

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:

26th March, 1999

FOR OFFICE USE ONLY.

DD	MM	YY

Designation date

--	--	--	--	--	--	--	--

Site Reference Number

2. Country: AUSTRALIA

3. Name of wetland: GWYDIR WETLANDS: GINGHAM AND LOWER GWYDIR (BIG LEATHER) WATERCOURSES

4. Geographical coordinates:

Windella:	Lat 29°12'10"	Long 149° 05'40"
Crinolyn:	Lat 29° 13'20"	Long 149° 07'20"
Old Dromana	Lat 29° 21'00"	Long 149° 19'50"
Goddard's Lease	Lat 29° 25'00"	Long 149° 23'10"

5. Altitude: 160 metres above sea level. **6. Area** Area of nominated wetlands : 823 hectares
Total area of wetland system : 102,120 hectares.

7. Overview: (general summary, in two or three sentences, of the wetland's principal characteristics)

The Gwydir Wetlands are one of the few terminal wetlands found within inland NSW and contain one of the largest stands of water couch (*Paspalum distichum*) and marsh club-rush (*Bolboschoenus fluviatilis*) remaining in New South Wales (Bennett and Green, 1991) (McCosker and Duggin, 1993). The wetlands provide breeding and feeding grounds for very large numbers of colonial water bird species (around 500,000 in 1998), habitat for many threatened species and also continues to support a viable grazing industry.

8. Wetland Type (please circle the applicable codes for wetland types as listed in Annex I of the *Explanatory Note and Guidelines* document.)

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		

Please now rank these wetland types by listing them from the most to the least dominant:

L P N Ts Tp Xf W

9. Ramsar Criteria: (please circle the applicable criteria; see point 12, next page.)

1a 1b 1c 1d | 2a 2b 2c 2d | 3a 3b 3c | 4a 4b

Please specify the most significant criterion applicable to the site: 2 / 3

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

(Please refer to the *Explanatory Note and Guidelines* document for information regarding desirable map traits).

11. Name and address of the compiler of this form: This form was prepared jointly by:

World Wide Fund for Nature & National Parks Association
Western NSW Conservation Project
GPO Box 528
Sydney NSW 2001

National Parks and Wildlife Service
Conservation and Planning Division
PO Box 1967
Hurstville NSW 2220

12. Justification of the criteria selected under point 9, on previous page. (Please refer to Annex II in the *Explanatory Note and Guidelines* document).

Criteria 1a, b, c, d. Representative or unique wetlands:

Although parts of the wetland have been substantially modified due to river regulation, the Gwydir Wetlands remain a particularly good example of an inland terminal delta in the both the Darling Riverine Plains bioregion and the whole of the Murray-Darling Basin. It plays a substantial part in the biological and ecological functioning of the Murray-Darling Basin, as the major wetlands in the Basin are rarely inundated simultaneously, and therefore not always suitable for bird breeding at the same time. The Ramsar listed areas are important components of the entire Gwydir wetland system.

Criteria 2 a, b, c. General criteria based on plants and birds:

The wetland supports an appreciable assemblage of rare, endangered and vulnerable species, including magpie geese (breeding), and brolga. It supports a number of common species at the edge of their range including black-necked stork (jabiru), and jacana. The wetland is of value for maintaining genetic and ecological diversity because there are few of these inland wetlands left, and they are declining. It is of special habitat value particularly as breeding and feeding habitat for large numbers of colonial waterbirds.

Criteria 3 a, b. Specific criteria based on birds.

When flooded, the wetland sustains large numbers of breeding colonial water birds (500,000 in 1998), which feed in the wider wetland area. Families include: magpie geese (Anseranatidae), swans and ducks (Anatidae), ibis and spoonbills (Threskiornithidae), herons and egrets (Ardeidae), darters (Anhingidae), cormorants (Phalacrocoracidae), and grebes (Podicipedidae). The region is also important for gallinules (Rallidae), cranes (Gruidae), storks (Ciconiidae), raptors (Accipitridae and Falconidae), shorebirds and waders (Scolopadicae) (See section 18 and Appendix 2).

13. General location: (include the nearest large town and its administrative region)

The Gwydir wetlands are approximately 60km west of Moree in the north west of New South Wales, Australia. The Ramsar sites occur within the larger Gwydir wetland system.

14. Physical features: (e.g. geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; catchment area; downstream area; climate)

The Gwydir Valley is located west of the Great Dividing Range, within the Murray-Darling drainage system. It is bounded by the Mastermans Ranges to the north, the Great Dividing Range to the east and the Nandewar Range to the south. The Gwydir Wetlands are located on the lower floodplain of the Gwydir River, within the Darling Riverine Plains biogeographic region.

The wetlands are found on Quaternary riverine plain deposits of black and red clayey silt, sand, and coarse gravel (ANCA, 1996).

Annual median rainfall around the junction of the Gwydir and Barwon Rivers is 450mm with more than 50% falling between November and March (Keyte, 1994).

The headwaters of the Gwydir River are west of Armidale and Guyra on the New England Tableland. Copeton Dam (a capacity of 1364 Gegalitres) is located approximately 90 km downstream of the headwaters of the Gwydir River. The only major tributary, the Horton River with its headwaters in the Nandewar Ranges, enters the Gwydir River downstream of Bingara. Above Moree, the Mehi River breaks off to the south. Further distributaries above Moree are the Carole/Gil Gil Creeks to the north. Downstream of Moree the Gwydir River breaks into two major streams known as the Gingham Watercourse (northern arm) and the Lower Gwydir or Big Leather Watercourse (southern arm) (Keyte, 1994).

The most extensive wetland areas in the Gwydir valley are located along the watercourses, where flat, overland grades allow shallow extensive flooding over large areas of the floodplain. Water extends for approximately 95 kms through a series of natural and constructed channels and swamps (NPWS, unpublished). As a result, intermittent semi-permanent wetlands have developed.

Prior to the construction of the Copeton Dam, the Gwydir catchment could have been described as an inland delta or a closed system. Water only entered the Barwon River during major flood events, and all smaller flows discharged into the Gingham and Lower Gwydir Watercourses. Currently the Gwydir is described as an open system. Although water entering the Gingham and Lower Gwydir watercourses still rarely reaches the Barwon River, water from the Mehi River and to a lesser extent the Gil Gil/ Carole Creeks now reaches the Barwon frequently and at smaller river heights than previously required. Both the Mehi and the Carole/Gil Gil have been channelised to assist with delivery of water to the irrigation industry.

Prior to 1946, the majority of small floods and freshes entered the Lower Gwydir Watercourse, with only large floods reaching the Gingham Watercourse. With the progression of the head of the Gwydir Raft upstream, this situation reversed. The Raft is an accumulation of timber, debris and sediment which has been deposited in the former channel of the Gwydir River downstream of Moree. The formation of this Raft is thought to have occurred over many decades. The process of raft creation appears to have been occurring over a much longer period of time. A combination of human activities, such as clearing in the upper catchment and natural depositional processes, allowed logs and silt to be washed into the river during floods and are regarded as the factors leading to its formation. The resultant accumulation of debris extends for about 35 km upstream to a point 7 km downstream of Moree.

Water pooled behind this blockage and would break out of the Gwydir channel northwards into the Gingham Watercourse and south into the Tyreel Anabranche. It is likely that the Gingham now receives a greater proportion of low to medium flows than it did prior to the formation of the Raft.

A low fixed crested weir was constructed across the Gwydir River upstream of the offtake to the Gingham Watercourse in 1983 to facilitate the diversion of flows into the Lower Gwydir Watercourse. A regulator was also constructed on the Tyreel offtake so as to control flows into this system, and the channel was altered (Keyte, 1994).

15. Hydrological values: (groundwater recharge, flood control, sediment trapping, shoreline stabilisation etc)

As the Gwydir wetlands are terminal wetlands, they serve to some degree as flood mitigation for downstream areas. The wetlands may prevent the flow of nutrient rich water into the Barwon-Darling system, thus reducing the likelihood of algal blooms. Although the Gingham and the Lower Gwydir watercourses remain terminal, water now flows through to the Barwon River permanently through the Carole Creek and the Mehi River.

Since flooding in the Gwydir wetlands is not always synchronous with flooding of other Murray Darling Basin wetlands, such as the Macquarie Marshes or Narran Lake, the Gwydir wetlands play an important role on a regional scale.

16. Ecological features: (main habitats and vegetation types)

Prior to river regulation, there were around 220 000 hectares of ephemeral and floodplain wetlands on the Gwydir Valley floodplain. Eighty two per cent of this area is dominated by coolibah (*Eucalyptus coolabah*) woodland. Here seasonal, extensive flooding occurs over approximately 20 000 ha of wetland dominated by aquatic plants (Bennett and Green 1991) (See section 17 and Appendix 1).

Vegetation communities are predominantly determined by the frequency and duration of flooding. Variation of vegetation associations with soil types have also been observed. Three identifiable vegetation groups exist: those on high red solodic ridges subject to infrequent flooding for example bumble box (*Eucalyptus poplunea*) and white cypress pine (*Callitris glaucophylla*) communities; those on heavy clay soils in areas subject to periodic inundation for example coolibah (*E. coolabah*) and belah (*Casuarina cristata*) communities; and those on heavy clay soils in channels or depressions subject to frequent inundation for example water couch (*Paspalum distichum*), ribbed spike rush (*Eleocharis plana*), marsh club rush (*Bolboschoenus fluviatilis*) and *Juncus* species (McCosker and Duggin, 1993) (Keyte, 1994).

17. Noteworthy flora: (indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc)

This wetland is probably the largest stand of water couch (*P. distichum*) and marsh club-rush (*B. fluviatilis*) in New South Wales (Bennett and Green, 1991) (McCosker and Duggin, 1993).

Other specific flora include ribbed spike-rush (*E. plana*), tall spike-rush (*Eleocharis sphacelata*), tussock rush (*Juncus aridicola*) and cumbungi (*Typha* sp.), in association with various other aquatic plants including swamp buttercup (*Ranunculus undosus*), water primrose (*Ludwigia peploides*), swamp lily (*Ottelia ovalifolia*), starfruit (*Damasonium minus*), numerous sedges (*Cyperus* sp.) and water milfoils (*Myriophyllum* sp.) (McCosker, pers comm.).

A flora list is attached as Appendix 1.

18. Noteworthy fauna: (indicating, e.g., which species are unique, rare, endangered, abundant or biogeographically important; include count data, etc.)

Since 1982, the New South Wales Bird Atlassers have observed 236 bird species in the Gingham and Lower Gwydir watercourses of which 165 species have been recorded as breeding (Jen Southeron pers comm.).

Many colonial waterbird species - little egret (*Egretta garzetta*), intermediate egret (*Egretta intermedia*), great egret (*Egretta alba*), nankeen night heron (*Nycticorax caledonicus*), straw-necked ibis (*Threskiornis spinicollis*), Australian white ibis (*Threskiornis molucca*) and glossy ibis (*Plegadis falcinellus*) breed in the wetlands (ANCA,1996). It was estimated that the minimum numbers of birds breeding in the colonies in 1999 was at least 500,000 birds. One estimate was up to 500,000 pairs (Dick Cooper, pers comm.) The breeding of brolga (*Grus rubicundus*) and black swan (*Cygnus atratus*) has also been recorded within the wetlands. Increasing numbers of magpie geese (*Anseranas semipalmata*) have bred in the wetlands during the floods of 1984, 1998 and 1999. (Shane Murphy pers. comm). This is a significant occurrence since breeding of magpie geese in New South Wales is considered rare.

The black-necked stork (*Ephippiorhynchus asiaticus*) which has been recorded in the Gwydir wetlands is listed as endangered under the NSW *Threatened Species Conservation Act 1995*. A further thirteen species of birds listed as vulnerable under the NSW *Threatened Species Conservation Act* have also been recorded in the wetlands. These include magpie goose (*Anseranas semipalmata*), blue-billed duck (*Oxyura australis*), freckled duck (*Stictonetta naevosa*), Australasian bittern (*Botaurus poiciloptilus*), brolga (*Grus rubicundus*), painted snipe (*Rostratula benghalensis*) comb-crested jacana (*Irediparra gallinacea*), osprey (Panion haliaetus), red-tailed black-cockatoo (*Calyptorhynchus banksii*), glossy black cockatoo (*Calyptorhynchus lathamii*), turquoise parrot (*Neophema pulchella*), Pied Honeyeater (*Certhionyx variegatus*) and chestnut quail-thrush (*Cinclosoma castanotus*). Thirteen species listed under JAMBA and ten species under CAMBA are also found in the wetlands which include cattle egret* (*Ardeola ibis*), great egret* (*Ardea alba*), glossy ibis (*Plegadis falcinellus*), painted snipe* (*Rostratula benghalensis*), greenshank (*Tringa nebularia*), latham's snipe (*Gallinago hardwickii*), sharp sandpiper (*Calidris acuminata*), black tern (*Chlidonias niger*), caspian tern (*Sterna caspia*), common tern (*Sterna hirundo*), white-throated needletail (*Hirundapus caudactis*), fork-tailed swift (*Aspus pacificus*), barn swallow (*Hirundo rustica*) and rainbow bee-eater* (*Merops ornatus*) (NPWS, unpublished).

*Those marked with an asterisk have been observed breeding in the wetland.

Mammal species occurring within the Gwydir wetlands include eastern water rat (*Hydromys chrysogaster*), kangaroo (*Macropus spp*), swamp wallaby (*Wallabia bicolor*), echidna (*Tachyglossus aculeatus*), narrow-nosed planigale (*Planigale tenuirostris*) and several possum and glider species. There is anecdotal evidence of koalas (*Phascolarctos cinereus*) (Spark, unpublished).

Preliminary research indicates that areas of the wetlands are important fish breeding habitat (Siebentritt, 1999). Many species of frogs are also found (McCosker, 1996).

Fauna lists are attached as Appendix 2.

19. Social and cultural values: (e.g. fisheries production, forestry, religious importance, archaeological site etc.)

The flat terrain, fertile soils, abundant wildlife and virtually permanent water of the Gwydir wetlands have provided for a range of human activity over a long period of time.

The wetlands were very important to Aboriginal Kamilaroi people long before the arrival of Europeans. There are archeological sites throughout the area. The area provided a range of edible plants and animals, and provided a drought refuge for people. Aboriginal people today are also concerned that the wetlands continue to be healthy.

Upon European arrival, the agricultural possibilities for the region were immediately identified. Wool production was the main industry for the early part of this century. From the late 1940s onwards, higher rainfall and the progression of the raft resulted in increased flooding, causing most landholders to shift the emphasis of their enterprises from sheep to cattle. The large number of old and abandoned woolsheds on properties throughout the wetlands are testimony to this change. By the 1970s beef cattle were the mainstay of the grazing industry. The wetlands became renowned as a reliable area for producing fat cattle when the surrounding areas were experiencing drought (McCosker and Duggin, 1993).

Water from the Gwydir River now also supports a major irrigation industry. The major crop for this industry is cotton.

20. Land tenure/ownership of: (a) site (b) surrounding area

A mixture of freehold and perpetual leasehold lands which is managed by four private landholders.

21. Current land use: (a) site (b) surroundings/catchment

The Ramsar site is used for beef cattle and sheep grazing. Outside the Ramsar site the wetlands are used for grazing or have been cleared for cereal crops. Some smaller areas have been developed for the production of irrigated and dryland cotton.

22. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land use and development projects: (a) at the site (b) around the site

Continuing expansion of the irrigation industry in the wider catchment have lead to the reduction in the frequency and duration of inundation. This has changed vegetation patterns within the wetlands, with areas of primary wetland vegetation being reduced (McCosker and Duggin, 1993). Areas previously supporting water couch (*P. distichum*) and marsh club-rush (*B. fluviatilis*) have now been replaced by lippia (*Phyla canescens*), noogoora burr (*Xanthium accidentale*), bathurst burr (*Xanthium spinosum*), black thistle (*Cirsium vulgare*), variegated thistle (*Silybun marianum*) and black roly-poly and soft roly-poly (*Bassia sclerolaena muricata* and *B. salsola kali*). Of these invasive plants, lippia is the greatest threat and is rapidly spreading (1998 flood), as is water hyacinth (*Eichhornia crassipes*) in the Gingham watercourse (McCosker, pers comm.).

Wetland drying has also resulted in land use changes with a marked increase in cereal cropping. This has had the effect of further reduction of wetland habitat.

Feral animals requiring control are pigs, foxes and cats.

Dead coolabahs are present along depression lines and where water couch dominates. The cause of death is believed to have been excessive inundation during the winter months of the late 1950's and 1970's, although some trees show evidence of ringbarking. There has been minimal to no regeneration of coolabah trees in these areas.

Pesticide contamination is a threat (NPWS unpublished).

23. Conservation measures taken:)

The important conservation issue currently being addressed in the Gwydir Wetlands is water management, and the provision of environmental flows.

By the early 1980s local landholders expressed concerns about the condition of the watercourse wetlands to the Department of Land and Water Conservation (formerly the Department of Water Resources). Landholders had noted the decline in the number and diversity of plants and animals living in the wetlands. Moreover the reduced flooding had decreased the productivity of grazing land, by as much as 70% (Howard Blackburn, Shane Murphy, pers comm.). The Gwydir Environmental Flows Committee was established to reach a consensus decision over water sharing between consumptive use and the environment.

Sharing rules were formulated, and are being implemented by the Gwydir River Management Committee. Environmental flows have been provided to the wetlands as a result of the sharing agreement over four summers (NSW DLWC, 1998). The process established in the Gwydir Valley was then used as a model for other valleys in the state of NSW.

As a first step towards Ramsar listing, four wetland landholders signed a Memorandum of Understanding on 2nd February 1999. Other signatories included State and Commonwealth governments, the World Wide Fund for Nature and the National Parks Association. This ratified co-operative arrangements for the management of the Ramsar listed areas of the wetland.

Another result of wetland management issues being brought to the attention of NSW Department of Land and Water Conservation (DLWC) was the initiation of an investigation into the specific water needs of the wetlands of the lower Gwydir floodplain. A Steering Committee was formed to oversee the investigation and was comprised of landholders and representatives from DLWC. The Plan will be implemented by the Lower Gwydir Wetland Management Committee and will operate for 3 years after which time it will be reviewed.

Other conservation measures taken include:

- Landholders with water hyacinth on their properties have investigated cooperative models for the management of this invasive species. Control is ongoing for this and other feral species.
 - Grazing exclusion plots have been established to monitor the effects of stock (McCosker, 1996).
 - Flora and fauna species lists have been established.
 - Initial surveys for fish species and habitat have been undertaken (Siebentritt, 1999).
 - Pesticide monitoring sites have been established.
-

24. Conservation measures proposed but not yet implemented: (e.g. management plan in preparation; officially proposed as a protected area etc.)

The Memorandum of Understanding (MoU) for the Gwydir Wetlands will be implemented. Two of the most important conservation measures outlined in the MoU are the establishment of a Management Group, and the development of individual property action plans.

Monitoring and surveying of flora and fauna species will continue. Surveys of fish species will be expanded. An indicative survey of insects will be sought. Pesticide and grazing sites will be monitored.

The Gwydir River Management Committee will develop a River Management Plan over the next five years. When complete, this will provide the planning framework for the ongoing delivery of environmental flows.

Discussions will be held with other landholders to investigate the possibility of expanding Ramsar listed areas.

25. Current scientific research and facilities: (e.g. details of current projects; existence of field station etc.)

Currently there are no facilities for scientific research available at the Ramsar site, or in the wetlands generally. Various research projects have been undertaken by the University of New England in Armidale; Landmax Consulting, Brisbane; the National Parks and Wildlife Service; NSW Bird Atlasers; the Department of Land and Water Conservation, and Wetland Care Australia.

26. Current conservation education: (e.g. visitors centre, hides, information booklet, facilities for school visits etc.)

Currently there is little formal conservation education undertaken in the area. Landholders have conducted many informal tours for school groups, birdwatchers and water management authority representatives and other interested bodies, when required.

27. Current recreation and tourism: (state if wetland is used for recreation/tourism; indicate type and frequency/intensity)

The Ramsar site is entirely privately owned thus is not available as a public recreation site.

28. Jurisdiction: (territorial e.g. state/region and functional e.g. Dept of Agriculture/Dept. of Environment etc.)

Property name	County	Parish
“Old Dromana”	County of Benarba	Parish of Wandoona
“Crinolyn”	County of Benarba	Parish of Crinoline
“Windella”	County of Benarba	Parish of Dundunga
“Goddard’s Lease”	County of Benarba	Parish of Gingham

Territorial: Commonwealth of Australia, State of New South Wales, Shire of Moree Plains.

Functional: NSW National Parks and Wildlife Service
NSW Department of Land and Water Conservation
NSW Department of Fisheries
NSW Department of Urban Affairs and Planning
NSW Department of Agriculture

29. Management authority: (name and address of local body directly responsible for managing the wetland)

Gwydir Ramsar Management Group (as outlined in the Memorandum of Understanding) convened by:

Cath Webb
WWF/NPA Western NSW Conservation Project
GPO Box 528
Sydney NSW 2001
Ph (02) 9281 5515 Fx (02) 9281 1060

National Parks and Wildlife Service Western Region
PO Box 1007
Dubbo NSW 2830
Ph (02) 6883 5330 Fx (02) 6884 9382

Department of Land and Water Conservation Barwon Region
PO Box 550
Tamworth NSW 2340
Ph (02) 6764 5900 Fx (02) 6764 5982

30. Bibliographical references: (scientific/technical only)

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

Bennett, M and Green, J. (1993) *Preliminary Assessment of Gwydir Wetlands Water Needs*. Department of Water Resources, Technical Services Division.

Keyte, P.A. (1994) *Lower Gwydir Plan of Management - 1994 to 1997*. Report by NSW Department of Water Resources for the Lower Gwydir Wetland Steering Committee. Sydney.

McCosker, R.O. (1996). *Gwydir Wetlands Response to Flooding 1995-96*. Report to the Gwydir Environmental Flows Committee. Landmax Consulting.

McCosker, R.O; and Duggin, JA. (1993) *Gingham Watercourse Management Plan: Final Report*. University of New England, Armidale, NSW.

National Parks and Wildlife Service (1999.) *Revisions to the NSW Chapter of the Directory of Important Wetlands in Australia*. Report to Environment Australia. Unpublished

NSW Department of Land and Water Conservation (1998) *Gwydir Environmental Flow Rules 1998/99*. NSW DLWC, Sydney.

Siebenritt, M.A. (1999). *Fish and the Lower Gwydir Floodplain*. Wetland Care Australia, Berri, South Australia.

Sparks, P.A. (1998) *Fauna Survey Report for the Gwydir Watercourse*. Unpublished.

WWF/NPA, NPWS, EA (1999). *Memorandum of Understanding: Gingham and Lower Gwydir (Big Leather) Watercourses Gwydir Wetlands Ramsar Site* .

Please return to: **Ramsar Convention Bureau, Rue Mauverney 28, CH-1196 GLAND, Switzerland**
Telephone: +41 22 999 0170 • Fax: +41 22 999 0169 • e-mail: ramsar@hq.iucn.org