

**Submission
No 109**

INQUIRY INTO WATER AUGMENTATION

Organisation: Gwydir Valley Irrigators Association Inc.

Date received: 14 May 2017



Submission to:

Portfolio Committee No. 5 – Industry and Transport

***Inquiry into the augmentation of water supply for
rural and regional NSW***

By:

Gwydir Valley Irrigators Association

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I. Purpose of this Submission

This document has been developed by the Gwydir Valley Irrigators Association (GVIA) on behalf of its members as a formal submission for consideration by Legislative Council’s ‘Portfolio Committee No. 5 – Industry and Transport’s’ inquiry into the augmentation of water supply for rural and regional NSW.

This document represents the concerns, views and experiences of the GVIA members. However, each member reserves the right to express their own opinion and is entitled to make their own submission.

2 Recommendations

The following is a summary of the recommendations within this submission:

1. The two key organisations; the Department of Primary Industry – Water and WaterNSW, who are involved in rural water needs have recently undergone significant organisational change following government restructures of their roles and responsibilities. As such to assist stakeholders in understanding these changes, we ask the committee request organisational charts and contacts for each organisation and a plain English summary of their roles and responsibilities.
2. That governments recognise that embargoes are not cost effective or efficient way to deliver drinking water for north-western communities and that governments should plan and invest in projects to ensure all communities have a safe and secure water supply, as well as protecting the right to access other forms of water, now and into the future. Planning should consider accounting for all types of water use; environmental, industrial, commercial and agricultural.
3. That the NSW Government continue to investigate opportunities to enhance water reliability and use in the Gwydir Valley, recognising the value that improved productivity will have on the NSW economy but acknowledging that long-term diversions must be managed within limits outlined within the Basin Plan.
4. That the committee support the following recommendations by the Standing Committee on State Development as a priority for consideration by government because the previous response has been inadequate:
 - a) Recommendation 4 (i). That the NSW Government financially support the agricultural sector to use more efficient water practices and encourage contributions from industry and the Commonwealth Government to support research and development in this area;
 - b) Recommendation 5. That the NSW Government development a state-wide policy of waiving fixed water charges during expectation drought conditions. (noting the current policy of deferral is not adequate).
 - c) Recommendation 15. That the NSW Government investigate the potential for strategically placed en-route storages to extend water use and provide flexibility in water delivery in some river systems, particularly in the Murray Darling Basin.
 - d) Recommendation 16. That the NSW Government commit to continuing an integrated water management and conservation policy and that it

fosters responsible use of water in urban, industrial and agricultural settings.

- e) Recommendation 17. That the NSW Government ensure that new storage proposals are comprehensively assessed
5. That Government's recognise the reform fatigue experienced by the water industry and their communities and allow the current process to be fully implemented with appropriate measurement, monitoring and reporting of environmental, social and economic outcomes prior to considering further changes.
 6. Governments continue to support research and development activities that enhance agricultural productivity and continue to provide economic benefit to our regional communities and the state.
 7. The role and responsibilities of environmental water planning are reviewed and streamlined to allow community engagement at a local level and to ensure efficient delivery, without duplication by government agencies both within NSW and by the Commonwealth.
 8. Governments recognise that environmental outcomes from the delivery of environmental water will continue to be undermined until there is appropriate investment in complementary (or non-flow) measures like cold water pollution, invasive species like carp, fish passage and habitat and riparian land management and that funding mechanisms exist which will limit the government's fiscal responsibility to achieve these outcomes.
 9. That the committee support the MDBA conclusions that some valleys are over recovered and that the trade of excess water should be encouraged to provide win-win opportunities for communities, industry and the environment.

3. Introduction

The Gwydir Valley Irrigators Association (GVIA) welcomes the opportunity to provide this submission Legislative Council's 'Portfolio Committee No. 5 – Industry and Transport's' inquiry into the augmentation of water supply for rural and regional NSW as well as present at the public hearing in Moree on 15th May 2017.

Agricultural production is the main driver of our regional economy and is a significant contributor to the economy of the NSW as well, producing nearly 8 percent of the state's gross domestic product. Irrigated agriculture employs between 20-30 percent of the population and generates 72 percent of the value of gross domestic product from 10 percent of the land. Irrigated agriculture will be essential, if Australia is to actively contribute to the growing demand for food and fibre in Asia as well as meeting our own demands.

As an economy heavily reliant on agriculture, the community in the Gwydir Valley is also susceptible to changes in water availability. We locally recognise this variability

and have adapted our businesses. However, when government policy alters water availability, the subsequent impacts are often sudden and felt by the whole community.

For example, the impact of environmental water purchases in the Murray Darling Basin cannot be more evident than in the Gwydir Valley. Gwydir irrigators have over-time provided 28.5 percent of high security entitlement, 29 percent of general security entitlement and 13 percent of supplementary entitlement for environmental use following a series of reforms.

The Gwydir Valley now has a reduced maximum production capability resulting from a shift from irrigated to dry land agriculture, at reduced yield return. The regional impact is a reduction of 25-35 percent in area. Coupled with this is the significant social and economic decline in Moree and Collarenebri as detailed in the 2016 Northern Basin Review¹, where the region has lost nearly 200 jobs directly due to water recovery alone which is in addition to, a declining regional population due to changes in labour requirements from agricultural and government employment^{2,3}. These changes have altered the social structure of our region and placed pressure on local business to adapt, expand or close as well as services like schools that have reduced student numbers and teachers.

The impact of water reform and the increasing environmental water requirements on our regional economy have been significant and both industry and the community are fatigued by such changes.

We are now looking to governments to provide stability to our region's economy, to encourage investment and enhance our ability to attract and retain future generations in agricultural and rural communities. Irrigators will then be able to continue to innovate and to push the returns per megalitre to maintain or enhance our past production, so that we continue to utilise this valuable resource as efficiently as possible.

All we want is for all water users, to make every drop count, not just industry. We believe there is scope within the current frameworks to better plan for the use and supply of rural water and that continued improvements in environmental water management and an investment in complementary (non-flow) measures will ensure that the reforms will result in outcomes.

¹ <https://www.mdba.gov.au/publications/mdba-reports/northern-basin-review-technical-overview-socio-economic-analysis>

² See community profile for Collarenebri at <https://www.mdba.gov.au/sites/default/files/pubs/630%20-%20NBR%20Community%20profile%20-%20Collarenebri.pdf>

³ See community profile for Moree at https://www.mdba.gov.au/sites/default/files/pubs/630%20-%20NBR%20Community%20profile%20-%20Moree%20HR_0.pdf

We have as part of this submission provided nine recommendations for consideration by the committee as part of this inquiry.

We thank the committee for taking interest in the management of water and visiting our region as part of the inquiry.

4. About the Association

4.1. Our region

The Gwydir Valley Irrigators Association (GVIA) represents more than 250 water entitlement holders in the Gwydir Valley, centred around the town of Moree in North-West New South Wales. Our mission is to build a secure future for its members, the environment and the Gwydir Valley community through irrigated agriculture.

The Moree Plains Shire region alone is highly dependent on agriculture and irrigated agriculture for economic activity contributing over 72% of the value of gross domestic product (cotton is around 60%), employing 20-30% of the population and accounting for almost 90% of exports from the Shire⁴.

The 2011 agricultural census estimates that the total value of agricultural commodities for the Moree Plains Shire region was \$911,951,079 up from \$527,744,851 in the 2005-06 census. This is an estimated 7.83% of NSW's total agricultural production from a 1,040,021Ha principally used for agricultural crops⁵.

The Gwydir is characterised as having low water reliability with most water held as general security water with a reliability of 36% (that means irrigators could expect in the long-term just over a third of their entitlement can be accessed). Supplementary water entitlement is somewhat more reliable with 55% but accounts for less than a quarter of the total volume. Groundwater reliability is considered 100% but there is less than 30,000ML available.

The total volume of water available to be accessed by irrigators has been reduced significantly over time due to reforms as outlined below in Table 1: Summary of Water Reform. Entitlements owned for environmental purposes totals more than 170,000ML, which includes an Environmental Contingency Allowance of 45,000ML. As a result, only approximately 19% of the total river flows are available for diversion for productive use⁶. This equates irrigators holding 575,000ML from regulated entitlement (high

⁴ Cotton Catchment Communities CRC Communities and People Series 2009

⁵ 2010 2011 Agricultural Census Report – agdata cubes, 71210D0005-201011 Agricultural Commodities, Australia

⁶ Based on IQQM long-term modelling and the volume of water purchased for the environment

security, general security and supplementary water) and 28,000ML available from groundwater aquifers.

The NSW and Commonwealth environmental water managers are now responsible for 28.5% of high security entitlement, 29% of general security entitlement and 13% of supplementary entitlement for environmental use. Despite environmental water being held in the Gwydir prior to the first water Sharing Plan. Environmental water is primarily used to contribute waterbird and fish breeding events and to maintain the condition and extent of the internationally recognised Gwydir Wetlands but as the portfolio has grown, so has the application and use of environmental water.

Table 1: Summary of Water Reform

Year	Program	Volume of entitlement	
1970	Creation of replenishment flow	5,000ML	
1995	Murray-Darling Basin 1993/94 Interim Cap established to limit future growth in access		
1996	Voluntarily reduced their general security reliability by 5%, by establishing the original Gwydir Valley Environmental Contingency Allowance (ECA) of general security equivalent water.	25,000ML General Security	
2004	Gwydir Regulated River Water Sharing Plan further reduced reliability by 4%, primarily through increasing the ECA and enhancing its use and storage provision. Rules created for the WSP also reduced access, particularly to supplementary flow previously known as high flow.	20,000ML General Security	
2006	Lower Gwydir Groundwater Source Water Sharing Plan reduced groundwater entitlements from 68,000 megalitres to 28,700 megalitres.	39,300ML Groundwater	
2008 +	NSW State Government has purchased general security entitlement as well as supplementary for wetlands recovery programme.	17,092ML General Security	
	NSW Government infrastructure works	3,141ML Supplementary	
	Commonwealth buy-back program.	1,249ML High Security	
2016	Commonwealth infrastructure programs.	88,133ML General Security	
		20,451ML Supplementary	
TOTALS		4,508ML High Security	
		1,392ML General Security	
		5,757 High Security	
		156,617ML General Security (including ECA)	
		23,592 ML Supplementary	

The main broad acre irrigated crop is cotton with irrigated wheat, barley and Lucerne also occurring depending on commodity prices. The total broad acre irrigated area is approximately 90,000 ha (although recent analysis indicate that maximum planting area is now 70,000ha) but is rarely cropped in one year. In 2010-11 census data indicated the total production value of irrigated cotton was \$623M and is estimated to be worth three times that to the local community using the Cotton Catchment Communities Research Corporation economic multiplier for cotton regions⁷.

Currently there are also pecans, walnuts, oranges and olives being grown within the region covering approximately 1,500 hectares and generating an estimated \$31M with considerable benefits to the local community as a high intensity, permanent crop. There is significant potential for expansion into horticulture and improvement in water utilisation but the area of expansion is limited by the availability of high security water.

Changes in water availability either through climate or government policy has a direct impact on the productivity of the region as well as on the local economy. Analysis by the Murray Darling Basin Authority highlighted this relationship during the northern review and revealed that for both Moree and Collarenebri social and economic indicators declined through 2001 to 2011 including education, economic resources and disadvantage, resulting in an estimated 200 jobs lost due to the implementation of the Basin Plan in the region^{2,2}.

4.2 What we do

The GVIA's mission is to build a secure future for our members, the environment and the Gwydir Valley community through irrigated agriculture, we do this by making every drop count in the river or the aquifer, on-farm, for the environment, or for our community⁸.

GVIA members hold entitlements within the Gwydir regulated and un-regulated surface water areas, in addition to groundwater resources. All of which are managed through water sharing plans, which have been progressively developed since early 2000.

The GVIA organisation is voluntary, funded by a cents/megalitre levy on regulated, unregulated and groundwater irrigation entitlement. In 2015-16 the levy was paid on more than 86% of the eligible entitlement (excludes entitlement held by the NSW and Commonwealth governments).

⁷ Social and Economic Analysis of the Moree Community, 2009. Cotton Catchment Communities CRC

⁸ For more information, see our corporate video on <https://vimeo.com/177148006>

Much of the activity of the association revolves around negotiating with government at a Federal, State and Local level to ensure the rights of irrigators are maintained and respected. While the core activities of the Association are funded entirely through the voluntary levy, the Association does also undertake programs to maintain and improve the sustainability of members on-farm activities and from time to time, undertakes special projects, which can be funded by government or research corporations.

The Association is managed by a committee of 11 irrigators and employs a full-time executive officer and a part-time administrative assistant, as well as hosting a Project Officer funded through the Cotton Research and Development Corporation, the Gwydir Valley Cotton Growers Association and the GVIA.

The GVIA and its members, are members of both the National Irrigators Council and the NSW Irrigators Council.

4.3. Association Contacts

Gwydir Valley Irrigations Association

ABN: 49 075 380 648

100 Balo St (PO Box 1451)

Moree, 2400

Ph: 02 6752 1399

Fax: 02 6752 1499

Mobile: 0427 521 399

Email gvia@gvia.org.au

Chairman: Joe Robinson

Executive Officer: Zara Lowien

5. Terms of Reference

The Committee will inquire into and report on the performance or effectiveness of the NSW government agencies that are responsible for the augmentation of water supply for rural and regional NSW, and:

- a) Investigate the requirement for a water equation (demand and supply out to the middle of this century) for rural and regional NSW;
- b) Examine the suitability of existing NSW water storages and any future schemes for augmentation of water supply for NSW, including the potential for aquifer recharge;

- c) Review the NSW Government's response to the recommendations of the June 2013 report by the Standing Committee on State Development on the adequacy of water storages in NSW;
- d) Examine the 50-year flood history in NSW, particularly in northern coastal NSW, including the financial and human cost;
- e) Examine technologies available to mitigate flood damage, including diversion systems and the scope of infrastructure needed to support water augmentation by diversion, for rural and regional NSW;
- f) Examine the social, economic and environmental aspects of water management practices in NSW and international jurisdictions including the following case studies:
 - i. Broken Hill town water supply/Menindee Lakes system;
 - ii. South Western NSW water management practices;
 - iii. North-western NSW water management practices;
- g) The efficiency and sustainability of environmental water being managed by different State and Federal Government departments and agencies.
- h) The management, appropriateness, efficiency and reporting of:
 - i. Intervalley transfers;
 - ii. Conveyance and loss water;
 - iii. Carryover; and
 - iv. The management and reporting of the water market; and
- i) Any other related matter.

The following sections are intended to address the specific terms of references listed above, although we are not making direct comment on reference d), h) and e).

5.1. A demand equation

The GVIA supports the current approach for managing water operations in NSW by WaterNSW and NSW Department of Primary Industries - Water. Although we do note that these organisations have been undertaking significant changes and re-structures by altering their roles within this discipline; with WaterNSW taking the majority responsibility for operational aspects with DPI Water managing policy. Whilst the operationalisation of these changes is still being implemented, the GVIA assumes that the policy around planning for the supply of rural and regional water needs remains with DPI Water. However, clarification on the roles and responsibilities of each organisation, including an organisation chart outlining staff structures and contacts would greatly assist stakeholders in understanding the structural changes.

Recommendation:

- 1. The two key organisations; the Department of Primary Industry – Water and WaterNSW, who are involved in rural water needs have recently undergone significant organisational change following government restructures of their roles and responsibilities. As such to assist**

stakeholders in understanding these changes, we ask the committee request organisational charts and contacts for each organisation and a plain English summary of their roles and responsibilities.

The GVIA are currently, unaware of any scenario planning for the future demands of rural and regional communities and consider such planning to be appropriate and the responsibility of either DPI Water or WaterNSW. All rural and regional towns deserve, safe and secure drinking water and this must continue to be a priority of governments.

The Gwydir Valley community has suffered due to foregone production because of the poor planning of successive governments to adequately provide a safe and secure drinking water supply for Broken Hill. The embargoes of supplementary water in 2007 and later again in 2015, restricted access of below dam flows of 25,000ML⁹ which resulted in lost opportunity of approximately \$56.25M¹⁰ to the local economy. The more recent embargoes resulted with a combined flow increase of 30,000ML to the Barwon resulted in less than 6,000ML inflows into the Lakes themselves, cost around \$11,250/ML¹¹ to deliver that water which was borne by northern communities due to poor management and planning.

Whilst embargoes are not welcomed by many in northern communities, we do recognise the priority of drinking water and town water supplies above those of irrigation requirements. Hence, we will continue to support more efficient means to supply these water sources just as we have welcomed an alternative solution to the drinking water supply concerns of Broken Hill to efficiently secure their drinking water needs. But the NSW Government has further work to be undertaken to secure the drinking water supplies for other communities along the Barwon Darling.

We cannot support the use of embargoes to sure up supplies for entitlement types other than drinking or town water supplies. The adequacy of planning frameworks and management in the local area where supplies are a concern, should be the focus of how to address these issues, rather than targeting upstream industries and their communities for an inefficient solution.

Past planning has been ineffective and costly for our region and there is significant risk to all water users if this performance is not addressed. Especially considering most water sharing plans have mechanisms for managing growth in use of irrigation entitlements, whereas, unprecedented increases in urban demands would have

⁹ In 2007 – 4360ML was embargoed, in 2015 roughly 19,555ML was embargoed. Additional restrictions were also in place in 2002/3 but was no records of flow restrictions maintained at this time.

¹⁰ Value of 1 ML of supplementary water can roughly equate to \$750 at the farm-gate (1.5 extra bales of cotton), this is multiplied by 3 as per the community economic multiplier.

¹¹ 30,000ML could produce 45,000bales (1.5B/ML) worth \$22.5M at farm gate and \$67.5M to northern communities affected, therefore the inflows of 6,000ML resulted in an opportunity cost of \$11,250/ML.

disastrous impacts on other water users, including the environment if not managed appropriately. Under the current valley cap arrangements and future Basin Plan arrangements, total water use is limited therefore an increase in one area of use will result in a reduction in another.

Planning could include the establishment of a demand equation building upon the current water balance reporting provided for regulated systems, which is used to demonstrate the use of water throughout the water year. If these accounting systems were updated to highlight the different uses of water; environmental, industrial, commercial and agricultural, then the equation could also be used to determine the benefit derived from the use of water by allocating value on a consistent basis.

Recommendation:

- 2. That governments recognise that embargoes are not cost effective or efficient way to deliver drinking water for north-western communities and that governments should plan and invest in projects to ensure all communities have a safe and secure water supply as well as protecting the right to access other forms of water, now and into the future. Planning should consider accounting for all types of water use; environmental, industrial, commercial and agricultural.**

5.2. Suitability of current water storages

5.2.1. Surface Water

The Gwydir Valley as explained above in 4.1 Our region, currently has less water available for production than historically and the majority of water that is available, is considered to have a low level of water reliability. Because of this reliability, the region has a large proportion of water use for cotton¹², which allows irrigators to produce a high value crop per megalitre of water but importantly, adjust their production areas to the available water on annual basis. This results in variable production outcomes as demonstrated by the cotton production and water use information presented below in Figure 1.

The variability of production flows through to the regional economy and businesses must be structured to meet increased demands during highs and maintain services throughout the lower periods.

Therefore, by improving the reliability of supply or the volume of water available for irrigation, there will be significant economic benefit to our regional economy through increased and more stable production. Previous studies have highlighted that for

¹² This is often estimated at 90%

agricultural production like irrigated cotton, the farm-gate value is known to have at least a 2¹³ to 3⁷ times multiplier to calculate the flow-on benefits to the local economy.

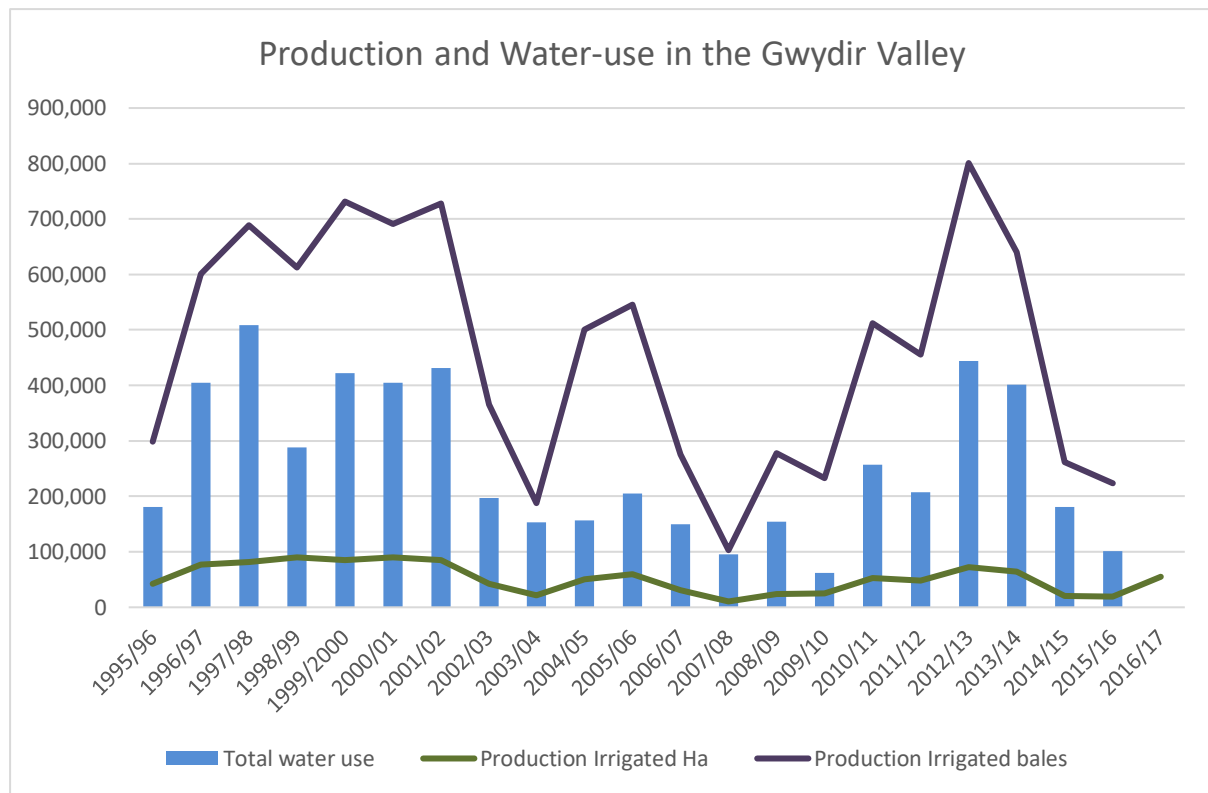


Figure 1: Cotton Production and Water-use in the Gwydir Valley

Any strategies and actions that can be implemented to improve productivity would also be consistent with the Department of Primary Industries Strategic Plan 2015-2019¹⁴ which aims to achieve the following:

“... three key strategic outcomes:

- Innovation that improves resilience and boosts productivity,
- Sustainable use of, and access to, natural resources, and
- Mitigating and managing risks to community and industry confidence.”¹⁵

As measured by “increased value of our primary industries within NSW by 30%”¹⁶.

Any improvements in reliability of any water source may result in a change to long-term diversions, which are not allowed under current water planning frameworks;

¹³ ABS agricultural economic multiplier is 2.178

¹⁴ <http://www.dpi.nsw.gov.au/about-us/publications/nsw-dpi-strategic-plan-2015-2019>

¹⁵ NSW Department of Primary Industries Strategic Plan 2015-2019 - page 4, DPI Outcomes

¹⁶ NSW Department of Primary Industries Strategic Plan 2015-2019 -- Page 4, Measures

either the current state-based water sharing plans or the future water resource plans being developed to meet the Basin Plan. Therefore, any potential augmentation of existing supply arrangements or new supply options must be assessed against the potential risks to long-term diversions and any impacts mitigated or negotiated. Which, in our opinion, does not preclude such developments but will add additional complexity around negotiating outcomes and any cost benefit analysis. The highly valuable private on-farm investment must be considered when assessing the cost benefit of any opportunity to enhancing public headwater storages.

The GVIA therefore acknowledges the current limitations around water planning arrangements but would support the NSW Government continuing to pursue opportunities to enhance water reliability in our region as consistent within the NSW State Infrastructure Strategy¹⁷ which states:

“Government will examine the options proposed by Infrastructure NSW...:

1. *Gwydir River Valley – a re-regulating dam at Gravesend or a new dam on the Horton River.”*

Recommendation:

3. **That the NSW Government continue to investigate opportunities to enhance water reliability and use in the Gwydir Valley, recognising the value that improved productivity will have on the NSW economy but acknowledging that long-term diversions must be managed within limits outlined within the Basin Plan.**

5.2.2. *Aquifer storage*

We ask for a cautious ‘precautionary’ approach to the consideration of the application of aquifer recharge due to potential risks to other water sources. However, there may be circumstances where the hydrogeological features of an aquifer may result in it being able to be safely recharged or utilised for underground storage. Noting that ‘managed aquifer recharge’ is being researched and utilised in other parts of Australia to supplement water supplies and manage waste-water¹⁸. However, the maintenance of current water access arrangements is of paramount importance.

5.3. Government’s response to inquiry into the ‘adequacy of water storages’

The GVIA participated via a submission and presentation to the previous inquiry by the Legislative Council Standing Committee on State Development into the adequacy

¹⁷ <https://www.nsw.gov.au/improving-nsw/projects-and-initiatives/state-infrastructure-strategy/#water>

¹⁸ For example, <https://research.csiro.au/mar/using-managed-aquifer-recharge/#map> or http://www.australianwaterrecycling.com.au/literature/148114/MARRO_Case_Studies

of water storages in NSW, finalised in 2013. We supported many of the recommendations by that committee.

We were disappointed with the NSW Government's response which only 'noted' many of the recommendations and did not appear to consider these relevant despite the broad engagement of the inquiry committee. The continued lack of response of governments from such inquiries is frustrating for participants, who genuinely engage in such a process as the only opportunity to have our issues raised directly to decision makers but outcomes are often limited.

As such we ask that expectations are better managed for participants and the government around what changes may be possible following an inquiry such as this.

Furthermore, we ask the committee to be cautious on making broad-scale changes to the current policy and operating frameworks in NSW due to the fatigue felt by industry and community from past reforms to government operations and policy. Whilst the current frameworks may not be perfect, we believe that there is opportunity to work with the arrangements rather than over-haul the current approach. Industry and their communities are looking to government to provide stability for investment and opportunity to improve and enhance, which continual reform doesn't provide.

We believe that many of the recommendation outlined by the previous inquiry remain relevant today.

Recommendation:

- 4. That the committee support the following recommendations by the Standing Committee on State Development as a priority for consideration by government because the previous response has been inadequate:**
 - a) Recommendation 4 (i). That the NSW Government financially support the agricultural sector to use more efficient water practices and encourage contributions from industry and the Commonwealth Government to support research and development in this area;**
 - b) Recommendation 5. That the NSW Government development a state-wide policy of waiving fixed water charges during expectation drought conditions. (noting the current policy of deferral is not adequate).**
 - c) Recommendation 15. That the NSW Government investigate the potential for strategically placed en-route storages to extend water use and provide flexibility in water delivery in some river systems, particularly in the Murray Darling Basin.**
 - d) Recommendation 16. That the NSW Government commit to continuing an integrated water management and conservation policy and that it fosters responsible use of water in urban, industrial and agricultural settings.**

e) Recommendation 17. That the NSW Government ensure that new storage proposals are comprehensively assessed

5.4. Aspects of water management practices

All water within the Gwydir valley is managed by the rules and conditions outlined within water sharing plans¹⁹. These plans provide stability to users and their business by outlining the rules and conditions in which they can access and utilise water for a set period, usual at least 10-years.

All plans in our region are in the process of being reviewed and updated to be consistent with sustainable diversion limits and conditions outlined within the Basin Plan²⁰. The water sharing plans in the Gwydir, did not have the opportunity to run their full length of time prior to the implementation of the Basin Plan reforms and this has resulted in an inability to test the appropriateness and outcomes of the water sharing process thoroughly. We believe that these plans were adequate at providing for the environmental needs of our valley but that this will never be accurately tested due to the implementation of the Basin Plan reforms prior to their completion.

However, it's important to note that the reforms of the Basin Plan have largely not impacted industry but rather, our local community²¹. This raises the question whether there has been appropriate balancing of environmental, social and economic needs. Although, the Basin Plan amendments proposed by the Murray Darling Basin Authority in November 2016²² for our region, will go some of the way to re-balancing these factors due to the overall reduction in water required for the environment and the recommendation to investment in complementary (non-flow) measures to achieve environmental outcomes.

The settings of the Basin Plan should not preclude making improvements to water sharing plans if diversions remain within the sustainable diversion limits provided and that there are no net reductions in environmental provisions (two key components of the Basin Plan). We therefore, believe that there is opportunity to work within the current frameworks to ensure that there is an efficient sharing regime, which will provide stability to users allowing them to invest and grow. However, to achieve this we must allow the reform to run its full course and for the appropriate monitoring of social, economic and environmental outcomes to occur; none of which were adequately undertaken during the state-based reform process.

¹⁹ Including the Gwydir Regulated Water Source, Lower Gwydir Groundwater Source, Gwydir Unregulated and Alluvial Water Sources, Rocky Creek, Cobbadah and Upper and Lower Horton Unregulated Water Sources.

²⁰ Murray Darling Basin Plan 2012 (Cth)

²¹ See Attachment 1 from GVIA "How the MDBA Northern Review Affects You"

²² See more at <https://www.mdba.gov.au/basin-plan-roll-out/basin-plan-amendments>

Recommendation:

- 5. That Government's recognise the reform fatigue experienced by the water industry and their communities and allow the current process to be fully implemented with appropriate measurement, monitoring and reporting of environmental, social and economic outcomes prior to considering further changes.**

We also believe that investment back into communities through enhancing efficient production should be prioritised as per the DPI strategy and Recommendation 4(a) of this submission. Investment back into successful, sustainable and productive industries will also ensure that our resources are utilised effectively. This would aim to allow Australia to meet the growing demand for food and fibre whilst ensuring future generations a career in agriculture.

The challenges with investing in agricultural businesses is the complexity of which they operate and through the management of grower-led research in our own region, we have been able to provide commercially relevant, objective information to help inform irrigators on the best option for irrigation management that suits their business rather than the current trends.

Our systems comparison trial at Keytah, is the flagship demonstration site of this research. The project has been funded through a range of different schemes since 2008²³, which has resulted in the extension of eight years of irrigation efficiency research within the valley.

The primary focus of this research has been irrigation system comparisons²⁴ of furrow, drip, bankless and lateral move irrigation technologies. It has identified that water use efficiency is not solely about water, the importance of irrigation systems specifically oriented to soil, crop, water reliability and management constraints cannot be underestimated. In addition, it has demonstrated that these resources must be considered in unison with the resources of energy and labour.

The GVIA research has confirmed that the suitability of different systems can be significantly impacted by seasonal conditions. The rainfall and temperature of the growing season will impact on the energy and water use of different systems in different ways; for example, in a hot dry season with very little or no rainfall the flood irrigation systems perform more efficiently than the pressurised lateral move or drip

²³ Initial funding was received from the National Water Commission, followed by the Cotton Research and Development Corporation and now by the Cotton Research and Development Corporation in partnership with the national Smarter Irrigation for Profit program.

²⁴ <http://www.gvia.org.au/IrrigationEfficiencyProgramme2.htm> or our summary video, <https://vimeo.com/174306570> or view documents on the GVIA thumb drive provided during presentation.

systems. However, in wet seasons the pressurised systems allow more flexibility and have been more efficient. The system which has produced the highest GPWUI is the lateral move, but in regions where irrigation water reliability is less than 50% such systems have a limited fit as the capital setup costs is more than \$4,000/Ha can be difficult to justify the investment based only of water use efficiency improvements.

This research has demonstrated that there is no simple solution to the efficiency use of water in agriculture, producers will need to make irrigation investment decisions to suit their individual farm needs if they are to enhance their irrigation water use efficiency.

As a demonstration of the commitment of irrigators to drive the efficiency of irrigated agriculture, the next phase of the system comparison is being scheduled to take place on Keytah our primary 'optimised irrigation farm' during 2017-2018. The 'Smarter Irrigation for Profit' project in partnership with the producer, is supporting a practical assessment of the automation of irrigation systems to help maintain WUE as well as address labour resourcing. The trial will involve an assessment of remote control or automation of siphon, bankless channel, lateral move and subsurface drip irrigation at a single location. This site is well recognised across the cotton industry as a premium irrigation efficiency site.

Continued investment in grower-led research at this site will further enhance learning for the agricultural industry. Importantly it enables producers to see infrastructure, technology and engineering solutions in a commercial environment, so that they can make well informed decisions to enhance the efficiency and cost effectiveness of their irrigation systems.

Agricultural producers have traditionally learnt from each other, as the early adopters typically iron out the challenges associated with adoption of new innovative technology and the modernisation of systems. Many farming operations are faced with declining terms of trade, variable climate and environmental pressure, as a result they are reluctant to adopt new technologies unless there is a demonstrated fit into practical on farm situations. Optimised irrigation farms have enabled producers to see firsthand how to integrate new technology and techniques into their operations to enhance water productivity, efficiency and farmer profitability.

Recommendation:

- 6. Governments continue to support research and development activities that enhance agricultural productivity and continue to provide economic benefit to our regional communities and the state.**

5.5. Environmental water management

5.5.1. Current arrangements

Environmental water managers hold a varied and extensive portfolio of environmental water entitlements of both planned and held in the Gwydir Valley. Water sharing rules and environmental holdings has resulted in approximately 19% of the total river flows being available for diversion for productive use⁶. This has been because Gwydir irrigators either; gifted, had removed or sold entitlement resulting in 28.5% of high security entitlement, 29% of general security entitlement and 13% of supplementary entitlement available for environmental use following a series of water recovery programs as presented earlier in Table 1: Summary of Water Reform.

It is the responsibility of the Environmental Contingency Allowance Operational Advisory Committee (ECAOAC) to provide the strategic advice for the management of environmental water in the Gwydir. This committee includes scientists, the community, irrigators and Government Departments involved in water management or delivery, including the local land services who are the current chair.

It was this committee that requested the development of the Gwydir Wetlands Adaptive Environmental Management Plan (AEMP)²⁵. The Gwydir AEMP details the framework for understanding and restoring ecological balance within the wetlands. This includes to best utilise the 45,000ML ECA in managing flows that can be influenced or as the Gwydir AEMP highlights that it is also important that the floodplain wetland vegetation communities “are flooded by large flows that occur infrequently (ARI of 5-6 or 10-20 years), but inundate large areas”²⁶ which cannot be impacted on by irrigators due to their limited extraction capacity. Therefore, the Gwydir AEMP attempts to address all watering events even those events that will still happen without the need for environmental water.

In our region, local implementation for the Basin Plan is an extension of those processes in place for the local water sharing plan which have continued to mature over-time as relationships, the science and local knowledge builds. However, the Basin Plan has resulted in additional layers of bureaucracy within the water space as in Figure 2, which looks at the implementation of the Basin Plan regarding environmental water planning. There are now four-levels of involvement across different temporal and timescales, yet duplication particularly at a five-year and annual priority is evident. With a trend toward user-pays system, we are increasingly concerned with not only the additional regulation and excessive planning cycles but

²⁵ See <http://www.environment.nsw.gov.au/resources/environmentalwater/110027-aemp-gwydir.pdf>

²⁶ Gwydir Wetlands Adaptive Environmental Management Plan by NSW Department of Environment, Climate Change and Water, 2011 - page 37

also the costs associated with water management and clarity around roles and responsibilities under the Basin Plan.

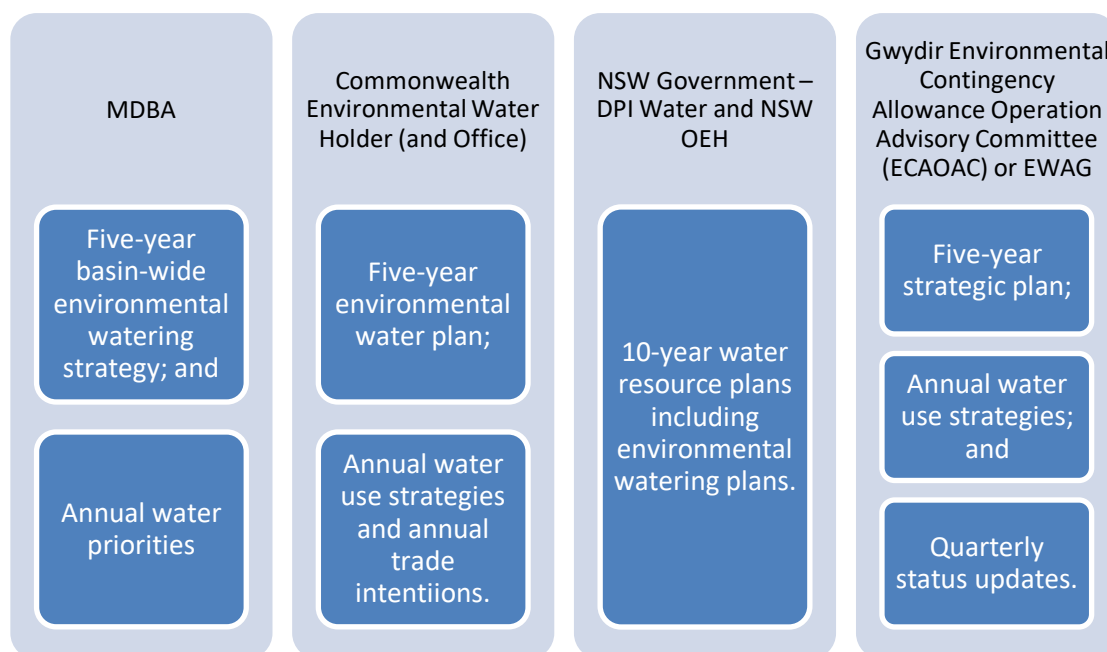


Figure 2: Government Agencies involved in environmental water planning under the Basin Plan.

From our experience, we question the continued role of the MDBA in Basin Plan implementation and recommend that a review of roles and responsibilities is considered by all Basin governments to reduce the burden on communities and genuinely engage in local management. We remain unconvinced that the MDBA should be involved in Basin-wide environmental water planning at a five-year or annual interval when the Commonwealth Environmental Water Holder and Basin states are responsible for implementation over a 10-year period.

Recommendation:

- The role and responsibilities of environmental water planning are reviewed and streamlined to allow community engagement at a local level and to ensure efficient delivery, without duplication by government agencies both within NSW and by the Commonwealth.**

5.5.2. Current environmental water use

An analysis of use of environmental water usage as outlined below in Table 2: Environmental Water Use in the Gwydir Valley, highlights that on average, environmental water use for key outcomes in the Gwydir Wetlands remains within historical limits despite the additional portfolio acquisitions by both the NSW and Commonwealth governments and this water delivery has contributed to enhancing environmental outcomes in the region. New water requirements for the Mallowa

wetlands and fish flows in the effluent streams, are over and above those planned for directly by the water sharing plan. In the case of the fish flows over and above those targeted by the MDBA in developing valley water requirements for the Basin Plan, as no site-specific flow indicators exists for the Mehi and Carole systems, despite Basin Plan targets for fish populations improvements and connectivity and the use of Commonwealth environmental water for such outcomes.

Table 2: Environmental Water Use in the Gwydir Valley also summarises the volume of environmental water against the outcomes and its location; either the wetlands or effluent systems.

Table 2: Environmental Water Use in the Gwydir Valley

Year	Outcomes	Total usage for Wetlands ¹	Total usage other ²	Est. account availability at end of year ³
2010/2011	Successful delivery of volume and duration of flows due to natural triggers	20,000ML	0	N/A
2011/2012	Successful delivery of volume and duration due to natural flows with more than 1,000,000 ML of water gauged at Pallamallawa, which could never be re-created, bird breeding event extended	10,000ML	0	116,000ML
2012/2013	Initiation of Mallowa deliveries and final year of resilience strategy for Gwydir, required significant flows not matched to natural triggers as limited tributary flows	51,000ML	0	116,000ML
2013/2014	Second year of Mallowa deliveries and proactive delivery in Gwydir on triggers, initialisation of fish flows	20,000ML	20,000ML	98,000 ML
2014/2015	Extremely dry period. Third year of Mallowa program, deliveries into Lower Gwydir used fire to trigger non-natural flows, fish flows also occurred.	69,000ML	17,000ML	30,000 ML
2015/2016	Extreme dry with deliveries aiming for connectivity to wetlands and maintaining pools.	12,000 ML	1,000 ML	23,000 ML

Notes:

1.Total usage to wetlands include Mallowa and Gwydir.

2. Total usage other includes non-Gwydir SFI related flows, e.g. flows for fish
3. Estimated account availability using ECA and NSW held high security and general security accounts only.

The question, remains whether the successful outcomes in the Gwydir and Mallowa regions would be achieved with or without the additional water requirements or not. As accounts were maximised in 2011-2012, this calculation can be easily determined from 2012 onwards, using the known account limitations and the allocations during that period and this is calculated using the estimate account availability at the end of the year in Table 2. Together, the ECA with NSW held entitlements for high security and general security, would have met all environmental requirements for the Basin Plan without additional entitlement of the Commonwealth.

This raises the question whether the Commonwealth water is really needed and more importantly, if only some of the Commonwealth water is needed in the long-term, to what extent is the Gwydir Valley over-recovered for environmental water needs. If it is determined that too much water has been acquired, then it is important that governments act but seize this unique opportunity to maximise the benefit for the whole community (see discussion in 5.6.1 Over recovery of environmental water for the Basin Plan).

5.5.3. Opportunity for improvement

Furthermore, the proposed amendments to the Basin Plan announced in November 2016 have also paved the way for government to achieve real environmental outcomes, if complementary measures are addressed. The effectiveness of environmental watering will continue to be undermined without an investment in these measures.

The Basin Plan's original focus on only flow was flawed and a one-side attempt at addressing the basin-wide objectives to improve environmental outcomes like those for native fish which are to improve distribution, populations and movement²⁷. This flawed approach is highlighted by the ineffective use of environmental water for native fish recruitment in the Gwydir Valley. Despite attempts by the Commonwealth Environmental Water Holder to meet fish recruitment triggers by mimicking flow-hydrographs, there has been to-date limited evidence of fish response to these actions using nearly 40,000ML since 2013.

That is why the GVIA invested on behalf of the community in our 'Cold Fish'²⁸ campaign, not because cold water pollution is the only issue undermining native fish populations in our region but one that significantly influences recruitment potential. Our 'Cold Fish' campaign, aimed to bring heat to the issue of cold water pollution and

²⁷ Basin Wide Environmental Watering Strategy by MDBA (2014)

²⁸ www.facebook.com/GwydirValley/videos/ or <https://vimeo.com/186216049>

received over 18,000 views and excellent engagement and conversation regarding the issue. Awareness was a key goal of the campaign which we believed we achieved.

Water is an extremely value resource for everyone and we should not allow environmental water to be wasted (as evidenced in the Gwydir) to achieve outcomes that we know can't be achieved. We must address the limitations to environmental water management like like cold water pollution, invasive species like carp, poor fish passage and habitat and riparian land management. Issues that through a modest investment, compared to the \$380M²⁹ in water recovery in our region, can be mitigated or eliminated.

Recommendation:

- 8. Governments recognise that environmental outcomes from the delivery of environmental water will continue to be undermined until there is appropriate investment in complementary (or non-flow) measures like cold water pollution, invasive species like carp, fish passage and habitat and riparian land management and that funding mechanisms exist which will limit the government's fiscal responsibility to achieve these outcomes.**

5.6. Other matters

5.6.1. Over recovery of environmental water for the Basin Plan

Irrigation is an essential contributor to the economy of our region as outlined in 4.1 Our region but can be summarised as follows;

- Cropping accounts for 54% of the land-use, 10% of this is irrigated and in 2011 produced around 72% of the value of gross domestic product (cotton is around 60%).
- Total Agricultural production in the shire in 2011 was nearly 8% of the state's gross domestic product estimated at \$911 million.
- Using an economic multiplier for the community from the ABS (2.178) this equals \$2 billion to the region.
- Total Irrigated production is estimated at \$656 million, which generated an estimated \$1.44 billion using the Cotton Catchment Communities economic multiplier for the community of 3⁴.

The community and social impacts of over recovery of water from the Gwydir Valley under the Basin Plan have been significant in the region not to mention the process of

²⁹ Current estimated value of environmental water portfolio.

water recovery under the Basin Plan was implemented poorly with devastating outcomes for regional communities reliant on irrigated agriculture.

In Moree, there was an 8% decrease in water availability which equates to around 5% reduction on area. This had the following impact on employment;

- Modelled change in FTE is around 15% (850 FTE)
- 2.4% (47 FTE) impact on jobs in agricultural sector to 1.5% (27FTE) in non-ag.
- Total impact of Basin Plan a 1.4% (75 FTE) without taking into consideration Collarenebri, a town whose major service centre is Moree.
- Total agriculture and agriculture supply sector felt by 22% (520 FTE) with non-ag private sector also declining by 21% (460 FTE) between 2001 – 2011.

In Collarenebri, there was a 66% decrease in water availability which equates to 83% reduction in area for irrigation. This has had the following impact on employment;

- 21% (54 FTE) change in jobs because of the Basin Plan (28% (47 FTE) reduction in farm related jobs and 21% (7 FTE) other private jobs).
- Relates to half of the total job losses which are agriculture and supply sector have 42% (81 FTE) with non-agriculture private sector also declining by 68% (50 FTE) between 2001-2011.

The GVIA recommend that any over recovered water is returned to production in valleys, such as the Gwydir and that the investment is value-added by coupling it with other stimulus opportunities. The return of over recovered water, coupled with smarter investment should aim to offset the economic losses of the past and provide a unique opportunity to strengthen the economic base of the community to build community resilience and reinvigorate the economy of the region. Returning water into production by itself will have benefits by increasing the productive capacity of the irrigated industry, which would have demonstrated benefits for the agricultural and supply sectors, as well as for the non-agricultural sector but will only lead to a partial reversal in the job losses. But if aligned other investment opportunities like new-business stimulus packages, decentralisation initiatives, further investment in transport routes and improved technology access the possibilities to harness this unique opportunity further beyond the farm-gate and for future generations are significant.

Recommendation

- 9. That the committee support the MDBA conclusions that some valleys are over recovered and that the trade of excess water should be encouraged to provide win-win opportunities for communities, industry and the environment.**

5.6.2. *Mining and coal seam gas*

Agriculture has been the back-bone of the Gwydir Valley for 100 years, with irrigated agriculture in the district since 1970's whereas, coal seam gas or other mining, is a relatively new industry to the region and rapidly looking to expand in the area. The two industries must co-exist in a way that each is synergetic and considered an asset to the other.

To achieve this, there needs to be a greater understanding of the potential environmental, social and health impacts associated with mining and agriculture. This information needs to be independently sourced and peer reviewed. The current reliance on self-regulation and mining company science is unacceptable.

We have serious concerns regarding the lack of independent information on the impacts to water aquifers in both quantity and quality and the management of the water as a by-product of coal seam gas extraction. The Namoi Water Study or equivalent needs to be replicated across other valleys where mining and irrigated agriculture has the potential to coexist. Such a study will help to unravel the complexity of surface water and groundwater interactions within the valleys, which we are yet to fully comprehend.

The GVIA believes that scenario testing of the risks associated with individual licence applications and the accumulated impacts in the region must be assessed on several time scales. This information will be critical in assessing the ability of the two industries to co-exist and could help formulate a set of guidelines or criteria for appropriate extraction conditions.

GVIA is not only concerned about the potential impacts to water quantity and reliability but also to quality. Bore drilling for irrigation and stock and domestic purposes must meet The Minimum Construction Requirements for Water Bores in Australia. GVIA is unaware of any Australian Standard for the drilling of bores for coal seam gas extraction, and both industries should be treated equally in respect to regulation.

Such standards would help to reduce the risk of drilling chemicals impacting aquifer and changing their chemistry.

5.7. Conclusion

The Gwydir Valley Irrigators Association (GVIA) welcomes the opportunity to provide this submission Legislative Council's 'Portfolio Committee No. 5 – Industry and Transport's' inquiry into the augmentation of water supply for rural and regional NSW as well as present at the public hearing in Moree on 15th May 2017.

We believe there is scope within the current frameworks to better plan for the use and supply of rural water and that continued improvements in environmental water

management and an investment in complementary (non-flow) measures will ensure that the reforms will result in outcomes.

We ask that all water users, make every drop count, not just industry. And we have highlighted initiatives growers are investing in to enhance water use efficiency and sustainability into the future as well as areas for improvement.

We have as part of this submission provided nine recommendations for consideration by the committee as part of this inquiry.

Submission ends.



Gwydir Valley Irrigators Association Inc.
making every drop count

How the MDBA Northern Review Affects You



Water is the lifeblood of this community it is critical for employment and productivity. The MDBA Northern Review has acknowledged these facts, and recognised that the Government has bought too much water from Gwydir Valley which has hurt our entire community.

Key findings from the Northern Review for the Gwydir Valley:

1. The social and economic impacts of water recovered in the Gwydir have been significant.
2. The Gwydir is a closed system, so water recovered in the Gwydir will have very little impact downstream.
3. A healthy river is **“More Than Flow.”** For example, the bulk release of 40GL of environmental water for fish recruitment was wasted due to cold water pollution and other in-stream problems.
4. The Gwydir Valley is over recovered as the Government has bought too much water. The return of excess water should be encouraged to increased economic activity and enable investment in measures to enhance river health. **A win-win for the community and the environment**
5. The MDBA are pursuing a constraints project to deliver more water to the Gwydir Wetlands. More detail will be requested regarding this project.



Impact on Employment

- At least 200 full time job losses because of water recovery which flows right through the community, with less families, fewer children and diminishing services.
- Population decrease in the Shire of 14% means fewer services for everyone.

“A 19% reduction in school aged children matches the 17% drop in education employment”

Census data 2001-2011 Moree Plains Shire region



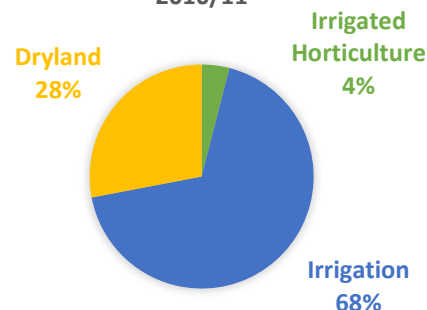
Value of Agricultural Production in MPSC

- MPSC produced approximately 8% of NSW’s Gross Domestic Product valued at \$911 million in 2011.
- This is worth \$2 billion to the community (ABS economic multiplier).

“Irrigated agriculture in 2011 generated \$1.44 billion in economic revenue and activity in MPSC alone”

2011 Census data Moree Plain Shire region

VALUE OF AGRICULTURE IN MPSC
2010/11



Importance of Irrigation

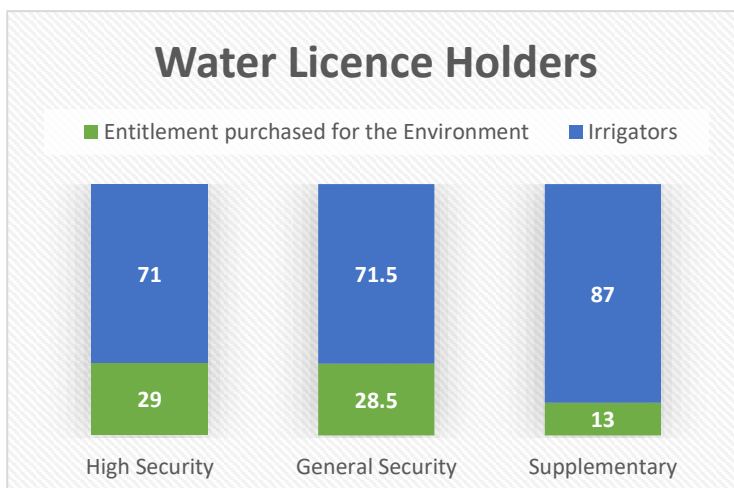
- In 2011 72% of Agricultural production came for the 10% of irrigated land.
- Buy-backs have reduced the irrigated area by 9% in Moree and 80% in Collarenebri – as a result the region’s production peak is lower and there is less time available to recover between low-water years.



Gwydir Valley Irrigators Association Inc.
making every drop count

How Much Water is Available for Irrigation:

- Irrigators have access to **only 19% of long-term average river flows** this includes rules that restrict access below 50% of supplementary events - supplementary events occur on river flows below Copeton Dam.
- Groundwater is allocated based on an estimate that 85% of the aquifers sustainable yield (extraction is lower than the estimate discharge to balance levels).
- Most irrigators have direct access to rivers and manage vast stretches of riparian land.



**The MDBA Northern Basin Community meeting will be held in
 Moree on**

Wednesday the 7th December 2016

at the Banquet Hall, starting at 2:30pm.

Join us to support the recommendations for the Gwydir Valley

Table 1: Summary of census changes 2001 – 2011 moree plains

	2001	2006	2011	Percentage change
Population	15,680	14,124	13,429	-14.35%
Town Population	9,249	8,084	7,722	-16.51%
Number of 'families'	3,906	3,447	3,321	-14.98%
Number of primary school aged children	2,445	2,252	1,978 (1263 registered as attending)	-19.10% (-8.34% on registered no.)
Main employment - agriculture	14.3 % (1,693)	17% with support services 20% (1,217)	15.8% with support services 19.22% (1,113)	-34.25%
Second employment - education	3.8% (450)	5.8% (353)	6.4% (373)	-17.1%

Sources:

Australia Bureau of Statistic Census information, 2001, 2016, 2011.

MDBA Catchment Profiles for the Socio-economic analysis to inform the Northern Review.