

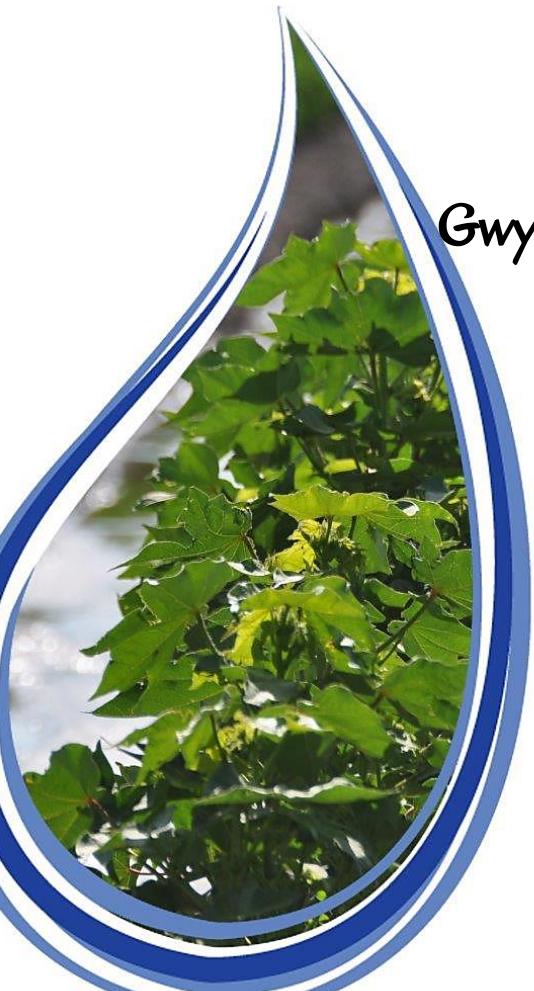


***Submission to the Murray-Darling Basin
Authority:***

Basin Plan Amendments 2017

Gwydir Valley Irrigators Association

February 2017



making every drop count

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1 Purpose of this Document

This document has been prepared for the Murray Darling Basin Authority (MDBA) to be considered when finalising their recommendation to Minister for Agriculture and Water on the Basin Plan Amendment Instrument 2017 (No 1).

We have prepared this document on behalf of our members; water entitlement holders and users in the Gwydir Valley, NSW. However, each member is entitled to make their own submission on the matter and we have actively encouraged them to do so.

This submission has been prepared with consideration to the submission by the New South Wales Irrigators Council (NSWIC) and National Irrigators Council (NIC) of which our members, are also members. As well as the National Farmers Federation (NFF) submission to which we also support as a member of the #MoreThanFlow campaign. We support the submissions by these organisations.

2 Executive Summary

The Gwydir Valley Irrigators Association (GVIA) welcomes the opportunity to provide this submission to the Murray Darling Basin Authority (MDBA) on their proposed amendments to the Basin Plan.

Following a review of the documentation provided by the MDBA during the Northern Review but also throughout the development of the Basin Plan and from our experience of implementing the Basin Plan in our valley, we have determined that there is substantive evidence to reject the headline recommendation of the Northern Review to reduce the sustainable diversion limit by 70GL to 320GL.

We recommend that no further recovery is required resulting in a further downward revision for the Northern Basin, as well as a reduction in the Gwydir Valley's instream requirements, for the following key reasons:

- Under-estimation of the social and economic impact;
- Lessons from the implementation in the Basin Plan in our valley;
- Inherent model inaccuracies;
- Model assumptions particularly on the recovery location of environmental water, aspirational operational capabilities and behaviours and flow relationships being out-of-date;

- Flaws in the methodology to determine water requirements and uncertainty around the analysis;
- Deliverability of water from upstream catchments particularly from the Gwydir Valley;
- Changed conditions and behaviour of environmental water managers that are not represented; and the
- Recognition of the need to invest in non-flow complementary measures, which will maximise environmental outcomes with the water we already have.

We explore each of these areas and others as part of this submission and in doing so, have developed 16 recommendations for the MDBA as well as the Australian and NSW Governments, to consider when finalising the proposed amendments and future implementation of the Basin Plan.

3 Introduction

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

The GVIA have long been the voice for water users but also the local community when it comes to water planning and management. The Association was officially formed in 1996 at the beginning of what would become more than a decade of water debate and participated in the Murray Darling Basin Cap process, the National Water Initiative debate, the preparation and establishment of each of the water sharing plans for the region, the of the Murray Darling Basin Plan and more recently, participation in the Northern Basin Review for the Basin Plan.

Throughout the more recent Commonwealth reforms, the GVIA has maintained that the Water Sharing Plan for the Regulated Gwydir River more than adequately shares water between users and the environment. The large volumes of additional environmental water purchased above the WSP^{1,2} which equals 29% of High Security entitlements, 21% General Security entitlements and 13% of Supplementary entitlements and the closed nature of our valley has influenced the science behind the determination of water requirements in our region and resulted in a lack of appetite to review this information even throughout the almost four-year Northern Review.

¹ NSW Government holds 1,249ML of High Security, 17,092ML of General Security and 3,141ML of Supplementary entitlement.

² Commonwealth Environmental Water Holder holds 4,508ML High Security, 89,525ML General Security and 20,451ML of Supplementary entitlements

We do not support the in-valley water requirements in our valley and believe that there is more environmental water in our region than what can be efficiently and effectively delivered. Government's must recognise this over-recovery and use this opportunity to provide genuine economic growth in our region that was devastated by past water recovery strategies.

We implore Governments to learn from the lesson's in the Gwydir Valley and not condemn other valleys to the same social and economic hardship, and requiring more water to seek marginal environmental benefit above what is already being achieved.

We do not support the headline recommendation of the Northern Review to reduce the sustainable diversion limit by 70GL to 320GL on the basis that there is practical, scientific, social and economic evidence to support a lower level of water recovery across the whole Northern Basin but importantly, also a downward revision in the Gwydir Valley's in-valley requirements. Enough is enough and no further water recovery should be required.

We believe that river health is more than flow; its people, the environment and industries and that the information gathered for the Northern Review provides the MDBA and Government's, a unique opportunity to enable a true triple bottom line decision and initiate a fundamental shift in the debate towards environmental outcomes. In doing so, Governments can amend past decisions and provide our community (and others in the Northern Basin) a pathway to a better future, with a strong a vibrant industry and a healthy working river.

We therefore welcome the recognition by the MDBA of the value in investing in non-flow complementary measures but believe broader actions can be considered. Outcomes must be prioritised and investment targeted, to maximise environmental benefit from the water already recovered. We believe that there is strong community support for such investment, which has the potential to be transformative for generations to come.

We thank the MDBA for the opportunity to provide comment on their proposed amendments and their genuine effort to engage throughout the latter part of the Northern Review.

4 Recommendations

The following is a list of recommendations provided throughout this submission, we recommend:

1. In-valley water requirements in the Gwydir Valley are reviewed and reduced.
2. A program is developed to update local hydrology models with current practice assumptions prior to any future reviews.

3. A review of roles and responsibilities of Government involvement in Basin Plan implementation and planning.
4. Governments work with regions where there is over-recovery of environmental water to ensure multiple benefits.
5. A reduction in the level of water recovery further for the Northern Basin.
6. The investment in non-flow complementary measures should be broader to include other natural resource management initiatives provided they provide a benefit to Basin Plan objectives.
7. No further recovery is proposed.
8. The identification of priority environmental outcomes and develop a program of integrated non-flow complementary measures.
9. The downstream demands for the Gwydir Valley are removed in model assumptions.
10. Efficiencies gained from in-valley works and measures projects be used to reduce in-stream requirements.
11. Governments to learn lesson from impact of water recovery in the Gwydir Valley.
12. Establishment of an industry-government taskforce to work through the commercial options available to address the need to protect environmental flows.
13. Removal of the Gwydir constraints project from key recommendations for the Basin Plan amendments.
14. Development and provision of detailed evidence to support the benefit and costs of the constraints project for other funding opportunities (outside of the Northern Review).
15. Substitution of funding from water recovery into non-flow complementary measures to maximise environmental benefit.
16. Smarter investment in community support programs.

5 General Comments

5.1 Basin Plan implementation

The Gwydir Valley has had environmental water in some form or another, managed in our valley since the final construction of Copeton Dam in late 1970's. Hence, the Basin Plan was another increment in the reform process endured by the industry and

community over 40-years. But the Basin Plan not only further expanded our local environmental water portfolio but increased the complexities around planning and using environmental water.

An analysis of the use of environmental water since 2010-11 highlights that despite new environmental assets being addressed (Mallowa and effluent flows for fish recruitment), past water deliveries could be met through water sharing plan rules and allowances and NSW holdings alone.

Table 1: Environmental Water Deliveries 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.

Above in Table 1: Environmental Water Deliveries in the Gwydir Valley, summarises the volume of environmental water against the outcomes and its location; either the wetlands or effluent systems and highlights that successful outcomes in the Gwydir and Mallowa regions would be achieved with or without the additional water requirements or not. This can be easily calculated from 2012 after all accounts were

maximised and where a running tally of account limits is provided in the final column of Table 1.

Together, the ECA with NSW held entitlements for high security and general security¹, would have met all the environmental water deliveries in the Gwydir Valley without the additional entitlement via the Commonwealth buy-back program. This is despite there being high water use for the Mallowa wetlands as the resilience strategy was established and implemented and the unexpected delivery of water to the Gwydir wetlands in 2014-15 due to fire.

This raises many questions regarding how assumed and actual behaviours differ and how lessons learnt during implementation can be incorporated into current decisions. But more importantly on whether, the current water recovery targets are accurate.

Clearly past behaviour and usage analysis suggests that environmental water needs of the Gwydir Valley have been overstated, we explore this further in Section 6.1 SDL amendments. As such we recommend that a review of the in-stream requirements should be undertaken with an aim to reduce the in-stream water requirements.

Recommend that the in-stream water requirements in the Gwydir Valley are reviewed and reduced.

Furthermore, the implementation of the Basin Plan in our region has also highlighted how adaptive local management can achieve outcomes but how that in-turn, exposes flaws in the underlying assumptions of the Basin Plan, creates a time-lag the information contained within decision making tools and subsequently affects the accuracy of predictions of water required for the environment. For example, environmental managers have learned and adopted their approaches over-time to achieve and value add outcomes but that assumptions of behaviour within the Gwydir Integrated Quality and Quantity Model (IQQM) are stagnant, outdated and miss-representing actual practice. In fact, the baseline assumptions as of 2009 are even considered inaccurate for environmental water management behaviour at that point in time.

This undermines our confidence in any analysis of environmental outputs within the Northern Review for our valley but also raises questions around the validity of the underlying assumptions for other valleys as well.

Not to mention, the time-lag in model re-development will present significant challenges for assessing the performance of the Basin Plan, if the models are used as part of any future analysis. For example, due to works and measures of Basin Pipe Program in Gwydir and Mallowa wetlands in addition to the NSW Government land purchase held as state conservation areas, there have been physical changes in flow delivery patterns they have in-turn altered requirements in the Gwydir. These changes are not reflected in the model assumptions utilised by the MDBA and whilst their impact on water requirements has not been quantified (they would have to be modelled), they fundamentally affect the achievement of environmental outcomes in the valley both in practice and theoretically as part of the achievement of SFI

analysis. Considering these changes occurred early in Basin Plan implementation and it is now 2017, such a time-lag is unacceptable as decisions regarding the future of regional communities are being made on out-of-date data rather than the 'best available science'.

These issues combined, increase the level of uncertainty around the SFI analysis and outcomes to be achieved by the MDBA. As such we reinforce the MDBA's view that the model outcomes are information to guide the decision in a triple bottom line approach rather than the decision-maker.

We are however, disappointed that the MDBA could not upgrade models during this review time-frame. We recommend that the MDBA work with Basin States to provide a road-map to updating models with the most current practice assumptions before undertaking further statutory Basin Plan reviews.

Recommend a program to update local hydrology models with current practice assumptions prior to any future reviews.

In our region, local implementation is an extension of those processes in place for the local water sharing plan have continued to mature over-time as relationships, the science and local knowledge builds. The Basin Plan has resulted in additional layers of bureaucracy within the water space as in Figure 1, which looks at the implementation of the Basin Plan in regards to 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 also the costs associated with water management and clarity around roles and responsibilities under the Basin Plan.

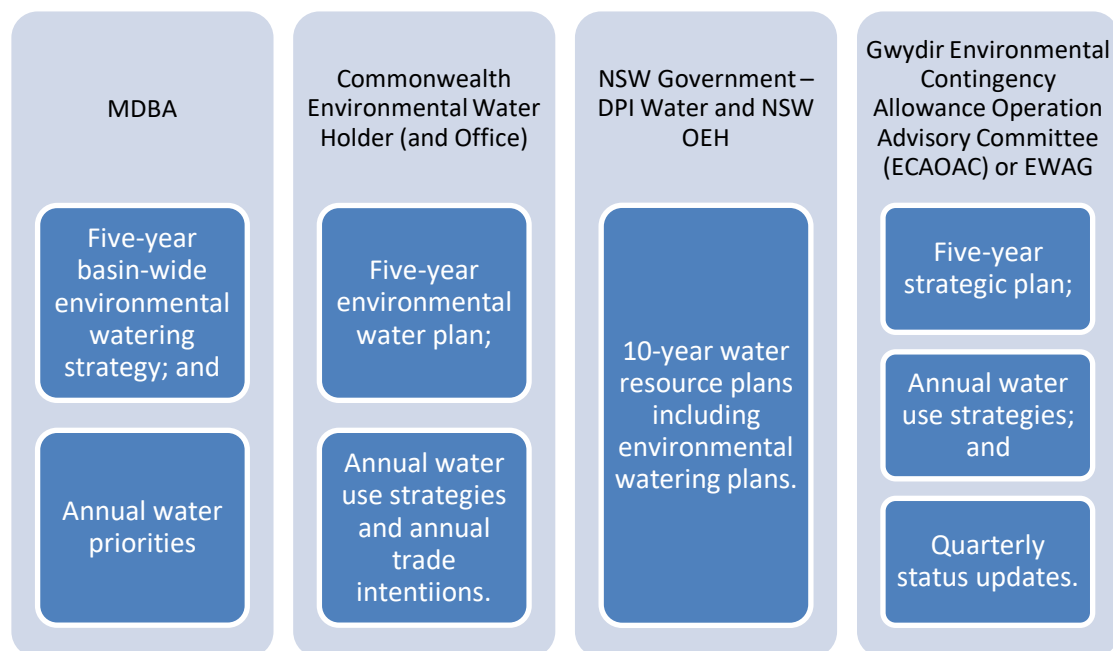


Figure 1: Government Agencies involved in environmental water planning under the Basin Plan.

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 CEWH and Basin states are responsible for implementation over a 10-year period.

Recommendation that a review of roles and responsibility of Government involvement in Basin Plan implementation and planning.

5.2 *Over-recovery of environmental water*

As outlined earlier, the Gwydir is considered over-recovered for environmental water entitlements and that is prior to any amendments to the in-valley recovery volume or a correction to the conversation factors to calculate long-term diversion limit equivalents. Government's must recognise this over-recovery and use this opportunity to provide genuine economic growth in our region that was devastated by past water recovery strategies. In doing so, Governments can amend past decisions and provide our community (and others in the Northern Basin) a pathway to a better future, with a strong a vibrant industry and a healthy working river.

We recommend governments work proactively with those regions who are over-recovered and determine mechanisms to return water into production in a way that limits third-party impacts and maximise the opportunity to offset the poor policies of the past. We provide further commentary on this in Section 6.8 Community support.

We recommend governments work with regions where there is over-recovery of environmental water to ensure multiple benefits.

5.3 *Review scope*

The GVIA has long-been frustrated with the scope of the Northern Review to focus primarily on the Barwon-Darling and Condamine Balonne regions due to the scale of the water recovery in those areas. We were lead to believe that this would result in a review of only those valley's instream requirements, in addition to the downstream component. Yet the MDBA's recommendation resulted in amendments to other local in-valley reductions as well, which contradicts their previous advice to Northern Valley's. This change-of-heart has undermined the good will established between the MDBA and northern communities throughout the Northern Review.

The GVIA has provided several submissions to the MDBA on issues associated with the local in-valley recovery requirement for the Gwydir Valley and believe that due to the large volume of water recovered (over-recovered) in the Gwydir, there has been no appetite to assess the suitability of local site flow indicator targets for our region. Which is unacceptable for our community who has in the MDBA's own analysis suffered significantly due to the 'no-regrets' buy-back policies of the past.

We will provide more detail on our issues with the local valley requirement in Section 6.1 SDL amendments and recommend that the MDBA prioritise this issue.

5.4 *Socio-economic analysis*

The GVIA welcomed the long-awaited results from the MDBA's socio-economic analysis. Whilst we may not agree with every assumption adopted by the MDBA in selecting individual community profiles and the impact of certain types of water recovery programs, we feel that the results vindicated the concerns raised by our community and industry. The loss of nearly 200 jobs from the region on top of a decline in the major employment sector of agriculture³ has slowly crippled the economic stability of the region.

Removing water from irrigation-dependent communities hurts those communities. However, in our experience, removing that water in large whole-of-farm transactions coupled with multiple smaller purchases, the cumulative impacts of removing a quarter of the water entitlements² from production almost over-night, cannot be easily mitigated.

The socio-economic impact of the Basin Plan in our region is drastic and the MDBA analysis whilst welcomed, continues to under-estimate the impact on the ground, as social changes filter through the region and businesses continue to adjust or close. The social and commercial relationship between Moree and Collarenebri continues to be miss-represented through the community profiling, supporting our belief that the impacts in our region are under-estimated. There are also impacts that cannot be measured by statistics and numbers and these in-tangibles, are what compound the measured impacts reported by the MDBA.

We support government's continuing to monitor these metrics and updating the MDBA database and model with new census data when its available to provide long-term regional information for decision making. This information will be invaluable in not only monitoring the impact of the Basin Plan in the future but also identifying regional social and economic trends as opposed to national or state analysis and should assist governments and businesses alike.

5.5 *Engagement and consultation*

The GVIA has welcomed the genuine approach by the MDBA to engage throughout the latter part of the Northern Review. We have been frustrated with the lack of information behind some recommendations within the Northern Review, particularly the constraints project in our region. We note we are still awaiting documentation on the benefits of the Gwydir constraints project from the MDBA (and the NSW Government). But overall have supported the approach by the MDBA to provide multiple opportunities for consultation.

³ Northern Basin Review, Technical Overview of Socio-economic Analysis by MDBA (2016) and Community Profiles of Moree and Collarenebri by MDBA (2016)

As outlined earlier, we do believe that the change of scope of the Northern Review towards the end of the program to look at in-stream water requirements has undermined the relationships built by the MDBA throughout the review process. This fundamental shift in scope is unacceptable by the GVIA.

6 Northern Review Recommendations

The GVIA does not support to headline recommendation of the Northern Review to reduce the sustainable diversion limit by 70GL to 320GL as we believe no further water recovery is required. Because there are practical limitations as well as scientific and social and economic evidence to support a lower level of water recovery across the whole Northern Basin but importantly, also consider a revision in the Gwydir Valley's local requirements.

We believe this is a unique opportunity afforded to the MDBA to enable a triple bottom line decision whilst instigating a fundamental shift towards outcomes. In doing so, governments will be able to amend past decisions and provide our community (and others in the Northern Basin) a pathway to a better future, with a strong vibrant industry and a healthy working river.

Recommendation to reduce the level of water recovery further for the Northern Basin.

We believe that river health is more than flow; its people, the environment and industries and that the MDBA's recommendations within the Northern Review, whilst not binding recognise that there must be greater investment in non-flow issues to ensure outcomes can be achieved. We welcome the inclusion of recommendation to invest into complementary measures to achieve environmental outcomes under the Basin Plan. We have provided commentary on this in Section 6.5 Works to promote native fish.

However, we believe that the MDBA could extend their recommendation to address broader natural resource management issues not only works to address native fish. For example, further investment in riparian land management to maintain and improve the extent of riparian conditions would have flow-on benefits to environmental objectives of the Basin Plan. As would the control of feral animals that require a regional strategic approach to manage the risk of damage by feral pigs and foxes to private land but also public land, as in the Gwydir the State Conservation Areas and RAMSAR sites in the Gwydir Wetlands. Due to an intense increase in feral pig numbers future bird breeding events are at risk of being less successful due damage by pigs.

We recommend that investment in complementary measures should not be limited to those works that only improve native fish habitat but that could be seen to directly improve the achievement of any of the Basin Plan objectives.

Recommend investment in non-flow complementary measures should include other natural resource management initiatives provided they provide a benefit to Basin Plan objectives.

The following sections address the key recommendations of the Northern Review.

6.1 *SDL amendments*

The GVIA does not support the recommended reduction in water recovery by 70GL to a Northern Basin SDL of 320GL. Following a review of the available information informing the MDBA's recommendation, we believe that they have underestimated the already large social and economic cost, there are limitations to the scientific analysis to inform water requirements in addition, to our experience that would suggest that complementary measures, if appropriately prioritised, could achieve as much if not better environmental outcomes than assumed. We believe that the achievability of assumed outcomes is undermined by:

- Inherent model inaccuracies;
- Model assumptions particularly where environmental water is recovered from and operational capability and behaviours;
- Methodology to determine water requirements is flawed with setting of site flow indicators (frequencies) beyond historical limits;
- Deliverability of water from upstream catchments; and
- Changed conditions; behavioural and on-the-ground.

The following sections look at the Gwydir Valley as an example and why we believe that the local requirement in the valley continues to be unjustified and that the high level of water recovery in the region⁴ and the closed hydrological nature of the system⁵, meant that there was no appetite by the MDBA to review the suitability of these targets during the Northern Review. Our analysis of actual usage earlier in Section 5.1 Basin Plan implementation, highlighted this with practical evidence. Notwithstanding we have repeatedly provided submissions to the MDBA outlining our concerns with the SFIs for our region and the underlying assumptions of the water requirements for the Gwydir Valley.

If we in the Gwydir, with a long-history of environmental water and management and with clearly identified environmental assets, consider there to be questions regarding the suitability of our water requirements, we subsequently have reduced confidence in the overall Northern Basin settings.

For this reason, we recommend that no further recovery is proposed by the MDBA and that a focus on identify priority outcomes and developing integrated complementary measures should be considered.

Recommend that no further recovery is proposed.

⁴ The region prior to the proposed amendment was considered "over-recovered" when updated conversation factors are applied.

⁵ Inability to reliably contribute to downstream catchments.

Recommend to identify priority environmental outcomes and develop integrated non-flow complementary measures

6.1.1 *Analysis of local specific flow indicators*

A summary of the SFIs for the region and comments regarding their appropriateness are provided below in Table 2 a Summary and Analysis of Site Flow Indicators for the Gwydir Valley, which was compiled by information contained in the MDBA's own supporting documentation^(6,8).

Site specific flow indicators as explained by the MDBA water requirements in the Gwydir are based on a multilayered assumption analysis⁶ being:

- The flow metric being targeted is accurately selected;
- The flow rate, duration etc. can be replicated in the real world; and
- The desire flow equates to environmental outcomes.

The GVIA raised concerns with the objective determination of these 'targets' by which the environmental water requirements were calculated. Whilst the flow and duration targets for most (the Gwydir wetlands and to a lesser degree the Mallowa targets) were referenced to be consistent with the local adaptive environmental water plan⁷, increasing of the frequency of these targets over and above either the without development scenario or the baseline, is extremely concerning. As presented in Table 2, these alterations act to provide the justification for environmental water already acquired rather than what would be needed.

The admission that the MDBA ignored water sharing plan operational constraints to deliver desired volumes within target ranges further supports concerns that the instream SFIs in the Gwydir have been embellished. Although we note in the report summarising hydrological modelling for the northern review⁸, this assumption has been reversed, resulting in the non-achievement of that SFI, which we suspect is not designed to be achieved as its Basin Plan target frequency is 20-35% higher than the without development frequency (difference Basin Plan to WOD in Table 2 for SFI 1). It highlights the uncertainty around the model assumptions and representation and a willingness of the MDBA to change fundamental assumptions either within the decision-making tool or the targets to achieve an outcome.

Furthermore, the base flow targets which appear to be difficult to meet under any water recovery scenario have been established with a lack of supporting evidence. These targets were established from one set of data collected over three years, barely significant to create specific and permanent ecological links. However, recent environmental water manager behaviour would suggest that these can be met (if they

⁶ Assessment of environmental water requirements for the proposed Basin Plan: Gwydir Wetlands by the MDBA (2012)

⁷ Gwydir Wetlands Adaptive Environmental Management Plan, Department of Environmental, Climate Change and Water (2011)

⁸ Hydrological modelling for the Northern Review by the MDBA (2016)

Table 2: Summary and Analysis of Site Flow Indicators for the Gwydir Valley

Stream Flow Indicator	Volume (GL)	Duration (days)	BP Target	WOD	Baseline	Requirement	Ha	ML/Ha	Comments			
Gwydir – Yarraman Bridge Gauge	Wetlands	40	60	Oct-Mar	80-90	67	70	667	ML/day	9456	6.3	1. Natural flows required to meet as daily requirement greater than river operations. 2. Baseline conditions exceed WOD. 3. Basin Plan target exceeds WOD.
	Wetlands and near channel	60	60	Oct-Mar	60-70	57	63	1000	ML/day	12404	4.8	1. Natural flows required to meet. 2. Baseline conditions meet WOD and BP.
	Low-level floodplain	80	60	Oct-Mar	40-50	50	46	1333	ML/day	10158	5.9	1. Natural flows required to meet and cannot be created. 2. Baseline within Basin Plan target, just below WOD.
	Mid-level floodplain	150	60	Oct-Mar	20-30	29	20	2500	ML/day	23821	2.5	1. Natural flows required to meet and cannot be created. 2. Baseline within Basin Plan target.
	High-level floodplain	250	60	Oct-Mar	12	14	11	4167	ML/day	34327	1.7	1. Natural flows required to meet and cannot be created.
Mallowa	Wetlands and low-level floodplain	5.4	120	Feb/Mar Aug/Spt	95	17	91	45	ML/day	850	6.4	1. Duration requirements cannot be met within time-period targeted. 2. Baseline exceed WOD. 3. Basin Plan target greater than WOD.
	Wetlands and low-level floodplain	4.5	92	Nov-Jan	40-50	15	1	49	ML/day	850	5.3	1. Current operational limitations.
River-channel	Base flow	150/day	45	Oct-Jan	85	38	81	6750	ML	N/A		1. Cannot occur at same time as 1 and based on flow behaviour analysis of 2007/08 only.
	Fresh	1000/day	2	Oct-Jan	85	89	81	2000	ML	N/A		1. Aim to enhance conditions rather than reinstate (MDBA environmental water requirements). 2. Developed from limited data.

are proven to be valid water requirements). As evidenced by actions in June and July 2016 when environmental water managers provided base flows following an extended dry period to maintain pool levels for fish and other aquatic species.

An analysis of past behaviour of environmental water use also highlight issues around the implementation of the Basin Plan but particularly around how the water requirements appear to be over and above what is required with the SFIs for the Gwydir Valley.

We therefore, recommend a review into the Gwydir Valley's local environmental water requirements, primarily because:

1. SFI frequency targets aim for an exceedance of without development probabilities, suggesting outcomes were being targeted beyond natural conditions (as for lower volume Gwydir wetlands targets, the Mallowa targets and the river-channel base flow target).
2. Baseline outputs are meeting or exceeding SFI requirements (or without development frequencies) due Water Sharing Plan rules and resulting change in behaviours (as with all Gwydir wetland targets, the higher volume Mallowa target and the in-river targets),
3. SFI for base-flow and in-stream freshes targets are based on limited science and if beneficial, can be met through improved model assumptions reflecting change in management.
4. Model assumptions and actual behaviours do not align and therefore do not provide an up-to-date assessment of SFI achievement.

Interestingly, there is no improvement of environmental outcomes being achieved under any scenario tested in the Gwydir Valley from current recovery to more recovery, yet no scenario has tested a lower water recovery volume (to assess the sensitivity at which SFIs are impacted). We believe that this was neglected by the MDBA due to the volume of water recovery that had already occurred and is a miss-justice to the Gwydir Valley communities.

We recommend that the Gwydir in-valley requirements are prioritised for future review and that a further lowering of the Northern Basin recovery target is justified as baseline conditions meet most SFIs and those SFIs that cannot be address, management changes (and a subsequent change in model assumptions) would indicate that they can be addressed.

6.1.2 *Connectivity*

Furthermore, we note that assumptions of 300ML/day flows from out of the Gwydir Valley remain part of the hydrological assumptions in an optimised Northern Basin⁸. The delivery of any water from Copeton Dam for the purposes of downstream requirements is flawed; its inefficient due to long delivery times, losses and flow attenuation, will be ineffective in meeting overall outcomes due to the limited volumes and has the potential to undermine the achievement of outcomes within our own Valley whilst also ignoring the valley's historical geomorphology.

It is accepted that the Gwydir River is an inland terminal river network that is also classified as “distributary” network⁹. This indicates that the rivers become a series of branching channels that distribute their flows across large areas especially during flood times¹⁰. This distribution of water represents wetland areas of which the Gwydir has internationally recognised Gwydir Wetlands.

However, it also means that the Gwydir River under natural conditions would have a very low ability to contribute to surrounding catchment inflows¹⁰. The Gwydir River can be reported to have a 3%¹¹ to 12%¹² long-term contribution to the flows in the Darling. This low level of long-term contribution is consistent with other terminal valleys within the Northern Murray-Darling Basin, where large volumes of water can contribute downstream during discrete flood events.

The low outflow or end-of-system flow is a result of the majority of the water within the system flowing towards the terminal wetlands¹³. However due to development (or channelization) of the river systems for stock and domestic and then irrigation purposes, larger volumes of water can be diverted away from the wetlands meaning that end of system flows now under current conditions are greater than under natural conditions¹⁰. A fact often ignored in current MDBA analysis due to inaccuracies in without development scenarios that is not corrected for channelization.

Thus, the Gwydir Valley is already contributing flows beyond historical capability and that any additional contributions, regardless of how low, are in direct contravention of the terminal nature of our system. Not to mention that the establishment of additional downstream demands for the Gwydir would result in a reduction in water available for the in-valley assets, directly undermining the ability to achieve wetland outcomes¹⁴ as outlined in the methodology to determine the ecological sustainable level of take.

We therefore object to the inclusion of downstream demands from the Gwydir Valley and recommend that these are removed and suggest that water requirements are subsequently reduced upon reflection.

Recommend that downstream demands for the Gwydir Valley are removed in model assumptions.

⁹ The Shared Water Resources of the Murray-Darling Basin, Murray Darling Basin Commission (2004)

¹⁰ The Impacts of Water Regulation and Storage on the Basin's Rivers, Murray Darling Basin Commission (2007)

¹¹ Critical water planning for the Murray Valley and Lower Darling by NSW Office of Water (2010).

¹² State of Hydrology Report by Murray-Darling Basin Commission (2007)

¹³ Wetlands of the Gwydir Valley: progress report, prepared for the MDBC by Green & Bennett (1991)

¹⁴ The proposed “environmentally sustainable level of take” for surface water of the Murray Darling Basin: Method and outcomes by MDBA (2011)

6.1.3 *Changed conditions*

Another concern regarding the volume of water required for the environment is the assumptions around current conditions within the Gwydir Valley. It is widely recognised that the core wetland areas have significantly reduced through land development and clearing for cropping (both for dry land and irrigated)⁷.

The current estimated wetland area is reduced by almost 76,216 Ha. The Semi-permanent wetland is approximately 6,829 Ha and the floodplain wetland 77,949 Ha⁷ yet the MDBA target areas are greater (see Table 2), which increases the volume of water required to water this area based on accepted estimates megalitre per ha.

This inconsistency raises further questions around the outcomes of water requirement analysis in the Gwydir as larger area would result in larger volumes of water.

In addition, there has been two major changes within the wetland area that additionally affect the estimate of water requirements. These being NSW government land purchases and works and measures projects.

Whilst it is unclear on the impact of these programs, recognition that the Lower Gwydir and Mallowa Basin Pipes projects for example would have resulted in significantly altered flow regimes in these regions and the benefits from these new delivery patterns have not be incorporated into Basin Plan assumptions. For example, it is the understanding of GVIA that in the Lower Gwydir due to a reduction in water losses away from target areas, less water can now be delivered to achieve the same outcomes.

As these works were post the 2009 baseline scenario for the Basin Plan any new efficiencies have not been incorporated into the model assumptions. The GVIA request that the efficiencies gained from these works be considered as a reduction in the in-stream requirements in our valley.

Recommend that efficiencies gained from in-valley works and measures projects be used to reduce in-stream requirements.

6.2 *Targeted Water recovery*

Notwithstanding our position of no further water recovery, the GVIA implores the MDBA to consider the lessons learnt from the recovery of water in our valley and work with governments to ensure that they are not repeated in any future programs.

Recommend governments to learn lesson from impact of water recovery in the Gwydir Valley.

Removing any volume of water from production will hurt that community, regardless of the mechanism used to acquire that water. Governments must acknowledge this and consider the trade-offs in those regions, if water recovery continues to be perused.

We support the implementation of a strategic taskforce as outlined by Minister Joyce to assist the government in their future strategies and support governments working directly with affected communities and industries.

6.3 Protection of environmental flows

The Australian Government with the establishment of the National Water for the Future Fund including the Sustainable Rural Water Use Infrastructure program and others¹⁵ meant that the Commonwealth made a commitment to Basin States and their communities to enter commercial arrangements to meet the requirements to 'bridge the gap' between baseline conditions and the Basin Plan. This decision was to protect the rights and reliability of water entitlement holders within the Basin to fulfil their objective for a healthy working Basin with strong industries and communities. The pursuance of protection of environmental flows should therefore, maintain this commitment and the Australian Government (the Commonwealth Environmental Water Holder) should consider commercial arrangements to meet their requirements.

We do not support any proposal to impact on the rights of entitlement holders therefore any proposal with negative third party impacts should not be pursued.

There are a range of commercial options currently available within the water market that could be adopted to meet the requirements desired by the MDBA to 'protect environmental flows'. This would require however, the MDBA with environmental water managers to prioritise environmental outcomes to be targeted and negotiate arrangements with water entitlement holders. Which would be somewhat more difficult than the MDBA's current option of impeding rights but not impossible to achieve.

Greater flexibility in the Commonwealth Environmental Water Holder's ability to participate in the market would enable such market transactions to the benefit of the environment to occur more easily. As such, we recommend further consideration of the restrictions to the CEWH in the water market within the Water Act 2007 to be reviewed to help support these outcomes.

We recommend the establishment of an industry-government taskforce to work through the commercial options available to the CEWH to address concerns around the need to protect environmental flows.

Recommend the establishment of an industry-government taskforce to work through the commercial options available to address the need to protect environmental flows.

¹⁵ <http://www.agriculture.gov.au/water/mdb/programmes/basin-wide>

6.4 Gwydir Constraints Project

The GVIA supports the concept that governments should invest in works or measures that provide opportunities to achieve improved or greater environmental benefit with the same or less environmental water. As recommended above, we believe any such projects, should offset the volume of water required for the environment in the long-term. Such projects are not about achieving the Basin Plan but enhancing its outcomes and as with all government investments, should be thoroughly assessed to ensure that the public benefit out ways the cost.

However, we could not at the time of this submission, access any publicly available information that would outline why the MDBA believe that getting more water into the Gwydir Wetlands¹⁶ is a project that meets the above criteria.

From our limited knowledge and our SFI assessment in Table 2, we assume the project aims to address the limitations around required minimum daily flow rates of 667ML/day to achieve flow deliveries into the core areas of the Gwydir Wetlands. As noted in Table 2, this SFI requirement exceed the current operational capacity within the river due to the restrictions at the offtake, as well as channel capacity which significantly reduces downstream of the offtake. It was the capacity at this regulator that was ignored in modelling assumptions for the establishment of environmental water requirements in the Gwydir and coupled with the low volume channel capacity means that all wetland SFIs must be supported by natural flow events, which must exceed operational constraints to be successfully achieved. Therefore, any project must fully address the issues of regulation capacity, channel capacity and improve efficiencies in delivery, which would have to consider flow attenuation (time and losses) as well as third party impacts.

The GVIA was also seeking as part of documentation within the Northern Review, was a greater understanding of the benefit of such a project. This continues to be poorly communicated. We question the MDBA's recommendation for the Gwydir constraints project because of the lack of clearly communicated benefit to the environment and the community.

We therefore question the inclusion of the Gwydir Constraints project as a key recommendation of the Northern Review, due to a lack of evidence to support how it will provide opportunities to achieve improved or greater environmental benefit with the same or less environmental water. We do not want to see such a project undermine the certainty of the proposed amendments for our community or others, in the Northern Basin and therefore, recommend it be removed as a key recommendation of the proposed amendments.

Recommend to remove the Gwydir constraints project from key recommendations for the Basin Plan amendments.

¹⁶ Northern Basin Review report by the MDBA (2016)

We are not rejecting the project out-right but believe that the MDBA could continue to pursue it through current funding arrangements separate to the Northern Review. We recommend that either the MDBA or the NSW Government provide further evidence regarding the intent and benefit of the project. If such evidence can be provided, then we look forward to working with the NSW Government and the MDBA to work through a thorough cost benefit analysis of the proposed project.

Recommend the development and provision of detailed evidence to support the benefit and costs of the constraints project for other funding opportunities (outside of the Northern Review).

6.5 Works to promote native fish

We have been advocating for complementary measures (or non-flow measures) as part of our recognition that broader natural resource management issues that were undermining the effectiveness of the implementation of the Basin Plan. For example, for native fish we know^{17,18} that flow regulation is only part of the complex picture of issues including:

- Habitat degradation;
- Water quality;
- Passage;
- Invasive species (alien species);
- Disease;
- Exploitation;
- Poor stocking practices.

Yet until the proposed amendments outlined within the Northern Review were made, the Basin Plan only pursues one option, flow. Which is a one-side attempt at addressing the basin-wide objectives to increase native fish such as improved distribution, populations and movement¹⁹. This flawed approach is highlighted by the ineffective use of environmental water for native fish recruitment in the Gwydir Valley. Despite attempts by the CEWH 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'²⁰ 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 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 succeeded at.

¹⁷ As in Fishes of the Murray Darling Basin by Mark Lintermans for the MDBA (2009)

¹⁸ Native Fish Strategy 2003-2013 by MDBC (2004)

¹⁹ Basin Wide Environmental Watering Strategy by MDBA (2014)

²⁰ www.facebook.com/GwydirValley/videos/

We should not allow environmental water to be wasted (as in the Gwydir) to achieve outcomes that we know can't be delivered because of issues like cold water pollution, invasive species like carp and fish passage and habitat. Issues that through investment (a modest investment compared to the \$380M in water recovery in our region) can be mitigated or eliminated. Therefore, investment must be made into developing plans to address these issues to ensure the long-term success of the Basin Plan.

We recommend the deferral of funding from water recovery into non-flow complementary measures and encourage governments to work with communities to identify priority projects that maximise environmental benefit and win-win opportunities for communities.

Recommend the substitution of funding from water recovery into non-flow complementary measures to maximise environmental benefit.

6.6 Sensitive water recovery strategies

As with Section 6.2 Targeted Water recovery, notwithstanding our objection to the requirement for further water recovery the GVIA also implores the MDBA to consider the lessons learnt from the recovery of water in our valley and work with governments to ensure that they are not repeated in any future programs to bridge the gap.

6.7 Improved engagement of Aboriginal people

The GVIA acknowledges the cultural and social importance of the river for Aboriginal people and we welcome the constructive involvement of Aboriginal people in the water planning and decision-making process and support capacity building to enable that to occur.

We believe there is capacity for greater engagement of Aboriginal people in planning for water use, decision making and management but that there is shared understanding of the scope of influence, as with other water users and interest groups.

6.8 Community support

As outlined in Section 5.4 Socio-economic analysis, removing water from production hurts those regional communities. However, government assistance to-date has fallen short of genuinely supporting those communities hardest hit by the Basin Plan. For example, the funding providing by the Murray Darling Basin Economic Diversification Fund has been ineffective. While the GVIA does not discredit the value of projects being funding, towns like Armidale, Coonamble or Orange all in

NSW²¹, for example would not be considered significantly impacted by the Basin Plan yet received funding under the program as they are located 'in the Basin'.

Not to mention that the value of traditional support packages appears to be diminishing as the regulatory requirements of accepting that support somewhat out-way the financial benefit.

We therefore support investment into these communities but ask governments to consider the approach in which support is provided. For example, fast-tracking of programs like the national broadband network or addressing mobile blackspots, coupled with funding for business re-locations, expansions or new business enterprises could provide longer lasting benefits than investment opportunities to-date. No to mention using the opportunity that over-recovery of environmental water may provide to help stimulate long-term economic growth for future generations.

Recommend smarter investment in community support programs.

7 Groundwater Review

The GVIA supports the changes to boundaries and sustainable diversion limits for specified groundwater management zones.

Please refer to Section 8 Other Amendments regarding the changes in SDL compliance methodology.

8 Other Amendments

8.1 SDL Compliance

The GVIA is concerned with the long-term implications of the change in SDL compliance methodology despite the region not being at risk of under-recovery of the SDL. We support the NSW Irrigators Council submission on this.

8.2 Water trade

The MDBA proposes to amend the Basin Plan water trading rules to improve clarity, having identified a small number of rules that may benefit from clarification to ensure they operate in the manner that was originally intended.

We support these amendments to update the trading rules.

²¹ Full list of energise enterprise funding available at http://www.industry.nsw.gov.au/_data/assets/pdf_file/0011/88445/successful-R1-and-R2-EEF-projects.pdf

8.3 Water Act

The MDBA has proposed several amendments to the Basin Plan because of the Expert Panel's Independent Statutory Review of the Water Act, and the subsequent amendments to the Act made by the parliament in 2016.

The GVIA supports this proposal but refers to our recommendation to highlight further changes to the Water Act to allow the CEWH to effectively use the water market to achieve environmental outcomes as outlined in Section 6.3 Protection of environmental flows.