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Dear Panel members

Submission to the Independent Assessment Panel's draft recommendations on the 2020 Northern Basin First Flush Event

Thank you for the opportunity to provide a submission to the Panel's draft report. The submission from DPIE-Water Division is attached.

I look forward to receiving a copy of the final report.

Yours sincerely

Jim Bentley
CEO – NSW Water Sector



Planning,
Industry &
Environment

Submission on Independent Assessment Panel's draft recommendations on 2020 Northern Basin First Flush Event

Department of Planning, Industry & Environment -
Water

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Introduction

The Water Group of the Department of Planning, Industry and Environment (DPIE-Water) welcomes the review by the Independent Assessment Panel of the 2020 northern basin first flush event.

This was the first time that the department had implemented temporary water restrictions under section 324 of the *Water Management Act 2000* (the Act) covering such a large area and the full range of water access, including floodplain harvesting. The restrictions were effective in meeting the objectives to protect flows across the Northern NSW Basin to replenish town water, domestic and stock supplies and refuge pools. However, implementation was challenging given the complex and dynamic nature of the rainfall and flow events, the management tools at the department's disposal and the scale at which these were applied, and the deep drought conditions that preceded the event.

As a result, decisions were made based on daily assessments about whether access should be permitted. This meant that it was difficult to effectively communicate these decisions and the reasons for them in a timely and transparent way. DPIE Water acknowledges communication needs to be improved. This needs to include communication with licence holders as well as other stakeholders with an interest. The department has learnt from the experience of managing the event and through the Panel process and its draft recommendations.

This submission, in response to the Panel's draft report is in two sections. The first section outlines the events and process that the department applied to protect the first flush flows after a prolonged and severe dry period across the entire NSW Northern Basin. This section also provides some context on existing water sharing plan rules aimed at improving connectivity in the Northern Basin.

The second section provides comments on each of the Panel's draft recommendations and advises how the department will work towards improving our management of these types of flow events. These comments are for the Panel's consideration, as part of the review of submissions.

Role of DPIE-Water

DPIE-Water is responsible for the overall management of the State's water resources. How water is shared between the environment and water users and between different categories of water users is set out in the provisions of the Act and the rules in statutory water sharing plans. However, the Act and the plans do not fully address severe water shortages when even highest priority needs are at risk, nor circumstances when there is some improvement, but not full improvement in drought conditions.

To provide further direction the department prepared an Extreme Events Policy which sets out various stages of increasing water shortages and the measures that may be taken as shortages escalate. Measures can include options such as announcing low or zero water allocations for various categories of water licences, suspending access to water in licence accounts, suspending specific water sharing plan rules if necessary to safeguard critical supplies, and the application of temporary water restrictions under section 324 of the Act.

Section 324 of the Act provides for the Minister to apply temporary water restrictions when it is in the public interest to do so. DPIE Water exercises this function on the Minister's behalf under delegation. Temporary water restrictions have been used to suspend water in general security accounts when storage volumes are insufficient to deliver water, to protect town water supplies at risk from other extractions, to protect released environmental water from extraction by water users and also, as in the case of the recent Northern Basin restrictions, to embargo access to natural flows to ensure that the flows can be allowed to pass through the system and meet critical needs. Due to the extreme dry conditions in 2019/2020, there were an unprecedented number of temporary water restrictions in place at various times over the year.

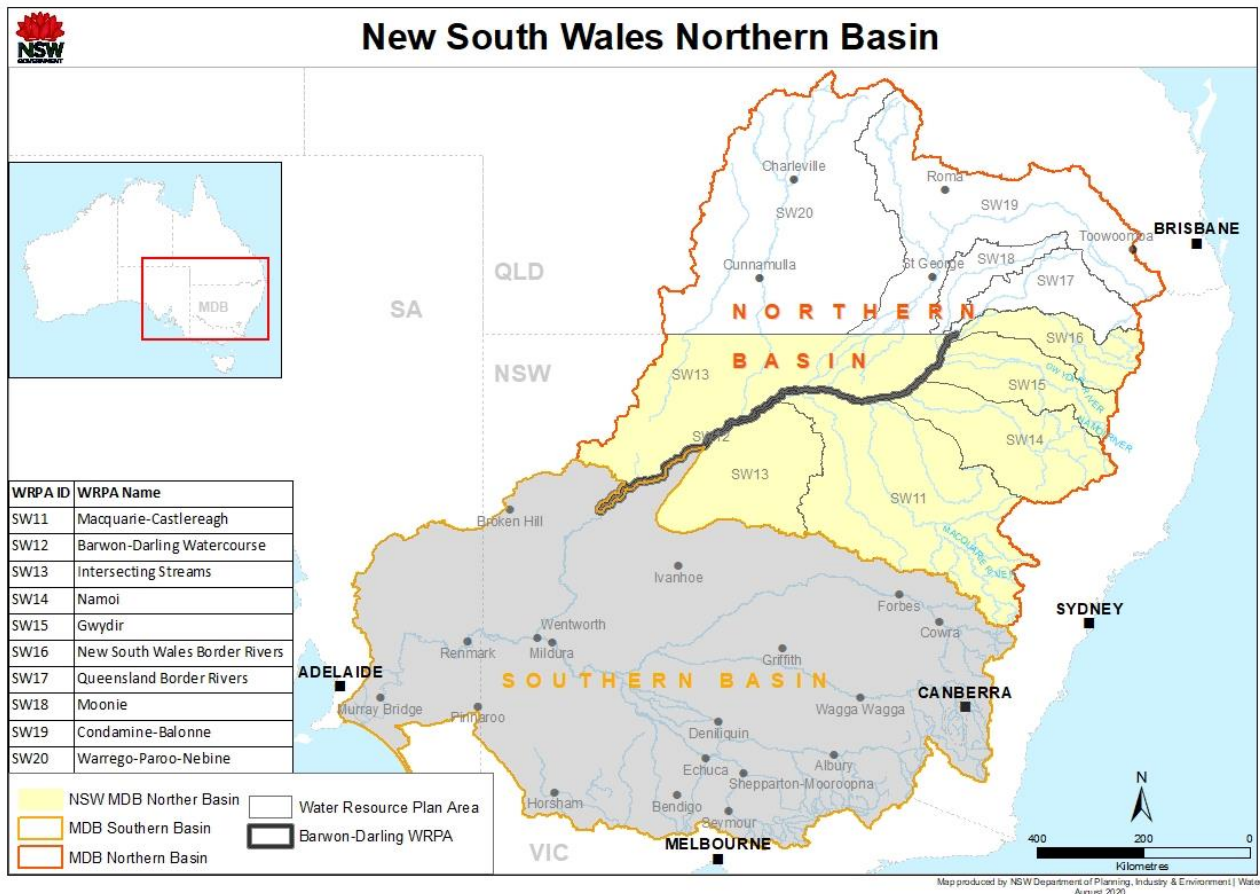
DPIE Water prepares and issues temporary water restriction orders and arranges for their publication in the Government Gazette, administered by the Parliamentary Counsel's Office. During the recent Northern Basin restrictions, we introduced responsive management provisions to determine if and when pumping could be permitted while a restriction was in place. DPIE Water also determines whether supplementary access, that is access to uncontrolled flows downstream of storages, is permitted and WaterNSW advises licence holders of these events.

DPIE Water consults with DPIE's Energy, Environment and Sciences Division and the Department of Primary Industries' Fisheries staff on environmental water and fisheries' needs, and with the Natural Resources Access Regulator on how restrictions on licence holders can be effectively applied and enforced.

WaterNSW operates the major rural dams, manages the hydrometric network and assesses and forecasts flows. Communication with licensed water users is primarily undertaken by WaterNSW which provides the direct customer interface with users, the operational updates and customer notices. It is acknowledged that communication for any future event needs to be improved, including with other interests such as Native Title holders, and downstream communities.

NSW Northern Basin

Figure 1 shows the Murray Darling Basin and, shaded in yellow, the area of the NSW portion of the Northern Basin. The NSW Northern Basin valleys are the NSW Border Rivers, NSW Intersecting Streams, Namoi, Gwydir, Macquarie and Barwon-Darling River upstream of Menindee Lakes. All these areas were subject to the temporary water restrictions during this event.



The Northern Basin also includes the Queensland water resource plan areas of the Border Rivers, Moonie, Condamine-Balonne, Paroo-Warrego-Nebine. The Barwon-Darling River is the linking river system between the northern and southern parts of the Murray-Darling Basin and is very important ecologically. For example, the Barwon-Darling provides for the movement of golden perch (an important recreational fishing species) between the Southern Basin and the northern tributaries (see: Fish connectivity into Macquarie).

Details on the importance of flows to aquatic ecology in the Barwon-Darling can be found in the [Barwon-Darling Long Term Water Plan](#). The catchment of the Barwon–Darling River covers about 13% of the Murray–Darling Basin, but it only generates about 2.8% of the flow. However much more water flows through the system, with 99% of its flow generated in upstream tributaries. This makes the Northern Basin tributaries critical for meeting improved water flows, and social, economic, cultural and environmental outcomes along the Barwon–Darling River.

The contribution of flows to the Barwon-Darling River from the Northern Basin tributaries varies from valley to valley. Of the tributaries to the Barwon-Darling River, the Border Rivers, Namoi and Macquarie–Castlereagh–Bogan catchments are the largest contributors (Table 1). Together, these three catchments account for nearly 80% of the Barwon Darling River's flow. The largest flows tend to be the result of summer rainfall, and hence flood events are more likely in summer and autumn (Thoms et al. 2004b2).

Table 1: Long-term modelled inflows to the Barwon – Darling (1900 to 2013)

	Average Inflow to Barwon–Darling (GL/yr)	Average Inflows as a % of total Average inflows from Barwon–Darling Tributaries
Border Rivers	535.8	25%
Moonie	70.6	3%
Gwydir	151.8	7%
Namoi	588.8	28%
Macquarie-Bogan	497.1	24%
Condamine/Balonne	202.2	10%
Warrego	58.0	3%
Total Flow (GL/yr)	2104.3	100%

Just as the NSW northern rivers contribute to Barwon-Darling flows, flows from Queensland crossing the NSW-Queensland border also support the Barwon-Darling system.

Northern Basin Restrictions

Overview

As noted by the Panel, the first flush flows starting in January 2020 in NSW were the result of not one, but a series of separate rainfall events. These events were of varying intensity and resulted in different flows over a large area (some hundreds or thousands of kilometres). These flows in the NSW Northern Basin valleys were actively protected from most commercial extraction until enough water had passed to meet critical downstream requirements.

The Northern Basin restrictions were a combination of three temporary restriction orders (under section 324 of the Act) that were applied as follows:

1. All northern valleys and the Barwon-Darling - prohibited the take of water by general river pumpers from 17 January to 31 January, extended to 17 February and then extended again to 28 February 2020
2. The designated floodplains in the Gwydir, Namoi (Upper Namoi floodplain, Narrabri-Wee Waa floodplain and the Lower Namoi floodplain), Macquarie (Narromine to Oxley floodplain) and Barwon Darling Valleys – prohibited the take of water from these six designated floodplains from 7 February, and then extended to a further two floodplains - Macintyre and the Lower Macquarie - from 12 February until 28 February 2020
3. Barwon-Darling River - prohibited the take of water by river pumpers below Culgoa junction and from the Barwon-Darling floodplain – from 29 February to 17 April 2020.

The restriction orders included responsive management provisions, which allowed for limited take (temporary exemptions) to be given during the period of the orders. In addition, the orders allowed for the progressive lifting of restrictions when sufficient flow passed from upstream areas and downstream targets were forecast to be met. Access to supplementary flows was not specifically restricted by the orders as this can only occur when announced. Decisions to restrict or permit access to these supplementary flows also considered likely impacts on downstream flows and targets.

What was different about these restrictions?

1. **The type of take to which restrictions applied:** Due to the need to protect first flows after a prolonged dry period these restrictions applied to more types of water users – both regulated and unregulated licence holders and floodplain harvesting take - than in previous orders.
2. **The area covered:** The NSW Northern Basin as shown in Figure 1 covers almost half of inland NSW - all the northern valleys from the Macquarie north to the Border Rivers and west to the Barwon-Darling. The NSW Northern Basin and Lower Darling had been particularly hard hit by drought with most valleys recording record low inflows and many towns and landholders out of river supply or limited to remaining pools. In addition to this, many key refuges for fish and other aquatic species were drying out, and a number of fish deaths had occurred. Restrictions applied to such a large area because of the severity of the drought across the whole Northern Basin, and the predictions of the widespread rainfall. Prior to this in 2019 some rainfall had occurred in areas of the Lower Namoi and Lower Macquarie and restrictions to protect resulting flows had been limited to these valleys.
3. **Multiple rainfall and flow events:** The 2020 flows were the result of not just one rainfall event that occurred. There were a series of rainfall and flow events happening at different times over several months and in different locations - across both NSW and Queensland catchments. These rainfall events and flows started in late January, occurred through February and into April.
3. **How they were managed:** These orders were proactive and introduced a new concept of responsive management. Rather than having to gazette, repeal and gazette again to apply, lift

then re-apply restrictions – the orders applied broadly prior to the rain events and were set for a defined period, but during the period the department could approve pumping by way of a temporary exemption in certain areas for specified times if appropriate. This was to ensure the Department could respond quickly to local conditions. For example, once enough flows had passed a location, and targets to restore flows and meet high priority needs downstream were forecast to be met, the Department could permit water users at that location to take water in accordance with the rules in water sharing plans and their licences. Restrictions and lifting were reviewed daily and during February, the peak period of the restrictions, several times in a day.

4. Using both actual and forecast flows: Because of the large area covered by the orders, decisions about whether take could be permitted were based not only on actual flows but also on forecasts of the likelihood of flows reaching downstream if protected. Flows generated in the headwaters of the northern valleys or Queensland can take weeks to reach the Barwon-Darling and months to reach Menindee Lakes. Not allowing any access until the last downstream target was physically met (i.e. Menindee Lakes) would have meant no one could access water for almost three months in the upstream valleys. In practice, this would have meant that upstream users would not have had access to any of the flows even though the flows required for downstream needs would have already passed.

5. Applying flow targets - local and downstream: For the first time flow targets were developed to assist in determining when sufficient flows had passed specified locations. These targets were based on meeting critical needs in each valley and to ensure that sufficient flow could pass to contribute to critical needs downstream.

6. Including a Menindee Lakes target: In addition to the valley targets set along the northern and the Barwon-Darling rivers, as further rainfall and flows occurred and it was assessed that flows would be able to reach Menindee Lakes, a Menindee Lakes target of 60–70 GL was set. All restrictions were lifted in the northern valleys before the end of February once WaterNSW forecast that at least 60–70 GL would reach the Lakes.

The target was subsequently increased to 200 GL on 4 March as a result of significant additional inflows forecast from Queensland, which meant that it was likely the new target could be achieved if flows were protected. This increase to 200 GL had no impact on when restrictions were lifted in the northern valleys – only the Barwon-Darling.

Why did the target for Menindee Lakes change?

In mid-January, it was hoped that sufficient flows might be generated to reach the Barwon-Darling, but it would take continuing rainfall beyond the initial forecasts. By 6 February some flows were occurring in the Barwon-Darling and by 12 February sufficient flows had been generated upstream for WaterNSW to forecast that between 10 and 30 GL could reach Menindee Lakes if restrictions were maintained.

DPIE Water assessed that 60-70 GL was the minimum volume that would allow for a full flush of the Lower Darling and retention of a drought refuge volume in Lake Wetherell. By 19 February with further rainfall in the Namoi and Castlereagh catchments, WaterNSW was forecasting that flows of up to 60 GL could reach Menindee Lakes if most access remained restricted.

On 21 February it was assessed that sufficient contributions had been provided from the northern valley catchments and all restrictions were lifted on unregulated river access in the northern valleys and some of the northern floodplains. This was followed by the lifting of the remaining northern floodplain restrictions on 23 February and the lifting of separate restrictions on general security carryover access in the Border Rivers, Upper Namoi and Lower Namoi by 25 February.

As a result of major flooding in the Balonne-Condamine Basin and significant rainfall in the Warrego catchment in Queensland from heavy rain on the 23-24 February, well over the 60 GL was then expected to reach Menindee Lakes. WaterNSW forecast that 200 GL could reach

Menindee Lakes and on 4 March 200 GL was adopted as the revised target to achieve better outcomes for the Lower Darling. By that time, restrictions only remained in place along the Barwon-Darling River below Culgoa and the Barwon-Darling floodplain.

The final 200 GL target meant that up to 12 -18 months' supply could be provided to lower Darling water users. This is consistent with the approach taken for storage management in the northern upstream tributaries. In these tributaries, restrictions on access to water suspended in general security accounts were not fully lifted until a year's worth of supply for critical needs was assured in the headwater dams and sufficient flows had passed to contribute downstream to the Barwon-Darling.

How the flows increased over the period.

Appendix 1 provides a list of all the key dates in the timeline of the restrictions, pumping exemptions and when restrictions were permanently lifted. The following table shows the actual flows and forecast flow assessments, and the key points when restrictions were permanently lifted. It also highlights how quickly the assessments changed for Menindee Lakes inflows with increasing rainfall over February.

Table 2: Actual and forecasts flows along the Barwon-Darling and into Menindee Lakes during February and March 2020

Date	@ Bourke		@ Wilcannia		@Menindee Lakes		Restriction Lifted
	Total Actual Flow (GL)	Total Forecast Flow (GL)	Total Actual Flow (GL)	Total Forecast Flow (GL)	Total Actual Flow (GL)	Total Forecast Flow (GL)	
10 Feb	0	27-42	0	1-15	0	0-15	
21 Feb	0.16	140-170	0	80-110	0	60-80	Northern valley restrictions begin to be permanently lifted – river and floodplain, as 60-70 GL target forecast to be met, even with extraction in these valleys.
28 Feb	69	245-275	0	170-200	0	150-170	Restrictions along the Barwon-Darling upstream of Culgoa permanently lifted on 27 February, as these were not contributing significant volumes to meet the target

Date	@ Bourke		@ Wilcannia		@ Menindee Lakes		Restriction Lifted
6 March	151	315-345	3	235-285	0	205-250	Restrictions along the Barwon-Darling downstream of Culgoa permanently lifted, as these would not impact on meeting the 200 GL target at Menindee
30 March	431	450-470	284	380-415	209	340-390	Last remaining restriction lifted – Barwon-Darling floodplain - as the 200 GL had entered the Lakes

How much water was taken and protected during key periods of the restrictions?

The department's technical report on the [Assessment of take and protection during the flush flows in the Northern Basin](#) provides information on these aspects of water taken and protected through the event from February to April 2020. This report covers most of the period the orders were in place, as well as the period after restrictions were lifted when flows were still occurring. Table 2 above lists the key dates when restrictions were permanently lifted in the northern valleys and the Barwon-Darling.

The key points from the assessment report are:

- A substantial portion of the inflows were protected from extraction and either replenished the northern valley systems or passed through to the Barwon-Darling River. During February, 422 GL flowed into the northern regulated river tributaries, of which only 31 GL (7%) was taken by licensed NSW water users and 164 GL (39%) flowed to the Barwon-Darling River. Most of the take was when supplementary access was permitted.
- By the end of April, 670 GL flowed into the regulated river tributaries and 260 GL flowed to the Barwon-Darling River, with some 47% (316 GL) replenishing the northern river systems.
- Between February and April, a total of 880 GL of inflows were received into the Barwon Darling River, of which 260 GL were from the northern regulated river systems. The remaining 620 GL were from unregulated rivers, both from northern NSW tributaries and Queensland tributaries.
- The increase in stored water in large on-farm storages in NSW totalled an estimated 270 GL from early February to April. Some of this was from floodplain harvesting, but also from water being pumped into the storages from the river, including water taken during supplementary access announcement periods. Of this about 30 GL of the increase in storage occurred in mid-February when the 4 to 5-day floodplain take exemption was provided in some floodplain areas because of reports of infrastructure damage.
- If the standard water sharing plan arrangements were followed, an additional 100 GL of supplementary water could have been accessed. Some 27 GL of supplementary water was accessed between February and April for consumptive purposes. A further 4 GL was left in the river for environmental purposes.
- Initial estimated extractions from the Barwon-Darling River for the entire 2019/20 water year are around 230 GL. Most of this extraction occurred after the restrictions were lifted on A, B

and C access, from 27 February upstream of Culgoa and after 6 March for downstream of Culgoa. Prior to February there would have been no or very limited opportunity for A, B and C class access because of the low river flows, and extractions would have been limited to town water and stock and domestic supply.

The assessment did not include estimates of unregulated river extractions, except for the Barwon-Darling. However, it does highlight the importance of protecting flushing flows after a prolonged dry period to replenish the local and downstream rivers. It also indicates that if unrestricted, substantial volumes can be taken through supplementary announcements, floodplain capture and from pumping from the Barwon-Darling River itself over a relatively short period of time. The Northern Basin restrictions attempted to balance restricting access sufficiently to ensure that good flows would occur throughout the system and reach Menindee Lakes, while also allowing commercial access to the first flows for some time once these needs had been met. The window for pumping can at times be quite limited.

These events can occur quickly and just as quickly cease with rivers returning to flow lows. While a total of around 680 GL eventually entered Menindee Lakes by end of June, the Barwon-Darling River upstream has again returned to low flows with no pumping permitted by A, B and C class pumpers along most of the river from 12 June to early August 2020.

Existing water sharing plan rules that contribute to connectivity

A key aspect of the Northern Basin restrictions was to ensure connectivity along local river systems and to floodplains, plus downstream as far as possible into the Barwon-Darling River and the Menindee Lakes. It is important to note that there are various other rules and measures that also contribute to the connectivity between and within river systems. These rules are designed to provide for connectivity under normal conditions. It should be stressed that the Northern Basin restrictions were imposed during extreme and unprecedented drought conditions and were specifically designed to protect the first flush down the northern tributaries and into the Barwon Darling to meet critical needs.

Connectivity has a broad definition, and includes lateral connectivity, and connection among groundwater and surface water sources. These various definitions broadly align with the NSW principle under the Act that "water sources, floodplains and dependent ecosystems (including groundwater and wetlands) should be protected and restored and, where possible, land should not be degraded".

Provisions in the Water Sharing Plans

The main tools in the Act for managing the state's water resources are water sharing plans. There are rules within water sharing plans that support hydrological connectivity and associated environmental, cultural, social and economic outcomes within the individual valleys in the Northern Basin and between those valleys and the Barwon-Darling River.

Long-term average annual flow

Under water sharing plans, water must be reserved for the fundamental health of a river or aquifer and the ecosystems that depend on this. The long-term average annual extraction limit determines the maximum volume of water that may be extracted under access licences, domestic and stock rights and native title rights on a long-term average annual basis. This water may contribute to hydrological connectivity as the water is not available for extraction and remains in that water source.

The volumes of water set aside for the environment vary between valleys and are subject to the rules and specifications within the individual water sharing plans. These levels are set to ensure

that water extractions do not increase, so that there is no erosion of the water set aside for the environment and to protect the security of supply to water users.

Supplementary water

Supplementary water in regulated river valleys results from rainfall events that cannot be captured (regulated) for future use in public storage structures such as dams or weirs, and the water is not needed to meet current demands or commitments. Supplementary water, which is triggered by naturally higher flows, is important for in-stream river health and for contributing to these needs downstream.

Water sharing plans detail both the criteria to be met before access to supplementary water is announced, and individual access rules applying during a supplementary event. The latter may share flows between the environment, extraction and other priority commitments. In summary, the WSPs set the following supplementary flow sharing rules:

- NSW Border Rivers Regulated River – supplementary rules in the plan aim to meet the requirements in the NSW – Queensland Border Rivers Intergovernmental Agreement of a minimum of 25% of uncontrolled flows for the environment.
- Gwydir Regulated Rivers – the plan protects 50% of supplementary flows for the environment.
- Upper Namoi & Lower Namoi Regulated Rivers – the plan protects 90% of supplementary flows for the environment between 1 July and 31 October and 50% of supplementary flows for the environment between 1 November and 30 June.
- Macquarie Regulated River – the plan allows for supplementary access to be announced when flows in the river exceed 5,000 ML/day at Warren and are above requirements for the environment, basic landholder rights, replenishment flows and other licensed requirements.

Some supplementary water licences are held by environmental water holders (see Tables 3 and 4), which protects a further portion of supplementary water from extraction.

Environmental water allowances

An environmental water allowance creates a 'bank' or volume of water reserved in storage. This reserve can be released for specific environmental purposes, such as flushing blue-green algal blooms, reducing in-river salinity concentrations or supporting bird breeding and fish spawning events. In the Gwydir the plan provides for up to 90 GL of water to be reserved in an environmental account and in the Macquarie up to 160 GL.

Held environmental water

Held environmental water is entitlement that can arise from water recovery projects or through the purchase of water licences. The water in these accounts is accrued via the annual allocation process for the type of licence category held, and can be used in accordance with the rules of the relevant plan. The exception to this is with the use of supplementary water or unregulated river water. Supplementary water is made available when supplementary events are announced by the Department. In unregulated rivers, availability is managed by imposing flow thresholds. In any of these scenarios, the water is used at the discretion of the environmental water manager, either the Commonwealth Environmental Water Office or the Energy, Environment and Science Division of NSW DPIE. New rules for the protection of HEW have been included in the Barwon Darling, lower Macquarie and lower Gwydir unregulated river water sharing plans (see below). The volumes of held environmental water are set out in tables 3 and 4.

Table 3: NSW held licensed water environmental water in the Northern Basin

Valley	High Security (ML)	General Security (ML)	Supplementary (ML)	Unregulated (ML)	Total (ML)
Gwydir	1,249	17,092	3,140.5	-	21,481.5
Macquarie		48,419	1,451.5	2,916	52,786.5
Barwon-Darling				1,728	1,728
Total	1,249	65,511	4,592	4,644	75,996

Table 4: Commonwealth held licensed water environmental water in the NSW Northern Basin

Valley	High Security (ML)	General Security (ML)	Supplementary (ML)	Unregulated (ML)	Total (ML)
NSW Border Rivers		2,806	1,437		4,243
Gwydir	4,508	89,525	20,451		114,484
Namoi – including Upper Namoi, Peel and Lower Namoi		14,910			14,910
Macquarie		126,224	8,292		134,516
Barwon-Darling				28,631	28,631
Warrego (NSW)				17,626	17,626
Total	4,508	233,465	30,180	46,257	314,410

The Commonwealth and NSW environmental water holders regularly cooperate on environmental water releases. For example, in 2018 and 2019 environmental water was released from the storages in the Border and Gwydir rivers to provide connectivity flows into the Barwon-Darling because of dry conditions.

In the Northern Connectivity Event in April 2018, 23.2 GL of held environmental water was released from the storages in the Gwydir and Border Rivers, comprising 16.6 GL from Commonwealth accounts and 6.6 GL from NSW accounts. This event followed natural inflows that had wetted up sections of the river. 7.5 GL of water flowed past Wilcannia, but little water made it into Menindee Lakes. The event improved water and river habitat quality and gave native fish such as Golden Perch opportunities to move between river pools.

In early 2019, the Barwon River had not flowed for over 200 days. Waterholes were depleted and the resulting poor water quality threatened the survival of native fish. In April 2019 the Commonwealth and NSW governments again released water from the Gwydir and Border Rivers, this event was named the Northern Fish Flow Event. This involved a release of 7.4 GL from Glenlyon Dam in the Border Rivers and 28.6 GL from Copeton Dam in the Gwydir. The flows

supported the health of the Dumaresq, Macintyre, Mehi and Barwon river systems and ran until July 2019. Although a higher volume was released in this event, given the very dry conditions the flow only reached as far as Warraweena upstream of Bourke, highlighting the importance of antecedent conditions in determining how far flows will travel.

Both flow events were protected from pumping by temporary water restrictions. The Barwon River at Walgett would have ceased to flow for around 630 days between May 2018 and February 2020, if not for the Northern Connectivity and the Northern Fish Flow Events. However, there had been effectively no flows into Menindee Lakes during 2018 and 2019. The last major inflow into the Lakes prior to this had occurred in September 2016.

End-of-system flow rules

End-of-system flow rules require minimum flows to pass through to the end of a river system or a specified gauge. This ensures that flow is maintained below the areas of major extraction and can assist in providing for hydrological connectivity into the downstream water source. End-of-system flow rules are included in the Border Rivers, Upper Namoi and Lower Namoi Regulated River water sharing plans.

Flow classes and cease-to-pumps and commence-to-pump rules

Unregulated water sharing plans define flow classes linked to cease-to-pump and commence-to-pump rules that require users to start or stop taking water when flow reaches a set level. These types of rules are used to control extraction from specific portions of the hydrograph (i.e. low, medium or high flows).

Interim Unregulated Flow Management Plan for the North West

The Interim Unregulated Flow Management Plan for the North West was released in 1992. The Plan sets when access to supplementary flows in the tributary systems may be restricted to protect flows into the Barwon-Darling River. In addition, B and C Class access in the Barwon-Darling River may also be restricted to achieve various flow targets at downstream locations.

Rules to support the implementation of the Plan were embedded into the Water Sharing Plans for the NSW Border Rivers, Gwydir and Namoi Regulated Rivers. The Macquarie valley was also included in the Plan although it specified the Macquarie valley could only make modest contributions to the Barwon-Darling River through the Northern Marsh Channel and the Bogan River. The plan has not been actively implemented, but the department intends to review it over the next 12 months.

The requirements of the Plan are set out in Table 5.

Table 5: Objectives and flow requirements of the Interim Unregulated Flow Management Plan for the North West.

Objective	Flow requirement
Provide opportunity for the passage of fish across the major weirs in the Barwon-Darling River	<p>Achieve:</p> <ul style="list-style-type: none"> a flow of 14,000 ML/day in the Darling River at Brewarrina for 5 consecutive days, and/ or a flow of 10,000 ML/day in the Darling River at Bourke for 5 consecutive days <p>during the period September to February inclusive, providing two such flow events have not already occurred during that period in that water year</p>

Objective	Flow requirement
Protect flows needed to suppress blue-green algae blooms	Achieve a flow of at least 2,000 ML/day in the Darling River at Wilcannia for 5 consecutive days during the period 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
Protect flows needed to meet basic landholder rights requirements along the Barwon-Darling River	Achieve a flow of: <ul style="list-style-type: none"> (i) 150 ML/day in the Darling River at Wilcannia, (ii) 280 ML/day in the Darling River at Louth, (iii) 390 ML/day in the Darling River at Bourke, (iv) 550 ML/day in the Darling River at Brewarrina, (v) 700 ML/day in the Barwon River at Walgett, (vi) 760 ML/day in the Barwon River at Collarenebri, and (vii) 850 ML/day in the Barwon River at Mungindi.

Recent Additional Rules to Support Connectivity

On 1 July 2020 the following additional provisions came into effect in NSW:

Increase in the cease to pump level for A Class licences. The department has adopted the recommendations of the Natural Resources Commission review of the Barwon Darling water sharing plan and increased the cease to pump levels for A Class licences in the Barwon Darling River to protect more of the low flows for the environment.

Individual Daily Extraction Components – implementing limits on the total volume of water that can be extracted daily by individuals in the Barwon-Darling River will help to mitigate the local environmental impacts of water extraction and enable shared access to flows for both local and downstream users. The total volume of water extracted daily by all licence holders is limited to the levels of extraction permitted immediately before the commencement of the 2012 Barwon-Darling water sharing plan.

Resumption of flow rules – the first flow of water through the Barwon-Darling system after an extended dry period is now protected from extraction for irrigation through specific resumption of flow rules in the water sharing plan (clause 50). These rules require a no flow class to be announced if flows are below certain volume (ML/day) targets at Walgett, Brewarrina, Bourke and Wilcannia for specific consecutive number of days at these locations in the four river sections.

Aboriginal supplementary access licences - provision has been made in the Barwon-Darling plan for Aboriginal supplementary access licences. These rules allow Aboriginal persons and Aboriginal communities to access water up to 500 ML to enhance the Aboriginal cultural value of important lagoons and billabongs by restoring the natural filling sequence of that lagoon or billabong.

Active management - on 1 December 2020, the active management provisions come into effect in the Barwon Darling, lower Macquarie and lower Gwydir unregulated water sharing plans.

These new rules protect environmental water in those unregulated systems from extraction so that it can remain in rivers for the benefit of the environment. Active management reduces the need for temporary water restrictions to protect the held environmental water, and makes it clearer to licence holders in these areas when they can and can't take water. Periods will be announced when the active management arrangements apply – either restricting all access (if there is only

environmental water in the river) or sharing access above the environmental water if there are other flows in the river as well.

More information on these rules can be found at the [Environmental Water Hub](#) on our website.

Other programs underway to improve connectivity

- 1. Recognition, and options for protection, of the volumes of environmental water entering NSW from Queensland** - Queensland is due to have completed work on identifying potential volumes of environmental water reaching the border by November 2020.
- 2. Review and implementation of the Interim Unregulated Flow Management Plan for the North West** – this plan was developed in 1992, and the flow targets were based on the best available science at the time. There has been a significant body of work completed since then on flow requirements in the Barwon Darling River. In particular, the long-term watering plans, developed by DPIE EES, reflect the contemporary available scientific information on environmental watering requirements for each inland valley in NSW. Additionally, the plan was rarely implemented due to an inability to accurately forecast and predict flows. With the advent of both contemporary flow requirements, and flow forecasting tools, the department intends to review the targets in the plan in line with the long-term watering plan for the Barwon Darling, as well as develop an implementation manual.
- 3. Regional Water Strategies** – these set the long-term strategies for water management in NSW and are completed on a regional basis. The Western Regional Water Strategy will also include potential longer-term strategies for addressing connectivity.
- 4. Incident Response Guides** – to ensure transparency of any future restrictions, it is intended that targets and principles for operations will be documented to any future releases. This may include the extreme events policy and/or the relevant valley incident response guides. As discussed below the principles used in the recent northern restrictions were developed to ensure connectivity and to ensure critical needs were met as far downstream as possible.

Comments on draft recommendations

1. Ensure that water management provides for and promotes connectivity between water sources

Connectivity can mean both longitudinal connectivity of the flows along the length of the river and between hydrologically connected rivers, as well as lateral connectivity between the river and its anabranches, riparian zones, wetlands and floodplains. Connectivity can also include the connection between surface water and groundwater sources. All these are important objectives.

A key feature of the Northern Basin restrictions is that they sought to achieve connectivity before access was allowed for commercial water take. For example, the restrictions in the northern tributaries were only lifted once forecasts assured DPIE Water that the 60-70 GL Menindee target could be achieved. Restrictions in the Barwon Darling below the Culgoa River junction were only lifted once we were confident that the 200 GL Menindee target could be achieved.

For the first flush event, the end of the system was ultimately defined as Menindee Lakes. Restoration of flows in the lower Darling was then managed separately via regulated flows, using the water derived from the northern restrictions. First flush management cannot be used to protect for connectivity downstream of Menindee Lakes, because the lower Darling is a regulated river. If NSW Water agencies allowed water to pass directly through Lake Wetherell as a translucent flow, then that would result in no drought storage in Menindee Lakes.

It is also important to recognise the value of using flow forecasting as a tool in managing restrictions. If DPIE Water had waited until 60–70 GL had entered Menindee Lakes (mid-March) before allowing any access upstream, there would have been some 2 or 3 months under a 200 GL target, where no access was permitted upstream. In many cases, by that time the flows would have passed and been below the thresholds to allow pumping. The principle was to allow access if there was high confidence in flow predictions meeting triggers or allow access if we knew, given the information available at the time, that the target would not be met (without extraction).

Just as Councils along the Barwon Darling River were rightly concerned that sufficient flows should be protected to replenish their town water supplies, once that point had been reached, there was also concern raised by those same Councils that commercial users should be given access to provide important economic stimulus for their communities.

The event was managed to ensure connectivity into Menindee Lakes while still allowing opportunities for water users. Once the flows were captured in Menindee Lakes, NSW agencies managed the releases along the Lower Darling to ensure a flush along the length of the river in a manner that protected fish and water quality and supplied water users, and ensured that reserves were available for ongoing flows to the Lower Darling.

The targets were set both along the rivers and for Menindee Lakes. Beyond Menindee Lakes, the system is then regulated by NSW to meet Lower Darling water needs until the storage is above 640 GL when it is then subject to MDBA operation under the Murray Darling Basin Agreement. When in NSW control, the Lower Darling is managed as a drought reserve, providing connectivity to the Murray as per the rules in the water sharing plan.

The department has undertaken a stocktake of water sharing plan rules that contribute to longitudinal and lateral connectivity in the Northern Basin. There are 25 rules, grouped into four rule types, as follows:

- flow targets - includes unregulated river flow classes, cease and commence-to-pump requirements, end-of-system flow and downstream flow targets

- flow access conditions – protect portions of flows (such as supplementary access conditions) to provide water for the environment
- long-term average annual extraction limits – set aside flows above the extraction limit derived from a long-term average model for the environment
- environmental water allowances – set aside a proportion of water in storages to be managed for environmental purposes (for example the Gwydir environmental contingency allowance).

These rules are designed for most water years, with first flush protection using section 324 temporary water restrictions only considered under extreme conditions. Whether connectivity can be achieved downstream depends on the general water availability in river systems. In very dry times, for example during 2018 and 2019, many river systems could not provide flows along their own length. In some cases, flows had to be cut at certain locations to ensure that critical town needs could be met.

There will always be a need to assess events as they occur, assessing the size of the event, the likely distance flows may be able to reach and determining whether they will be able to make meaningful contributions to downstream systems. There would be little value in denying access to upstream users to flows that would not be able to reach downstream even if all access upstream was restricted.

Most droughts typically end with significant flooding flows that flush through the system, filling major dams and on-farm storages. The high flows that occurred in the Northern Basin in 2016 resulted in Menindee Lakes increasing from almost empty to 1,528 GL by December 2016 - close to full capacity. However, the flows that occurred in the north-west in early 2020 were reasonable, but they were not drought breaking.

Menindee Lakes is now only around 27% of its full capacity. The major northern rural storages received some improvement from the 2020 rainfall, but most of the flows in this period occurred downstream of the major dams. Therefore there needed to be a balance in ensuring that critical needs were met, that some reserves in storages were achieved, that drought refuges were filled, but in also allowing some opportunity for commercial users – many of whom had not had access and therefore any economic opportunities for some time. It required a careful balancing act of ensuring that flows could pass through the system, while allowing commercial users long awaited access.

2. Make any temporary water restrictions required to manage first flush events on a proactive basis (that is, prior to specific forecasts of rain)

As noted by the Panel, this would provide communities with more time to plan. However, it would not change the need for real time management and for decisions to be communicated quickly during any event.

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

The department acknowledges that this was a gap and will develop guidance materials within the next 12 months. The department notes that this recommendation by the Panel is for a short-term product, pending longer-term actions and broader consultation.

4. Incorporate learnings from the 2020 Northern Basin First Flush event into systems that will be used to manage any future first flush event that arise in the short term, including by undertaking community consultation on the objectives, principles and targets

The department acknowledges that there are many learnings from the first flush event that need to be incorporated into future management systems. In particular, to promote transparency and understanding, the triggers and principles should have been released before, or at the least, at the start of the event.

The department also acknowledges the need for improved consultation processes with diverse stakeholders including water users, Traditional owners and the broader community. During the event we mainly focused communication of restrictions on licence holders to whom the restrictions will apply. This approach does not give sufficient transparency to other extractive users downstream. It also misses the opportunity for non-extractive stakeholder interests to understand and realise the benefits from flows.

We acknowledge that First Nations peoples have expressed disappointment that, had they known about flows ahead of time, they could have arranged cultural events and practices to coincide with these events which are critical to enduring culture and transfer of knowledge to emerging leaders. This is particularly important in the context of adhering to the aspirations set down in any Native Title determinations – in this case, those of the Barkandji Registered Native Title Prescribed Body Corporate, who the NSW government is currently in negotiation with to develop an Indigenous Land Use Agreement.

The NSW Government, in its response to the Vertessy report, undertook to work with key agencies involved in NSW water management and Aboriginal groups to explore options for an Aboriginal water strategy with the aim of improving the representation of Aboriginal cultural interests and values in water management. We want to incorporate this initiative into any NSW Aboriginal water strategy.

The department also notes that there is a broad range of differing views between water users and the community on flow targets and connectivity. Whilst consultation can, and should, be undertaken, it will be very difficult to achieve consensus between all water users. Managing expectations will be a key component of any consultation on rules and targets that provide for restrictions, and impact on the ability for some users to take water during a restriction.

5. The evidence base and methodology for first flush management must be quantified, science-based and made publicly available

With the prospect of an event occurring sometime in the future, the department worked with other agencies during 2019 to determine minimum environmental needs as a basis for decision making when flows occurred. These were based on the targets in [Long Term Water Plans](#) which use the current best available science. The targets used for the Northern Basin restrictions have now been published on the department's website. The Department acknowledges that this information should be available, and current, prior to any future restrictions.

The department is continuing to work with peak Aboriginal groups and Native Title holders to understand and identify barriers to water being available to support cultural practices and access to water.

The department acknowledges that better understanding of the use of domestic and stock take under basic landholder rights and where this might be growing, are important measures for managing these extractions, particularly for long term planning and local decision-making during

droughts. That said, the water sharing plans establish the requirements for domestic and stock basic landholder rights based on landholding, assumed stocking rates and requirements.

The triggers were based on flows required to re-start the rivers and to achieve flow through the river systems which in turn would replenish town water weirs and drought refuge pools. These volumes well exceed individual basic landholder rights or town water supply requirements over the course of a year. For example, in the Macquarie Regulated River, the actual requirements for towns, stock and domestic users and basic landholder rights total around 23 GL per year, but the volume required to run the river to deliver water to these users is 131 GL.

Information on actual river and floodplain extractions will improve over time with the roll out of the metering and monitoring programs. The department is proactively working on improving measurements of floodplain harvesting take, and recently released its [floodplain harvesting measurement policy](#).

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

The department had a core group of staff from DPIE-Water, WaterNSW, and Fisheries constantly on call to assess flows and determine if triggers had been met. This group met multiple times a day during the height of some of the rainfall events. Within the agencies the process worked well to ensure that decisions were made as quickly as possible, including over weekends and public holidays. The key issue remained how to communicate these decisions just as quickly to water users and the community.

The main method used to communicate with water users was WaterNSW's Early Warning Network (EWN) which sends texts or emails directly to those who have registered. The department and WaterNSW will continue to encourage all water users and community stakeholders to register. The department acknowledges that some water user groups, particularly unregulated water users and some floodplain harvesting users, were not signed up to the EWN and found it difficult to find information.

The department is working with WaterNSW on its Water Insights Portal which, in addition to storage levels and allocations, includes the latest customer notices. This could be extended to be the key site for also accessing WaterNSW's flow forecasts and the department's section 324 restrictions and temporary pumping exemptions, plus regular information sheets on the progress with the restrictions and information on event and media contacts. The potential for a "live" map will be assessed noting that it is difficult to produce maps in real time as rainfall events unfold across multiple valleys.

The department will work with WaterNSW to plan for future section 324 restrictions, including a communications strategy.

7. Embed the management of first flush events in the regulatory and policy framework for managing drought

The department acknowledges that there are benefits to embedding key drought management measures in regulatory and policy frameworks, as demonstrated by the Extreme Events Policy, released in October 2018. This policy establishes the principles for managing extreme events for each major water source in the NSW Murray–Darling Basin. It provides a transparent decision-making framework based on an assessment of risk and need in the face of competing priorities and demands.

The Extreme Events Policy considers connectivity during water shortages. It specifically states that consideration needs to be given to connectivity issues, but there are also other factors to take into account. The relevant extract from the Policy follows:

“Connectivity between water sources will be considered to ensure water is available to meet critical human water needs in connected systems during an extreme event. This includes interconnections between surface water and groundwater sources as well as longitudinal connections between surface water sources.

When considering restricting access to a lower-priority use to provide water to a higher priority use in separately managed but hydrologically connected systems, the other principles identified in this policy should also be considered. A number of additional factors must also be carefully weighed:

- the relative priority between the access restriction (lower) and the access provision (higher)
- the severity of the extreme event
- the alternative options available to meet the higher-priority needs
- the physical constraints to delivery
- any unintended impacts.”

The Extreme Events Policy, and Incident Response Guides, will be reviewed as part of the assessment of the policy's effectiveness in light of the current drought and its effectiveness for signalling measures as we move back out of drought, including the broader principles and triggers for first flush events.

As of 1 July 2020, the *Water Sharing Plan for the Barwon-Darling Unregulated River Water Source 2012* includes triggers around first flush flows as part of the resumption of flow provisions (see page 12, above). However, implementing these rules requires a high degree of river management. It should be noted that if these rules were in place and implemented as part of the first flush event, rather than the section 324 restrictions, the same outcome would not have been achieved, as they were designed for a less extreme dry period than had occurred up until 2020. This demonstrates the difficulty in “hard wiring” rules to deal with extreme events.

Any potential changes to water sharing plans to include first flush triggers will be subject to consultation with stakeholders.

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

The ability to improve flow forecasting modelling and real-time monitoring capability will be increased by the following reform and work programs that are underway.

The department is implementing the metering framework to improve the standard and coverage of non-urban water meters across NSW. Under the framework, all surface water pumps authorised by a water supply work approval that are at least 100 mm in size will require a pattern-approved meter. Additionally, surface water pumps that are 200 mm or greater will require telemetry. Groundwater works are also subject to the new framework. More information on the [Non-Urban Metering Framework](#) can be found on the department's website.

The framework commenced in December 2018 and is being rolled out in stages across a five-year period with compliant meters required on all surface water pumps of 500mm and above by 1 December 2020 and on other eligible surface water and groundwater works in the northern inland

by 1 December 2021. The framework will improve compliance with water sharing rules, including those that protect water for the environment, and any future restrictions to protect first flush flows.

The department is implementing a program to license floodplain harvesting water extractions and make them subject to volumetric limits. This will ensure that floodplain harvesting fits within the sustainable diversion limits set by the Basin Plan by establishing new floodplain harvesting entitlements and account management rules that are specifically designed to control any growth in use.

Floodplain harvesting licences and water supply work approvals for all the northern valleys are scheduled to be in place by June 2021. All floodplain harvesting will be required to be accurately measured. This will support a fair system of floodplain access and improve flows for downstream communities and the environment. The department requires landholders to install minimum-standard telemetry-enabled metering devices fitted with tamper-evident seals. The move to automated metering for floodplain harvesting measurement aligns with the metering requirements for river pumpers.

NSW has also commenced discussions with Queensland on making flow information more transparent to water users and providing better links between each State's respective websites.

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

The department acknowledges that clear implementation plans and communication of progress of these plans are important for transparency and accountability. The work of the Water Renewal Taskforce on environmental water and the metering roll out, as well as the department's work on the implementation of floodplain harvesting, are good examples of this practice. These processes have been significant, lengthy and regularly reported on the department's website.

The department has established a [North West flows page](#) on its website on which we are progressively including more information, including the publication of the technical report on the assessment of take and protection of flows.

As part of its strategic approach to improving implementation, the department is also developing implementation programs for water sharing plans. It is proposed that annual progress on implementation be reported as part of this work. This work will commence in 2021.

10. Improve and resource communication coordination and capability

The department acknowledges that significant improvements are required. While the department published the temporary water restrictions, the reasoning, and the exemptions on our webpage, this was not done in real time and many stakeholders were not aware that the information was there. In addition, the department published a series of information sheets on the temporary water restrictions outlining progress with the restrictions and key information on the reasoning. Again, the timing and communication of the availability of this information was problematic.

From 10 February WaterNSW published every Monday, Wednesday and Friday on its website its operational updates of forecasts of the expected flows along the Barwon-Darling and into Menindee Lakes. WaterNSW alerted customers to the restrictions and pumping exemptions by way of customer notices. However, to receive these notices by way of email or text stakeholders need to be registered with WaterNSW. This information is, by nature, targeted at licence holders and therefore other stakeholders are not specifically notified unless they register. The department and WaterNSW will continue to promote this to unregulated river users and floodplain harvesters

(noting that floodplain harvesters generally have river licences). However, it is also licensed water users' responsibility that they ensure they are accessing water in compliance with their licence conditions and any additional restrictions.

As referred to in response to recommendation 6, the department and WaterNSW are working towards the Insights Portal as a single location for recent information and notices. A communication plan will also be developed, that clearly provides users, Native Title holders, Traditional Owners, as well as the broader community with direction on where to go for information.

The department acknowledges that improving water literacy and knowledge sharing are important issues throughout the Murray Darling Basin, and more broadly across the community. This was highlighted by the very diverse range of views expressed on the northern restrictions, and some misinformation that appeared on various social media platforms.

A Communications, Marketing and Engagement team has been established as a dedicated resource for the Water Division of the department. The team of nine staff provide strategic communications and engagement services to the business units within the Water division, with a focus on specific high profile programs and issues. The team has established the standards and methodology for good practice in our community and stakeholder engagement and communications approach. This is now being applied in our interactions with water related industry groups, key stakeholders and the wider community to ensure communications is fit for purpose and meets the needs of our water customers. Our ongoing engagement also informs priority policies, programs and activities in the water portfolio.

More Information:

Click on the links below:

- [Information sheet](#) setting out the targets and principles for the Northern Basin restrictions
- Series of information sheets and the water restrictions orders and reasons for decisions for the Northern Basin restrictions – available from the [temporary water restriction page](#)
- [Assessment of take and protection during first flush flows in the Northern Basin](#) – technical report
- [North–West Flows](#) webpage - includes information about the benefits of the restrictions
- [Northern Connectivity – Better Management of Environmental Water in NSW](#) - brochure
- [Operational updates](#) – WaterNSW regularly published updates on the volumes of flow in the Barwon-Darling and forecasts flows to Menindee Lakes
- [Supplementary Announcements](#) – WaterNSW publishes supplementary access announcements on its website
- [Macquarie Marshes Drought Recovery](#) – information sheet outlining the delay in allowing further supplementary access in the Lower Macquarie until 5 April

Attachment 1

Key Timelines and Actions

Date	Information/Action
12 January 2020	<p>BOM Forecast:</p> <p>The Bureau of Meteorology forecast widespread rain for the east of Australia from 16 January. The low-pressure trough was expected to develop over central to western NSW. The trough was forecast to be slow moving and continue over a four-day period with potential rainfall totals of 30 – 80 mm over this period.</p>
15 January 2020	<p>Valley Targets:</p> <p>As a basis for determining the critical volumes that would need to be protected before access could be permitted, the department developed a series of volumetric flow targets for points along the northern valleys and the Barwon-Darling River.</p>
17 January	<p>First Order Gazetted:</p> <p>The Northern Basin temporary water restriction was gazetted covering unregulated and regulated river access across the northern valleys and the Barwon-Darling. The order applied initially until 31 January.</p>
20 and 23 January	<p>Area Excluded from the Order:</p> <p>Permanent exemptions were provided to river pumpers in the Bathurst region in the Upper Macquarie as they were already subject to pumping restrictions which had applied since October 2019 to protect Bathurst's town water supply.</p>
26 January to 7 February	<p>Temporary Exemption:</p> <p>Peel high security regulated river and Mooki River and Quirindi Creek unregulated river access licences were given an exemption and allowed to pump. Flows were sufficient to allow access in these areas and to reconnect the Peel and the Mooki Rivers to the Namoi River. Further downstream targets were not expected to be met, regardless of extraction. Peel high security users had been substantially restricted from accessing flows since regulated releases had ceased at Dungowan to conserve water for Tamworth in December 2019. The exemption initially applied to 31 January and was then extended to 7 February.</p>
30 January	<p>First Order Extended:</p> <p>With further rainfall and flows forecast, the order was extended for river pumping from the northern and Barwon-Darling Valleys to 17 February.</p>

Date	Information/Action
7 February	<p>Second Order Gazetted covering floodplain harvesting:</p> <p>Order applying to the following 6 floodplains commenced and applied to 28 February:</p> <p>Barwon-Darling Floodplain Gwydir Valley Floodplain Lower Namoi Valley Floodplain Narrabri- Wee Waa Floodplain (mid Namoi) Narromine to Oxley Station Floodplain (Macquarie) Upper Namoi Floodplain</p>
8 to 17 February	<p>Temporary Exemption:</p> <p>High rainfall in the Namoi Valley and Lower Gwydir allowed unregulated river access in some sources as it was considered that the take would not materially impact on flows into the Barwon Darling.</p> <p>Namoi Unregulated water sources were: Upper Macdonald River Water Source, Mid Macdonald River Water Source, Upper Namoi Water Source, Werris Creek Water Source, Rangira Creek Water Source, Bluevale Water Source, Coxs Creek Water Source, Maules Creek Water Source, Eulah Creek Water Source, Bohena Creek Water Source, Spring and Bobbiwaa Creeks Water Source, Phillips Creek Water Source, Mooki River Water Source, Quirindi Creek Water Source, Warrah Creek Water Source.</p> <p>Gwydir Unregulated water sources: - Thalaba Creek Water Source - Millie Creek Water Source</p>
9 to 12 February	<p>Temporary Exemption:</p> <p>Pumping permitted from the Mehi River (at the end of the Gwydir system). For 2 days there had been in excess of 250 mm of rain in lower Gwydir. Flows in the Mehi River were at 4000 ML/day and 4,500 ML/day in Moomim. Flows from the Mehi were backing up due to high flows in the Barwon Darling. The main intent of lifting this order was to minimise flood impacts, and allow farmers to move water around their property</p>
9 to 17 February	<p>Temporary Exemption:</p> <p>Access permitted for high security users in the Peel, Upper Namoi and Lower Namoi. It was estimated that high security take would be in the order of up to 150 ML/day, 3 ML/day, and 0.2 ML/day in the Namoi, Peel, and upper Namoi respectively. At the time of this decision, flows in the Namoi were 10,000 ML day at Gunnedah and 14,000 ML day at Narrabri (and rising). These were well in excess of the flow targets to achieve high priority needs. The impact of allowing high security take was insignificant when considered against the flows and would have no material impact on flow targets.</p>

Date	Information/Action
9 to 17 February	<p>Temporary Exemption:</p> <p>Access permitted in some Namoi unregulated river water sources: Brigalow, Bundock, Coghill, Etoo and Talluba, lower Namoi, Pian, and Baradine. Over 2 days there had been in excess of 250mm of rain in lower Gwydir, lower and mid Namoi. Flows in the Namoi River had exceeded (or were forecast to exceed) all trigger targets. All flow targets had been met in the Namoi valley, and it was expected that targets at Brewarrina, and Bourke would also be met, in the Barwon Darling. Unregulated access take from these water sources would not pose a material risk to further flows down the Barwon Darling.</p>
9/10 to 13 February	<p>Temporary Exemption:</p> <p>Take permitted initially from 9-12 February for the Thalaba and Mehi water sources on the Gwydir Floodplain. On 10 February this exemption was extended for these water sources on the Gwydir floodplain until 13 February and also included the Barwon section.</p> <p>Specified sections of the Lower Namoi, and Barwon-Darling floodplains were also included in the 10 –13 February exemption. There had been in excess of 250 mm of rain in some locations across the Namoi and lower Gwydir resulting in large volumes of overland flow on the floodplains and flash flooding. Flows from the Mehi had been backing up due to high flows in the Barwon Darling. The main intent of the exemptions was to minimise flood impacts and as a result of reports of infrastructure damage to allow farmers to move water around their property to avoid further damage.</p>
12 February	<p>Floodplain Order Amended:</p> <p>Order for floodplains amended to include two additional floodplains - Lower Macintyre River Floodplain and the Lower Macquarie Valley Floodplain</p>
12-17 February	<p>Temporary Exemption:</p> <p>Access permitted in the unregulated Yarraman Creek within Lake Goran Water Source as an intensive rainfall event occurred in Yarraman Creek. This resulted in very high localised flows and flash flooding. Yarraman Creek is a terminal system and the take of water would not materially impact on flows.</p>
13 February	<p>First Order Final Extension:</p> <p>Order on river pumping in the northern valleys extended to 28 February and permanently removed restriction on access by high security users in Peel, Lower Namoi and Upper Namoi from the order.</p>

Date	Information/Action
17 February	<p>Restriction Lifted:</p> <p>Restrictions on access by Border Rivers high security users were lifted. There had been significant flows into the Border Rivers since 10 February. While the Border River flows would contribute to flow in the Barwon-Darling, the material impact of permitting access by high security licence holders was minimal. Allowing high security access from uncontrolled flows would also allow inflows to upstream dams to be retained for future critical water needs in the Border Rivers regulated river water source.</p>
18 February	<p>Restriction Lifted:</p> <p>Restrictions on access in Yarraman Creek lifted as a result of a further intensive rainfall event on 17th February 2020.</p>
20 February	<p>Menindee Lakes Target:</p> <p>Because of further rainfall, WaterNSW forecast that 60-80 GL could reach Menindee if restrictions remained. A volume of 60 – 70 GL into Menindee Lakes would enable a release of water along the full length of the Lower Darling River to Wentworth of 20 GL, with an additional 40 GL providing a water supply reserve for the township of Menindee and a drought refuge if dry conditions return. A 60-70 GL target for Menindee Lakes was adopted.</p>
21 February	<p>Restriction Lifted:</p> <p>Restrictions on all unregulated river access in the NSW Border Rivers, Gwydir, Namoi, Macquarie Bogan, Peel and Castlereagh Valleys were permanently lifted. Flows were expected to meet critical needs along the full length of the Barwon-Darling River and the target of 60-70 GL in Menindee Lakes. Peak flows had moved out of these unregulated tributaries and were no longer included in flow forecasts to meet target volumes in Menindee Lakes.</p>
21 February	<p>Restriction Lifted:</p> <p>Restrictions were permanently lifted for Gwydir Valley Floodplain, Narromine to Oxley Station Floodplain, Upper Namoi Valley Floodplain and Lower Macquarie Valley Floodplain. Peak flows had now moved out of these floodplain areas, and continued contributions of floodplain water to river flows in these areas were no longer included in flow forecasts to meet target volumes in Menindee Lakes.</p>
23 February	<p>Restriction Lifted:</p> <p>Restrictions were permanently lifted in the Lower Namoi Valley Floodplain, Narrabri – Wee Waa Floodplain and Lower Macintyre River. Floodplain following intensive rainfall and increased flows over previous 24 hours from Queensland, the forecast flows which meant that access in these water sources could be permitted without jeopardising the 60-70 GL target in Menindee Lakes.</p>

Date	Information/Action
23 February	<p>Restriction Lifted:</p> <p>Restrictions were permanently lifted to allow general security users to access remaining small volume of water in general security accounts from run of the river flows. Access would not impact on target flows to Menindee Lakes and would conserve water in major dams.</p>
25 February	<p>Restriction Lifted:</p> <p>Suspension of general security account water lifted to enable general security users in the Border Rivers, Upper Namoi and Lower Namoi to access limited volumes in suspended carryover accounts from run of the river flows. Access would not impact on target flows to Menindee Lakes and would conserve water in major dams.</p>
27 February	<p>Restriction Lifted:</p> <p>Restrictions were permanently lifted on A, B and C class pumpers on the Barwon-Darling Upstream of the Culgoa Junction as inflows from the Culgoa River system meant that forecast flows for the Barwon-Darling would exceed the target of 60-70 GL at Menindee Lakes. Access in this section would not impact on target flows to Menindee Lakes.</p>
29 February	<p>Third Order Gazetted:</p> <p>New order gazetted applying to A, B and C Class unregulated river access licences in the Barwon-Darling downstream of Culgoa Junction, and to floodplain harvesting in the Barwon-Darling Floodplain. This order applied to 17 April. This restriction was required to protect the flows as they made their way down the Barwon-Darling to Lake Wetherell. The peak flows were forecast at that time to pass into Lake Wetherell by end of March/mid-April.</p>
4 March	<p>Revised Menindee Lakes Target:</p> <p>WaterNSW was forecasting over 200 GL of flows could reach Menindee Lakes. 200 GL was subsequently adopted as the new target for Menindee Lakes as this would provide at least 12 months' supply for the Lower Darling.</p>
6 March	<p>Restriction Lifted:</p> <p>Restrictions were permanently lifted on unregulated river access licences downstream of the Culgoa Junction in the Barwon-Darling. Following further rainfall and flows in the Barwon-Darling on 4-5 March, and increased flows forecast to arrive from Queensland, inflows were now forecast to exceed 200 GL at Lake Wetherell even with pumping along the Barwon -Darling.</p>
10 March	<p>Flows Reach Menindee Lakes:</p> <p>Flows began entering Menindee Lakes with some 60 GL arriving by 16 March.</p>
26 March	<p>Lower Darling Releases Commence:</p> <p>Some 190 GL had arrived in Menindee Lakes and releases commenced into the Lower Darling.</p>

Date	Information/Action
31 March	Restriction Lifted: Restrictions were permanently lifted on Barwon-Darling floodplain take as more than 200 GL had entered Menindee Lakes.