



Australian Government



Queensland
Government

WETLAND MANAGEMENT PROFILE

WETLAND MANAGEMENT PROFILES – AN OVERVIEW

Wetlands are an important resource — providing a range of social, economic and environmental benefits to Queensland. A series of wetland management profiles have been produced to aid wetland and land managers maintain and enhance these values. This overview profile provides general information about wetlands in Queensland and background information about key elements and definitions relevant to all wetland management profiles.

WETLANDS are broadly defined as areas of permanent or periodic/intermittent inundation, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres.



Coastal wet heath – sedgeland community with swamp banksia *Banksia robur* in the foreground and sword grass *Gahnia sieberiana* mid-photo.
Photo: EPA

What are wetland management profiles?

Wetland management profiles have been designed to provide information about the distribution, ecology, cultural values, conservation status, threats to, and management of particular wetland types and wetland regional ecosystems (REs) within Queensland. These profiles are a tool to help wetland managers identify:

- the social, economic and environmental values of wetlands;
- the hydrology and ecology of wetlands;
- threats and pressures on wetlands; and
- management actions that can be taken to conserve or enhance wetland biodiversity and productivity — for example by better planning, by mitigating threats and/or by undertaking restoration/rehabilitation activities.

Each profile also contains a profile-specific glossary, relevant wetland website links and additional sources of ecological and management information about wetlands. Words underlined in profiles are contained in the glossary.

Wetland management profiles have been written as part of the Queensland Natural Heritage Trust Wetlands Programme — a joint initiative between the Australian Government and Queensland Government www.deh.gov.au/coasts/pollution/qldwetlands/nhtwetlands.html. This programme complements the Great Barrier Reef Coastal Wetlands Protection Programme, which is designed to develop and implement measures for the long-term conservation and management of wetlands in the Great Barrier Reef catchment consistent with actions outlined in the Reef Water Quality Protection Plan www.deh.gov.au/coasts/pollution/reef/index.html. The overall aim of these two programmes is to address the loss and degradation of wetlands, which in turn impacts water quality and biodiversity in Queensland, particularly the Great Barrier Reef catchment. Further information on these programmes can be found at www.deh.gov.au/coasts/index.html#qldwetlands.

Wetland management profiles also form part of a set of conservation management profiles being developed by the Queensland Parks and Wildlife Service/Environmental Protection Agency (EPA).

These profiles are designed to provide general information and management recommendations for individual species, ecosystems and cultural heritage in Queensland.

Wetland management profiles are a tool to be used in conjunction with existing legislation and policy documents relating to wetlands, and in no way take precedence over them.

What wetland management profiles are available?

For a complete list of profiles available refer to the Queensland EPA website www.epa.qld.gov.au/nature_conservation/habitats/wetlands/.

Each wetland management profile describes one or more RE across Queensland (see What are regional ecosystems?) and the name/label given to each profile reflects a broader wetland type or grouping of similar wetland types that the REs represent. A list of relevant REs and their conservation status is provided in Appendix 1 of each profile.

How are wetlands defined in Queensland?

In Queensland, wetlands are defined as areas of permanent or periodic/intermittent inundation, whether natural or artificial, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres. To be classified as a wetland the area must have one or more of the following attributes:

- At least periodically the land supports plants or animals that are adapted to and dependent on living in wet conditions for at least part of their life cycle; or
- The substratum is predominantly undrained soils that are saturated, flooded or ponded long enough to develop anaerobic conditions in the upper layers; or
- The substratum is not soil and is saturated with water, or covered by water at some time.

This definition is based on the broad wetland definitions set out in the Convention on Wetlands (Ramsar, Iran, 1971) or what is more commonly referred to as the Ramsar Convention, and the *Strategy for the Conservation and Management of Queensland Wetlands* (1999).

Natural wetlands can be broadly classified into five categories: marine, riverine, estuarine, lacustrine and palustrine. These wetland systems can be further divided into wetland classes and types according to features such as geomorphology, hydrology, water properties (such as fresh or saline water) and dominant vegetation. The EPA is currently undertaking an intensive mapping and classification analysis of Queensland's wetlands. This project will enhance wetland planning for conservation, and land and water resource management across Queensland. For further information on the mapping and classification program refer to the Queensland Wetlands Programme section of the EPA website www.epa.qld.gov.au/nature_conservation/habitats/wetlands/#Programme.

Note: A single wetland can consist of multiple REs and wetland types.



Mangrove intertidal area on Bribie Island.
Photo: David Cameron, EPA

What are regional ecosystems (REs)?

A regional ecosystem classification framework was developed in Queensland in the 1990s to aid planning for conservation purposes. REs, as defined by Sattler and Williams (1999), are vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. The bioregions of Queensland are illustrated in Figure 1.

REGIONAL ecosystems are vegetation communities that are consistently associated with a particular combination of geology, landform and soil.

A three-part code is given to each RE such that the first number denotes the bioregion, the second number the land zone, and the third number the vegetation community. For example 12.3.5 describes an RE in the Southeast Queensland bioregion (bioregion 12), occurring on coastal alluvial plains (land zone 3) that are dominated by *Melaleuca quinquenervia* tall open forest (vegetation community 5). In some cases a fourth code may be present and this denotes a different vegetation community within the RE or a proposed new RE (for example 12.3.5a).

Each RE is given a conservation status of “endangered”, “of concern” or “not of concern/no concern at present” under the Queensland *Vegetation Management Act 1999* (Vegetation Management Status) and by the EPA (Biodiversity Status) see www.epa.qld.gov.au/nature_conservation/biodiversity/regional_ecosystems/introduction_and_status/. Vegetation Management Status is based on an assessment of the pre-clearing and remnant extent of an RE, whereas the Biodiversity Status also considers the condition of the RE and threats it is facing. Biodiversity Status has been used to guide which REs are examined in wetland management profiles.

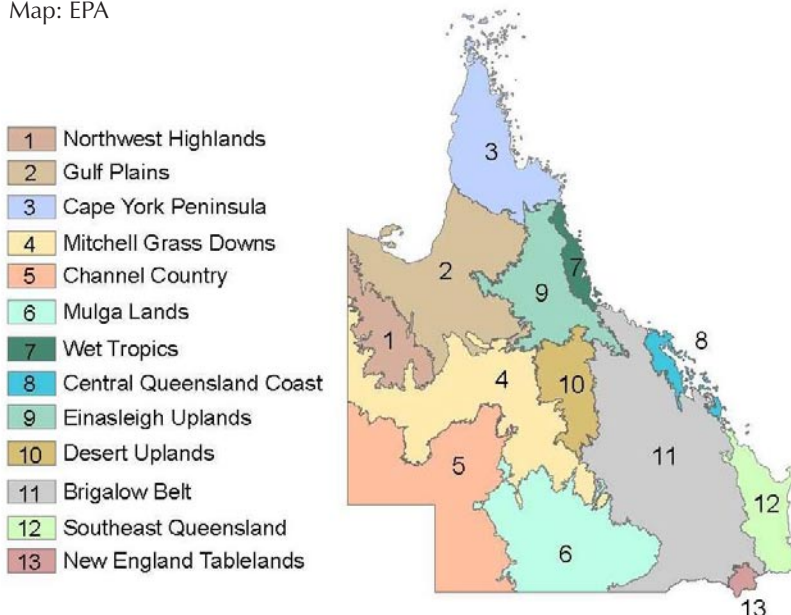
Further information about the RE system, individual RE and land zone descriptions, and how to obtain an RE map (based on either a lot on plan number or latitude and longitude) can be found at the following websites:

- www.epa.qld.gov.au/nature_conservation/biodiversity/regional_ecosystems/
- www.epa.qld.gov.au/nature_conservation/biodiversity/regional_ecosystems/land_zone_definitions/
- www.epa.qld.gov.au/nature_conservation/biodiversity/regional_ecosystems/introduction_and_status/Regional_Ecosystem_Maps/

Note: RE mapping is an ongoing process. RE descriptions and status information are reviewed and updated as new information becomes available. Currently there are parts of Cape York Peninsula, south-west and central-west Queensland that have either not been surveyed and mapped at an appropriate scale, or that have been mapped but have not had their RE code finalised.

Figure 1: Map showing Queensland's bioregions.

Map: EPA



Note: Queensland bioregions differ slightly from the Interim Biogeographic Regionalisation for Australia (IBRA) system adopted nationally. For example the Queensland defined Brigalow Belt and Channel Country Bioregions each comprise two national bioregions.

How much of Queensland is “wetland”?

Wetlands occur on protected areas, freehold and leasehold land, and are estimated to cover approximately four percent of Queensland’s mainland area, or nearly 71,000 square kilometres. Of this, seasonally and intermittently inundated wetlands account for about 69 percent of the total, tidal wetlands (mangroves and saline coastal flats) account for 14 percent, and the remaining 17 percent includes a variety of wetland types. Only 0.7 percent of Queensland is permanently inundated with water, including more than 1,125,000km of major waterways (Queensland Government 1999). These numbers are an underestimate of the total wetland area in Queensland as figures are derived from topographical maps (AUSLIG GEODATA 1:250,000), which only take into account significant (that is, of a certain size) waterbodies and rivers. As the Queensland EPA’s wetland mapping and classification program is completed (refer to How are wetlands defined in Queensland?) the amount and type of wetland in Queensland are likely to be revised.

QUEENSLAND has a diverse array of wetlands – 29 of the 32 nationally recognised categories of natural wetlands occur here.

How important are Queensland’s wetlands?

A number of Queensland’s wetlands are nationally and internationally acknowledged for their significant values — five wetlands are listed under the international Ramsar Convention and 210 are nationally recognised in *A Directory of Important Wetlands in Australia* (June 2005) www.deh.gov.au/water/wetlands/database/index.html. Of the 32 natural wetland categories defined in this directory, 29 occur in Queensland. Wetlands are also recognised as being of regional significance through the natural resource management (NRM) planning process being undertaken across Queensland www.nrm.gov.au/index.html.



Speculation Creek (Barakula State Forest).
Photo: David Cameron, EPA

What functions and values do wetlands provide?

Wetlands are recognised as being of significant environmental, economical and social importance (Environmental Protection Agency 1999) because they:

- support a diverse range of plants and animals and provide habitat and refuge for many migratory and threatened species;
- play an essential role in natural hydrological cycles, provide water passage and storage, and may contribute to flood mitigation and the recharge of groundwater;
- purify water by filtering nutrients and sediments;
- provide coastal protection against destructive natural events, such as cyclones;
- lessen flood levels;
- contribute to the economic productivity of the State by providing essential water sources for agricultural, urban and industrial uses, fish resources, and fodder for livestock grazing;
- are used for navigation and port facilities essential for trade;
- feature significantly in the cultural heritage, spiritual values, and day-to-day living of Aboriginal and Torres Strait Islander peoples;
- contribute to the well-being of people through landscape diversity, heritage values and aesthetic appeal; and
- feature strongly in Queensland’s tourism and recreational appeal.

WETLANDS support a diverse range of plants and animals and provide habitat and refuge for many migratory and threatened species.

What threatens wetlands?

Many activities or conditions contribute to the degradation and loss of wetlands including:

- clearing, draining and/or filling of wetland for residential, industrial and agricultural development;
- sediment accumulation and suspension;
- water pollution and nutrient enrichment;
- alterations to hydrological cycles;
- stormwater run-off;
- salinisation;
- excessive water extraction for urban use, agriculture and industry;
- modification of water regimes through emplacement of dams and other barriers;
- inappropriate grazing regimes;
- mining and other resource use activities;
- weeds;
- aquatic and terrestrial feral animals;
- fire;
- increased human activity within wetlands; and
- climate change.



Samphire saltmarsh vegetation used for foraging by the bird species, yellow chat *Epthianura crocea macgregori* (Dawson subspecies).

Photo: Wayne Houston, Centre for Environmental Management, Central Queensland University

Who is responsible for protecting wetlands?

Protecting wetlands requires a co-operative approach between:

- local, state and Australian governments;
- NRM regional bodies;
- landholders;
- the private sector and producer organisations;
- recreation groups and tourism operators;
- Aboriginal and Torres Strait Islander people;
- non-government organisations;
- conservation groups; and
- the broader community.

How are wetlands protected by legislation?

Forty-four State and Australian Government statutory instruments and international agreements are currently used to improve wetland conservation in Queensland (Queensland Government 2003). State legislation includes Queensland's:

- *Environmental Protection Act 1994*;
- *Environmental Protection (Water) Policy 1997*;
- *Nature Conservation Act 1992*;
- *Integrated Planning Act 1997*;
- *Vegetation Management Act 1999*;
- *Fisheries Act 1994*;
- *Coastal Protection and Management Act 1995*;
- *River Improvement Trust Act 1940*;
- *Marine Parks Act 1982*; and the
- *Water Act 2000*.

Wetland managers must also comply with the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) when undertaking activities that may significantly impact on matters of national environmental significance (NES). Matters of NES include: wetlands of international importance (Ramsar wetlands); threatened species and ecological communities; World Heritage properties; National heritage places; Commonwealth marine areas; nuclear actions (including uranium mining); and migratory species and/or threatened species listed under international treaties such as the China-Australia Migratory Bird Agreement (CAMBA), the Japan-Australia Migratory Bird Agreement (JAMBA) and the Bonn Convention. Under the EPBC Act any action that will, or is likely to have a significant impact on a matter of NES is subject to an environmental assessment and approval regime under the Act (see www.deh.gov.au/epbc/matters/index.html for further information).

LEGISLATION for the management of wetlands is administered by various Queensland government agencies and in some cases, in association with Australian Government agencies or local government.

In addition to legislation, policies and strategies to protect wetlands have been developed at both the national and State level. These have been developed in accordance with the internationally recognised Ramsar Convention, which aims to halt the worldwide loss of wetlands and to conserve those that remain through wise use and management. Like the Ramsar Convention, Australian and Queensland policies recognise the environmental, social and economic value of wetlands and promote the conservation, enhancement and ecologically sustainable use of wetlands. These policies can be found on the Australian Government Department of the Environment and Heritage www.deh.gov.au/water/wetlands/publications/policy.html#HDRn15 and Queensland EPA www.epa.qld.gov.au/publications?id=565 websites.



Bowarrady Creek (Fraser Island).
Photo: EPA



Lake Cooloola (Great Sandy National Park).
Photo: EPA

Where can I find more information about wetlands?

Further information on wetlands, their values and protection can be obtained from the following sources:

- Queensland Environmental Protection Agency www.epa.qld.gov.au/
- Queensland Department of Natural Resources and Mines www.nrm.qld.gov.au/index.html
- Queensland Department of Primary Industries and Fisheries www.dpi.qld.gov.au/home/default.html
- Australian Government Department of the Environment and Heritage www.deh.gov.au/index.html
- Australian Government Natural Resource Management (NRM) www.nrm.gov.au/
- Non-government wetland conservation groups www.deh.gov.au/water/wetlands/contacts/ngos.html

Funding opportunities may be available to assist wetland conservation. The following websites may be useful:

- www.epa.qld.gov.au/about_the_epa/grantsconnect/
- www.deh.gov.au/index.html
- www.grantslink.gov.au/
- www.nrm.qld.gov.au/regional_planning/funding/index.html
- www.dpi.qld.gov.au/rerc/12544.html
- www.qld.gov.au/grants/ssq/display.asp?Id=IndOrg&Quest=System&Resp=Grants

Glossary

Anaerobic Without oxygen.

Biodiversity Status The Biodiversity Status is defined by the Queensland Environmental Protection Agency and is based on an assessment of the condition of remnant vegetation in addition to the pre-clearing and remnant extent of a regional ecosystem.

Bioregion An area of the continent defined by a combination of particular geology, landforms, climate and vegetation. For the definition of regional ecosystems, the bioregions of Sattler and Williams (1999) are adopted. Currently thirteen bioregions, numbered one to 13, have been defined for Queensland, however, parts of five regions are small extensions of nationally recognised bioregions in adjacent states and the Northern Territory (see Interim Biogeographic Regionalisation for Australia (IBRA) — www.deh.gov.au/parks/nrs/ibra/). Bioregions provide the primary level of classification of land for biodiversity values on a statewide and nationwide basis and have been mapped at scales smaller than 1:1,000,000.

Bonn Convention The Convention on the Conservation of Migratory Species of Wild Animals, to which Australia is a signatory, and a Range State for many migratory species.

CAMBA The Agreement between the Government of Australia and the Government of the Peoples Republic of China for the Protection of Migratory Birds and their Environment is a treaty that aims to protect and conserve the birds and their habitat of those species migrate between China and Australia.

Estuarine An area where a freshwater river or stream meets the ocean and tidal influences result in fluctuations in salinity.

Geomorphology The science concerned with landforms, especially the origin, evolution and processes involved in the formation of the earth's surface.

Hydrology/Hydrological Relating to the properties, distribution and circulation of water.

JAMBA The Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds in Danger of

Extinction and their Environment is a treaty that aims to protect and conserve the birds and their habitat of those species that migrate between Japan and Australia.

Lacustrine Pertaining to lakes — includes wetlands and deepwater habitats that may be tidal or non-tidal but ocean derived salinity is less than one part per thousand (1 ppt). 1 ppt is the equivalent of one gram of sodium chloride (salt) per litre of water.

Land zone This is a simplified geology/substrate landform classification developed for Queensland. There are twelve different land zones. www.epa.qld.gov.au/nature_conservation/biodiversity/regional_ecosystems/land_zone_definitions/.

Marine Pertaining to seas or oceans.

Palustrine Pertaining to marshes, bogs, swamps and fens.

Ramsar Convention The Convention on Wetlands (Ramsar, Iran, 1971) is an international treaty that aims to halt the worldwide loss of wetlands and to conserve those that remain through wise use and management. www.ramsar.org/.

Regional ecosystem (RE) The vegetation community that is consistently associated with a particular combination of geology, landform and soil (see Sattler and Williams 1999). The Queensland Herbarium describes the vegetation by the predominant form, which is the one that is assessed as contributing the most above-ground biomass. A regional ecosystem may consist of one or several plant sub-associations or associations.

Riverine Pertaining to rivers.

Salinisation The accumulation of soluble salts in soil or water so that they become unfit for their normal uses, such as growing plants or providing drinking water.

Sediment Sand, clay, silt, pebbles, organic material and minerals carried and deposited by water or wind. Sedimentation is the process by which sediment is deposited.

Substratum The surface or underlying material that forms the bed of a body of water.

Vegetation Management Status This conservation status as defined under the *Vegetation Management Act 1999* is based on an assessment of the pre-clearing and remnant extent of a RE. REs are classified as “endangered”, “of concern” or “not of concern”.

Wetland systems Under the Ramsar Convention five categories of wetland system are recognised www.ramsar.org/about/about_wetlands.htm:

- Marine (coastal wetlands including rocky shores)
- Riverine (wetlands along rivers and streams)
- Estuarine (includes tidal marshes and mangrove swamps)
- Lacustrine (wetlands associated with lakes)
- Palustrine (marshes, swamps and bogs)

Wetland types/wetland classes The wetland classification system defined in *A Directory of Important Wetlands* (2005) identifies more than 40 different wetland types in three separate classes or categories: A — marine and coastal zone wetlands; B — inland wetlands; and C — human-made wetlands. For the most up-to-date list of wetland types defined in the Directory see www.deh.gov.au/water/wetlands/database/index.html. The broad wetland type, as specified in the title of wetland management profiles may differ slightly from this list.

Information sources

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