



Australian Government

**Department of Sustainability, Environment,
Water, Population and Communities**



Gippsland Lakes

Ramsar Site

Ecological Character Description



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March 2010

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Introductory notes: This Ecological Character Description (ECD Publication) has been prepared in accordance with the National Framework and Guidance for Describing the Ecological Character of Australia's Ramsar Wetlands (National Framework) (Department of the Environment, Water, Heritage and the Arts, 2008).

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Use of terms and information sources: All definitions and terms used in this report were correct at the time of production in February 2011. Refer to the References (Section 8) for works cited and Glossary (Section 9) for a list of key terms and terminology used.

CONTENTS

Acknowledgments	i
Contents	iii
List of Figures	vii
List of Tables	viii
List of Abbreviations	x
Executive Summary	xii
1 INTRODUCTION	1
1.1 Background	1
1.2 Scope and Purpose	2
1.3 Relevant Treaties, Legislation and Regulations	4
1.3.1 Australian Government Legislation or Policy Instruments	4
1.3.2 Victorian Government Legislation or Policy Instruments	6
2 GENERAL DESCRIPTION OF THE SITE	9
2.1 Location and Brief Description	9
2.2 Land Use and Tenure	12
2.2.1 Land Use Within and Adjacent to the Site	12
2.2.2 Catchment Land Use	15
2.3 Description of Wetland Types	17
2.3.1 Coastal Wetlands	20
2.3.2 Inland Wetlands	22
2.3.3 Human-made Wetlands	24
2.4 Nomination Criteria Met by the Site	24
2.4.1 Original Criteria under which the Site was Listed	24
2.4.2 Assessment Based on Current Information and Ramsar Criteria	26
3 DESCRIPTION OF ECOLOGICAL CHARACTER	35
3.1 Basis of the ECD	35
3.1.1 Interaction of Wetland Elements	35
3.1.2 Study Approach	37
3.2 Overview of Critical Components, Processes and Services/Benefits	37
3.3 Critical Components – Wetland Habitats	39
3.3.1 Critical Component 1 - Marine Subtidal Aquatic Beds	40

3.3.2	Critical Component 2 - Coastal Brackish or Saline Lagoons	43
3.3.3	Critical Component 3 - Fringing Wetlands (Predominantly Freshwater)	45
3.3.4	Critical Component 4 - Fringing Wetlands (Brackish)	48
3.3.5	Critical Component 5 – Fringing Wetlands (Saltmarsh/ Hypersaline)	51
3.4	Critical Components – Wetland Flora and Fauna	53
3.4.1	Critical Component 6 - Abundance and Diversity of Waterbirds	53
3.4.2	Critical Component 7 - Threatened Frog Species	59
3.4.3	Critical Component 8 - Threatened Flora Species	61
3.5	Supporting Components	62
3.5.1	Other Wetland Habitats	62
3.5.2	Other Wetland Fauna	63
3.6	Critical Processes	64
3.6.1	Critical Process 1 - Hydrological Regime	64
3.6.1.1	<i>Freshwater Inflows (surface hydrology)</i>	65
3.6.1.2	<i>Groundwater</i>	76
3.6.1.3	<i>Marine In-Flows</i>	76
3.6.1.4	<i>Hydrological Regime Influence on Ecology</i>	77
3.6.2	Critical Process 2 - Waterbird Breeding Sites	80
3.7	Supporting Processes	81
3.7.1	Climate	82
3.7.2	Geomorphology	82
3.7.2.1	<i>Bathymetry</i>	83
3.7.2.2	<i>Sediment Transport Processes</i>	85
3.7.3	Shoreline and Coastal Processes	86
3.7.4	Water Quality	87
3.7.4.1	<i>Lake Wellington Water Quality</i>	89
3.7.4.2	<i>Eastern Lakes Water Quality</i>	89
3.7.5	Nutrient Cycling, Sediments and Algal Blooms	94
3.7.5.1	<i>Role of Sediments</i>	94
3.7.5.2	<i>Nutrient Cycling in the Gippsland Lakes</i>	95
3.7.5.3	<i>Algal Blooms</i>	98
3.7.6	Biological Processes	98
3.8	Critical Services/Benefits	100
3.8.1	Critical Service 1 – Maintaining Threatened Species	101
3.8.2	Critical Service 2 - Fishery Resource Values	103
3.9	Supporting Services/Benefits	108
3.9.1	Recreation and Tourism Values	108
3.9.2	Scientific Research	110

3.10	Conceptual Models	111
4	LIMITS OF ACCEPTABLE CHANGE	116
4.1	Background and Interpretation	116
4.2	Derivation of Limits of Acceptable Change	116
4.3	Characterising Baseline Information	118
4.4	Summary of Limits of Acceptable Change	118
5	THREATS TO ECOLOGICAL CHARACTER	125
5.1	Overview	125
5.2	Discussion of Threats	126
6	CHANGES TO ECOLOGICAL CHARACTER	133
6.1	Timescales Used in the Assessment	133
6.2	Matters Affecting Ecological Character Prior to Listing	133
6.3	Assessment of Ecological Character Changes Since Listing	135
6.4	Assessment of Changes to Ecological Character Against LAC	149
6.5	Conclusions about Ecological Character Changes	154
7	INFORMATION GAPS, MONITORING AND EDUCATION	155
7.1	Information Gaps	155
7.2	Monitoring Needs	160
7.3	Communication, Education, Participation and Awareness Messages	160
7.4	Conclusions	162
8	REFERENCES	163
9	GLOSSARY OF TERMS	172
	APPENDIX A: DETAILED METHODOLOGY	174
	APPENDIX B: WATER QUALITY INFORMATION	179
	APPENDIX C: ADDITIONAL BIRD COUNT DATA ANALYSIS	192
	APPENDIX D: SPECIES LIST	D-1

LIST OF FIGURES

Figure 1-1	Key steps in preparing an Ecological Character Description	3
Figure 2-1	Gippsland Lakes Ramsar site map (Source: DSE unpublished)	12
Figure 2-2	Gippsland Lakes catchment land use (reproduced from Ecos unpublished)	16
Figure 2-3	Wetland types within the Gippsland Lakes Ramsar site based on Victorian wetland classification system mapping (Source: DSE unpublished)	19
Figure 3-1	Generic conceptual model showing interaction between wetland ecosystem processes, components and services/benefits	36
Figure 3-2	Seagrass cover estimates for Gippsland Lakes (source: Roob and Ball 1997)	43
Figure 3-3	Mapped area of VWCS wetland subcategories at Sale Common and Macleod Morass in 1980 (Source: DSE unpublished data)	48
Figure 3-4	Changes in total area of swamp paperbark and common reed at Dowd Morass between 1964 and 2003 (Source: Boon et al. 2007)	50
Figure 3-5	Area of saltmarsh, saltpan and salt meadow VWCS subcategories at the 'Lake Reeves Nature Reserve' and other parts of the site based on 1980 mapping (Source: DSE unpublished data)	53
Figure 3-6	Annual total discharge from major rivers into Gippsland Lakes since 1976	68
Figure 3-7	Annual discharge from major western rivers into Gippsland Lakes since 1976	69
Figure 3-8	Annual discharge from major eastern rivers into Gippsland Lakes since 1976	70
Figure 3-9	Annual discharge from major rivers into Gippsland Lakes since 1976 correlated against rainfall data	71
Figure 3-10	Average annual discharge and surface water extraction from the major rivers entering the Gippsland Lakes system. The flow data is for the period 1965 to 2003 (from Tilleard et al. 2009)	72
Figure 3-11	Water resource and water use within the Tambo basin over a five year period	74
Figure 3-12	Water resource and water use within the Mitchell basin over a five year period	74
Figure 3-13	Water resource and water use within the Thomson basin over a five year period	75
Figure 3-14	Water resource and water use within the Latrobe basin over a five year period	75
Figure 3-15	Gippsland Lakes bathymetry (after Grayson et al. 2001) reproduced from Ecos unpublished	84
Figure 3-16	Locations of EPA water quality monitoring sites in the Gippsland Lakes (source: DSE)	88
Figure 3-17	Lake Wellington surface water quality data (EPA monitoring site 002306)	90
Figure 3-18	Eastern Lake Victoria surface water quality data (EPA monitoring site 002314)	92

Figure 3-19	Commercial fisheries catch data between 1978-2008 (Source: DPI 2008)	107
Figure 3-20	Black bream commercial catch, effort (number of boats) and catch per unit effort (catch divided by number of vessels) at Gippsland Lakes (Data source: Ecos unpublished)	108
Figure 3-21	Conceptual model showing interaction of ecosystem components, processes and services/benefits (bold font indicates critical element)	112
Figure 3-22	Conceptual model of Gippsland Lakes lagoons	113
Figure 3-23	Conceptual model of Gippsland Lakes seagrass beds	114
Figure 3-24	Conceptual model of Gippsland Lakes fringing wetlands	115
Figure 6-1	Total number of individuals recorded in each year for black swan, Eurasian coot, chestnut teal, fairy tern, little tern and musk duck, together with total annual river inflows into the site (DSE Database)	141
Figure B- 1	Locations of EPA water quality monitoring sites in the Gippsland Lakes. Figure modified from the Victorian Department of Sustainability and Environment.	180
Figure B- 2	Lake Wellington surface water quality data (EPA monitoring site 002306). Total flow represents the summed flow recorded for all major catchment rivers and is given as hydrological year (June-May). Red dotted line denotes listing of Gippsland Lakes as Ramsar wetland in 1982. Refer to text for information on notable events A-E.	183
Figure B- 3	Eastern Lake Victoria surface water quality data (EPA monitoring site 002314). Total flow represents the summed flow recorded for all major catchment rivers and is given as hydrological year (June-May). Red dotted line denotes listing of Gippsland Lakes as Ramsar wetland in 1982. Refer to text for information on notable events A-D.	187
Figure B- 4	Western Lake Victoria surface water quality data (EPA monitoring site 002311). Total flow represents the summed flow recorded for all major catchment rivers and is given as hydrological year (June-May). Red dotted line denotes listing of Gippsland Lakes as Ramsar wetland in 1982.	189
Figure B- 5	Lake King surface water quality data (EPA monitoring site 002316). Total flow represents the summed flow recorded for all major catchment rivers and is given as hydrological year (June-May). Red dotted line denotes listing of Gippsland Lakes as Ramsar wetland in 1982.	190
Figure B- 6	Lake King Channel surface water quality data (EPA monitoring site 002322). Total flow represents the summed flow recorded for all major catchment rivers and is given as hydrological year (June-May). Red dotted line denotes listing of Gippsland Lakes as Ramsar wetland in 1982.	191

LIST OF TABLES

Table E-1-1	Summary of critical components, processes and services/benefits for the Gippsland Lakes Ramsar site	xvi
Table E-1-2	Limits of acceptable change (LAC) – Gippsland Lakes Ramsar site	xvii
Table 2-1	Details of the Gippsland Lakes Ramsar site	10

Table 2-2	Land tenure and management of the Ramsar site (updated from DSE 2003)	13
Table 2-3	Lead management agencies and their key responsibilities (updated from DSE 2003)	14
Table 2-4	Ramsar wetland types as translated from the Victorian Wetland Classification System (VWCS) wetland types within the Ramsar site	18
Table 2-5	Comparison of Current and Pre-1999 Ramsar Nomination Criteria	27
Table 3-1	Summary of critical components, critical processes and critical services/benefits of the Gippsland Lakes Ramsar site	38
Table 3-2	Groupings of Gippsland Lakes wetlands according to major habitat (Source: various)	40
Table 3-3	Nationally threatened frog species occurring within the Gippsland Lakes Ramsar site	60
Table 3-4	Nationally threatened wetland-associated flora species occurring within the Gippsland Lakes Ramsar site	61
Table 3-5	Environmental Water Reserves for river basins that influence the site (Victorian Government 2005, 2007 and 2010; State of Victoria 2010)	73
Table 3-6	Relative priority of wetland habitats when considering environmental flow requirements (appended in a modified form from Tilleard et al. 2009)	79
Table 3-7	Lake Wellington surface water quality parameters and guideline values from EPA site 002306	91
Table 3-8	Eastern Lake Victoria surface water quality parameters and guideline values from EPA site 002314	93
Table 3-9	Reports of algal blooms in the Gippsland Lakes (after Stephens et al. 2004)	98
Table 3-10	Key fisheries species present in the Gippsland Lakes Ramsar site, and their primary habitats at different stages of their life-cycle (Data: Kailoa et al. 1993)	104
Table 3-11	Commercial production (tonnes) for Gippsland Lakes summary statistics (20 th , 50 th and 80 th percentile values)	106
Table 4-1	Limits of acceptable change (LAC)	119
Table 5-1	Summary of major threats to the Gippsland Lakes Ramsar site	125
Table 5-2	Threat likelihood categories	126
Table 6-1	Trends in the populations of important waterbirds (adopted from Ecos unpublished)	139
Table 6-2	Waterbody/Wetland level assessment	144
Table 6-3	Assessment of ecological character changes against LAC	149
Table 6-4	Assessment of ecological character changes against LAC for wetlands habitat types	153
Table 7-1	Summary of information/knowledge gaps	157
Table B- 1	Lake Wellington surface water quality parameters and guideline values from EPA site 002306. Orange and red colour represents slight and distinct exceedance of guideline trigger limits, respectively. Note that the ANZECC guideline values are	

	representative of the broad southeast Australia estuaries and not specific to the Gippsland Lakes.	184
Table B- 2	Eastern Lake Victoria surface water quality parameters and guideline values from EPA site 002314. Red colour represents exceedance of guideline trigger limits. Note that the ANZECC guideline values are representative of the broad southeast Australia estuaries and not specific to the Gippsland Lakes.	188

LIST OF ABBREVIATIONS

ANZECC/ARMCANZ:	Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand
ASFB:	Australian Society of Fish Biologists
ASS:	Acid Sulfate Soils
AWSG:	Australian Wader Study Group
CAMBA:	China-Australia Migratory Bird Agreement
CEPA:	Communication, Education, Participation and Awareness
CMA:	Catchment Management Authority
CMS:	Convention on the Conservation of Migratory Species
DEWHA:	Former Department of the Environment, Water, Heritage and the Arts (Australian Government)
DoD:	Department of Defence
DSE:	Department of Sustainability and Environment (Victoria)
DSEWPaC	Department of Sustainability, Environmental, Water, Population and Communities (formerly DEWHA)
ECD:	Ecological Character Description
EGCMA:	East Gippsland Catchment Management Authority
EGSC:	East Gippsland Shire Council
EMP:	Ecological monitoring program
EPA:	Environment Protection Authority (Victoria)
EPBC:	<i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i>
ESO:	Environmental Significance Overlay
EVC:	Ecological Vegetation Class
EWR:	Environmental Water Reserve

LIST OF ABBREVIATIONS

FIS:	Flora Information System
GCB:	Gippsland Coastal Board
ICOL:	Intermittently Closing and Opening Lagoon
IMCRA:	Integrated Marine and Coastal Regionalisation of Australia
IUCN:	International Union for Conservation of Nature
JAMBA:	Japan-Australia Migratory Bird Agreement
LAC:	Limit(s) of Acceptable Change
NES:	(matter of) National Environmental Significance
NRM:	Natural Resource Management
RIS:	Ramsar Information Sheet
ROKAMBA:	Republic of Korea- Australia Migratory Bird Agreement
SEPP:	State Environment Protection Policies
sp.:	Species (singular)
spp.:	Species (plural)
TSS:	Total Suspended Solids
VWCS:	Victorian Wetland Classification System
WGCMA:	West Gippsland Catchment Management Authority

EXECUTIVE SUMMARY

The Gippsland Lakes Ramsar site is one of 64 wetland areas in Australia that is listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat or, as it is more commonly referred to, the Ramsar Convention (the Convention). Gippsland Lakes was listed as a Ramsar site under the Convention in 1982 in recognition of its outstanding coastal wetland values and features.

This report provides the Ecological Character Description (ECD) for the Gippsland Lakes Ramsar site, prepared in accordance with the *National Framework and Guidance for Describing the Ecological Character of Australia's Ramsar Wetlands 2008* (the National ECD Framework). In parallel with the preparation of the ECD, the Ramsar Information Sheet (RIS) for the site has been updated for submission to the Australian Government and Ramsar Secretariat. This report updates and replaces an unpublished draft ECD document for the site prepared by the Ecos Consortium in 2008 hereafter referenced as Ecos (unpublished).

The Gippsland Lakes Ramsar site is located in coastal Victoria in the Southeast Coast Drainage Division, situated east of the Latrobe Valley and south of the Eastern Highlands. It consists of a group of coastal lagoons and marsh environments that are 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. These include, most notably, coastal lagoons (Type J), subtidal seagrass and algal beds (Type B), and a range of saline, brackish and freshwater marsh environments (Types Sp and Tp).

The ecosystem processes that underpin the habitats of the Gippsland Lakes Ramsar site include hydrology and hydrodynamics (with the site heavily influenced by both freshwater riverine inputs and marine saline inflows), water quality and sediment nutrient dynamics, geomorphology, climate, shoreline and coastal processes 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.

As part of the site overview, the ECD has reviewed the Ramsar Nomination Criteria under which the site was listed as a Wetland of International Importance and the applicability of the revised and new criteria under the Convention that have been added since the site was originally listed in 1982. In this context, the site is now seen as meeting six out of the nine Nomination Criteria recognising its representative wetland habitats at a bioregional level, vulnerable wetland species, support for key ecological life-cycle functions such as waterbird breeding, its importance for supporting waterbird abundance and diversity and its fish nursery and spawning habitats.

Following the methodology set out in the National ECD Framework, Table E-1-1 summarises the critical ecosystem components, processes and services/benefits for the site. The assignment of a given wetland component, process or service/benefit as critical was guided by the following considerations:

- the component, process or service/benefit is an important determinant of the uniqueness of the site
- the component, process or service/benefit is important for supporting one or more of the Ramsar Nomination Criteria under which the site was listed
- a change to the component, process or service/benefit is reasonably likely to occur over short to medium term time scales (less than 100 years), and/or
- the change to the component, process or service/benefit will cause significant negative consequences if the change occurs.

In addition to critical components, processes and services/benefits, a range of other elements were identified as being important to the maintenance of the morphological, physio-chemical and biological processes. These supporting components, processes and services/benefits (also shown in Table E-1-1), while important to wetland functioning, were not considered to directly address the criteria listed above.

There are three descriptive groupings of wetland habitats for the site that form the basis for the conceptual models of the wetland. These habitat groupings include:

- marine subtidal aquatic beds (which contain seagrass or macroalgae)
- coastal brackish or saline lagoons (which are phytoplankton-dominated system)
- fringing wetlands, which are generally brackish in character but sometimes freshwater and sometimes hypersaline, and are vegetated with a wide range of vascular and non-vascular plants.

Conceptual models have been prepared for each of these, in order to represent the relationships between the critical components, processes and services/benefits.

The study has sought to define the natural variability and limits of acceptable change (LAC) for the critical components, processes and services/benefits identified. A summary of the limits of acceptable change is shown in Table E-1-2.

The study has also examined:

- current and future threats to ecological character
- ecological character changes that have been observed or documented since listing of the site in 1982.

Recent or continuing threats that are notable in the context of the site and that may affect future ecological character have been identified in the Ramsar Site Strategic Management Plan (DSE 2003) and other plans and strategies that apply to the site. Key threats include altered water regimes, salinity, pollution, pest plants and animals, natural resource utilisation, dredging, activation of acid sulfate soils, recreation and tourism usage, fire and erosion. Contemporary threats include the prevalence and severity of recent algal blooms and the implications of climate change – particularly sea level rise – on the Gippsland Lakes.

A review of available data and specific studies on the site (and comparison against relevant LAC) demonstrate that an ecological character change is possible for some critical components since site listing in 1982. Relevant studies show a possible reduction in abundance and density of waterbirds (mainly those species that rely on or regularly use freshwater habitats), a possible reduction in abundance of key fish species such as black bream (based on commercial catch data only), possible reduction in density of seagrass assemblages and long term changes to vegetation communities in the fringing marsh wetlands of Lake Wellington (for example from *Phragmites* wetland to *Melaleuca* and swamp scrub dominated wetlands in Dowd Morass). 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 clear or demonstrable evidence that the limits of acceptable change (LAC) defined for the site have been exceeded since listing. On this basis, it is determined that an empirical change to ecological character of the site cannot be established.

Information gaps, monitoring needs and recommendations in relation to communication, education, participation and awareness messages are also identified in the ECD. Thematic information gaps identified as being most important for consideration in future monitoring for the site include:

- Additional research and monitoring to establish an ecological character baseline for the key waterbodies/wetland habitats, with a priority on the transitional freshwater and brackish marshes that support important flora, fauna and life stage habitats (for example, breeding sites, roosting sites, spawning sites, etc.) and are at most risk of future ecological change from increasing salinity.
- The need for better information and data sets about the presence and natural history of critical wetland species and their habitats including for example, surveys of threatened plant species, aquatic fauna species such as Australian grayling and more systematic surveys of important avifauna and fish species and populations.
- Better information and understanding about the natural variability of wetland fauna populations and key attributes and controls on those populations.
- The ecological character threshold of particular habitats and communities to changes in key attributes/controls such surface and groundwater hydrology and salinity need additional investigation. Noting that the LAC stated in the ECD should be reviewed and revised as improved information becomes available.
- More specific assessment of the vulnerability of the site to the impacts of climate change, and adaptation options that could be explored to reduce the future impacts.

In accordance with the above, monitoring needs and recommendations presented in this ECD relate broadly to obtaining data to assess future changes to ecological character as defined by the critical components, processes and services/benefits and associated LAC for the site. In this context, it should be recognised that the site requires more detailed broad-scale monitoring of ecological health in order to provide for a more sound understanding of natural variability and future ecological character changes.

A combined set of communication, education, participation and awareness messages relevant to the ECD have been presented and can be used to communicate the importance of the site, why it was

listed, possible changes to ecological character, the threats to the site and future actions required. These messages should be considered as part of existing objectives and strategic actions about community awareness in the Ramsar Strategic Management Plan (DSE 2003).

Table E-1-1 Summary of critical components, processes and services/benefits for the Gippsland Lakes Ramsar site

Critical components	Critical processes	Critical services/benefits
<p>Wetland habitats: grouped as follows</p> <ul style="list-style-type: none"> • (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– <ul style="list-style-type: none"> ○ (C3) predominantly freshwater wetlands ○ (C4) brackish wetlands ○ (C5) saltmarsh/hypersaline wetlands. <p>Wetland flora and fauna:</p> <ul style="list-style-type: none"> • (C6) abundance and diversity of waterbirds. • (C7) presence of threatened frog species (green and golden bell frog; growling grass frog). • (C8) presence of threatened wetland flora species. 	<p>Hydrological regime: (P1) patterns of inundation and freshwater flows into the wetland system, groundwater influences and marine inflows that affect habitat structure and condition.</p> <p>Waterbird breeding functions: (P2) critical breeding habitats for a variety of waterbird species.</p>	<p>Threatened species: (S1) the site supports an assemblage of vulnerable or endangered wetland flora and fauna that contribute to biodiversity.</p> <p>Fisheries resource values: (S2) the site supports key fisheries habitats and stocks of commercial and recreational significance.</p>
Supporting Components	Supporting Processes	Supporting services/benefits
<p>Other wetland habitats: supported by the site (sand/pebble shores, estuarine waters, etc.).</p> <p>Other wetland fauna: supported by the site (for example, fish, aquatic invertebrates).</p>	<p>Climate: patterns of temperature, rainfall and evaporation.</p> <p>Geomorphology: key geomorphologic/topographic features of the site.</p> <p>Coastal and shoreline processes: hydrodynamic controls on coasts and shorelines through tides, currents, wind, erosion and accretion.</p> <p>Water quality: water quality influences aquatic ecosystem values, noting the key water quality variables for Gippsland Lakes are salinity, dissolved oxygen, nutrients and sediments.</p> <p>Nutrient cycling, sediment processes and algal blooms: primary productivity and the natural functioning of nutrient cycling/flux processes in waterbodies.</p> <p>Biological processes: important biological processes such as primary productivity.</p>	<p>Tourism and recreation: the site provides and supports a range of tourism and recreational activities that are significant to the regional economy.</p> <p>Scientific research: the site supports and contains features important for scientific research.</p>

Table E-1-2 Limits of acceptable change (LAC) – Gippsland Lakes Ramsar site

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale ¹	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC
Critical components						
C1	Marine sub-tidal aquatic beds (for example, within Lake King, Lake Victoria, Lake Tyers, Bunga Arm and Lake Bunga)	Long Term	<ul style="list-style-type: none"> Total seagrass extent will not decline by greater than 50 per cent of the baseline value of Roob and Ball 1997 (that is, 50 per cent of 4330 hectares = 2165 hectares) in two successive decades at a whole of site scale. Total mapped extent of dense and moderate <i>Zostera</i> will not decline by greater than 80 per cent of the baseline values determined by Roob and Ball (1997) in two successive decades at any of the following locations: <ul style="list-style-type: none"> Fraser Island Point Fullerton, Lake King Point King, Raymond Island, Lake King Gorcrow Point – Steel Bay, Lake Victoria Waddy Island, Lake Victoria 	<p>Sampling to occur at least twice within the decade under consideration. Baseline mapping against which this LAC can be tested is within Roob and Ball 1997.</p> <p>Note that the seagrass assessment by Hindell (2008) did not produce mapping but did use similar sampling sites to Roob and Ball.</p>	Level B - Recent quantitative data describes seagrass condition at various sites but over a limited timeframe. There is no available seagrass condition data prior to listing.	P1
C2	Coastal brackish or saline lagoons (for example, Lake King, Lake Victoria, Lake Wellington, Lake Tyers)	<p>Long Term</p> <p>Long Term</p> <p>Short Term</p>	<ul style="list-style-type: none"> No change in wetland typology from the 1980 classification of Corrick and Norman (1980), as presented in Figure 2-3. A long-term change in ecosystem state at Lake King, Lake Victoria or Lake Tyers from relatively clear, seagrass-dominated estuarine lagoons to turbid, algae dominated system (characteristic of Lake Wellington) will represent a change in ecological character. No single cyanobacteria algal bloom event will cover greater than 10 per cent of the combined area of coastal brackish/saline lagoons (that is, Lake King, Victoria, Wellington and Tyers) in two successive years. 	<p>To be determined based on expert review.</p> <p>To be determined based on expert review.</p> <p>Algal bloom extent (per cent lakes area and location) and number should be reported annually, but assessed on an ongoing basis.</p>	<p>Level B - VMCS mapping data describes wetland extent. This is coarse scale mapping and should be considered as indicative only.</p> <p>Level A - The occurrence of cyanobacteria algal blooms are well documented. The extent of algal blooms historically has not been assessed, including at the time of site declaration.</p>	P1, S2

¹ Short Term – measured in years; Medium Term – 5 to 10 year intervals; Long term – 10+ year intervals.

EXECUTIVE SUMMARY

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale ¹	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC
C5	Fringing wetlands – saltmarsh/hypersaline marsh (for example, Lake Reeve)	Medium Term	<ul style="list-style-type: none"> • No change in wetland typology from the 1980 classification (Corrick and Norman 1980). • The total mapped area of salt flat, saltpan and salt meadow habitat at Lake Reeve Reserve will not decline by greater than 50 per cent of the baseline value outlined in VMCS for 1980 (that is, 50 per cent of 5035 hectares = 2517 hectares) in two successive decades. 	<p>To be determined based on expert review.</p> <p>Sampling to occur at least twice within the decade under consideration.</p>	As for C3.	P1, C6
C6	Abundance and diversity of waterbirds	Medium Term	<ul style="list-style-type: none"> • The number of standard 20 minute searches (within any ten year period) where waterbird abundance is less than 50 individuals will not fall below 50 per cent of the 'baseline' value (based on Birds Australia count data – 1987-2010), for the following species: <ul style="list-style-type: none"> ○ black swan = 15 per cent of surveys ○ chestnut teal = 10 per cent of surveys ○ Eurasian coot = 11 per cent of surveys. • The absence of records in any of the following species in five successive years will represent a change in character: red-necked stint, sharp-tailed sandpiper, black swan, chestnut teal, fairy tern, little tern, musk duck, Australasian grebe, grey teal, Eurasian coot, great cormorant, red knot, curlew sandpiper. • Median abundance (derived from at least three annual surveys {summer counts} over a 10-year period) falls below the 20th percentile baseline value. <i>Note: An adequate baseline will need to be established to assess this LAC (for example, at least three annual surveys (summer counts) over a 10-year period).</i> 	<p>Sampling to be undertaken at least twice a year over any 10 year period at stations containing favourable habitat for these species (see Table E8 for locations). Surveys should consist of standardised 20 minute counts.</p> <p>Sampling to be undertaken at least twice a year (during summer) at stations containing favourable habitat for these species (see section 3.4.1 for important locations).</p> <p>Recommended baseline monitoring program should include:</p> <ul style="list-style-type: none"> • A combination of aerial and ground surveys. • Representative coverage of primary habitats within the site. 	<p>Level A - Birds Australia data, while standardised in terms of sampling effort per site, is not standardised in terms of frequency of sampling events at any given sampling location. Data should be considered indicative only.</p> <p>Level A - Records for these species are reliable. Birds Australia and DSE data can be used to assess this qualitative LAC.</p> <p>There are no baseline data available for this LAC.</p>	P1, P2

EXECUTIVE SUMMARY

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale ¹	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC
C7	Presence of threatened frogs	Medium Term	<ul style="list-style-type: none"> The site will continue to support suitable habitat for growing grass frog and green and golden bell frog. In this regard, the LAC for Component 3 applies. There is insufficient data to develop a LAC relating directly to site usage by these species, which represents a critical information gap. Should baseline data become available in the future, the following LAC will apply: a significant reduction (greater than 25 per cent over a period of 5 years) in the local adult population within the site, especially for important local populations (for example, within Macleod Morass, Sale Common, Ewings Marsh, Roseneath wetlands (Morley Swamp and Victoria Lagoon), the Heart Morass and freshwater pools on Rotamah Island). 	<p>Refer to C3.</p> <p>Recommended baseline monitoring program should comprise a minimum two annual sampling periods separated by at least one year (and within a 5 year period).</p>	<p>Level C - Surveys for these species have been opportunistic. The most recent record for growing grass frog is 2007, whereas the green and golden bell frog was recorded at the site in 1998. There are no empirical data describing abundances at the site.</p>	P1
C8	Presence of threatened wetland flora species	Long Term	<ul style="list-style-type: none"> The three threatened flora species (<i>Rulingia prostrata</i>, <i>Thelymitra epipactoides</i> and <i>Xerochrysum palustre</i>) continue to be supported within the boundaries of the Gippsland Lakes Ramsar site. 	<p>Based on opportunistic searches.</p>	<p>Level C - Setting of empirical limits of acceptable change is not possible at present, given the absence of quantitative estimates of population size of threatened species within the site, and more importantly the viability of populations (and their key controls) within the site.</p>	P1

EXECUTIVE SUMMARY

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale ¹	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC																
Critical processes																						
P1	Hydrological regime	Short Term – Medium Term	<p>Wetland wetting frequency, flushing frequency and flushing volume are maintained as follows:</p> <table border="1" data-bbox="728 453 1310 730"> <thead> <tr> <th>Wetland</th> <th>Wetting Frequency</th> <th>Flushing Frequency</th> <th>Required Flushing Volume</th> </tr> </thead> <tbody> <tr> <td>Sale Common</td> <td>Annual with 100 per cent reliability</td> <td>2-3 times/decade</td> <td>4 GL</td> </tr> <tr> <td>Dowd Morass</td> <td>5-7 times/decade</td> <td>2-3 times/decade</td> <td>15GL</td> </tr> <tr> <td>The Heart Morass</td> <td>5-7 times/decade</td> <td>2-3 times/decade</td> <td>15GL</td> </tr> </tbody> </table> <p>From Tilleard and Ladson (2010); note that larger flushing volumes (~20GL) are identified as being needed for Dowd and the Heart Morasses following saline flood events in the Lake Wellington system (for example, when the wetlands are filled with saline water from Lake Wellington and this corresponds with low flows in the Latrobe River).</p>	Wetland	Wetting Frequency	Flushing Frequency	Required Flushing Volume	Sale Common	Annual with 100 per cent reliability	2-3 times/decade	4 GL	Dowd Morass	5-7 times/decade	2-3 times/decade	15GL	The Heart Morass	5-7 times/decade	2-3 times/decade	15GL	Refer to LAC for details. Values measured at existing gauging stations in the lower reaches of the Rivers or otherwise in the wetlands themselves.	<p>LAC have been identified for these wetlands on the basis that they are the best indicators of freshwater flows into the broader Gippsland Lakes system.</p> <p>Level C - LAC based on Tilleard and Ladson (2010) 'Hydrological Analyses to Support Determination of Environmental Water Requirements in the Gippsland Lakes'. This is a threshold-based LAC that is based on modeling and ecological assessments. Note that these values should be considered as indicative only at this stage, and should be constantly reviewed.</p> <p>Tilleard and Ladson (2010) indicate no work has been done for wetlands on the Mitchell (Macleod Morass); McLennan Straits (Morley Swamp, Lake Betsy); or Jones Bay.</p>	C1 – C8 S1, S2
Wetland	Wetting Frequency	Flushing Frequency	Required Flushing Volume																			
Sale Common	Annual with 100 per cent reliability	2-3 times/decade	4 GL																			
Dowd Morass	5-7 times/decade	2-3 times/decade	15GL																			
The Heart Morass	5-7 times/decade	2-3 times/decade	15GL																			
P2	Waterbird breeding	Short Term	<p>Abandonment or significant decline (greater than 50 per cent) in the productivity of two or more representative breeding sites (based on two sampling episodes over a five year period) within any of the following site groupings:</p> <ul style="list-style-type: none"> • Lake Coleman, Tucker Swamp and Albifrons Island - Australian pelican. • Bunga Arm and Lake Tyers – little tern and fairy tern. • Macleod Morass, Sale Common and Dowd Morass – black swan, Australian white ibis, straw-necked ibis, and little black cormorant. 	Recommended baseline monitoring program should comprise a minimum two annual sampling periods separated by at least one year (and within a 5 year period).	Level C - The use of the site by these species is well documented. However, there are no empirical data describing breeding rates. Baseline data will need to be collected to assess this LAC.	C6																

EXECUTIVE SUMMARY

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale ¹	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC
Critical services/benefits						
S1	Threatened species	N/A	No LAC are proposed for painted snipe and Australasian bittern at the current time until greater information is available about patterns of usage and populations in the Ramsar site. Other threatened species are dealt with in the critical components above.	N/A	Level C - Site records are not recent, uncommon and the location within the Ramsar boundary not known.	P1, C3
		Long Term	Australian grayling continues to be supported in one or more of the catchments draining into the Gippsland Lakes.	Setting of more empirical limits of acceptable change not possible at present, given the absence of quantitative population data for this species for any of the rivers and creeks that drain into the site.	Level C - This species has been recorded in the major drainages that drain into the site. Juveniles have an apparent obligate estuarine phase, and therefore must use the site in order for this species to persist in these drainages. There are no data describing the population status of this species in these drainages.	P1, C1, C2
S2	Fisheries resource values	Medium Term	<ul style="list-style-type: none"> Total annual black bream commercial fishing catch per unit effort will not fall below the 10th percentile historical baseline value of 6.1 (see Section 3.8.2) in a five successive year period. Sub-optimal black bream spawning conditions should not occur in any successive five year period within key spawning grounds (that is, mid-lower estuaries and adjacent waters of main lakes) during the peak spawning period (October to December). Based on Tilleard (2009), optimal conditions are as follows: Water column salinity is maintained in brackish condition (for example, between 17-21 grams per litre median value) in the middle of the water column in the mid-lower estuaries and adjacent waters of the main lakes The salt wedge is located within the mid-lower section of the estuarine river reaches or just out into the main lakes as opposed to far upstream or well-out into the Lakes. 	<p>Median measured over five years.</p> <p>Annual median value for the period October to December.</p> <p>As above.</p>	<p>Level B - While some commercial fish data has been accessed and reviewed as part of the current study, the abundance and usage of the Gippsland Lakes by key fish species of commercial and recreational significance is not well quantified. The baseline data used in this LAC has limited duration (five years), and is unlikely to be representative of patterns in abundance over longer timeframes. This LAC will need to reviewed and refined.</p> <p>Level C – based on conditions outlined in Tilleard (2009).</p>	C1, C2, C3, C4, C5

