2. Wetland classification system, Criteria for inclusion and Data presentation

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Wetland classification system

THE DEFINITION OF A WETLAND USED IN THE DIRECTORY CONTINUES TO BE THAT ADOPTED BY THE RAMSAR CONVENTION UNDER ARTICLE 1.1, NAMELY:

> *"wetlands are areas of marsh, fen, peatland or water, whether natural or artificial, permanent of temporary, 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."*

Within this broad definition, the wetland classification system used in the Directory identifies 40 different wetland types in three categories: A—Marine and Coastal Zone wetlands, B—Inland wetlands, and C—Human-made wetlands (refer below). This system has not been altered since it was agreed to by the then ANZECC Wetlands Network[1] in 1994, hence it remains the same as that used in the second edition.

The system is based on that used by the Ramsar Convention in describing Wetlands of International Importance, but was modified slightly to suit the Australian situation in describing wetlands of national importance. Notable alterations to the Ramsar classification system included the addition of non-tidal freshwater forested wetlands (A12) and rock pools (B17). Inland karst systems were also added (B19), although the Ramsar classification system now includes karst systems under all categories.

A—Marine and Coastal Zone wetlands

1 Marine waters—permanent shallow waters less than six metres deep at low tide; includes sea bays, straits

2 Subtidal aquatic beds; includes kelp beds, seagrasses, tropical marine meadows

3 Coral reefs

4 Rocky marine shores; includes rocky offshore islands, sea cliffs

5 Sand, shingle or pebble beaches; includes sand bars, spits, sandy islets

1 ANZECC, the Australian and New Zealand Environment and Conservation Council, is the Council of Environment Ministers from the Australian Federal Government, the New Zealand Government and all Australian State and Territory Governments. The ANZECC Wetlands Network, now known as the ANZECC Wetlands and Migratory Shorebirds Taskforce, is a group of officers representing each of the nature conservation agencies of the Governments represented in ANZECC. The Taskforce is responsible for coordinating implementation of the Ramsar Convention in Australia.

6 Estuarine waters; permanent waters of estuaries and estuarine systems of deltas

7 Intertidal mud, sand or salt flats

8 Intertidal marshes; includes saltmarshes, salt meadows, saltings, raised salt marshes, tidal brackish and freshwater marshes

9 Intertidal forested wetlands; includes mangrove swamps, nipa swamps, tidal freshwater swamp forests

10 Brackish to saline lagoons and marshes with one or more relatively narrow connections with the sea

11 Freshwater lagoons and marshes in the coastal zone

12 Non-tidal freshwater forested wetlands

B—Inland wetlands

1 Permanent rivers and streams; includes waterfalls

2 Seasonal and irregular rivers and streams

3 Inland deltas (permanent)

4 Riverine floodplains; includes river flats, flooded river basins, seasonally flooded grassland, savanna and palm savanna

5 Permanent freshwater lakes (> 8 ha); includes large oxbow lakes

6 Seasonal/intermittent freshwater lakes (> 8 ha), floodplain lakes

7 Permanent saline/brackish lakes

8 Seasonal/intermittent saline lakes

9 Permanent freshwater ponds (< 8 ha), marshes and swamps on inorganic soils; with emergent vegetation waterlogged for at least most of the growing season

10 Seasonal/intermittent freshwater ponds and marshes on inorganic soils; includes sloughs, potholes; seasonally flooded meadows, sedge marshes

11 Permanent saline/brackish marshes

12 Seasonal saline marshes

13 Shrub swamps; shrub-dominated freshwater marsh, shrub carr, alder thicket on inorganic soils

14 Freshwater swamp forest; seasonally flooded forest, wooded swamps; on inorganic soils

15 Peatlands; forest, shrub or open bogs

16 Alpine and tundra wetlands; includes alpine meadows, tundra pools, temporary waters from snow melt

17 Freshwater springs, oases and rock pools

18 Geothermal wetlands

19 Inland, subterranean karst wetlands

C—Human-made wetlands

1 Water storage areas; reservoirs, barrages, hydro-electric dams, impoundments (generally > 8 ha)

2 Ponds, including farm ponds, stock ponds, small tanks (generally < 8 ha)

3 Aquaculture ponds; fish ponds, shrimp ponds

4 Salt exploitation; salt pans, salines

5 Excavations; gravel pits, borrow pits, mining pools

6 Wastewater treatment; sewage farms, settling ponds, oxidation basins

7 Irrigated land and irrigation channels; rice fields, canals, ditches

8 Seasonally flooded arable land, farm land

9 Canals

Criteria for determining important wetlands

The criteria for determining nationally important wetlands in Australia, and hence inclusion in the Directory, are those agreed to by the ANZECC Wetlands Network in 1994 and used in the second edition.

A wetland may be considered nationally important if it meets at least one of the following criteria:

1. *It is a good example of a wetland type occurring within a biogeographic region in Australia.*
2. *It is a wetland which plays an important ecological or hydrological role in the natural functioning of a major wetland system/complex.*
3. *It is a wetland which is important as the habitat for animal taxa at a vulnerable stage in their life cycles, or provides a refuge when adverse conditions such as drought prevail.*
4. *The wetland supports 1% or more of the national populations of any native plant or animal taxa.*
5. *The wetland supports native plant or animal taxa or communities which are considered endangered or vulnerable at the national level.*
6. *The wetland is of outstanding historical or cultural significance.*

Many of the sites in the Directory meet more than one of the criteria. Application of the criteria to individual wetland sites involves a degree of subjectivity. Not only may certain aspects of a site's significance be interpreted differently by different investigators, but information gaps often exist which make it difficult to judge whether or not a site meets a particular criterion.

The Interim Biogeographic Regionalisation for Australia (IBRA) is used as the framework for applying Criterion 1, which identifies wetlands that are unique or representative within a biogeographic region in Australia. An overview of the IBRA regionalisation and a map of IBRA regions is included in Appendix 2.

Data presentation

The ANZECC Wetlands Network also agreed in 1994 to conform to a standard format to describe wetlands included in the Directory. This format is considered the "minimum data set" for describing wetlands.

Now that the Directory is in database format these information descriptors have become field descriptors. Again there is some subjective interpretation of these descriptors, and in the current database not all fields contain information. Information is still presented under these headings by the online Directory. In moving the Directory from a hard copy publication to an online database the format for reference numbers has been changed to enable easier addition of sites to the database. Changes have also been introduced to the notable flora and fauna sections to reflect the categories of threatened species introduced under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

If additional information on particular sites in the online Directory is required, users should either consult the online reference list, or contact the relevant member of the ANZECC Wetlands and Migratory Shorebirds Taskforce (see Contacts list).

Standard format for describing wetlands in the Directory

Name of wetland: The name of the site.

Reference number: Each site has been allocated an individual reference number. The code used has been amended since the second edition. This is now a sequential number with a two or three letter prefix for the State or Territory in which the wetland occurs. There is no longer any reference to the bioregion. The State and Territory lists of important wetlands in their respective chapters give both old and new reference numbers for sites that were included in the second edition. Sites listed since 1996 have only the new reference number. An example showing both old and new reference numbers follows:

Old Reference No.	Wetland name	New Reference No.
NET001NS	Little Llangothlin Lagoon	NSW022
NET002NS	New England Wetlands	NSW023
NET003NS	Round Mountain Swamps	NSW024

Location: Latitude and longitude at the centre of the wetland. If the site consists of two or more discrete entities, the centre coordinates of each of these entities is given. A general description of the location of the wetland including the distance from the nearest landmark, town, reserve or access point. This also includes bioregion name (IBRA, see Appendix 2) and local government area where applicable.

Area: In hectares.

Elevation: In metres above sea level (m ASL).

Other wetlands in same aggregation: Those wetlands included in the Directory, listed by reference number. Wetlands in the same aggregation are those where there is a hydrological, ecological or biological connection apparent.

Wetland type: All wetland habitat types occurring at the site using the wetland classification system code (A1, A2, etc) discussed above and including an indication of the dominant wetland type.

Criteria for inclusion: Reference numbers for criteria (1–6) discussed above indicating why the wetland is nationally important.

Site description: A brief summary of the important characteristics of the wetland, ie those that make it nationally important.

Further details of the features of the site are supplied under the following subheadings:

Physical features: Description of the following where relevant: landform, geology, geomorphology, origin, soil types and climate, including rainfall and evaporation.

Hydrological features: A brief description of the principal hydrological features such as source of water supply, maximum water depth, persistence, salinity regime and pH values. Other features may include the role of the wetland in recharge and discharge of ground water, flood mitigation, and maintenance of water quality.

Ecological features: A brief description of the main habitats, listing dominant plant communities, species present and describing any seasonal variation or long-term changes in species composition. This includes information on adjacent areas where appropriate, to put the wetland in context.

Significance: The significance of the site within its bioregion.

Specific features of significance are also addressed under the following subheadings. For threatened species of flora and fauna the common name and scientific name (in italics) is followed by the appropriate code of conservation status in brackets:

National Conservation status	Code	State/Territory Conservation status [2]	Code
Critically endangered (CR) [1]	Ncr	Critically endangered (CR)	Scr
Endangered (E)	Ne	Endangered (E or EN)	Se
Vulnerable (V)	Nv	Vulnerable (V or VU)	Sv
Conservation dependent (CD) [1]	Ncd	Lower Risk (LR)	Slr
Rare (R)	Nr	Rare (R)	Sr
		Data Deficient (DD)	Sdd

1 these categories established under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

2 conservation status categories and definitions vary between jurisdictions.

Notable flora: Threatened species: threatened flora at national or State level that occur on the site (includes any threatened species identified under national or State legislation, ANZECC lists or action plans). Composition: information on the composition of any plant species or communities for which the wetland is particularly important (eg local endemic species or good examples of native plant communities).

Notable fauna: Threatened species: list of threatened fauna at national or State level that are present at the site (includes any threatened species identified under national or State legislation, ANZECC lists or action plans). Composition: information regarding composition of important fauna that may inhabit the wetland permanently or seasonally, including migratory species. An indication of population sizes, breeding colonies, migration stopover etc is also given where available.

Social and cultural values: Social and/or cultural values of the wetland. Social values may include tourism, recreation, scientific research, education, grazing, water supply, fisheries production etc. Cultural values include specific prehistoric or historical associations whether they relate to indigenous or non-indigenous culture.

Land tenure: Using standard terminology, land tenure is addressed under the following subheadings:

On site: Details of land ownership of the wetland site.

Surrounding area: Details of the tenure type that is dominant in the surrounding areas if possible.

Current land use: Using standard terminology, land use is addressed under the following subheadings:

On site: Current human use of the designated wetland area.

Surrounding area: Human use on land adjacent to the wetlands, and more broadly in the surrounding catchment.

Disturbances or threats: Disturbances or threats are defined as any direct or indirect human activities at the site or in the catchment area that may have a detrimental effect on the ecological character of the wetland. The effect may be a low level disturbance (eg low intensity grazing) or a major threat (eg water diversion schemes). Examples include disturbance by stock, water extraction, river regulation, siltation, salinity, urban development, drainage, pollution, excessive human activity, and impact of invasive species. Disturbances or threats are addressed under the following subheadings:

Current: Activities or features that are adversely affecting the wetland at present. An indication of the severity or degree of threat may be given where known, eg high, moderate, or low.

Potential: Potential future threats, for example planned changes in land use or degradation of the site from current land use practices (eg increased salinity).

Conservation measures taken: Details of conservation measures being undertaken at the site, and where appropriate, the names of any protected areas established at or around the wetland. This includes details of any management plans for the site and whether they are being implemented. It also includes the status of the site in terms of National Estate, Ramsar or World Heritage listing, or whether it falls within a Biosphere Reserve.

Management authority and jurisdiction: The name of the body or bodies responsible for management of the wetland.

Compiler & date: The name of individuals and associated organisations who provided information for the site description, with the date of compilation and that of the most recent update.