House of Representatives
Standing Committee on Regional Australia

Inquiry into the impact of the Murray-Darling Basin Plan in Regional Australia

Supplementary Submission

February 2010

MACQUARIE RIVER FOOD & FIBRE

Chairman: Mark Miller

Executive Officer: Susan Madden

Introduction

Macquarie River Food and Fibre (MRFF) represents the interests and concerns of around 600 irrigated farming families in the Macquarie Valley and is associated with a number of supportive local businesses. Our membership comprises riparian irrigators along the regulated section of the Macquarie River, the groundwater irrigators of the Lower Macquarie Groundwater Sources, as well as the individual members of the Valley's seven off-river irrigations schemes.

In December 2010, MRFF provided a submission to the House of Representatives Standing Committee on Regional Australia's (the Committee) Inquiry into the impact of the Murray-Darling Basin Plan in Regional Australia (the Inquiry). MRFF provides this supplementary submission to outline the history of environmental water in the Macquarie Valley and opportunities and limitations pertaining to the recovery of further water entitlement for environmental purposes.

A brief history of managed environmental water in the Macquarie Valley

Managed environmental water is not a new concept in the Macquarie valley. The first environmental allowance was provided for following commencement of river regulation when Burrendong Dam was constructed in 1967. The table below provides a timeline of specific provisions for water for the environment in the Macquarie regulated river system.

1967	Commencement of river regulation with the completion of Burrendong Dam 18.5 GL allocated to the environment
1986	*Environmental allowance became 50 GL of High Security entitlement*
1996	75 GL of General Security entitlement was added to the environmental allowance and supplementary access for industry capped at 50 GL
2004	Commencement of Water Sharing Plan for the Macquarie-Cudgegong Regulated Rivers Existing High Security (50 GL) and General Security (75 GL) entitlements converted to 160 GL of General Security entitlement Supplementary access further restricted to individual licence holders
2004-2011	NSW State Government purchased 48.154 GL General Security entitlement and 1.442 GL of Supplementary entitlement through Riverbank, Rivers Environmental Restoration Program and Wetland Recovery Program[1]
2008-2011	Commonwealth Environmental Water Holder purchased 63.823 GL General Security entitlement and 1.888 GL of Supplementary entitlement through the Restoring Balance in the Murray Darling Basin Program[2]
2010	Minister Wong announced successful projects in Round 1 of the Private Irrigator Infrastructure Operators Program expected to result in another 48 GL of General Security entitlement to go to the Commonwealth Environmental Water Holder

[1] http://www.environment.nsw.gov.au/environmentalwater/waterpurchase.htm
[2] http://www.environment.gov.au/water/policy-programs/cewh/holdings.html

Opportunities and limitations to further gains from industry

Irrigation modernisation, or efficiency upgrades, is one option for achieving the triple-bottom line objective of maximising environmental, social and economic outcomes. In recognition of the opportunities available through the Commonwealth Government's Sustainable Rural Water Use funding, the Macquarie valley irrigation industry has been proactive in engaging in the available infrastructure programs.

Already announced funding through Round 1 of the Private Irrigator Infrastructure Operators Program will result in approximately 48 GL of Macquarie River entitlement transfer to the Commonwealth Environmental Water Holder.

MRFF believes there is some further opportunity, although likely to be on a smaller scale, for further irrigation efficiency improvements in the Macquarie Valley via:

- Involvement of the remaining off-river irrigation schemes in Round 2 of the Private Irrigator Infrastructure Operators Program;
- The roll-out of the $200 million on-farm efficiency program earmarked for the Northern Basin to be delivered by NSW Industry & Investment; and
- Inclusion of groundwater entitlement holders in infrastructure programs.

The irrigation industry is firmly of the belief that it is doing more than its fair share in working toward a sustainable water future for the Macquarie Valley. If further significant volumes are required from this catchment to provide for a national agenda to increase overall end-of-system flows, savings from the irrigation industry will be limited by the reality that the irrigation industry accounts for a relatively small proportion of the available water resource.

We are now at the point where, based on the SDL area defined by the Murray Darling Basin Authority as the Macquarie/Castlereagh region, the water available for productive purposes is around 10% of the available resource. The alternative way of looking at this is that around 90% of the water resource in this region goes to the environment and whole-of-system losses.

If the desired environmental outcomes are not being achieved from 90% of the available resource, then surely we must consider 1) whether effective use is being made of that 90% and 2) what alternatives to the 'just add water' approach might aid the health of our rivers and wetlands. The next two sections focus on these two issues.

Opportunities for in-stream improvements

The State Water convened Macquarie-Cudgegong Customer Service Committee has established a sub-committee to consider options for improving the efficiency of the operation of the Macquarie-Cudgegong river system. While some projects have been identified, their progress has been impeded due, in part, to a lack of available funding and, more likely, due to the lack of a clear delegation of responsibility to State and Commonwealth government agencies.

Some initial projects that MRFF believe warrant further investigation as part of this Inquiry include:

- Construction of an on-route storage at Gin Gin – estimates suggest this could provide a saving of 20 GL/year. An on-route storage would also allow for the better management of environmental allocations.
- Crooked Creek project – savings estimated to be in the order of 5 GL/year. There are other effluent creek systems where it is likely that similar savings could be achieved.
- Bora Regulator – refurbishment estimated to save 10 GL/year in drought years.

Opportunities for improved management of the Macquarie Marshes

MRFF believe that there are a number of issues compromising the health of the Macquarie Marshes. These include:

- Poor use of environmental water;
- An unbalanced focus on water rather than land, vegetation and water management;
- Large areas of privately owned land where grazing and bank diversions significantly disrupt the Marsh environment;
- Lack of effective close working relationships between government agencies and the various stakeholders; and
- An obsession that the Marshes have to be continually wet which is not what has happened pre-river regulation where the Marshes naturally grew or shrank in line with the seasons. Many of the tree deaths in the Marshes can be shown to have been caused by lengthy water inundation rather than water shortage.

It is this full gamut of issues that need to be addressed if there are to be real improvements in the health of the wetlands. The purchase of the property "Burrima" has provided a demonstration of how on-ground management can improve the effectiveness of the environmental water allowance without impacting on productive water use. We are of the belief that more of these adaptive, on-ground projects are required to help solve the many environmental and agricultural challenges we face. Further information is provided below.

Principle causes leading to the degradation of the Marshes

1.Overgrazing

It has long been recognised that grazing has had significant impact on these fragile ephemeral wetlands. Clear evidence of this can be seen by looking at the huge loss of reedbeds that occurred in the Southern marshes during a significant wet period and prior to Burrendong Dam being built.

- The following images come from a Thesis by Dayle Brander "Environmental Changes in the Southern Macquarie Marshes 1934 – 1987" One of her conclusions was loss of reed beds in the south was "most probably the result of burning and overgrazing. It is common practice for farmers to burn the reed in early spring to make room for the new shoots which are favourable for grazing by cattle. This is indicated by the straight lines where grazing has occurred up to a fence line. Once overgrazing has occurred the unpalatable chenopod species take over."

Summary of Pre-Dam Changes

1934

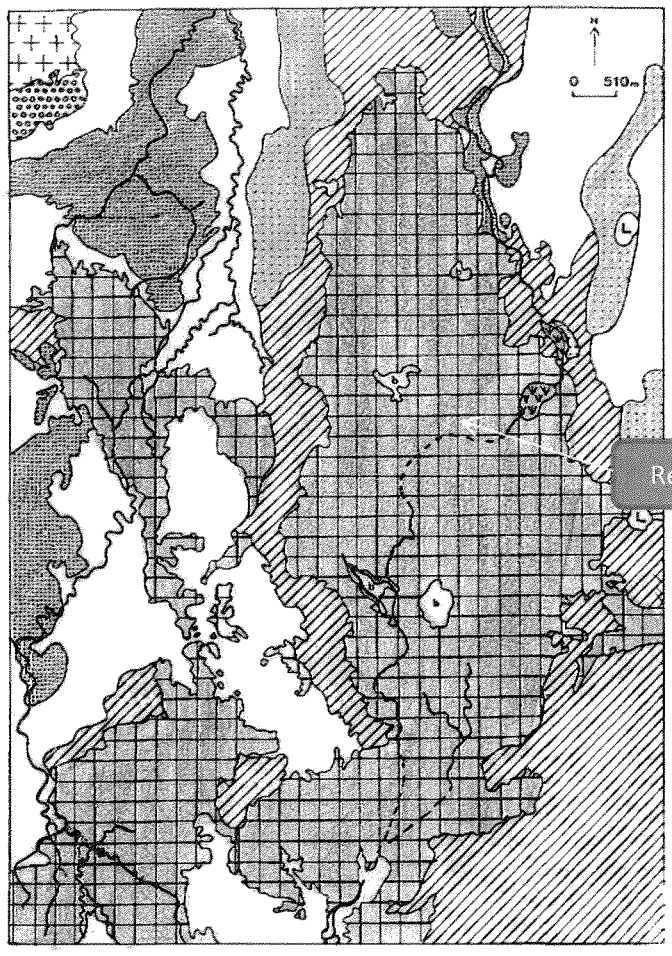
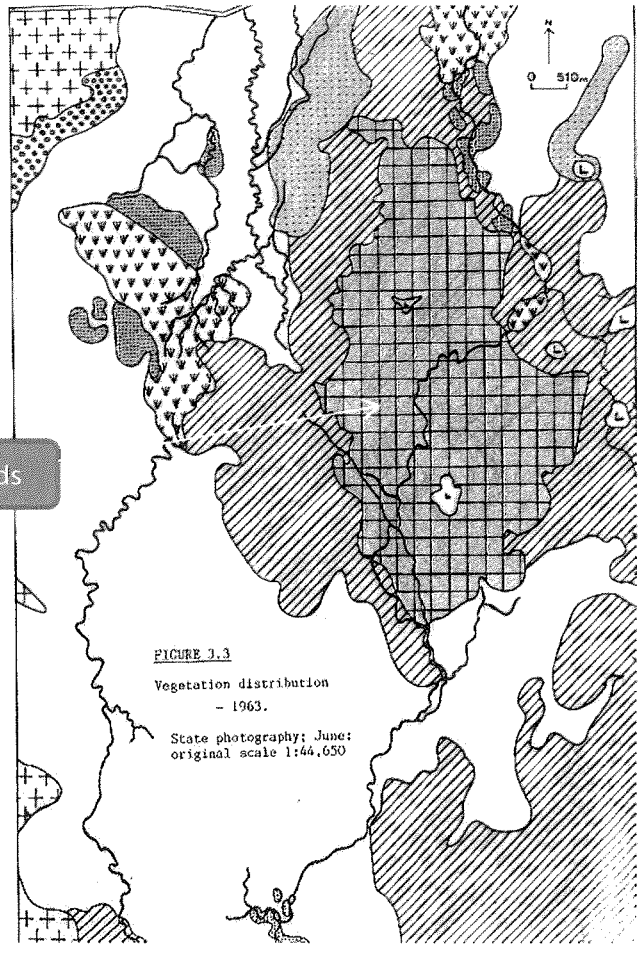


FIGURE 3.1 Vegetation distribution - 1934.
R.A.A.F. photography: March 1934; original scale 1:17,143

1963

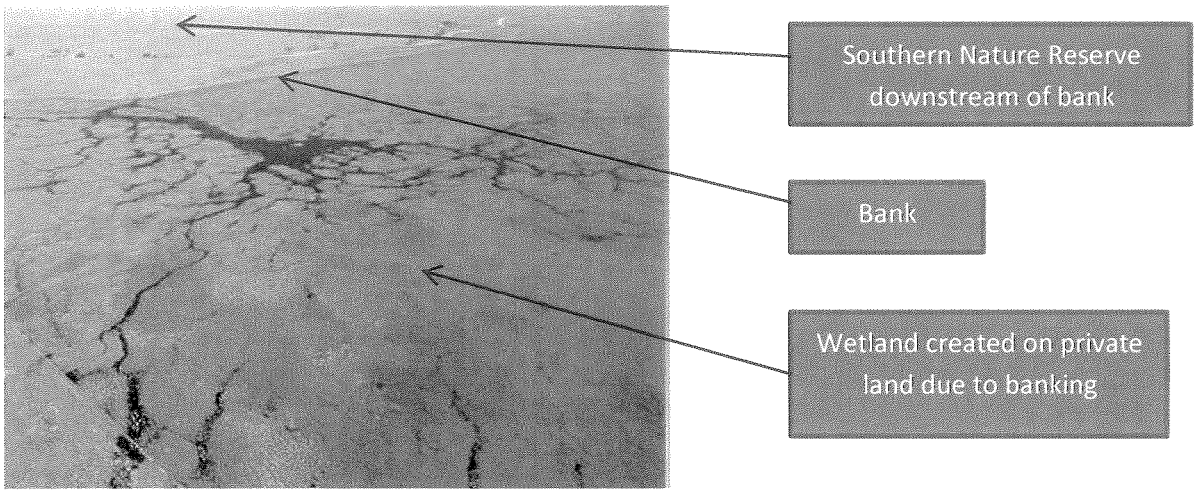


Reedbeds

A current day image of this process occurring was captured by Australian Geographic photographer Peter Solness (below). This image was taken in 2002 and shows the ungrazed Northern Nature Reserve on the right and private land heavily grazed on the left. One can see the loss of reedbeds and the beginning of channelization occurring.

2. Banks and diversion

Over the years many graziers have put in diversionary structures and banks to hold water on their land to create short term grazing benefits. This water all comes at the expense and competition of the core wetlands which in turn suffer through lack of water. The following image again comes from the Australian Geographic. It shows a large bank constructed upstream of the Southern Nature Reserve in 1984 which has led to the final demise of this iconic wetland following on from the severe loss of reedbeds from overgrazing.

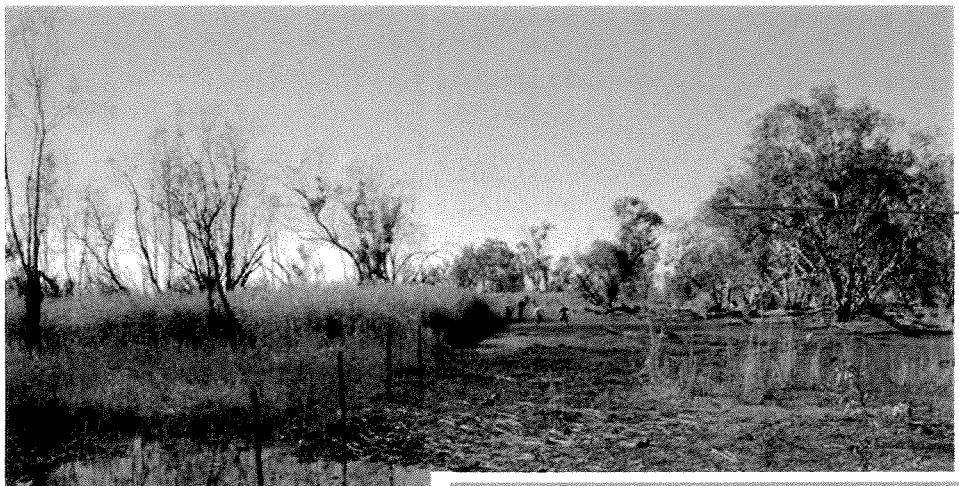


Solutions and Water Savings

There are two different levels at which water savings and efficiencies can be addressed that will lead to a much more resilient and productive marsh environment. The first level is delivery system and infrastructure efficiencies and secondly the on ground management of the Macquarie Marshes. We will deal with the latter first.

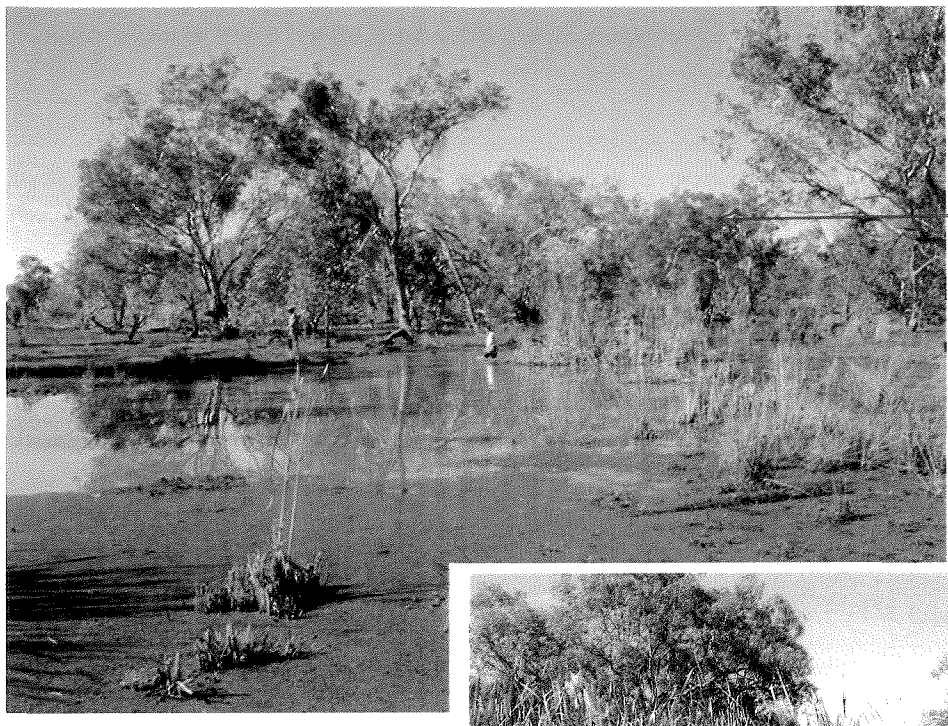
On Ground Management of the Marshes

Due to the long held belief that the marshes should not be in the condition they are solely due to water flows and based on the evidence of degradation prior to the construction of Burrendong Dam, a group of individuals formed "The Macquarie Marshes Environmental Trust". This group purchased a property called "Burrima" located adjacent to the Northern Nature Reserve. The goal was to set out and explore the on ground management issues facing the Marshes. The first thing that was done was the property was destocked. The effect on the reedbeds and understory was amazing. The following 2 picture sets taken at the same place show the changes without grazing over 3 years



2005

2008



2005

2008

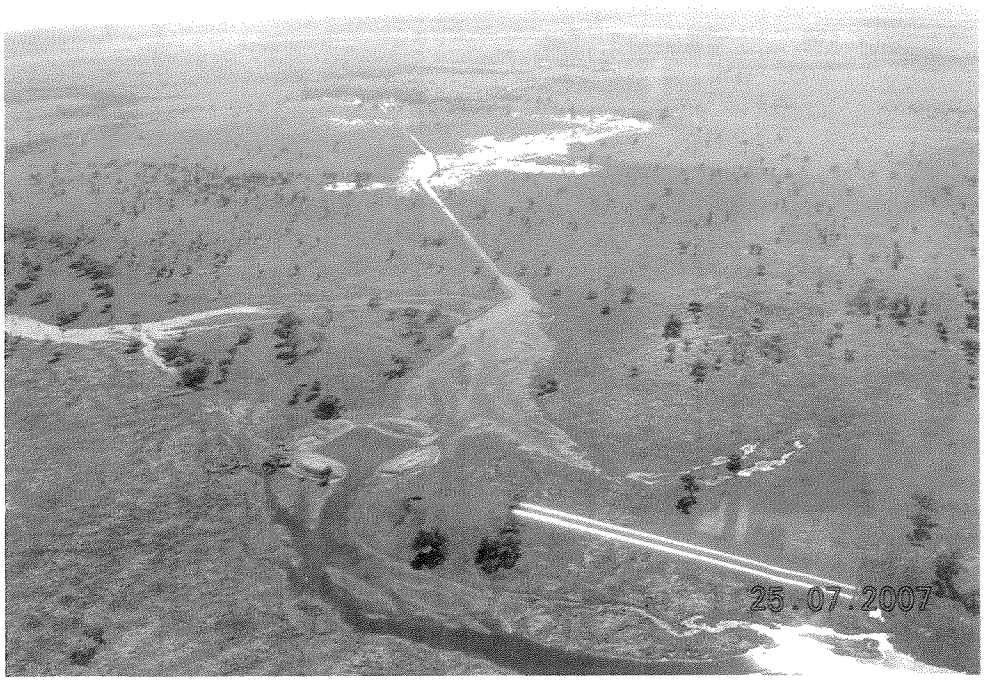
The huge benefit achieved with this change in vegetation cover was that water no longer rushed through the property but was slowed down by the vegetation causing it to spread out further and remain around a lot longer. Anecdotal evidence suggests following the revegetation of all the waterways and the understorey, it was taking only about one eighth of the water to wet the same area. **That is an eight fold increase in water efficiency** .

However we were not seeing the same changes even with destocking away from the wetland on what used to be grasslands on the property. We observed any grasses that did try and grow were quickly chewed off. We believed this damage to be caused by Kangaroos. To test this theory enclosures were built to exclude Kangaroos from within as their population has exploded in the wetlands of the Marshes. The results of this can be seen below.

The above picture was taken in 2009, 2 years after the enclosures were built. In the foreground can be seen the vegetation without protection from Kangaroos and within the enclosure the grassland that has developed. Unfortunately the publically owned Nature Reserves are plagued with the same problem as they cannot control Kangaroos.

Delivery of Environmental Water

The other major problem plaguing the Marshes is the issue of banks and diversions of water onto private lands for grazing as discussed earlier. The following picture shows another example of this.



The problem with this process is that this water was meant for the key wetlands of the system, many of them owned by the Government. You cannot divert water away from established wetlands to create new areas without compromising the original wetlands. In 2008 an extensive audit was carried out investigating many of these structures. During this process 119 structures were identified with 28 being illegal. To date we do not know how many have been removed however unfortunately we know many of them remain today. This process has not been transparent at all.

Conclusion to On Ground Management of the Marshes

From the above it can be seen there are serious issues that need to be addressed to efficiently use the water that does enter the Macquarie Marsh system. The degradation of the Marshes has progressively occurred ever since the Marshes were settled. History tells us that even with good management these wetlands are too fragile to be used commercially. We believe that strategic purchases of key wetlands from willing sellers and managed by an independent group such as Macquarie Marshes environmental Trust or Bush Heritage that have the ability to manage this area without the constraints that organisations such as DECC face is the answer to their long term sustainability. The other option is to purchase this land into theNature Conservation Trust's revolving fund.

Macquarie Marsh Ramsar Notification

As a final issue in this supplementary submission, MRFF would like to bring to the Committee's attention a letter by the then Department of Environment, Heritage, Water and the Arts (DEWHA) to the Ramsar Secretariat notifying of likely changes to the ecological character of the Macquarie Marshes Ramsar site since its listing in 1986. MRFF consider this letter to provide an inaccurate and unreasonable representation of the reasons for changes to the ecological condition of the marshes.

Whilst we recognise that the Macquarie Marshes have undergone significant ecological change over time, we argue that lack of water available to the marshes is not the primary cause of this change. It is correct that the South Marsh has been seriously degraded over many years and is now no longer a wetland. It is also true that the river redgum forests of the North Marsh have suffered throughout a decade of drought. However, we have serious concerns with the information presented by the then DEWHA in the 'Statement of Reasons' attached to the Ramsar notification. This Statement:

- attempts to ascribe the cause of the decline entirely to consumptive use of water upstream,
- makes a large number of claims that are unreferenced,
- completely ignores the role of a decade of drought and the impact of this on aquatic vegetation, and
- compares vegetation mapping from 1991 (following 3 consecutive years of flooding) with vegetation mapping from 2008 (following 8 consecutive years of drought).

Given the strong basis that both the *Water Act 2007* and the Basin Plan have in the international Ramsar Convention, MRFF believes that there are very serious implications if information in relation to Ramsar sites is inaccurate or misrepresented. MRFF would therefore urge the Committee to consider the more detailed critique of the DEWHA notice that we have attached as Appendix 1 to this submission.

Ends

Appendix 1.

Critique of the "Statement of Reasons" given by DEWHA for the "Likely Change in Ecological Character of the Macquarie Marshes Ramsar Site"

In July 2009 the Commonwealth Department of Environment, Water, Heritage and the Arts (DEWHA) wrote to the Ramsar Secretariat notifying of likely changes in the ecological character of the Macquarie Marshes Ramsar Site. This refers to changes since its listing as a Ramsar site in 1986.

It should be noted that "For the purposes of implementation of Article 3.2, change in ecological Character is ***the human-induced*** adverse alteration of ***any ecosystem component,*** process, and/or ecosystem benefit/service."

It is correct that the South Marsh has been seriously degraded over many years and is now no longer a wetland. It is also true that the rivergum forests of the North Marsh have suffered throughout a decade of drought.

However we have serious concern with the information presented by DEWHA in the STATEMENT OF REASONS.

In broad terms this Statement:

- attempts to ascribe the cause of the decline entirely to consumptive use of water upstream
- makes a large number of claims that are unreferenced
- completely ignores that the Marshes continued to be commercially grazed until 1990
- completely ignores the role of a decade of drought and the impact of this on aquatic vegetation
- compares vegetation mapping from 1991 (following 3 consecutive years of flooding) with vegetation mapping from 2008 (following 8 consecutive years of drought).

Dealing specifically with each of the points raised in the "Statement of Reasons":

Changes in flow regime

1. The referenced paper by Kingsford and Thomas (1995) compares water passing Dubbo gauge with water passing Oxley gauge downstream in two periods (1944-53 with 1984-93) to claim that water reaching Oxley gauge had declined from 51% to 21%. Some data from the earlier time period was omitted even though flow figures were available for the whole time period, thus distorting the result. NSW Government sources used in the development of the Macquarie-Cudgegong Water Sharing Plan directly contradict the Kingsford and Thomas (1995) findings and further point out that the Oxley gauge is not a correct measuring point for inflows to the Macquarie Marshes.
2. It is assumed the inundation mapping referred to in the Statement is that shown in the "Macquarie Marshes Adaptive Environmental Management Plan" on pages 42-43. Firstly it should be noted that this only looks at spring flood events so there may be data sets that are not included that could add to the story. Secondly one should be aware that the Marebone regulator was completed in 1979 and from that point on there was the ability to direct water to the east into the Gum Cowal/Terrigal system. Data from State Water shows the following water volumes diverted down the Gum Cowal system as a percentage of total environmental flows past Marebone:

    - 2002 – 12,200ML out 67,000ML = 18%
    - 2003 – 15,000ML out of 55,500ML = 27%

- 2005 – 23,000ML out of 120,00ML = 20%

These diversions are reflected in the inundation maps that show that the system to the east, and down through Long Plain Cowal, are wetter than in the first sequence (1979-1987). The diversion of water down the Gum Cowal/Terrigal system is a management decision that comes at the expense of the key Ramsar wetlands along the main-stem Macquarie system. It also does not attribute any of this decline to the extended drought sequence from 2000-2006.

3. This data needs to be referenced to better understand the conclusions.

Changes in extent and condition of wetland vegetation communities in the southern section of the Macquarie Marshes Nature Reserve (MMNR)

4. Again this information needs to be referenced so that data can be validated. However, it builds on the loss of reedbeds that occurred even before Burrendong dam was built.

   The following images come from a Thesis by Dayle Brander "Environmental Changes in the Southern Macquarie Marshes 1934 – 1987". These images show the huge loss of reedbeds that occurred pre-dam. One of Brander's conclusions was that the loss of reed beds in the south was "most probably the result of burning and overgrazing. It is common practice for farmers to burn the reed in early spring to make room for the new shoots which are favourable for grazing by cattle. This is indicated by the straight lines where grazing has occurred up to a fence line. Once overgrazing has occurred the unpalatable chenopod species take over."

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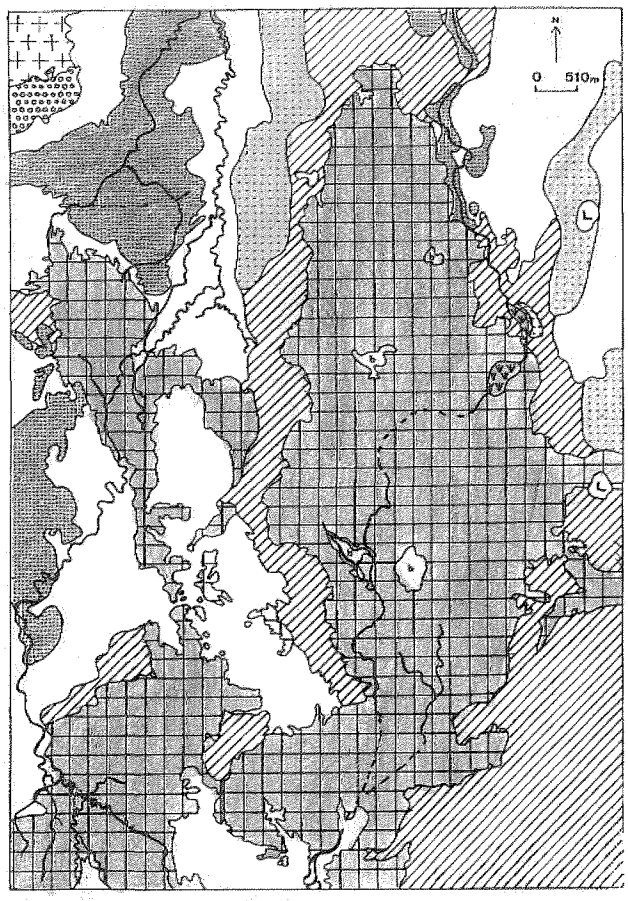

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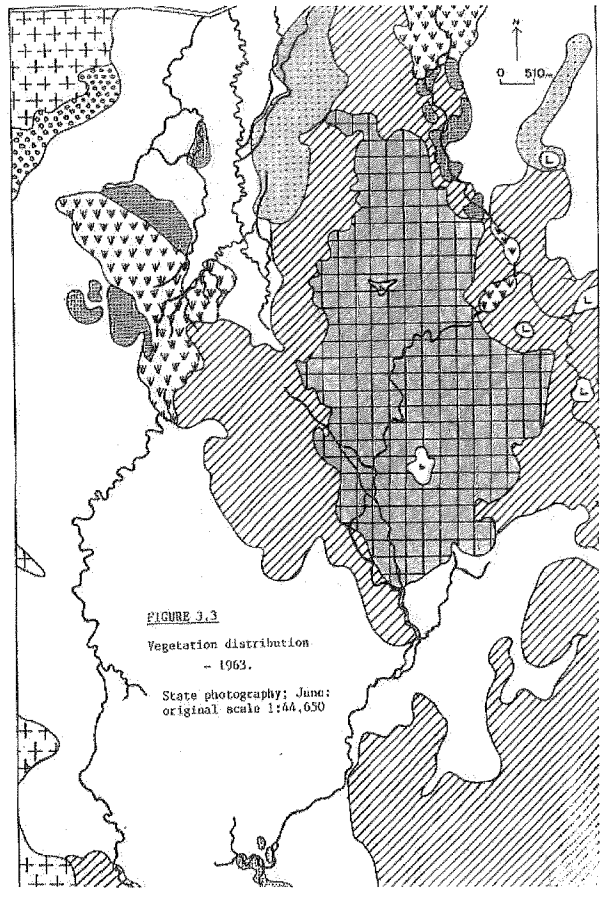
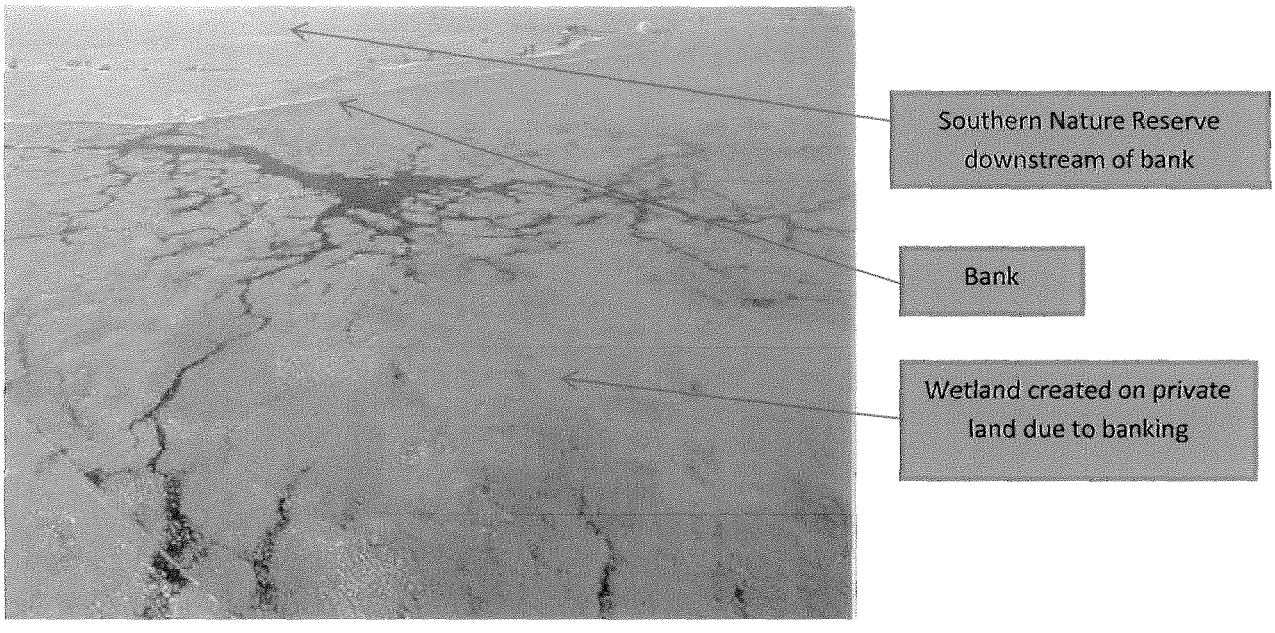


It must be remembered that grazing continued in the Ramsar Nature Reserves until 1990. Further adding to the problems of the southern marsh, a large bank was constructed upstream of the Nature Reserve in 1984 to reduce water flows into the wetlands to arrest the erosion that was occurring due to the cattle grazing. As can be seen in the following image taken from the Australian Geographic magazine, it was extremely effective in reducing water into these wetlands. None of this is considered in this notification despite it being human induced yet having nothing to do with river regulation.



5. This point builds on the same issues identified in point 4. Further to this, the last vegetation mapping was carried out in 2008, after seven years of record drought. Hardly surprising the areas of water couch has decreased.

6. This again totally relates to the issues raised in point 4 as it relates to the Southern Marsh. The overgrazing and resultant channelisation, construction of a bank upstream of the Ramsar wetland followed by a record drought can hardly be attributed to human induced changes due to river regulation as portrayed in this document.

Changes in extent and condition of wetland vegetation communities in the northern section of the Macquarie Marshes Nature Reserve (MMNR)

7. Again this point looks at wetland vegetation in 1991 (after 3 very wet years) and compares it to 2008 (after 7 years of drought) It is hardly surprising that there has been a reduction in health. Again there is no mention of the effect drought may have had on these communities.

8. Again we see the same comparison between 1991 and 2008 with the same lack of recognition of the effects of drought.

9. This point refers to the death of 30% of river gums being attributed to lack of flooding. Whilst this may indeed be correct, this work needs to be referenced to investigate further. Whilst lack of flooding may be implicated, one aspect that continually is neglected is salinity.

Preliminary investigations looking at the data coming from the Aerial borne Electromagnetic Survey conducted across the marshes has shown raised water tables associated with many of the affected river gum stands. In here it also makes the point that "since 2001 the Marshes have received less than 25% of their environmental water allocation." Over the same period, due to drought conditions, the irrigation community averaged only 12% of their allocation. Again the effects of drought have played a big part in this current condition. The statement "In 2008 it is ***likely*** that as much..." is hardly a scientific statement to be used in a document such as this. It should be based on scientific fact.

10. Once again we see the unbalanced comparisons made between 1991 and 2008. As drought is so dominant through this time phase the data merely reflects these conditions.

Changes in ecological character of Wilgara wetland

11. The changes documented here have the same drought impacts overlaid across them as discussed earlier however it is interesting to note the conditions here "has not progressed as far towards the dryland state as seen in other parts of the Marsh". This is hardly surprising when it is realised that since 1979 and the completion of Marebone Weir there was the ability to direct water into the Gum Cowal system as a management decision. The beneficiary of the water sent into this system is the Wilgara wetland hence it is not surprising that it is in better condition. In making this management decision an inevitable trade-off is involved, that is, this additional water comes at a cost to the established wetlands of the Macquarie system.

Changes in colonial waterbird breeding

12. It is difficult to understand the point that is being made here. It looks at a 15 year period for bird breeding and then compares it to the condition of the sites in 2008. It acknowledges the impact of grazing pressure on these sites as well as lack of water. Again 2008 was after 7 years of drought so hardly a surprise however not human induced.

13. This point describes many factors that "probably" led to these nesting sites being in poor condition, most of which are not human induced.

Reasons for decision

Based on the evidence DEWHA "was satisfied that human induced changes to the flow regime of the Macquarie Marshes as a result of river regulation are adverse to the ecological character of the Macquarie Marshes Ramsar site."

MRFF submit that based on the above facts and critique that this decision must be reviewed as all the data confirms we have been through a drought of epic proportions and that other human influences on the land management both in and around the Marshes have not investigated nor considered.