Submission No 105

INQUIRY INTO WATER AUGMENTATION

Organisation: Macquarie Marshes Environmental Landholders Association

Date received: 20 March 2017

Submission to MDBA proposed amendments to the Basin Plan

I object to the proposed amendments to the Basin Plan

GARRY HALL "The Mole" Warren 2824

My family and I live in the Macquarie Marshes. We own and run a 5000 ha beef cattle grazing business. My family have owned the property for 83 years and have witnessed firsthand the many changers that river regulation has caused to the marshes. Part of our property is Ramsar listed and as a private Ramsar manager I have a responsibility to notify the commonwealth government of any potential threats to the health of the Ramsar site. The proposed amendments are a threat to our Ramsar site and will cause irreversible damage to the biodiversity of the Ramsar site.

I also represent the local landholders on the Environmental Flows reference group as well as sit on the stake holder advisory panel consulting over the water resource plan for the Macquarie/Castlereagh. My family have been involved in water management for two generations and we have seen many plans come and go, never have we seen anything as ill prepared as the current proposed amendments.

I object to the proposed amendments

The following is a list of the contents of this submission.

Environment: The Macquarie Cudgegong water sharing plan was completed in 2004 and that saw the formation of the local environmental water advisory group. This is known locally as the Environmental Flows Reference Group (EFRG). The success of the EFRG in the Macquarie has been used to model other advisory groups. The template of the EFRG has been successful because it includes a broad cross section of community/stake holders and agencies.

I became a member of the EFRG in 2009 and have witnessed the evolution of state purchased water and then commonwealth purchased water. It is also of note that for the last three years (four meetings a year) members of the MDBA have attended these meetings.

The group's charter defines that we must reach a consensus. The fact that this happens in the majority of cases only strengthens the effectiveness of the group. A common issue that arises every year when doing the water plan is that there is not enough water to be able to satisfy all the demand areas be they Marshes, Creeks, Lower River, connectivity, fish, weir drown outs, etc……. The biggest challenge in delivering any environmental flows in the Macquarie is the fact that to get maximum inundation of the wetlands the water needs to be arriving in July/August/September before it gets to hot causing evaporation and channel growth that slows the spread. This is

in direct conflict with the demands of native fish (fish passage, movement and breeding). As the large bodied native fish require water temperature greater than 18 degrees. Each year the decision either impacts on the fish or the Marshes. To remove any water from the environment will make this decision harder, (the Macquarie has a cold water curtain in place). There are two facts to show that MDBA have failed: 1. that the MDBA staff who attended the EFRG meetings either did not forward on the information or the Northern Basin Review chose not to take notice of the MDBA staff who attended. 2. That the issue of inundation verses fish was not identified in the sight specific flow indicator (SFI) for the Macquarie.

The marshes are one of the three Ramsar sites in the northern basin and include the largest phragmites (Reed bed) site in the whole basin. The continuous drying of the area has meant that fires have become a larger part of fragile ecosystem. The repetition of these unmanaged fires has impacted on colonial bird breeding sites. The lowering of the end of system flows in the regulated section in the Macquarie has led to the environmental flows being less effective, this has been done by the NSW government and is one of the many things that should be investigated. The removal of any water from the environment will only make this worse. The fact that the model used to assess the flows at Marebone has been found to be not fit for its purpose will greatly impact on the marshes.

Site Flow Indicator: The site specific flow indicator for the Macquarie refers to it as being at Marebone break. The gauge that is used to measure environmental flows is at Marebone **not** the Marebone break gauge. This simple fact brings into question the credibility of the modelling used to claim the Macquarie has reached 4/4 of the flow indicators.

The MDBA were told that the timing on the lowest flow indicator (100gl over five months) was incorrect but they chose to ignore that advice. In Dubbo on the 15th of December 2016, Chris Pulkinen acknowledged that the MDBA had been told of this error. The flow indicator should read 100gl over three months. The failure of the lowest flow indicator brings the rest under question as only the 100/250gl indicators can be met from managed water. The other two (400gl and 700gl) can only be met by flood events. These have failed to be met in the observed data.

The 100gl and 250gl flow indicators are not being met by managed environmental flows as they are absorbed by Burrandong and Windamere Dams and redistributed to general security allocation. The failure to meet flow indicators in the observed data and the fact that the model says it is achieving the flow indicators must raise a flag to the MDBA. If the MDBA continue to ignore the failure in the model for their planning then this brings into question all the other flow indicators in the Northern Basin. Only reaching 22/43 flow indicators is completely unacceptable. The MDBA must immediately stop calling the Macquarie over recovered, review the flow indicators and talk to the environmental water managers who have some understanding of the issues facing the Macquarie.

MDBA staff and board members: It is unacceptable that misleading information was given by both Di Davidson and Phillip Glyde regarding the NBR. On Friday the 2nd December 2016 at Brewarrina, I commented to Di Davidson that things had changed quickly in the Macquarie after Susan Maddens appointment to the Authority. During a later public presentation at Langhorne creek in South Australia Di stated that the Authority had finalised the numbers in the Macquarie well before Susan's appointment. I was later to find out that Susan started her role with the MDBA in March 2016. This means that the MDBA was responsible for the numbers in the Macquarie and that the decision was made before the consultation meetings when we were all presented with the options. It was many months before the northern basin review was finalised. This is completely unacceptable and the MDBA have treated those that took the time to attend the engagement meetings as fools. When people are treated this way they understandably get very angry. This again brings into question the whole process and shows a complete lack of transparency. During the meeting in Warren on Wednesday 30th of November 2016, I asked why the SFI's in the Macquarie did not get reviewed. In a written reply form Phillip Glyde he said "analysis was completed in 2012 and we think that this combined with new research in surrounding reaches give us a good picture". I

was to later find out that the nearest site to the Macquarie SFI's that was reviewed was in fact on the Lower Balonne that has nothing to do with the Macquarie. This reply is misleading and deceptive.

Also at the Warren meeting Peta Derham (PJ) said she had consulted with Grant Buckley (Macquarie River Food and Fibre) to further understand some operational issues in the Macquarie regarding environmental flows. As the MDBA have two staff members who attend the EFRG (Alex Meehan and Simon Godschalx), Why did the MDBA ask MRFF for advice, why didn't the MDBA ask their own staff who they pay to attend the meetings to collect this information. This is a continuation of the MDBA working closely with the irrigators.

Contribution to the Barwon: At the engagement meeting in Warren on the 22nd of July 2016, I was told by the MDBA staff present that the Macquarie Castlereagh was less connected to the Barwon/Darling then other rivers in the Northern Basin. It was a surprise to me that in the Hydrological Modelling report that the Macquarie is in fact the largest contributor to the Barwon/Darling.

As the Macquarie is a winter fed catchment in the Northern Basin the Macquarie is a critical contributor to the Barwon. The townships of Brewarrina and Bourke rely on the clean Macquarie water arriving in the spring that has been filtered through the Marshes. Not only have the amendments failed on the Macquarie FSI the fact that the major contributor to the Barwon has only been identified as base flows brings into question the whole modelling process. This is possibly why the hydrological report was withheld by the MDBA only released just before the original submission date. It is my understanding that the irrigators had access to this document many months before (July 2016). This again shows a lack of transparency and a bias towards the irrigation industry.

When the marshes are wet and the area receives rainfall there is a huge catchment, the rain falling on the wet marsh lifts the flows at Bells Bridge and the flows entering the Barwon increase.

Cap Factors Reliability: The process of setting the conversion factor must be transparent. The proposed 12gl to be sold back to industry could mean that 60gl be removed from the environments account. Reliability has decreased as a result of water trade as less water is used by small growers and larger growers buy water on the temporary market. The plan to raise the conversion factor in the Macquarie will do much harm to the environment. The conversion factor must stay the same throughout the whole basin and be transparent.

Tool Kit Measures: The authority recommends the use of event base mechanisms to improve the use of environmental water. This idea shows a complete lack of understanding of how the current environmental water is managed and the challengers that environmental water managers are faced with. The assumption that water could be released many months out to provide connected flows to the Barwon is ridiculous and must not be allowed to happen. The idea of using water from irrigator's farm storages horrifies me, as a marsh landholder chemical contamination would be an unacceptable risk. My biosecurity would be compromised for my beef cattle breeding operation as well as the health status of our Ramsar site. The Northern Basin Advisory committee should hang their heads in shame for suggesting such a pathetic idea. This shows their complete lack of experience in managing environmental water.

Compensation: As water recovery started taking place in the Macquarie from 2009, much land has been bought and sold after that date. As a marketing tool the properties were sold advertising the fact that they received beneficial flooding thus increasing the income earning potential.

The basin plan was seen as a secure decision underpinned by the water act. The proposed amendments would mean that landholders who paid a premium for their land are likely to now receive little or no beneficial flooding. As we have been using inundation mapping in the Macquarie for many years to assist

in managing environmental flows, the same science could now be used to identify those areas that will no longer receive flows. This will open up the case for compensation directly as a result of the amendments, as the marsh landholders will now have a class action for compensation. When the buybacks started the water was purchased from willing sellers who received market value for their asset. Now if the amendments get through they can once again buy the water back. There is no equity in this situation and the environment and the marsh landholders are the net loser's. The amendments must not get through.

Flood plain harvest and supplementary access: In the information provided in the socio-economic study it appears that Warren was a community that was greatly impacted on during the buyback period. We were able to find that when all the employment data was studied, irrigation jobs and non-irrigation jobs in the Warren Shire fell at a similar rate.

All industries have become more mechanized during the life of the plan and will continue to become more efficient. If industry plant a full crop and the season is average it is possible that the 2017/2018 cotton crop in the Macquarie valley will be the largest amount of cotton ginned in the history of Warren. The NSW government issued flood plain harvesting entitlements and they continue to go unmetered. There is a 50gl cap on supplementary access water in the Macquarie and now this means nothing as it is just called flood plain harvesting. There continues to be cotton grown on farms that sold all there entitlement to the commonwealth using floodplain harvest licence rules so the idea of the Warren community being effected by water by backs are rubbish. The proposed amendments are designed to lessen the impacts on Warren and the Water Minister has stated he has a moral responsibility to protect this community. If cotton is continuing to be grown on areas that received compensation from the Commonwealth surely this needs investigation. The same community's receive large investment during the buyback period. The moral responsibility the government have should be to the river and all water dependent communities not just the large irrigation towns.

Protection of Environmental Flows: The NSW government has been failing in its compliance and the protection of environmental flows needs addressing. This should be taken over by the MDBA and be a criminal matter, like stock or property theft. Until police are involved in this matter there will be no effective compliance and environment water will be continued to be used to grow cotton.

Climate Change: There is increasing evidence of reduced rainfall and extended periods between flood events. The proposed amendments will reduce the Marshes ability to recover after droughts, this will compound with climate change. Many people are still undecided about long term climate change. The risk of doing nothing is unacceptable. The removal of any water from the environment would very likely impact on threatened species (nationally endangered), such as; Painted Snipe and Australian Bittern. Both birds have returned to the Marshes as a result of water buy backs. The amendments will most likely add to the demise of these birds that are already identifies as threatened.

The proposed amendments would impact on the people living in the Marshes and the small villages (Carinda and Quambone) that relay on having a healthy community. The amendments would be welcomed by the big cotton growers and come at the expense of graziers in and around the Marshes. There is currently less people living in and around the Marshes then at any time during human habitation of the continent as a result of over allocation of the water resource. The amendments would add to the decline in population and the Marshes depend on the people who live here to protect it.

Conclusion

After the water reform that has taken place in the Macquarie during the 80s and 90s I believed that we were in a position to work as a whole community to find solutions for managing a sustainable and resilient

landscape. The amendments have reignited the tensions between irrigators and the marsh landholders. The MDBA need to accept full responsibility for causing this tension, the failure of the proposed amendments to include suitable evidence of the need to change while creating social unrest and having an impact on many people's lives is a disgrace to all those involved. The whole process has been insulting to those involved who have gone to great lengths to treat MDBA staff with respect.

The management of a resource as critical as water needs to be above political influence and sadly this has not been the case for this process. The MDBA alliance with the irrigation industry has meant that only one side gets heard. I can only hope that at some stage in the future those involved in the process will realise the injustice they have caused to many people.

The poor consultation with the aboriginal community shows a complete lack of respect to people who managed this landscape in a sustainable way for thousands of years. While you claim that you had consultation with the aboriginal people these meetings were separate from the other engagement meetings and no one else ever knew what went on.

This all concludes that the MDBA should withdraw the proposed amendments and work with the whole community to better manage the limited natural resource.

The MDBA must withdraw the amendments and stay with the original 415 gl as a minimum.

MACQUARIE MARSHES ENVIRONMENTAL

LANDHOLDERS ASSOCIATION

SUBMISSION

TO THE

MURRAY DARLING BASIN AUTHORITY

NORTHERN BASIN REVIEW

Position:

The Macquarie Marshes Environmental Landholders Association cannot and does not support the Murray Darling Basin Authority's proposed amendments to the Northern Basin Plan.

Introduction :

The Macquarie Marshes Environmental Landholders Association (MMELA) was formed in 1995 when there was increasing pressure to further reduce water flows to the Macquarie Marshes. Its members are local landholders, many of whom are third and fourth generation landholders in the area, and all are dedicated to ensuring a healthy and productive marsh for future generations.

The aim of MMELA is:

The Macquarie Marshes Environmental Landholders Association (MMELA) aims to ensure the social, economic and environmental sustainability of the internationally recognised Macquarie Marshes.

The Macquarie Marshes is a large semi permanent, **flow through** wetland on the lower end of the Macquarie River in central western NSW. It covers an area of approximately 200,000ha of which 12% is a Nature Reserve managed by the NSW National Parks & Wildlife Service (NPWS). The remaining 88% is privately owned freehold land which supports an extensive agricultural industry. Much of the land has been held in families for generations and the property owners have an extraordinary knowledge and understanding of all aspects of the Marshes and its management.

The Macquarie Marshes Nature Reserve, "Wilgara" Wetland and U Block are listed on the Ramsar Convention of Wetlands of International Importance. The Nature Reserve is also listed on the Japan - Australia Migratory Bird Agreement (JAMBA) and the China - Australia Migratory Bird Agreement (CAMBA) along with several other agreements. It is the responsibility of the whole community, including State and Federal Governments, to ensure management of the wetland does not compromise values and/or obligations set out in the above mentioned agreements.

The Macquarie Marshes is unique both environmentally and economically. Research indicates it is the most important colonial nesting waterbird breeding site in Australia for species diversity and nesting density *(Kingsford and Thomas 1995).* The majority of the breeding colonies are situated on privately owned land where landholders have managed and protected them since settlement. The Marshes also support an extensive cattle grazing industry which is its main economic focus. Sustainable grazing is encouraged by MMELA and the majority of landholders are acutely aware of the environmental needs of the wetland and undertake congruent management practices.

Government policy and decision making relating to natural resource management has in the past had devastating impacts on the Marshes, particularly water management, which has severely reduced water flows through river regulation and other such legislation. The proposed amendments contained in the Murray Darling Basin Authority's (MDBA) Northern Basin Review is another example of a proposal that will have devastating impacts on the internationally recognised Macquarie Marshes and its community.

When Burrendong Dam was completed and irrigation was established throughout the Macquarie Valley scientific research showed flows to the internationally recognised Macquarie Marshes were greatly decreased. MMELA brought this to the attention of many governments and fought for water to be recovered for this diverse and unique wetland and its associated floodplain. As a result both the NSW and Federal Governments introduced 'buy back' programs and improved efficiency schemes in an effort to halt the ongoing destruction of the Macquarie Marshes. It must be remembered that these programs only returned a small portion of the water originally taken from the Macquarie Marshes and the landholders who depend on its health and vitality to make their living. Now for the MDBA to propose taking water from the Marshes and its community again, with no evidence, merely assumptions, to prove allegations of over recovery, is extremely irresponsible and indefensible. It is obvious to MMELA that floodplain graziers and other sectors of the community are expected to

continue subsidising the irrigation industry as they have in the past, and it seems, will do so for the foreseeable future.
MMELA objects strongly to the MDBA's proposed amendments to the Northern Basin plan and any reduction in any of the environmental water accounts (Planned Environmental Water, NSW Government Water Account and the Commonwealth Environmental Water Account) for the Macquarie Castlereagh system.

Consultation Process:

MMELA does not believe the consultation process regarding the proposed amendments has been adequate, equitable or fair. The time taken for the Hydrogical Modelling Report to be made available to all relevant parties was unacceptable. No one could be expected to prepare a detailed submission when they do not have all the pertinent information. Admittedly the report was finally made public, however it is so convoluted you would need a degree in hydrology to decipher it. The MDBA should have made this report public prior to its community engagement meetings held throughout the Northern Basin so it could be explained and those present could have any questions answered. As it is, there is no time to properly analyse and question the Hydrological Modelling Report.
It has also come to MMELA's attention, through reviewing information gained under the Freedom of Information (FOI) Act and passed on to MMELA, that the irrigation industry had access to this crucial report in July 2016. This information also states that the MDBA has consulted and negotiated almost exclusively with the irrigation industry, or 'super users' as they refer to them. This emphasises the MDBA's backing of one group of stakeholders (this also being the smallest stakeholder group) at the expenses of all others. MMELA cannot understand why the MDBA would operate this way when the environment is the largest licence holder on the Macquarie. At no time did senior staff of the MDBA make an official visit to the Macquarie Marshes to speak with graziers and again this is very disappointing considering it is an internationally recognised wetland for which the Government has specific obligations and responsibilities. The Marshes are also one of the key environmental assets within the Basin. The entire consultation process has been inequitable, inadequate and insulting to many involved in this process.

Floodplain Graziers:

It is extremely concerning to MMELA that throughout this entire process there has been no recognition of the dependence floodplain graziers have on healthy and functioning wetlands and floodplains. They are not acknowledged as legitimate water users regardless of the fact that they are not extractive users, and do not remove water from the system. They are however totally reliant on flows through the system which promote pasture growth and supply stock and domestic water for use on their properties. There has been no assessment (social or economic) of the impacts of taking water from floodplain graziers in the Macquarie Marshes area. It must be assumed the MDBA does not believe or understand the dependence of floodplain graziers on healthy functioning wetlands and floodplains for their livelihoods. They are dependent on all size of flows from the smallest in channel flows to the large and uncontrolled floods. All flows play a different but essential role in the ecology of the Macquarie Marshes. To reduce any of these in size or frequency will have negative impacts to production and the environment. MMELA has seen the report compiled by the MDBA on floodplain graziers on the Lower Balonne Floodplain. This report cannot simply be overlaid on the Macquarie as a means of assessing grazing outcomes. The land and water flows in the Macquarie system are vastly different to those on the Lower Balonne and as such a separate study needs to be conducted for Macquarie floodplain graziers. Please see Appendix 1 for grazing information related to the Macquarie Marshes.
When water was taken in the past (Burrendong Dam was completed) and irrigation licences were sold there was no compensation for the loss of that water for floodplain graziers. Again it seems they are to have water 'taken' from them and again, with no compensation. They

have been expected, and made to, absorb the resultant losses of production. They have all paid a premium for their land as it historically had regular flooding to ensure pasture growth, particularly at times when the local area was experiencing dry times. Floodplain graziers are one of the only groups in agriculture who are treated in such a discriminatory manner when government decisions and policies directly reduce their earning capacity.

When research indicated the Macquarie was over allocated and the recovery programs began water was only recovered from irrigators **willing** to sell and at full market value. There was no 'taking' water from them. In fact at one point when the irrigation industry did not want the Government in the water market and an embargo was placed on the NSW Government buying licences, a group of irrigators in the Macquarie took up a class action against the embargo as they wanted to sell their licences and were happy to sell to any buyer including the Government. Now it seems some have decided they want the water back but do not want to pay for it. As the old saying goes "you cannot have your cake and eat it to".

There has been no social or economic study completed by any government or government agency to properly assess the impact of these proposed amendments on the landholders in the Macquarie Marshes. There seem to be a number of 'assumptions' made throughout all of the documents detailing the amendments and this is totally unacceptable to MMELA and its members. These are real people and real livelihoods and 'assumptions' are just not acceptable. We need real and robust data so we can have some trust in any predicted impacts and so we can confidently assess if they are economically and environmentally justified. Assumptions are simply unacceptable. Floodplain graziers are tired of being treated as second class citizens and being expected to continually prop up the irrigation industry.

Environment:

As you are aware the internationally recognised Macquarie Marshes is situated between Warren and Carinda. The Macquarie Marshes is unique both environmentally and economically. Research indicates it is the most important colonial nesting waterbird breeding site in Australia for species diversity and nesting density *(Kingsford and Thomas 1995)*. The majority of the breeding colonies are situated on privately owned land where landholders have looked after and protected them since settlement. The Macquarie Marshes Nature Reserve, "Wilgara" Wetland and U Block are listed on the Ramsar Convention of Wetlands of International Importance. The Nature Reserve is also listed on the Japan - Australia Migratory Bird Agreement (JAMBA) and the China - Australia Migratory Bird Agreement (CAMBA) along with several other agreements. It is the responsibility of the whole community, including State and Federal Governments to ensure management of the wetland does not compromise values set out in the above mentioned agreements.

Continued water flows are the lifeblood of this unique wetland and its associated floodplain and any decrease in these flows without proper research and assessment could compromise the integrity of this vibrant area.

In the supporting documents the MDBA states that all four (4) environmental outcomes or specific flow indicators were met when modelling environmental outcomes, in fact in reality none of the indicators were met in the observed data. Again, this highlights the dangers of working with 'assumptions'.

The NSW Government states in its Northern Basin Review Synopsis (November 2016) that it considers assumptions underpinning the Tool Kit as being 'not fit for purpose' and 'both unrealistic and unachievable'. MMELA supports this view. Given that the NSW Government will be responsible for implementing these measures, this position destroys the Tool Kit's credibility and usefulness.

Stakeholders in the Macquarie valley have been at the forefront of environmental flow management as there has been an Environmental Water Account of some sort managed in the Macquarie since 1967 when 15,000 acre feet (18,500ML) was set aside to be used for the health of the Macquarie Marshes. This was put in place when Burrendong Dam was completed and the government of the day accepted there would be reduced water flows the Macquarie Marshes. MMELA cannot understand why the MDBA did not seek advice and

information from the environmental managers in the Macquarie instead of taking advice from other groups, in particular Macquarie River Food and Fibre, resulting in incorrect assumptions being made about the success or otherwise of environmental management water in this valley.
One of the biggest threats to the ecology of the Macquarie Marshes is the reduced frequency of large floods as it is only on these large floods that the colonial nesting waterbirds breed. These key species such as egrets and ibis are not long lived birds, 7 to 8 years. Where they previously nested in the marshes in hundreds of thousands every two to three years, we are lucky to see them breed every 6 to 8 years, numbers are declining and will continue to do so until we have no birds left to breed. One breeding event in a bird's lifetime is not enough to ensure these species' survival. Even worse, if we accept the MDBA's 114 year model it predicts periods of "NON BREEDING" greater than bird life expectancies. This is government sanctioned extinction of many fauna species.
Reduced water availability will place constraints on flows for habitat maintenance at crucial times such as extended dry periods as experienced in the 2002/2009 drought. The ability to provide even small in channel flows in times of drought are vital for vegetation health and wildlife survival.

Cap Factors:

The MDBA's proposed amendments suggest a reduction in recovered water of 12GL on the Macquarie, however depending on what Cap Factor or Conversion Factor is used, this will be anywhere from 29GL to 60GL. This is totally unacceptable to MMELA.
How conversions are determined has been a concern for stakeholders on the Macquarie since 1980, when licences were converted from area based licences to volumetric based licences. At this time all valleys in NSW were converted at a factor 6ML/ha, however the Macquarie irrigators convinced the government of the day to allow them to convert at 8ML/ha *(WJ Johnson 2005)*. As a consequence the NSW Water Resources Commission in 1981 admitted that the regulated flow in the Macquarie was 'overcommitted.' Since 1981 commitments in the Macquarie River have doubled casting doubt on Macquarie River Food and Fibre's claim that the conversion factor in the Macquarie is 53%. This allocation of water has been over generous and has never been properly addressed. It is particularly galling to hear the recent demands from Macquarie irrigators for water to be 'returned.'.
Conversions have a long and murky history in the Macquarie. The current debate about Conversion Factors is confusing and secretive, excluding many stakeholders who are materially affected by such decisions. MMELA remains fearful that allocations can be manipulated to favour any one group of water users over others. The entire process needs to be simplified and made clearer so all water users can have confidence in the numbers.
MMELA presumes the approach to calculations of Cap Factors used for determining licence volumes in the Northern Basin will also be used in the same way in the Southern Basin. If not then this again becomes an equity issue.
Another concern of MMELA's is who will have responsibility for calculating and negotiating Cap Factors, particularly should the proposed amendments not be approved. It is the opinion of this organisation that the role of setting Cap Factors should rest with the MDBA to ensure fairness across state boundaries and throughout the Basin.

Flow Assessment:

Using averages to assess, model or guess river flows in the Northern Basin (NB) has always been fraught with dangers. Because the NB, including the Macquarie, historically experiences such variation in flows from large floods to prolonged low flows to no flow, it is impossible to rely on averages to model flows with any degree of accuracy.
The Macquarie also has a responsibility to supply flows to the Barwon Darling system. Including supplementing the town water supplies for Brewarrina, Bourke and Wilcannia. Bourke Shire Council has acknowledged that when water from the Macquarie arrives at Bourke the cost of filtration of the town water supply is greatly reduced. This is a result of the natural filtration as water flows through the Macquarie Marshes' vast phragmities reed beds

and other aquatic vegetation. Historically the Macquarie was the largest contributor to the Barwon Darling however flows reaching Brewarrina and Bourke have significantly reduced since the advent of river regulation. This is according to the MDBA's Hydrological Modelling Report. Any additional reduction to Environmental Water Accounts will further compromise the Macquarie's ability to achieve its obligations to downstream systems.
Documents received by MMELA question the concept of Specific Flow Indicators (SFIs) and their usefulness in assessing environmental outcomes, particularly in the unregulated north. They also suggest that SFIs are not fit for purpose in the NB and given much of the lower Macquarie is unregulated the use and effectiveness of SFIs here must be questioned. It is also unclear how the hydrological modelling is linked to SFIs.

Inaccuracies in the Review:

The inaccuracies in both the *Environmental Outcomes of the Northern Basin Review* and *The Northern Basin Review* are shocking and indefensible for an organisation such as the MDBA.

1. When talking about flows in the Macquarie and the amount of environmental water flowing to the Macquarie Marshes and downstream the documents state water is measured at Marebone Break. This is not where environmental water is measured. It is measured at the gauge upstream of Marebone Weir not the gauge on Marebone Break. They are two completely different and separate gauges.
2. When modelling environmental outcomes (or SFIs) for the Macquarie the model assumes all four (4) outcomes are met under all flow scenarios. In fact none have been observed to be met in the field. They all failed under actual observations. This should mean that all the modelled data is corrupted.
3. Page 63, Table 12 states 100GL volume "over 5 successive months", June to April was reached 80 -85 per cent of years. This should read "over 3 successive months". This error was pointed out to MDBA staff when draft documents were released but the figures were not rectified in the final report. This is just another example of how inaccurate and misleading data has been used to justify taking water from other users and the community.
4. Connectivity for native fish was also modelled as being met and again fails real observations. There are a number factors impacting on fish connectivity including flow release times, temperature pollution and flow rates. To think these issues can be addressed using the proposed Tool Box strategies in extremely naive.
5. When comparing the impacts of water recovery on local communities the documents state Coonabarabran is not affected as much as Warren because it is closer to Dubbo than Warren. Coonabarabran is 160KM from Dubbo and Warren is 125KM from Dubbo. How can anyone have any degree of confidence in the data supplied by the MDBA when it contains such rudimentary mistakes?
6. Coonamble which is on the Castlereagh and has approximately one quarter of the Macquarie Marshes within its shire boundary was completely left out of the assessment process. Again this shows ignorance by the MDBA as the proposed amendments will have a direct impact on the Coonamble Shire Council and its rate payers through reduced productivity and reduced water flows for tourism.

<u>Warren Employment Figures:</u>

Information provided to MMELA relating to employment figures for the Warren Shire (Please see Appendix 2 employment data) indicates the NSW and Federal Governments' recovery programs have had little, if any, impact on irrigation farm employment for this area.
The figures show that while there was a small decrease from the date of the announcement of the Federal Government Recovery Program, 18th August 2006, numbers have now increased. There were 57 employed in 2006, this has increased to 63 employed in 2012. There are no figures available to MMELA from 2012 on. Ginning jobs went from 7 in 2006 to 34 in 2012. At the same time non irrigation farm jobs fell from 293 in 2006 to 254 in 2012.

This information was given to the MDBA and irrigation groups throughout the Northern Basin, including Macquarie River Food and Fibre (MRFF) on 4th September 2016.
Is MMELA therefore to assume the media blitz blaming water recovery for jobs losses is nothing more than a propaganda campaign and an easy out for councils who do not want to work to address the issue of job losses in their shires.

Other Influencing Factors:

Supplementary Access and Floodplain Harvesting are two factors that greatly impact downstream water users and until these are looked at in more depth MMELA cannot even entertain any reduction in current environmental water accounts.

FLOODPLAIN HARVESTING -

The whole concept of Floodplain Harvesting beggars belief. How can a Government allow one group of water users to take water (even under licence) when it has absolutely no capacity to measure or even assess the amount of water being taken. It does not know the impact on downstream users and communities. It does not know the impact on the ecology of the rivers, wetlands floodplains, and it does not know the impact on the internationally recognised Macquarie Marshes. One could even go a step further and assume it does not care. Until there is accurate metering of floodplain harvesting licences and meticulous monitoring when water is being taken, there can be no consideration of reducing environmental water accounts.

SUPPLEMENTARY ACCESS -

Supplementary Access licenses also impact the wetlands, floodplains and effluent creeks of the Macquarie. The original intent of providing Supplementary Water Access Licences was to grant opportunistic access to water in times of 'plenty' and when there would be no adverse impact on the environment or downstream users and communities. However access to water under these licences is now being granted every time the trigger point is reached regardless of the environmental health of the river, creeks and in particular the Macquarie Marshes.
Tributary flows and Dam spills are the life blood of the effluent creeks and the lower Macquarie system. By allowing access every time the 5,000ML per day at Warren trigger occurs you severely impact these areas, as this is the height most effluent creeks begin to flow. The creeks just start to flow then supplementary access is announced and the flow in the river retracts thus dropping levels and stopping flows to these creeks and the lower river.
One measure the MDBA should be looking at is lifting the Supplementary Access trigger for the health of the effluent creeks and the lower Macquarie River.

IMPROVEMENTS TO TECHNOLOGY -

During the years since water recovery programs were introduced there have been enormous advances in technology for farmers. These include, self steer technology for tractors, automatic weed sprayers such as 'Weed Seeker', cotton pickers that bale as they go and computerised irrigation systems. All of these innovations have resulted in less jobs on irrigation farms. How has the use of this new technology been considered in the process of determining the so called impacts of water recovery on farms and communities or in the socio economic assessments?

LAND REMAINS IN PRODUCTION -

Another issue that has not been mentioned during all the debate around water recovery is the fact that when willing irrigators sold their water licences, at full market value, (whether it be to the government or another buyer in the market) they still retained the land. This land is still being used for primary production. It was not removed in any way. The respective landholders continue to use it for either livestock production or dry land farming so there is still a monetary return from that piece of land. Selling the irrigation licences did not remove the land's ability to produce.

In many cases irrigators who sold licences remain on their properties and the very large sums they received from those licences came back to the local area. Whether or not these people choose to spend that money in their local community is another matter, but cannot be considered a negative against the concept of water recovery.

EFFICIENCY PROGRAMS -

An anomaly that needs addressing is the so called Water Efficiency Programs for irrigators. These are 100% taxpayer subsidised. It appears irrigators have become totally reliant on government subsidies every time they experience a hardship, big or small. The protection afforded this group astounds all other agricultural industries. Rarely have other farmers experienced such generosity and this includes programs such as the Great Artesian Basin Cap and Pipe Scheme. This scheme while generous never covered 100% of all costs.

Other Key Points:

- The MDBA has been negligent in pursuing such a discriminatory proposal. To consider taking water from highly dependent users where impacts will be extremely detrimental and giving it to another group of users who will gain very little is incomprehensible. Also the consultation has been biased and inequitable favouring the irrigation industry to the detriment of other agricultural and non agricultural stakeholders. This has incited splits within communities and is pitting various agricultural industries against each other. For the MDBA to be party to such community unrest is unacceptable. If all stakeholders had been treated equally and fairly communities would not be so fractured.
- There has been no recognition or acknowledgement of floodplain graziers as affected water users and no attempt to gauge the impact of reduced flows on floodplain graziers. Therefore no hint of compensation for the decline in production should these amendments be accepted.
- The MDBA has proposed these amendments without any scientific justification. This includes both environmental research and/or rigorous social and economic studies that include all dependent water users.
- The MDBA must remember that water is the key ecological driver in all wetlands and floodplains. It is foolish and reckless to think you can reduce water availability and not have negative impacts.
- MMELA can, under no circumstances, support a reduction of recovered water to 320GL. The only number this organisation would support is a recovery target of 415GL or greater!

- ***The Macquarie Marshes Environmental Landholders Association cannot and does not support the Murray Darling Basin Authority's proposed amendments to the Northern Basin Plan.***

Prepared by
Macquarie Marshes Environmental Landholders Association

For further information contact:

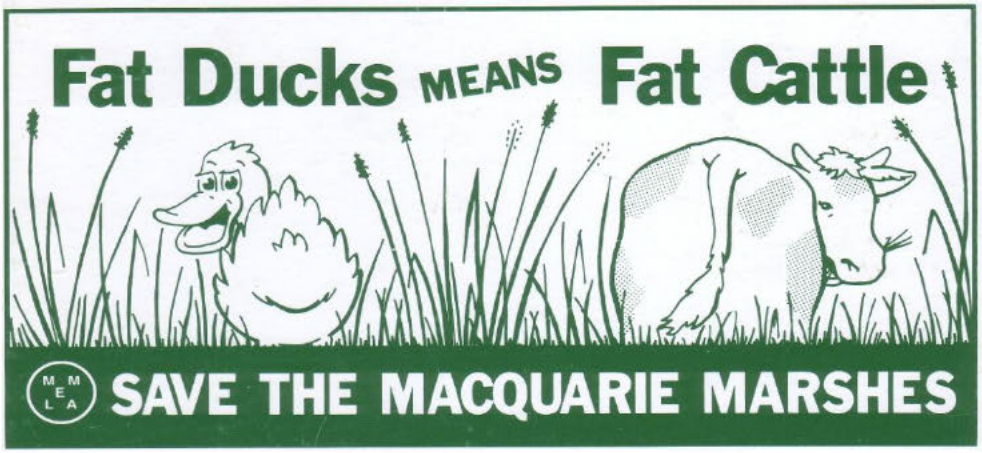
Garry Hall
Chairman MMELA

Appendix 1

MACQUARIE MARSHES ENVIRONMENTAL LANDHOLDERS ASSOCIATION

Beef Productivity of the Macquarie Marshes

Photo courtesy of Donna Veech

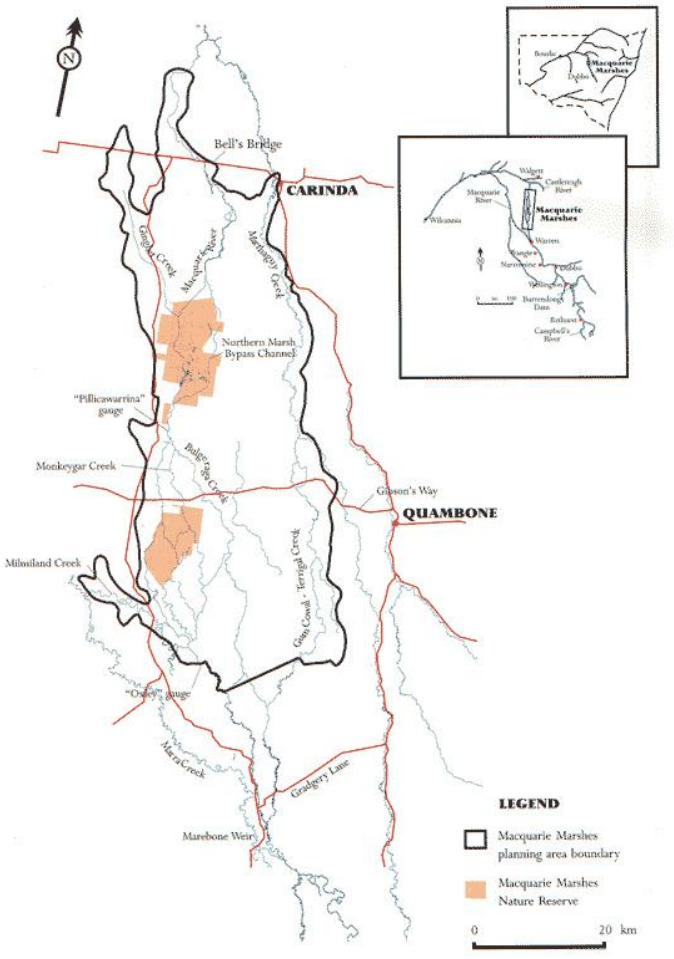


INTRODUCTION

The Macquarie Marshes is a large semi permanent, flow through wetland on the lower end of the Macquarie River in central west NSW. It covers an area of approximately 200,000ha of which 12% is a Nature Reserve managed by the NSW National Parks & Wildlife Service (NPWS). The remaining 88% is privately owned freehold land that supports an extensive agricultural industry, predominantly beef cattle production. Much of this land has been held in families for several generations and the property owners have an extraordinary knowledge and understanding of all aspects of the Macquarie Marshes.

The Macquarie Marshes were first settled in the 1830s and have reliably and sustainably supported beef cattle production from then until the Macquarie River was heavily regulated in the 1970s. Following regulation the beef cattle industry continues to be part of the Macquarie Marshes but landholders no longer have the security of reliability that they had prior to regulation of the river.

The Macquarie Marshes is unique both environmentally and economically. Research indicates it is the most important colonial nesting waterbird breeding site in Australia for species diversity and nesting density (Kingford & Auld 2000). The majority of the colonies are situated on privately owned land where landholders have looked after and protected them since settlement. The Marshes also support an extensive cattle grazing industry which is its main economic focus. Sustainable grazing is encouraged by the Macquarie Marshes Environmental Landholders Association (MMELA) and the majority of landholders are acutely aware of the environmental needs of the wetland and undertake appropriate management to ensure environmental assets are not compromised while undertaking sustainable beef production.



The Macquarie Marshes Nature Reserve, U Block and "Wilgara" Wetland are listed on the Ramsar Convention of Wetlands of International Importance. The Nature Reserve is also listed on the Japan - Australia Migratory Bird Agreement (JAMBA) and the China - Australia Migratory Bird Agreement (CAMBA). It is the responsibility of the whole community, including State and Federal Governments and the local community to ensure management of the wetland does not comprise values set out in the above mentioned agreements.

It is an accepted fact that the wetland and floodplain areas of the Macquarie Marshes do not respond as well to rain as the land outside the Marsh area. The majority of the vegetation species of the Macquarie Marshes are reliant on periodic flooding to thrive and provide both fodder for cattle and feed, shelter and habitat for native flora and fauna. If you take away vital flood water you vastly reduce plants' vigour and resilience and average or below average rainfall does not provide the nutrients or the inundation duration needed by these plants to flourish.

FLOODING

Extract from *Jenkins, K.M., Asmus, M., Ryder, D., and Wolfenden, B.J. 2004. Fish and macroinvertebrate communities in the Macquarie Marshes in the winter and spring of 2003*

"Under natural flow conditions the Macquarie Marshes was a renowned waterbird habitat and considered one of the most important drought refuges for waterbirds in NSW (papers referred to in Kingsford and Thomas 1995 from 1954, 1957, etc). During floods the floodplain and creeks were thick with aquatic macrophytes, such that it was impossible to use an outboard motor (Landholder anecdotal records and photographs). The Macquarie Marshes contained 42,448 ha of river red gum woodland and forest in 1949, one of the most extensive stands in Australia (Kidson *et al.* 2000a, b). The extremely high productivity of the Macquarie Marshes, as expressed by waterbirds, macrophytes and river red gum, is likely linked to the high frequency of flooding. For example, floods were predicted to occur naturally every 1.07 years in floodplain habitats with river red gum forests (ie. green zone), every 1.44 years in floodplain habitats with river red gum woodland (ie. yellow zone) and every 1.8 years in coolibah floodplain (ie. red zone) (Table 1, Brereton *et al.* 2000). The main channels that dissected the floodplain, (Macquarie River, Monkeygar Creek and Bulgeraga Creek) received small floods at least once a year and were seldom dry (MMMC landholder records 2004).

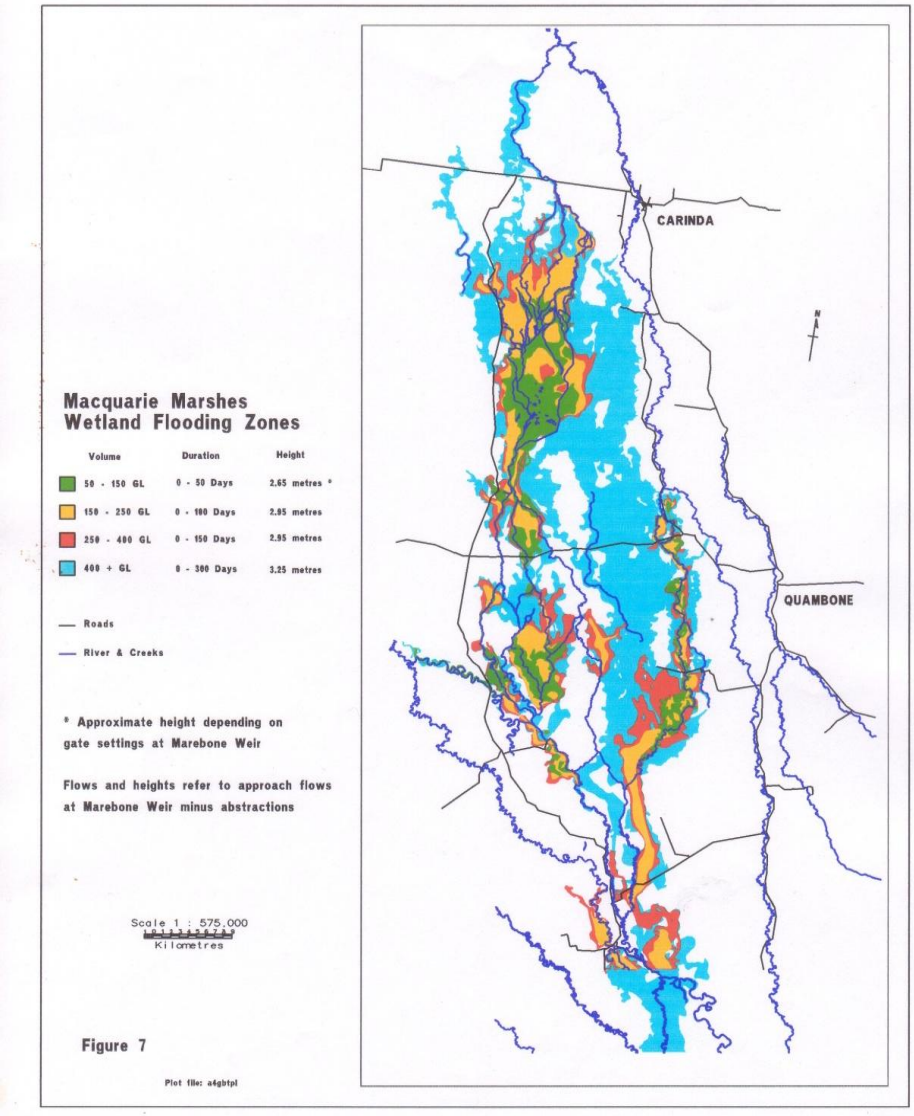


Table 1. Vegetation type and flood frequency in 5 flood zones described for the Macquarie Marshes under modelled natural flow conditions (Brereton *et al*. 2000).

Flood zones	Vegetation type in flood zones	Natural flood frequency
Purple	phragmites, cumbungi, water couch, mixed marsh	Every 1.00 years
Green	phragmites, cumbungi, water couch, mixed marsh and river red gum forests	Every 1.07 years
Yellow	The above plus river red gum woodlands, river red gum associations and ephemeral grasslands	Every 1.43 years
Red	The above plus river red gum association, lignum, coolibah, ephemeral grasslands and some black box	Every 1.80 years
Blue	The above plus drier coolibah and black box areas, myall, belah and ephemeral grassland areas	Every 2.50 years

Knowledge of the impacts of regulation on the natural water regime of the Macquarie Marshes relies on links between river flow (modelled or actual) and flood extent mapped from Landsat imagery (Kingsford and Thomas 1995). This is similar to most floodplain wetlands in Australia, due to the lack of water gauging stations (flow or height) located within wetlands. In contrast, in the Macquarie River there are a number of gauges dating back to 1944 and changes in water regime are well documented. Two studies on the impacts of river regulation on the Macquarie Marshes, provided insight into different aspects of water regime. Brereton *et al.* (2000) used modelled IQQM data and Landsat imagery of flood extent to compare flood frequencies in 5 flood zones under natural (Table 1) versus regulated flows (1986 and 1996 Water Management Plans). The modelling approach highlighted that the Marshes is composed of a mosaic of floodplain with differing water regimes. It identified two critical changes to water regime in the Macquarie Marshes due to regulation, firstly the reduction in flood frequency particularly of smaller floods, and the shift in the timing of flooding primarily from winter-spring to spring-summer (Brereton *et al.* 2000).

Kingsford and others (1995, 1998) examined actual annual flows, rainfall and flood extent over a 50 year period (1944-1993). The first 24 years preceded the major regulation impacts in the system and included major flooding in the 1950s. The latter included the commissioning of Burrendong Dam (1968), major flooding in the 1970s, flooding in the early 1980s and the 1990s, and the increase in irrigation in the Macquarie Valley in the 1980s. Kingsford and Thomas (1995) found that annual flows at Oxley decreased significantly for high and medium rainfall events and the areas flooded by large floods contracted by at least 40-50%. Fifty-one per cent of water passing Dubbo each year reached the Macquarie Marshes between 1944-1953, but this declined to 21% by 1984-1993 (Kingsford and Thomas 1995). Analysis of actual flows at Oxley (1996-2003) found an average **reduction in flows to the Marshes of around 207,000 ML / year** compared to flows in the period 1943-1965 (MMMC unpublished analysis of Oxley gauge records)".

This reduction in flows to the Macquarie Marshes, and throughout the Murray Darling Basin (as this situation has been replicated in other river systems throughout the Murray Darling Basin) resulted in the establishment of both the NSW and Federal 'buy back' programs. The 'buy back' was recognised as being the quickest and most cost effective means of returning water to stressed rivers.

It must also be recognised that by keeping the Marshes wet, or at least damp, it uses far less water than if it is allowed to dry out and become 'parched'. The deep heavy black mulching soil takes a considerable amount of water to its profile. Once the Marsh is wet or even damp, it takes very little water to maintain this state and to ensure water continues to flow to the end of the system and meet its obligation to provide base flows to the Barwon Darling. Rainfall events have a much great beneficial impact on this area if the soil has some moisture already on the profile.

The Macquarie contributes approximately 20% flows to the Barwon River system. The water the Barwon receives from the Macquarie is of high quality as it has been filtered by the aquatic vegetation as it flowed through the Macquarie Marshes. These flows are also some of the most valuable flows in both the Macquarie and Barwon rivers as they have multiple uses eg. they provide environmental benefits such as supporting colonial nesting waterbird breeding events, enhancing vegetation growth and enhance fish breeding. They also have economic benefits such as supporting the floodplain grazing of beef cattle, provide soil moisture for grain cropping and irrigation water further downstream.

This is one of the reasons MMELA has so strongly supported the 'buy back' program as it has a huge "bang for its buck" when you consider the vast number of benefits that come from each megalitre of water purchased.

Beef Production

Beef Production was established in the Macquarie Marshes in the 1840s and continues to be the major economic industry in this area. It is seen to be sustainable and hence the phrase "Fat Ducks Means Fat Cattle" that has been associated with the Macquarie Marshes for many years.

The vast majority of the colonial nesting waterbird breeding colony sites being on private Marsh land that has been grazed by cattle for over 150 years. Only one major colony remains on the Macquarie Marshes Nature Reserve.

Up until 1989 the Macquarie Marshes Nature Reserve was leased out to graziers for beef cattle production. The recommended stocking rate by the National Parks & Wildlife Service (NPWS) in the 1985 Management Plan was 1 cow & calf to 10 acres (4.05ha). This was considered to be sustainable both economically and environmentally and was monitored regularly by the NPWS. The surrounding marsh land was grazed using the same stocking rate however as flooding size and frequency has reduced so has the ability to maintain this stocking rate. In the drier times during the 2000s some graziers have reported stocking rates as low as 1 cow to 150 acreas (60ha)

The recommended stocking rate by the Central West Local Land Services (2013 Land & Stock Returns) for land to the immediate east of the Macquarie Marshes under average seasonal conditions is 1cow to 19 acres (7.7ha), approximately half that of the Marsh area in average seasonal conditions, much less the Marsh area. This is why the Macquarie Marshes have been so valued for beef cattle production and prior to river regulation were seen as very safe (almost drought proof) grazing land.

The majority of beef producers in the Macquarie Marshes run self replacing beef cattle herds (cows having calves each year with the steer portion being sold annually along with cull heifers and cast for age cows) which means the number of breeding cows on the property remains static as older cows are

sold off and young heifers are kept to replace them go on into the breeding program. Under these regimes stock sent for sale average 400kg live weight.

The beef yield of cattle after slaughter is between 52% & 54.7% *(NSW Department of Primary Industries Primefacts January 2007).* Working on 52% yield for this report equates to 20.8kg of beef per acre or 51.37kg per hectare (One 400kg (live weight) beast sold yielding 52% beef = 208kg off 10 acres (24.7ha) = 20.8kg per acre (51.37 per ha).

Table 2. Annual Beef Production under current water regime *(This is in conjunction with environmental benefits)*

Flow past Marebone (ML)	Area Flooded ha	Cattle Produced	Kilograms of beef	Australians Fed	Frequency in Years
700,000	145,000	35,802	7,446,816	225,661	10
400,000	81,000	20,000	4,160,000	126,060	6
250,000	50,000	12,345	2,567,901	77,815	3-4
100,000	19,000	4,691	975,802	29,569	1-2
58,000	9,000	2,222	462,221	14,006	1
30,000	4,000	987	205,431	6,225	0.5-1

- Information on flow rates and area flooded supplied by the Office of Environment and Heritage NSW and the Marebone gauge
- Australians eat on average 33kg of beef per year *(National Farmers Federation – Farm Facts 2012)*

As you can see as flows reduce so do the number of cattle being produced thus putting strain on supply and so the price of beef in our supermarkets rises. As a result of this much less beef is produced and the smaller amount that is becomes cost prohibitive to many in the community.

The reduction in flooding under natural conditions compared to today (207,000ML on average per year) equates to a loss of beef production of 10,122 cattle = 2,105,376kg beef that would have feed 63,799 Australian people.

While a 400kg beast yields 52% of beef the remaining 48% of the beast is not discarded it also has a considerable value. Co products or By products such as: *(Meat and Livestock Australia reports)*

- The hide – leather goods, floor rugs etc
- Bones, blood and Offal – blood and bone products for gardens
- Tongue and cheek – sold for human consumption
- Other offal – some sold for human consumption (tripe and heart) and some for pet food.

are important to the national economy as well as some being part of the export market.

Local businesses and services benefit from having a healthy and sustainable grazing industry in the Macquarie Marshes as graziers purchase the majority of their inputs such as drenches, lice control etc locally and use local contract labour. This has a positive flow on effect to the socio economic well being of the local communities.

There are also positive impacts for wider regional communities with the larger livestock selling centres often used to sell stock from the Marsh area. Feedlots and abattoirs also receive cattle from this area so their workers and supplies also benefit. The flow on effects are considerable and not to be underestimated.

Over View

MMELA was, and continues to be, very supportive of the 'buy back' approach to return water to our still stressed and over allocated river systems. This organisation has always seen 'buy back' as the quickest, most cost effective and equitable means to increase water availability for rivers, floodplains and wetlands.

Beef cattle production on floodplains and in wetlands flourishes as a result of flooding however it does this without extracting or taking water from the system. Therefore this water can continue on through the river system and benefit many graziers as well as any identified environmental assets downstream. It is extraction of water from the system that has the biggest detrimental impact, to both ecological communities as well as graziers on the downstream side of the extraction.

There has been criticism from other sectors of the community that water returned to river systems for environmental purposes has no real value. As you can see water purchased by governments can help to feed a rapidly growing population while still achieving the environmental benefits for which the water was targeted.

MMELA also acknowledges that the 12% of the Macquarie Marshes now managed by the National Parks and Wildlife Service (NPWS) is no longer used for grazing. However it must be accepted that the value and contribution of this area of the Marshes to the Australian population must be equal to, or greater than that of beef production or it would not have been retired from grazing.

It must also be understood that if a greater area of the Macquarie Marshes was to be taken out of production, as suggested by another section of the community, this then poses a cost burden on the Australian public as it is the tax payers who must fund the ongoing staffing and management of the land and ensure such management tasks as weed and feral animal control, infrastructure maintenance and bush fire management etc.

Conclusion

MMELA trusts this paper helps to clarify the importance of maintaining programs such as the 'buy back' for both environmental and economic purposes. The current and future value of the beef cattle industry in the Macquarie Marshes is vital to the survival Marsh landholders and our local communities as well as having an important role in wider regional economies.

To imply or say water purchased by governments in 'buy back' programs as no real value to communities is not only incorrect but it is irresponsible as the benefits are great and far reaching.

We thank you for taking the time to read this paper and should you have any questions or comments, please do not hesitate to contact this organisation.

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Jenkins, K.M., Asmus, M., Ryder, D., and Wolfenden, B.J. 2004. Fish and macroinvertebrate communities in the Macquarie Marshes in the winter and spring of 2003

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NSW Office of Environment and Heritage

This paper prepared by:

The Macquarie Marshes Environmental Landholders Association

For Further information please contact:

Mr Garry Hall
Chairman, MMELA