

18 Bunurong Coast and Inlets Management Unit



Figure 26 Conceptual diagram of the Bunurong Coast and Inlets Management Unit

The Bunurong Coast and Inlets management unit supports a number of coastal wetlands, estuaries and tributary waterways. Anderson Inlet and Shallow Inlet are listed under the Directory of Important Wetlands of Australia and Shallow Inlet is an internationally important shorebird site in the East Asian-Australasian Flyway. The coastal waterways of this management unit support a range of recreational and tourism values including fishing, kite surfing, boating, kayaking and bird watching as well as being a growth area for coastal development.

Ecologically, these systems are of critical importance for migratory birds, rare and threatened bird and fish populations, commercial and recreational fish species and the presence of large tracts of intact fragile vegetation communities including saltmarsh and coastal woodland.

Threats to South Gippsland's coastal wetlands and inlets include; poor water quality from catchment sources, invasion of *Spartina* in the intertidal zone, predation of fauna by foxes, foreshore erosion and changes to sea level due to climate variability.

During the life of the *RHS* there was a major effort in controlling the invasive aquatic weed *Spartina* in Anderson Inlet. This was complemented by fencing to exclude stock access and establishment of native vegetation. More recently work has started to address erosion of the foreshore and tributary waterways of Shallow Inlet.

This Strategy will continue efforts to contain and prevent reinfestation of *Spartina* in Anderson Inlet. Establishing native vegetation and fencing to exclude stock will help maintain coastal vegetation communities and prevent foreshore erosion across both Shallow Inlet and Anderson Inlet.

During the life of the Strategy an investigation into the sources of sediment and sedimentation processes in Anderson Inlet will address a key knowledge gap and inform future management priorities within the estuary and its catchment. The Strategy supports work undertaken by public land managers and community groups to address weeds and pest animal threats to the wetlands and estuaries of this management unit.

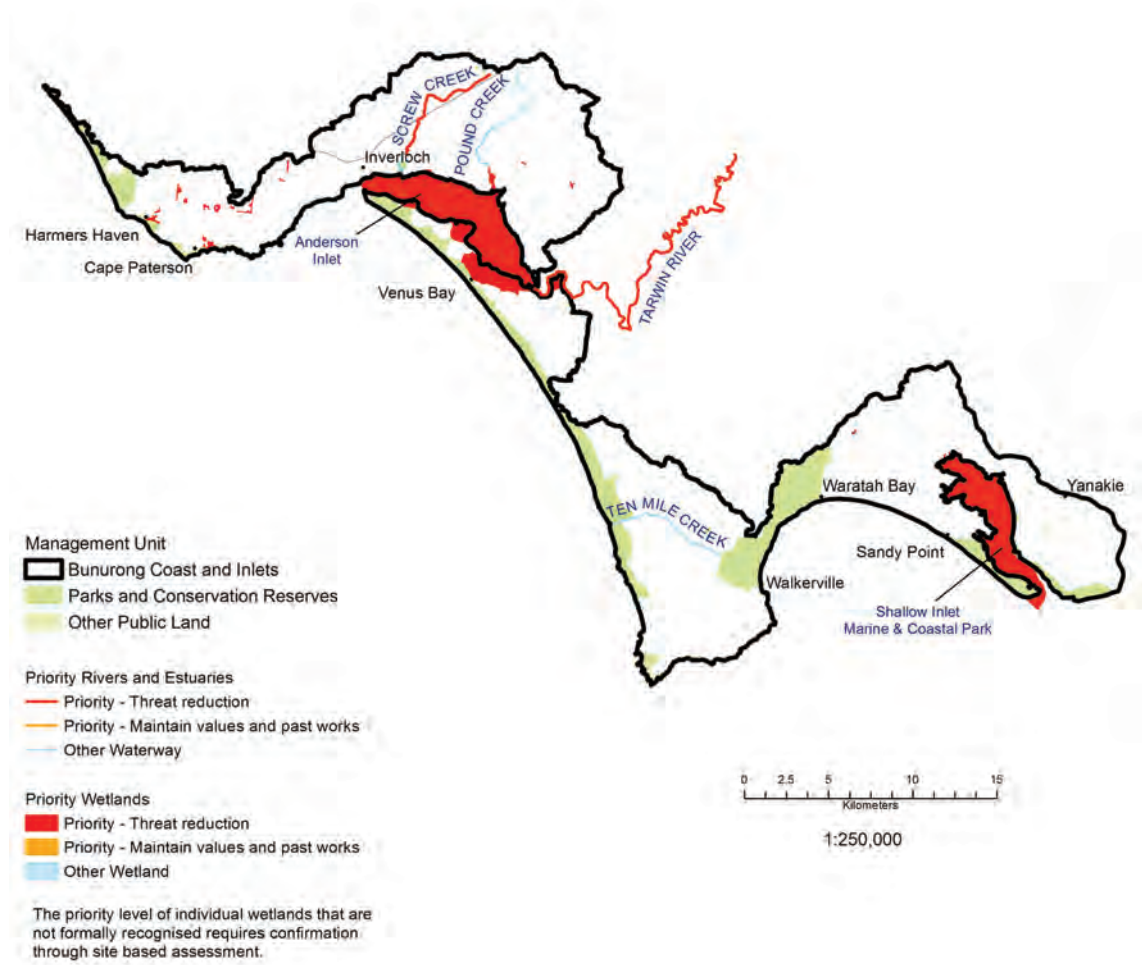


Figure 27 Map of priorities for Bunurong Coast and Inlets Management Unit

Table 11 Bunurong Coast and Inlets Work Program

Priorities			
Threat reduction: Screw Creek (27-9), Anderson Inlet (including Pound Creek estuary and part of the Tarwin River estuary) (27-210), Shallow Inlet (27-206), Wetlands of the Bunurong Coast			
Long Term Resource Condition Target			
All expected native fish species (migratory and non-migratory) are found in the reach and their abundance has increased.			
Current extent of estuarine and coastal vegetation communities are maintained.			
Migratory and resident bird populations are protected through habitat improvements and management of pest animals.			
Community groups are actively involved in the management of waterways.			
Waterways in the catchment provide water of suitable quality to support economic uses including township, rural uses and fishing.			
Waterways are physically stable (not actively eroding at high rates) and their values are not threatened by waterway instability.			
The extent of freshwater and saline wetlands is maintained and their condition has improved.			
Values linked to Regional Goals: fish, birds, vegetation, social			
Threats addressed by work program: invasive fauna, invasive flora, poor water quality, reduced riparian large trees			
Management Outcome Target	Management activity / output		Lead agency and partners
Water quality threats have reduced in Screw Creek, Anderson Inlet and Shallow Inlet.	Establish management agreement with landholders.* (ha)	178	WGCMA , Landcare, landholders
	Construct riparian fencing to exclude stock. (km)	32	WGCMA , Landcare, landholders
Saltmarsh and associated coastal vegetation communities provide a buffer to estuaries (Shallow Inlet, Anderson Inlet, Screw Creek).	Establish native vegetation. (ha)	74	WGCMA , Landcare, landholders
	Investigate fencing and revegetation requirements along Screw Creek.	1	WGCMA , Landcare
Wetland condition has improved from baseline. ¹	Construct riparian (wetland) fencing to exclude stock. (km)	25	WGCMA , Landcare, landholders
	Support landholders to increase the area of wetlands under permanent protection.	1	TFN

¹ Comprehensive baseline condition assessments have not yet been completed for wetlands

Table 11 Bunurong Coast and Inlets Work Program continued

Management Outcome Target	Management activity / output		Lead agency and partners
Less than 60% cover of invasive riparian flora are present in the shrub and ground layer (Shallow Inlet and tributaries).	Establish weed control – stem poisoning / spraying of willow. (ha)	8	WGCMA
	Establish woody weed control. (ha)	31	WGCMA , Landcare, landholders
	Maintain control of weeds in past works. (ha)	80	WGCMA , Landcare, landholders
Spartina infestations are contained at 2013 extent and density in Anderson Inlet.	Establish non-woody weed control (spartina). (ha)	300	Parks Victoria , WGCMA
	Weed control – non-woody maintenance (ha) spartina.	1,000	Parks Victoria , WGCMA
Threats to bird populations from pest animals are reduced (Anderson Inlet and Shallow Inlet).	Support implementation of integrated fox control programs.*		Parks Victoria , DEPI, community groups, landholders
Less than 50% of Shallow Inlet foreshore is actively eroding.	Undertake earth works (bank armouring) to address erosion. (km)	1	WGCMA
	Undertake earth works (bank armouring) to address erosion. (no. sites)	8	WGCMA
	Construct waterway structure (chute). (no.)	4	WGCMA
	Construct waterway structure (groyne). (no.)	4	WGCMA
Improved knowledge of geomorphological processes is informing planning and delivery of waterway activities.	Investigate coastal and fluvial geomorphology and sedimentation processes in Anderson Inlet. (no. assessment)	1	WGCMA , research institutions
Increased community skills and knowledge of waterway management issues.	Support community monitoring of waterways to inform management. (no. sites)	2	WGCMA
	Coordination / participation in engagement events. (no. events)	3	WGCMA , Landcare
	Support Parks Victoria to monitor and manage invasive flora and pest animal threats at Bald Hills Wetland as required.*		WGCMA , DEPI
	Estimated cost	\$5,000,000	

* Management activity not costed

19 Tarwin and Powlett Rivers Management Unit



Figure 28 Conceptual diagram of the Tarwin and Powlett Rivers Management Unit

The Tarwin and Powlett Rivers management unit supports the two major waterways that flow to the South Gippsland coast, being the Tarwin and Powlett rivers. The catchments of these rivers start in the Strzelecki ranges flowing through native forest, national parks and plantation forest, whilst the mid and lower catchments support high rainfall dairy and beef as well as providing water for associated manufacturing industries and rural communities including Korumburra, Leongatha and Wonthaggi. The residential population has grown significantly and is expected to continue.

The Tarwin system consists of two branches, the west and the east branch as well as its major tributaries Coalition, Wilkur, Berrys, Turtons and Fish creeks. The waterways provide important unregulated flows to the nationally important Anderson Inlet. The Powlett has one major tributary – Foster Creek.

Extensive patches of remnant vegetation are found in the headwaters of South Gippsland tributaries. On the lower slopes and plains remain areas of riparian and wetland vegetation that support significant fauna species including the endangered Australian Grayling and Giant Gippsland Earthworm and the regionally important River Blackfish. The Tarwin River estuary provides critical habitat for the endangered Australian Whitebait.

Fish Creek flows through the town which shares its name and is valued by the local community for its visual amenity and environmental values.

Pressures on the waterways of the Tarwin and Powlett management unit can be seen from increased development and growth arising from the 'tree change' and lifestyle movement. The waterways have been impacted on by past land uses and management practices including channelisation, removal of native vegetation and grazing of stock. Infestations of exotic flora, particularly willow, is a major threat across the catchment.

During the life of the *RHS* significant gains were made in addressing willow infestations and excluding stock from riparian land along the lower reaches and west branch of the Tarwin River, Coalition Creek and Wilkur Creek, Fish Creek and Foster Creek. The focus for this Strategy will be to build on this and extend the work into the east branch of the Tarwin River. Improving the condition of wetlands in partnership with private landholders remains a priority for this Strategy. The estuary of Powlett River will be the focus of monitoring and the development of an estuary management plan to improve understanding and management of its hydrology and artificial opening processes.



Figure 29 Map of priorities for Tarwin and Powlett Rivers Management Unit

Table 12 Tarwin and Powlett Rivers Work Program

Priorities			
Threat reduction: Powlett River (27-5), Powlett River estuary (27-205), Tarwin River (including part of the Tarwin River estuary) (27-10), Tarwin River West Branch (27-11), Tarwin River East Branch (27-15), Fish Creek (27-13)			
Maintain values/past works: Fish Creek (27-14), Coalition Creek (27-17), Foster Creek (27-7), Bald Hills Wetland.			
Long Term Resource Condition Target			
All expected native fish species (migratory and non-migratory) are found in the reach and their abundance has increased.			
Migratory fish have free passage at critical times.			
Populations of Gippsland Giant Earthworm are maintained in Coalition Creek.			
Vegetation establishment provides connectivity with remnant patches.			
Riparian vegetation provides improved visual amenity and contributes to community use of waterways.			
Community groups are actively involved in the management of waterways.			
Waterways in the catchment provide water of suitable quality for township and rural uses.			
The extent of freshwater wetlands is maintained and their condition has improved.			
Values linked to Regional Goals: fish, birds, amphibians, invertebrates, vegetation, social, economic, hydrology			
Threats addressed by work program: bank erosion, reduced floodplain connectivity, invasive flora, poor water quality, reduced riparian connectivity, reduced riparian large trees, reduced riparian width			
Management Outcome Target	Management activity / output		Lead agency and partners
No livestock access along the Lower Powlett River (27-5 and 27-205).	Establish riparian management agreements with landholders.* (ha)	224	WGCMA, landholders
Recruitment and growth of large tree species is occurring successfully throughout riparian zones of priority waterways.	Construct riparian fencing to exclude stock. (km)	118	WGCMA, landholders
Vegetation connectivity provided throughout the Lower Tarwin (27-10).	Establish native vegetation. (ha)	122	WGCMA, landholders
Wetland buffer vegetation condition has improved from baseline. ¹	Construct riparian (wetland) fencing to exclude stock. (km)	12	WGCMA, landholders

¹ Comprehensive baseline condition assessments have not yet been completed for wetlands

Table 12 Tarwin and Powlett Rivers Work Program continued

Management Outcome Target	Management activity / output		Lead agency and partners
Less than 60% cover of invasive riparian flora are present in the shrub and ground layer of priority waterways.	Establish weed control mechanical removal of willow. (ha)	16	WGCMA
	Establish woody weed control (other). (ha)	56	WGCMA , landholders
	Establish non-woody weed control. (ha)	8	WGCMA , landholders
	Maintain control of weeds in past works. (ha)	141	WGCMA , landholders
Threats to bird populations from pest animals are reduced.	Pest animal control (fox). (no. programs)	1	Parks Victoria
Less than 50% of Fish Creek (27-13) and Lower Powlett (27-5, 27-205) have active bank erosion.	Undertake earth works(bank armouring) to address erosion. (km)	2	WGCMA
	Undertake earth works (bank armouring) to address erosion. (no. sites)	18	WGCMA
	Construct waterway structure – chute. (no.)	2	WGCMA
	Install fishing platform on the Powlett River estuary.	1	WGCMA , recreational fishing groups
Costs and feasibility of addressing fish barrier in Powlett River assessed.	Investigate the costs and feasibility of addressing fish barrier in Powlett River assessed.	1	WGCMA , DEPI
Artificial estuary mouth openings are undertaken using risk based approach informed by the (EEMSS).	Install and maintain monitoring structure to collect continuous water quality data in the Lower Powlett River. (no. sites)	2	WGCMA , DEPI
	Implement Estuary Entrance Management Support System (EEMSS).*	1	WGCMA
	Develop and implement the Powlett River Estuary Management Plan. (no. plan)	1	WGCMA , Parks Victoria, Bass Coast Shire Council
Water quality threats to the Tarwin and Powlett rivers are reduced.	Investigate and address sources of poor water quality in urban areas. (no. assessment)	1	Local government (Bass Coast Shire Council, South Gippsland Shire Council)
	Support forestry and agricultural industries to implement BMP programs that reduce sediment and nutrient runoff to waterways.*		WGCMA , Forestry Industry, GippsDairy, Meat & Livestock Australia, DEPI

Table 12 Tarwin and Powlett Rivers Work Program continued

Management Outcome Target	Management activity / output		Lead agency and partners
Management of urban waterways occurs through partnership arrangements between land and waterway managers. (Fish Creek, Tarwin Estuary).	Establish waterway management arrangements for urban areas of Fish Creek. (no. partnerships)	1	WGCMA , South Gippsland Shire Council
	Integrate vegetation establishment and weed maintenance with recreational uses along urban waterways (Fish Creek, Tarwin Estuary).		WGCMA , South Gippsland Shire Council, community groups
Increased community skills and knowledge of waterway management issues.	Support community monitoring of waterways to inform management. (no. sites)	4	WGCMA , Bass Coast Landcare Network
	Support community management of crown frontages in the lower Powlett River.*		
	Support community groups.		
	Coordination/participation in engagement events. (no. events)	4	WGCMA , Bass Coast Landcare Network
		Estimated cost	\$3,300,000

* Management activity not costed

20 Wilsons Promontory Management Unit



Figure 30 Conceptual diagram of the Wilsons Promontory Management Unit

The Wilsons Promontory management unit supports outstanding unique terrestrial vegetation communities along with significant geological features. The main waterways of Wilsons Promontory include Tidal River, Darby River and Barry Creek.

Recreation and tourism are major values of the waterways which are used for fishing, boating and beside water uses such as camping, bird watching and walking.

The waterways of Wilsons Promontory retain largely natural values as a result of their protection in the National Park. Impacts to the waterways result from recreation and tourism pressures and bushfires which have impacted on water quality and vegetation condition.

This Strategy has a focus on monitoring and surveillance to ensure recovery of the priority waterways following bushfire and to minimise impact from recreational use.

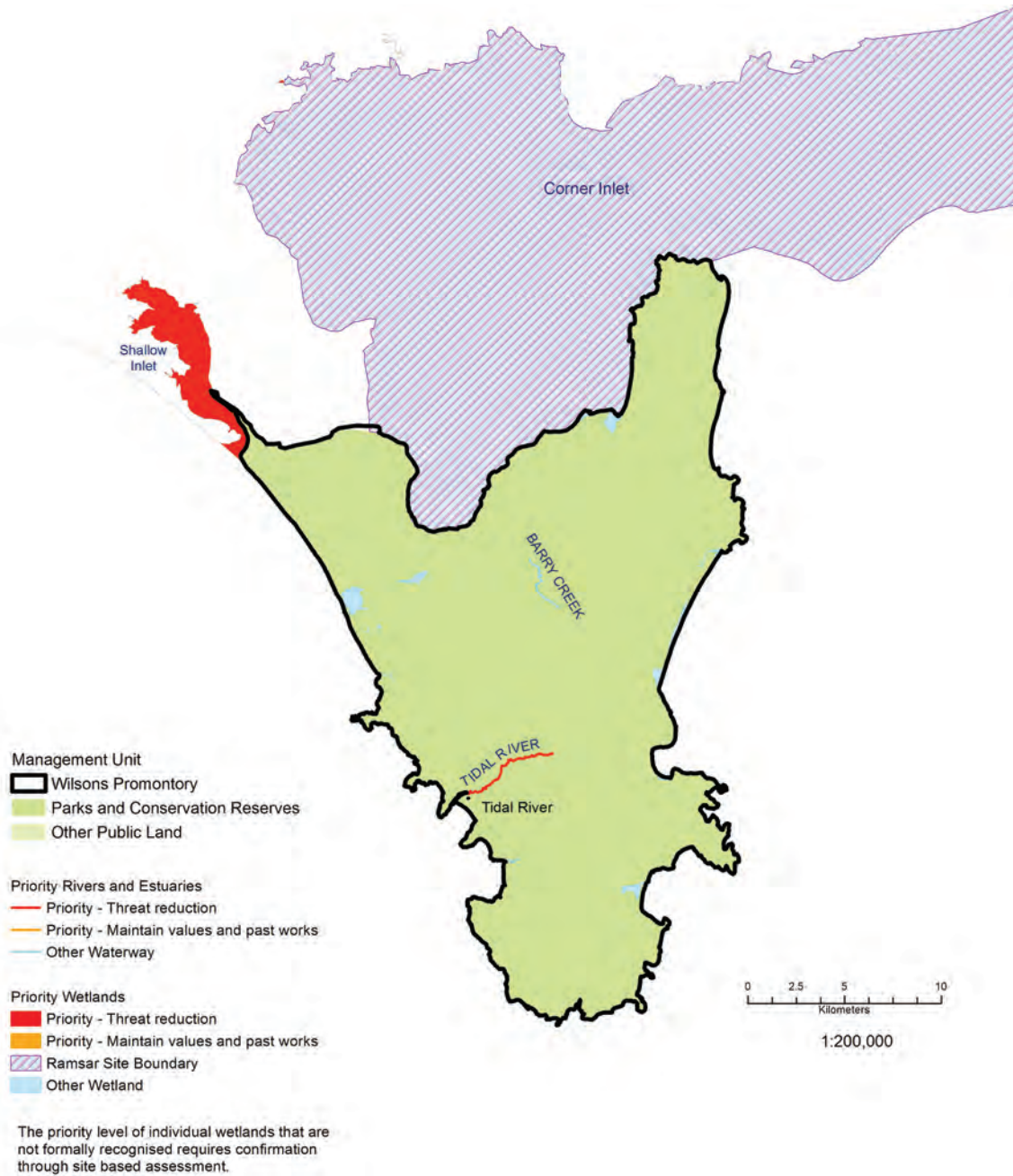


Figure 31 Map of priorities for the Wilsons Promontory Management Unit

Table 13 Wilsons Promontory Work Program

Priorities		
Threat reduction: Tidal River (27-23), Tidal River estuary (27-223)		
Long Term Resource Condition Target		
All expected native fish species (migratory and non-migratory) are found in the reach and their abundance has increased.		
Riparian vegetation provides improved visual amenity and contributes to community use.		
Community uses are maintained through improvements to water quality and management of marine pest threats.		
Values linked to Regional Goals: social, birds and fish		
Threats addressed by work program: poor water quality (Tidal River Estuary) degraded large trees (large trees absent or in poor condition) (Tidal River)		
Management Outcome Target	Management activity / output	Lead agency and partners
Recruitment and growth of large tree species is occurring successfully throughout riparian zones (Tidal River).	Monitor the natural regeneration of riparian vegetation following bushfire – implement revegetation works if natural regeneration is not sufficient.*	Parks Victoria
Water quality threats are reduced in Tidal River.	Maintain stormwater management measures around the Tidal River settlement to minimise sediment and nutrient runoff.*	Parks Victoria
Increased community skills and knowledge of waterway management issues.	Support community monitoring of waterways to inform management.*(no. sites)	2 WGCMA, Parks Victoria
	Coordination / participation in engagement events.*(no. events)	3 WGCMA, Parks Victoria
	Continue to monitor Tidal River estuary for outbreaks of marine pests including Northern Pacific Sea Star.*	Parks Victoria, DEPI
	Develop contingency and emergency response plans to address potential future outbreaks of marine pests.*	Parks Victoria, DEPI
	Estimated cost	Not applicable

* Management activity not costed

21 Corner Inlet Management Unit



Figure 32 Conceptual diagram of the Corner Inlet Management Unit

The Corner Inlet management unit includes the marine and intertidal areas of the main embayment and the lower reaches and estuaries of the main tributaries to Corner Inlet. Corner Inlet is listed as a wetland of international importance under the Ramsar Convention of wetlands.

The work program for the Corner Inlet management unit is divided into two sections. The first section sets out the priorities and activities for the lower reaches of the tributaries and wetlands adjacent to the Corner Inlet embayment (see Table 14). The second section sets out the Ramsar Management Plan for the Corner Inlet Ramsar Site. (see Table 16).

Corner Inlet supports diverse wetland habitats that are important areas for bird populations and fish communities. Recreation and tourism are major values of the waterways which are used for fishing, boating and beside water uses such as camping, bird watching and walking.

The waterways of this management unit are impacted on by recreation and tourism pressures and threats from bushfire. The tributaries to Corner Inlet are impacted by poor water quality resulting from runoff from urban, agricultural and forestry land uses as well as fragmentation of habitat through land clearing and stock access. Erosion and sedimentation is a key issue for several waterways including the Albert River.

Together with the *Corner Inlet Water Quality Improvement Plan*, this Strategy builds on past efforts through the Corner Inlet Connections partnership to address the major threats to the waterways whilst providing a water quality benefit for the downstream receiving marine embayment.

This Strategy continues to focus on establishing vegetation and excluding stock from rivers, creeks and fringing wetlands. In addition, stability threats in the Albert and Jack rivers will be addressed through investigation and works. Importantly the Strategy supports the work of agencies and community groups in coordinating natural resource management activities in the local area.

The work program for the lower reaches of the tributaries to Corner Inlet addresses specific issues within the tributaries themselves (e.g. habitat fragmentation and poor water quality); they will also contribute towards maintaining the ecological character of the Ramsar Site through improving water quality and inflows to the marine embayment.

Critical services/benefits of Corner Inlet Ramsar Site (in line with the Ecological Character Description,) that will benefit from this Work Program include the extent and condition of seagrass (Critical Component 1) through improved water quality, and the Australian grayling (Critical Service 1) through improved inflows. Further details and actions specifically related to the maintenance of ecological character of the Corner Inlet Ramsar Site and associated values are presented in the following section.

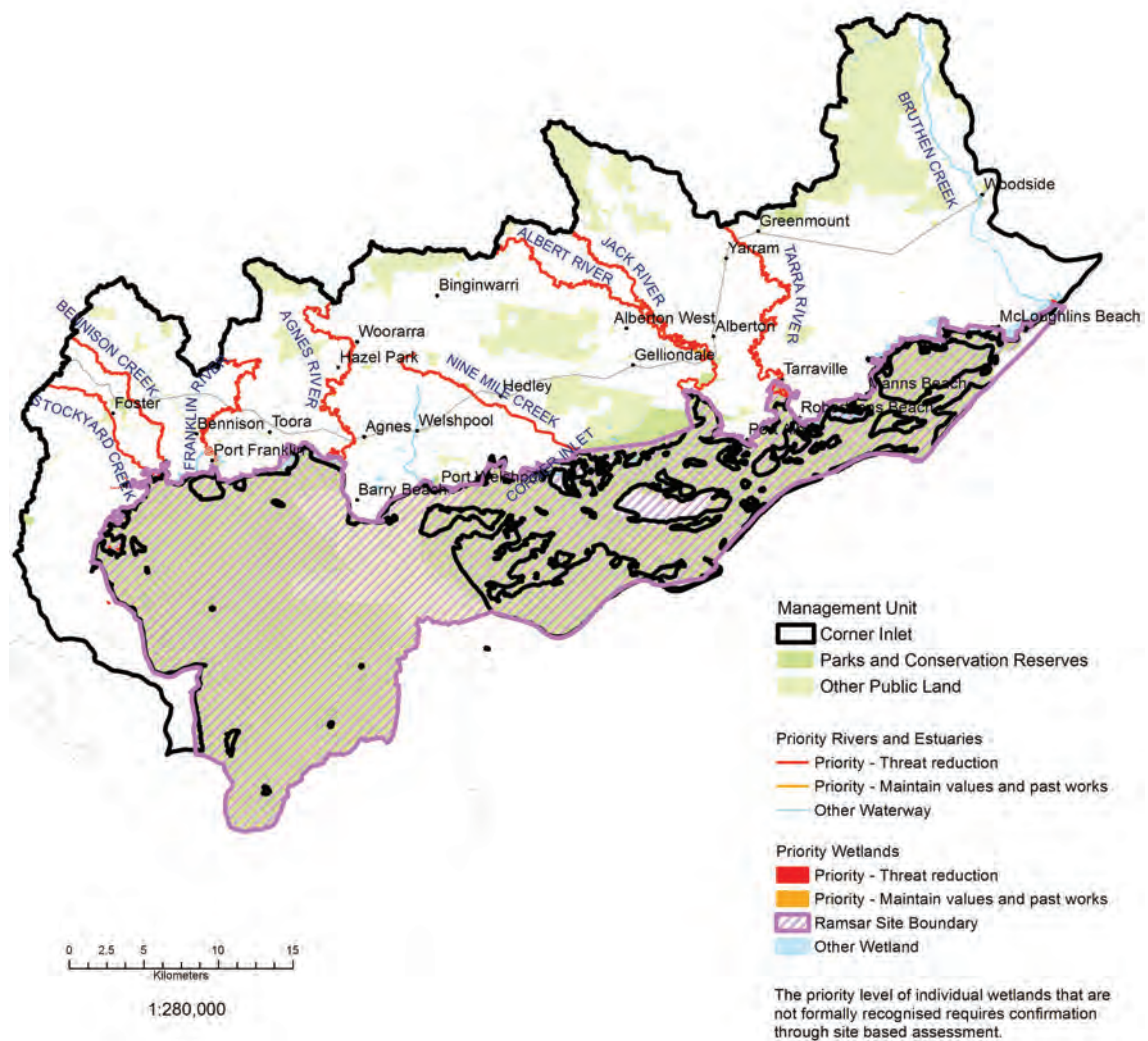


Figure 33 Map of priorities for the Corner Inlet Management Unit

Table 14 Corner Inlet Work Program**Priorities:**

Threat Reduction: Bennison Creek (27-20), Franklin River (27-21), Stockyard Creek, Agnes River (27-25), Albert River (27-29), Jack River (27-31), Nine Mile Creek (27-27), Tarra River (27-33), Western Tributaries (not mapped), Old Hat Creek estuary (27-207), Stockyard Creek estuary (27-208), Bennison Creek estuary (27-220), Agnes River estuary (27-225), Nine Mile Creek estuary (27-227), Albert River estuary (27-228) Bruthen Creek estuary (27-236) and the Corner Inlet Ramsar site.

Maintain values/past works: Albert River estuary (27-229)

Note. Table 14 sets out the work program for the priority tributaries of the Corner Inlet Ramsar site. Table 16 sets out the work program for the Corner Inlet Ramsar Site and the estuarine sections of the tributaries, as the majority of these estuaries fall within the Ramsar Site boundary.

Long Term Resource Condition Target

All expected native fish species (migratory and non-migratory), including Australian Grayling, are found in the reach and their abundance has increased.

Waterways in the catchment provide suitable water quality to maintain seagrass condition and extent in Corner Inlet within the limits of acceptable change set out in the Ramsar Site Ecological character Description.

Vegetation establishment provides connectivity with remnant patches and a robust riparian buffer.

Riparian vegetation provides improved visual amenity and contributes to community use.

Community groups are actively involved in the management of waterways.

Waterways in the catchment provide water of suitable quality to support social and economic uses including township, rural uses and fishing.

Waterways are physically stable (not actively eroding at high rates) and their values are not threatened by waterway instability.

Water regime is improved to provide seasonal variability in summer and autumn.

Values linked to Regional Goals: fish, birds, invertebrates, vegetation, landscape, social, economic, hydrology

Threats addressed by work program: flow stress, invasive flora, livestock access, loss of large wood, poor water quality, reduced riparian large trees, reduced riparian width, sedimentation.

Management Outcome Target	Management activity / output		Lead agency and partners
Recruitment and growth of large tree species is occurring successfully throughout riparian zones.	Establish riparian management agreements with landholders.* (ha)	160	WGCMA, landholders
	Construct riparian fencing to exclude stock. (km)	86	WGCMA, landholders
Vegetated riparian corridor is at least 15m on each side for 90% of reach (27-29, 27-31, 27-33).	Establish native vegetation. (ha)	144	WGCMA, landholders

Table 14 Corner Inlet Work Program continued

Management Outcome Target	Management activity / output		Lead agency and partners
Nutrient and sediment load reduction targets for Corner Inlet tributaries are achieved. ¹	Construct riparian (wetland) fencing to exclude stock. ² (km)	6	WGCMA , landholders
	Continue to implement agricultural and forestry Best Management Practices as outlined in the Water Quality Improvement Plan. ³		
Less than 60% cover of invasive riparian flora are present in the shrub and ground layer of priority waterways.	Establish weed control – mechanical removal of willow. (ha)	24	WGCMA
	Establish weed control – stem poisoning / spraying of willow. (ha)	27	WGCMA
	Establish woody weed control. (ha)	20	WGCMA , landholders
	Maintain weed control in past works. (ha)	235	WGCMA , landholders
Less than 50% of Albert River (27-29) and Nine Mile Creek active bank erosion.	Undertake earth works (bank armouring) to address erosion. (km)	1	WGCMA
	Undertake earth works (bank armouring) to address erosion. (no. sites)	8	WGCMA
No active bed degradation in Albert River (27-29).			
Jack and Albert Rivers maintain their current channel environment.	Construct waterway structure (chute). (no.)	4	WGCMA
Delivery of NRM activities in Corner Inlet are coordinated through partnership arrangements.	Maintain the Corner Inlet Connections partnership. (no. partnerships).*	1	WGCMA
	Establish waterway management arrangements for urban areas of Stockyard Creek. (no. partnerships)	1	WGCMA , DEPI, South Gippsland Shire Council,
Community participation in waterway management activities is increased.	Coordination / participation in engagement events. (no. events)	8	WGCMA , Landcare
	Support community monitoring of waterways to inform management. (no. sites)	3	WGCMA , Landcare
Environmental water outcomes are improved through planning, reporting and monitoring.	Implement the Yarram Water Supply Protection Area Management Plan.*		SRW , WGCMA
	Implement local management rules related to groundwater and surface water management.*		SRW

¹ Water Quality Targets and implementation planning has been completed for the entire catchment through the *Corner Inlet Water Quality Improvement Plan*.

² This action will occur outside of the Corner Inlet Ramsar Site boundary

³ Costs for this management activity are outlined in the *Corner Inlet Water Quality Improvement Plan*.

Table 14 Corner Inlet Work Program continued

Management Outcome Target	Management activity / output		Lead agency and partners
Improved knowledge of the instream and floodplain dynamics of the Albert and Jack Rivers.	Investigate the avulsion risk for the Jack River and Albert River (Pound Rd West to Jack River confluence), and identify strategies to manage stability of the system. (no. assessment)	1	WGCMA
	Investigate options to re-engage the lower Albert River with the floodplain. (no. assessment)	1	WGCMA
Estimated cost			\$3,400,000

* Management activity not costed

22 Corner Inlet Ramsar Site Management Plan

The Corner Inlet Ramsar Site is located approximately 250 km south-east of Melbourne and includes the areas of Corner Inlet and Nooramunga Marine and Coastal Parks and the Corner Inlet Marine National Park. It covers 67,192 ha and represents the most southerly marine embayment and intertidal system of mainland Australia.

The site is a large marine embayment with tidal channels and sandy barrier islands. It includes: the marine areas within Corner Inlet which are covered by sand or mud flats with well-developed sea grass beds; land areas (above the high water mark) covering the sand islands and spits along the south eastern site boundary; and near-shore coastal areas fringing the mainland. The site excludes most of the rivers and creeks that flow into the Inlet from the mainland catchments, but does include the estuaries of the tributary rivers and creeks.

The Corner Inlet Ramsar Site is composed of a complex network of coastal wetland types, which provide habitat for a diverse range of flora and fauna. These include permanent shallow marine waters, sub-tidal aquatic beds, rocky marine shores, intertidal marshes, intertidal forested wetlands, estuarine waters and coastal freshwater lagoons (BMT WBM, 2011a).

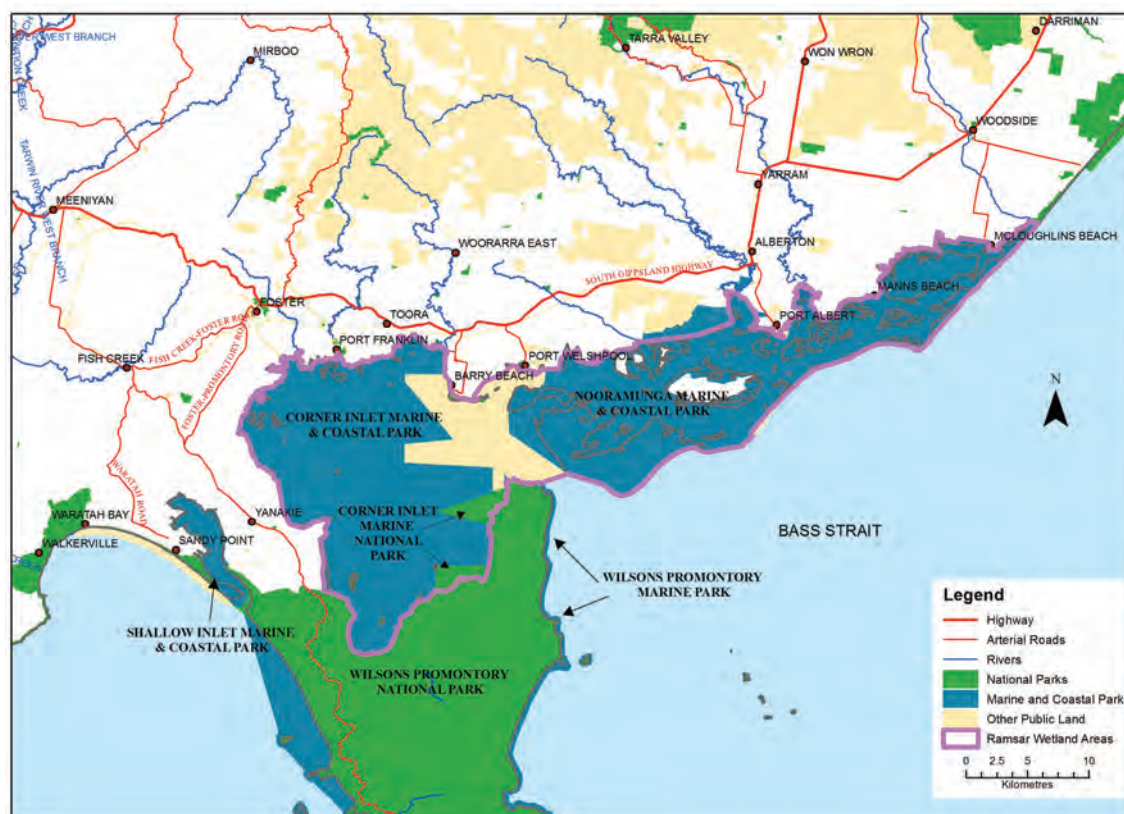


Figure 34 Corner Inlet Ramsar Site management arrangements



Pictured: Port Welshpool

22.1 Criteria met for Ramsar and other important values

Corner Inlet supports outstanding environmental values that have been recognised through its listing under the Ramsar Convention in 1982. Each site nominated under the Ramsar Convention must meet some or all of the internationally accepted criteria in relation to zoology, botany, ecology, hydrology or limnology and importance to waterfowl.

A detailed outline of the criteria against which Corner Inlet was assessed is detailed in the Corner Inlet Ecological Character Description, <http://www.environment.gov.au/resource/corner-inlet-ramsar-site-ecological-character-description> (BTM WBM, 2011a). Overall, the values supporting the listing of the Corner Inlet Ramsar Site include:

- A substantially unmodified wetland which is a very good example of and wetland enclosed by barrier islands and which supports a range of estuarine habitats (seagrass, mud and sand flats, mangroves, saltmarsh and permanent marine shallow water) which are characteristic of the marine bioregion (Criterion 1).
- Presence of nationally threatened species; Orange bellied parrot, Australian grayling, Fairy tern and Growling grass frog (Criterion 2).
- The site supports non-breeding habitats for 24 migratory shorebird species known to occur within the site. It also supports in excess of 40,000 shorebirds at times, and counts of in excess of 20,000 shorebirds have been regularly recorded. During the austral winter, approximately 50 per cent of the over-wintering birds (predominately juveniles) remain whilst adults migrate to northern hemisphere breeding grounds.

Furthermore, the site provides breeding habitat for a variety of waterbirds, including several species listed as threatened at the State level and/or occurring in significant numbers. The site also provides habitat for significant aggregations of waterbirds during post-breeding, and as a refuge during adverse environmental conditions, particularly the western parts of Corner Inlet, where areas of seagrass, mangroves and coastal saltmarsh provide habitat are likely to support highest values for these species (Criterion 4).

- The site regularly supports more than 20,000 shorebirds and at times over 40,000. Black swan, Grey teal and Chestnut teal also occur in significant numbers (Criterion 5).
- Corner Inlet also regularly supports at least one per cent of individuals in a population of a number of waterbird species including Pied oystercatcher, Sooty oystercatcher, Pacific gull, Fairy tern, Red knot, Red-necked stint and Chestnut teal (Criterion 6).
- Corner Inlet provides important habitats, feeding areas, dispersal and migratory pathways and spawning sites for numerous fish species of direct or indirect fisheries significance including several fish species which are estuary residents or depend on estuaries to complete their life cycle and the Australian grayling which occurs in freshwater streams in the catchment but would use Corner Inlet to complete its life cycle (Criterion 8).

Other important natural values of the Corner Inlet Ramsar Site include:

- The most southern location for broad-leafed seagrass (*Posidonia australis*)
- Over 390 species of indigenous flora and 160 species of indigenous terrestrial fauna and over 390 species of marine invertebrates.
- In addition, fifteen flora species and twenty-two fauna species threatened in Victoria have been recorded in Corner Inlet.
- Thirty-two species of wading birds have been recorded in the Ramsar site.
- A wide variety of marine mammals including bottlenose dolphins and Australian fur seals, as well as occasional records of common dolphins, New Zealand fur seals, leopard seals and southern right whale.
- Significant areas of mangrove and saltmarsh which is listed nationally as a vulnerable ecological community. These areas filter pollutants, stabilise sediments, trap and process nutrients and protect the shoreline from erosion. They also provide food, nesting and nursery areas for many animals including a variety of reptiles, amphibians, mammals, fish and birds, including threatened species.
- Sand and mudflats, when exposed at low tide, provide important feeding grounds for migratory and resident birds; and at high tide provide food for aquatic organisms including commercial fish species (CSIRO, 2005).

Key social, economic and cultural values of the site include:

Ports and harbours – The four main ports (Port Albert, Port Franklin, Port Welshpool and Barry's Beach) service the commercial fishing industry, minor coastal trade, offshore oil and gas production and boating visitors.

Fishing – The area support the third largest commercial bay and inlet fishery in Victoria, including 18 licensed commercial fishermen, within an economic value of between 5 and 8 million dollars annually (DPI, 2008).

Recreation and tourism – Corner Inlet provides important terrestrial and aquatic environments for tourism and recreational activities such as fishing, boating, sightseeing, horse riding, scuba diving, bird watching and bushwalking. Corner Inlet attracts at least 150,000 visitors each year (DNRE, 2002).

Cultural Heritage – Both the Corner Inlet catchment and Ramsar site have significant cultural value to the Gunaikurnai people, with the Corner Inlet and Nooramunga area located on the traditional lands of the Brataualung people who form part of the Gunaikurnai Nation. The area has a large number of cultural heritage sites that provide significant information for the Gunaikurnai people of today about their history. The Bunurong and the Boon Wurrung peoples also have areas of cultural significance in this region.

Thirty-one shipwrecks are present in the site, with 23 in the Port Albert area. They are an important cultural feature as they illustrate aspects of European settlement, primarily the history of trade, ship building and propulsion (DNRE, 2002).

Research and education – The wildlife, marine ecosystems, geomorphological processes and various assemblages of aquatic and terrestrial vegetation within the Corner Inlet Ramsar Site provide a range of opportunities for education and interpretation. While the site does not contain any scientific research stations, it is used extensively for research programs by institutions including University of Melbourne, CSIRO and the DEPI Arthur Rylah Institute.

22.2 Critical components processes and services

As part of its role as a Contracting Party to the Ramsar Convention on Wetlands, Australia is expected to manage its Ramsar sites so as to maintain the ecological character of each site, and notify the Ramsar Secretariat of any change. Of primary importance to wetland management is having an understanding of the critical components, processes and services that characterise the wetland and their state at the time of Ramsar listing and the basic processes that link the key components and cause changes in state.

An Ecological Character Description (ECD) has been prepared for the Corner Inlet Ramsar Site by BMT WBM in 2011. The ECD identifies, describes and where possible, quantifies the critical components, processes, benefits and services that make up the ecological character of Corner Inlet. These are the aspects of the Corner Inlet Ramsar Site that, beyond certain limits of acceptable change, would result in a change to the ecological character of the site.

The critical and other supporting components, processes and services of the Corner Inlet Ramsar Site as described in the Ecological Character Description are set out in table below. Supporting components, processes and services are considered important in wetland functioning but not critical. Broadly, the major features of the Corner Inlet Ramsar site that form its ecological character are its large geographical area, the wetland types present, diversity of aquatic and semi-aquatic habitats and abundant flora and fauna (including significant proportions of the global population of a number of waterbird species). The interaction of the critical components, processes and services are shown in Figure 35 Conceptual Model of Components, Processes and Services/Benefits at Corner Inlet (from BTM WBM, 2011a).

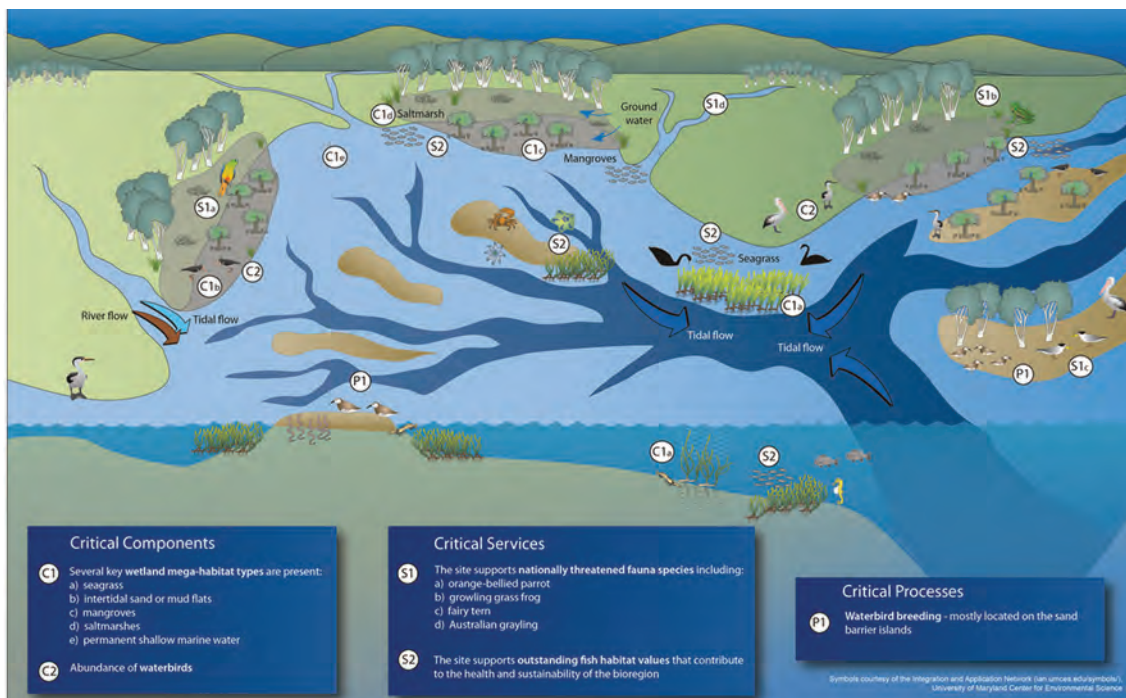


Figure 35 Conceptual Model of Components, Processes and Services/Benefits at Corner Inlet (from BTM WBM, 2011a)

Table 15 Summary of critical components, processes and services/ benefits of the Corner Inlet Ramsar Site (taken from BMT WBM, 2011a)

Critical components	Critical processes	Critical services/ benefits
<p>Several key wetland mega-habitat types are present:</p> <ul style="list-style-type: none"> • seagrass • intertidal sand or mud flats • mangroves • saltmarshes • permanent shallow marine water <p>Abundance and diversity of waterbirds.</p>	<p>Waterbird breeding is a key life history function in the context of maintaining ecological character of the site, with important sites present on the sand barrier islands</p>	<p>The site supports nationally threatened fauna species including:</p> <ul style="list-style-type: none"> • Orange-bellied parrot • Growling grass frog • Fairy tern • Australian grayling <p>The site supports outstanding fish habitat values that contribute to the health and sustainability of the bioregion.</p>
Supporting components	Supporting processes	Supporting services/ benefits
<p>Important geomorphological features that control habitat extent and types include:</p> <ul style="list-style-type: none"> • sand barrier island and associated delta system • extensive tidal channel network • mud flats and sand flats <p>Invertebrate megafauna in seagrass beds and sub-tidal channels are important elements of biodiversity and control a range of ecosystem functions.</p> <p>Diverse fish communities underpin the biodiversity values of the site.</p>	<p>Climate, particularly patterns in temperature and rainfall, control a range of physical processes and ecosystem functions.</p> <p>Important hydraulic and hydrological processes that support the ecological character of the site includes:</p> <ul style="list-style-type: none"> • Fluvial hydrology. Patterns of inundation and freshwater flows to wetlands systems. • Physical coastal processes. Hydrodynamic controls and marine inflows that affect habitats through tides, current, wind, erosion and accretion. • Groundwater. For those wetlands influenced by groundwater interaction, the level of the groundwater table and the groundwater quality. <p>Water quality underpins aquatic ecosystem values within wetland habitats. The key water quality parameters for the site are salinity, turbidity, dissolved oxygen and nutrients.</p> <p>Important biological processes include nutrient cycling and food webs.</p>	<p>The site supports recreation and tourism values (scenic values, boating, recreational fishing, camping etc.) that have important flow-on economic effects for the region.</p> <p>The site provides a range of values important for scientific research, including a valuable reference site for future monitoring.</p>

22.3 Land Management Arrangements

While the Corner Inlet Ramsar Site has a complex tenure arrangement, most public land and waters within the site (89% of the site area) is public land contained within the Corner Inlet Marine and Coastal Park (27,848 ha), Nooramunga Marine and Coastal Park (30,101 ha) and Corner Inlet Marine National Park (1,641 ha). These areas are managed by Parks Victoria under the provisions of the *National Parks Act 1975* and Parks Regulations. The Act requires the Secretary to the Department of Environment and Primary Industries to preserve and protect the natural condition of the parks and its natural and other features and, subject to this, to provide for the use of the park by the public for enjoyment, recreation and education. Land areas above the high water mark on Doughboy Island, Bennison Island, Granite Island, Long Island and Corner Island, together with the intertidal area in the southern section of Corner Inlet, form part of Wilsons Promontory National Park.

The Park is managed by Parks Victoria under the provisions of the *National Parks Act* and Parks Regulation. In addition:

- land and waters within Port areas (Port Welshpool and Port Albert) are managed by Gippsland Ports under the *Crown Land (Reserves) Act 1978*
- Sunday Island, Dog Island, Little Dog Island, Hunter Island and Bullock Island are privately owned and managed
- the remaining areas of the Ramsar site are either unreserved Crown Land or are included in various public purposes or coastal reserves.

Management plans approved under section 17D of the *National Parks Act 1975* provide for the protection natural values and use of park areas by the public and are implemented by Parks Victoria.

22.4 Community Participation

The Corner Inlet Connections partnership was established in 2007 to provide an integrated and collaborative approach to address issues impacting on the Corner Inlet Ramsar Site. The partnership involves 15 groups including community groups, landholders, government bodies and industry groups.

Since 2007, Corner Inlet Connections has been instrumental in coordinating a number of initiatives including oversight of investment in research, planning, monitoring, engagement and on-ground works. Through the Corner Inlet Connections partnership individual members of the community can get involved in monitoring, onground works and attend events and activities that aim to raise awareness of the values of Corner Inlet and improve participation in natural resource management. This Strategy supports community participation and the delivery of coordinated programs for natural resource management within the Ramsar site and its catchment through the Corner Inlet Connections Partnership.

22.5 Limits of Acceptable Change

A key requirement of the Corner Inlet Ecological Character Description (ECD) was to define the limits of acceptable change (LACs) for the critical components, processes and services/benefits of the site. Limits of acceptable change are defined as, 'the variation that is considered acceptable in a particular measure or feature of the ecological character of the wetland' (DEWHA 2008).

A literature review and engagement with experts on the Steering Committee undertaken through the development of the ECD did not identify any significant or overarching changes in the ecological character of Corner Inlet since 1982. However, it was recognised that a number of long term threats are having an incremental and cumulative effect on the ecological character and require further investigation.

This is supported by the 2011 Ramsar Rolling Review undertaken by DEPI, which found that while the LAC had not been exceeded for a number of indicators, it was not possible to determine if there had been a change in the ecological character of the site due to insufficient monitoring of a number of indicators. Based on this, it is considered that the focus of management should be to reduce the impact of existing threats rather than on rehabilitation or restoration. Limits of Acceptable change for Corner Inlet are set out in Appendix nine.

22.6 Threats, risk assessment and prioritisation of actions for Corner Inlet

Given the size and diversity of habitats present, the threats to the values of the Corner Inlet Ramsar Site vary greatly across multiple spatial and temporal scales and in terms of their potential severity (BMT WBM, 2011a). Broad scale threats to the ecological character of the site are identified in the ECD as, impacts associated with recreational activities, natural resource utilisation, altered hydrology, habitat isolation, dredging, pollution, urban encroachment, acid sulfate soils, oil spills, invasive plants and animals, and climate change.

The identification of threats and assessment of risk (based on expected timing, likelihood and consequence) for this Strategy has been drawn from numerous sources in addition in the ECD including:

- the *Corner Inlet Ramsar Site Strategic Management Plan* (DNRE, 2002)
- the *Corner Inlet Water Quality Improvement Plan* (WGCMA, 2013)
- the Corner Inlet Ramsar Site INFFER Assessment (Natural Decisions, 2014) – further detail on this process is provided in Appendix nine.

The above sources were used in place of AVIRA due to fact that the AVIRA dataset does not include a comprehensive list of assets within Corner Inlet. These threats, their potential impacts on the ecological character of Corner Inlet and the risk assessment results are set out in Appendix ten, (Tables 1-3).

The results of the risk assessment was then used together with a number of other factors (the project goal, possible works and actions, time lags, the effectiveness of works, private adoption of actions and delivery mechanism and costs) to identify the management outcome targets and management activities and outputs in Table 16. This assessment also drew on knowledge of the extent to which management actions within the Ramsar site or surrounding catchment can influence the condition of the critical components, processes and services

22.7 Ramsar Site Monitoring Evaluation and Reporting

The Australian Government is developing a three-year Ramsar Rolling Review program for reporting the status of the ecological character of Australia's Ramsar sites.

The broad aims of the Ramsar Rolling Review program are to:

- review and report on the status of the ecological character of Australia's Ramsar sites (including positive or adverse change)
- be a tool to assist managing sites in order to maintain their ecological character, improving links between ecological character, site management plans and monitoring programs for critical components, processes and services and associated threats
- provide input to a database of baseline and threat data
- record updates as knowledge gaps are addressed and refinement of LACs

- highlight issues and facilitate assessment of a potential change of character, focussing on proactive management before the situation requires notification
- identify broad trends or common threats across site and jurisdiction boundaries.

Under the Ramsar rolling review, reporting for the Corner Inlet Ramsar Site will focus on the LACs, knowledge gaps and/or key threats exist as identified in the ECD (Appendix eleven, Table 4).

Australia reports the ecological character of its Ramsar sites through a national Ramsar site rolling review. The findings are included in Australia's national report to the triennial Conventions of Contracting Parties to the Ramsar Convention.

22.8 Work Program for the Corner Inlet Ramsar Site

This section sets out the work program for the Corner Inlet Ramsar Site Management Plan. Table 16 identifies the Long Term Resource Condition Targets with links to the Critical, Components, Processes and Services of the site. The overall aim of the management plan is to maintain ecological character as described at the time of listing. For some LTRCTs a benchmark from the time of listing was not available and more recent benchmarks have been used.

Management activities have been identified based on the analysis of threats and values and where possible linked to eight year management outcome targets. An overall cost estimate is provided for the work program which will be updated at the midterm review of the Strategy.

Table 16 Work Program for the Corner Inlet Ramsar Management Plan

Long Term Resource Condition Target	Link to Critical Components, Processes and Services				
	Wetland habitats	Waterbird breeding	Waterbirds	Threatened fauna	Fish habitat
Current extent of mangrove shrub land and coastal saltmarsh aggregate is maintained.	✓			✓	
90% of all saltmarsh in Corner Inlet in good condition.	✓			✓	
Current habitat (condition and extent) for threatened species is maintained.	✓			✓	
Seagrass condition and extent in Corner Inlet is maintained at 2013 benchmark.	✓				✓
Numbers of migratory and resident shorebird species are maintained within +/- 25% of their 2006 – 2008 benchmark numbers.*			✓		
Current number of key beach nesting bird breeding sites and pairs maintained.		✓			
Waterways in the catchment provide water of suitable quality to support economic uses including township, rural uses and fishing.	✓				✓

* Achievement of this target will be impacted on by offsite threats

Table 16 Work Program for the Corner Inlet Ramsar Management Plan continued

Link to LTRCT	Management Outcome Target	Management activity / output		Lead agency and partners
Key Values: fish, birds ² , invertebrates, vegetation ¹ , landscape, social, economic, hydrology ¹				
Key Threats: pollutants (sediment and nutrient), oil spills and incidents, recreational activities, natural resource use, urban development and encroachment, barriers to tidal exchange, dredging, acid sulfate soils, invasive flora, invasive animals (terrestrial and marine), altered hydrology				
1, 2	No livestock access along Corner Inlet foreshore and estuaries.	Establish management agreement with landholders.* (ha)	150	WGCMA, landholders
		Construct riparian fencing to exclude stock. (km)	10	
4,7	Nutrient and sediment load reduction targets for Corner Inlet tributaries are achieved.	Establish native vegetation. (ha)	24	WGCMA
		Establish woody weed control. (ha)	151	
		Establish permanent protection of native vegetation. (ha)	15	TFN, landholders
		Continue to implement agricultural and forestry Best Management Practices as outlined in the Water Quality Improvement Plan.*		WGCMA, landholders, DEPI, industry
1, 2	200 ha of saltmarsh/ mangrove communities in Corner Inlet have improved in condition from baseline .	Construct fencing to exclude stock from saltmarsh and mangrove communities. (km)	30	WGCMA, landholders
		Undertake assessment to determine baseline condition of saltmarsh and mangrove vegetation within the Corner Inlet Ramsar Site. (no. assessment)	1	WGCMA, research organisation/ university
5	Spartina infestations are contained at 2013 extent and density in Corner Inlet.	Assess and map spartina infestation extent and densities (biennial). (no. assessments)	4	Parks Victoria
		Establish weed control – non-woody spartina. (ha)	68	WGCMA, Parks Victoria
		Maintain weed control – non-woody (spartina). (ha)	350	Parks Victoria
6	Fox populations on Corner Inlet barrier islands maintained at 2014 benchmark.	Investigate and quantify the impact of fox control activities (on private and public land) on shorebird numbers in Corner Inlet. (no. assessment)	1	Parks Victoria, Birdlife Australia
		Support Parks Victoria to undertake fox control activities on the barrier islands of Corner Inlet.		Parks Victoria

¹ Costs for this management activity are outlined in the Corner Inlet Water Quality Improvement Plan

² Comprehensive baseline conditions assessments have not yet been completed for saltmarsh / mangrove communities in Corner Inlet.

Table 16 Work Program for the Corner Inlet Ramsar Management Plan continued

Link to LTRCT	Management Outcome Target	Management activity / output		Lead agency and partners
6	1000 ha targeted fox control on private land.	Support landholders to undertake integrated fox control activities on private land adjacent to priority nesting and roosting sites in the Corner Inlet Ramsar Site.		Landcare, landholders
7	Less than 50% of the Tarra River estuary is actively eroding.	Undertake earth works (bank armouring) to address erosion. (km)	1	WGCMA
		Undertake earth works (bank armouring) to address erosion. (no. sites)	2	WGCMA
		Install fishing platform . (no.)	1	WGCMA
3, 4	Improved knowledge of water quality and seagrass dynamics.	Investigate seagrass condition and extent to quantify links with nutrient and sediment loads and hydrodynamic processes including resuspension. (no. assessment)	1	WGCMA, research organisation/ university
		Implement high flow / event based catchment water quality monitoring program. (no. program)	1	WGCMA
		Implement marine water quality monitoring program. (no. program)	1	Parks Victoria
		Monitoring, Evaluation and Reporting processes are established for the Corner Inlet Ramsar Site.	1	Parks Victoria, WGCMA, DEPI
		Collate monitoring results and report on ecological character every three years. (no. assessment)	2	DEPI
	Review and update Limits of Acceptable Change for critical components. (no. assessment)			DEPI, Parks Victoria
	Undertake targeted survey of threatened flora and fauna species. (no. assessment)	1		DEPI, Birdlife Australia, Parks Victoria
	Monitor the impacts of recreational and commercial fishing on the resources of the site (juvenile fish, bait species and resident fish species). If necessary, use education programs and regulations to enforce sustainable fishing practices.			Fisheries Victoria

Table 16 Work Program for the Corner Inlet Ramsar Management Plan continued

Link to LTRCT	Management Outcome Target	Management activity / output	Lead agency and partners
	Monitoring, Evaluation and Reporting processes are established for the Corner Inlet Ramsar Site continued.	Monitor human disturbance at principal high tide shorebird roosts and tern breeding colonies. Where necessary, introduce restrictions and visitor management methods at the sites.	Parks Victoria
		Ensure planning applications for land adjacent to the Ramsar site consider the potential impact to the site's ecological character.*	Wellington Shire Council, South Gippsland Shire Council, DEPI
		Ensure referral under the EPBC Act any actions (within or outside the Ramsar site) that may have a significant impact on the ecological character of the Corner Inlet Lakes Ramsar Site.*	DEPI, all Strategy partners and agencies
		Ensure all dredging activities are in accordance with relevant Victorian and Australian Government regulations.*	EPA
		Ensure all boating facilities, including jetties and moorings, are appropriately licenced.*	Gippsland Ports, Parks Victoria, Wellington Shire Council, South Gippsland Shire Council,
		Support Traditional Owners to survey and manage sites of cultural significance.	Parks Victoria, GLAWAC
		Support commercial fishing industry to continue to implement measures to reduce seagrass damage.*	Commercial fishing industry, Fisheries Victoria
		Estimated cost	\$4,300,000

* Management activity not costed

23 Monitoring, evaluation and reporting

Effectively managing rivers, estuaries and wetlands requires all responsible agencies to have access to reliable information on which to base management decisions. This section describes the monitoring, evaluation and adaptive management framework for this Strategy. A detailed Monitoring, Evaluation, Reporting and Improvement plan will be developed when the strategy is completed.

23.1 Adaptive Management

Adaptive management at the regional level requires both regular review and learning from previous experience. This allows the responsible agencies to alter management approaches based on knowledge gained during implementation.

The *Victorian Waterway Management Strategy* sets out the adaptive management cycle for waterway management.



Figure 36 Adaptive Management Cycle (DEPI 2013a)

The cycle includes:

- Strategy and Planning – state policy framework and targets, planning for waterway management through regional waterway strategies with priorities and regional targets.
- Implementation and Monitoring – government and other investment in regional priorities.
- Implementation of priority management activities – intervention monitoring and long-term resource condition assessment.
- Evaluation and reporting – management reporting, intervention monitoring reporting, resource condition reporting, program evaluation and improvement.

Community participation and research and innovation occur across all parts of the program. This knowledge and information is crucial for ensuring effective adaptive management and informing associated monitoring, evaluation and reporting processes.



Pictured: electrofishing in the Thomson River

23.2 Monitoring

Monitoring activities aim to provide data to help evaluate and report on implementation progress and the overall success of Strategy once implemented. It involves collecting information relating to direct and indirect influences that impact on the implementation of the Strategy. This might include factors such as flood, bushfire, drought and other potential impacts of climate change, land use, population growth, government support and community expectations.

Monitoring the success of the Strategy will draw on a variety of methods including the results of intervention monitoring and the resource condition monitoring process coordinated through the Victorian Waterway Management Program. This is done through the Index of Stream Condition, Index of Wetland Condition and Index of Estuarine Condition monitoring programs which are conducted at a reach or waterway scale.

The WGCMA also works with community members to monitor waterway condition through the Waterwatch and EstuaryWatch programs.

23.3 Evaluation

Evaluating the Strategy involves assessing the extent to which the outcomes have been achieved at each level of the program logic underpinning the Strategy. It also provides for a review of the assumptions in the program logic and provides direction and improved knowledge for subsequent planning cycles.

Evaluation of the Strategy will include a review of each stage of the program logic to assess the level at which each aspect has been achieved. Evaluation questions have been developed to address the following five categories.

1. impact – changes to resource condition, management activities or institutions
2. appropriateness – addressing the needs of beneficiaries against best practice
3. effectiveness – achieving desired management outputs and resource condition objectives
4. efficiency – value or return from investment
5. legacy – after the activity/program ends.

The scale and frequency of evaluation will vary throughout the life of the Strategy, and will include an annual review cycle along with more detailed reviews mid-term and in the final year of the Strategy.

Where appropriate, projects that deliver against the Strategy will include evaluation questions and require evaluation to occur at similar periods to those described below.

Annual review

- progress towards planned activities, outputs and budgets
- new knowledge and information
- changes to planned activities and outputs, based on above.

Mid-term evaluation (approx. 2018)

- progress towards planned activities, outputs and budgets
- where possible progress towards management outcomes
- new knowledge and information.

Final independent evaluation (2022)

- assessment of progress and/or achievements against the Strategy targets
- capturing of knowledge (lessons learnt, new data or approaches) gained during implementation of the Strategy, from all partners
- review of changes to the Strategy, from mid-term evaluation and review (and the information these changes were based on).

23.4 Reporting

Accurate reporting is an important tool to be able to report to the community and stakeholders on Strategy implementation and ensure accountability for the investment of government funds into waterway management. Over the long term, consistent and effective reporting provides evidence to enable evaluation of the effectiveness of this Strategy.

WGCMA reports to government and community through:

1. Annual reporting

This reports the highlights, challenges, activities and achievements for the year, as well as the organisation's financial position. The WGCMA's Annual Report is audited to ensure financial information gives an accurate representation of financial position.

2. Reporting against Strategy outcomes

Public reporting of progress towards Management Outcome Targets will occur at a minimum as part of the final review of the Strategy. WGCMA will also support reporting of management outcome targets for the *Victorian Waterway Management Strategy* in 2016 and 2020.

3. Resource condition reporting

This reporting is coordinated through the Victorian Waterway Management Program. This involves the collection, analysis and reporting of information on the condition of Victoria's waterways every eight years (subject to available funding) (DEPI, 2013a). This reporting, along with local knowledge and Waterwatch data provides the information to help assess waterway condition over the long term.

23.5 Knowledge gaps and research

Over a long period of waterway management, WGCMA has gained a good understanding of the waterways in the region, however knowledge gaps are likely to be identified through monitoring and evaluation activities. A number of the existing priority knowledge gaps are being addressed in the Work Program.

WGCMA takes the following actions, where critical gaps in knowledge are identified:

- addresses the gap by obtaining external expert knowledge,
- targets activities to build local knowledge and understanding,
- records and collates information relating to the knowledge gap, relaying it back to DEPI for further research.

WGCMA works with its delivery partners; DEPI and the tertiary education sector; to identify areas for further research.

23.6 Adaptive Management

WGCMA, like other CMAs and government authorities, uses the 'adaptive management' cycle to manage waterways. We live in an ever changing and unpredictable environment where bushfire, flood and drought require an adaptive response. Adaptive management is also referred to as 'learning by doing' (DEPI 2013a).

At the core of adaptive management (see Figure 36) is community participation and research and innovation. This suggests the need to learn from experience and change the management approach based on community knowledge or knowledge gained from the implementation.

Community participation and research and innovation occur across all parts of the program and are integral for ensuring adaptive management.

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