTAL	47962

* These EVCs form a fuzzy boundary with the Gippsland Plains and Strzeleckis Park Landscape. Management of these EVCs is included within that landscape.

Appendix C — Action options and relative priority

Action options	Targeted key ecological attributes	Priority
Broad-scale fox control; also support policy and legislation to make broad-scale cat control available.	• heathland birds • ground-dwelling mammals • shorebirds and seabirds	High
Apply patch burns to the heathlands burnt in 2009 to improve age-class heterogeneity and help mitigate large-scale fire, and to reduce tea-tree and kunzea in heathland between Darby River and Tidal River and inland from Waterloo Bay.	• heathland birds • ground-dwelling mammals • shorebirds and seabirds • age-class structure, composition and diversity of vegetation • water quality and instream habitat complexity • freshwater fish and invertebrate assemblages	High
Do not apply patch burns (exclude fire) to Mixed Dry Forest until at least 2019 to improve age-class heterogeneity and help mitigate large-scale fire (start burn planning now).	• heathland birds • ground-dwelling mammals • shorebirds and seabirds • age-class structure, composition and diversity of vegetation • water quality and instream habitat complexity • freshwater fish and invertebrate assemblages	High
Surveillance and rapid control of new and emerging weeds at key entry and transit points, including islands.	• shorebird and seabird breeding • age-class and structure of vegetation	High
Surveillance and rapid targeted control of marine pests.	• abundance and diversity of mobile sessile invertebrates • seagrass communities	High
Broad-scale fox control and targeted cat control; also support policy and legislation to make broad-scale cat control available.	• heathland birds • ground-dwelling mammals • shorebirds and seabirds	Medium
Weed control (including burning) to eradicate Mirror Bush, Cape Wattle, thistles, Arum Lily and Blue Periwinkle from Doughboy Island.	• breeding of shorebirds and seabirds • vegetation age class and structure	Medium
Educate LTOs and visitors before their arrival, and increase patrols and enforcement of permit conditions (including minimum approach distances) to protect fur seals and other significant species at Kanowna Island and other sites.	• abundance and diversity of mobile sessile invertebrates • large mobile fish • shorebirds and seabirds • seals • coastal vegetation communities	Medium
Introduce dingo or meso-predators to control foxes and cats, and manage overabundant herbivores.	• heathland birds • ground-dwelling mammals • shorebirds and seabirds	Medium
Apply integrated fire management and weed management to improve habitat quality and complexity for priority fauna species at risk of predation.	• heathland birds • ground-dwelling mammals • shorebirds and seabirds	Medium

Management strategy	Targeted key ecological attributes	Priority
Integrated grazing management targeting Coastal Grassy Woodland areas (rabbit baiting and release of rabbit-specific pathogens), reduce the deer population to an appropriate level, achieve sustainable numbers of wombats, kangaroos and wallabies), particularly on Yanakie Isthmus and at Oberon Bay.	• age-class structure, composition and diversity of vegetation • water quality and instream habitat complexity	Medium
Landscape-scale deer control by volunteer hunters and (where necessary) specialist contractors, and seek legislative modifications to increase the efficacy (baiting, aerial shooting, ground shooting) for targeting all deer species..	• age-class structure, composition and diversity of vegetation • water quality and instream habitat complexity	Medium
Deliver community engagement to achieve the social licence needed to apply the critically needed grazer control actions.	• age-class structure, composition and diversity of vegetation • water quality and instream habitat complexity	Medium
Manage the use of fire to reduce the impacts of fire management (e.g. implement a more appropriate fire regime, create heterogeneity, avoid track construction, prevent the spread of pathogens and weeds by vehicles and other equipment).	• heathland birds • ground-dwelling mammals • shorebirds and seabirds • age-class structure, composition and diversity of vegetation • water quality and instream habitat complexity • freshwater fish and invertebrate assemblages	Medium
Integrated grazing control combined with ecological burning at the correct season, frequency and intensity, to control Coast Tea-tree.	• heathland birds • ground-dwelling mammals • shorebirds and seabirds • age-class structure, composition and diversity of vegetation • water quality and instream habitat complexity • freshwater fish and invertebrate assemblages	Medium
Aerial seeding collapsed forest (Wet Forest and Rainforest) . Requires seed collection and research trials.	• heathland birds • ground dwelling mammals • shorebirds and seabirds • vegetation age class structure composition and diversity • water quality and instream habitat complexity • freshwater fish and invertebrate assemblages	Medium
Enforce compliance with fire management hygiene protocols and for staff daily operating in the park	• heathland birds • ground dwelling mammals • shorebirds and seabirds • vegetation age class structure composition and diversity • water quality and instream habitat complexity • freshwater fish and invertebrate assemblages	Medium
Change legislation to alter proximity of shipping lanes (away from between the islands) to reduce pollution risk.		Medium

Management strategy	Targeted key ecological attributes	Priority
Work with partners to enforce the proximity of ballast discharge around the prom (xyz km TBD) to reduce impacts of marine pest invasion	• abundance and diversity of mobile sessile invertebrates • seagrass plant communities • mobile and sessile invertebrates • brown macro algae • water quality and in stream habitat • freshwater fish and invertebrate assemblages • shorebirds and seabirds • seals • coastal vegetation communities	Medium
Increased community engagement to assist with hygiene awareness of marine pests, surveillance and detection to prevention marine pest invasion.	• abundance and diversity of mobile sessile invertebrates • seagrass plant communities	Medium
Interpretation and education on the importance of keeping to tracks for hygiene.	• breeding of shorebirds and seabirds • age-class and structure of vegetation	Medium
Island weed control program (all islands) Eradication of Blue Periwinkle, Mirror Bush, Arum Lily from Doughboy, Cliffy group, Kanowna (integrate with burning); linked to rapid detection.	• breeding of shorebirds and seabirds • age-class and structure of vegetation	Medium
Remove spurge from seabird nesting sites (targeted asset protection).	• breeding of shorebirds and seabirds • age-class and structure of vegetation	Medium
Control established weeds (e.g. Blue Periwinkle, Blackberry, thistles, Ragwort) at targeted sites to protect key assets; requires knowledge to be pulled together.	• breeding of shorebirds and seabirds • age-class and structure of vegetation	Medium
Engage land-owners, shires and VicRoads in target areas of Yanakie and Sandy Point for integrated Mirror Bush control.	• breeding of shorebirds and seabirds • age-class and structure of vegetation	Medium
Work with Fisheries Victoria in targeted joint enforcement operations, and exchange information on recreational and commercial fishing in marine protected areas (including abalone).	• abundance and diversity of mobile sessile invertebrates • large mobile fish • shorebirds and seabirds • seals	Medium
Conduct 50 days of patrols per year in marine protected areas to ensure compliance with marine protected area regulations relating to fishing.	• abundance and diversity of mobile sessile invertebrates • large mobile fish • shorebirds and seabirds • seals	Medium
Maintain boundary markers and signs to assist with education and compliance with marine park regulations.	• abundance and diversity of mobile sessile invertebrates • large mobile fish • shorebirds and seabirds • seals	Medium

Management strategy	Targeted key ecological attributes	Priority
Work with policy-makers and stakeholders to alter the proximity of tank washing, to reduce impacts of pollution.		Low
Trial the introduction of the Eleven-armed Seastar as a natural predator for the Northern Pacific Seastar.	• abundance and diversity of mobile sessile invertebrates • seagrass plant communities	Low
Install footbaths at trail heads to prevent the spread of pathogens, especially *Phytophthora* and chytrid fungus.	• shorebird and seabird breeding • age-class and structure of vegetation	Low
Install fencing and signs around shorebird nesting sites.	• shorebirds and seabirds • seals • coastal vegetation communities	Low
Control access to beaches and prevent off-track (fencing, signs, revegetation).	• shorebirds and seabirds • seals • coastal vegetation communities	Low
Develop a community clean-up program, including participating in Clean Up Australia and World Ocean Day.	• mobile and sessile invertebrates • brown macroalgae • water quality and instream habitat • freshwater fish and invertebrate assemblages • shorebirds and seabirds • seals • coastal vegetation communities • seagrass plant communities	Low
Upgrade to treatment systems at key toilet facilities to EPA compliance (Tidal River stormwater, sullage pits at powered sites in Tidal River, Sealers Cove and Refuge Cove for boats) to reduce pollution.	• mobile and sessile invertebrates • brown macroalgae • water quality and instream habitat • freshwater fish and invertebrate assemblages • shorebirds and seabirds • seals • coastal vegetation communities • seagrass plant communities	Low
Increase the number of staff trained in oil spill response (currently only one person at Tidal River).	• mobile and sessile invertebrates • brown macroalgae • water quality and instream habitat • freshwater fish and invertebrate assemblages • shorebirds and seabirds • seals • coastal vegetation communities • seagrass plant communities	Low

Appendix D — Scientific names of species mentioned in the plan

English name	Scientific name
Arum Lily	*Zantedeschia aethiopica*
Austral Brooklime	*Gratiola peruviana*
Austral Mulberry	*Hedycarya angustifolia*
Australasian Swamphen	*Porphyrio melanotus*
Australian Fur Seal	*Arctocephalus pusillus*
Australian Gannet	*Morus serrator*
Bastard Trumpeter	*Latridopsis forsteri*
Bat's Wing Fern	*Histiopteris incisa*
Black Wallaby	*Wallabia bicolor*
Blackberries	*Rubus* species
Blackwood	*Acacia melanoxylon*
Blady Grass	*Imperata cylindrica*
Blanket-leaf	*Bedfordia arborescens*
Blue Periwinkle	*Vinca major*
Blue-throated Wrasse	*Notolabrus tetricus*
Bristly Wallaby Grass	*Rytidosperma setacea*
Cape Ivy	*Delairea odorata*
Cape Wattle	*Paraserianthes lophantha*
Cinnamon Fungus	*Phytophthora cinnamomi*
Coast Banksia	*Banksia integrifolia*
Coast Tea-tree	*Leptospermum laevigatum*
Coast Wattle	*Acacia longifolia* var. *sophorae*
Common Diving-petrel	*Pelecanoides urinatrix*
Common Ground-fern	*Calochlaena dubia*
Crested Tern	*Sterna bergii*
Dark-stem Eelgrass	*Heterozostera nigricaulis*
Dingo	*Canis lupus dingo*
Downy Ground-fern	*Hypolepis glandulifera*
Drooping She-oak	*Allocasuarina verticillata*
Eastern Great Egret	*Ardea modesta*
Eastern Quoll	*Dasyurus viverrinus*
Eleven-armed Seastar	*Coscinasterias muricata*
European Rabbit	*Oryctolagus cuniculatus*
Fairy Prion	*Pachyptila turtur subantarctica*
Feral Cat	*Felis catus*
Fishbone Water-fern	*Blechnum nudum*
Forest Mint	*Mentha laxiflora*
Forest Nettle	*Urtica incisa*
Gobies	*Nesogobius* species
Great White Shark	*Carcharodon carcharias*
Ground Parrot	*Pezoporus wallicus*
Hazel Pomaderris	*Pomaderris aspera*
Hooded Plover	*Thinornis rubricollis*

English name	Scientific name
Hog Deer	*Axis porcinus*
Intermediate Egret	*Ardea intermedia*
Kangaroo Grass	*Themeda triandra*
Kikuyu	*Pennisetum clandestinum*
Leafy Flat-sedge	*Cyperus lucidus*
Lewin's Rail	*Rallus pectoralis*
Lilly Pilly	*Acmena smithii*
Lilly Pilly Burrowing Crayfish	*Engaeus australis*
Little Penguin	*Eudyptula minor*
Manna Gum	*Eucalyptus viminalis*
Messmate	*Eucalyptus obliqua*
Mirror Bush	*Coprosma repens*
Mother Shield-fern	*Polystichum proliferum*
Mountain Ash	*Eucalyptus regnans*
Mountain Grey Gum	*Eucalyptus cypellocarpa*
Mullein	*Verbascum* species
Musk Daisy Bush	*Olearia argophylla*
Myrtle Beech	*Nothofagus cunninghamii*
Narrow-leaf Eelgrass	*Zostera muelleri*
Narrow-leaved Peppermint	*Eucalyptus radiata*
New Holland Mouse	*Pseudomys novaehollandiae*
New Zealand Fur Seal	*Arctocephalus forsteri*
Northern Pacific Seastar	*Asterias amurensis*
Old Wife	*Enoplosus armatus*
Ox-eye Daisy	*Leucanthemum vulgare*
Pacific Gull	*Larus pacificus*
Paddleweed	*Halophila australis*
Ragwort	*Senecio jacobaea*
Red Fox	*Vulpes vulpes*
Red-capped Plover	*Charadrius ruficapillus*
Rosy Perch	*Callanthias allporti*
Rough Tree-fern	*Cyathea australis*
Sambar Deer	*Rosa unicolor*
Sea Spurge	*Euphorbia paralias*
Sea Sweep	*Scorpis aequipinnis*
Self-heal	*Prunella vulgaris*
Shining Gum	*Eucalyptus nitida*
Short-beaked Echidna	*Tachyglossus aculeatus*
Short-tailed Shearwater	*Puffinus tenuirostris*
Silverbelly	*Parequula melbournensis*
Silver Gull	*Larus novaehollandiae*
Silver Wattle	*Acacia dealbata*
Silvertop Ash	*Eucalyptus sieberi*
Slender Weed Whiting	*Siphonognathus attenuatus*
Soft Tree-fern	*Dicksonia antarctica*

Appendix D (continued)

English name	Scientific name
Sooty Oystercatcher	*Haematopus fuliginosus*
South Gippsland Spiny Crayfish	*Euastacus neodiversus*
Southern Blue Gum	*Eucalyptus globulus*
Southern Brown Bandicoot	*Isoodon obesulus*
Southern Emu-wren	*Stipiturus malachurus*
Southern Goatfish	*Upeneichthys vlamingii*
Southern Hulafish	*Trachinops caudimaculatus*
Southern Maori Wrasse	*Opthalmolepis lineolata*
Southern Sand Flathead	*Platycephalus bassensis*
Southern Sassafras	*Atherosperma moschatum*
Spanish Heath	*Erica lusitanica*
Sparsely-spotted Stingaree	*Urolophus paucimaculatus*
Spot-tailed Quoll	*Dasyurus maculatus*
Spotted Galaxias	*Galaxias truttaceus*
Spotted Pipefish	*Stigmatopora argus*
Strapweed	*Posidonia australis*
Stinkwood	*Zieria arborescens*
Swamp Antechinus	*Antechinus minimus*
Sweet Pittosporum	*Pittosporum undulatum*
Thick-lipped Spider-orchid	*Caladenia tessellata*
Toothbrush Leatherjacket	*Acanthaluteres vittiger*
Victorian Christmas Bush	*Prostanthera lasianthos*
Victorian Smooth Froglet	*Geocrinia victoriana*
Weedfish	*Heteroclinus* and *Cristiceps* species
White Kunzea	*Kunzea ambigua*
Wide-bodied Pipefish	*Stigmatopora nigra*


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