# Review and Renewal of the 2015 Gippsland Lakes Ramsar Site Management Plan

## Update: September 2023

EAST GIPPSLAND CATCHMENT MANAGEMENT AUTHORITY

West Gippsland Catchment Management Authority

VICTORIA State Government

We acknowledge the Gunaikurnai people, Traditional Owners of the land and waters of the Gippsland Lakes and pay our respects to their Elders, past and present. In particular, we pay tribute to the Brayakaulung, Brabralung and Tatungalung clans, whose intrinsic connection and custodianship of Country continue to be a vital element of the heritage, knowledge and future management of the Gippsland Lakes. Learn more about Gunaikurnai Country here.

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# 1 Background

The Convention on Wetlands of International Importance, commonly known as the Ramsar Convention, is the intergovernmental treaty that provides the framework for the conservation and wise use of wetlands. Contracting parties to the Convention are required to designate wetlands for inclusion as Wetlands of International Importance (Ramsar site).

The Gippsland Lakes was listed as a Ramsar site in 1982. It is located 300 kilometres from Melbourne to the east of the Latrobe Valley. Ninety Mile Beach lies to the south. The Ramsar site consists of a series of lakes and fringing wetlands. It is the largest estuarine lagoon system in Australia, covering an area of 61,150 ha.

I**mage** – *Aerial view of the Gippsland Lakes.*

The Gippsland Lakes Ramsar Site Management Plan (GLRSMP) establishes the framework for the maintenance of the site's unique ecological character through conservation and wise use.

The GLRSMP is currently being renewed. Since the release of the GLRSMP seven years ago, there has been significant progress in our understanding of the ecological character of the Gippsland Lakes, key threats to ecological character, and the strategic direction and management of Ramsar wetlands in Victoria.

This document provides an update on the first stage of the renewal process (see Figure 1) which has included:

- a review of the status of management strategies identified in the 2015 GLRSMP
- progress made to date against the 20-year aspirational Resource Condition Targets
- a detailed analysis of the available data and evidence which will be used to inform the draft GLRSMP.

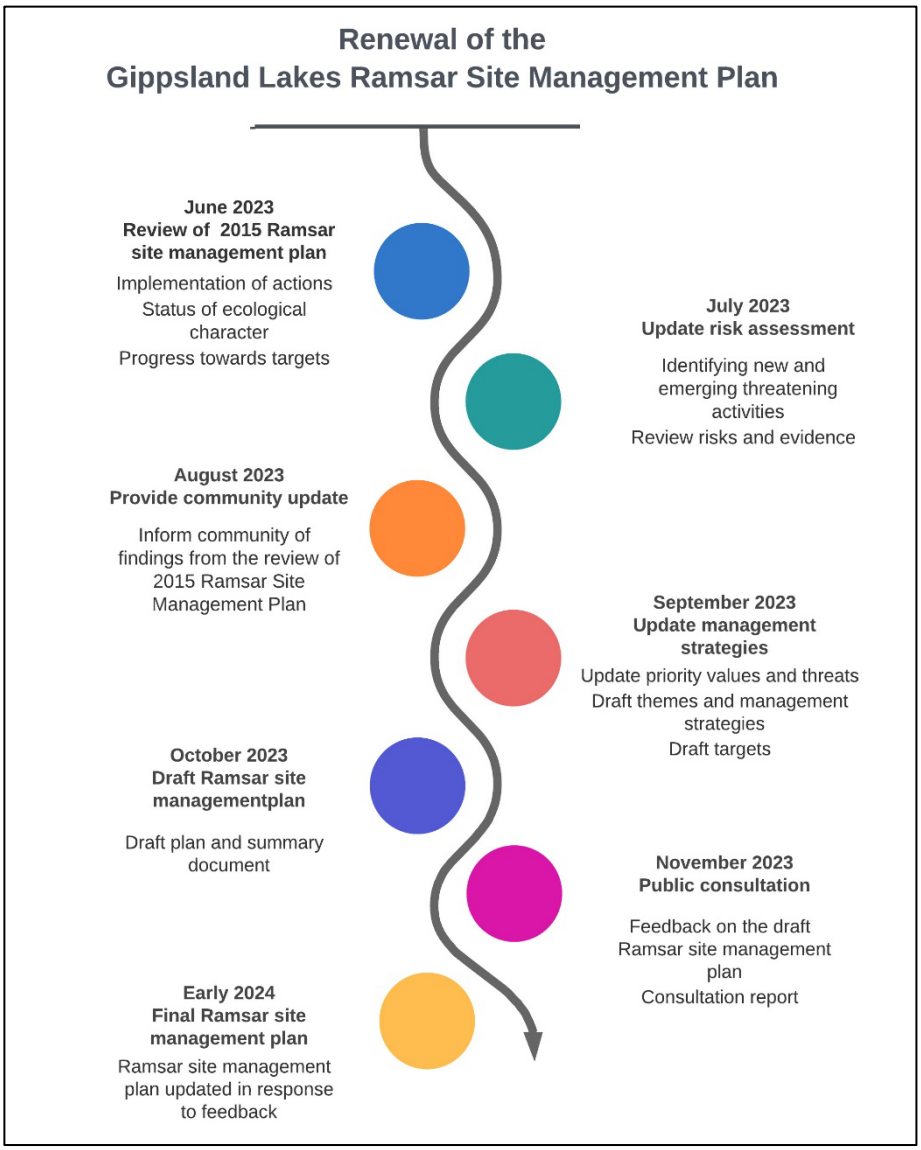


**Figure 1**. *Process to renew the Gippsland Lakes Ramsar Site Management Plan.*

## Purpose

The primary purpose of the GLRSMP is to inform actions and monitoring to help maintain ecological character and promote wise use of the Gippsland Lakes Ramsar Site. The Ramsar Convention definition of 'wise use' 'is the maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development.'

The Australian Ramsar management principles outline the requirements for the management of Ramsar sites. Under these principles, the Ramsar site management plan must:

- Describe the ecological character of the site at the time of listing and state the Ramsar criteria met.
- Contain management actions that target the conservation and maintenance of the ecological character of the site and address the threats that impact the wetland's ecological character.
- Consider and provide for monitoring and reporting on the state of the wetland's ecological character on an ongoing basis.
- Be developed in consultation with people who have a particular interest in the wetland and include processes that provide for continuing community and technical input.

## Ecological Character

There are certain obligations associated with managing a Ramsar site including a commitment to take steps to maintain its 'ecological character' and to have procedures in place to detect if any threatening processes are likely to, or have altered, the '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."*

**Image**. *Green and Golden Bell Frog.*

There are 8 components, 2 processes and 2 services that are critical to the ecological character of the Gippsland Lakes Ramsar Site:

- Marine subtidal aquatic beds (seagrass)
- Coastal brackish or saline lagoons
- Fringing wetlands (predominantly freshwater)
- Fringing wetlands (brackish)
- Fringing wetlands (saltmarsh / hypersaline)
- Abundance and diversity of waterbirds
- Threatened species
- Abundance and diversity of native fish
- Hydrological regime
- Waterbird breeding
- Maintaining threatened species

The Ecological Character Description (ECD) and more information on this Ramsar site is available here.

# 2 Implementation of the 2015 Gippsland Lakes RSMP

## Implementation progress and achievements

Management of the Gippsland Lakes involves a range of government and non-government organisations including Parks Victoria (PV), the Department of Environment, Energy and Climate Action (DEECA), East Gippsland Catchment Management Authority (EGCMA), West Gippsland Catchment Management Authority (WGCMA), Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC), community groups and volunteers.

A large amount of on-ground work, planning and research has been undertaken within the Gippsland Lakes Ramsar Site since the release of the 2015 GLRSMP.

Overall, there have been actions delivered or commenced against all the management strategies in the plan. The majority of actions are complete or ongoing, with a small number of actions recently commenced. Ongoing actions include those that are required to be undertaken regularly or at least more than once and beyond the life of the 2015 GLRSMP, to manage the threat or value of the lakes.

Key achievements include:

- Sand renourishment to restore island habitats for beach nesting birds (pelicans and terns) at Pelican and Crescent Islands.
- Continuing to plan for and deliver environmental water to the Lower Latrobe Wetlands (Sale Common, Dowd Morass and Heart Morass).
- Working with landholders, industry, and communities to try and reduce the loads of nutrients and sediments entering the Gippsland Lakes from the catchment.
- Ongoing works with pest plant and animal control across the different habitats within the Lakes.
- Improving our understanding of seagrass in the Lakes, through development of a monitoring framework, mapping seagrass extent from satellite imagery and piloting revegetation trials.
- Carp screens and revegetation for the nationally endangered green and golden bell frog at Macleod Morass.
- Undertaking surveys of waterways for cultural significance.
- Developing a strategic approach to climate change through the “room to move” initiative.
- Keeping up to date with national and international reporting obligations on the status of ecological character.
- Improving the monitoring of water level and quality, water birds and plants in the lower Latrobe wetlands and Macleod Morass.

Further details on the achievements and implementation progress are provided below in Tables 1-7, with results presented by theme.

**Key to status of management actions.**

| |
|---|
| **Complete** |
| **Commenced** |
| **Ongoing** |

## *Theme 1: Maintaining and restoring habitats*

*Table 1. Implementation progress – Maintaining and restoring habitats*

| Management strategy | Status |
|---|---|
| 1A. Manage boat and swing moorings to minimize physical damage to seagrass beds. | Complete – 30 seagrass friendly moorings installed. |
| | Commenced – planning for another 10 seagrass friendly mooring to be installed next year. |
| 1B. Implement island renourishment and re-vegetation. | Ongoing – renourishment completed at Pelican and Crescent Island. Further work planned. |
| 1C. Protect and restore habitat at little tern and fairy tern nesting and post-breeding sites. Manage sea spurge at little tern and fairy tern nesting sites. | Ongoing – Fox and weed control on islands and outer barrier undertaken seasonally by PV and GLaWAC. |
| 1D. Improve native vegetation corridors and connectivity within and between all habitat types represented in the Ramsar site. | Ongoing – Wetland rehabilitation works across various projects including locations such as: Sale Common, Macleod Morass, Lake Wellington, Lake Reeve. |
| 1E. Continue protection and rehabilitation of the Heart Morass. | Ongoing – Implementation of the Heart Morass Rehabilitation Plan. |
| 1F. Continue strategic protection and rehabilitation of wetlands on private property that contribute to maintaining the ecological character of the Ramsar site. | Ongoing – Wetland rehabilitation works at Hollands Landing, Jones Bay, Flannagan Is and Cobblers Creek. |
| 1G. Implement actions to control invasive native species such as Typha and Giant Rush in freshwater wetlands as required. | Ongoing – Sale Common. |
| | Complete – Investigations into Typha expansion and control at Macleod Morass |
| 1H. Actively manage priority non-native pest plants. | Ongoing – Wide range of projects including implementation of Gippsland Lakes Invasive Species Strategy |
| 1I. Develop and implement instream and riparian habitat protection and/or rehabilitation programs for the estuarine river reaches. | Ongoing – Wide range of river health works including; stock exclusion, fencing, revegetation and installation of woody instream habitat. |
| 1J. Explicitly consider impacts to visual amenity of the landscape when assessing planning applications adjacent to the site. | Ongoing (Business as Usual) – Development applications assessed in accordance with planning regulations. |
| 1K. Monitor and where possible control off-road vehicle use at priority locations within the Ramsar site. | Ongoing – recreation and public land management and surveillance, development and implementation of Lake Tyers Camping and Access Strategy. |
| | Commenced – bollard installation at 4 priority sites including Lake Wellington wetlands. |
| 1L. Develop management strategies to maintain and restore the Mitchell River silt jetties. | Complete – Investigations, prioritisation and delivery of stabilisation works and revegetation. |

## *Theme 2: Protecting fauna*

*Table 2. Implementation progress – Protecting fauna*

| Management strategy | Status |
|---|---|
| 2A. Control of introduced predators in priority bird areas. | Ongoing – Fox control (McLeod Morass, Outer Barrier, Barrier Islands), predator scat analysis and fox control at Blond Bay. |
| 2B. Increase signs in priority migratory wader and nesting bird habitats to reduce disturbance. | Complete – Signage erected in key breeding and roosting sites. |
| 2C. Identify key nursery areas for the Burrunan dolphins. | Complete – Investigation and report on key nursery areas. Monitoring of Burrunan dolphins across the lakes. |
| 2D. Investigate the risk posed by human disturbance to migratory waders develop and implement feasible actions to address the risks. | Complete – Study completed into the human disturbance rates of birds at 4 locations in the lakes. |
| 2E. Develop and implement a public awareness campaign to reduce harassment and boating injuries to Burrunan dolphins. | Complete – Communications products Social media, signage, brochures and booklets with tourism operators and visitor information centres. |
| 2F. Implement an introduced marine pest strategy for the Gippsland Lakes. | Complete – Survey of marine pests. |
| | Complete – Marine pest risk assessment. |

## *Theme 3: Managing nutrients and sediments*

*Table 3. Implementation progress – Managing nutrients and sediments*

| Management strategy | Status |
|---|---|
| 3A. Reduce nutrient and sediment loads to the Gippsland Lakes through riparian, in-stream and catchment works to improve water quality of river flows to the Gippsland Lakes. | Ongoing – Implementation of works to reduce nutrient runoff from irrigated land and waterway erosion. |
| | Complete – Construction of stormwater treatment wetland at Broadlands, Jones Bay catchment. |
| | Commenced – Construction of stormwater treatment wetland in East Bairnsdale, Jones Bay catchment. |

## *Theme 4: Managing water regimes*

*Table 4. Implementation progress – Managing water regimes*

| Management strategy | Status |
|---|---|
| 4A. Undertake regular planning, delivery, monitoring and evaluation of the use of environmental water entitlements in the lower Latrobe wetlands (Sale Common, Heart Morass, Dowd Morass) and the Latrobe River estuary. | Ongoing – Planning and delivery of environmental water entitlements and associated monitoring |
| 4B. Investigate, and where feasible and cost effective, implement actions that enable and facilitate effective management of the water and salt regimes of priority fringing wetlands, including Sale Common, Heart Morass, Dowd Morass, Lake Reeve, and Macleod Morass. For example: technical studies, management plans and/or agreements, water entitlements, on-ground works, operational management and monitoring. | Ongoing – Investigations at Macleod Morass<br>Implementation yet to commence. |
| | Complete – Investigations and plans completed and funding largely secured for watering infrastructure at Sale Common, Heart Morass and Dowd Morass. |
| | Ongoing – Upgrades and construction of new watering infrastructure for Sale Common, Heart Morass and Dowd Morass, and protection and improvement of the environmental water reserve. |
| 4C. Maintain and where necessary improve hydrological connectivity and freshwater inflows to the Gippsland Lakes for fish migration and breeding. | Ongoing – Numerous projects including provision of fish passage and provision of e-flows in Latrobe, Thomson and Macalister rivers and associated monitoring. |
| 4D. Develop and implement a procedure for the management of estuary mouth closures for Lake Tyers and Merriman Creek | Ongoing – Estuary Opening Protocols for Lake Tyers. |
| | Commenced – Investigations at Merriman Creek. |

## *Theme 5: Integrating Aboriginal and European knowledge and management*

*Table 5. Implementation progress – Integrating Aboriginal and European knowledge and management*

| Management strategy | Status |
|---|---|
| 5A. Implement joint management of the Gippsland Lakes Coastal Park, The Lakes National Park, Lake Tyers State Park and Raymond Island Gippsland Lakes Reserve. | Ongoing – Joint management of land around the Gippsland Lakes is a partnership between Gunaikurnai Traditional Owners and Parks Victoria. As part of the model, Gunaikurnai and Parks Victoria Rangers are collectively responsible for the on-ground management of 4 parks and reserves within the Gippsland Lakes Ramsar Site (The Lakes NP, Gippsland Lakes CP, Lake Tyers SP, and Raymond Island GLR). |
| 5B. Deliver training and knowledge to increase the capacity of the Aboriginal community to be involved in the management of the Ramsar site. | Ongoing – GLaWAC are involved in a range of projects around the Gippsland Lakes in partnership with regional organisations. GLaWAC has worked with individual partners to deliver on ground works and identify opportunities for training and development through programs around the lakes. A continued focus on this is needed. |
| 5C. Conduct a comprehensive survey of all waterways in the Ramsar site with respect to cultural significance. | Commenced – GLaWAC has begun and is continuing a comprehensive cultural mapping program, around the Gippsland Lakes and Lake Tyers, as well as broader areas along the Gippsland coast, including predictive modelling. This program is improving knowledge and understanding of culturally significant sites as well as identifying sites under current or future threats. |
| 5E. Recognise the cultural value of water bodies, collect data on cultural flows and to take steps to ensure that these values are included in decisions regarding Ramsar site management. | Ongoing – GLaWAC continue to pursue water rights as a priority, including the cultural obligations and values associated with water. Cultural values have been incorporated into Latrobe and Thomson flows studies, and a Mitchell River estuary risk assessment. GLaWAC have undertaken Aboriginal Water Assessments across rivers and wetlands within and the Ramsar site. A continued focus on this is needed. |
| 5F. Develop and implement traditional ecological knowledge projects within the Ramsar site. | Commenced – Traditional Owner (via GLaWAC) involvement occurs in many Gippsland Lakes projects. Continued efforts from all partners is needed to ensure ongoing opportunities for the use of traditional ecological knowledge in projects within the Ramsar site. |

### *Theme 6: Improving our understanding.*

*Table 6. Implementation progress – Improving our understanding*

| Management strategy | Status |
|---|---|
| 6A. Investigate priority species and locations for waterbird breeding and migratory wader refuges within the Ramsar site. Assess that habitat requirements are being met at priority locations. | Commenced – Study completed on "Reducing human disturbance on migratory and resident shorebird hotspots in the Gippsland Lakes" and investigation into refuge sites commenced. |
| 6B. Assess the distribution of heavy metals and other contaminants (including mercury) in the Gippsland Lakes and the level of risk (i.e. bioavailability). | Complete – Heavy metals study complete. |
| 6C. Investigate the risks of toxicants (steroid hormones) in Macleod Morass. | Complete – Study at Bairnsdale WWTP and risk assessment for MacLeod Morass. |
| 6D. Investigate the cues for migration and recruitment of native fish. | Complete – Several studies completed on Australian grayling and black bream. |
| 6E. Assess the impacts of blue-green algal blooms on waterbird populations and recruitment success. | Ongoing - Blue green algal blooms routinely monitored by DEECA. |
| 6F. Assess variability in the extent and condition of seagrass, including environmental thresholds for change. | Ongoing - Framework complete, mapping and monitoring of seagrass extent. |
| 6G. Investigate the habitat use and requirements for Australian grayling within the Ramsar site. | Complete – report on Grayling habitat use in the Gippsland Lakes (ARI). |
| 6H. Assess the importance of estuarine reaches to amphibians, aquatic reptiles, and mammals. | Complete – Study completed and key species identified that utilise estuarine reaches within the Gippsland Lakes. |
| 6I. Investigate the risk associated with and potential mitigation strategies for climate change impacts to ecological character of the Ramsar site. | Ongoing - Multiple projects ongoing including assessing risks and options and modelling habitat changes. |
| 6J. Investigate the impacts of altered freshwater inflows on nutrient cycling and productivity in the Deep Lakes, including thresholds for change. | Complete – Various studies including water quality monitoring, modelling of nutrient loads including phosphorus, effects of climate change. |
| 6K. Investigate the impact of high nutrient and sediment loads to fresh and variably saline wetlands following bushfires. | Complete – Study completed by CSIRO "Vulnerability of the Gippsland Lakes Ramsar Site and its catchment to bushfire and climate change". |
| 6L. Investigate feasible management options for the control of invasive freshwater fish (carp and gambusia). | Commenced – Carp exclusion plots are being installed in Sale Common and Macleod Morass to measure impact of carp on submerged vegetation. |
| 6M. Investigate options for improving the ecological condition of Lake Wellington. | Complete – Lake Wellington and Fringing Wetlands Scoping Study. |
| 6N. Investigate the non-breeding habitat requirements of threatened frog species. | Complete – Habitat enhancement within Macleod Morass and studies at Clydebank Morass. |
| 6O. Awareness raising/education about the Ramsar Convention, the condition of the Gippsland Lakes, environmental impact assessment, management options and implications. | Ongoing - Communications and engagement via Love our Lakes. |

## *Ramsar administration*

*Table 7. Implementation progress – Ramsar administration*

| Management strategy | Status |
|---|---|
| 7A. Review the Ramsar site boundary. | Complete – Updated boundary description. |
| 7B. Update the Ramsar Information Sheet. | Ongoing – draft update complete. DEECA currently working with Australian Government to finalise. |
| 7C. Review and where necessary update Limits of Acceptable Change, in particular for areas that are currently not covered by current LAC such as Lake Tyers. | Complete – Ecological Character Description Addendum. |
| 7D. 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). | Ongoing – Business as usual impact assessment for projects with the potential to impact on ecological character. |
| 7E. 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. | Ongoing – Ramsar rolling review, Gippsland Lakes Environment Report, Ramsar site monitoring and evaluation. |
| 7F. Develop implementation plans for this strategy. | Complete – Gippsland Lakes Priorities Plan 2016 and 2021. |

## Progress towards Resource Condition Targets

A total of 26 Resource Condition Targets (RCTs) were identified in the 2015 GLRSMP by the Ramsar Coordinating Committee and site managers when developing the GLRSMP. RCTs are statements of aspirational condition of priority values over a 20-year timeframe. They guide the identification of management strategies and provided a management goal for evaluating progress. Twenty RCTs directly relate to the ecological character of the Gippsland Lakes Ramsar Site and six do not. This review includes a progress update against RCTs that relate to ecological character.

Overall, the review found that progress is being made against the majority of RCTs where data is available to make an assessment. Four RCTs have been met and seven are progressing towards being met. One RCT has not been met and eight are unable to be assessed at this time due to insufficient baseline data. Insufficient baseline data has been identified as a knowledge gap and work is currently underway to gather data that can be used to establish a baseline upon which the 2023 RCT can be assessed against. The updated plan will seek to refine RCTs to ensure they are measurable and achievable. A summary of the progress made against RCTs is provided below with further detail provided in Table 8.

**Image**. *Little and Fairy Terns in the Gippsland Lakes.*

*Table 8. Detailed progress update: Gippsland Lakes Ramsar Site Management Plan Resource Condition Targets*

| Critical CPS | RCT No. | Description | Assessment | Details |
|---|---|---|---|---|
| **C1 Marine subtidal aquatic beds (seagrass)** | 1 | Maintain extent of seagrass – 4000 to 5000 hectares.<br>Maintain medium-dense seagrass cover in 25 % of beds (measured as a long-term average over the 20-year timeframe). | Progressing towards | Between 2017 and 2021, total extent of seagrass ranged from 2235 to 2854 hectares, with 32 to 38% occurring as dense patches (Brooks and Hale 2021b).<br>RCT for density is met but was not achieved from 2017 to 2021 for extent. |
| **C2 Coastal brackish or saline lagoons (open water phytoplankton dominated habitats)** | 2 | Lakes Victoria and King remain clear with median secchi depths of > 1 m | Progressing towards | Lakes King and Victoria have remained seagrass dominated. Lake Tyers estuary has opened several times in the past two years (June 2021; September 2021; April 2022); with anecdotal reports of changes from tannin stained water to clear "blue" water conditions when the system is open and tidal. (http://www.laketyersbeach.net.au/index.html)<br>Median secchi depths have remained greater than one metre in the three sample locations in Lake King from 2010 to 2021; with the exception of 2012. In Lake Victoria, however, the median secchi depth has been less than 1 metre in eight of the past 11 years (data from EPA Victoria). RCT is achieved at Lake King, and is progressing towards achievement in Lake Victoria. |
| | 3 | A reduction in the number of years in which blue-green algal blooms occur in the lakes to less than five over the 20 years | Not met | There have been nine algal blooms in the main lakes in the past two decades. Blooms have been defined as an algal level of "high" as indicated by DEECA phytoplankton monitoring (https://www.water.vic.gov.au/waterways-and-catchments/rivers-estuaries-and-waterways/blue-green-algae).<br>Algae are a naturally occurring organism present in all waterways. The Gippsland Lakes contain many different types of algae at varying levels as part of the natural environment and balance of the Lakes system.<br>High sediment and nutrient loads entering the Gippsland Lakes, especially during and after high rainfall events and following bushfires, can lead to potential blue-green algal blooms.<br>Catchment restoration works are undertaken to reduce nutrient and sediment loads entering the Gippsland Lakes and improve water quality with a long term benefit of reducing the frequency of algal blooms. Works include stock exclusion, erosion control, revegetation of riparian vegetation communities, and weed control. |

| Critical CPS | RCT No. | Description | Assessment | Details |
|---|---|---|---|---|
| | | | | Monitoring and analysis of water samples is conducted on a regular basis to assess the threat to public health from toxic algae and algae blooms. If there is a risk the public are informed and signs put up to warn people not to come into contact with the water. |
| **C3 Freshwater wetlands** | 5 | Maintain the extent, diversity, and condition of freshwater vegetation communities. | Insufficient information to assess progress against RCT. | There is insufficient baseline data to access progress against RCT at this time. Vegetation mapping was undertaken in 2020 and this data will contribute to the development of a baseline for future RCT progress assessments. |
| | 4 | Maintain Macleod Morass and Sale Common as freshwater marshes[1]. | Met | Water quality data from Sale Common is limited with spot Waterwatch data most recently collected in 2017. Salinity at that time remained less than 1 ppt. Median salinity in the upper MacLeod Morass (2020-22) was 0.17 ppt (data from the Water measurement information system). New water quality meters were installed in 2022 at each site. |
| **C4 Brackish wetlands** | 6 | Maintain extent, diversity, and condition of native vegetation communities: swamp paperbark (*Melaleuca ericifolia*) woodland and common reed (*Phragmites australis*) emergent macrophyte beds. | Insufficient information to assess progress against RCT. | There is insufficient baseline data to assess progress against RCT at this time. Vegetation community mapping has been undertaken at Sale Common, Macleod Morass and Dowd Morass. Additional mapping of the extent and type of vegetation communities within Brackish Wetlands is planned in 2024. |
| | 7 | Increase the extent and diversity; and improve the condition of native vegetation communities in and around the Heart Morass and other fringing wetlands on private land. | Insufficient information to assess progress against RCT. | |
| | 8 | Maintain extent of variably saline fringing wetlands | Insufficient information to assess progress against RCT. | |

[1] i.e. median annual salinity less than 1ppt.

| Critical CPS | RCT No. | Description | Assessment | Details |
|---|---|---|---|---|
| **C5 Saltmarsh** | 9 | Maintain the extent, diversity, and condition of saltmarsh communities | Insufficient information to assess progress against RCT. | There is insufficient baseline data to assess progress against RCT at this time. Total extent of saltmarsh in 2021 was 4924 hectares (calculated from mapping in Brooks and Hale 2021c).Over half the sites assessed had recorded saltmarsh in good condition. This data will be used to inform a baseline for future RCT progress assessments. Works are underway to update saltmarsh extent mapping and the development of a monitoring program that will detect changes in saltmarsh condition. |
| **C6 Abundance & diversity of waterbirds** | 10 | Total diversity of waterbirds across the site remains above 86. | Met | Data pooled from multiple sources (GLCC BirdLife, Field and Game Australia, Atlas of Living Australia, DEECA Summer Waterfowl)<br>• Total annual abundance ranged from 36,497 in 2019 to over 75,000 in 2018.<br>• Over the five years 2017 to 2021, a total of 93 wetland dependent species were recorded. |
| | 11 | The site supports greater than 20 000 waterbirds in three out of five years. | Met | |
| **C7 Threatened frog species** | 13 | Green and golden bell frog and growling grass frog are recorded at Dutson Downs, Heart Morass, Clydebank Morass, Dowd Morass, Macleod Morass within a five-year period. | Progressing towards | Green and golden bell frog have been recorded at Heart Morass, Clydebank Morass, and Macleod Morass and growling grass frogs at Heart Morass and Clydebank Morass. |
| | 14 | Successful breeding of green and golden bell frog and growling grass frog at a minimum of five sites in any five-year period, as evidenced by tadpoles and juveniles | Progressing towards | Green and golden bell frog have been recorded breeding in Heart Morass in 2021 and growling grass frog have been recorded breeding in Clydebank Morass in 2022 (Greening Australia unpublished data). Progress towards RCT is being made. |
| **C8 Threatened wetland flora species** | 21 | Maintain populations of threatened plant species. | Insufficient information to assess progress against RCT | There is insufficient baseline data to assess progress against RCT at this time. Trust for Nature have been monitoring several key threatened species in the Ramsar site including Swamp Everlasting at Blond Bay. This data will be used to develop a baseline for future RCT progress assessments. |

| Critical CPS | RCT No. | Description | Assessment | Details |
|---|---|---|---|---|
| **C9 Native fish diversity and abundance** | 15 | Maintain native fish species richness, with a minimum of 70 species recorded in the Deep and Shallow lakes over any five-year period (based on Warry and Hindell 2012). | Progressing towards | Surveys by Friends of Beware Reef have recorded over 100 species of fish representing all the life history categories in surveys conducted between 2017 and 2019. |
| | 16 | Maintain fish diversity for species within each of the following life history strategy: estuarine dependent, estuarine opportunists, marine migrants, diadromous, and obligate freshwater species. | Progressing towards | Recent surveys by Friends of Beware Reef indicate no evidence of a decline in diversity. |
| | 18 | Maintain hydrological and biotic connectivity between the catchment and the sea. | Met | The entrance has remained open. |
| **P2 Waterbird breeding** | 12 | Maintain successful breeding of little tern and fairy tern, with recruitment of 1.5 chicks per nest. | Insufficient information to assess progress against RCT. | Monitoring of breeding success at known Little and Fairy Tern nesting sites has been undertaken by both DEECA and Birdlife Australia across the life of the plan. Data indicates a wide variability in results (ranging from highly successful breeding events post sand renourishment in 2015/16, through to breeding failure including 2019/20). Wide fluctuations in breeding success and failure over the life of this plan have resulted in insufficient information to assess progress towards this RCT. |
| | 25 | Protect regularly used colonial waterbird breeding sites (pelicans, darters, ibis, pied cormorants, little black cormorants, royal spoonbills). | Progressing towards | Birdlife Australia undertakes regular surveys across the lakes, including the recording and monitoring of colonial breeding sites. In recent years successful colonial breeding has been recorded at Crescent Island (Pelicans), Macleod Morass (Australian White Ibis, Straw-necked Ibis, Royal Spoonbill), Sale Common (Royal Spoonbill, Little Pied Cormorants, Little Black Cormorants), Dowd Morass (Little Pied Cormorants, Darters, Little Black Cormorants, Royal Spoonbill, Pied Cormorants). |

| Critical CPS | RCT No. | Description | Assessment | Details |
|---|---|---|---|---|
| **S1 Maintaining threatened species** | 20 | Maintain populations of Australasian bittern (*Botaurus poiciloptilus*) | Insufficient information to assess progress against RCT. | There is insufficient baseline population data to assess progress against RCT at this time. Surveys for the cryptic species Australasian bittern have confirmed recordings of the species in the Ramsar site in 2018, 2020, 2021 and 2022 and at repeat locations such as Clydebank and Macleod Morass. The data will be used to build an understanding of the species use of the Ramsar site. |

# 3 Risk assessment and priority values and threats

A risk assessment was completed as part of the review process, with the input of scientific experts, and local knowledge. The purpose of the risk assessment was to identify any changes to risk ratings and determine if any new risks to ecological character have arisen. The risk assessment will be used to identify priority values and threats to inform strategic actions in the Gippsland Lakes Ramsar Site Management Plan (Figure 2).

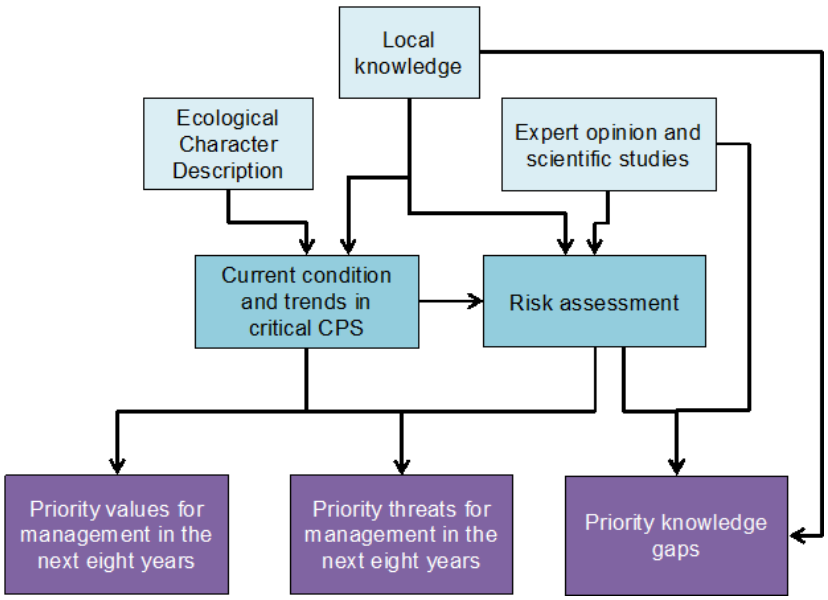


*Figure 2. Process of prioritising values and threats and the role of the risk assessment*

A series of workshops and review of evidence identified and explored the potential risks to ecological character from the following threats:

- Climate change, including seal level rise and storms, increased bushfires
- The combined effects of water resource use and climate change
- Inflows of nutrients, sediments and toxicants from the catchment
- Invasive plants, including terrestrial and salt tolerant weeds and overabundant native species
- Invasive animals, including foxes and cats, non-native fish, and non-native grazing animals
- Recreation, including water and land based activities (boating, jet-skis, walking, vehicle damage, duck hunting)

The results of the risk assessment are currently being reviewed. A complete description of the risk assessment process, the identified risks, the critical knowledge gaps, and the process for identifying high priority values and threats will be provided in the draft GLRSMP.

# 4 What's happening now?

Management agencies and partners are working together to review the 2015 risk assessment and identify priorities for management that will be included in the updated draft 2023 GLRSMP.

The draft GLRSMP will be released for public comment on the Engage Vic website in November 2023. Comments received on the plan will be considered during preparation of the final GLRSMP which will be released later in the year.

Regular updates on the renewal of the GLRSMP and the key stages of the public consultation process will be provided via the EGCMA website and social media (facebook, twitter, Linked In) and the *Love our Lakes* website.

**Image**. *Straw-necked Ibis at Macleod Morass.*