



NSW FLOODPLAIN HARVESTING

# Macquarie valley: Floodplain harvesting in water sharing plans

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Report to assist community consultation

March 2021



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## Summary

The department is implementing the NSW Floodplain Harvesting Policy across the six northern inland designated floodplains in the Border Rivers, Gwydir, Upper Namoi, Lower Namoi, Macquarie and Barwon–Darling valleys. We will issue floodplain harvesting access licences in regulated and unregulated river water sources throughout the floodplains and the rules for these licences will be included in the relevant water sharing plans.

We will issue floodplain harvesting (regulated river) access licences to eligible landholders within the Macquarie and Cudgegong Regulated Rivers Water Source, requiring us to include rules for these licences in the *Water Sharing Plan for the Macquarie and Cudgegong Regulated Rivers Water Source*.

There are no floodplain harvesting (unregulated river) access licences to issue in the Macquarie Unregulated River Water Sources. Therefore, we do not need to amend the *Water Sharing Plan for the Macquarie Bogan Unregulated and Alluvial Water Sources 2012*.

This report aims to help the community and water users understand the proposed rules for floodplain harvesting (regulated river) access licences in the Macquarie and Cudgegong Regulated Rivers Water Source. It also explains the interaction between those rules, modelling and the expected environmental benefits once the rules are in place.

A summary of the proposed rules for floodplain harvesting (regulated river) access licences in the Macquarie and Cudgegong Regulated Rivers Water Source is provided in Table 1. We are seeking feedback through a public submission process from **22 March 2021 until 18 April 2021**.

**Table 1. Summary of proposed rules for floodplain harvesting (regulated river) access licences**

Type of rule	Proposed rule for floodplain harvesting
Account management	Account limit: maximum of 5 ML per unit share at any time
Available water determination	Initial available water determination between the range of 1 ML and 5 ML per unit share  Available water determination of 1 ML per unit share every year after that, subject to increases or decreases to respond to growth or improved accuracy in calculating the extraction limit
Permanent trade	Establishing trading zones that largely reflect unregulated river water sources to protect the Macquarie marshes  Permanent trade of floodplain harvesting (regulated river) access licences between trading zones subject to the same restrictions as unregulated river access licences, where appropriate  No nomination of works located outside the Macquarie Valley floodplain  No new nomination of works located in management zones A or D established under the <i>Floodplain Management Plan for the Macquarie Valley Floodplain 2021</i>
Granting or amending water supply works nominated by a floodplain harvesting (regulated river) access licence	No modification of works located in management zones A or D established under the <i>Floodplain Management Plan for the Macquarie Valley Floodplain 2021</i> – this rule would apply to those works already constructed and approved for floodplain harvesting when licences are issued  No new works constructed in management zones A or D  No new or modified works outside management zones A or D if the construction or modification would result in an increased rate of take for works located in management zone A or D

Type of rule	Proposed rule for floodplain harvesting
Access rules	<p>Water must not be taken from works located in the following management zones and nominated by a floodplain harvesting (regulated river) access licence when active management is being used to create overbank flow:</p> <ul style="list-style-type: none"><li>• Gum Cowal Management Zone</li><li>• Lower Macquarie River Upstream Management Zone</li><li>• Lower Macquarie River Downstream Management Zone.</li></ul>

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## Introduction

This report provides detail on the rules that will be included in the relevant water sharing plans for floodplain harvesting licences in the Macquarie valley floodplain and how those rules interact with modelling and provide potential environmental benefits. The report also includes information on the submission process and the rules that are subject to the consultation outcomes of that process.

We will issue floodplain harvesting access licences in the Macquarie and Cudgegong Regulated Rivers Water Source. This report explains the rules we propose to include in the *Water Sharing Plan for the Macquarie and Cudgegong Regulated Rivers Water Source* for floodplain harvesting (regulated river) access licences.

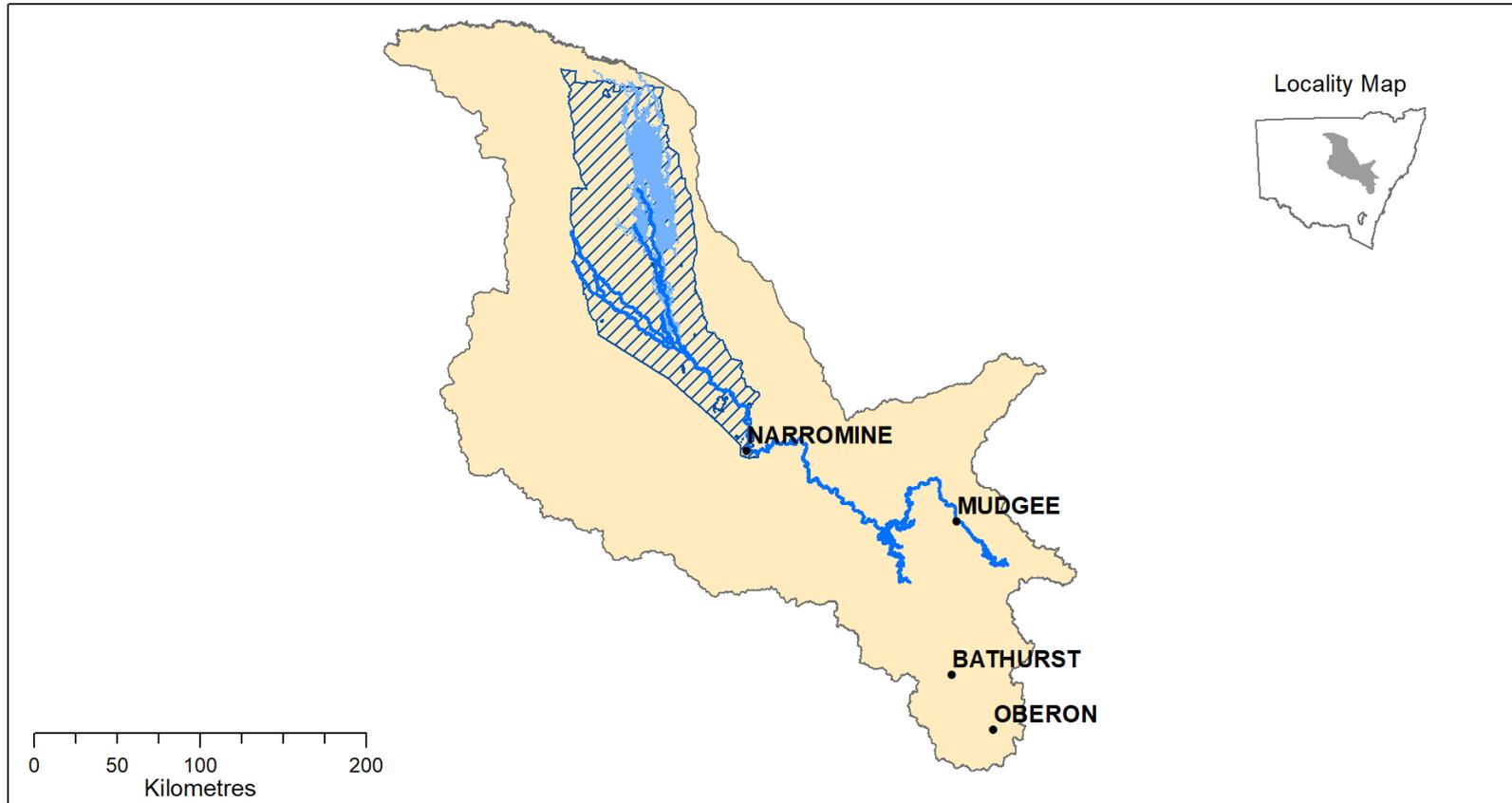
## Macquarie valley floodplain

The Macquarie valley floodplain (Figure 1) was declared in December 2020. We anticipate the *Floodplain Management Plan for the Macquarie Valley Floodplain 2021* to commence in March 2021. The Macquarie valley floodplain has areas of high ecological and cultural significance, designated as management zones A and D.

Floodplain management plans provide the framework for coordinating the development of flood works on a whole-of-valley basis. This framework minimises future changes to flooding behaviour, improves the environmental health of floodplains and increases awareness of risk to life and property from the effects of flooding.



## Macquarie Valley declared floodplain



### Legend

- Town/locality
- Macquarie and Cudgegong Regulated Rivers Water Source
- Macquarie Marshes
- ▨ Declared Floodplain
- Water Sharing Plan for the Macquarie Bogan Unregulated Rivers Water Sources 2012

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**Figure 1 Macquarie valley floodplain**

## Rules for floodplain harvesting in water sharing plans

As part of the implementation of the NSW Floodplain Harvesting Policy, we are currently undertaking a process for issuing floodplain harvesting licences. We will include rules specific to the management of these licences in the relevant water sharing plans. For more information on the implementation process, please refer to the [Guideline for the implementation of the NSW Floodplain Harvesting Policy](#)<sup>1</sup>.

To some extent, the take of water associated with floodplain harvesting activities has already been incorporated into the relevant water sharing plans for the northern inland valleys of NSW. Specifically, long-term average annual extraction limits in these water sharing plans and the sustainable diversion limit (SDL) specified in the *Basin Plan 2012* (jointly referred to as **extraction limits**) include the take of water associated with floodplain harvesting activities within the plan area. These limits also place an upper limit on total extraction.

In addition to the extraction limits, there are several types of rules that will apply to floodplain harvesting access licences once they are issued. The relevant water sharing plan will contain rules that relate to:

- share components for floodplain harvesting access licences (the total entitlements per water source at a specified point in time)
- compliance with the extraction limits (how any new growth in floodplain harvesting is managed)
- available water determinations (how allocation accounts will be credited each water year)
- account management (limits on annual take and ability to carryover allocations)
- granting or amending of water supply works nominated by a floodplain harvesting access licence
- trade (permanent and temporary trade)
- mandatory conditions for access licences and water supply works
- access arrangements
- amendment provisions (to allow for adjustment of rules based on future outcomes including data from monitoring, evaluation, and reporting).

## Adaptive management for floodplain harvesting

The NSW water landscape is in a state of constant change, affected by highly variable climatic factors and seasonal shifts. A key objective of water sharing plans is to manage water sources in an adaptive way. For floodplain harvesting, this means:

- managing the amount of water available for floodplain harvesting access licences to ensure compliance with an extraction limit
- updating the modelled extraction limit estimate based on the best available information and, where appropriate, increasing or decreasing the amount of water available for floodplain harvesting access licences in response to a change
- reviewing the rules for floodplain harvesting access licences after the first five years and, if appropriate, amending those rules
- undertaking monitoring and evaluation of the floodplain to assess whether the rules for floodplain harvesting access licences are achieving the intended environmental and cultural outcomes.

<sup>1</sup> [industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project/nsw-floodplain-harvesting-policy](http://industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project/nsw-floodplain-harvesting-policy)

## Connectivity outcomes

Improving connectivity between valleys is an important aspect of water management. Licencing floodplain harvesting will improve connectivity outcomes in two distinct ways: through the application of water sharing plan rules; and, consequentially, by increasing the amount of water returning from the floodplain into the river.

There are three key types of rules for floodplain harvesting licences in water sharing plans that will improve connectivity between valleys and increase water availability in downstream systems:

- Compliance with the extraction limits ensure that the amount taken from the floodplain is managed over the long-term, allowing for a proportion of flood flows to return to the river (**returned flows**).
- Account management rules ensure that growth is managed while maintaining flexibility for the licence holder, contributing to the volume of returned flows.
- Trade rules prevent an increase in the amount taken from floodplains in identified areas with major flood flow paths, allowing for continued and unimpeded returned flows.

Existing river system models do not represent the increase in return flows from the floodplain to rivers and creeks expected as a result of implementing the *NSW Floodplain Harvesting Policy*.

Further data collection and model enhancements are needed to explicitly represent return flows in river system models and further improve the management of floodplain harvesting in the Northern Basin. Without modelling return flows, the department is unable to develop and test the efficacy of event-based restrictions for floodplain harvesting. We have made a commitment under the Floodplain Harvesting Action Plan to invest in improving the representation of return flows work from July 2021.

Amendment provisions have also been provided that clearly and transparently indicate the potential for developing event-based access rules for floodplain harvesting based on the outcomes of improved modelling processes.

## Default rules for floodplain harvesting

There is a suite of default rules for floodplain harvesting that are required in water sharing plans to:

- ensure compliance with extraction limits
- reflect share components for licences
- restrict take of water to overland flow
- prohibit temporary trade, consistent with the NSW Floodplain Harvesting Policy.

These rules are described below for context and are **not subject to the outcomes of consultation**.

### Compliance with extraction limits

Water sharing plans provide for the annual assessment of total licensed extraction within the plan area. If this assessment shows that the long-term average annual extraction limit has been exceeded by 3% in any year in the Macquarie and Cudgegong Regulated Rivers Water Source, steps must be taken to reduce the extraction back to within the limit.

Once floodplain harvesting licences are issued in the Macquarie and Cudgegong Regulated Rivers Water Source, the water sharing plan will include another rule. This rule will allow for extraction under these licences to be managed in response to exceeding the extraction limit.

The rule says:

'floodplain harvesting (regulated river) access licences will be reduced to respond to the exceedance that has occurred within those licences.'

In addition to compliance with the long-term average annual extraction limit, the *Basin Plan 2012* requires compliance with the SDL specified for the Macquarie SDL resource unit. The Macquarie SDL resource unit comprises the Macquarie and Cudgegong Regulated Rivers Water Source and the Macquarie Bogan Unregulated River Water Sources.

The requirements for complying with the SDL are specified in Division 2 of Part 4 of Chapter 6 of the *Basin Plan 2012*. The same response, as outlined above, is to be undertaken if the SDL has been exceeded. We will amend the *Macquarie Surface Water Resource Plan* to outline the management response in relation to floodplain harvesting access licences (see Appendix 2).

## Share components

A water sharing plan will provide details on the total share components for each licence category and basic landholder rights within the plan area at the time of plan commencement or amendment. In water sharing plans where floodplain harvesting licences are issued, the total share components for these licences will be included once they are issued.

In the Macquarie and Cudgegong Regulated Rivers Water Source, the total share components for floodplain harvesting (regulated river) access licences, assuming the proposed tailwater exemption is made, are estimated to be 52,537 unit shares. If the proposed tailwater exemption does not commence, the estimated share components would be 62,791 unit shares. We will refine this estimate as the consultation process for property-specific entitlement determinations is finalised.

There is no floodplain harvesting (unregulated river) access licences to be issued in the Macquarie Bogan Unregulated River Water Sources.

## Take from overland flow

We are determining floodplain harvesting entitlements with consideration for the capacity of take and frequency of access for each eligible property. The frequency of access to floodplain harvesting varies across the floodplain. These events are highly episodic and, in some cases, only occur once in every five or more years.

Floodplain harvesting licences will allow for the lawful taking of water from a floodplain. This includes rainfall runoff and overbank flow. Collectively, this is termed 'overland flow' and is defined under section 4A of the *Water Management Act 2000*.

We will include a mandatory condition in all water sharing plans where floodplain harvesting access licences are issued that restricts the take of water under these licences to overland flow. Diverting water from rivers or creeks under a floodplain harvesting licence will not be permitted.

## Temporary trade

The NSW Floodplain Harvesting Policy does not permit the trade of allocations (temporary trade) for floodplain harvesting access licences. This is due to the episodic nature of floodplain harvesting events and unique on-farm conditions. There may be also be instances where the works capable of floodplain harvesting will require modification to prevent further floodplain harvesting if a trade out occurs. This would be difficult to undertake on a temporary basis.

We will include rules consistent with this restriction in all water sharing plans that have floodplain harvesting licences issued.

## Mandatory conditions

Water sharing plans include mandatory conditions that apply to water supply work approvals and access licences. To implement some of the default rules outlined above, we will include in the relevant water sharing plans a mandatory condition on:

- water supply works to ensure they are modified or removed following a trade of share components (permanent trade) for approvals nominated by a floodplain harvesting access licence
- floodplain harvesting (regulated river) access licences that restricts the take of water to overland flows.

Further, mandatory conditions will be required to implement requirements under the *NSW Floodplain Harvesting Measurement Policy*.

## Floodplain harvesting rules in the Macquarie Cudgegong Regulated Rivers Water Source

We will remake the *Water Sharing Plan for the Macquarie and Cudgegong Regulated Rivers Water Source 2009* as part of the accreditation of the *Macquarie Surface Water Resource Plan*. The rules described below are based on the water sharing plan prior to the remake process. However, any proposed changes to rules as part of remake that interact or influence those proposed for floodplain harvesting have been highlighted.

Rules for floodplain harvesting access licences will vary between regulated rivers and unregulated rivers and, for regulated rivers, from valley to valley, based on public consultation, modelling outcomes and environmental benefit assessments. Rules for floodplain harvesting (regulated river) access licences that are variable and subject to public consultation outcomes are:

- account management rules
- available water determinations
- permanent trade
- access arrangements
- amendment provisions.

A summary of these rules for other licence categories in the Macquarie and Cudgegong Regulated Rivers Water Source is provided below, along with information on the intent of the rules for floodplain harvesting (regulated river) access licences. The proposed rules are shown in shaded boxes.

### Account management rules

Account-management rules vary across NSW and between categories of access licences. However, they generally consist of a combination of limits on the amount of water that may be:

- taken annually or over a number of consecutive years, or both  
or
- held in an allocation account at any time  
or
- carried over from one year to the next.

Floodplain harvesting is highly variable in nature. The NSW Floodplain Harvesting Policy provides that account management rules will be developed on a valley-by-valley basis in conjunction with the proposed entitlements that recognise this variability.

There are four primary considerations we use when developing account management rules for floodplain harvesting:

1. managing growth above the extraction limit that has already occurred
2. managing growth above the extraction limit that may occur in the future
3. risk to the environment and downstream communities
4. flexibility for the licence holder.

The size of entitlements is influenced by the account management rules. The considerations specified above are influenced by the size of modelled entitlements.

We have tested various combinations of account management rules. An illustration of the differences between annual and 5-year accounting is shown in Appendix 1. A summary of the results is shown in Table 2 and outlined below.

**Table 2. Interaction between the accounting period and floodplain harvesting objectives**

Accounting period	Entitlement size	Ability to control current growth	Ability to control future growth	Risk to environment and downstream	Flexibility for licence holders
Annual	Large (reflects closer to maximum take)	High	Low	High	Low
Five year	Moderate (reflects closer to average take)	Moderate	Moderate	Low	High

Annual accounting arrangements are likely to result in future growth that would require a response action, such as reduced allocations, to avoid adverse downstream impacts. Future growth with annual accounting is likely as entitlements would need to be approximately three times larger than the entitlements created under 5-year accounting to achieve the same level of historical diversions.

Furthermore, future changes to development, behaviour or trade could all lead to an increase in the use of these entitlements that would drive growth. For these reasons, we assert that adopting annual accounting arrangements does not reflect the public's best interest.

We propose 5-year accounting arrangements for floodplain harvesting (regulated river) access licences in the Macquarie and Cudgegong Regulated Rivers Water Source. This accounting period matches the frequency of accessing floodplain harvesting water while:

- providing the optimum level of protection against future growth
- maintaining any improvements for environmental outcomes – as described in the *Environmental Benefits of Implementing the Floodplain Harvesting Policy Report*
- providing flexibility to licence holders.

The department acknowledges the complex nature of account management rules. We have developed a short animation to better inform the public and to help them make a submission on the rules. You can view the animation on our website at [industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project/water-sharing-plan-rules](http://industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project/water-sharing-plan-rules)

While we seek public comment on account management rules, note that a reduction in the accounting period will increase the size of entitlements and reduce the level of environmental protection.

Proposed account management rules for floodplain harvesting (regulated river) access licences in the Macquarie and Cudgegong Regulated Rivers Water Source:

1. Account limit: Maximum of 5 ML per unit share at any time.

## Available water determinations

### Available water determinations in the first year

Historically, an available water determination greater than 100% of the share component (1 ML per unit share) has been applied to some access licence categories in the first year following the start of a water sharing plan. This ensures the volume of water in a water allocation account reflects the:

- potential amount of carryover that would have been permitted under the *Water Act 1912* licence  
or
- use of long-term averages in determining the access licence entitlement and the associated need to take more in some years and less in others.

In addition to these factors, it is also important to consider:

- the impact that growth in floodplain harvesting has had on the environment and downstream users
- the critical drought conditions occurring throughout the Basin
- social and economic impacts.

We are inviting feedback on an initial available water determination of between 1 ML per unit share at the lower end of the threshold and 5 ML per unit share at the upper end.

The precise value for the initial available water determination will be subject to consultation outcomes and is intrinsically linked to the account management rules above.

### Available water determinations after the first year

For most licence categories, an available water determination of 1 ML per unit share is specified for each year after the first water year (or a less amount if required to ensure compliance with any extraction limits). For some licence categories, such as regulated river (general security) access licences, an available water determination of greater than 1 ML per unit share is permitted if there is sufficient water available.

To allow for flexibility in responding to a growth in use or improved accuracy in calculating the extraction limits, we propose there be no limit for available water determinations for floodplain harvesting (regulated river) access licences in the Macquarie and Cudgegong Regulated Rivers Water Source after the first water year. An available water determination of less than 1 ML per unit share can be applied to ensure compliance with any extraction limits and, conversely, an available water determination of greater or less than 1 ML per unit share can be applied to respond to improved accuracy in calculating the extraction limit.

Proposed available water determination rules for floodplain harvesting (regulated river) access licences in the Macquarie and Cudgegong Regulated Rivers Water Source:

1. An available water determination, between the range of 1 ML per unit share and 5 ML per unit share, in the first water year licences are issued, with the precise value being subject to consultation outcomes.
2. An available water determination of 1 ML per unit share every year after the first year (or a lesser or greater amount to ensure compliance with the extraction limit or as a result of improved accuracy in calculating the extraction limit estimates).

## Permanent trade

Rules for the trade of entitlement, known as permanent trade rules, are established in water sharing plans to protect sensitive areas from extraction that may occur because of entitlements changing location. Common trade rules include:

- no trade or no net gain (concentration) of entitlement upstream or downstream of an environmental asset
- no trade between water sources.

Permanent trade rules for floodplain harvesting may vary between valleys, depending on:

- existing trade rules in the relevant water sharing plan
- any identified areas that require protection, such as:
  - environmental assets dependent on floodwater
  - any areas where entitlement may be concentrated.

Existing trade restrictions specified in the Water Sharing Plan for the Macquarie and Cudgegong Regulated Rivers Water Source are summarised in Table 3.

**Table 3. Existing trade rules for the Macquarie and Cudgegong Regulated Rivers**

Licence category	Permanent trade rule	Temporary trade rule
All licences	Within the water source	Within the water source
All licences	No net gain within Crooked Creek section of the water source or within the Macquarie Marshes	No net gain within Crooked Creek section of the water source or within the Macquarie Marshes
All licences	Dealings not to exceed limits on share components within specified sections of the water source	Dealings not to exceed limits on share components within specified sections of the water source
Supplementary	Only to or from supplementary water access licences	Only to or from supplementary water access licences

Schedule 3 of the *Basin Plan 2012* establishes the Basin water market and trading objectives and principles. Free trade of surface water is required, except where establishing a restriction is required due to a physical constraint, lack of connectivity, or the environment may be harmed. Trading restrictions must be justified to the Murray–Darling Basin Authority as part of the Water Resource Plan accreditation process.

While free trade is a desired outcome, the establishment of trade rules is particularly important in water sources with sensitive environmental areas. Valleys such as the Gwydir and Macquarie contain highly sensitive, internationally recognized RAMSAR wetlands. Trade of entitlement that results in concentration upstream of these locations could decrease inflows and impact environmental outcomes.

There are two distinct areas of intent that we have considered in the development of permanent trade rules for floodplain harvesting (regulated river) access licences:

1. preventing concentration of entitlement in areas where extraction may impact sensitive environmental areas, such as the Gwydir wetlands or Macquarie marshes
2. protection of identified areas that are important for flood flow connectivity or contain identified environmental or cultural assets or values.

### Concentration of entitlement impacting sensitive environmental areas

We propose to establish rules that restrict the permanent trade of floodplain harvesting (regulated river) access licences that largely reflect the trade rules for unregulated river access licences in the

Macquarie Bogan Unregulated River. This involves establishing trading zones that largely reflect the unregulated river water source boundaries.

The Macquarie Bogan Unregulated River Water Sources comprises 30 unregulated river water sources. The following unregulated river water sources are located within the Macquarie valley floodplain:

- Backwater Boggy Cowal Water Source
- Ewenmar Creek Water Source
- Lower Bogan River Water Source
- Lower Macquarie River Water Source'
- Marra Creek Water Source
- Marthaguy Creek Water Source.

There are also the following three management zones established in the Lower Macquarie River Water Source that relate to trade rules for unregulated river access licences:

- Gum Cowal Management Zone
- Lower Macquarie River Downstream Management Zone
- Lower Macquarie Upstream Management Zone

Except for the Lower Macquarie River Water Source, we propose to mostly replicate the boundaries of the unregulated river water sources listed above as trade zones for floodplain harvesting (regulated river) access licences.

Additionally, we propose to replicate the boundaries for the Lower Macquarie River Water Source management zones, as listed above, as trade zones for floodplain harvesting (regulated river) access licences. The proposed trading zones have been designed in a way that protects the Macquarie Marshes.

Due to the small percentage of floodplain harvesting entitlement located within the Lower Bogan River Water Source, we propose to combine this with the Backwater Boggy Cowal Water Source. We propose to call this the Lower Bogan Backwater trading zone.

The proposed trade zones are shown on Figure 2 along with the percentage of floodplain harvesting licensed entitlement within each trade zone.

The existing trade rules associated with these water sources and/or management zones are summarised in Table 4.

In the Macquarie and Cudgegong Regulated Rivers Water Source, trade rules for floodplain harvesting (regulated river) access licences would involve trade rules between and within trading zones that reflect those restrictions specified in Table 4.

The establishment of trading zones and associated rules for trade between trading zones supports any improvements to in-valley environmental assets shown in the *Environmental Outcomes of implementing the NSW Floodplain Harvesting in the Macquarie Valley* report. Further, they replicate the environmental protection intended by the implementation of the trade rules for unregulated river access licences.

The proposed trading zones will ensure that floodplain harvesting (regulated river) access licences only take water within the Macquarie valley floodplain. This restriction is consistent with the implementation of the NSW Floodplain Harvesting Policy and licence determination process.

**Table 4 Existing unregulated river trade rules within Macquarie valley floodplain**

Water source	Trade into	Trade within
Backwater Boggy Cowal Water Source	Not permitted	Permitted
Ewenmar Creek Water Source	Not permitted	Permitted
Lower Bogan River Water Source	Permitted from Upper Bogan River Water Source *Not applicable to floodplain harvesting	Permitted
Marra Creek Water Source	Not permitted	Permitted
Marthaguy Creek Water Source	Permitted from Lower Macquarie River Water Source (Gum Cowal Management Zone OR Lower Macquarie River Downstream Management Zone)	Permitted
Lower Macquarie River Water Source (Gum Cowal Management Zone)	Not permitted	Downstream direction only
Lower Macquarie River Water Source (Lower Macquarie River Downstream Management Zone)	Permitted from Lower Macquarie River Water Source (Lower Macquarie River Upstream Management Zone) and Marthaguy Creek Water Source	Permitted
Lower Macquarie River Water Source (Lower Macquarie River Upstream Management Zone)	Not permitted	Downstream direction only

The Macquarie valley floodplain was established under the *Water Management (General) Regulations 2018* and is shown in Figure 1. The restriction to within the Macquarie valley floodplain will also be imposed by a rule that restricts floodplain harvesting access licences nominating works located outside the Macquarie valley floodplain.

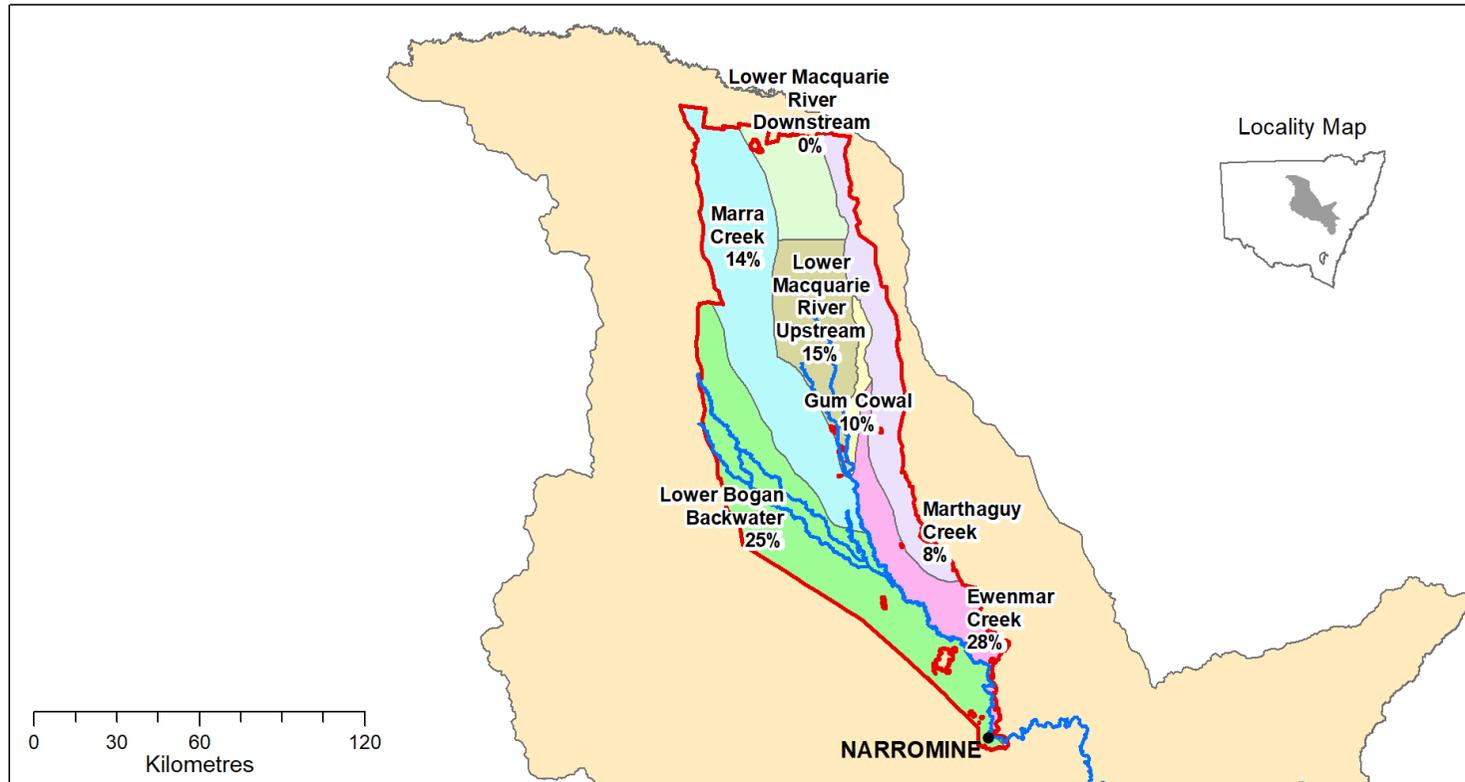
In addition to the proposed trade rules, we may impose a condition on water supply works as part of the trade assessment to modify or remove works used for floodplain harvesting. We will impose this condition where the modification or removal of works is needed to ensure that the portion of the floodplain harvesting licence that has been sold can longer be taken.

Proposed permanent trade rules for floodplain harvesting (regulated river) access licences in the Macquarie and Cudgegong Regulated Rivers Water Source:

1. Establishing 7 trading zones largely reflective of the unregulated river water sources (Figure 2)
2. Trade permitted within and between trading zones, subject to restrictions in Table 4
3. No nomination of works located outside the Macquarie valley designated floodplain by a floodplain harvesting (regulated river) access licence.



## Proposed trading zones in the Macquarie Valley declared floodplain



### Legend

- Town/locality
  - Macquarie and Cudgegong Regulated Rivers Water Source
  - ▭ Declared Floodplain
  - ▭ Water Sharing Plan for the Macquarie Bogan Unregulated Rivers Water Sources 2012
- | Trading Zones                        |                                                 |
|--------------------------------------|-------------------------------------------------|
| ▭ Ewenmar Creek Trading Zone         | ▭ Lower Macquarie River Downstream Trading Zone |
| ▭ Gum Cowal Trading Zone             | ▭ Lower Macquarie River Upstream Trading Zone   |
| ▭ Lower Bogan Backwater Trading Zone | ▭ Marra Creek Trading Zone                      |
|                                      | ▭ Marthaguy Creek Trading Zone                  |

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**Figure 2. Proposed trading zones in the Macquarie and Cudgegong Regulated Rivers Water Source**

## Protection of identified areas

Floodplain management plans identify areas of the floodplain that are important for flood flow connectivity or contain flood-dependent environmental and/or cultural assets and values. These areas have been designated in the *Floodplain Management Plan for the Macquarie Valley 2021* as management zones A and D (Figure 3).

An initial assessment of the Macquarie eligible properties shows that most properties that will receive a floodplain harvesting (regulated river) access licence have at least one work located within management zones A or D.

To protect the identified assets in management zones A and D, we intend to develop a rule for floodplain harvesting (regulated river) access licences that ensures that the works located within these areas do not increase in capacity or number. Put simply, the rules will cap the capacity for the rate of diversion in these areas. The rules will not impact works that are currently installed.

Proposed permanent trade rules for floodplain harvesting (regulated river) access licences in the Macquarie and Cudgegong Regulated Rivers Water Source:

1. No nomination of new works located in management zones A or D, as specified in the Floodplain Management Plan for the Macquarie Valley Floodplain 2021.

This prevents a floodplain harvesting licence from taking water through works in these management zones that are not currently nominated on a floodplain harvesting licence

## New or amended water supply work approvals

We have developed a series of rules that would restrict granting new water supply work approvals or modifying existing water supply work approvals if the work concerned is located within management zone A or D and the water supply work approval is nominated by a floodplain harvesting access licence.

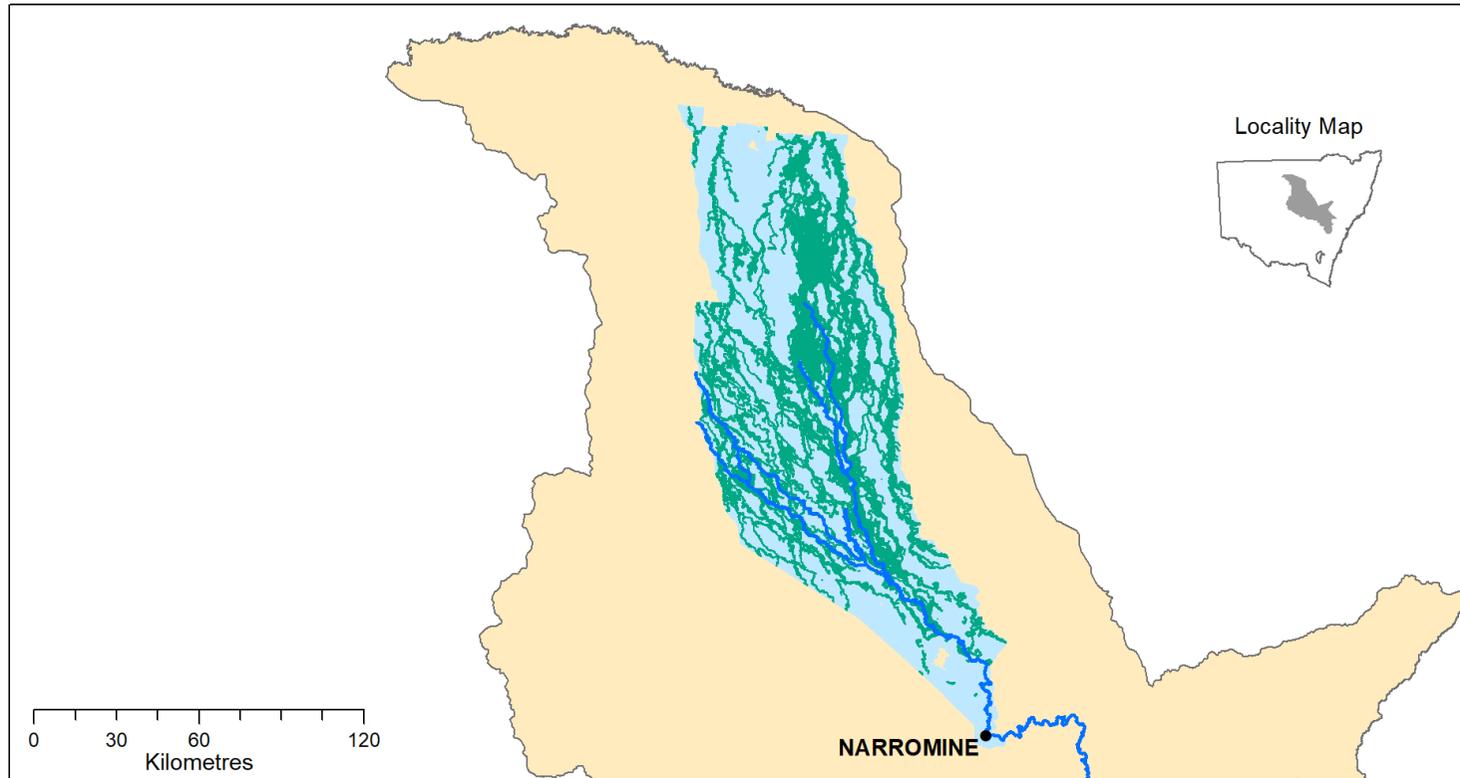
The intended outcome of the proposed rules is to complement and support the trade rules in restricting growth in the take capacity of works located within areas of identified environmental and/or cultural value.

Proposed rules for water supply works nominated by a floodplain harvesting (regulated river) access licences in the Macquarie and Cudgegong Regulated Rivers Water Source:

1. No modification of works located in management zones A or D if the modification would result in an increase in capacity for that work
2. No new works constructed in management zones A or D
3. No new or modified works outside management zones A and D if the construction or modification would result in an increased rate of take for works located in management zone A or D.



## Proposed zones to be protected in the Macquarie Valley declared floodplain



### Legend

- Town/locality
- Macquarie and Cudgegong Regulated Rivers Water Source
- Management Zones A & D - Macquarie Floodplain Management Plan
- Declared Floodplain
- Water Sharing Plan for the Macquarie Bogan Unregulated Rivers Water Sources 2012

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**Figure 3 Proposed protection zones within the Macquarie valley**

## Access rules

Access rules are specified in water sharing plans for the purpose of environmental protection. In regulated river water sharing plans, these are usually specified for supplementary water access licences. There are no access rules specified for supplementary water access licences in the *Water Sharing Plan for the Macquarie and Cudgegong Regulated Rivers Water Source*. However, there are rules that manage when a supplementary water announcement may be made.

Access under supplementary water access licences is provided by an announcement made by the Minister. This allows supplementary take to be managed on an event-by-event basis.

There is no power under the *Water Management Act 2000* that allows for the announcement of access to floodplain harvesting events. Without an announcement system it is difficult to implement rules that would partially restrict access to floodplain harvesting on an event basis.

However, it is desirable to have access rules that enable event-based management of floodplain harvesting. The department has two options for implementing event-based management. These are discussed in the following sections.

### Option 1: temporary water restriction orders

Temporary Water Restriction Orders made under section 324 of the *Water Management Act 2000* are one of the few legislative tools available that can be used to place event-based restrictions on floodplain harvesting (regulated river) access licences. A Section 324 order is used to restrict all take in a water source by a particular licence type if it is determined to be in the public interest.

### Option 2: prohibiting access until downstream flow targets are met

It is not possible or practical to develop and/or appropriately implement access rules for floodplain harvesting access licenses at this stage because:

- access to floodplain flows is unique to each property. This access does not correlate well against flows measured at river gauge – high river levels do not mean that a property has access to floodplain flow and vice versa.
- current models cannot test the efficacy of different access rules or their impacts. It is not possible to quantify whether access rules for floodplain harvesting licences would deliver the desired environmental and downstream benefits nor is it possible to quantify the impact that these rules would have on reliability of access for floodplain harvesters.

Although floodplain harvesting can impact downstream connectivity outcomes, the benefits of event-based restrictions to floodplain harvesting access, particularly at low flows, will almost certainly be at the margins relative to other forms of extractions.

The NSW Government has committed through the Floodplain Harvesting Action Plan to improving our river system models to represent return flows from the floodplain to the rivers and using this to refine the management of floodplain harvesting licences to further improve downstream outcomes. While we expect to start work on this in 2021, it is a complex technical exercise that we don't expect to have complete before 2025.

Accordingly, we are **proposing amendment provisions that will allow for the future inclusion of access rules** for floodplain harvesting (regulated river) access licences.

## Active management

We can use active management to protect defined types of environmental water as they flow through an unregulated river water source. The definition of the water source includes rivers, lakes, streams and water flowing across the surface of the ground. Under this definition, unregulated river access licences are prevented from taking actively managed water, even if it flows out of a river and across a floodplain (overbank flow).

Active management rules apply to unregulated river access licences in the Macquarie Bogan Unregulated River Water Sources with an extraction component that specifies any of the following management zones:

- Gum Cowal Management Zone
- Lower Macquarie River Upstream Management Zone
- Lower Macquarie River Downstream Management Zone
- Lower Marthaguy Creek Management Zone.

In the circumstance where actively managed water contributes to overbank flows, there is a potential intersection between active management and floodplain harvesting. Without specific access rules, these actively managed overbank flows may legally be taken under a floodplain harvesting (regulated river) access licence if that licence nominates works (pipes, pumps, channels) located in a management zone where active management applies. This protected water is intended to flow across the surface of the floodplain, supporting floodplain-dependent ecosystems and help improve the environment. We don't want this protected water diverted by floodplain harvesting.

In response to recommendations made as part of the Independent Review of NSW Floodplain Harvesting Policy Implementation, the department has committed to considering 'the risks and opportunities to protect held environmental water delivery from floodplain harvesting'.

Based on this commitment, we propose to restrict take under a floodplain harvesting (regulated river) access licence if:

- the licence nominates works located in a management zone where active management applies
- active management is being used to purposely created overbank flow.

An analysis of actively managed water being used to purposely create overbank flow has resulted in the identification of the potential need to apply active management provisions to floodplain harvesting (regulated river) access licences in the following management zones:

- Gum Cowal Management Zone
- Lower Macquarie River Upstream Management Zone
- Lower Macquarie River Downstream Management Zone.

We will implement these rules through conditions on floodplain harvesting (regulated river) access licences.

Proposed access rules for floodplain harvesting (regulated river) access licences in the Macquarie and Cudgegong Regulated Rivers Water Source:

1. Take is not permitted through works located in one of the following management zones when active management is being used purposely to create overbank flow:
  - Gum Cowal Management Zone
  - Lower Macquarie River Upstream Management Zone
  - Lower Macquarie River Downstream Management Zone.

The department is committed to a process of continuous improvement and adaptive management. If the scope of active management changes as part of any future amendments, we will then explore the options for implementing active management provisions for floodplain harvesting (regulated river) access licences.

## Environmental flow rules

In addition to access rules that improve environmental outcomes, environmental flow rules specify how and when specific releases are made from dams for environmental purposes.

The *Water Sharing Plan for the Macquarie and Cudgegong Regulated Rivers Water Source* provides for two distinct environmental flows: environmental releases in the Cudgegong River and an Environmental Water Allowance for environmental releases in the Macquarie River. These are summarised in Table 5.

**Table 5. Environmental flow rules**

Environmental flow rule	Description
Environmental release	<p>The rule requires an environmental release from Windamere Dam when the storage inflows plus tributary inflows downstream of the dam can result in 150 ML/day for 2 days in the Cudgegong River at Rocky Water Hole. The volume of this release is the lesser of storage inflows or that required to result in 1,500 ML/day in the Cudgegong River at Rocky Water Hole.</p> <p>The maximum volume to be released is 10,000 ML/year and releases do not need to be made if the storage level in Windamere Dam is at or below 110,000 ML.</p>
Environmental water allowance	<p>An environmental water allowance to improve environmental outcomes in the Macquarie Marshes and the Macquarie River between Burrendong Dam and the Macquarie Marshes</p> <p>This rule requires that the allowance is credited each time allocations are provided to regulated river (general security) access licences with a maximum annual volume of 160,000 ML.</p> <p>Translucent releases are to be from Burrendong Dam when the storage inflows plus tributary inflows downstream of the dam can result in 500 ML/day for 5 days in the Macquarie River upstream of Marebone Weir. The volume of this release is the lesser of storage inflows or that required to result in 4,000 ML/day in the Macquarie River upstream of Marebone Weir.</p> <p>Active releases are also permitted to enhance opportunities for native fish recruitment.</p>

In addition to environmental flow rules, there is a volume of held environmental water in the Macquarie and Cudgegong Regulated Rivers Water Source. This water is used to improve environmental outcomes while being managed to avoid third party impacts.

We do not propose to include rules in the *Water Sharing Plan for the Macquarie and Cudgegong Regulated Rivers Water Source* to protect the environmental flows from take under floodplain harvesting (regulated river) access licences. Instead, there is scope to protect this water through active management provisions if the definition of actively managed water is changed in the future.

## Amendment provisions

Water sharing plans may be amended under section 45 of the *Water Management Act 2000*. To improve transparency and confidence among stakeholders, we propose to include specific amendment provisions in relation to floodplain harvesting (regulated river) access licences in the *Water Sharing Plan for the Macquarie and Cudgegong Regulated Rivers Water Source*. This will provide clarity on the types of amendments that may occur in the future and the justification for such changes.

Proposed amendment provisions for floodplain harvesting (regulated river) access licences in the Macquarie and Cudgegong Regulated Rivers Water Source:

1. An amendment provision to add, modify or remove provisions for floodplain harvesting (regulated river) access licences:

- to allow flexibility should environmental flows be targeted to create overbank flow
- in response to monitoring, evaluation and reporting outcomes of environmental benefits from licencing floodplain harvesting
- in response to improved understanding of the influence of floodplain harvesting on downstream flows
- in response to improved integration of hydrologic and hydrodynamic model systems
- in response to a review undertaken of the existing trade rules in the Macquarie Bogan Unregulated River Water Sources.

## Interaction of water sharing plan rules and modelling

The *Floodplain Harvesting entitlements for Macquarie Valley Regulated River system, Model Scenarios Report* describes how the source model of the Macquarie Regulated River System (Macquarie valley model) was used to estimate the extraction limit specified for the Macquarie and Cudgegong Regulated Rivers Water Source, and to subsequently estimate individual floodplain harvesting entitlements. This report includes discussion of the relevant policy instruments, how models are used to represent these, how development levels and water management arrangements were determined, and key results.

The estimate of the extraction limit for the Macquarie and Cudgegong Regulated Rivers Water Source is determined using computer models that simulate river basin behaviours based on the amount of irrigation development in the water source at a point in time with the applicable plan rules, then averages diversions using climate data from the late 19<sup>th</sup> century to the present.

The extraction limit estimate includes an estimate of floodplain harvesting extractions under the specified baseline conditions. These baseline conditions refer to development levels and management conditions at a point in time.

Management arrangements include water sharing plan rules as implemented, such as resource assessment, water accounting, storage operation, as well as farm operation, especially regarding crop area and planting decisions.

We developed a suite of model scenarios to implement the floodplain harvesting licensing framework:

- plan limit scenario – for the Macquarie, this reflects the level of development and management conditions in place at 1999–2000
- current conditions scenario – current levels of development and management rules used to estimate the level of diversions without the floodplain harvesting licensing framework in place and determines the reduction if any required to comply with long-term average annual extraction limit
- eligible development scenario – the levels of farm infrastructure development that was present or otherwise eligible as at 3 July 2008 and used to determine individual shares of the total volume of floodplain harvesting entitlements
- plan limit compliance scenario – an evolution of the current conditions scenario with the proposed account management rules and the floodplain harvesting licensing framework applied to bring diversion back to the long-term average annual extraction limit, with shares of the total based on distribution of floodplain harvesting volumes from (iii).

The plan limit and current conditions scenarios were both configured in the Macquarie valley model and run for the period of climate record (1895–2009). The results of this are summarised in Table 6.

**Table 6 Long term average diversions (1895–2009) for determining growth in use**

Diversion component	Long term average diversion – Plan limit GL/year	Long term average diversion – Current conditions GL/year
General and High Security	304	271.3
Supplementary Access	13.6	14
Floodplain harvesting	46.1	52.5
TOTAL	363.7	337.8
<b>TOTAL (less exempt rainfall runoff)</b>	<b>350.8</b>	<b>324.6</b>

The results show that while current conditions for floodplain harvesting has increased by 6.1 gigalitres per year (18%,) above that for the plan limit scenario, there has not been any overall growth in water use. Total long-term average diversions have decreased by 26.2 gigalitres per year, a decrease of about 7%. Conversely, without the tailwater exemption in place, these results show that floodplain harvesting has increased by 6.4 gigalitres per year and overall water use has decreased by 25.9 gigalitres per year.

As overall water use is below the plan limit, no reduction in current floodplain harvesting is required.

## Interaction of water sharing plan rules and environmental benefits

The *Environmental outcomes of implementing the Floodplain Harvesting Policy in the Macquarie Valley* report considers the predicted environmental benefits (i.e. ecological responses) to changed floodplain harvesting volumes in the Macquarie valley after licencing floodplain harvesting. The report includes the identification of floodplain water-dependent environmental assets and values, modelled hydrological changes, and predicted outcomes for floodplain ecosystems with and without licencing of floodplain harvesting. This assessment has a targeted focus on areas of the floodplain where floodplain harvesting occurs and uses a 5-year accounting framework in the model.

Modelling suggests that there would be very little change in meeting the environmental water requirements of native vegetation, native fish and waterbirds in the scenario modelled with licencing of floodplain harvesting compared to without licencing of floodplain harvesting. This result directly relates to the plan limit scenario outlined in the previous section that shows no overall growth in water use.

For more information on the key findings and recommendations, please refer to the *Environmental outcomes of implementing the Floodplain Harvesting Policy in the Macquarie Valley* report on our website.

In addition to assessing the predicted environmental benefits of licencing floodplain harvesting, it is important to undertake ongoing monitoring, evaluation, and reporting (MER) of the environmental benefits into the future. We have established a MER program specific to floodplain harvesting. This program will assess the on-going environmental outcomes associated with licencing floodplain harvesting and inform the approach to adaptive management.

## Interaction of water sharing plan rules and returned flows

The *Floodplain Harvesting entitlements for Macquarie Valley Regulated River system, Model Scenarios Report* has shown no growth above the plan limit. As such, the licencing of floodplain harvesting will result in very little change to the volume of returned flows.

Due to the lack of distinct change in returned flows prior to and following licencing of floodplain harvesting, the department has not developed a further iteration of the *Modelled downstream effects of licencing floodplain harvesting – NSW Border Rivers and Gwydir* report that includes the Macquarie valley. Instead, we will develop a further iteration that considers the predicted range in downstream benefits after licencing floodplain harvesting in the NSW Border Rivers, Gwydir, Macquarie and Barwon–Darling valleys.

## Interaction of water sharing plan rules and cultural benefits

A report is being developed by the Northern Basin Aboriginal Network (NBAN) that outlines the identified cultural assets and values in the Macquarie valley floodplain and assesses the predicted benefits to these assets and values after licencing of floodplain harvesting. NBAN are consulting extensively with the First Nation Peoples of the Macquarie valley.

The report focuses on areas where identified cultural assets and values in the Macquarie valley floodplain overlap with the occurrence of floodplain harvesting.

The development of the report and associated consultation with First Nations builds on the extensive work done to identify cultural assets and values that has occurred as part of developing the *Floodplain Management Plan for the Macquarie Valley Floodplain 2021* and the Macquarie Surface Water Resource Plan.

## Submission process

We will undertake targeted and broad public consultation on the rules for floodplain harvesting access licences we propose to include in water sharing plans. As part of this consultation, we will provide a formal submission period of 28 days. During this period, you can make a submission giving feedback on the proposed rules. The formal submission period will be from 22 March until 18 April 2021, inclusive.

We will host a webinar for all stakeholders and the public followed by a series of meetings with targeted stakeholders. These sessions will commence in the week beginning 22 March 2021.

## Amendments to water resource plans

The Macquarie Surface Water Resource Plan, currently submitted for accreditation, will require amendment once we have issued floodplain harvesting (regulated river) access licences in the Macquarie and Cudgegong Regulated Rivers Water Source. Under the *Basin Plan 2012*, there is a requirement (10.08) for each sustainable diversion limit (SDL) resource unit to describe the characteristics of each form of take. At present, there is no specific reference to the number of access rights or associated total volume for floodplain harvesting (regulated river) access licences. This will be updated once licences have been issued.

Under section 10.11 of the Basin Plan, a water resource plan must specify how annual actual take will not exceed the SDL specified in Schedule 2 for the SDL resource unit. The Macquarie Surface Water Resource Plan will require amendment to include reference to the rules outlined above in

relation to compliance with the long-term average annual extraction limit for floodplain harvesting (regulated river) access licences.

As part of implementing the NSW Floodplain Harvesting Policy, there has been significant investment in finalising models that include the take by floodplain harvesting. These models may result in proposed changes to the baseline diversion limit (BDL) specified in Schedule 3 of the Basin Plan due to improved accuracy of the volumes associated with floodplain harvesting. The BDL is the SDL plus any water recovered for environmental benefit. For more information on changes to the BDL or SDL, please refer to [www.mdba.gov.au/basin-plan-roll-out/sustainable-diversion-limits/changing](http://www.mdba.gov.au/basin-plan-roll-out/sustainable-diversion-limits/changing)

Any proposed changes to the Macquarie Surface Water Resource Plan or Basin Plan because of licencing floodplain harvesting will require approval from the Australian Government's Minister for Resources and Water.

Appendix 2 details the proposed amendments to the Macquarie Surface Water Resource Plan.

## Summary of the implementation process

Figure 4 presents a simple outline of the process for incorporating floodplain harvesting access licences into the broader water management framework.



**Figure 4. Process for incorporating floodplain harvesting licences into management framework**

## Appendix 1. Annual versus 5-year accounting scenario

The use of annual accounting influences the size of modelled entitlements. Using annual accounting, a much larger entitlement is needed to achieve a 10% reduction. This is shown in Table 7.

Comparatively, both account management frameworks result in the same 10% reduction over the long-term period, however the lack of carryover in annual accounting along with larger entitlements may lead to a greater risk of growth in use.

The first scenario modelled (Growth test A) examined potential growth in the amount taken if new works were installed that doubled the amount that could be taken each year. As shown in Table 7, annual accounting resulted in a 22% increase while the 5-year accounting resulted in a 15% increase.

The second scenario modelled (Growth test B) examined potential growth when entitlement was traded into an area with more reliable access to water on the floodplain. To test this, a hypothetical outcome was examined where the full allocation was able to be used each year. As shown in Table 7, in this scenario annual accounting would lead to 286% growth while the 5-year accounting would lead to 44% growth. Importantly, this is not a likely outcome but, for illustrative purposes, demonstrates the difference sensitivities of the two sets of account management rules.

**Table 7. Assessment of accounting rules and potential for growth**

Parameter	Annual accounting	3-year accounting	5-year accounting
Entitlement	7,800	3,605	2,810
% reduction	-10.0%	-10.0%	-10.0%
Growth test A: Theoretical potential for growth assuming amount taken doubled	22%	28%	15%
Growth test B: Theoretical potential for if account was fully used	286%	81%	44%

## Appendix 2. Proposed amendments to the Macquarie Surface Water Resource Plan

**Table 8. Summary of proposed amendments to Macquarie Surface Water Resource Plan submitted for accreditation**

Water resource plan reference	Basin Plan 2012 reference	Proposed amendment
1.8 Review and amendment	10.47	<p>Remove text from blue box relating to anticipated amendment of the <i>Water Sharing Plan for the Macquarie and Cudgegong Regulated Rivers Water Source 2020</i>, the <i>Water Sharing Plan for the Macquarie Bogan Unregulated Rivers Water Sources 2012</i> and the <i>Water Sharing Plan for the Castlereagh Unregulated River Water Sources 2011</i> following the issue of floodplain harvesting access licences. Floodplain harvesting access licences will be issued in the Macquarie and Cudgegong Regulated Rivers Water Source. Therefore, amendment is required only for the <i>Water Sharing Plan for the Macquarie and Cudgegong Regulated Rivers Water Source 2020</i>.</p> <p>Remove text immediately underneath 'Box 1-4. Circumstances under which this Plan may be amended'. This is a description for floodplain harvesting amendments in water sharing plans and are likely to have material effect on the water resource plan.</p>
4.2 Priority environmental assets and priority ecosystem functions (blue-boxed text)	10.17 (3) 10.22 (b)	<p><b>Blue-boxed text</b></p> <p>Amend text to specify that growth in use of floodplain harvesting access licences will be managed through rules for compliance with a long-term annual diversion limit for the <i>Macquarie and Cudgegong Regulated Rivers Water Source</i> SDL resource unit in a water accounting period. The <i>Water Sharing Plan for the Macquarie and Cudgegong Regulated Rivers Water Source 2020</i> will specify these rules.</p>
5.1.2 Complying with conditions of water access rights	10.08 (2) 10.08 (1) (c)	<p>Remove note under boxed text.</p> <p>Sections 91C and 91D of the <i>Water Management Act 2000</i> will be included for accreditation in blue-box text.</p>
5.1.2—Table 5-1: Forms of take and their related access rights and characteristics	10.08 (2) 10.08 (1) (c)	<p>Update row 8 to include number of access rights, total volume (ML per unit share) and mandatory conditions for floodplain harvesting (regulated river) access licences in the Macquarie and Cudgegong Regulated Rivers Water Source.</p> <p>Update row 9 to clarify that no floodplain harvesting (unregulated river) access licences are to be issued in Macquarie Bogan Unregulated Rivers Water Sources.</p>
5.3.2 SDL adjustments	Non -accredited text	Adjust SDL as a result of improvements in information about and modelling of floodplain harvesting take.

Water resource plan reference	Basin Plan 2012 reference	Proposed amendment
5.4 Determining available water—rules for take	10.11	<p><b>Blue-boxed text</b></p> <p>Update 'Take by Floodplain Harvesting' to refer to relevant parts of the <i>Water Sharing Plan for the Macquarie and Cudgegong Regulated Rivers Water Source 2020</i> that ensure the quantity of water taken under floodplain harvesting (regulated river) access licences does not exceed the annual permitted take for the period.</p> <p>Remove floodplain harvesting from text relating to Section 10.11 of the <i>Basin Plan 2012</i>.</p>
5.4 Determining available water—rules for take Floodplain harvesting and Section 10.11	Non-accredited text	Remove text and heading (white text): Floodplain harvesting and s10.11 immediately below the blue box.
5.4.4 Floodplain harvesting	Non-accredited text	Amend text to reflect the issuing of floodplain harvesting (regulated river) access licences in the Macquarie and Cudgegong Regulated Rivers Water Source and rules associated with these licences included in the <i>Water Sharing Plan for Macquarie and Cudgegong Regulated Rivers Water Source 2020</i> .
5.4.4 Floodplain harvesting additional information	Non-accredited text	Remove this subheading and associated explanatory text.
5.4.6 Corrective actions	Non-accredited text	Amend text to clarify that no floodplain harvesting (unregulated river) access licences will be issued in the Macquarie Bogan Unregulated Rivers Water Sources
5.4.7 Floodplain harvesting compliance	Non-accredited text	<p>Amend text to reflect compliance measures for floodplain harvesting (regulated river) access licences; mandatory conditions for measurement, including timing; and updates to BDL and annual permitted take models.</p> <p>Amend text to clarify the method for determining annual permitted take for floodplain harvesting (regulated river) access licences.</p>
5.5.2 Determining actual take	10.15(1) to 10.15(3)	<p><b>Blue-boxed text</b></p> <p>Include information on timing for implementing the measurement requirements for floodplain harvesting (regulated river) access licences, noting that the timing is subject to consultation outcomes associated with the proposed amendments to the <i>Water Management (General) Regulation 2018</i>.</p> <p>When the <i>NSW Floodplain Harvesting Measurement Policy</i> is fully implemented, annual actual take for floodplain harvesting (regulated river) access licences will be measured using storage devices for licence holders with storages greater than 1,000 ML or using other methods, such as gauge boards, for landholders with storages less than 1,000 ML.</p> <p>When the <i>NSW Floodplain Harvesting Measurement Policy</i> is fully implemented, annual actual take for floodplain harvesting (regulated river) access licences will be measured using storage devices for all licence holders.</p>

Water resource plan reference	Basin Plan 2012 reference	Proposed amendment
5.6 Annual permitted take	10.10 10.12	<b>Blue-boxed text</b> Remove last paragraph that refers to anticipated amendment of the water resource plan, BDL and annual permitted take models. Insert additional text that confirms that the model will be used to recalculate the annual permitted take and the annual actual take upon implementation of the <i>NSW Floodplain Harvesting Policy</i> .
5.7.4 Floodplain harvesting	Non-accredited text	Update text to reflect implementation of the NSW Floodplain Harvesting Policy in the Macquarie Rivers valley, issuing of floodplain harvesting (regulated river) access licences in the Macquarie and Cudgegong Regulated Rivers Water Source and rules for these licences included in the <i>Water Sharing Plan for Macquarie and Cudgegong Regulated Rivers Water Source 2020</i> .
5.7.4 Floodplain harvesting	10.24 and 10.25	<b>Blue-boxed text</b> Update text to clarify the method for determining annual permitted take; specify rules to manage growth in use; and outline the measurement requirements and anticipated monitoring, evaluating and reporting for floodplain harvesting (regulated river) access licences in the Macquarie and Cudgegong Regulated Rivers Water Source. Also insert reference for including rules for floodplain harvesting (regulated river) access licences in the <i>Water Sharing Plan for Macquarie and Cudgegong Regulated Rivers Water Source 2020</i> .
5.7.4.1 Growth in use of floodplain harvesting	Non-accredited text	Update text to refer to Section 5 of the water resource plan.
5.7.4.2 Monitoring floodplain harvesting	Non-accredited text	Update text to include reference to <i>Floodplain Harvesting Measurement Policy</i> and update table referencing the <i>Floodplain Harvesting Action Plan</i> to detail progress.
7.1 Information relating to measuring take	Non-accredited text	Replace white text, 'Floodplain Harvesting Monitoring Policy' with 'Floodplain Harvesting Measurement Policy' Update Table 7-1
7.1—Table 7-1: Information relating to measured and estimated take by class of access right	10.44, 10.45	Update table to include annual average quantity of water that is taken and measured, and annual average quantity of water that is taken and not measured for floodplain harvesting (regulated river) access licences in the Macquarie and Cudgegong Regulated Rivers Water Source.
Schedule C Consultation report	2.4.2	Update to include reference to valley-specific consultation conducted in relation to proposed rules for floodplain harvesting licences in water sharing plans.

Water resource plan reference	Basin Plan 2012 reference	Proposed amendment
Schedule D Risk assessment information	N/A	<p>Update text to reflect the licensing of floodplain harvesting. The risk for floodplain harvesting will remain unchanged. Instead, it is the response to that risk that changes with the licensing of floodplain harvesting.</p> <p>Update Section 4.5.4 and 8.2.4 to past tense.</p> <p>Where the risk assessment says words to the effect of 'In NSW, the Floodplain Harvesting Policy and Healthy Floodplains Projects are converting this form of take into a licensable right. This form of take will be managed under the Floodplain licensing framework', change to past tense (for example, 'were converted' and 'is managed').</p>
Schedule F Water for consumptive use information Table F-1: Parameters for the method for determining annual actual take	10.15(1) to 10.15(3)	<p>Update table to clarify that no floodplain harvesting (unregulated river) access licences will be issued in the Macquarie Bogan Unregulated Rivers Water Sources</p> <p>Update footnote to clarify finalisation of the <i>Floodplain Harvesting Measurement Policy</i>.</p>
Schedule F—Table F-2: Parameters for the method for determining annual permitted take	10.10, 10.12	<p>Update table to clarify the method for determining annual permitted take for floodplain harvesting (regulated river) access licences in the Macquarie and Cudgegong Regulated Rivers Water Source.</p> <p>Update table to ensure that floodplain harvesting is included in the entitlements in the Macquarie and Cudgegong Regulated Rivers annual permitted take model include floodplain harvesting.</p>
Schedule F—Table F-3: Demonstration of annual permitted take method with the SDL	10.10(4)	Update text at the end of the table to reflect updates to the model that improve representation of floodplain harvesting.
Schedule F—Attachment A: BDL report	N/A	Update report to reflect updates to the model that improve representation of floodplain harvesting.
Schedule F—Attachment B: SDL report	N/A	Update report to reflect updates to the model that improve representation of floodplain harvesting.
Schedule I—Table I-1: Data sets and methods used in formation of the water resource plan	10.49	Update table to refer to Macquarie and Cudgegong Regulated Rivers Water Source modelling reports.