

# **Gwydir Valley Irrigators Association Inc.**

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458 Frome St, PO Box 1451, Moree NSW 2400

## Standing Committee on Natural Resource Management (Climate Change)

### *Inquiry into Sustainable Water Management*

February, 2010

**Introduction:** The Gwydir Valley Irrigators Association (GVIA) is a voluntary organisation that represents the interests of irrigation entitlement holders in the Gwydir Valley of North-West NSW.

Membership of the organisation represents in excess of 90% of the privately owned (non-government) water entitlement in the valley, covering regulated, unregulated and groundwater sources.

The Association is a member of both the NSW Irrigators Council and the National Irrigators Council, but reserves the right to express views independently of these two bodies.

GVIA appreciates the opportunity to provide this submission to the Standing Committee on Natural Resource Management (Climate Change) “Inquiry into Sustainable Water Management”, and would like to re-extend its previous invitation for the Inquiry to visit Moree and take the opportunity to gain a first-hand understanding of irrigation in North-West NSW.

GVIA notes that the Committee is particularly interested in:

- a) The likely impact of climate change on the availability of water resources under different climatic scenarios;
- b) Approaches to the management of water resources by all water users including provision for environmental flows; and
- c) Best practice in water conservation and management.

This submission will address those points as well as make comment on a number of significant water management issues that are within the area of responsibility of the NSW Parliament.

GVIA would be delighted to elaborate further on any issue raised in this submission at the committee’s convenience.

**Background Information:** The Gwydir Valley is located in North-West NSW, extending just west of Armidale in the east, through to Collarenebri in the west. While there are small pockets of irrigation sourced from unregulated licences throughout the catchment, the most significant irrigation centres around the regional community of Moree, located approximately 620km north-west of Sydney.

Moree is well recognised as one of Australia's leading cotton producers, as well as a significant producer of winter cereals and other summer crops. Production utilises irrigation and dryland farming systems.

With regards to irrigation there are approximately 15,000 megalitres of high security Gwydir Regulated River entitlement, and 509,500 megalitres of general security entitlement.

In addition there is 178,000 megalitres of supplementary regulated river entitlement, and significant access to rainfall run-off/floodplain harvesting water.

The area around Moree also supports a relatively small groundwater based irrigation industry that has approximately 29,000 megalitres of entitlement available to irrigation.

The valley is within the summer-rainfall zone, and therefore a significant proportion of its average rainfall can fall during intense summer storms. It does not enjoy the relative headwater reliability of the snow-fed southern NSW systems.

The valley's headwater storage is Copeton Dam, which has capacity of 1.3 million megalitres, but has only spilled three times since construction was completed in 1976.

The average long-term reliability of a Gwydir River regulated general security entitlement has been modelled by the NSW Government to be 38%, however, over the past eight years the average reliability has been just 10%, with 4 years (including 09/10 to date) being zero allocation years.

Long-term supplementary access averages approximately 47%, but actual reliability is very location specific.

On average irrigators extract approximately 392,000 megalitres or 34% of the valley's total surface water flow of 1,141,000 megalitres.

The most significant irrigated crop is cotton, as it consistently returns the highest gross margin return of suitable broad-acre crops.

There is a small, but expanding permanent horticulture industry (including the largest pecan nut orchard in the Southern Hemisphere) that utilises high security river water, and increasingly groundwater.

General security entitlement holders utilise the Continuous Accounting method for water account management, with State Water and the NSW Office of Water carrying-out monthly Water Resource Assessments.

The Gwydir Valley is home to the internationally recognised ephemeral Gwydir Wetlands, which cover approximately 10,000ha and which include four Ramsar listed sites.

The NSW Government has recently announced the purchase of a \$10 million property on the Lower Gwydir; the first publicly owned site within the Wetlands, and home to the largest Ramsar listed site.

The Gwydir River Regulated Water Sharing Plan includes a planned adaptive environmental water allowance of 45,000 megalitres. This Environmental Contingency Allowance (ECA) accrues water at the same rate as a general security entitlement, but has more generous use and storage allowances.

In recent years NSW Riverbank has acquired approximately 17,000 megalitres of general security entitlement and the Federal Government holds 88,520 megalitres. In total governments hold 105,000 megalitres of general security licencing as adaptive environmental water (21%) and approximately 17,000 megalitres or 10% of the valleys supplementary licencing.

### **Summary**

- *15,000 megalitres High Security*
- *509,5000 megalitres General Security – 38% LTA reliability – Past 8yrs 10%*
- *178,000megalitres Supplementary – 47% reliability*
- *Cotton, winter cereals, summer cereals, horticulture*
- *Summer rainfall pattern*
- *Continuous Accounting and Monthly Resource Assessments*
- *Home to the Gwydir Wetlands – 4 Ramsar listed sites*
- *45,000 megalitre Environmental Contingency Allowance*
- *Approximately 105,000megalitres or 21% of General Security Entitlement held as Adaptive Environmental Water*
- *Total valley surface water extractions account for 34% of total valley flows*

**The Likely Impact of Climate Change:** GVIA accepts Climate Change as a continuous process, which can be broken down into short, medium and long-term climate cycles. For example there is no doubt that the first decade of the 21<sup>st</sup> Century has been dominated by a severe drought over much of Australia. It is well accepted that the last half of the last century was considerably wetter than the first half, and likewise going back over the centuries there are well documented cases of significant periods of times characterised by higher or lower than average temperature.

In terms of the contemporary climate change debate, GVIA accepts that there is a substantial body of scientific evidence pointing to “Climate Change”, but there is little in the way of clear evidence as to how this “Change” will manifest itself.

In terms of climate change and water management, the most comprehensive study undertaken has been the “Water Availability in the Murray-Darling Basin” a report prepared by the CSIRO for the Australian Government.

It attempted to model water availability in 2030 under a range of Climate Change scenarios.

GVIA has well documented concerns about the Gwydir Valley component of this report, largely to do with methodology and base information, but putting that aside, this comprehensive report concluded that by 2030 surface water availability in the Gwydir Valley may increase by 34%, may decrease by 29% , with a 10% reduction being its “best” estimate.

It is important to note that the “best” estimate is not the result from the model CSIRO had the highest confidence in, rather the statistical average of a range of model outputs.

Given this very high degree of uncertainty, GVIA does not believe that it would be very useful for the NSW Government to seek to establish a water sharing management system designed to meet the needs of a designated climate, but rather should utilise a water sharing system that can handle a range of possible climates.

In this regard, the Gwydir Regulated Water Sharing Plan, and its associated Water Resource Assessment procedures and water account management rules, is a very useful model.

If the aim of a water sharing regime is to ensure:

1. water is shared with a variety of users in a set order of priority;
2. environmental water requirements and extractive use water requirements are treated equitably; and
3. relative shares can be adjusted easily and equitably.

then the Gwydir Plan is a deserving model.

Basic environmental needs, town water supplies, and domestic and stock supplies are secured first, as water becomes available.

As more water becomes available high security Irrigation entitlements are filled, followed by allocations to the general security accounts and the Environmental Contingency Allowance.

Downstream of the dam wall, the Water Sharing Plan allows the first 500 megalitres of uncontrolled system flows to be retained for the environment, while additional flows are theoretically shared 50/50 by the environment and irrigators. The nature of the river flow events and capacity restraints on pumping means the environment averages approximately 75% of these events.

While some Water Sharing Plans have been criticised because they allegedly deliver a greater proportion of the available water pool to extractive users during periods of low flow, the Gwydir Plan has been acknowledged as one that equitably shares between the environment and extractive users during low water resource years.

Should society choose to alter the share balance between extractive users and the environment, this can be easily achieved through the market acquisition of entitlements from one sector and transferred to the other.

Whether climate change results in 30% more water availability or 30% less, its sharing can be handled by the Gwydir Regulated Water Sharing Plan. Each sector would receive its relative share of the available water, be it a little or a lot.

The question for government is whether “Climate Change” impacts on water availability should impact on both extractive users and the environment equally, or whether one sector should receive some form of protection.

While GVIA would argue that the environment must adapt to climate change to the same extent as any other water user, should government decide differently, then the solution is to adjust access by the transfer of shares, rather than through the adjustment of water sharing rules.

For example, Government may decide that the environment requires additional protection from climate change, and that its approach will be to increase the environment’s share of the available surface water pool.

The Government could pursue a rules based approach, and for example increase the size of the ECA. The result would be the environment would receive a greater share of the total resource, but the reliability of all general security licences would fall.

GVIA would argue that the much more equitable approach to achieving the same outcome would be for the Government to stand in the market place and buy general security entitlement off willing sellers. The result would be that the environment would have its share of the available resource enhanced, while the reliability of the balance of general security shares would be maintained.

This approach has been given strong precedence by the recent purchasing activity of NSW Riverbank and the Commonwealth’s “Restoring the Balance” programme.

Likewise, Government may be concerned that town water supplies or industry may suffer if climate change results in less water availability.

If a Water Sharing Plan has been well constructed (such as the Gwydir Regulated River Plan), then these needs are already among the highest priority water, and will receive their full allocation prior to general security entitlement holders receiving anything.

The market would allow these users to trade entitlement among themselves; and if possible, purchase from general security water entitlement holders who may hold water allocated in previous years in their continuous accounting accounts.

This approach allows needs to be met in priority order, while maintaining the entitlement and market based system that underpins NSW's approach to water management and is consistent with the National Water Initiative (NWI).

### *Summary*

- *While Climate Change may be real, its impacts on water availability are largely unknown.*
- *Well constructed water sharing plans can equitably share the available water pool.*
- *Market based transfers can be used to protect identified sectors (if desired) once the impacts of climate change are identified.*

### **Approaches to Water Management By Water Users, Including Provisions for Environmental Flows:**

#### *Market Based System*

With the adoption of the Federal Water Act and the ceding of some water management responsibilities by the States to the Commonwealth, and the consequential creation of the Murray-Darling Basin Authority, water management is once again undergoing fundamental reform.

The development of the Basin Plan (due in 2011) with its Sustainable Diversion Limits and Environmental Watering Plans, and the requirement for NSW to develop Water Sharing Plans consistent with the Basin Plan will ensure significant further changes to water management in NSW over the short to medium term.

For this latest reform to be successful, it must build on the foundations established by the 1994 COAG Water Agreement, the implementation of the Water Management Act 2000, the 2004 NWI and the NSW Water Sharing Plans.

All these processes have fundamentally focussed on developing a more secure and identifiable water right for all participants including extractors and the environment.

While GVIA would strongly argue that irrigators still lack a robust and highly secure property right, there is no doubt that this right has been better defined and strengthened through the above processes, but so have the rights of the environment.

Much emphasis has been placed on developing functioning and mature water markets and this has certainly led to the creation of a framework for water to move to its "highest value use". Governments should be extremely wary about trying to

determine what the “highest value use” is, but should ensure the systems are maintained and enhanced to ensure capability of movement.

It should be stressed that Governments, when deemed appropriate, should be active participants in the water market, and when adopting that role it is perfectly legitimate for them to make their own market-based decisions.

For example, government may wish to supply more water to a wetland site, and GVIA would strongly argue that if that was the case, the required water entitlement should be purchased off a willing seller.

In deciding to buy or not, the government must determine two key things; firstly, is the water to be purchased of more value to the community being retained for extractive, commercial use, or as a tool to enhance an environmental asset?; secondly, it must decide whether the money required is best allocated to water, or to the many other competing demands that are placed on government. This process puts some economic rigour into that decision process.

To further illustrate the above point, the NSW and Australian Government has purchased over a 100,000 megalitres of Gwydir general security entitlement over the past two years at a cost in excess of \$220,000,000. GVIA estimates that for every 1000 megalitres purchased, one long-term on-farm job has been lost and a further three to four downstream jobs have also been lost.

When water availability returns to reasonable levels, these purchases will have very significant social and economic impacts on Moree and the surrounding communities. These community costs must be assessed against the desired environmental benefits.

While a market based entitlement system provides an appropriate framework for entitlement sharing adjustment, many other tools can assist efficient water management, and are appropriate whether entitlement is held by extractive users or for environmental use.

### ***Continuous Accounting***

The Gwydir introduced the system of continuous accounting in the mid-1990s. Under this system a Resource Assessment is conducted monthly (more often if a period of significant inflow occurs). If the assessment results in an increment being made to general security or ECA accounts, that water is credited to the individual water account (for example a 10% increment for a 1000 megalitre GS entitlement would see 100 megalitres credited to that user’s account).

The account water is then free for the holder to either use, trade or hold. The concept of a water year becomes largely irrelevant; the account balance at the end of a month/year rolls over to the start of the next period.

Under Continuous Accounting a persons water account is very similar to a bank account, when water is credited it goes up, when debited it goes down, but it remains



up to the account holder to decide when the water is used. Unfortunately no interest is paid, but there are fees and charges (As said – very similar to a bank account!!).

In the Gwydir the account balance is capped at 150% of the holder's general security entitlement, while the ECA has a 200% cap.

If an increment was to lead to an individual account exceeding its cap limit, the surplus is redistributed to the rest of the general security and ECA accounts.

Prior to Continuous Accounting, any water in a general security account at the end of a water year, was socialised and re-distributed to all eligible accounts at the start of the next water year. This increasingly led to a “use-it-or-lose-it” mentality.

Continuous Accounting allows entitlement holders (including the government on behalf of the environment) to actively manage their water for the highest return.

Water availability in the Gwydir is highly volatile, it is not uncommon for water allocations to accumulate up to 100% over 12 months, but nor is it uncommon to have allocations of zero. In fact, since the commencement of regulated irrigation in the Gwydir Valley total allocation increments for a water year have never been between 35 and 70%.

Without Continuous Accounting an irrigator effectively had to plan to use all available water very year, and due to the wide variability in availability this resulted in highly variable annual production. One year an irrigator might have grown 1000ha of crop, and required the land, machinery and labour to do so, while the next year low water availability may have reduced his programme to 100ha, leaving the irrigator with significantly under utilised resources.

With Continuous Accounting the irrigator may choose to try to average out water use and grow 500ha every year, making it much easier to match resources to production. Likewise an environmental water manager may choose to hold water over from a wet year, to use during a drier year.

### ***Environmental Water Managers***

The actual employment of environmental water managers has also been a significant water management improvement.

For many years the 45,000 megalitre ECA (with a market value of over \$100 million), had no single person responsible for its management. The decision, by the NSW Department of Environment, Climate Change and Water should be applauded.

The ECA is now managed by the Gwydir ECA Advisory Committee, a mature body with a sound track-record, supported by the manager.

GVIA is concerned that the Commonwealth Environmental Water Holder (CEWH) - 88,520 megalitres of Gwydir General Security Entitlement - has no dedicated, locally

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based environmental water manager, and has indicated it will develop its own Gwydir Environmental Watering Plan, rather than join forces with the well established Gwydir ECA committee (It should be noted that the CEWH does have observer status on this committee).

GVIA believes it would be sensible environmental water management if the CEWH handed over management of its Gwydir entitlements to the ECA Committee and the Gwydir environmental water manager.

The doubling up of management systems, and the lack of on-the-ground management, is a very foolish approach.

As one GVIA member like to say – “Centralised economies have failed, and so will centralised ecology.”

### ***Significant Risks to NSW Water Resource Management***

Within the context of the Basin Planning process, GVIA strongly believes that two extremely important NSW water sources are at risk of being unfairly treated.

**Supplementary Water** – Supplementary water is a specific class of water as defined by the Water Management Act 2000. In the context of surface water, it is water that enters into a system below the headwater storage, and therefore cannot be captured by that storage.

GVIA has always opposed the name, as it gives the impression that this water is somehow “incidental” an “add-on”. However, in the summer rainfall, storm based systems of north-west NSW this source of water is absolutely critical, and it is only through the combined application of regulated river, supplementary and floodplain harvesting and overland flow water that the irrigation industry achieves sufficient reliability to be viable.

Given the above, GVIA believes regulated surface water supplementary licences should be re-issued as “Uncontrolled Flow” licences, which much better reflects their characteristics.

However, the more substantial and immediate concern is that the majority of NSW water entitlement classes have been issued in perpetuity, providing those licences with a greater level of security and protection under the NWI and the Water Act’s Risk Assignment provisions.

Surface supplementary licences have only been issued for “life of plan”, that is they exist only while a Water Sharing Plan requires them, and if a Plan ceases to require them they can be cancelled without compensation.

There is no logical reason for supplementary licences to be provided with a lower level of property right than any other class, and given that the Commonwealth has

taken over any Risk Assignment liability from the NSW Government there is no State financial argument to prevent the issuing of these licences in perpetuity.

While GVIA can accept that it is highly likely that the Basin Plan and Sustainable Diversion Limits will result in a reduction in extractions, it cannot accept that these reductions should be inequitably shouldered by holders of supplementary licences, given their critical importance to the irrigation industry of North-West NSW.

**Floodplain Harvesting/Overland Flow** – The third critical surface water source in north-west NSW is Overland Flow/Floodplain Harvested Water – water collected in a controlled manner that has either flooded out of a stream, or is flowing across ground towards a stream.

Opportunity to capture this water primarily occurs after extreme rainfall events causing either local or widespread flooding.

Under the Water Management Act 2000 all water taken for extraction should be subject to a Water Access Licence. The NSW Government has been progressively issuing compliant licences for various water classes since 2004.

First to be issued were high security and general security licences for regulated rivers, followed by supplementary licences, then groundwater licences. The NSW Government has now turned its attention to developing a policy for issuing licences for floodplain harvesting/overland flow.

However, progress has been slow, and this is now becoming a critical issue in the lead up to the Basin Plan.

As GVIA understands it, the Basin Plan will only recognise water rights that are subject to legitimate licences, and it now appears highly unlikely that Floodplain Harvesting licences will be in place when the Basin Plan comes into being in 2011.

This places at critical risk this water source. Its importance can be clearly demonstrated by the fact that the majority of irrigators who have sold general security licences to the Government in recent years are from properties with little or no access to overland flows, and due to the very low general security allocations their irrigation properties have become non-viable.

It is of the up most importance that the NSW Government put immediate measures in place to provide protection to floodplain harvesting from the Basin Plan process.

The NSW Parliament must clearly understand that the industry is only seeking licencing of existing historical practice, and the issuing of licence will not result in any increase in harvesting activity.

In fact, licencing will have to lead to immediate compliance with 1994 Murray-Darling Basin Cap conditions, and provide a framework for the ongoing management

of this practice. While licencing will provide greater security to irrigators, it will also provide a framework for government to better manage the practice.

### *Summary*

- *A more secure property right should be a fundamental outcome of water reform.*
- *A Government should be free to enter the market place – putting “economic rigour into their environmental water requirement decisions.*
- *Environmental water purchases will have significant economic and social outcomes.*
- *Continuous Accounting allows for far greater “self-management” of water resources for both extractors and the environment.*
- *Active and co-ordinated environmental water management is critical.*
- *Surface Supplementary licences should be re-issued in perpetuity has “uncontrolled Flow” licences.*
- *NSW must immediately move to protect “Floodplain harvesting/overland flows” in the Basin Planning process.*

**Best Practice in Water Conservation and Management:** The role of government in this area should be to ensure support for high level research and extension in the area of irrigation efficiency and management, but it should at all cost avoid the trap of trying to dictate what constitutes “Best Management”.

The most appropriate irrigation system for any one circumstance will be determined by a whole range of factors that are best judged by the individual irrigator. While one person may select a lateral move irrigation system, it can be equally legitimate for an irrigator to retain a well optimized surface irrigation system.

Irrigators, as business men and women have all the incentive in the world to optimize their irrigation efficiency. In many cases more than 80% of their business assets consist of water entitlements, and therefore it is imperative that they maximise their returns from these entitlements.

In the current context of environmental water acquisitions, the NSW government should throw its support behind “On-Farm Irrigation Efficiency” projects as an alternative to straight water purchase.

In summary, these programmes part fund irrigation system upgrades (determined by the irrigator) in return for a share of the efficiency savings (in the form of water entitlements).

Because these programmes operate on a share of the savings, water is obtained for the environment, while still maintaining production from extractive use, providing a win-win to the environment and the economy.

## **Summary**

- *What consists “Best Practice” is best determined by individual irrigators.*
- *Government should support quality research and extension.*
- *“On-Farm Irrigation Efficiency Schemes should be supported as a preferred way of acquiring additional entitlement for the environment.*

## **Submission Concludes**