



Submission to: Independent Assessment Panel

*“Draft - Assessment of the Management of 2020
Northern Basin First Flush ”*

By:

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making every drop count

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1 Summary and Purpose

This document has been developed by the Gwydir Valley Irrigators Association (GVIA) on behalf of its members as a formal submission for consideration by the Independent Panel's Assessment into the Management of the 2020 Northern Basin First Flush.

This document aims to represent the concerns, views and experiences of our members, not as individuals but as a local industry. Each member reserves the right to express their own opinion and is entitled to make their own submission.

Every member of the GVIA is also a member of the NSW Irrigators Council and as such we endorse their submission unless clearly outlined otherwise.

2 Introduction

The Gwydir Valley Irrigators Association (GVIA) as the representative body for irrigation entitlement holders in the Gwydir Valley and in that role, was an active participant in discussions and representations on behalf of our members and community, prior to, during and after, the events, categorised by this report as the 2020 Northern Basin First Flush.

Given the public persecution of our industry and community, fuelled by the absence of this essential framework, poor communication and the lack of facts regarding extractive potential and take, we have no interest in continuing to support a system under the guise of the undefined 'public interest' that can provide for a repeat of events of the Northern Basin 2020 First Flush.

The Northern Basin 2020 First Flush event was unprecedented in uniting stakeholders around the Northern Basin in demanding the NSW Government do better at managing competing critical needs in times of drought. It became obvious that during the event, in the absence of a clear and transparent set of rules that set a strong framework to address competing critical needs in the well-defined scope of the public interest, the event would be seen as unduly influenced by one or another set of stakeholders.

We therefore see no other solution than to pursue changes to our existing water sharing plans that provide a clearer framework for sharing flows in times of drought that better protect our communities share to possible flows. Whilst not perfect, our plans already provide a robust sharing arrangement but this was ignored, fuelled by an undefined government focus around drought and community perception of a select few on low flows, that failed to consider what would happen when it rained.

With this in mind, we largely support the recommendations proposed by the panel. However, we do offer a number of suggestions to be considered in the process of refining the final report included opportunities to improve data gaps and improve the information base for future discussions. Of importance is an independent and thorough assessment of flow outcomes and alternative scenarios. Without fully understanding a range of scenarios, we cannot fully objectively review the event and properly inform any future debate about improved frameworks. Without this information we may very well focus on a range of reforms that may or may not be required.

We thank the panel for identification of key themes of communication, trust, preparedness and data gaps and the objective manner in detailing the timetable of events that unfolded. The report also captures the broad range of sentiments and concerns around Northern Basin communities, highlighting the anxiety and stress that these events had on communities everywhere.

It must also be acknowledged that some of our rivers and streams flowed providing much needed replenishment to farms and town water supplies, waterholes were topped up and fish were provided passage. All of these outcomes are welcomed and celebrated by us but they can happen when it rains, as it did, in the throughout February and March.

The narrative by the NSW Government and the Independent Panel's draft report that the outcomes of the event were only possible because of the restrictions have not even been tested. The underlying assumption that water sharing plans were failing without fully understanding how they would operate, despite NSW managing drought events of this scale and magnitude before.

The fact Queensland, firmly supported their accredited water resource plans and implemented their framework that enabled flows to be shared as agreed, proving a range of environmental and community benefits, as well as inflows into NSW, that could have been possible also in NSW. The resulting impact on assuming the water sharing plans were failing, had an estimated \$174M¹ of lost economic potential that could have kick-started our northern economy's recovery from drought while maintaining flows to environmental assets and critical downstream needs. Instead this water was foregone and well on its way downstream or evaporating on floodplains, disconnected from the river, when it was eventually realised with upmost conservatism, that even the enhanced targets had been dramatically exceeded.

Given this outcome and the assumptions around water sharing plans and extractive risk, we continue to be disappointed by the lack of data provided from this event. As well as the unwillingness to openly scenario test their assumptions in applying and then maintaining such wide-sweeping temporary restriction orders. To say that an assessment of outcomes under normal water sharing plan conditions cannot be provided is false, there is no willingness. Nor is there a willingness to publicly release information pertaining to understanding the effectiveness of existing northern water sharing plans, because this will again not support the many assumptions for the implementation and management of the 2020 Northern Basin First Flush. We will provide the Panel with our own valley assessment as part of this report.

For us, the lack of interest in this information highlights an inability for government agencies to accept their culpability in final outcome, which for our community was not the positive experience and economic boom that should have occurred with widespread rainfall and our rivers flowing naturally for the first time in years.

¹ Foregone supplementary access in the northern basin of 100,000ML multiplied by the opportunity cost of the water multiplied by 2.178 as the community benefit.

We've provided a number of general comments and recommendations, as well as comments pertaining to specific recommendations as part of the draft report. We have made 11 recommendations in total, summarised below.

We thank the Independent Panel for the opportunity to provide feedback and trust it will be useful in refining the final report.

2.1 Recommendations

1. Recommendation that further work is undertaken to consult and defined key elements a what is a first flush, including:
 - What are critical needs versus desirable?
 - How are they measured?
 - Can a range of critical needs be achieved with a range of management approaches?
 - When are first flush rules are required?
 - How governments assess and implement restrictions in the public interest.
2. Recommendation that NSW Government provide communications on existing connectivity provisions within northern basin water sharing plans as part of communicating their obligations to connectivity for the Basin Plan.
3. Recommendation that the NSW Government understand scenario analysis of flows comparing the existing and proposed water sharing plan rules for the northern basin, against the decisions and outcomes of the first flush.
4. Recommendation that future principles of management be expanded to ensure timeliness of decisions and a balancing of risk, consequence and uncertainty in decisions that is not currently clear.
5. We recommend the NSW Government explore the need for future changes in access arrangements for connectivity be considered as a form of water recovery towards the Basin Plan and compensated accordingly.
6. Recommendation to remove or amend recommendation 1 (of the Independent Panel's draft report), to recognise the ephemeral and intermittent nature of northern systems by defining connectivity in these systems in terms of their natural flow regime.
7. Recommendation that proactive restrictions for first flush management be only implemented contingent on all other recommendations being addressed.
8. We recommend that further guidance should at a minimum address the following outstanding concerns raised by industry prior to the 2020 Northern Basin First Flush:
 - Definition of critical targets within a valley and downstream.
 - Assessing capacity of streams (unregulated and regulated) and now floodplains to contribute to these critical targets both instream and downstream.
 - Definition of channel capacity constraints to allow for sharing of flows above river channel capacity.
 - Assessment of river management efficiencies.
 - Assessment of cumulative impact of events.

- Socio economic considerations of restrictions and considerations of pay-back in the event restrictions are put in place.
 - Clear, efficient and timely removal of restrictions when critical targets are met.
9. Recommend the expansion of existing Water Account Licencing system for all agencies to spatially represent key information on extractive capacity, storage capacity and licences.
 10. Recommend a continuous improvement program for flow forecasting methodology but also exploration of alternative methods for assessing flows, given the limitations and costs with the gauging network and satellite technology being impacted by clouds. This could include but not limited to local information from the ground, transportable flow sensors and other means of aerial observations.
 11. Recommend refinement of the water balance reporting methodology to reflect the different flow patterns and limited connectivity of systems like the Gwydir Valley.

2.2 Our region

The Gwydir Valley Irrigators Association (GVIA) represents more than 450 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 Shire².

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 crops³.

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 186,000ML, which includes an Environmental Contingency Allowance (ECA) of 45,000ML. 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

² Cotton Catchment Communities CRC Communities and People Series 2009

³ 2010 2011 Agricultural Census Report – agdata cubes, 71210D0005-201011 Agricultural Commodities, Australia

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.

As a result, only approximately 19% of the total river flows are available for diversion for productive use⁴. This equates irrigators holding 575,000ML from regulated entitlement (high security, general security and supplementary water) and 28,000ML available from groundwater aquifers.

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 3,141ML Supplementary
	NSW Government infrastructure works	1,249ML High Security
	Commonwealth buy-back program.	88,133ML General Security 20,451ML Supplementary
2016	Commonwealth infrastructure programs.	4,508ML High Security 1,392ML General Security
TOTALS		5,757 High Security 156,617ML General Security (including ECA) 23,592 ML Supplementary

⁴ Based on IQQM long-term modelling and the volume of water purchased for the environment

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 regions⁵.

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.

2.3 What we do

The GVIA's mission is to build a secure future for our members, the environment and the broader Gwydir Valley community through irrigated agriculture, we can do this together by making every drop count in the river or the aquifer, on-farm, for the environment, or for our community⁶.

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 nominal levy, cents/megalitre on regulated, unregulated and groundwater irrigation entitlement. In 2019-20 the levy was paid and supported by more than 89% of the eligible entitlement (excludes entitlement held by the NSW and Commonwealth governments).

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.

⁵ Social and Economic Analysis of the Moree Community, 2009. Cotton Catchment Communities CRC

⁶ For more information, see our corporate video on <https://vimeo.com/177148006>

The Association is managed by a committee of a minimum 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.

2.4 Contacts

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3 General Comments

The draft Independent Assessment report provided as guided by the terms of reference focussed on the policy and process of government (“the how”) and as a result lacked a technical review of aspects of the management of the event. For us, a continuing body of work must be undertaken to review and assess the validity of the targets and alternate scenarios using the application of existing and proposed rules and how that may have contributed to the outcomes, to fully evaluate the effectiveness of the outcomes.

The narrative that this was the first-time an event like this had been managed and was only possible due to the restrictions, ignores a number of key factors, including but not limited to:

1. NSW have been managing northern systems for critical needs in times of drought since the upstream headwater storages were first built. The use of Section 324 to start rivers is not new however, this was the first time the application of the public interest was used so widely.
2. There are components of how NSW managed these flows which were a first; these were often the most controversial, including:
 - a. The broad-scale application of the public interest test.
 - b. The application of floodplain harvesting temporary restriction.
 - c. WaterNSW’s new approach to modelling forecasts.
 - d. The establishment of new critical targets, other than those in existing water sharing plans.

3. There has been no analysis of alternate flow management scenario's such as what the water sharing plans would have delivered to understand what would have happened without the restrictions in place.

Without acknowledging these aspects, the ongoing discussion will continue to seek significant changes that are not yet fully informed to make. As highlighted by the Northern Basin Commissioner this year, in the absence of clear information, miss-information thrives and the following sections outline areas that we believe need to be explored to have an informed discussion on future planning arrangements.

3.1 Understanding and defining criticality, a first flush and the public interest test

It has been clearly acknowledged that greater consultation and communication on the targets to be achieved by the 2020 Northern Basin First Flush would have lead to a broader acceptance of the purpose and subsequent outcomes of the event. In the interest of developing a stronger framework based on science and data, further work on defining what is critical versus beneficial, a processes to manage competing critical needs like and the establishment of robust targets to measure and monitor success is required.

The Independent Panel identified the frustration by the changing needs throughout the implementation timeframe, perceived as a moving of goal posts particularly when considering the various targets for Menindee Lakes⁷. There is no reason why a range of targets cannot be consulted and considered. There is also no reason why a range of responses to achieve these targets can also be adjusted against the degree of criticality of these targets, aligning risk and consequence more appropriately rather than the blanket approach applied more recently. For example, if core needs require target 1 to be achieved but its agreed there is also desirable but not as critical benefit with a higher target, being target 2, then you may enforce more conservative assumptions until target 1 is met and relax this approach and monitor up to target 2.

To achieve an approach like this that attempts to better aligns risk and consequence with uncertainty, a difficult discussion on what is critical versus desirable, in times of drought would need occur. From our perspective an allocation being provided with water forgone from our communities, is over and above critical needs but is one of the many outcomes of the 2020 Northern Basin First Flush.

Further consultation on what defines a "first flush" is also required. This work has previously been undertaken as part of the interim north west flow plan back in the 1990s and more recently, the development of the resumption of flow rule for the Barwon Darling Water Sharing Plan, but has not been discussed more broadly outside of that process. The question of when first flush rules would apply must be answered in the context of our later discussion around connectivity and the intermittent, ephemeral nature of northern basin rivers and streams.

Whilst it is also accepted that a stronger framework embedded in local water sharing plans is required, this should not distract from the need for there to be more definition and discussion

⁷ Initially 40-60GL as part of the pre-emptive discussions, then 60-70GL defined mid event and increased to 200GL.

around how the public interest test is also applied. Repeated requests for establishing clear guidelines and assessments in the public interest have been undertaken of various levels of government. There remains a lack of clarity around decisions in this manner that must be addressed.

Recommendation that further work is undertaken to consult and defined key elements a what is a first flush, including:

- **What are critical needs versus desirable?**
- **How are they measured?**
- **Can a range of critical needs be achieved with a range of management approaches?**
- **When are first flush rules are required?**
- **How governments assess and implement restrictions in the public interest.**

3.2 Understanding the existing (and proposed) water sharing plan rules and access arrangements

3.2.1 Existing and proposed rules for connectivity and resumption of flow

A fundamental flaw of the management of the 2020 Northern Basin First Flush was a lack of understanding by decision makers and the broader community on the existing rules within water sharing plans to provide sharing of flows. This coupled with a lack of understanding of risk, in terms of daily access arrangements across the various forms of water access including floodplain harvesting meant that the conservative, broad ranging assumption was made that northern basin water sharing plans would fail to provide connectivity or water downstream.

This flawed assumption is frustrating considering the GVIA is aware that the NSW Government and multiple Federal and State Agencies had access to their commissioned research into the Northern Basin Stocktake Report, which was finalised in around June 2019. Whilst our request to access this document was refused, it was promoted to agencies as part of that Better Management of Environmental Water (which includes the Commonwealth Environmental Water Office and the former NSW Office of Environmental Heritage) to be adopted as part of their planning consideration and document database for water management⁸.

An internal stocktake of northern Basin regulated water sharing plan reveals that there are a range of specific sharing rules that provide simple volumetric or percentage sharing arrangements to flows, that were designed to allow for base flow or connectivity for critical needs.

These rules are for unregulated events; for unregulated streams these are commenced to pump triggers but in the regulated system, unregulated flows below the headwater storages are managed as supplementary events. Northern basin supplementary rules are summarised below.

⁸ Meeting minutes of the Better Management of Environmental Water Group access by GIPA.

Macquarie – objective to deliver to marshes as priority downstream of Warren

Supplementary trigger is more than 5,000ML/day over weir at Warren (plus any orders) and can be predicted. The trigger provides for full capacity of 4000ML/day and losses to the Macquarie Marshes. Water must flow through the marsh to make it downstream.

Any flows above 5,000GL are shared between, as environment gets first 5,000ML. But any flow greater than 12,000ML/day will send water down effluents or to marshes as above capacity.

Border Rivers – volumetric trigger plus ratios for sharing with NSW:QLD:environment

Supplementary trigger must be 10,000ML over two days upstream of Goondiwindi (Macintyre, Brook and Dumaresq) and is passed over the Mungindi weir.

25% of total flow to environment.

Remaining 75% shared 50:50 between NSW:QLD. Flows greater than 27,000ML/day will provide more to the environment, either downstream or into smaller effluents.

Majority of valley inflows are supplementary events due to dam location (30% of catchment represented in catchment dams).

Gwydir – volumetric trigger with sharing, flows focussed on wetlands

Supplementary trigger occurs when flows greater than 500ML/day at Pallamallawa/Gravesend with a 50:50 share between the environment and water users.

Limited stream capacities – 900ML/day at Bronte on the Mehi and 300ML/day on Gil Gil. Flows greater than 20,000ML/day upstream of Pallamallawa on the Gwydir cannot be managed and go to the wetlands.

New rules allow for the direction of the not extracted share of supplementary events to be directed by discretion and planning of the environmental water managers, which can be to wetlands or other streams.

Namoi – multiple scenarios for triggers which are volumetric and event based.

Simplified (summarised) version provides a supplementary trigger if less than 90,000ML in Dam and flow trigger is 500ML/day, if more than 90,000ML than at a minimum 1,000ML/day must flow down the end of the system (lowest gauge measure) but the starting trigger for individual sections, varies down the stream from 5,000ML/day flow to 1,500ML/day flow protecting an estimated 66% of the upstream triggered flow.

Flows are also then is shared 10% to irrigators between July-October (90% environment) and then 50% from November to June.

There are also the overarching extreme events restrictions in the water sharing plans for the Namoi, Gwydir (Mehi, Moomin and Carole and Gil Gil inflows) and Border Rivers which link

to the targets in the Barwon Darling. These rules were the interim north-west flow plan rules (no referred to as Schedule 1 restrictions) which were established in the pre-water sharing plan days to provide for basic landholder rights, algal bloom management and fish passage. The requirement for these were largely superseded with water sharing plans and the establishment of supplementary flow rules rather than previously unregulated, high flow access conditions.

During the early periods of the water sharing plan, these rules were often not implemented largely because Broken Hill's water supply requirements of a reserve of 200,000ML resulted in upstream temporary restrictions anyway.

Schedule 1 targets are:

The requirements of the Interim Unregulated Flow Management Plan for the North West are:

(a) a flow of 14,000 megalitres per day (hereafter ML/day) in the Darling River at Brewarrina for 5 consecutive days, or 10,000 ML/day in the Darling River at Bourke for 5 consecutive days, during the period September to February inclusive, providing two such flow events have not already occurred during that period in that water year, Note. This subclause is intended to provide opportunity for the passage of fish across the major weirs in the Barwon-Darling River.

(b) a flow of 2,000 ML/day in the Darling River at Wilcannia for 5 consecutive days during October to April, inclusive, providing flows of this quantity have not already been reached during the preceding three months within the October to April period, and

Note. This subclause is intended to protect flows needed to suppress blue-green algae blooms.

(c) a flow of:

(i) 150 ML/day in the Darling River at Wilcannia,

(ii) 280 ML/day in the Darling River at Louth,

(iii) 390 ML/day at in the Darling River at Bourke,

(iv) 550 ML/day at in the Darling River at Brewarrina, and

(v) 700 ML/day in the Barwon River at Walgett.

Note. This subclause is intended to protect flows needed to meet basic landholder rights requirements in the Barwon-Darling.

Further to these existing rules, the draft Water Sharing Plan for the Barwon-Darling Unregulated Water Source had proposed resumption of flow rules, specifically developed to address first flush events. These rules are a combination of daily and cumulative flows at specific trigger points.

There continues to be a miss-conception that northern water sharing plans do not provide connectivity, despite the existence of these rules since 2004 and others like the interim North West Flow Plan since the 1990's. The draft Water Resource Plans for these regions clearly articulate these rules as well. Perhaps it's important that there is clearer identification of the existence and benefits of these rules as part of the Independent Panel's report and NSW ongoing discussions around water management.

We recommend that DPIEW clearly communicate the existing and proposed rule set that help provide for connectivity in the northern basin, including a release of an assessment of their effectiveness to provide for a share of flows, when flows occur.

Recommendation that NSW Government provide communications on existing connectivity provisions within northern basin water sharing plans as part of communicating their obligations to connectivity for the Basin Plan.

3.2.2 Assessing existing rules in the Gwydir Valley

Further to understanding the existing and proposed rule set, there is missing analysis on what these rules are designed to achieve. The following analysis considers how all of these rules would have contributed to sharing of flows and the provisions of flows for connectivity and other critical needs rather than assuming that water sharing plans were flawed.

Given the rainfall events and sequences of events, the first flush in the Gwydir had three discrete opportunities for supplementary water events (as opposed to the two events, presented by DPIEW). Analysis by WaterNSW to the recent Gwydir River Operations Consultative Committee and DPIEW combines the two later events (in February), which acts to smooth the impact of the decision to maintain restrictions during this later event and mask the loss of water to the floodplain. As a result, we prefer categorising the events separately, as would be done under normal operations considering the sources of water for these events are very different.

The restrictions were implemented across three discrete unregulated events.

- 1. Gravesend unregulated 20 January – 28 January (estimated). Total flow 1000ML, available to share 500ML delivered for town water supply:** This event provided for Weemelah town water supply needs and occurred on the tail end of the January environmental and high security delivery. The majority of the water was delivered either into the Gwydir (for the wetlands) or the Carole. Follow up flows were distributed down the Mehi and Moomin upon request in an attempt to meet stock and domestic needs in this system.
- 2. Mallowa/Mei Flood 8 February – 18 February. Total measured flow from Bronte 15,000ML with majority flow overbank (adjusted for water backing up at Collarenebri as gauges read 17,000ML), available to be shared 7,000ML:** This event is clearly recognisable from flow peaks in Mehi at Balin Bora, Mehi at Bronte, Mehi near Collarenebri, Moomin at Alma Bridge and Thalaba gauges from rainfall in the region and near Bellata. The river water was protected under restrictions, limited unregulated and FPH was made available. This was largely a floodplain event, with limited supplementary access opportunity due to the location. Total outflow was estimated by WaterNSW on 19th February as 70,273ML with half of this provided via the Thalaba, unregulated creek.
- 3. Gravesend unregulated flow 10 February - 18 February (peak on 13 February). Total flow measured at Gravesend 39,500ML with 15,500ML available to be shared. 5,565ML allocated with 9,940ML:** This event is a typical Gwydir River supplementary event, with a large unregulated flow triggering flood watch warning for Yarraman on the Saturday morning. WaterNSW were instructed to maximise water

down the effluent systems for downstream targets into Mehi and Carole Creek (that connects to Gil Gil then Barwon River), the residual water was delivered to the Lower Gwydir and Gingham and a 36% announcement made in that section to minimise flooding impacts in the Lower Gwydir/Gingham. The Commonwealth Water Holder called on supplementary allocation, being the largest beneficiary of the event together with the greater than 50% share, having received additional flows that couldn't be diverted. A total of 9,940ML was foregone by industry, this almost equalled the potential losses from the Carole and Gil Gil, and Mehi systems where the daily flow rate was higher than the channel capacity.

Of these events, the first event clearly provided for the critical town requirements at Weemelah. Given the stock and domestic needs in other areas of the valley, the delivery the three tributaries rule to the Gwydir Wetlands was queried. This is an example where clarity around the priorities on competing critical needs is required.

The second event was largely flood related and difficult to control. Its location meant that there was very little river access either via supplementary or unregulated licences. Whilst it could have yielded more access than what was temporarily granted, there were limitations to the volume that could have been accessed namely due to infrastructure constraints and the limited supplementary licence in this section of the river system.

An assessment of these existing rules as part of the potential flow outcomes, revealed that requirements to provide downstream flows as part of the existing interim north west flow plan for the Event 2 starting 8th February, would have been restricted in that section of the river under at least the 10th to 11th February when these flow targets for Bourke and Wilcannia would have been met. Interestingly the proposed resumption of flow rules were forecast to also met around this time.

Detailed analysis of the third event, generated from upstream of Gravesend would not have been restricted by the interim north west flow rules as it was a natural Gwydir River inflow but that the proportion of losses which were greater for this event almost equalled the remaining share of flow. This means that given the NSW Environmental water manager has discretion on where to send the unallocated portion of supplementary water, this water could have still been directed downstream within channel capacity and industry could have had almost their full share without impacting the downstream flow outcomes.

Meaning, in all, normal water sharing plan rules both existing and proposed, would have seen a similar outflow outcome from these events given the location of the events, their intensity and the channel constraints in the Gwydir Valley.

The opportunity foregone of 100,000ML⁹ as reported by DPIEW would therefore, not have resulted in a 1:1 reduction in inflows into Menindee Lakes. Providing limited access to ensure flows remained within channel capacity would have provided an additional 10,000-17,000ML of supplementary access (depending on the timing of announcements), which is the residual volume as reported by DPIEW within the assessment of take report⁹. The lower

⁹ Assessment of take and protection during first flush flows via https://www.industry.nsw.gov.au/__data/assets/pdf_file/0014/316310/assessment-of-take-and-protection-during-first-flush-flows-in-the-northern-basin.pdf

end estimate of 10,000ML has been corrected assuming the application of the interim north west flow plan.

Nonetheless, these flows would have provided a much needed boost to our communities drought recovery. The economic impact of this foregone flows, that would not have substantially contributed to further flows downstream are estimated at \$17.4M to \$29.6M of post farm gate economic activity for our region alone¹⁰.

It is critical for our communities and those everywhere, to understand what could have happened and to understand what the benefit of management versus what is a natural first flush event. It is essential information which is missing from the current debate about the outcomes, effectiveness and efficiency of the management of the Northern Basin 2020 First Flush. It will be required to help develop the future framework as proposed by the draft Independent Assessment.

It is therefore critical a thorough independent review of the event is undertaken to assess the outcomes of existing and proposed water sharing rules, to inform any further discussions on targets and mechanisms to achieve these.

Recommendation that the NSW Government understand scenario analysis of flows comparing the existing and proposed water sharing plan rules for the northern basin, against the decisions and outcomes of the first flush.

3.3 Establishing clear guidelines for planning arrangements

The risk and impact of temporary water restrictions has been a long-standing concern for our organisation given the extended drought conditions. We had towns in our valley as well as members and other farmers within the community, suffering from poor supply of domestic and stock water and poor quality water. We were not alone and this was widespread in NSW.

We are well aware of the requirements for these critical needs and the likelihood that restrictions would be used to ensure these needs could be achieved. We had been helping WaterNSW on a way to ensure we could identify and address these needs when inflows occurred.

As a result, we had engaged in conversations regarding questions around planning arrangements in drought for more than a year. These requests were a range of formal letter's to the Minister and informal emails and discussions at forums such as WaterNSW River Operations committee and local drought meetings. Industry was keen to understand how the NSW Government planned to address low flow scenarios in our region and indeed the northern basin¹¹. At the time the Department issued responses to this communication without addressing the core requests, being largely:

¹⁰ Calculation of 10,000-17,000ML foregone access equating to \$800/ML opportunity cost with a 2.178 community value as per the Australian Bureau of Statistics calculation method, noting for cotton the community multiplier is reported as 3.

¹¹ Following letter correspondence initiated to Minister Blair in December 2018, follow up to DPIEW in May 2019 and again in July 2019 (the Minister) and as well as part of the northern groups also in July 2019 and again, in January 2020.

- Definition of critical targets within a valley and downstream.
- Assessing capacity of streams (unregulated and regulated) to contribute to these critical targets both instream and downstream.
- Definition of channel capacity constraints to allow for sharing of flows above river channel capacity.
- Assessment of river management efficiencies.
- Assessment of cumulative impact of events.
- Socio economic considerations of restrictions and considerations of pay-back in the event restrictions are put in place.
- Clear and efficient removal of restrictions when critical targets are met.

Our requests for more information and an understanding of planning arrangements, were continued into 2020 with communication provided to both WaterNSW and DPIEW in January and February, before the 8th February event started, seeking clarification around the priority of rules and access under “critical water” needs, scenario testing of flow requirements and the lack of clarity between competing needs within a system and downstream¹². We had raised concerns with the local priority of needs and how NSW were prioritising critical environmental needs and critical human needs, as demonstrated by the operation of the first event in January in our region whereby we had hoped water would have been delivered to those in need of stock and domestic requirements in addition to town water supplies.

DPIEW seemed more interested in ensuring that they had clearly communicated the reason for the decision rather than discussion how to implement those reasons. It was clear then that considerable effort was placed on planning for a restriction, little planning on the reasons to lift and processes, were lacking. The finalisation of critical targets only days before the February rain event, confirmed this.

However, it seemed that the little planning undertaken for the event was adaptively adjusted to a highly conservative blanket approach.

This change was evident from the more proactive previous discussions and even the now public planning arrangements, when in mid-February concerns were raised about how the rivers were being operated under the “blanket” application of temporary water restrictions, ignore known channel constraints and existing sharing arrangements, in a means to maximise downstream flows at any cost. Following multiple requests for information regarding targets and how flows were able to contribute to these, DPIEW responded first with a public response acknowledging the “significant impact on Northern Communities” but that “changing community attitudes towards water sharing” were one of the reasons further restrictions were required. They released the initial flow target for Menindee Lakes of 60-70GL (which was higher than the previously communicated 40-60GL as part of the pre-emptive restriction discussion).

Further follow up was requested more specifically on how flows in the Gwydir Valley that were breaking out of known river constraints were contributing to this, now public target. The response was:

¹² Email communication to WaterNSW, 17th January 2020 and 5th February 2020. Email communication to DPIEW 6th February 2020.

“Whilst we acknowledge that some over bank flows may not find their way back into the channel, we are committed to ensure the maximum volume possible can contribute to downstream targets”¹³.

A review of meeting minutes where the request for limited supplementary access was considered around this time, revealed the panel discussed the issue but that “lower darling water users wouldn’t support the argument”¹⁴ that sharing of flows because water was flowing out of the river, would ultimately not impact downstream flows. At this time, more than 70,000ML had already passed Bourke well on its way downstream, the Department’s own decision tree and previous communications was ignored, and channel capacities were continually exceeded throughout the rest of the event. The outcome of this approach which we outlined earlier, is that our community missed the opportunity of up to 10,000ML of supplementary access in our region with the majority of that flow being lost overbank and not contributing to downstream flow outcomes.

Our assessments identified that at some stage during the 2020 Northern Basin First Flush event, possibly after the public backlash over the poorly executed lifted of temporary restrictions in early February, there was sudden change in decision making approach which meant that some of the previous planning arrangements were ignored. This included recognition of channel capacity and instream flows being the most efficient mechanism to achieve downstream targets and the agreed testing of the resumption of flow rules for the Barwon-Darling.

We accept the channel capacity were more in-principle discussions, although they were considered as part of the final decision flow chart and early pre-emptive flow discussion. Whereas, the resumption of flow rules, were broadly consulted on and had acceptance within the community, were part of the Natural Resource Commission recommendations but were also believed to have multi-jurisdictional support for the rules to be tested as part of the Better Management of Environmental Water group¹⁵. Our analysis has these rules being met on and around the 10th to 11th February 2020 and DPIEW have provided no formal analysis to date.

For these reasons and the lack of willingness to review these decisions, and discuss the flow outcomes, we see major flaws for the future reform work program to work towards an enduring, stronger and clearer framework as proposed by the draft Independent Panel report.

If we establish more clarity around first flush targets and rules, how do communities have confidence that once these rules are in place within water sharing plans, that in the public interest, they aren’t ignored again later, as they have done during these events.

For this reason, we encourage further consideration and exploration of guidelines around the implementation of the public interest test as well as, the need to independently review the

¹³ Email correspondence on 20 February following multiple requests for consideration of channel capacity constraints.

¹⁴ Summary of meeting discussion – 17 February 2020 obtained via GIPA.

¹⁵ Evidenced in meeting minutes obtained via GIPA.

event to assess the outcomes of existing and proposed water sharing rules, to inform any further discussions on targets and mechanisms to achieve these.

3.4 *Conservatism versus timeliness*

The Independent Panel outlined they supported the conservatism adopted by the flow forecasting and decision-making approach to assessing if flows could meaningfully contribute to outcomes. Yet the Panel also raises issues around timeliness of decisions and how, this is important, particularly in unregulated systems, where the access opportunity maybe limited. Delayed decisions has the ability to impact one set of water users disproportionately to others and this is evident in the outcomes of the 2020 Northern Basin First Flush, where opportunity foregone by upstream communities was later allocated to others downstream and where a final target of 200,000 ML resulted in more than 500,000ML of flows at Menindee Lakes.

It is easy for us, to judge the event management in retrospect and we acknowledge that is not entirely fair on the DPIEW or WaterNSW, who were working with the tools they had available at the time. While they may have internally acknowledged the limitations of these tools, they subsequently applied the most conservative approach to adopting this information, which ultimately meant that certainty of flows needed to be guaranteed before a decision to change conditions could be provided. This approach ultimately resulted in delays in decision making that cost the economies of northern communities.

We also provide a number of recommendations later in the document to improve tools to provide greater certainty as well as an assessment of how rivers and floodplains meaningfully contribute to critical targets. However, the principles of decision making must be expanded to include consideration of how to balance these competing needs with imperfect information, in a timely manner.

As we raised earlier, one approach maybe to consider a range of responses to achieve pre-determined critical targets can also be adjusted against the degree of criticality of these targets. This approach seeks to better align risk and consequence and can be adjusted for uncertainty in a more systemic way and is likely more appropriately rather than the blanket approach applied more recently. This would for example, may also allow for more balance between conservatism and timeliness, to allow limited access in circumstances where the immediate critical needs are achieved with confidence.

There may be no easy answers, further discussion and direction on ways to balance these competing needs should be further explored by the Independent Panel and government.

Recommendation that future principles of management be expanded to ensure timeliness of decisions and a balancing of risk, consequence and uncertainty in decisions that is not currently clear.

3.5 *Future changes to access arrangement*

Given the key recommendations of the draft Independent Assessment focus on changes to future access arrangements, its important to consider that if changes are required and the impact of these assessed volumetrically there is no reason why it cannot be considered as a form of recovery towards the Basin Plan.

Connectivity is one of the Basin Plan objectives and indeed, forms part of the calculation for water recovery requirements for the Basin Plan. The initial water recovery targets included estimates to provide for connectivity and now there is water available to be utilised for these outcomes, along with the other objectives of the Basin Plan.

We contend that if further connectivity above these requirements is required, then it could therefore be considered as a form of water recovery to the Basin Plan rather than a direct policy change requiring compensation.

We recommend the NSW Government explore the need for future changes in access arrangements for connectivity be considered as a form of water recovery towards the Basin Plan and compensated accordingly.

4 Draft Recommendations

We agree largely with the recommendations provided by the draft Independent Assessment and offer the following amendments to be considered as part of building on these recommendations.

However, we do not fully support the need for hard-wiring changes into the *NSW Water Management Act 2000* given that there are already broad principles within the Act that allow for the existing rules for connectivity as well as establishing the resumption of flow rules in the Barwon-Darling water sharing plan that suggest there is already adequate scope within the Act.

Rather we support focusing on ways to enhance the data set and information to improve the operationalisation of existing principles, incident management and as a last resort use, the use of Section 324 orders in the public interest.

4.1 *Water management must provide for and promote connectivity between water sources*

As outlined earlier, we contend that the northern basin water sharing plans already provide significant opportunity to promote and provide for connectivity, in the event it rains. These rules are largely misunderstood (even by government it seems), as they are sharing rules rather than connectivity rules or specified end of system flows. The reasons for these is that the water sharing plans were developed with a clear understanding of the intermittent nature of our northern systems and more so, in the Gwydir and Macquarie whereby the systems largely flowed toward terminal wetlands, rather than to another river system.

We therefore, consider this recommendation unnecessary in the broader context of the well communicated existing rule set but also risky, if left unamended. Our concern is not because we don't support connectivity, but that connectivity hasn't been defined in the context of managing particular events but rather aims to "provide and promote" which is open to interpretation on what success looks like. These concerns are also relevant for the definition of what is a first flush.

This overarching principle conjures a range of scenarios based on a person's belief on connectivity, where they may be located or what they perceive a river should look like without any consideration to the ephemeral and intermittent nature of our northern systems, that by nature should disconnect at times. Interestingly, there is an evolving range of literature now considering the need for drying down as part of environmental water regimes, to reinstate this phase in river management, which is often replaced with continuous delivery

of water for other purposes. Also early assessment of the water requirements for the Gwydir Valley as part of the Basin Plan, had the region exceeding flow sequences in mid to upper reaches, where water deliveries meant the river was not drying down as regularly.

We must therefore, remember that the nature of northern systems will mean that periods of disconnect will occur. Having a principle to “provide and promote” therefore may be rather challenging for government to fulfil unless, the circumstances were clearly articulated (as in the proposed resumption of flow rules) and the measures for success are hydrologically dynamic for these circumstances recognising the natural flow regime (as with our sharing rules for supplementary). Without these boundaries, the default of establishing end of system flows rules of a volume per day or per period, would decimate our natural flow regimes and undermine the operational efficiencies, impacting the environment and water users. The deficit within the Lachlan Valley in response to required end of system targets, highlights the extreme perverse outcomes in times of drought that such rules can have.

Recommendation to remove or amend recommendation 1 (of the Independent Panel’s draft report), to recognise the ephemeral and intermittent nature of northern systems by defining connectivity in these systems in terms of their natural flow regime.

4.2 Make temporary water restrictions required to managed first flush events on a proactive basis

We agree that proactively applying temporary restrictions would alleviate concerns around understanding water user obligations in a clear and timely manner. However, we do not agree with the Independent Panel’s recommendation around proactive nature given that this approach does little to address the core concerns with how the NSW Government managed the most recent event as identified by the report.

This recommendation cannot be adopted unless the other key recommendation are also adopted and therefore this recommendation should be contingent on their implementation first.

Recommendation that proactive restrictions for first flush management be only implemented contingent on all other recommendations being addressed.

We also note the discussion within the around the proposed pre-emptive temporary restriction proposed in 2019 as being represented as a missed opportunity for clear communication. Whilst it would have provided an indication to water users of their obligations, this discussion did not include or reference floodplain harvesting restrictions. It was the late inclusion of this as part of the restriction and the language identified in the restriction that caused confusion, not the temporary restriction order itself.

We note that as part of the northern valleys we raised a range of issues with the pre-emptive proposal, not just the timeliness of decisions. Largely our concerns were validated in how the 2020 Northern Basin First Lush was managed.

The same outcome by proactively understanding restrictions, could be achieved through better engagement with water users on the proposed inclusions with the temporary water restriction and how they can be compliant, as a means to better inform water users of their obligations.

4.3 Until there are further statutory provisions for first flush event management, publish guidance materials which outline how the NSW Government will use temporary restrictions to manage first flush events.

We support this recommendation and have been requesting further discussion around the use and application of Section 324 orders using the public interest, since it was proposed in 2018.

Clear guidance would be welcomed on the following areas as communicated most recently to DPIEW in January 2020, including:

- Definition of critical targets within a valley and downstream.
- Assessing capacity of streams (unregulated and regulated) and now floodplains to contribute to these critical targets both instream and downstream.
- Definition of channel capacity constraints to allow for sharing of flows above river channel capacity.
- Assessment of river management efficiencies.
- Assessment of cumulative impact of events.
- Socio economic considerations of restrictions and considerations of pay-back in the event restrictions are put in place.
- Clear, efficient and timely removal of restrictions when critical targets are met.

We recommend that further guidance should at a minimum address the following outstanding concerns raised by industry prior to the 2020 Northern Basin First Flush:

- **Definition of critical targets within a valley and downstream.**
- **Assessing capacity of streams (unregulated and regulated) and now floodplains to contribute to these critical targets both instream and downstream.**
- **Definition of channel capacity constraints to allow for sharing of flows above river channel capacity.**
- **Assessment of river management efficiencies.**
- **Assessment of cumulative impact of events.**
- **Socio economic considerations of restrictions and considerations of pay-back in the event restrictions are put in place.**
- **Clear, efficient and timely removal of restrictions when critical targets are met.**

4.4 Incorporate learnings from the 2020 Northern Basin First Flush event into systems.

We support this recommendation but also recommend as outlined earlier, that scenario analysis of the existing and proposed water sharing plan rules should be undertaken to clearly determine the efficiency and effectiveness of the 2020 Northern Basin First Flush.

Further consideration and direction should be considered by the Independent Panel on how the NSW Government can consider the current gaps in information and provide a pathway to address them.

An opportunity to undertake a technical review of the objectives, principles and targets used to manage the 2020 Northern Basin First Flush event should also be provided, with broad community engagement to ensure we address the range of critical needs by communities. These objectives and outcomes should be re-assessed based on the outcomes they achieved and identify any limitations including channel constraints and what would happen during cumulative events.

4.5 *Take steps to ensure the evidence base and methodology for first flush event management is quantified, science based and publicly available.*

We support this recommendation and further consultation on the establishment of criteria to define a first flush and determining critical targets and their measurement as recommended earlier.

Furthermore, one of the key areas of poor data and assumptions was the potential risk of extraction either during the event or if some access was made available, how would it impact flow forecasting. It is therefore imperative that the Water Account Licencing System for the agencies is reviewed to include an ability to spatially interrogate data as well as list the daily extractive capacity for all licences including the proposed floodplain harvesting licences and storage capacity. This information in addition to total licence capacity will help to better identify and quantify this risk rather than the broad assumptions that storages were empty and could be full. This information would also be useful in scenario testing the ability for temporary restriction or normal rules, to meet agreed first flush targets or how a partial or full lifting of restrictions may impact flows.

Recommend the expansion of existing Water Account Licencing system for all agencies to spatially represent key information on extractive capacity, storage capacity and licences.

4.6 *Review and update incident management systems for managing first flush events.*

We support this recommendation however it's important that any update to incident management systems plan for the application of Section 324 and their lifting.

4.7 *Embed the management of first flush events into the regulatory and policy framework for managing drought.*

We agree that further work is required to provide clear and transparent rules around managing flows during and after a drought – it's important that the focus is on both the prior, during and end-of drought sequence to ensure all scenarios are considered. Clearly identifying and defining what is a first flush is also important, however we disagree with the need to amend the *NSW Water Management Act 2000* to include objectives for managing first flush events.

We already consider that the principles in the WMA have provided enough scope and direction to develop the existing provisions for connectivity and priority of needs, as well as, enabled the development and implementing of resumption of flow rules.

We believe there is no need to prioritise principles of first flush (as proposed by the WMA amendments) as these are already clearly articulated but rather the focus should be on operationalising and communicating the first flush management framework. We therefore, support the recommendations that focus on embedding a similar (although refined) decision making framework with greater rigour and informed through consultation into the state-wide Extreme Events Policy and the localised Incident Response Guidelines and if necessary, water sharing plans. Noting we outlined earlier that existing rules already provide for a process for managing such events but are not well understood and were ignored as part of the most recent events.

Completion of the recommendation to assess flow scenario within the existing and proposed water sharing plan rules would identify any gaps in water sharing plans for future consideration and local contextualisation. However, in the Gwydir region, we clearly identified a lack of clarity around the existing rules as part of our discussions during water sharing plan reviews. This was around the lack of clarity on how and when a restriction is applied to supplementary access to achieve Schedule 1 flow objectives.

We recommended as part of the consultation process that a framework should be established as part of the long-term planning arrangements and should aim to address a range of scenarios about how a decision is made, to ensure the plan remains as robust as possible and avoid the continued use of Section 324, temporary restriction orders. We agree that this framework may not be able to be established immediately. However there is no reason to not consider a set of principles in Schedule 1, which can be expanded later.

We therefore recommend that key principles are included as a starting point with these general principles taken from the recent communications around the temporary restriction orders in the northern valleys with some key additions, particularly for the Gwydir but also maybe relevant for other northern valleys.

We support and recommend as part of Schedule 1 of the Water Sharing Plan for the Gwydir Regulated Water Source 2020, the following general principles are included:

General Principles

- **ability for the inflows to meaningfully contribute to meeting critical water needs downstream but alignment of risk, consequence and uncertainty for a range of scenarios.**
- **uncertainty in future rainfall and flow predictions.**
- **utilisation of flow forecasting and ongoing improvement program of this process.**
- **recognition of system operation capacities and efficient water delivery to maximise the social, economic and environmental benefit of water use.**
- **timeliness of decisions.**
- **dispute process, allowing external third-party information/review if a decision to restrict or not is disagreed with (drop if they considered channel constraints as major priority).**

The **highlighted** sections are direct from the existing DPIEW factsheets.

We will support further development of a framework in consultation that provides the clarity for water users and communities around managing flows in drought conditions.

4.8 Improve flow forecasting modelling and real-time monitoring capability, including measurement of extractions and the hydrometric system for inflows and monitoring end of system flows.

We agree that there were significant data gaps in understanding flow forecasting and floodplain behaviour, as well as risk from extraction that was highlighted as part of the management of the 2020 Northern Basin First Flush.

We therefore, recommend further assessment, review and refinement of the flow forecasting tools utilised by WaterNSW and support an ongoing improvement program in the approach, given information by other technical experts in this field indicated that restriction targets of 60-70GL could be forecasted to be achieved around the 19th February rather than the following week.

We also support further exploration of a means to provide local information into the decision-making process. Clearly, we will never have perfect hydrometric coverage and given the expanse of the floodplain and the many variables that can affect flow, there must be a clear and transparent process to provide local insight or ground truthing of conditions. Expanding the proactive use of other intelligence such as reconnaissance flights, like that undertaken on 10th February should be explored to gather quick information. Ideally the reconnaissance flight should have been undertaken no later than Sunday, 9th February to ascertain the extent and potential of flooding, as it turned out is captured the tail of the flood and was less useful as an assessment tool because of that delay. Considering the use of portable sensors, that could be installed at the beginning of a flow without the set up and ongoing maintenance costs of a fixed gauging network.

These additional forms of data could also have been used as part of the improvement program to better inform the flow forecasting model inputs, which relied on gauged input data only.

Furthermore, the development of an internal spatial database of farms and their extractive capacity as outlined above should also form part of an improved forecasting system to allow for real-time scenario testing of rules.

Recommend a continuous improvement program for flow forecasting methodology but also exploration of alternative methods for assessing flows, given the limitations and costs with the gauging network and satellite technology being impacted by clouds. This could include but not limited to local information from the ground, transportable flow sensors and alternative methods of aerial observations.

We note that reforms including the NSW Non-urban Metering Policy and the implementation of the NSW Floodplain Measurement Policy will help with monitoring and reporting these forms of take more consistently, without the heavy reliance on meter reads, which has meant that final take reports for the Barwon Darling are still unknown.

However, it's important that any assessment of flows is undertaken in a timely manner, to avoid miss-representation of facts. We also recommend refinement to the existing water balance reporting, which focuses on end of system flows and combines within system floodplain flows (like for the Gwydir Wetlands) with general transitional and system losses. This approach misrepresents systems where the majority of flows are naturally provided to terminal wetlands or the floodplains, as in the Gwydir Valley whereby there is limited natural connectivity to downstream systems.

Recommend refinement of the water balance reporting methodology to reflect the different flow patterns and limited connectivity of systems like the Gwydir Valley.

4.9 Ensure that the current (and future) reform programs are accompanied by clear implementation plans and regular communication of progress to the public.

We support this recommendation and proposed the Independent Panel review the approach of the NSW Healthy Floodplains Program in preparing an implementation/reform Action Plan and reporting and consulting on its progress as an example of good engagement.

4.10 Improve and resource communication and capability.

We support the need to improve and resource communications and note that communication was one of the key areas of failure of the management of the 2020 Northern Basin First Flush. However, there must be a willingness to genuinely engage with communities and seek input.

Its important with any communication strategy that a variety of communication methods are used but that if active management is to be continued, an approach to directly target those affected must be developed. The existing reliance of voluntary sign up to the Early Warning Network and an inability to isolate sub-catchments needs to be investigated.

We support a consistent reporting approach of these events;

the flow forecasting and flow update reports were very useful communication tools. However, further work can be done to include the monitoring and reporting on outcomes for environmental, social and cultural requirements in addition to flow reporting.

5 Conclusion

The Gwydir Valley Irrigators Association largely support the recommendations proposed by the Independent Panel in their draft Assessment of the 2020 Northern Basin First Flush Report. We do offer several suggestions across 11 recommendations, to be considered in the process of refining the final report included opportunities to improve data gaps and improve the information base for future discussions.

Of importance is the need for further independent assessment of flow outcomes and alternative scenarios, including the existing and proposed northern basin water sharing plan rules. Without fully understanding a range of scenarios, we cannot objectively review the event and properly inform any future debate about improved frameworks.

We thank the Independent Panel for the opportunity to provide feedback and trust it will be useful in refining the final report.