Western Port Ramsar Site Management Plan Summary

Department of Environment, Land, Water & Planning

State Government Victoria

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Cover Image: Seagrass beds and Black Swans in Yaringa Marine National Park - M. Rodrigue, Parks Victoria.

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Acronyms

CAMBA	China Australia Migratory Bird Agreement
CPS	Components, Processes and Services
DEDJTR	Department of Economic Development, Jobs, Transport and Resources
DELWP	Department of Environment, Land, Water and Planning, *formerly* Department of Environment and Primary Industries
DoEE	Department of Environment and Energy (Australian Government)
ECD	Ecological Character Description
EPA	Environment Protection Authority, Victoria
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
IUCN	International Union for Conservation of Nature
LAC	Limits of Acceptable Change
JAMBA	Japan Australia Migratory Bird Agreement
MER	Monitoring, evaluation and reporting
PINP	Phillip Island Nature Parks
PPWCMA	Port Phillip and Westernport Catchment Management Authority
RIS	Ramsar Information Sheet
RCT	Resource Condition Target
ROKAMBA	Republic of Korea Australia Migratory Bird Agreement
SAG	Stakeholder Advisory Group
SC	Steering Committee
VWMS	*Victorian Waterway Management Strategy*

1. Introduction

The Western Port Ramsar Site Strategic Management Plan (Parks Victoria 2003) established the framework for the maintenance of ecological character through conservation and wise use. The plan is now over a decade old and there has been significant progress in both our understanding of the ecological character of Western Port and strategic direction in management of the site and Ramsar wetlands in Australia. A consultative and collaborative process was undertaken to review and update the Ramsar site management plan. The outputs of this review process are documented in two products:

1. A revised Western Port Ramsar Site Management Plan, including a full description of the plan's development and technical appendices, and
2. A Western Port Ramsar Site Management Plan summary document (**this document**) for a general audience that briefly outlines the process, and details the management strategies and responsibilities.

1.1 Purpose of the management plan

1.1.1 Ecological character

Ramsar sites are wetlands that are listed as having international importance under the 'Ramsar Convention on Wetlands', with Australia one of the first countries to sign in Ramsar, Iran in 1971. There are now 169 countries with over 2000 wetlands listed globally. Listing a wetland as a Ramsar site carries with it certain obligations, including managing the site to maintain its 'ecological character' and to have procedures in place to detect if any threats are likely to, or have altered 'ecological character'. The Ramsar Convention has defined "ecological character" and "change in ecological character" as (Ramsar Convention 2005):

"*Ecological character is the combination of the ecosystem components, processes and benefits/services [CPS] that characterise the wetlands at a given point in time*" and

"*…change in ecological character is the human induced adverse alteration of any ecosystem component, process and or ecosystem benefit/service*."

This Ramsar site management plan sits within a framework for the management of aquatic ecosystems in Australia and the State of Victoria. At the national level, the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) establishes the basis for managing Ramsar sites; and a set of Australian Government guidelines for describing ecological character and developing management plans has been developed. In Victoria the *Victorian Waterway Management Strategy* (VWMS) guides the management of rivers, estuaries and wetlands. How this management plan fits in to the broader framework is illustrated in Figure 1.

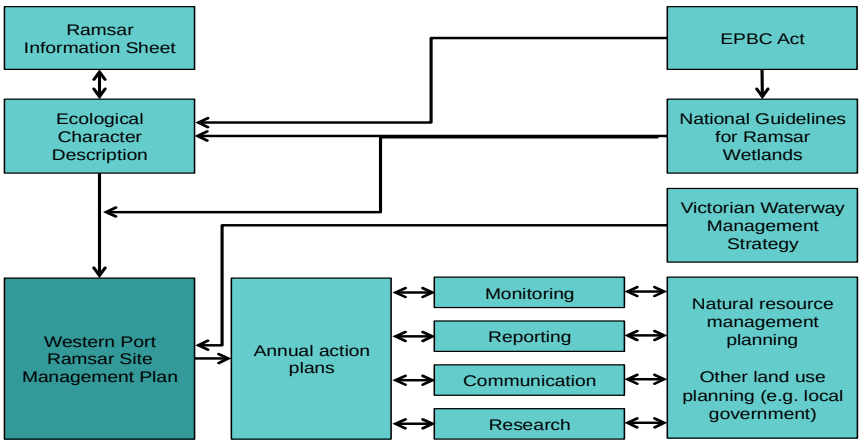


Figure 1: The Western Port Ramsar Site Management Plan in context of other requirements for the management of Ramsar sites (adapted from DEWHA 2008).

Ramsar: A network of sites

There is a network of over 2,000 Ramsar wetlands across the globe that is dedicated to sustaining biodiversity and wise use. One of the important functions, and a primary purpose for the establishment of the Convention, is to protect sites in different countries that are important for migratory birds.

The migratory birds that visit Australia are part of the East Asian-Australasian Flyway and most of them migrate from breeding grounds in North-east Asia and Alaska to non-breeding grounds in Australia and New Zealand, covering the journey of 10,000 kilometres twice in a single year.

The lifecycle of most international migratory shorebirds involves (Bamford et al. 2008):

- breeding in May to August (northern hemisphere),
- southward migration to the southern hemisphere (August to November),
- feeding and foraging in the southern hemisphere (August to April), and
- northward migration to breeding grounds (March to May).

During both northward and southward migration, birds may stop at areas on route to rest and feed. These stopovers are referred to as “staging” areas and are important for the birds’ survival. In addition, birds on their first southward migration that have not yet reached breeding maturity may remain in Australia over the southern winter period.

Other migratory species that are supported by the Western Port Ramsar Site include species such as the double-banded plover, which migrate between New Zealand and Australia spending the non-breeding (winter) season on Australian shores.

The Western Port Ramsar Site supports over 30 species that are international migrants and listed under migratory agreements with China, Japan and the Republic of Korea. Important habitats within the site include the extensive intertidal mudflats and saltmarsh where migratory waders feed. High tide roosting sites, where waders can rest are also important.

Migratory waders in Australia need to build up their energy reserves for the homeward journey. This means that they not only require abundant food sources, but they need to minimise their activity. Disturbance of waders when roosting or feeding may result in a significant loss of energy. This may even compromise their ability to build up enough reserves to complete the return journey to breeding grounds. Disturbance of migratory shorebirds may occur as a result of four wheel driving on beaches or in saltmarsh and intertidal areas, unleashed dogs, recreational fishing (in some instances); boating and jet skiing and any activity in the intertidal zone that causes significant noise or light. Migratory waders are also susceptible to predation by foxes and cats.

Populations of many migratory wader species are in decline, primarily through loss of habitat in breeding and staging areas outside Australia. This makes them more vulnerable while in Australia and increases the importance of maintaining habitat and conditions at overwintering sites. Residents and visitors to Western Port need to work together to help protect and conserve these important species.

1.1.2 Objectives of the draft management plan

The primary purpose of the Western Port Ramsar Site Management Plan is to maintain ecological character and promote wise use of the site. Wise use is defined by the Convention as (Ramsar Convention 2005):

"*the maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development*".

The Western Port Ramsar Site supports a number of ecological, socio-economic and cultural values. This plan has adopted the principle that by maintaining (or improving) ecological character, the socio-economic and cultural values associated with the Ramsar site will also be conserved, within the concept of wise use. Therefore, the primary objective of the Western Port Ramsar Site Management Plan is:

"***To maintain, and where necessary improve, the ecological character of the Western Port Ramsar Site and promote wise and sustainable use***".

1.2 Development of the draft plan

Throughout the development of the Western Port Ramsar Site Management Plan, a number of principles were adopted and underpinned the planning process, consistent with the guiding principles of the VWMS (Department of Environment and Primary Industries 2013):

Stakeholder involvement – this plan has been developed with the input of a broad range of stakeholders through every phase.

Evidence-based approach – best available knowledge has been used to underpin the development of this plan including the risk assessment and prioritisation of values and threats.

Precautionary principle – lack of full scientific certainty shall be not used as a reason for postponing cost-effective measures to prevent environmental degradation.

Building on existing activities – there are a large number of activities already being implemented within the catchment and the Western Port Ramsar Site to maintain and improve condition and ecosystem services. This plan seeks to build on these existing activities rather than duplicate effort.

Adaptive management – the plan life is for seven years, with a mid-term review after three years. A monitoring program has been included and the principles of monitor, evaluate, report and improve have been adopted.

2 Western Port Ramsar Site

A complete description of the ecological character of the Western Port Ramsar Site is contained in the ecological character description (ECD) (Kellogg, Brown and Root 2010). A summary of this information relevant to the management plan for the site is provided below.

2.1 Location

Western Port Ramsar Site is located 60 kilometres southeast of Melbourne and comprises a large proportion of the Western Port embayment to the north of Phillip Island (Figure 2). The site consists of large shallow intertidal areas, dissected by deeper channels and covers approximately 60,000 hectares. It includes a number of small islands such as Quail, Elizabeth and Ram Islands and the southern tip of French Island known as Tortoise Head. The main body of French Island lies in the centre of Western Port, but is excluded from the Ramsar Site.

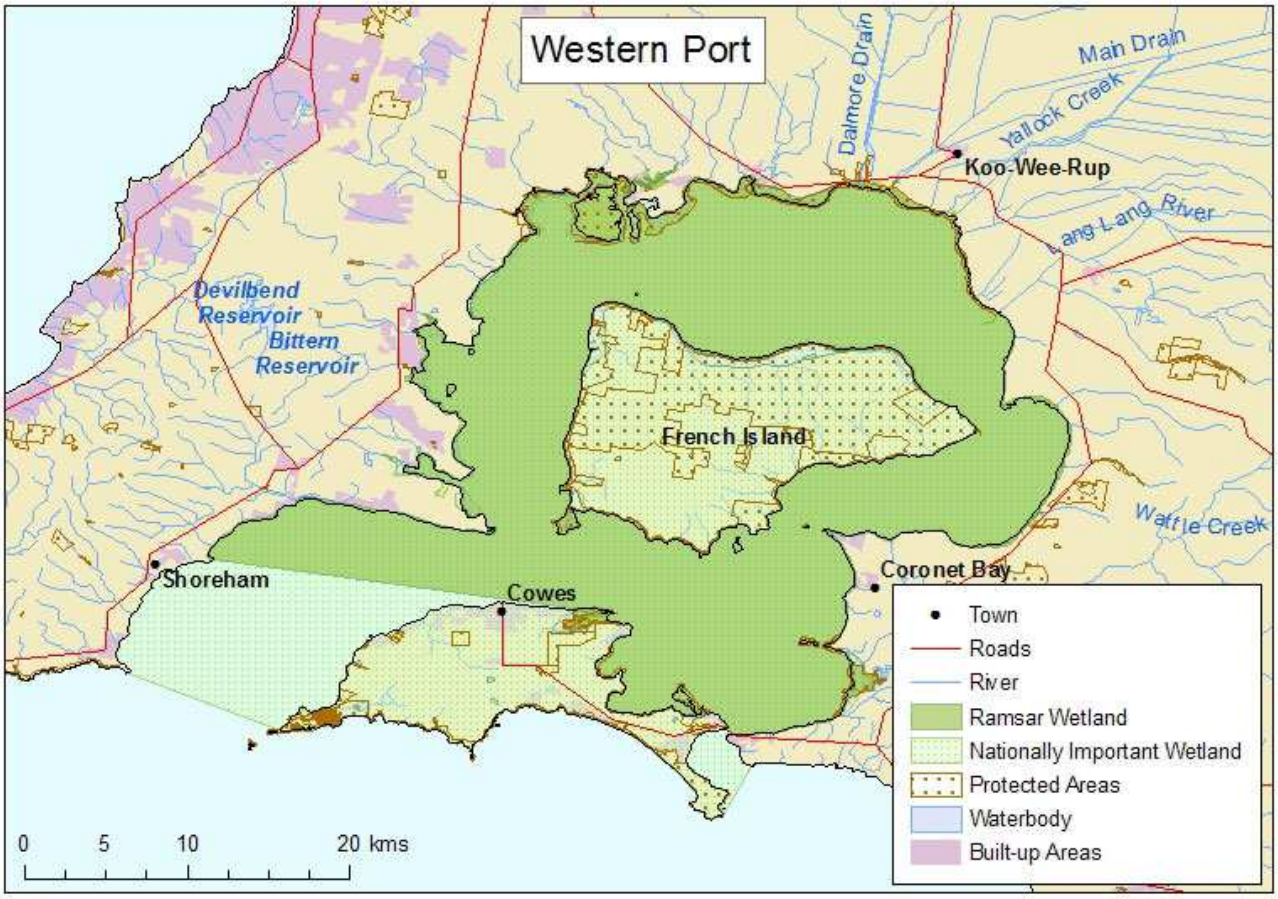


Figure 2 Map of the Western Port Ramsar Site (http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=19#). Note that finer detail can be seen using the Biodiversity Interactive Map (http://mapshare2.dse.vic.gov.au/MapShare2EXT/imf.jsp?site=bim) or the spatial layer is available from the Spatial Datamart (http://services.land.vic.gov.au/SpatialDatamart/).

2.2 Ramsar listing criteria

To be listed as a wetland of international importance under the Ramsar Convention, a site must meet at least one of the nine listing criteria. At the most recent assessment, in 2010, the Western Port Ramsar Site met seven of those criteria (Table 1).

Table 1: Criteria met by the Western Port Ramsar Site (Kellogg, Brown and Root 2010 and Ramsar Information Sheet, in prep.).

Criteria	Justification
1. Contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region	The Ramsar site is a particularly good example of a natural wetland marine embayment with extensive intertidal flats, mangroves, and saltmarsh within the bioregion.
2. Supports vulnerable, endangered, or critically endangered species or threatened ecological communities	The site regularly supports one ecological community and seven wetland dependent fauna species listed under the EPBC Act and / or IUCN Red List: • Coastal saltmarsh – Vulnerable ecological community • Australian fairy tern (*Sternula nereis nereis*) – Vulnerable • Bar-tailed godwit (*Limosa lapponica baueri*) - Vulnerable[1] • Curlew sandpiper (*Calidris ferruginea*) – Critically endangered • Eastern curlew (*Numenius madagascariensis*) – Critically endangered • Lesser sand plover (*Charadrius mongolus*) – Vulnerable[1] • Red knot (*Calidris canutus*) - Endangered[1] • Australian grayling (*Prototroctes maraena*) – Vulnerable.
3. Supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region	The soft sediments of Western Port support a high diversity of ghost shrimps, including *Michelea microphylla*, a local endemic species known only from Crib Point (Wilson et al. 2011). The intertidal and subtidal reefs at San Remo, which support a high diversity of one invertebrate group — opisthobranchs (sea-slugs and sea-hares) and Crawfish Rock, although small is considered especially diverse and supports the rare endemic hydroid *Ralpharia coccinea* (Edmunds et al. 2010).
4. Supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions	Western Port Ramsar Site supports large numbers of migratory waterbirds, breeding of waterbirds and nursery grounds for fish.
5. Regularly supports 20,000 or more waterbirds	Western Port Ramsar Site supports over 20,000 waterbirds in two out of every three years.
6: Regularly supports 1% of the individuals in a population of one species or subspecies of waterbird	Counts above 1% of the estimated flyway population of six species are regularly recorded within the site: Australian fairy tern (*Sternula nereis nereis*), eastern curlew (*Numenius madagascariensis*), red-necked stint (*Calidris ruficollis*), curlew sandpiper (*Calidris ferruginea*), Australian pied oystercatcher (*Haematopus longirostris*) and Pacific gull (*Larus pacificus*).
8: An important source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere, depend.	Seagrass beds and other habitats within the Ramsar site are known to provide important nursery habitat for a number of fish species, including several that are recreationally important.

[1] Species listed on May 5, 2016

2.3 Values

The Western Port Ramsar Site ECD (Kellogg, Brown and Root 2010) identified components, processes services (CPS) that are critical to the ecological character of the Ramsar site: wetland bathymetry, geomorphology and sedimentation; seagrass, saltmarsh, mangroves, waterbirds, invertebrates, fish and threatened species. These are described briefly in Table 2, together with additional values of the site identified as important to this management plan (rocky reefs and social and cultural values). More detail on each of the critical CPS can be found in the ECD for the site.

Table 2: Values of the Western Port Ramsar Site (Kellogg, Brown and Root 2010). * Indicates identified as critical to the ecological character of the Ramsar site.

Value	Description
Wetland bathymetry (intertidal and subtidal mud and sand flats)*	This value is related to the depth profile or morphology of the Western Port Ramsar Site, which comprises extensive intertidal mudflats (27,000 hectares) with deeper intertidal channels. At low tide, approximately 40 percent of the Ramsar site is exposed and this forms important feeding habitat for shorebirds, including migratory waders.
Geomorphology and sedimentation*	Western Port is characterised by the high sediment loads from the catchment, which are deposited in the river mouths and intertidal areas within the site. Resuspension of sediments by wind and wave action in the predominantly shallow embayment is also an important process.
Seagrass*	Seagrass covers intertidal and subtidal areas of the Western Port Ramsar Site, but has been highly variable over time. It was at very low levels at the time of listing (7,200 hectares); but has increased in the north and west of the site, with most recent estimates of 15,000 hectares.
Saltmarsh*	The Western Port Ramsar Site contains one of the largest expanses if saltmarsh in Victoria, covering an area of just over 1,100 hectares within the Ramsar site boundary.
Mangrove*	The mangrove areas of Western Port comprise a single species *Avicennia marina* and represent some of the most southerly extents of the species globally.
Rocky reef	Rocky reefs comprise a small area within the Ramsar site, such as the reefs at San Remo and Crawfish Rock. They are very diverse and contain a large number of species, some of which occur only in Western Port.
Fish*	The Western Port Ramsar Site supports a diversity and abundance of fish and supports an important recreational fishery.
Waterbird abundance*	A total of 115 waterbird species have been recorded within the Western Port Ramsar Site, and regularly supports 12 species listed under international migratory bird agreements JAMBA, CAMBA and ROKAMBA. The Western Port Ramsar Site provides significant foraging area for a variety of shorebird species as well as important roosting (resting) sites
Waterbird breeding*	Western Port supports breeding waterbird species and is particularly important for beach nesting birds.
Threatened species*	The Western Port Ramsar Site supports a number of threatened species including the critically endangered eastern curlew, curlew sandpiper and the vulnerable Australian fairy tern, bar-tailed godwit, lesser sand plover and red knot. The vulnerable Australian grayling migrates from rivers into the site for part of its lifecycle.
Social and cultural values	Western Port Ramsar Site, adjoining areas and its surrounds have been designated as a Biosphere Reserve under the UNESCO's Man and the Biosphere program. The Ramsar site is within the traditional lands of the Boonwurrung, who maintain strong connections to the land and waters. The site contains the commercial Port of Hastings that services around 200 ships per year and contributes around $67 million annually to the region's economy. Western Port has a long history of recreational fishing and was declared a 'Recreational Fishing Haven' in December 2007 by the Department of Primary Industries after imposing a ban on commercial fishing.

Establishing the benchmark: "At the time of listing"

The Ramsar Convention establishes the benchmark for the ecological character of listed wetlands as: "*at the time of designation as a Ramsar Wetland of International Importance*" (Resolution VI.1 Annex Para 2.1).

This is an important concept for understanding the goal of maintaining ecological character and assessing change in character. Aquatic ecosystems are rarely static and stable, and Western Port is no exception. There are ongoing changes, many of which commenced prior to designation, with a continuing trajectory of change. Establishing a benchmark, against which change in ecological character can be assessed, is a task for the Ecological Character Description, using Limits of Acceptable Change. Maintaining the site's ecological character in a changing environment is a challenge for Ramsar site management.

An example of these challenges is the extent of seagrass within the site. At the time of listing there were just 7,200 hectares of seagrass in Western Port. This fell further in 1983-94 to just 5,900 hectares and follows a decline from over 23,000 hectares in the 1970s (Blake and Ball 2001). There was a large loss of intertidal seagrass (*Zostera tasmanica*) in the late 1970s / early 1980s from the northern and eastern parts of Western Port attributed to smothering by sediments. By the mid-1990s, there was evidence of recovery of seagrass extent and condition in Western Port, which continues to this day. The most recent mapping suggests that there is now over 15,000 hectares of seagrass (Holland et al. 2013).

What does this mean for setting a benchmark for ecological character and managing seagrass at the site? It means that the administrative reporting of a potential change in character to the Convention would only occur if seagrass were to decline *below* what it was at the time of listing (7,200 hectares). Management of seagrass at the site, however, is aimed at continuing to improve the extent and condition of seagrass beyond current levels and continuing the trajectory of recovery.

Image: Pebble crab amongst narrow leaf seagrass (*Zostera muelleri*). Photo: M. Rodrigue, Parks Victoria.

2.4 Current condition and Limits of Acceptable Change (LAC)

The mechanism against which change in ecological character is assessed is via comparison with Limits of Acceptable Change (LAC). LAC are defined by Phillips (2006) as:

"…the variation that is considered acceptable in a particular measure or feature of the ecological character of the wetland. This may include population measures, hectares covered by a particular wetland type, the range of certain water quality parameter, etc. The inference is that if the particular measure or parameter moves outside the 'limits of acceptable change' this may indicate a change in ecological character that could lead to a reduction or loss of the values for which the site was Ramsar listed. In most cases, change is considered in a negative context, leading to a reduction in the values for which a site was listed".

The LAC for Western Port Ramsar Site were established for critical components, processes and services in the ECD (Kellogg, Brown and Root 2010). An example of a LAC and a comparison with current condition is provided below (Table 3). The full set of LAC and an assessment of the current state of the Western Port Ramsar Site are provided in the full Management Plan. Note that the official assessment of the status of ecological character occurs through the Ramsar Rolling review (DELWP in prep.).

Table 3: Example of a LAC and an assessment against current condition.

Critical CPS	Limit of Acceptable Change	2015 Assessment
Saltmarsh	Total saltmarsh extent will not decline below 850 hectares.	The most recent assessment of saltmarsh extent in Western Port (Boon et al. 2011) indicates 1143 hectares. There is no evidence of a significant decline in saltmarsh extent. **LAC is met.**

3 Priority values and threats

A risk assessment was completed for the Western Port Ramsar Site with the input of scientific experts and local knowledge. The purpose of the risk assessment was to identify priority values and threats to inform strategic actions in Western Port Ramsar Site Management Plan (Figure 3).

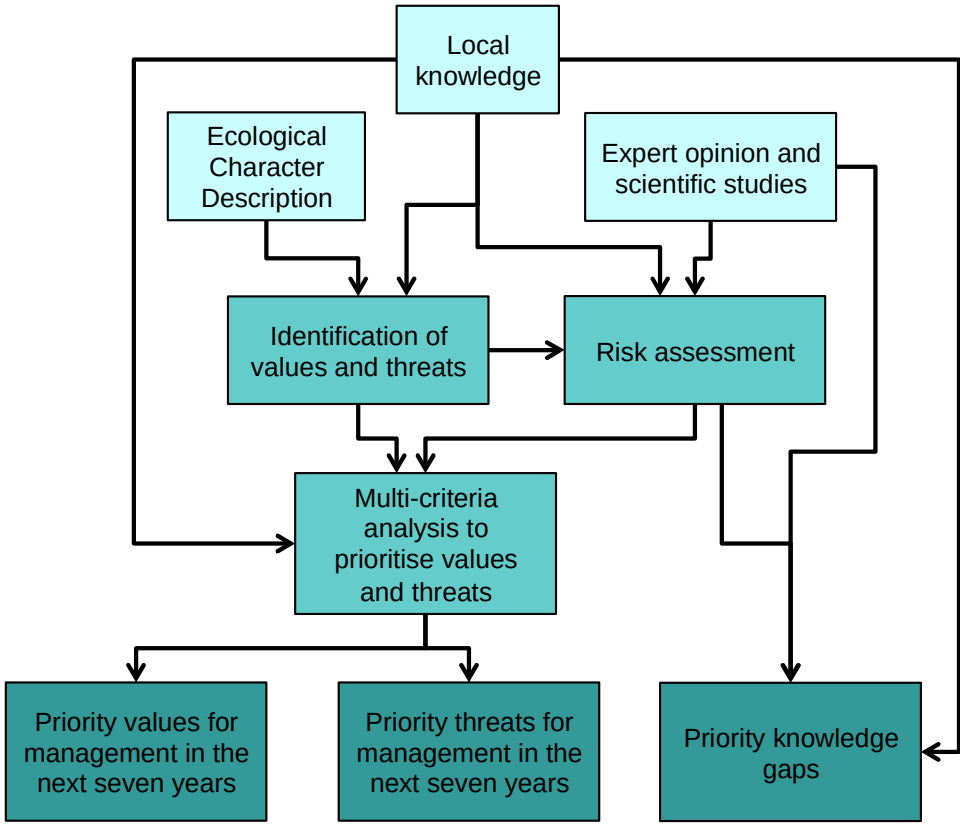


Figure 3: Process of prioritising values and threats and the role of the risk assessment.

A total of 17 priority threats were identified through this process:

1. Invasive species: Cord-grass (*Spartina* spp.)
2. Invasive species: new and emerging salt-tolerant weeds
3. Invasive species: foxes and cats predating on shorebirds and beach nesting birds
4. Invasive species: introduced marine pests (current and potential new invasions)
5. Invasive species: pigs, goats, rabbits in intertidal areas
6. Climate change: sea level rise
7. Climate change: increased frequency and intensity of storms leading to shoreline erosion
8. Climate change: increased frequency and intensity of storms leading to increased sediments
9. Recreation: Vehicles in the intertidal zone
10. Recreation: Disturbance of shorebirds and beach nesting birds
11. Recreational fishing (including bait pumping)
12. Nutrients from rural and agricultural areas
13. Sediments from rural and agricultural areas
14. Toxicants from rural and agricultural areas
15. Nutrients from urban areas
16. Toxicants from urban areas
17. Urban, commercial and industrial development (direct habitat removal and associated impacts).

The relationship between the high priority threats (pressures and stressors) and the high priority values is illustrated in Figure 4. In addition to the threats identified through the risk assessment process, the Steering Committee and Stakeholder Advisory Group considered that there were a number of non-physical threats that were critical to the management of the Western Port Ramsar Site. These included:

- a lack of awareness of the values and Ramsar status of Western Port by broad sections of the community
- poor integration of agency and NGO efforts, and
- Inadequate and variable resourcing for management actions to maintain the ecological character of the Western Port Ramsar Site.

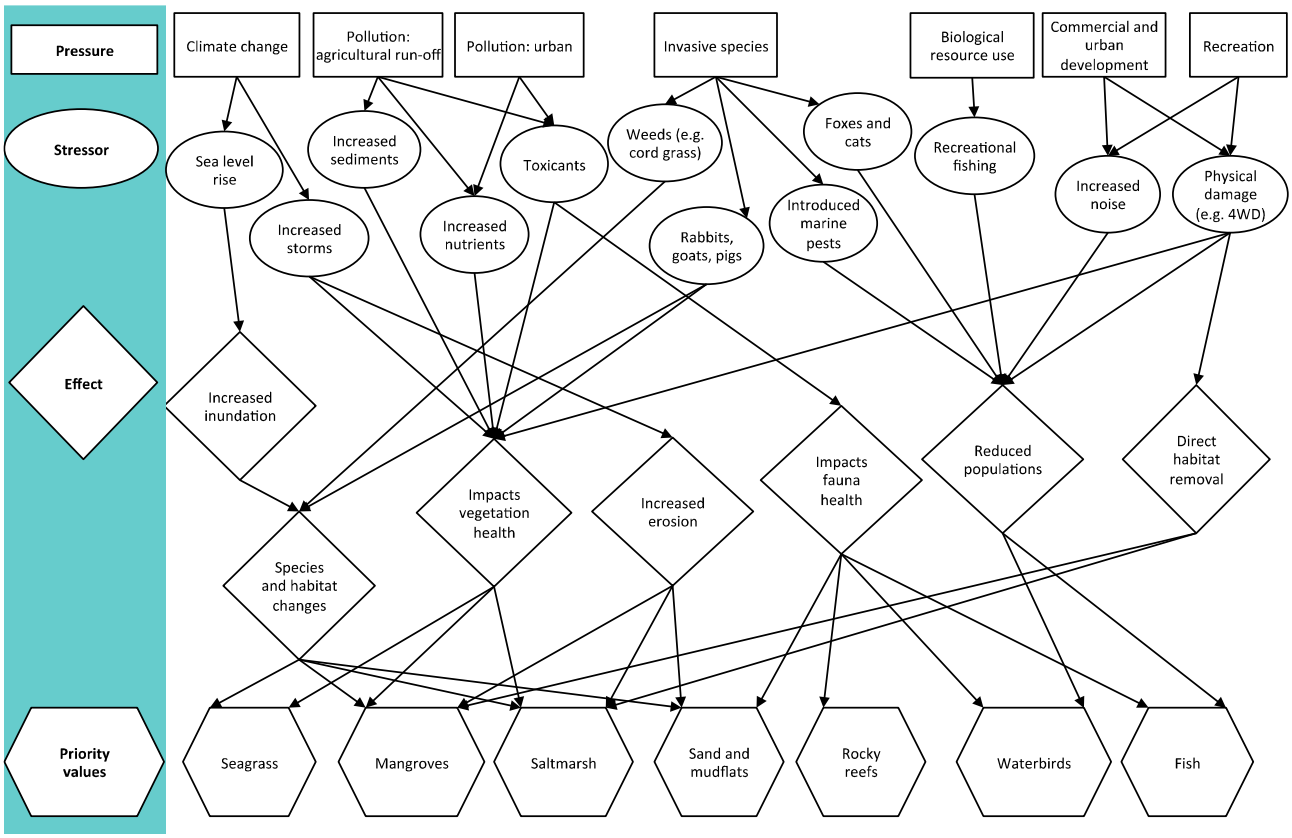


Figure 4: Stressor model illustrating the major linkages between high priority threats (pressures and stressors) and high priority values.

Throughout the development of the plan, 11 high priority knowledge gaps were identified:

1. Distribution, community composition, abundance and condition of benthic infauna communities.
2. Status of phytoplankton in Western Port, including toxic species.
3. Chemicals of emerging concern (oestrogens, pharmaceuticals) - concentrations and potential impacts.
4. Impact of current and future recreational fishing on fish populations.
5. Community understanding and valuing of the Western Port Ramsar Site.
6. Beach nesting bird breeding and recruitment success.
7. Impact of cattle from unfenced properties (e.g. fencing and unlicensed grazing of saltmarsh).
8. Extent and location of illegal removal of saltmarsh and mangrove vegetation.
9. Impact of climate change on fire regimes in saltmarsh and mangrove vegetation.
10. New and emerging recreational activities and impacts on Ramsar values.
11. Opportunities for investment from carbon stored in Western Port habitats.

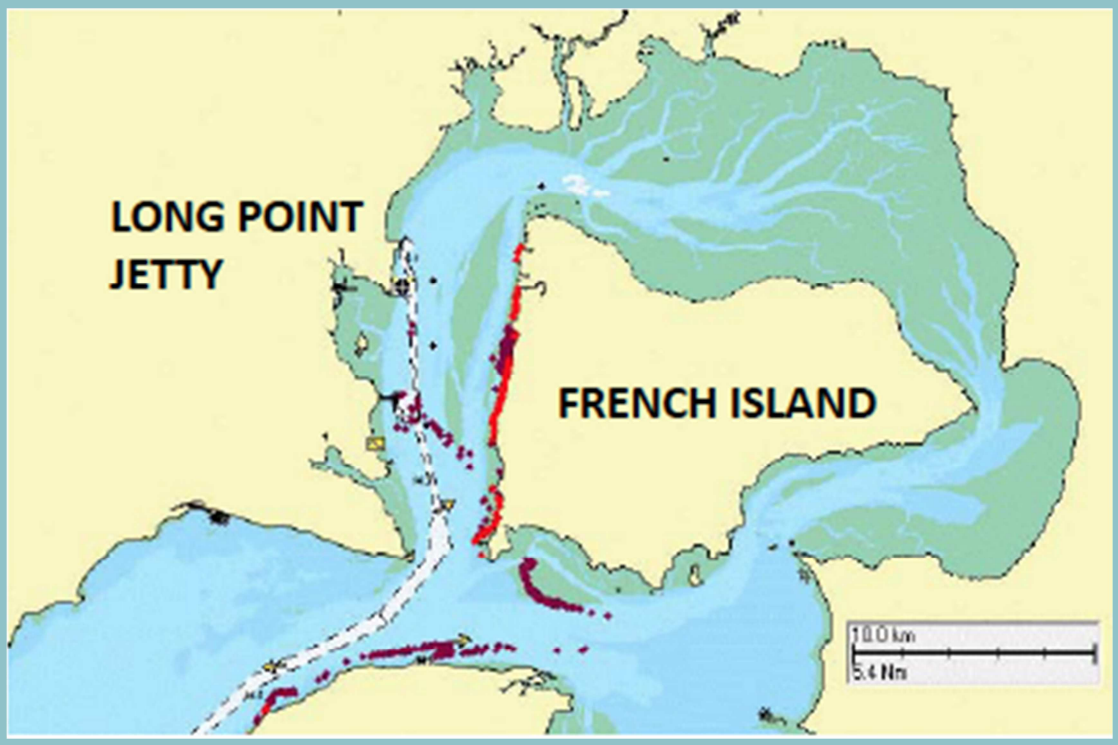
A complete description of the risk assessment process, the identified risks, and the process for identifying high priority values and threats is provided in the full Western Port Ramsar Site Management Plan.

Using an evidence-based approach to inform the risk assessment: Oil spills

The Westernport and Peninsula Protection Council and the Victorian National Parks Association commissioned an oil spill study for Western Port (http://vnpa.org.au/admin/library/attachments/PDFs/media%20backgrounders/bgr-wport-shipping-spill.pdf). Six oil spill scenarios were modelled using a SIMAP three-dimensional spill trajectory and weathering model. The model simulates the transport, spreading and weathering of specific oil types under the influence of changing weather conditions and ocean movements. The outputs were used to assess exposure and potential impacts to the values of Western Port, including the Ramsar site.

The main findings of the modelling were:

- Oil spilled under any of the six scenarios has a high probability of spreading widely across the bay.
- Oil spills disperse rapidly and could reach shorelines and seagrass meadows within minutes and sensitive marine national parks within hours.



An example of one of the six model outputs (modelling a diesel spill from Long Point Jetty). Red indicates oil spill reaching the shoreline, burgundy indicates oil movement within channels and open water areas.

Impacts of oil spills on marine biota and shorelines are well documented (e.g. Gundlach and Hayes 1978, Swan et al. 1994, Islam and Tanaka 2004) and effects are both acute and chronic, with recovery in many instances taking decades (e.g. Peterson et al. 2003). Boon et al. (2011) provide a literature review of the impacts of hydrocarbon pollution on Victorian coastal wetlands. This review found that few cases of pollution were recorded, but impacts can be prolonged.

All this combined evidence was used to inform the "consequence" aspect of the risk assessment. The consequence of oil spills on values in the Western Port Ramsar Site was assessed as "extreme".

The assessment of the likelihood of an oil spill was informed by a number of facts:

- The number of ships that enter Western Port each year is small (around 50) and there are no proposed plans to increase this number in the next 15 years (period of the risk assessment).
- The number of oil spills that have occurred in the past in Victorian waters is small. There have been no significant spills in Western Port and there have only been 20 spills of > 100 tonnes in Australia in the last 100 years (AMSA https://www.amsa.gov.au/environment/major-historical-incidents/).
- Mitigation measures such as oil spill contingency plans that are already in place.

Overall the risk was assessed as "medium".

4 Site management strategies

4.1 Approach

Resource condition targets (RCTs) were developed for priority values to guide the development of management strategies. Resource condition targets are statements of aspirational condition for each of the identified priority values. Management strategies were developed by experts and stakeholders to meet the targets and address critical knowledge gaps and were assigned to one of five themes.

- Theme 1: Managing water quality
- Theme 2: Living with climate change
- Theme 3: Protecting flora and fauna
- Theme 4: Improving our knowledge
- Theme 5: Communication, Education, Participation and Awareness (CEPA).

4.2 Achievements from the 2003 plan

A large amount of on-ground work and research has been undertaken within the Western Port Ramsar Site since the release of the 2003 Ramsar site management plan. Case studies of some key projects demonstrating the breadth of work being undertaken to maintain ecological character are provided in text boxes under each theme.

4.3 Resource condition targets

A total of eight RCTs have been defined for the Western Port Ramsar Site. These have helped to guide the identification of management strategies and provide a goal for monitoring the ecological character of the site. Further information about development of RCTs can be found in the full management plan for the site. The RCTs are:

1. Maintain the diversity of habitats for the Ramsar site:
    - Seagrass > 15,000 hectares
    - Saltmarsh > 1,100 hectares
    - Mangroves > 1,700 hectares
    - Sand / mudflats > 27,000 hectares
    - Rocky reef.
2. Maintain the diversity and abundance of native fish.
3. Maintain connectivity between inland rivers and marine areas of Western Port for migratory fish species.
4. Maintain abundance of waterbirds in each of the following guilds (calculated as a rolling five year average of maximum annual count):
    - Total waterbirds > 20,000
    - Migratory waders > 12,000
    - Australasian waders > 1,100
    - Ducks > 1,300
    - Fishers > 600
    - Gulls > 1,300
    - Large wading birds > 1,300
    - Swans > 2,700.
5. Provide predator free significant beach-nesting sites.
6. Maintain predator free roosting and feeding habitats for threatened waterbirds species (saltmarsh and intertidal mud and sandflats).
7. Maintain the abundance and diversity of ghost shrimp.
8. Maintain productivity of Western Port to support adequate shorebird biomass and abundance.

4.4 Theme 1: Managing water quality

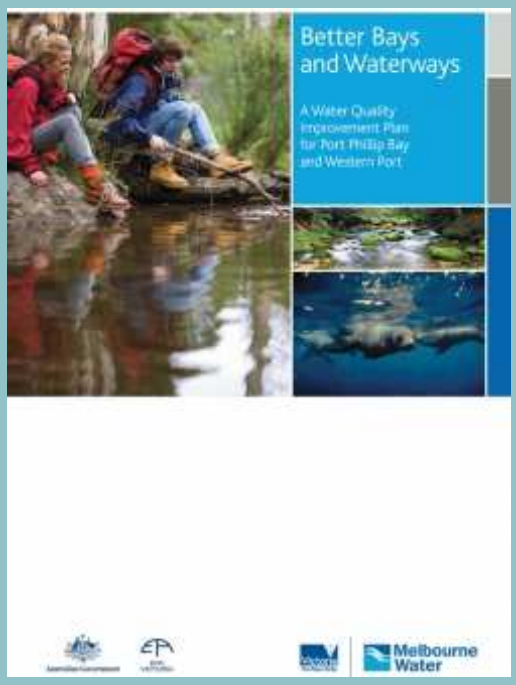
Sediment and nutrient inputs to Western Port were identified as high priority threats, with increasing concern about catchment derived toxicants. Significant research and on-ground work has been conducted on managing water quality both in terms of sources and impacts to key values within Western Port. This includes through the Better Bays and Waterways program (see below), Port Phillip and Western Port Regional Catchment Strategy and the Melbourne Water Healthy Waterways Strategy, as well as through a number of other regional initiatives. It is the intention of the Western Port Ramsar Site Management Plan to be complementary to these other initiatives, working in a coordinated manner to improve water quality in the Ramsar site.

Five management strategies have been identified to manage water quality (Table 4). The relationship between management strategies, priority threats and priority values with their associated RCTs is provided in the full Western Port Ramsar Site Management Plan.

Table 4: Management strategies and responsible organisations for managing water quality.

Management strategy	Responsibility	Linkages to existing programs / activities
1.1 Reduce nutrient and sediment inflow: Support the implementation of riparian, in-stream and catchment works identified in the Healthy Waterways Strategy (Melbourne Water Corporation 2013); revised State Environment Protection Policy Waters of Victoria (when completed); Port Phillip and Western Port Regional Catchment Strategy and local actions plans to improve water quality in storm water and river flows to Western Port.	Melbourne Water EPA Victoria DELWP CMA Local government	Healthy Waterways Strategy PPWP Regional Catchment Strategy Review of SEPP (WoV) Western Port Biosphere Water Stewardship
1.2 Develop best practice guidelines for urban and rural run-off and an incentive scheme to facilitate uptake	Melbourne Water DELWP Local government	Urban Stormwater: Best Practice Environmental Management Guidelines Western Port Biosphere Water Stewardship
1.3 Develop appropriate approaches for pollutant reduction and seagrass improvement, and trigger values (objectives) for water quality indicators	EPA Victoria	Review of SEPP (WoV) Western Port Biosphere Water Stewardship
1.4 Investigate the feasibility of and parameters for creating retention wetlands for improving water quality at the downstream end of priority streams entering Western Port. Implement actions that arise from the investigation (create appropriate retention wetlands).	CMA DELWP Melbourne Water Local government	Western Port Biosphere Water Stewardship
1.5 Investigate the sources, potential impact and mitigation strategies for toxicants entering Western Port through storm water drains and rivers	Melbourne Water EPA Victoria Local government	Western Port Scientific Investigations funded by Melbourne Water Western Port Biosphere Water Stewardship

Better Bays and Waterways



The Better Bays and Waterways program was developed jointly by EPA Victoria and Melbourne Water and was a five year (2009-2014) water quality improvement plan for the Port Phillip and Westernport region. More than 90 actions were identified for more than 30 organisations including local government, five Victorian Government agencies, research institutions and community groups.

The $5 million plan, jointly funded by the Australian Government, EPA Victoria and Melbourne Water, described the values, threats and condition of the region's catchments, waterways and Port Phillip and Western Port bays.

The plan resulted in a total investment of almost $300 million, across 15 focus areas, aimed at reducing the amount of pollutants entering waterways and bays from rural, urban and coastal areas.

Snap shot of the Better Bays and Waterways focus areas relevant to Western Port.

Example focus areas	Example actions
Rural water quality program	**5 actions** – e.g. Fencing and revegetating stream frontages and helping farmers implement practices to protect water quality.
Understanding and managing urban pollution	**8 actions** – e.g. Revise urban stormwater management standards; ensure compliance across all urban development.
Managing urban development	**10 actions** – e.g. Build urban wetlands to reduce existing stormwater pollutant loads to waterways and the bays.
Managing potentially polluting activities	**8 actions** – e.g. Accelerate programs to sewer areas still serviced by septic systems.
Bushfire rehabilitation	**8 actions** – e.g. Range of actions to minimise effects of February 2009 bushfires on waterways.
Marine environment	**4 actions** – e.g. Re-establish shoreline vegetation in targeted areas, especially mangroves on Western Port shorelines identified as at risk of erosion.
Bay monitoring	**5 actions** – e.g. Put in place a framework to monitor and report on the health of the bays.
Research and investigation	**12 actions** – e.g. Undertake research on the effectiveness of natural and constructed stormwater treatment systems.
Community engagement	**3 actions** – e.g. Continue educational programs run by Melbourne Water at schools and festivals to promote understanding of water quality.
Governance	**2 actions** – e.g. Establish a coordinating committee to oversee the implementation of Better Bays and Waterways action plan.
Reporting, evaluation, review	**6 actions** – e.g. Annually report on the implementation of Better Bays and Waterways actions

4.5 Theme 2: Living with climate change

Climate change was identified as a priority threat for management in the next seven years based largely on the effects of sea level rise on coastal vegetation communities (saltmarsh and mangroves) as well as on habitat for shorebirds. Longer term impacts from increased frequency and intensity of drought and increased storm surge were also considered a high priority threat, and the potential change in fire regimes identified as a knowledge gap.

Although it is not possible to directly influence the drivers of climate change in a management plan for a single Ramsar site, planning for resilience and adaptation to climate change is crucial and requires immediate action to maintain ecological character into the future. The issue of maintaining ecological character in a changing climate and with the inevitable changes in species distributions is being considered by the Convention (and in many other forums) both in Australia and internationally (Pittock et al. 2010, Gitay et al. 2011, Finlayson et al. 2013).

The impacts of climate change on the values of Western Port and potential mitigation strategies have been the subject of some recent research. This includes a local coastal hazard assessment (Arrowsmith and Womersley 2014); consideration of climate change impacts on key values (Melbourne Water Corporation 2011) and an assessment of potential restoration sites for saltmarsh (see text box next page).

Three management strategies have been identified to address the impact of changing climate (Table 5). The relationship between management strategies, priority threats and priority values with their associated RCTs is provided in the full Western Port Ramsar Site Management Plan.

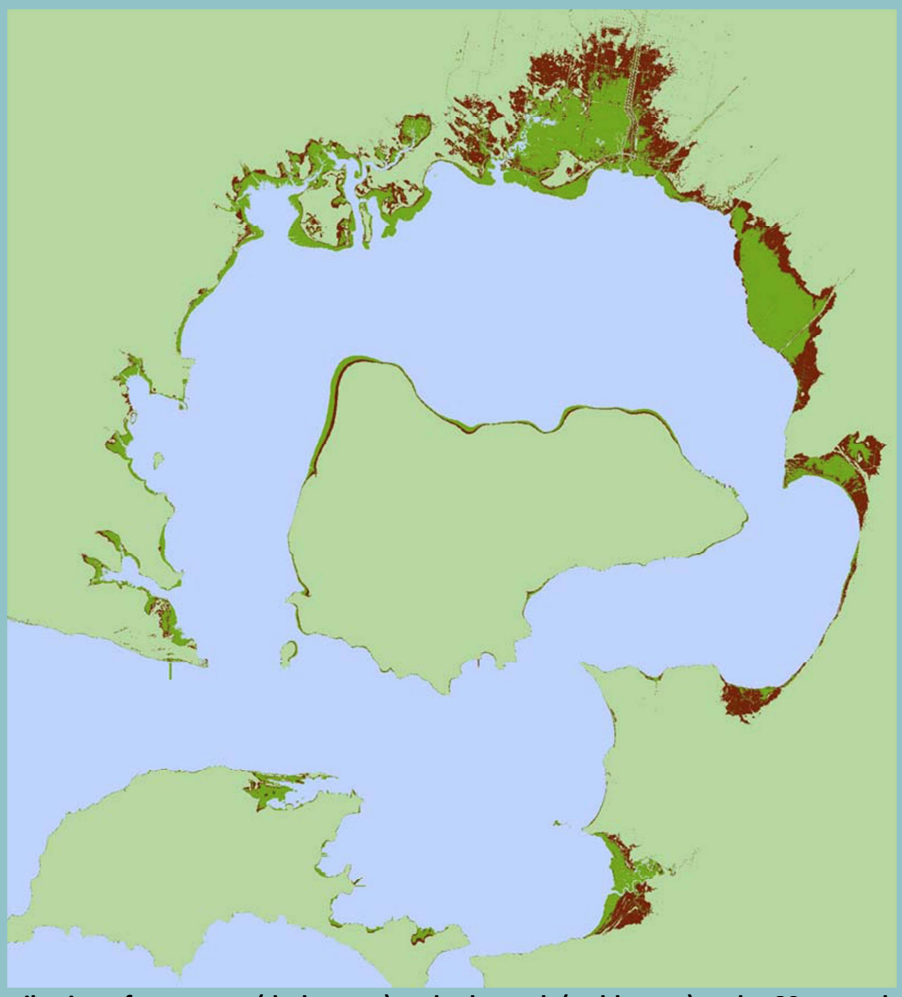
Table 5: Management strategies and responsible organisations related to living with climate change.

Management strategy	Responsibility	Linkages to existing programs / activities
2.1 Implement the recommendations of the Western Port Local Coastal Hazard Assessment. Specifically the: • Development of a strategic approach to the management and future adaptation of the existing shoreline protection works; • Provision of adaptation space for the landward migration of wetland fringed shorelines	DELWP CMA Local government	Western Port Local Coastal Hazard Assessment
2.2 Investigate the risk from and management strategies for increased frequency and intensity of fire in saltmarsh and mangrove communities	DELWP	
2.3 Investigate the risk associated with and potential mitigation strategies for climate change impacts to ecological character of the Ramsar site	DELWP CMA	

As the sea level rises where can the saltmarsh and mangroves go?

Saltmarsh and mangroves occupy much of the intertidal shoreline of the Western Port Ramsar Site. Climate change will affect these communities through a number of pathways, but sea level rise and storm surge have been identified as of immediate concern both in Western Port and elsewhere. Landward migration of saltmarsh and mangroves has long been identified as a potential mitigation strategy. That is, as the level of the sea and waves increase, saltmarsh and mangroves could gradually move inland to areas that match their inundation requirements. There are, of course, a number of factors that could prevent this, both natural (steep cliffs along the shoreline) and human induced (built barriers such as roads, levees and buildings).

If one of the management strategies to ensure the continued survival of saltmarsh and mangroves in Western Port was to set aside suitable land for migration of vegetation under future sea level conditions, it will be important to know where suitable locations can be found. To this end, a preliminary investigation has been completed into potential land suitable for mangroves and saltmarsh under an 80cm rise in mean sea level (see map below) (Boon et al. 2011). Although the authors note that the outputs of this preliminary modelling are too uncertain to inform conservation planning, it provides a broad overview and could be used to target more in depth localised investigations. The authors concluded:
"*if predicted rates of sea-level rise are realised, much of the Victorian public lands which currently support intertidal vascular vegetation will be inundated, and the conservation of saltmarsh and mangrove will require substantial areas of what is currently freehold land to be set aside for their landward migration and reassembly*."



Potential distribution of mangrove (dark green) and saltmarsh (red-brown) under 80cm sea level rise. Note that this does not account for many areas with levees and other artificial barriers to migration (Boon et al. 2011).

4.6 Theme 3: Protecting flora and fauna

Pest plants and animals, recreational activities, direct habitat removal through commercial and residential development and biological resource use (harvesting of fish and invertebrates) were all identified as high priority threats to the plants and animals of the Western Port Ramsar Site. While there has been a large and coordinated program to control predators and pest plants within the Ramsar site (see text box below), this work needs to be maintained. Similarly, while the relevant authorities assess individual development proposals, a coordinated approach to assessing the effect of multiple actions and developments may be required to adequately maintain ecological character.

Fourteen management strategies have been identified to protect flora and fauna (Table 6). The relationship between management strategies, priority threats and priority values with their associated RCTs is provided in the full Western Port Ramsar Site Management Plan.

Table 6: Management strategies and responsible organisations for protecting flora and fauna.

Management strategy	Responsibility	Linkages to existing programs / activities
3.1 Develop and implement best practice guidelines for habitat restoration (seagrass, saltmarsh, mangroves).	DELWP, NGOs	Seagrass partnership Western Port Biosphere
3.2 Restore / maintain extent and condition of key habitats in Western Port to increase resilience to the impacts of threats.	DELWP, CMA Parks Victoria Local Government NGOs	Seagrass partnership Western Port Biosphere Ramsar Protection Program
3.3 Identify priority locations of habitat loss in the Ramsar site due to human activity including vehicle damage, stock grazing, illegal dumping, direct vegetation removal and implement or improve enforcement of existing laws.	Parks Victoria Local government Landcare, CMA	Ramsar Protection Program
3.4 Install and maintain fencing at priority locations to restrict recreational access to sensitive habitats in the foreshore and intertidal zone.	Parks Victoria Local government	
3.5 Develop guidelines for defining and managing buffer zones to guide assessment of local planning applications and promote complementary management.	DELWP Local government	DELWP Wetland Buffer Guidelines
3.6 Develop and implement a strategic approach to development in areas adjacent to the Ramsar site that consider the cumulative impact of multiple actions on ecological character.	Local government DELWP	Western Port Biosphere Water Stewardship
3.7. Continue to implement pest animal control programs (cat, fox, rat, dog, pig) in priority waterbird roosting and nesting sites within the Ramsar site.	Parks Victoria CMA, PINP Local government NGOs	Ramsar Protection Program
3.8 Continue to implement rabbit control programs within the Ramsar site boundary to limit impacts on saltmarsh.	CMA, PINP Local government NGOs	Ramsar Protection Program; Local action plans and strategies (e.g. Bass Coast LandCare Rabbit Strategy)
3.9 Implement an incentive program for adjacent landholders to fence waterways, mangrove and saltmarsh areas to restrict stock access.	CMA DELWP Melbourne Water	Ramsar Protection Program Western Port Biosphere Water Stewardship
3.10 Continue to implement Spartina control programs within the Ramsar site.	Parks Victoria CMA	Ramsar Protection Program
3.11 Conduct regular surveys and implement control actions for new and emerging salt tolerant weeds.	Parks Victoria DELWP Local government	Ramsar Protection Program
3.12 Gazette of Quail Island as a Nature Conservation Reserve, to improve management of pest fauna and recreational activities.	DELWP Parks Victoria	
3.13 Support activities under the Port Phillip and Western Port Invasive Plant and Animal Strategy (PPWCMA 2011).	DELWP Parks Victoria	Ramsar Protection Program
3.14 Develop and implement a marine pest strategy for Western Port.	DELWP Parks Victoria	

Ramsar Protection Program

The Ramsar Protection Program protects two wetland sites in Victoria of international importance - the Port Phillip Bay (Western Shoreline and Bellarine Peninsula) site and the Western Port site. The program aims to reduce threats to the sites, such as pest plants and animals, and increase community understanding of the importance of wetlands and how to protect them. Specialist programs include fox and rabbit control, weed control and fencing. Pest animal control in the program has been particularly effective with 7,684 hectares of land managed for pest animals, including foxes, rabbits, cats, pigs, goats and deer. A further 344 hectares of land has been fenced to exclude pest animals, stock and domestic animals such as cats and dogs, protecting habitat for native animals and migrating shorebirds.

The program is being delivered over a five year period (2013-2018) with funding of $3 million from the Australian Government through the National Landcare Programme. Program partner organisations that receive Australian Government funds and are active in the Western Port Ramsar Site are:

- Port Phillip and Westernport Catchment Management Authority
- Parks Victoria
- Phillip Island Nature Parks
- Mornington Peninsula Shire
- City of Casey
- Western Port Biosphere Reserve
- French Island Landcare
- Bass Coast Landcare Network
- BirdLife Australia.

One of the critical success factors of the program has been the coordination and cooperation between partner organisations and the community.

4.7 Theme 4: Improving our knowledge

Western Port is a well-studied environment and in particular the recent Melbourne Water Western Port environment research program has added greatly to our understanding of the system and its values (see text box below).

Eleven priority knowledge gaps were identified during the development of the Western Port Ramsar Site Management Plan (section 3). Some of these are addressed through monitoring activities (see section 5) and five management strategies have been developed to address the remainder (Table 7).

Table 7: Management strategies and responsibilities to address critical knowledge gaps.

Management strategy	Responsibility	Linkages to existing programs / activities
4.1 Investigate the relationships between reduced water quality and shorebird food availability	DELWP EPA Victoria	EPA Marine Fixed Sites Network (FSN) water quality monitoring program
4.2 Investigate the population dynamics and behaviour of the fairy tern colony	Parks Victoria DELWP	
4.3 Assess the community composition, extent and condition of benthic invertebrates in soft sediments	Parks Victoria DELWP	Parks Victoria habitat mapping and marine park monitoring
4.4 Community composition, spatial and temporal variability and presence of potentially toxic species of phytoplankton in Western Port	DELWP	
4.5 Investigate the extent and potential impact of recreational fishing in Western Port. Use recreational fish monitoring data to inform the development of numerical RCTs and LAC for fish.	DEDJTR	

Melbourne Water: Western Port Environmental Research

In March 2012 Melbourne Water released a scientific review strategically assessing our knowledge of the Western Port environment, to inform future investment to protect and improve the bay's health. The review represents an outstanding summary of the combined knowledge of the Western Port environment. The review provided 43 recommendations for research and 12 high priority research projects.

The 12 highest priority research tasks fall into several group or themes as follows:

Improving our understanding of physical processes

1. Obtain detailed and up-to-date bathymetry for Western Port.
2. Calibrate hydrodynamic models to ensure accurate representation of water movement.

Relationships between habitat forming species such as seagrasses and mangroves and water quality (nutrients and sediments)

3. Determine a preliminary nutrient budget.
4. Measure nutrient cycling in major habitats (unvegetated soft sediments and seagrass habitat).

Understand the loss and recovery of seagrasses

5. Assess the degree of nutrient and light limitation of the major primary producers, seagrass and possibly microphytobenthos.
6. Determine water quality targets for sediments and nutrients that support seagrasses (and possibly microphytobenthos).
7. Determine which species of *Zostera* are present in Western Port.
8. Determine capacity for *Zostera* to recover and colonise new areas.

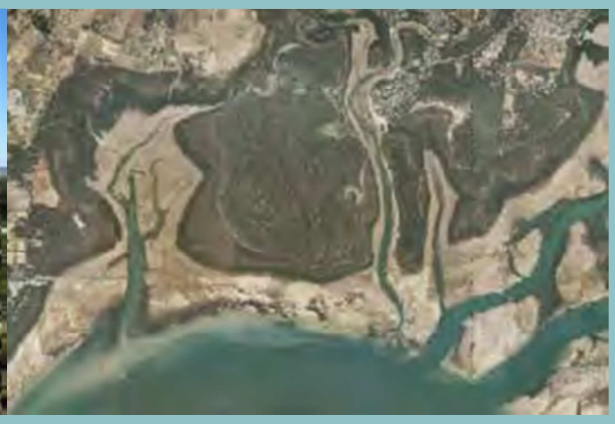
The extent to which toxicants entering Western Port pose a threat to the marine environment

9. Make an initial estimate of the risk from toxicants beyond discharge points.

Iconic species (fish and waterbirds)

10. Determine linkages between fish and habitats, to better understand the significance of changes from seagrass habitat to algae-dominated habitat
11. Determine the effects of recreational fishing on fish stocks
12. Examine the trends in abundance of fish-eating birds in Western Port.

Melbourne Water then instigated a range of strategic research projects, in partnership with other Victorian government agencies and leading environmental scientists, to improve our knowledge of Western Port marine and coastal environment. This program focussed initially on high priority research tasks in an interconnected program (http://www.melbournewater.com.au/whatwedo/protectrivers/research/pages/western-port-environment-research.aspx).



4.8 Theme 5: Communication, Education, Participation and Awareness (CEPA)

The Ramsar Convention's Program on Communication, Education, Participation and Awareness (CEPA) was established to help raise awareness of wetland values and functions. The CEPA Program calls for coordinated international and national wetland education, public awareness and communication. The Program also encourages the promotion of training in the fields of wetland research and management.

While there are some excellent CEPA programs already in place in the Western Port Ramsar Site (see text box below for the Indigenous Wardens program), the lack of awareness in the broader community of wetland values and the Ramsar Convention was raised by the Stakeholder Advisory Group and Steering Committee as a significant issue for Western Port.

Five management strategies have been identified to improve communication, education, participation and awareness (Table 8). The relationship between management strategies, priority threats and priority values with their associated RCTs is provided in the full Western Port Ramsar Site Management Plan.

Table 8: Management strategies and responsibilities for Communication, Education, Participation and Awareness.

Management strategy	Responsibility	Linkages to existing programs / activities
5.1 Education and engagement of landholders and community members and incentive programs for streamside/shoreline/coastline fencing.	CMA DELWP Melbourne Water Parks Victoria	Ramsar Protection Program
5.2 Implement a public awareness campaign for recreational boat users and personal watercraft (e.g. jet skis) and investigate opportunities for regulation to minimise the potential impacts to shorebirds and beach nesting birds.	DELWP Parks Victoria	
5.3 Implement a community awareness campaign and reporting hotline for introduced marine pests targeting divers and recreational fishers.	DELWP	Parks Victorian Marine Invasive Species Guide
5.4 Communicate the outcomes of the three yearly Ramsar Rolling Review to the broader community through a fact sheet / report card.	DELWP	Ramsar Rolling Review
5.5 Maintain the Western Port Ramsar Site webpage (DELWP) and the process for stakeholder involvement via updates and links.	DELWP	

Indigenous Wetland Wardens

In February 2015, Port Phillip and PPWCMA and BirdLife Australia held the inaugural *Indigenous Wetland Wardens* workshop within Victoria's Western Port and Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar Sites.

This free training event for Indigenous Australians aims to provide participants with the skills and knowledge to identify shorebirds and gain an understanding of how to manage and preserve their critical wetland habitat.

Staff from BirdLife Australia, PPWCMA, Parks Victoria and conservation rangers from Hobsons Bay City Council led the enthusiastic group through a range of topics including wetland conservation, shorebird ecology and identification, environmental monitoring and pest plant and animal management.

Stage 1 of the workshop was conducted over two days in Altona with a mix of classroom based learning and practical field based activities at important shorebird sites, including Cheetham Wetlands and the Altona foreshore.

Stage 2 was hosted at the Willum Warrain Aboriginal Gathering Place in Hastings over three days. Participants gained an insight into wetland habitat and the threats to shorebirds throughout the Western Port Ramsar Site.

The *Indigenous Wetland Wardens* training helps bring together Indigenous Australians from a variety of backgrounds, with some participants already employed or completing formal training in natural resource management, and others attending to learn brand new skills with the hope of gaining meaningful employment in the future.

5 Monitoring

5.1 Framework

Consistent with the *Victorian Waterway Management Strategy* (VWMS), the Ramsar Convention and the Australian Ramsar Management Principles, this Western Port Ramsar Site Management Plan adopts an adaptive management approach. The Western Port Ramsar Site Management Plan sits within the broader framework of the VWMS (Department of Environment and Primary Industries 2013) as a component of regional waterway management planning (Figure 5). The Western Port Ramsar Site Management Plan will be renewed every seven years and is underpinned by a monitoring program that reports on the condition of the system with respect to change in ecological character and progress towards meeting RCTs.

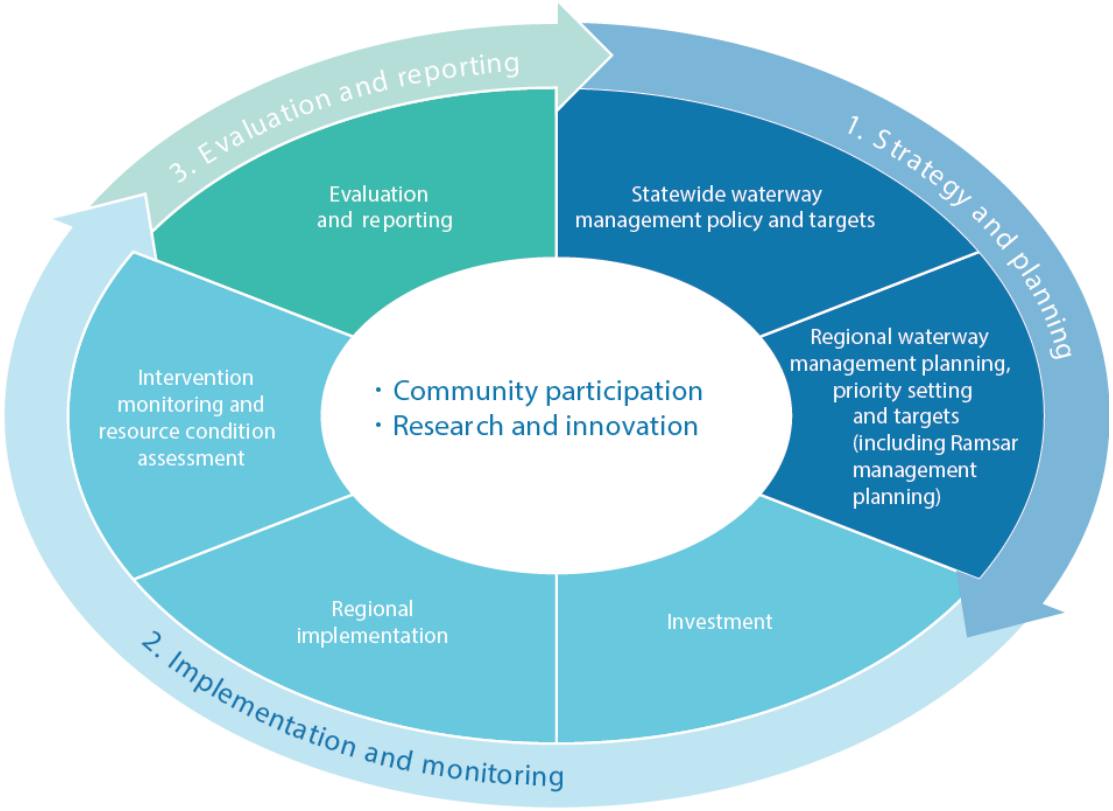


Figure 5: The adaptive management cycle of the Victorian Waterway Management Program, noting that this Ramsar management plan is a part of the regional waterway management planning process (adapted from Department of Environment and Primary Industries 2013).

5.2 Condition monitoring

Monitoring recommendations to assess progress towards RCTs and change in ecological character (i.e. evaluate critical components, processes and services against LAC) are provided in Table 9. Consistent with the principles of the Western Port Ramsar Site Management Plan, responsible agencies have been identified, as have links to existing, relevant programs. It should be noted that many of the existing programs have limited funding and timelines and a full assessment of ongoing monitoring against monitoring needs will be required as part of implementation planning. To this end DELWP has a current project assessing the monitoring needs across Victoria's 11 Ramsar sites, which may provide additional information for implementation planning in Western Port.

Table 9: Monitoring requirements for the Western Port Ramsar Site.

Program	Frequency	Responsibility	Linkages to existing programs / activities
Water quality	Monthly and event based	EPA Victoria Parks Victoria Melbourne Water	Current water quality monitoring by EPA Melbourne Water funded sediments in estuary mouths study
Intertidal mud and sand flat extent	Every five years	DELWP	None found
Seagrass	Mapping every five years. Condition every two years	DELWP	Parks Victoria benthic habitat mapping at French Island and Yaringa Marine Parks Melbourne Water
Saltmarsh and mangrove extent	Every ten years	DELWP CMA	Boon et al (2011) mapped saltmarsh communities
Saltmarsh and mangrove condition	Every five years	DELWP CMA	Parks Victoria Marine Protected Area monitoring programs
Invertebrate diversity, abundance	Every two to five years	DELWP Parks Victoria	Parks Victoria Marine Protected Area monitoring programs
Shorebird abundance and diversity (resident and migratory species)	Bi-annual	DELWP	Current: Shorebirds 2020
Monitoring of breeding for beach nesting species	Annual	DELWP Parks Victoria	Victorian Wader Studies Group
Native fish: abundance and trends	Annual	DELWP	Parks Victoria Marine National Parks Monitoring Program

5.3 Intervention monitoring

Intervention monitoring assesses the effectiveness of management actions in achieving desirable or stated outcomes and is an important part of an adaptive management approach. While there is solid scientific evidence for some management actions (e.g. predator control reduces injury and death of native wildlife) other management actions often lack scientific evidence to indicate outcomes and decisions are made on assumptions and expert opinion (e.g. the effectiveness of riparian fencing in reducing nutrient inflows).

A targeted intervention monitoring and evaluation program will be developed as part of implementation planning to assess the effectiveness of management actions in terms of measureable effects on ecosystem condition, rather than operational outputs (e.g. determining the effectives of a given management activity in sediment inflows to Western Port rather than reporting on numbers of hectares revegetated or kilometres of fences installed). The results of intervention monitoring will be used to inform future management actions so that the most effective and efficient programs are implemented to maintain the ecological character of the Western Port Ramsar Site (see Management Strategy 6.4 in Table 10).

5.4 Evaluation and reporting

The Ramsar Rolling Review is designed to assess the status of the ecological character of Ramsar sites in Australia every three years (in line with international reporting requirements). An assessment of Victoria's Ramsar sites is being conducted in 2015 – 2016 (DELWP in prep.). This process collates information across monitoring and management projects in Ramsar sites to assess against LAC. The output is an evaluation of ecological character and a report to site managers, DELWP and the Australian Government. This process fulfils the requirements of reporting for the Ramsar Convention.

6 Governance and implementation

6.1 Governance

Coordination of Ramsar site management in Victoria is the responsibility of the Victorian Government, through the DELWP. This Western Port Ramsar Site Management Plan is an integral component of a continuing program to develop and implement a current management framework for Victoria's Ramsar sites.

6.2 Implementation

A Ramsar Coordinating Committee comprising representatives of key stakeholder groups will be convened. This integrated approach builds on previous and current collaboration practice in the region, evident most recently in the strong participation of delivery partners in the development of the Western Port Ramsar Site Management Plan.

The Ramsar Coordinating Committee will be responsible for coordinating specific aspects of implementation within the themes of the Western Port Ramsar Site Management Plan. These responsibilities will include developing:

- annual action plans
- targeted investment proposals
- integrated delivery arrangements
- coordinated monitoring and evaluation of implementation, including integrated reporting against targets, and
- reviewing Management Plan progress bi-annually.

6.3 Resourcing implementation

Investment proposals to support actions of Western Port Ramsar Site Management Plan will be developed as investment opportunities arise. Project investment proposals will be prepared through the Ramsar Coordinating Committee in conjunction with delivery partners and will be structured to reflect the themes within the Western Port Ramsar Site Management Plan, and the regional programs of partner management agencies.

Implementation of the Western Port Ramsar Site Management Plan will be influenced by available funding and resources. The implementation approach will ensure coordination and prioritisation of management actions so that maximum benefit is achieved with the resources that are available.

Annual priorities and programs will be developed to best match the funding cycles of investors. Throughout the implementation of the Western Port Ramsar Site Management Plan, the Ramsar Coordinating Committee will work to use the best available information tools to support the establishment of annual priorities.

Partners will seek funding for implementation of this plan through the:

- Victorian Waterway Management Program
- relevant initiatives of the State and Federal Governments
- existing agency budgets, and
- contributions of industries and communities.

6.4 Ramsar administration

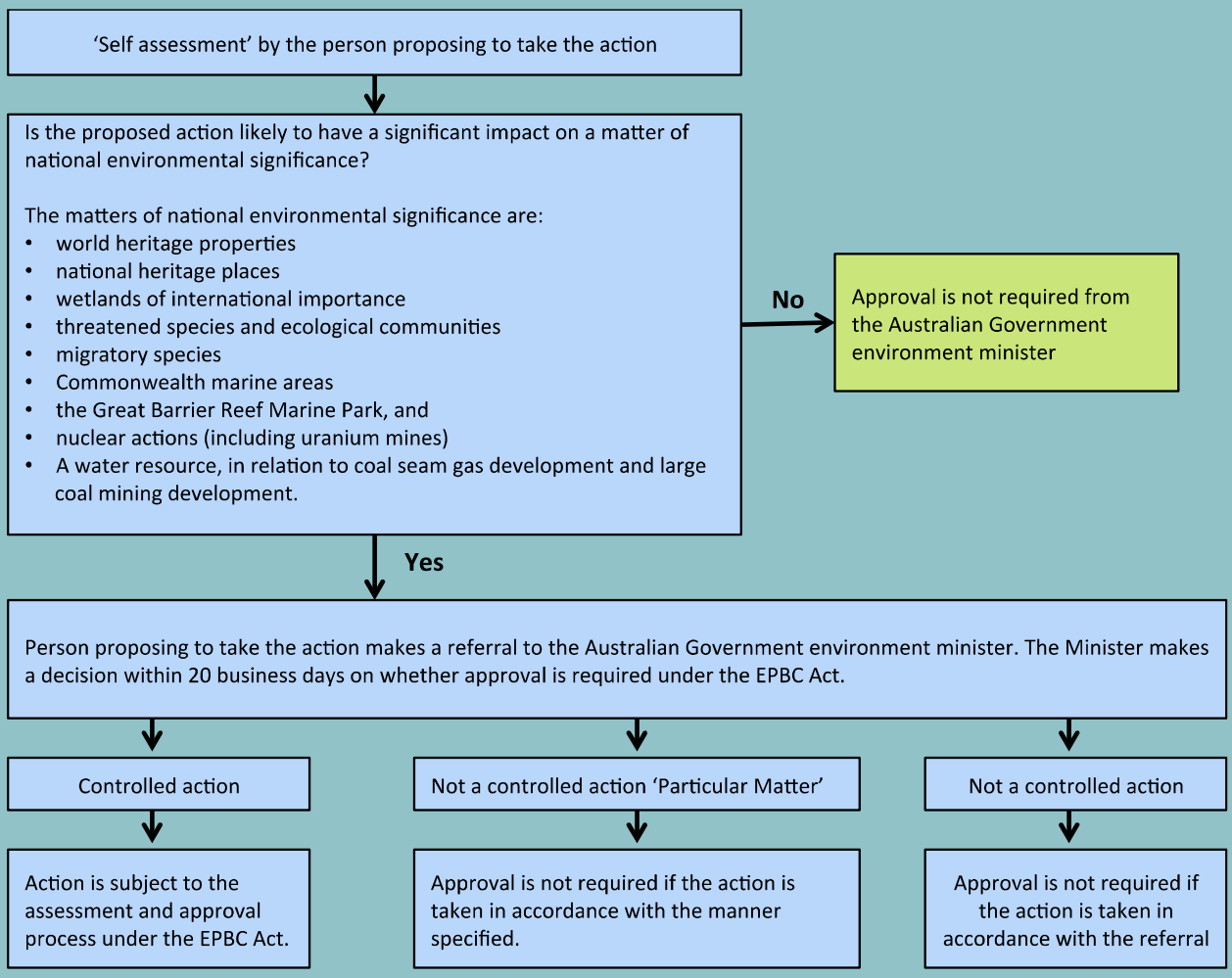
The development of the plan identified a number of administrative matters to resolve. These are described, with a brief rationale in Table 10.

Table 10: Matters related to the administering of the Ramsar Convention and the Western Port Ramsar Site.

Management strategies	Responsibility	Rationale
6.1 Review the Ramsar site boundary.	DELWP DoEE Ramsar Coordinating Committee	The Ramsar site boundary was delineated at the time of listing in 1982 and more recently described in detail (DEPI 2013). Since 1982, there have been some changes to land management and an increased understanding of the aquatic ecosystems in the region and their values. A review of the boundary to consider adjoining areas based on ecological function in a changing climate is proposed.
6.2 Apply the appropriate State and Commonwealth environmental impact assessment processes for activities that have the potential to impact on the Ramsar site and Matters of National Environmental Significance (MNES).	DELWP DoEE Ramsar Coordinating Committee	Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), actions that have, or are likely to have, a significant impact on a matter of national environmental significance require approval from the Australian Government Minister for the Environment (the Minister). The responsibility for referral of an action lies with the proponent. The Minister decides whether assessment and approval is required under the EPBC Act. Ramsar sites are one of the nine MNES and so assessments would be required for any activity that is likely to impact on the ecological character of the site, whether inside the site or in the catchment. The text box on the next page explains the process for assessing major projects.
6.3 Undertake a regular review of the status of the ecological character of the Ramsar site. This review should include new and emerging issues as well as the current listed values and threats.	DELWP	The Ramsar Rolling Review is undertaken every three years and reports on the status of ecological character of the Ramsar site. As new knowledge on the values and threats within the Ramsar site becomes available (e.g. new species supported in a changing climate), this should be incorporated into the sites ecological character and management planning.
6.4 Develop action plans for this strategy.	Ramsar Coordinating Committee	This plan has identified high level strategies for a number of agencies. An annual action plan, based on a formal prioritisation process and available resources is required on an annual basis. These action plans will explicitly consider intervention monitoring and monitoring to assess progress towards RCTs as part of an adaptive management program.
6.5 Investigate the potential of blue carbon offsets for raising resources to implement Ramsar site management plan.	Ramsar Coordinating Committee	A recent investigation indicated that the blue carbon value of Western Port is in the order of $11.5 million (Carnell et al. 2015) and could represent a funding source for implementation of actions in this management strategy.

Assessing the impact of major projects on Ramsar sites

Under the EPBC Act, a person must not take an action that has, will have or is likely to have a significant impact on any of the matters of environmental significance without approval from the Australian Government Minister for the Environment (the Minister). In this context an 'action' is a project, a development, an undertaking, an activity or a series of activities, or an alteration of any of these things. The EPBC Act referral process comprises several steps:



Although the EPBC referral process begins with "self assessment" there are strict penalties for not referring an action. A person who takes an action that is likely to have a significant impact on a matter of national environmental significance, without first obtaining approval, can be liable for a civil penalty of up to $900,000 for an individual and $9 million for a body corporate, or for a criminal penalty of seven years imprisonment.

DELWP administers the statutory environmental impact assessment system for major projects in Victoria with potentially significant environmental effects. This includes referrals to the Minister for Planning for Environmental Effects Statements (EES) under the *Environment Effects Act 1978* as well as assessment and approvals for major transport projects under the *Major Transport Projects Facilitation Act 2009*. In addition, Victoria has a bilateral agreement with the Commonwealth for environmental impact assessments that avoids duplication of assessment processes. It essentially allows the Commonwealth to use the assessments made by Victoria to inform decisions about impacts to matters of national environmental significance (which includes Ramsar Sites) under the EPBC Act.

This is a very simplified summary of the process, for more information see the following of the DELWP website: http://delwp.vic.gov.au/planning/environmental-assessment#sthash.WiF9gy5u.dpuf and the Australian Government Department of Environment and Energy http://www.environment.gov.au/protection/environment-assessments/assessment-and-approval-process

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