Information Sheet on Ramsar Wetlands

Categories approved by Recommendation 4.7 of the Conference of the Contracting Parties.

1. Date this sheet was completed/updated:
May 1999

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DD MM YY

Designation date | Site Reference Number

2. Country:
Australia

3. Name of wetland:
Western District Lakes, Victoria

4. Geographical coordinates:
Latitude: 38^0 00' to 38^0 20'S; Longitude: 143^0 07' to 143^0 55'E

5. Altitude:
Approximately 40 metres.

6. Area:
32,898 ha
Note: This is a revised area figure based on GIS Mapping (1995) and does not represent any change to the Ramsar Site boundary.

7. Overview:
The Western District Lakes, are important geomorphic features of a basaltic landscape. Water regimes vary both seasonally and annually so at any time the various lakes range from fresh to hypersaline. They support large numbers of mainly non-breeding waterbirds and are particularly important during periods of widespread drought and as moulting sites for some species.

8. Wetland Type:

marine-coastal:	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
inland:	**L**	**M**	**N**	**(O)**	**P**	**(Q)**	**R**	**Sp**	**Ss**	**Tp**	**Ts**
	U	**Va**	**Vt**	**W**	**Xf**	**Xp**	**Y**	**Zg**	**Zk**		
man-made:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**		

9. Ramsar Criteria:

(1a)	**1b**	**1c**	**1d**	**2a**	**2b**	**2c**	**2d**	**(3a)**	**(3b)**	**(3c)**	**4a**	**4b**

Please specify the most significant criterion applicable to the site:

10. Map of site included? Please tick *yes* ☐ -or- *no.* ☒

11. Name and address of the compiler of this form:

Parks Victoria
378 Cotham Road
Kew VIC 3101 Australia

12. Justification of the criteria selected under point 9, on previous page.

1(a) The wetland is a particularly good representative example of a natural or near-natural wetland characteristic of the appropriate biogeographical region.

Western District Lakes are a particularly good example of permanent saline, moderately saline and brackish lakes in the Victorian Volcanic Plains biogeographic region.

3(a) Regularly supports 20,000 waterfowl

The Western District Lakes regularly support well over 20,000 waterfowl. Species and groups that regularly occur in high numbers include Eurasian Coots (see below), ducks (Australian Shelduck, Australasian Shoveler, Pink-eared Duck in particular), Banded Stilts, grebes, ibis and cormorants (ANCA 1996).

3(b) Regularly supports substantial numbers of waterfowl from particular groups

Large numbers of Eurasian Coots utilise the Western District Lakes Wetlands: 10,900 have been recorded on Lake Bookaar, 9,700 on Lake Colongulac, 3,100 on Lake Milangil, 10,015 on Lake Corangamite and 19,670 on Lake Murdeduke. The lakes also support very high numbers of ducks: Australian Shelduck, Australasian Shoveler and Pink-eared Duck. Banded Stilts have been recorded at Lake Beeac (up to 50,000), Lake Corangamite and Lake Cundare (2895) (ANCA 1996).

3(c) Regularly supports 1% on the individuals in a population of one species or subspecies

Lake Beeac is very significant for Banded Stilts and Red-necked Avocets and has supported internationally significant numbers of these species. Lake Corangamite has also supported internationally significant numbers of Banded Stilts (ANCA 1996).

Five per cent of the Victorian population of Black Swan and Australasian Shoveler have occurred at Lake Colongulac.

Lake Milangil has supported 5% of the Victorian population of Pink-eared Duck and Chestnut Teal.

13. General location:

Western Victoria between Winchelsea and Camperdown.

14. Physical features:

The area around the Western District Lakes is a flat plain of newer basalt. Stony rises consisting of the most recent basalt flows occur, particularly around the shores of Lake Corangamite. The lakes vary widely in depth and salinity, depending upon their method of formation, their catchment area, and their outlet.

Lake Beeac has a large example of a playa or lunette. It is a closed basin and hypersaline.

Lake Bookar has several islands at high water levels. Saline water: 44 086 - 61 679 EC.

Lake Corangamite is the largest lake in Victoria, with a surface area of 23,000 ha. Water level is regulated. Salinity at present in the order of 100000 EC.

Lake Colongulac has a variety of shoreline features including bays, spits, cliffs and islands. Salinity: 21 338 to 25 532 EC.

Lake Cundare is a hypersaline lake (122 358 to 362 573 EC) with pale grey water due to flocculation of clay particles which dries to a salt crust during summer.

Lake Gnarpurt has a salinity between 23 338 and 23 671 EC.

Lake Milangil has a distinct lunette formation, with several spits. Two islands are formed at high water levels. Salinity: 43 342 to 45 676 EC.

Lake Murdeduke is a distinctly formed playa (lunette lake) on the transition of landform from lava plains to the Barwon River flats. Salinity: 29 703 to 36 007 EC.

Lake Terangpom is a freshwater playa.

15. Hydrological values:
The water contained in most lakes is saline or brackish and unsuitable for domestic consumption. In some cases, however, it is suitable for and used for irrigation.

Sewage from Camperdown is discharged after treatment into Lake Colongulac.

Lake Bookar is the terminal lake for local catchment.

Lake Corangamite is used as a basin for artificial drainage of small wetlands on agricultural land. Some large streams (the Woady Yallock River and the Gnarkeet 'Chain of Ponds' Creek) also flow into the lake.

Lake Colongulac is a terminal lake. Sewage from Camperdown is discharged after treatment into the lake. Inflows of abattoir and butter factory waste also occur.

Lake Gnarpurt drains an extensive area to the north.

Lake Milangil is a terminal lake for a local catchment and springs occur on its western edge.

Lake Murdeduke could be considered to be part of the Woady Yallock/Lake Corangamite diversion scheme. There is possible salt seepage to Barwon River.

Lake Terangpom acts as a basin for stream flow from the Kooraweera lake system, before flowing into Lake Corangamite. It is probably a significant freshwater input to Lake Corangamite.

16. Ecological features:
On a periodic basis, this lake system supports tens of thousands of ducks, swans and coots, and is considered to be an important drought refuge for waterfowl.

The lakes range from freshwater to highly saline and consequently provide a diversity of habitat for many species of waterfowl. Lakes Beeac and Cundare support large numbers of Banded Stilt *Cladorhyncus leucocephalus*.

17. Noteworthy flora:
Lake Beeac
There are isolated occurrence of Shiny Pepper-cress (*Lepidium aschersonii*) along the lake shore. This species is endangered in Victoria.

Lake Corangamite
Cuscuta victoriana (Victorian Dodder) - rare
Lepidium ashersonii (Spiny Pepper-cress) - Endangered in Australia, endangered in Victoria.
Leptorhynchus waitzia (Button Immortelle) - vulnerable

Lake Colongulac
Large mats of *Ruppia* spp. form at certain times on the Lake.

Hairy-tails (*Ptilotus erubescens*) is also found in the Western District Lakes. This species is endangered in Victoria.

18. Noteworthy fauna:
Lake Beeac
Large numbers of Banded Stilts - the season, number and duration of use varies greatly. Flocks of many thousands have been recorded. Large flocks of several other species, e.g. Hoary-headed Grebe, Red-necked Avocet and Whiskered Tern, have also occurred.

Large numbers of brine-shrimps occur in the lake (the main food source for Banded Stilts and Red-necked Avocets).

Lake Bookar
Large numbers of waterbirds. Particularly large numbers of Hoary-headed Grebe (6597), Black Swan (7500), Coot (10,900), Pink-eared Duck (2410). Other interesting species include Plumed Whistling Duck and Brolga. 200 Freckled Duck were seen in 1981.

Lake Colongulac
Large numbers of waterbirds including 200 Freckled Duck, 1008 Blue-billed Duck, 2070 Grey Teal, 2055 Blue-winged Shoveller, 7413 Eurasian Coot, 2000 Great Crested Grebe, 5786 Black Swans.

The lake had the highest number of Eurasian Coot (7300 birds) of any wetland surveyed in the annual Victorian waterfowl count of 1988.

Lake Corangamite
The notable birds of the lake are Australian Shelduck and Chestnut Teal which roost and moult in large numbers on the lake. Lake Corangamite had the highest count of Australian Shelduck of any wetland surveyed in the annual Victorian Waterfowl Counts of 1988 (22,950 birds) and 1990 (16,934). The lake also had the second highest count of Black Swan (5360) in 1988. Large to significant numbers of other species, e.g. Freckled Duck (up to 500), Double-banded Plover, and Banded Stilt (up to 6000).

Several sites, e.g. Wool Wool and Vaughan Island, held breeding colonies of such species as Pelicans, Straw-necked Ibis up to 10,000 nests), Sacred Ibis (up to 50 nest/100 nests) and other species.
Fish include Yarra Pygmy Perch (rare). There are also populations of the Common Galaxid, Short-finned Eel, Big-headed Gudgeon, Southern Pygmy Perch.

Important lizard species are found on the lake shore.

The amount of saltmarsh habitat indicates that large or significant numbers of migratory waders and possibly Orange-bellied Parrots could be found in the area.

Lake Cundare
Large numbers of Banded Stilts (2895) and Hoary-headed Grebe (1250) occur at times. The lake had the second highest count of (4340 birds) in the annual Victorian Waterfowl Count of 1988.

The Lake is also noted for brine shrimp growth.

Lake Gnarpurt
Large numbers and diversity of waterbirds including 14,705 Shelduck, 4385 Pink-eared Duck, 172 Great Crested Grebe, 32 Freckled Duck.

Lake Gnarpurt is closely linked to Lake Corangamite regarding waterbird movements and provides an important drought refuge.

Lake Milangil
A large diversity and number of waterbirds including good numbers of Freckled Duck, Blue-billed Duck, Musk Duck and Blue-winged Shoveller. Up to 1155 Grey Teal, 3850 Black Swans, 3500 Shelduck, 6000 Pink-eared Duck, 100 Double-banded Plovers. Brolgas (2+) are regularly sighted. Breeding Silver Gull (74 nests), breeding Gull-billed Tern (74 nests).

Lake Murdeduke
A very high diversity of waterbirds particularly duck species and migratory wading birds. Large numbers of duck included up to 730 Freckled Duck, 1910 Shelduck, 1900 Grey Teal. Also 10,000 Black Swans and 19,670 Coots. Extremely rare (vagrant) waders include Wilson's phalarope, White-rumped Sandpiper, Little Stint, Cox's Sandpiper etc. Unusual inland occurrences of several waders. Other interesting species include Gull-billed Tern, Spotless Crake, Brolga (13).

Lake Terangpom
Diversity of waterfowl and large flocks of several duck species. Some rare species such as Freckled Duck (50 in 1981), Blue-billed Duck, White-winged Tern and Little Curlew have been found.

Short-finned Eel are found in the lake. Their population is bolstered by flooding from adjacent wetlands. The lake is a significant drought refuge for waterfowl. It is an unusual freshwater playa (or lunette lake).

Other threatened birds include:
Great Egret (*Ardea alba*) - restricted colonial breeding in Victoria
Cape Barren Goose (*Cereopsis novaehollandiae*) - rare in Victoria
Letter-winged Kite (*Elanus scriptus*) - rare in Victoria

Black Falcon (*Falco subniger*) - rare in Victoria
Nankeen Knight Heron (*Nycticorax caledonicus*) - restricted colonial breeding in Victoria
Plains-wanderer (*Pedionomous torquatus*) - vulnerable in Victoria
Royal Spoonbill (*Platalea regia*) - restricted colonial breeding in Victoria
Glossy Ibis (*Plegadis falcinellus*) - restricted colonial breeding in Victoria
Baillon's Crake (*Porzana pusilla*) - insufficiently known
Painted Snipe (*Rostratula benghalensis*) - insufficiently known

Other threatened fish include:
Mountain Galaxias (*Galaxias oldius*) - insufficiently known

19. Social and cultural values:

20. Land tenure/ownership:
Lakes Beeac, Bookar, Cundare, Milangil, Murdeduke and Terangpom are State Wildlife Reserves.

Lakes Colongulac, Corangamite and Gnarpurt are Lake Reserves.

21. Current land use:
(a) the site: The lakes are used for native conservation and recreation including duck hunting.
Lake Cundare is grazed to the lake edge at some sites.
Lake Gnarpurt is used for eel fishing.
Lake Murdeduke is used by a commercial eel fishery, and is stocked with trout for recreational angling.
Lake Colongulac is use for waste water dispersal.

(b) the surroundings/catchment: The bulk of the land is used for agriculture. Sheep and beef cattle grazing predominate. The fertile alluvium near Lake Corangamite supports mixed farming, including dairying and the production of peas, potatoes, and onions. Dairying is also important in the Terang-Glenormiston area. Cereal cropping is carried out throughout the whole area.

22. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land use and development projects:
There has been no significant change in the ecological character of the Ramsar site since the Ramsar information sheets were last updated in 1992.

Factors which affect the ecological character at selected locations include:
- activities and processes in the wetland catchments which contribute to increased salinity and high nutrient input leading to algal blooms.
- livestock grazing
- waste water inflow.
- hydrological modification
- pest plants and animals

23. Conservation measures taken:
- Parts of the area have been reserved as State Wildlife Reserves for the conservation and management of wildlife and as Lake Reserves for the conservation of their natural values.
- A feasibility study to address erosion problems has been undertaken at Lake Murdeduke.
- Box Thorn has been removed to aid pest control at Lake Milangil and Lake Cundare.
- The discharge of industrial effluent from a dairy produce factory into Lake Colongulac was diverted from the lake to land disposal in 1996. An abattoir which discharged waste water into the lake has also ceased operation. The water quality in the lake is expected to slowly improve, although treated sewage from Camperdown continues to be discharged into the lake.
- Action Statements under the Flora and Fauna Guarantee Act 1988 have been produced for the Plains Wanderer (1995) which has been recorded at the site. The statement outlines conservation measures for the species.

24. Conservation measures proposed but not yet implemented:
Planned removal of grazing access to the margins of Lake Gnarput.

A catchment management plan for Lake Beeac is being prepared to establish strategies for the improved protection of environmental values.

A nutrient management plan is being prepared for the Lake Corangamite catchment to establish strategies to improve the quality of run-off entering the lake.

In an integrated approach to planning at Ramsar sites, management strategies are being prepared for all Ramsar sites in Victoria, including the Western District Lakes, to provide general strategic direction and site specific strategies. The strategies will be completed by June 1999.

25. Current scientific research and facilities:
Monitoring programs underway includes fauna surveys, regular waterbird counts and monitoring of breeding colonies and water quality.

Salinity monitoring is being undertaken for several Western District Lakes as part of a PhD project to determine the salinity tolerance of aquatic In an integrated approach to planning at Ramsar sites, management strategies are being prepared for all Ramsar sites in Victoria, including the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula site, to provide general strategic direction and site specific strategies. The strategies will be completed by June 1999.
macro-invertebrates and vegetation, and their potential as biological indicators.

Biannual surveys examining aquatic invertebrates and water quality parameters are undertaken for Lake Corangamite.

26. Current conservation education:
Lake Bookar is used for school environmental programs, and it is also a site for a Landcare group, with works including wetland revegetation and rehabilitation.

Lakes Beeac and Corangamite are used as study sites by Monash University.

27. Current recreation and tourism:
Duck hunting occurs at Lakes Bookar, Corangamite, Colongulac, Gnarput and Murdeduke. Lake Murdeduke is also used for birdwatching and fishing. Lake Bookar is also used for picnicking, sailing and other boating, and it has a recreation reserve on its southwest side.

28. Jurisdiction:
Government of Victoria.

29. Management authority:
Managed under the Department of Natural Resources and Environment Parks Program by Parks Victoria - 32,898 Ha (100%)

30. Bibliographical references:

ANCA (1996). A Directory of Important Wetlands in Australia. Second Edition. Australian Nature Conservation Agency, Canberra.