

---

Department of Planning and Environment

[dpie.nsw.gov.au](http://dpie.nsw.gov.au)



# Barwon-Darling: Floodplain harvesting in water sharing plans

Report to assist community consultation

May 2022



# Acknowledgement of Country

The Department of Planning and Environment acknowledges that it stands on Aboriginal land. We acknowledge the Traditional Custodians of the land and we show our respect for Elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

---

Published by NSW Department of Planning and Environment

[dpie.nsw.gov.au](http://dpie.nsw.gov.au)

Barwon-Darling: Floodplain harvesting in water sharing plans

First published: May 2022

Department reference number: PUB22/360

## Copyright and disclaimer

© State of New South Wales through Department of Planning and Environment 2022. Information contained in this publication is based on knowledge and understanding at the time of writing, April 2022, and is subject to change. For more information, please visit [dpie.nsw.gov.au/copyright](http://dpie.nsw.gov.au/copyright)

# Contents

Summary .....	4
Introduction.....	6
Barwon-Darling valley floodplain .....	6
Rules for floodplain harvesting in water sharing plans .....	8
Adaptive management for floodplain harvesting .....	9
Connectivity outcomes .....	9
Default rules for floodplain harvesting.....	10
Specific rules for floodplain harvesting in the Barwon-Darling Unregulated River Water Source.....	12
Interaction of water sharing plan rules and modelling .....	22
Interaction of water sharing plan rules and returned flows .....	23
Interaction of water sharing plan rules and cultural outcomes.....	24
Submission process .....	24
Amendments to water resource plans .....	25
Appendix 1: Annual versus 5-year accounting scenario .....	26
Appendix 2: Proposed amendments to the Barwon-Darling Watercourse Water Resource Plan .....	27

---

## Summary

The department is implementing the NSW Floodplain Harvesting Policy across the six northern inland designated floodplains of the Border Rivers, Gwydir, Upper Namoi, Lower Namoi, Macquarie and Barwon–Darling river systems. Implementation includes issuing replacement floodplain harvesting access licences in regulated and unregulated river water sources throughout these floodplains and including rules for managing these licences in the relevant water sharing plans.

Specifically, for the Barwon-Darling Unregulated River Water Source, this will involve issuing replacement floodplain harvesting (unregulated river) access licences to eligible landholders and including rules for managing these licences in the *Water Sharing Plan for the Barwon-Darling Unregulated River Water Source 2012*.

This report aims to help the community and water users understand the proposed rules for floodplain harvesting (unregulated river) access licences in the Barwon-Darling Unregulated River Water Source. It also explains the interaction between those rules, modelling and anticipated downstream outcomes once implemented.

A summary of the proposed rules for floodplain harvesting (unregulated river) access licences in the Barwon-Darling Unregulated River Water Source is provided in Table 1. We are seeking feedback through a public submission process from **1 June until 8 July 2022**.

Table 1 Summary of proposed rules for floodplain harvesting (unregulated river) access licences

Type of rule	Proposed rule for floodplain harvesting (unregulated river)
Account management	Account limit: maximum of 5 ML per unit share at any time
Available water determination	Initial available water determination of 1 ML per unit Available water determination of 1 ML per unit share every year after that, subject to decreases to respond to growth.
Permanent trade	Establishing trading zones that reflect the river sections that currently exist for unregulated river access licences. No permanent trade of floodplain harvesting (unregulated river) access licences between river sections. No nomination of works located outside the Barwon-Darling Valley floodplain.
Granting or amending water supply works nominated by a floodplain harvesting (unregulated river) access licence	A water supply work approval will not be granted or amended if it is, or is proposed to be, nominated by a floodplain harvesting (unregulated river) access licence and the water supply work is located or proposed to be located: <ul style="list-style-type: none"><li>• outside the Barwon Darling Floodplain, or</li><li>• for new works – within management zones A or D, or</li><li>• for existing works – within management zones A or D and the modification would result in an increased capacity for that work, or</li></ul>

Type of rule	Proposed rule for floodplain harvesting (unregulated river)
	<ul style="list-style-type: none"> <li>• outside management zones A or D and would result in an increase in the rate of take for an existing work located within management zones A or D.</li> </ul>
Access rules (including resumption of flow rules)	Access is not permitted when Menindee Lakes is below 195GL unless a continuous flow of at least 4,000 ML is forecast to occur in the Darling River at the Wilcannia gauge.

---

## Introduction

This report has been prepared to provide detail on the rules that will be included in the *Water Sharing Plan for the Barwon-Darling Unregulated River Water Source 2012* for floodplain harvesting (unregulated river) licences and how those rules interact with modelling and provide potential downstream benefits. The report also includes information on the submission process and the rules that are subject to consultation outcomes.

---

## Barwon-Darling valley floodplain

The Barwon-Darling valley floodplain (Figure 1) was established as part of the commencement of the *Floodplain Management Plan for the Barwon-Darling Valley Floodplain 2017*. The Barwon-Darling valley floodplain has areas of high flood flow connectivity and 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.

Implementation of the NSW Floodplain Harvesting Policy in the Barwon-Darling Valley Floodplain will result in the issuing of floodplain harvesting (unregulated river) access licences in the Barwon-Darling Unregulated River Water Source. This means that rules pertaining to floodplain harvesting will be included in the *Water Sharing Plan for the Barwon-Darling Unregulated River Water Source 2012*.

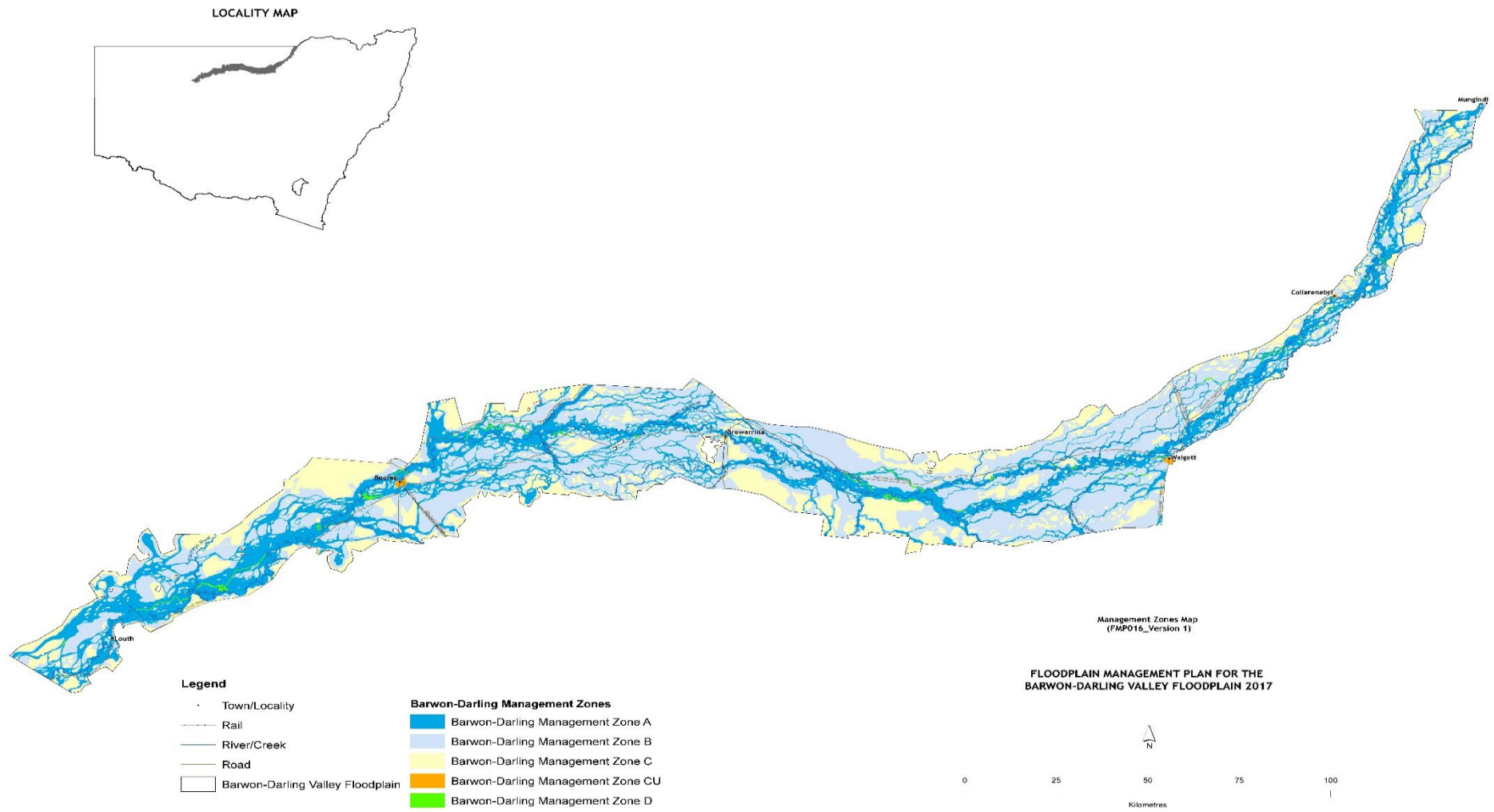


Figure 1 Barwon-Darling Valley Floodplain

---

## 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](#).

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 and 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 (account limits 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).

### Determining floodplain harvesting licences in the Barwon-Darling

Floodplain harvesting (unregulated river) access licences will be issued in the Barwon-Darling Unregulated River Water Source. The method for determining unregulated entitlements in the Barwon-Darling is different to that used in other unregulated river water sources..

In accordance with the NSW Floodplain Harvesting Policy, modelling is being used to determine floodplain harvesting (unregulated river) access licences in the Barwon-Darling. The entitlement determination process has implications for the types of water sharing rules.

The Barwon-Darling extraction limit is calculated using a computer model that simulate river basin behaviour based on more than 100 years of climatic data, the amount of development in the Barwon-



Darling at specified points in time, and the applicable water sharing plan rules. These models have been updated as part of the implementation of the NSW Floodplain Harvesting Policy to more accurately reflect historically legitimate floodplain harvesting.

The department will determine floodplain harvesting entitlements in the Barwon-Darling using three key steps:

1. update the river system model to represent floodplain harvesting activities for individual properties
2. assess the extraction limit to ensure compliance with it
3. use the river system model to determine individual floodplain harvesting entitlements, ensuring that the total take of water will be within the extraction limit and that any effects are distributed as equitably as possible among eligible floodplain harvesting properties.

---

## 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 on an annual basis
- 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.

---

## Connectivity outcomes

Improving connectivity between valleys is an important aspect of water management. Licensing floodplain harvesting across the northern Basin 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 four key types of rules for floodplain harvesting licences in water sharing plans that are expected to maintain and improve connectivity between valleys and increase water availability in downstream systems:

1. Compliance with the extraction limits will ensure that floodplain harvesting can be restricted where the water source limits have been exceeded, returning a proportion of flood flows to the floodplain and in turn rivers and creeks (*returned flows*),

2. Account management rules ensure that growth is managed while maintaining flexibility for the licence holder, contributing to the volume of returned flows,
3. 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,
4. Access rules prevent floodplain harvesting take during and following extreme dry periods.

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 properly 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. This work has commenced but will take 3-5 years to complete.

Amendment provisions are proposed that clearly and transparently indicate the potential for developing and/or refining event-based access rules for floodplain harvesting licences based on improved information and modelling capability.

---

## 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 the extraction limit

Water sharing plans provide for the annual assessment of total extraction within the plan area. If this assessment shows that the long-term average annual extraction limit has been exceeded by 3% or more in the Barwon-Darling Unregulated River Water Source, steps must be taken to reduce extraction to back within the limit.

It is proposed that if growth in floodplain harvesting has caused an exceedance of the extraction limits then the allocations made to floodplain harvesting (unregulated river) access licences will be reduced to offset this growth.

In addition to compliance with the long-term average annual extraction limit, there is a requirement under the Basin Plan 2012 to comply with the sustainable diversion limit (SDL) specified for the Barwon-Darling SDL resource unit.

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 Barwon-Darling Watercourse Water Resource Plan to outline the management response in relation to an exceedance of the SDL caused by floodplain harvesting 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 Barwon-Darling Unregulated River Water Source, the total share components for floodplain harvesting (unregulated river) access licences are estimated to be 51,320 unit shares.

We will refine this estimate as the consultation process for property-specific entitlement determinations is finalised.

## Take from overland flow

Floodplain harvesting licences will provide clarity 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*.

A mandatory condition will be included in all water sharing plans where floodplain harvesting access licences are issued that will restrict the take of water under these licences to overland flow. Diverting water from rivers or creeks under a floodplain harvesting access 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 the unique set of on-farm conditions for each floodplain harvesting property. There may 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 access 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 comply with the requirements of the NSW Floodplain Harvesting Measurement Policy,
- floodplain harvesting access licences that restricts the take of water to overland flows.

---

## Specific rules for floodplain harvesting in the Barwon-Darling Unregulated River Water Source

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

- account management rules,
- available water determination rules,
- permanent trade rules,
- access rules,
- amendment rules.

A summary of these rules for other licence categories in the Barwon-Darling Unregulated River Water Source is provided below, along with information on the intent of the rules for floodplain harvesting (unregulated river) access licences. The proposed rules for floodplain harvesting (unregulated river) access licences are shown in shaded boxes.

### Account management rules

Account management rules vary across NSW and between different categories of access licences but 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.

The existing account management rules for licences other than floodplain harvesting (unregulated river) access licences, as specified in the *Water Sharing Plan for the Barwon-Darling Unregulated River Water Source 2012*, are summarised in Table 2 for context.

Table 2 Existing account management rules for the Barwon-Darling

Licence category	Take limit (annual)	Carryover limit
Unregulated river (A, B and C Class)	3 ML per unit share +/- trade over three consecutive years	1 ML per unit share
Local water utility	100% +/- trade over three consecutive years	No carryover
Domestic and stock	100% +/- trade over three consecutive years	No carryover

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 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 3 and outlined below.

**Table 3 Interaction between accounting period and floodplain harvesting outcomes**

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 maximum take)	High	Low	High	Low
Five year	Moderate (reflects average take)	High	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 in order 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 (unregulated river) access licences in the Barwon-Darling Unregulated River Water Source. This accounting period matches the frequency of accessing floodplain harvesting water while:

- controlling current growth
- providing the optimum level of protection against future growth
- delivering a range of improvements for environmental outcomes
- 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](#).

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 (unregulated river) access licences in the Barwon-Darling Unregulated River Water Source is an account limit of 5 ML per unit share.

## Available water determinations

### Available water determinations in the first year

Historically, an available water determination greater than 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 carry over that would have been permitted under the *Water Act 1912* licence, or
- use of long-term averages in the determination of 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 water users,
- the recent access to flood flows during the recent flood events in late 2021 and early 2022.

Proposed initial available water determination for floodplain harvesting (unregulated river) access licences in the Barwon-Darling Unregulated River Water Source of 1 ML per unit share.

### 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.

Proposed available water determination rules for floodplain harvesting (unregulated river) access licences in the Barwon-Darling Unregulated River Water Source is 1 ML per unit share every year after the first year (or a lesser amount to ensure compliance with the extraction limit)

## 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 concentrating in a specific 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.

The permanent trade rules 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.

The types of trade restrictions specified in the *Water Sharing Plan for the Barwon-Darling Unregulated River Water Source 2012* are summarised in Table 4.

Table 4 Existing trade rules for the Barwon-Darling

Licence category	Permanent trade restriction	Temporary trade restriction
All licences	From an access licence to another access licence with more restrictive take conditions.	From an access licence to another access licence with more restrictive take conditions.
All licences	Only within the water source.	Only within the water source.
Unregulated River (A Class)	No net gain above 3434 unit shares for Unregulated river (A Class) in River Section 1.	
Unregulated River (B Class)	No net gain above 38,282 unit shares for Unregulated river (B Class) in River Section 2	

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, linear systems such as the Barwon-Darling can be impacted by trade that results in the upstream concentration of entitlement. The upstream movement of entitlement and extraction can decrease downstream flows and impact environmental outcomes.

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

1. preventing concentration of entitlement
2. protection of identified areas that are important for flood flow connectivity or contain identified environmental or cultural assets or values.

## Concentration of entitlement

We propose to establish rules to restrict the permanent trade of floodplain harvesting (unregulated river) access licences that reflect the existing trade rules for unregulated river access licences. This

involves replicating the four river sections that currently exist in the *Water Sharing Plan for the Barwon-Darling Unregulated River Water Source 2012* and restricting trade between those sections.

The proposed river sections are limited to the designated floodplain, which only extends to downstream of Bourke, and are shown on Figure 2.

In the Barwon-Darling Unregulated River Water Source, trade rules would involve:

- trade permitted within a river section
- trade not permitted between river sections

The proposed trading zones will ensure that floodplain harvesting (unregulated river) access licences only take water within the Barwon-Darling Valley floodplain. This restriction is consistent with the implementation of the NSW Floodplain Harvesting Policy and licence determination process. The Barwon-Darling Valley floodplain was established under the *Water Management (General) Regulations 2018* and is shown in Figure 1. The restriction to within the Barwon-Darling Valley floodplain will also be imposed through a rule that restricts floodplain harvesting access licences nominating works located outside the floodplain.

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

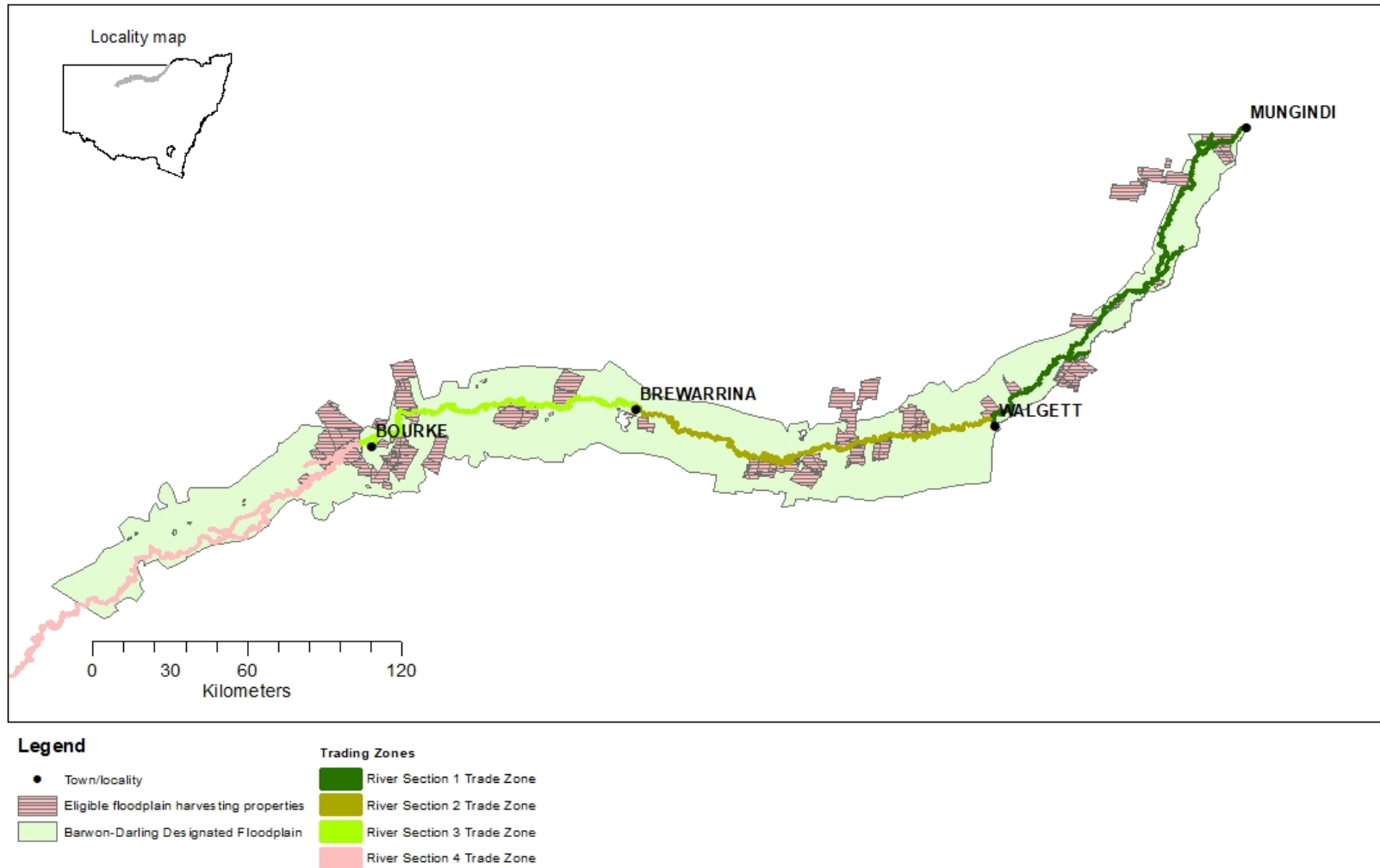
Proposed permanent trade rules for floodplain harvesting (unregulated river) access licences in the Barwon-Darling Unregulated River Water Source:

1. Replicating river sections already implemented in the unregulated river water sources (Figure 2)
2. No trade between river sections
3. No nomination of works located outside the Barwon-Darling Valley designated floodplain by a floodplain harvesting access licence





# Proposed Barwon-Darling Valley Trading Zones



© State of NSW through the Department of Planning, Industry and Environment, 2020.

Figure 2 Proposed trading zones for the Barwon-Darling

## 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 Barwon-Darling Valley 2017* as management zones A and D (Figure 3).

An initial assessment of the Barwon-Darling eligible properties shows that approximately 90% of properties that will receive a floodplain harvesting (unregulated river) access licence have a work located within management zones A or D.

To protect the identified assets in management zones A and D, we propose a rule for floodplain harvesting (unregulated river) access licences that ensures that the works used for floodplain harvesting 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 (unregulated river) access licences in the Barwon-Darling Unregulated River Water Source is no nomination of new works located in management zones A or D, as specified in the *Floodplain Management Plan for the Barwon-Darling Valley Floodplain 2017*.

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

A series of rules are proposed that would restrict the granting of new water supply work approvals or modification of 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 (unregulated river) access licences in the Barwon-Darling Unregulated River 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, and
2. no new works constructed in management zones A or D, and
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 that are on the same water supply works approval and located in management zone A or D.



# Proposed Barwon-Darling Valley Protection Zones

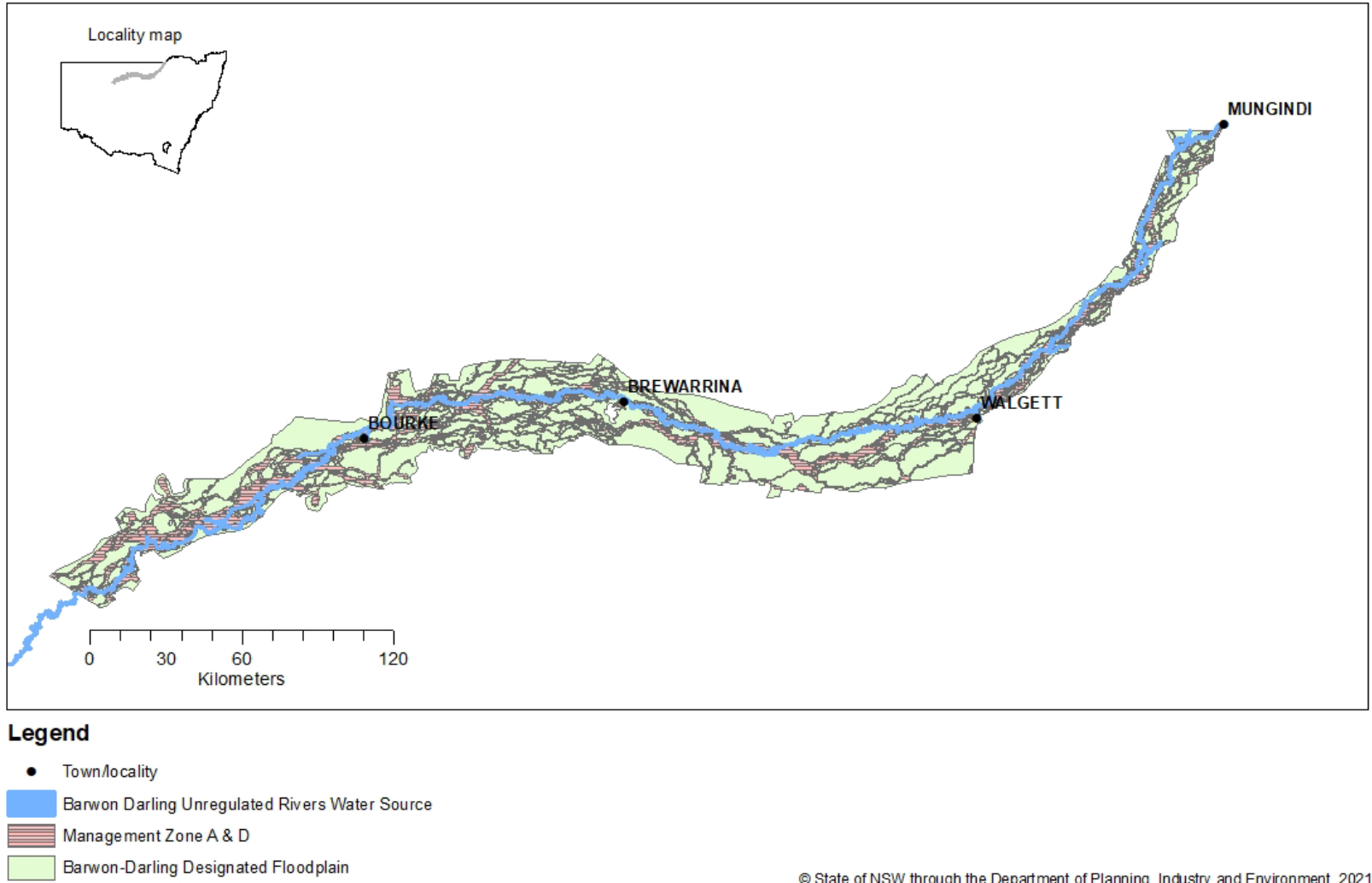


Figure 3 Proposed protection zones for Barwon-Darling

## Access rules

Access rules are specified in water sharing plans for the purpose of environmental protection. In the *Water Sharing Plan for the Barwon-Darling Unregulated River Water Source 2012* there are access rules specified for unregulated river water access licences. The cease and commence to pump rules are based on river gauge flow data. Some examples of access rules are shown in Table 5.

Table 5 Existing access rules for unregulated river (C class) access licences

Access rule	Description
Limit on volume taken	Water cannot be taken in excess of the daily flow shares specified in the extraction component of the access licence.
Flow classes	Water may only be taken under an unregulated river (C Class) access licence if the Minister has announced that flows in the management zone specified in the access licence are in C Class.

Existing access rules for the Barwon-Darling unregulated river water source are designed to protect within channel flows from river extractions in order to maintain and improve environmental values. It is not appropriate to apply these access rules to floodplain harvesting access licences as they are attempting to manage very different flows and outcomes.

However, to acknowledge the connectivity between the Barwon-Darling valleys and the northern inland tributary valleys, and ensure flows are temporarily protected from floodplain harvesting during and following extreme dry periods, a series of new access rules are proposed to be applied to floodplain harvesting access licences across the northern Basin.

Proposed access rule for floodplain harvesting (unregulated river) access licences in the Barwon-Darling Unregulated River Water Source:

1. Water cannot be taken when there is less than 195 GL stored in the Menindee Lakes system unless a continuous flow of at least 4,000 ML is forecast to occur in the Darling River at the Wilcannia gauge.

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 commenced this work 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 and/or review of access rules for floodplain harvesting (unregulated river) access licences.

## Active management

Active management is used to protect environmental water as it flows 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 (A Class), unregulated river (B Class) and unregulated river (C Class) access licences in the Barwon-Darling Unregulated River Water Source.

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 (unregulated river) access licence. This protected water is intended to flow across the surface of the floodplain, supporting flood-dependent ecosystems and achieving environmental outcomes.

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’.

In the Barwon-Darling Unregulated River Water Source analysis has shown that there is no intersection between active management and floodplain harvesting. This is due to the large channel capacity of the Barwon-Darling. Specifically, overbank flow cannot be created by the volume of environmental water present in the water source. The Department of Environment and Heritage is responsible for managing environmental water delivery in the Barwon-Darling and has confirmed this approach.

We do not propose to apply active management to floodplain harvesting (unregulated river) access licences in the Barwon-Darling Unregulated River Water Source.

## Resumption of flow

The *Water Sharing Plan for the Barwon-Darling Unregulated River Water Source 2012* contains rules to protect critical first flows after an extended low flow or dry period.

These first flows are particularly important to the river and dependent communities. They have cultural benefits to Aboriginal communities associated with the river whilst providing water security for local communities who rely on this water for human and stock needs. Protecting the first flow of water after a dry period also helps improve connectivity, maintain vital refuge pools for water dependent biota and may help to improve water quality. Finally, by wetting the river channel with the first flows, we can help reduce water losses from any larger flows that follow.

The resumption of flow rule is triggered when a flow event occurs after a continuous period of dry or low flow conditions and prevents water users from accessing the first flow for a period of time. Normal access conditions then apply after the flow has reached the required target.

These rules are intended to reduce the need for a Temporary Water Restriction Order to be made under section 324 of the *Water Management Act 2000*, codifying the conditions when access should be restricted in order to meet the high priority requirements of downstream ecosystems and communities. It is proposed to place resumption of flow rules on floodplain harvesting (unregulated river) access licences.

Proposed rule for floodplain harvesting (unregulated river) access licences in the Barwon-Darling Unregulated River Water Source is take will be restricted when resumption of flow rules are in effect

## 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 (unregulated river) access licences in the *Water Sharing Plan for the Barwon-Darling Unregulated River Water Source 2012*. 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 (unregulated river) access licences in the Barwon-Darling Unregulated River Water Source:

1. An amendment provision to add, modify or remove provisions for floodplain harvesting (unregulated river) access licence provided that they don't significantly alter the long-term volume of floodplain harvesting that can be taken under legal limits:

- to allow flexibility should environmental flows be targeted to create overbank flow, or
- in response to monitoring, evaluation and reporting outcomes of environmental benefits from licensing floodplain harvesting, or
- 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.

2. An amendment provision to allow for trade rules to be modified based on any review undertaken of the existing trade rules in the Barwon-Darling Unregulated River Water Source.

---

## Interaction of water sharing plan rules and modelling

The *Floodplain Harvesting entitlements for Barwon-Darling Unregulated River system, Model Scenarios Report* describes how the Barwon-Darling river system model (Barwon-Darling model) was used to re-estimate the long-term diversion limit (plan limit) set in the *Water Sharing Plan for the Barwon-Darling Unregulated River Water Source 2012*, estimate individual floodplain harvesting entitlements, and demonstrate that the new floodplain harvesting access licences will bring total diversions within the plan limit. This report includes discussion of the relevant policy instruments, how models are used to implement these, and how development levels and water management rules were determined.

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 Barwon-Darling, this reflects the level of development and management conditions in place at 1993/94

- 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 Barwon-Darling model and run for the period of climate record (1889-2018). Results for the benchmark climate period defined in the Basin Plan (1 July 1895 to 30 June 2009) for categories of diversions were calculated and 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 (Gigalitres per year)		
	Plan limit	Current conditions	Plan limit compliance
Unregulated river access licences	184.5	175.2	175.6
Floodplain harvesting (excludes exempt rainfall runoff)	10.9	21.0	19.8
<b>TOTAL</b>	195.4	196.2	195.4

The results show that whilst current conditions for floodplain harvesting has increased by 10.1 GL/year (93%) above that for the Plan limit scenario, the overall growth in water use has only been 0.7 GL/year (0.3%).

## Interaction of water sharing plan rules and returned flows

The *Modelled downstream effects of licensing floodplain harvesting - NSW Border Rivers, Gwydir, Macquarie and Barwon-Darling Valleys* report considers the predicted downstream benefits (i.e. water availability) after licensing floodplain harvesting in the NSW Border Rivers, Gwydir, Macquarie and Barwon-Darling valleys.

Any gains in upstream systems such as the NSW Border-Rivers (which provides on average 18% of Barwon-Darling inflows), Gwydir (6% of Barwon-Darling inflows) or Macquarie may translate into the downstream. These additional volumes originating in each of the Barwon-Darling tributary valleys contribute to connectivity between the broader northern Murray-Darling Basin (the Basin) and provision of increased flows towards Menindee and into the Murray.

Modelling analysis indicates that implementation of the NSW Floodplain Harvesting Policy within the NSW Border Rivers, Gwydir and Macquarie and Barwon-Darling will result in an average of 61.4 GL/year of water being returned to floodplains, rivers and creeks.



Analysis indicates that whilst these large reductions to floodplain harvesting will deliver significant local benefits, these benefits will decrease significantly by the time these additional floodplain flows reach Menindee Lakes or the NSW Murray, specifically the maximum possible benefits of licensing to:

- Menindee Lakes inflows is 26.6 GL/year on average, representing a 1.8% increase.
- No significant change to either Lower Darling or NSW Murray General Security water allocations on average.

A further sensitivity analysis indicates that completely removing all historically legitimate floodplain harvesting from the NSW Border Rivers, Gwydir, Macquarie and Barwon-Darling valleys would increase NSW Murray General Security water allocations by a maximum of 0.6% on average.

For more information on the key findings and recommendations, please refer to the *Modelled downstream effects of licensing floodplain harvesting - NSW Border Rivers, Gwydir, Macquarie and Barwon-Darling* report on our website.

---

## Interaction of water sharing plan rules and cultural outcomes

A report is being developed to outline the identified cultural assets and values in the Barwon-Darling valley floodplain and assesses the predicted benefits to these assets and values after licensing of floodplain harvesting. This report will draw from consulting with the First Nation Peoples of the Barwon-Darling valley.

The report will focus on areas where identified cultural assets and values in the Barwon-Darling 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 Barwon-Darling Valley Floodplain 2017* and the Barwon-Darling Watercourse Water Resource Plan.

---

## Submission process

We will undertake targeted and broad public consultation on the proposed rules for floodplain harvesting access licences to be included in the *Water Sharing Plan for the Barwon-Darling Unregulated River Water Source 2012*. As part of this consultation, we will provide a formal submission period of 30 days. During this period, you can make a submission giving feedback on the proposed rules. The formal submission period will be from **1 June until 8 July 2022**, inclusive.

We will host a webinar for all stakeholders and the public followed by a series of face-to-face meetings in Walgett, Bourke and Menindee. These sessions will commence in the week beginning 6 June 2022.



---

## Amendments to water resource plans

The Barwon-Darling Watercourse Water Resource Plan, currently awaiting submission for accreditation, will require amendment once we have issued floodplain harvesting (unregulated river) access licences in the Barwon-Darling Unregulated River 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 (unregulated 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 Barwon-Darling Watercourse 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 (unregulated 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 [mdba.gov.au/basin-plan-roll-out/sustainable-diversion-limits/changing](http://mdba.gov.au/basin-plan-roll-out/sustainable-diversion-limits/changing)

If accreditation is received prior to the issuing of floodplain harvesting (unregulated river) access licences in the Barwon-Darling, any proposed changes to the Barwon-Darling Watercourse Surface Water Resource Plan or Basin Plan will require approval from the Australian Government's Minister for Resources and Water.

Appendix 2 details the proposed amendments to the Barwon-Darling Surface Water Resource Plan.

---

## 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 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 different 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%
<b>Growth test B: Theoretical potential for if account was fully used</b>	<b>286%</b>	<b>81%</b>	<b>44%</b>

## Appendix 2: Proposed amendments to the Barwon-Darling Watercourse Water Resource Plan

Table 8 Summary of proposed amendments to the Barwon-Darling Watercourse WRP

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 Barwon-Darling Unregulated River Water Source 2012</i> following the issue of floodplain harvesting access licences.</p> <p>Floodplain harvesting access licences will be issued in the Barwon-Darling Unregulated River Water Source. Therefore, amendment is required for the <i>Water Sharing Plan for the Barwon-Darling Unregulated River Water Source 2012</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>Barwon-Darling Unregulated River Water Source</i> SDL resource unit in a water accounting period. The <i>Water Sharing Plan for Barwon-Darling Unregulated River Water Source 2012</i> will specify these rules.</p> <p>Remove text “Floodplain Harvesting and s10.17”.</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 “Take by floodplain harvesting” to include number of access rights, total volume (ML per unit share) and mandatory conditions for floodplain harvesting (unregulated river) access licences in the Barwon-Darling Unregulated River Water Source</p>

Water resource plan reference	<i>Basin Plan 2012</i> reference	Proposed amendment
5.3.2 SDL adjustments	Non -accredited text	Adjust SDL as a result of improvements in information about and modelling of floodplain harvesting take.
5.4 Determining available water – rules for take	10.11	<b>Blue-boxed text</b> Update ‘Take by Floodplain Harvesting’ to refer to relevant parts of the <i>Water Sharing Plan for Barwon-Darling Unregulated River Water Source 2012</i> that ensure the quantity of water taken under floodplain harvesting access licences does not exceed the annual permitted take for the period. Remove floodplain harvesting from text relating to Section 10.11 of the <i>Basin Plan 2012</i> .
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 first blue box.
5.4 Determining available water – rules for take	10.13	Remove entire last paragraph in the second blue-boxed text, starting with ‘For the purpose of section 10.11’
5.4.3 Floodplain harvesting	Non-accredited text	Amend text to reflect the issuing of floodplain harvesting (unregulated river) access licences in the Barwon-Darling Unregulated River Water Source.  and rules associated with these licences included in the <i>Water Sharing Plan for Barwon-Darling Unregulated River Water Source 2012</i> .
5.4.3 Floodplain harvesting further information	Non-accredited text	Remove this subheading and associated explanatory text.
5.4.6 Floodplain harvesting compliance	Non-accredited text	Amend text to reflect compliance measures for floodplain harvesting (unregulated river) access licences; mandatory conditions for measurement, including timing; and updates to BDL and annual permitted take models.  Amend text to clarify the method for determining annual permitted take for floodplain harvesting (unregulated river) access licences.
5.5.2 Determining actual take	10.15(1) to 10.15(3)	<b>Blue-boxed text</b> Include information on timing for implementing the measurement requirements for floodplain harvesting (unregulated river) access licences, noting that the timing is subject to consultation outcomes associated

Water resource plan reference	<i>Basin Plan 2012</i> reference	Proposed amendment
		with the proposed amendments to the <i>Water Management (General) Regulation 2018</i> .
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 from 1 July 2019.
5.7.4 Floodplain harvesting	Non-accredited text	Update text to reflect implementation of the NSW Floodplain Harvesting Policy in the Barwon-Darling valley, issuing of floodplain harvesting (unregulated river) access licences in the Barwon-Darling Water Source and rules for these licences included in the <i>Water Sharing Plan for Barwon-Darling Unregulated River Water Source 2012</i> .
5.7.4 Floodplain harvesting	10.23, 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 (unregulated river) access licences in the Barwon-Darling Unregulated River Water Source. Also insert reference for including rules for floodplain harvesting (unregulated river) access licences in the <i>Water Sharing Plan for Barwon-Darling Unregulated River Water Source 2012</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	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

Water resource plan reference	Basin Plan 2012 reference	Proposed amendment
estimated take by class of access right		measured for floodplain harvesting (unregulated river) access licences in the Barwon-Darling Unregulated River 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.
Schedule D Risk assessment information	N/A	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. Update Section 4.5.4 and 8.2.4 to past tense. 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').
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)	Update table to clarify the method for determining annual actual take for floodplain harvesting (unregulated river) access licences in the Barwon-Darling Unregulated River Water Source.  Update footnote to clarify finalisation of the <i>Floodplain Harvesting Measurement Policy</i> .
Schedule F – Table F-2: Parameters for the method for determining annual permitted take	10.10, 10.12	Update table to clarify the method for determining annual permitted take for floodplain harvesting (unregulated river) access licences in the Barwon-Darling Unregulated River Water Source.  Update table to ensure that floodplain harvesting is included in the entitlements in the Barwon-Darling Unregulated River Water Source annual permitted take model include floodplain harvesting.
Schedule F – Table F-3: Demonstration of annual	10.10(4)	Update text at the end of the table to reflect updates to the model that

Water resource plan reference	<i>Basin Plan 2012</i> reference	Proposed amendment
permitted take method with the SDL		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 Barwon-Darling unregulated River Water Source modelling reports.