



Gippsland Lakes Ramsar Site

Assessment of evidence concerning a possible change in ecological character under Article 3.2 of the Ramsar Convention

1. Purpose

The purpose of this assessment is to determine if the ecological character of the Gippsland Lakes Ramsar site is changing or is likely to change and whether or not a formal notification to the Ramsar Secretariat is required under Article 3.2 of the Ramsar Convention. The assessment has been undertaken in response to a third party notification to the Ramsar Secretariat claiming that the ecological character of the site had changed.

2. The site

The Gippsland Lakes Ramsar site, in eastern Victoria, was added to the list of Wetlands of International Importance in 1982. It consists of a group of coastal lagoons and marsh environments that are partially separated from the sea by a barrier system of sand dunes and fringed on the seaward side by the Ninety Mile Beach.

Eleven Ramsar wetland habitat types have been identified as occurring within the boundaries of the site. The ecosystem processes that underpin the habitats of the site include hydrology and hydrodynamics (with the site influenced by both freshwater riverine inputs and marine saline inflows), water quality and sediment nutrient dynamics, geomorphology, climate, and a range of biological processes.

The site supports a broad range of ecosystem services/benefits including nationally and internationally threatened wetland species, waterbird breeding and fish spawning sites. Cultural and socio-economic values are equally diverse, noting the particular importance of the site in a regional context in terms of recreational activities such as boating, recreational fishing and holiday tourism.

Parks Victoria, the Victorian Department of Sustainability and Environment and local government authorities are the direct land managers for the Gippsland Lakes Ramsar Site. Other agencies, including water authorities, the Department of Sustainability and Environment, the Department of Primary Industries, the East Gippsland and West Gippsland catchment management authorities, local government and the Gippsland Coastal Board are also involved in strategic planning and management for biodiversity, water, game hunting and fisheries, catchments and land use and coastal planning.

3. Third Party Notification

Under Article 3.2 of the Ramsar Convention, Contracting Parties agree that they will arrange to be informed at the earliest possible time if the ecological character of any listed wetland has changed, is changing or is likely to change as the result of technological developments, pollution or other human interference.

Under Ramsar Convention processes, individuals and organisations are able to make submissions directly to the Secretariat on a range of issues including those relating to the condition of Ramsar sites. Such submissions are referred to as third party notifications under

Article 3.2 of the Convention. Following third party notifications, the agreed process requires that the Secretariat advises Contracting Parties about the submission and seeks a formal response to those notifications from the Contracting Parties Administrative Authority for the Convention – in this case the Australian Government Department of Sustainability, Environment, Water, Population and Communities (DSEWPoC).

In March 2009, the Gippsland Environment Group made a third party notification to the Ramsar Secretary-General for the Gippsland Lakes Ramsar Site. The Group claimed that the ecological character of the site has changed as a result of alterations to water quality of the Lakes and the occurrence of an extensive marine algal bloom, claimed to be the result of reduced freshwater inflows, an influx of nutrients from the catchment, and the decline of riparian vegetation as a consequence of the resultant greater saltwater influx. Concern was also expressed that the likely increase in nutrients following recent bushfires would cause further deterioration in the water quality of the Lakes. The third party notification did not provide any scientific analyses or references to support the claim that the ecological character of the site has changed since listing.

Additional communication by the Group between November 2009 and February 2010 made references to dredging work to deepen the boat channel at Lakes Entrance as a major cause of the increasing salinity of the Lakes. The Group also claimed that the increased salinity was responsible for the dieback of fringing vegetation (including paperbarks), mortality of bivalve species, and enhanced presence of the invasive Green Shore Crab (*Carcinus maenas*).

4. Form of the assessment

This assessment of the Gippsland Lakes Ramsar Site has been carried out to determine whether or not the ecological character of the site has changed, is changing or is likely to change as the result of technological developments, pollution or other human interference. The assessment has been undertaken in accordance with the *National Guidance on Notifying Change in Ecological Character of Australian Ramsar Wetlands (Article 3.2) (National Guidance)*.

The *National Guidance* establishes the following principles which guide assessment and notification of change in ecological character at a Ramsar Site.

1. Assessment of change will be undertaken with respect to critical components, processes and benefits/services of the ecological character of the site.
2. An assessment of change to support a notification must be based on best available science.
3. The fact that a site was undergoing human-induced ecological character change at the time of listing does not preclude the need for an assessment, and possible notification of change, if there is evidence of significant ongoing adverse ecological change.
4. Where the natural variability of a site cannot reasonably be established for the critical component (process, benefit or service) against which change is being assessed, a notification, if made, will only be on the basis of 'is likely to' change.
5. A notification will not be made where the apparent character change has been identified as arising from the use of inadequate data sets at the time of listing.
6. A notification will not be made where climate change is the principal cause of identified ecological character change.

5. Evidence for the assessment

The recently completed ECD for the site (BMT WBM – Feb 2010) has been used as the basis for the assessment because:

- it identifies and describes the critical components, processes and services/benefits at the Gippsland Lakes Ramsar site based on the best available science in accordance with Principle 1 of the National Guidance; and

- it represents the most comprehensive and authoritative source of evidence regarding the ecological character of the Gippsland Lakes Ramsar Site in accordance with Principle 2 of the National Guidance.

In addition to a description of the critical components, processes and services/benefits at the Gippsland Lakes Ramsar Site, the ECD also provides:

- a description of the site, including baseline ecological characteristics from the time the site was listed, as far as these are known, based on identified information sources; and
- a comprehensive evaluation of the available scientific evidence to determine whether or not the ecological character ‘has changed’, ‘is changing’, or ‘is likely to change’.

The critical components, processes and services/benefits at the Gippsland Lakes Ramsar Site are listed below. The references (C1, P1, S1 etc.) are to the system used in the ECD to identify the critical components, processes and services/benefits.

Critical Components

Wetland habitats. Grouped as follows -

- (C1) Marine subtidal aquatic beds (seagrass/aquatic plants);
- (C2) Coastal brackish or saline lagoons (open water phytoplankton-dominated habitats);
- Fringing wetlands that can occur within the site as (C3) Predominantly freshwater wetlands, (C4) Brackish wetlands and (C5) Saltmarsh/ hypersaline wetlands

Populations of the following wetland-dependant groups:

- (C6) Migratory and resident waterbirds
- (C7) Threatened frog species (Green and Golden Bell Frog Growling Grass Frog)
- (C8) Australian Grayling
- (C9) Threatened wetland flora species

Critical Processes

- **Hydrological regime.** (P1) Patterns of inundation and freshwater flows into the wetland system, groundwater influences and marine inflows that affect habitat structure and condition
- **Waterbird breeding functions.** (P2) Critical breeding habitats for a variety of waterbird species

Critical Services/Benefits

- **Biodiversity.** (S1) The site supports an assemblage of vulnerable or endangered wetland flora and fauna that contribute to global biodiversity
- **Fisheries Resource Values.** (S2) The site supports key fisheries habitats and stocks of commercial and recreational significance

The ECD defines Limits of Acceptable Change (LACs) for these factors.

6. Assessment of evidence for change in ecological character

A site’s ecological character may have changed if LACs for critical components, processes and services are exceeded. Some aspects of ecological character referred to in the third party notification do not relate directly to components, processes or services which have been identified in the ECD as being critical to the ecological character of the site and which form the basis for this assessment, in accordance with Principle 1 of the National Guidance.

Matters effecting ecological character

In accordance with Principle 3 of the National Guidance, the assessment considered changes evident at the time of listing. The ECD identified a number of factors that affected the ecological character of the Ramsar site prior to listing in 1982.

The permanent opening of the Gippsland Lakes to Bass Strait at Lakes Entrance in 1889 set in train a long-term transition of the Gippsland Lakes from an intermittently closing and opening estuarine system to a more open marine-estuarine system. The ECD states that the estuarisation

of the system was well progressed at the time of listing but that it may take centuries for the full impact to become apparent. It is expected that freshwater-dependent flora and fauna will be under increasing stress and are likely to be gradually replaced by species that are better adapted to more marine, estuarine or brackish conditions. This has been evident in the:

- the change of Lake Wellington from a macrophyte-dominated to a phytoplankton-dominated system dating from around 1965; and
- decline in the extent of Common Reed and increase in the extent of Swamp Paperbark at Dowd Morass over the period 1964 – 2003.

Long-term nutrient loading from the catchment, together with long-term changes to salinity, have made the system more prone to cyanobacteria blooms. The introduction of carp to the region in the 1960s and the subsequent high biomass in the site is identified as a threat but the impacts are not further discussed. There has been long-term variability in seagrass cover in Lakes King and Victoria and historical wetland drainage which continue to affect the water regimes of Dowd Morass, Heart Morass and Lake Coleman.

The ECD has also identified a number of key points in relation to assessment of change of the ecological character of the Ramsar site since listing in 1982:

- the ongoing estuarisation of the Gippsland Lakes Ramsar Site associated with the permanent opening at Lakes Entrance is likely to continue.
- there has been increased river regulation and diversion of water for consumptive uses from the 1970s onwards which has exacerbated salinity in conjunction with marine inflows and saline inputs from the catchment.
- there has been a possible reduction in the abundance and density of waterbirds, mainly those that are freshwater-dependent.
- long term changes to the vegetation structure have occurred at Dowd Morass;
- there has been a possible reduction in the density of seagrass assemblages.
- black bream catch has shown a marked decline since 1986.
- there has been a likely deterioration in the ecological condition of Lake Wellington and the wetlands that fringe the lake but no likely loss of values at these wetlands from the time of listing

Based on the evidence in the ECD, the assessment finds that changes evident at the time of listing have the potential to cause ongoing adverse ecological change.

Adequacy of data sets for the assessment

The ECD was based on a comprehensive collation and review of all available scientific literature and existing data for the Ramsar site. The ECD characterises the available baseline data used to derive the LACs for the critical components, processes and services/benefits at the Gippsland Lakes Ramsar Site. Only two of the LACs were based on long-term monitoring data. The majority were:

- based on empirical data that was unlikely to describe the natural variability of the component, process or service/benefit over time; or
- not based on empirical data describing patterns in natural variability but instead based on published information, expert scientific advice or professional judgement.

There was poor baseline data on the condition of wetlands in the site at the time of listing. Little information and data has been systematically collected on the values of individual wetlands since listing.

Principles 4 and 5 of the National Guidance relate to the adequacy of the available data used for the assessment and the implications of this for formal notification of change in ecological character.

Assessment of changes to ecological character

The ECD finds that:

- An ecological character change is possible for some critical components since listing in 1982.
- The extent to which the changes are a result of natural and/or anthropogenic change (or a combination of both) is not able to be determined based on the current data set.
- There is no demonstrable evidence that the limits of acceptable change (LACs) defined for the site have been exceeded since listing. On this basis, it is determined that an empirical change to the ecological character of the site cannot be established.

In terms of the specific issues raised in the third party notification, the relevant LAC and an assessment of each is set out below.

Issue	Critical Component, process, benefit/service	LAC	Assessment of exceedance of LAC
Decreased water quality and marine algal bloom due to reduced freshwater inflows and influx of nutrients from catchment	Process - Hydrological regimes	<ul style="list-style-type: none"> • Specific flushing frequency and volumes maintained in 3 identified wetlands 	Not known whether LAC exceeded. The environmental water requirements for various wetlands are being assessed by the Victorian Govt, which will enable better monitoring and assessment of appropriateness of LACs
Decline of riparian vegetation due to greater saltwater inflows	Component - Fringing wetlands habitat	<ul style="list-style-type: none"> • Habitat extent and condition – no change in wetland typology and less than specific defined change in extent • Salinity in freshwater areas below defined level (related to species tolerances) 	Uncertain whether LAC exceeded, but possible due to drought and reduced freshwater inflows. Long-term habitat extent is relatively stable. Long term studies of condition required. No baseline data or ongoing monitoring.
Increased nutrients in lakes due to ash from fires	Not identified as critical		
Dredging work to deepen the boat channel at Lakes Entrance as a major cause of increased salinity responsible for the dieback of fringing vegetation (including paperbarks), mortality of bivalve species, and enhanced presence of the invasive Green Shore Crab (<i>Carcinus maenas</i>).	Component – Fringing wetlands habitat	<ul style="list-style-type: none"> • Habitat extent and condition – no change in wetland typology and less than specific defined change in extent • Salinity in freshwater areas below defined level (related to species tolerances) 	Uncertain whether LAC exceeded, but possible due to drought and reduced freshwater inflows. Long-term habitat extent is relatively stable. Long term studies of condition required. No baseline data or ongoing monitoring.

Possible changes since listing appear to be due to a complex combination of natural and anthropogenic factors, including:

- long-term marine inflows via Lakes Entrance leading to a more saline system;
- the regulation and diversion of freshwater from tributaries that flow into the West of the Gippsland Lakes;
- historical water control structures situated in the marshes and fringing wetlands that have modified local flow regimes; and
- natural variability in seagrass extent; and
- periods of prolonged drought.

6. Consultation

The *National Article 3.2 Notification Guidance* requires evidence of appropriate consultation with the relevant government management agency and the site manager/landowner. Extensive consultation was undertaken with these stakeholders during the preparation of the ECD.

The draft assessment was provided to the Victorian Department of Sustainability and Environment, which agreed with the conclusion of the assessment. The Department advised that the Gippsland Lakes have a high priority for management in state and regional programs in accordance with their Ramsar status and significant community value. Victoria will continue to give priority to the management of threats to the ecological character of the Gippsland Lakes Ramsar site and the monitoring of key aspects of ecological character. This will enable on-going review of the issues which triggered the third party notification and Assessment.

7. Conclusions

Based on the best available scientific evidence, the ecological character of the Gippsland Lakes Ramsar Site has not undergone human-induced adverse alteration in the critical components, processes and benefits/services since the time it was listed in 1982.

In accordance with the National Guidance, a formal notification to the Ramsar Secretariat is not required under Article 3.2 of the Ramsar Convention.

Reference

BMT WBM 2010, *Ecological Character Description of the Gippsland Lakes Ramsar Site*, Prepared for the Australian Government Department of Sustainability, Environment, Water, Population and Communities. Canberra