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Department of Planning and Environment

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# Namoi: Floodplain harvesting in water sharing plans

Report to assist community consultation

November 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.

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Namoi: Floodplain harvesting in water sharing plans

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## 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.

For the Namoi valley, this will involve issuing replacement floodplain harvesting (regulated river) access licences to eligible landholders in the Lower Namoi Regulated River Water Source and including rules for managing these licences in the *Water Sharing Plan for the Upper and Lower Namoi Regulated River Water Source 2016*. It will also involve issuing replacement floodplain harvesting (unregulated river) access licences to eligible landholders in the Namoi Unregulated River Water Sources and including rules for managing these licences in the *Water Sharing Plan for the Namoi and Peel Unregulated Rivers Water Sources 2012*.

This report aims to help the community and water users understand the proposed rules for floodplain harvesting (regulated river) access licences and floodplain harvesting (unregulated river) access licences in the Namoi valley. It also explains the interaction between those rules, modelling and anticipated environmental benefits, including downstream outcomes, once implemented.

A summary of the proposed rules for floodplain harvesting (regulated river) access licences in the Lower Namoi Regulated River Water Source is provided in Table 1. We are seeking feedback through a public submission process from **1 December 2022 until 29 January 2023**.

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

Type of rule	Proposed rule for floodplain harvesting (regulated 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 management zones that largely reflect existing unregulated river water source boundaries with some being merged to create trade opportunities.  No permanent trade of floodplain harvesting (regulated river) access licences between management zones.  No nomination of works located outside the relevant declared floodplains.  No nomination of new works located in management zones A, AD or D of the relevant floodplain management plan.
Granting or amending water supply works nominated by a floodplain harvesting (regulated 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 (regulated river) access licence and the water supply work is located or proposed to be located:

Type of rule	Proposed rule for floodplain harvesting (regulated river)
	<ul style="list-style-type: none"> <li>• outside the relevant declared floodplain, or</li> <li>• for new works – within management zones A, AD or D of the relevant floodplain management plan, or</li> <li>• for existing works – within management zones A, AD or D of the relevant floodplain management plan and the modification would result in an increased capacity for that work, or</li> <li>• outside management zones A, AD or D of the relevant floodplain management plan and would result in an increase in the rate of take for an existing work located within these management zones.</li> </ul> <p>A water supply work approval will not be granted or amended until a flood work approval is granted if:</p> <ul style="list-style-type: none"> <li>• the water supply work approval is, or is proposed to be, nominated by a floodplain harvesting (regulated river) access licence, and</li> <li>• the water supply work is located or proposed to be located within management zone AID of the relevant floodplain management plan, and</li> <li>• the water supply work is also a flood work.</li> </ul>
Access rules	Access is not permitted when Menindee Lakes is below 195GL except during periods when there is a flow of at least 4,500 ML/day in the Namoi River at the Bugilbone gauge (419021).

A summary of the proposed rules for floodplain harvesting (unregulated river) access licences in the Namoi Unregulated River Water Sources is provided in Table 2. We are seeking feedback through a public submission process from **1 December 2022 until 29 January 2023**.

Table 2. Summary of proposed rules for floodplain harvesting (unregulated river) access licences

Type of rule	Proposed rule for floodplain harvesting (unregulated river)
Account management	<p>Take limit: 3 ML per unit share over 3 consecutive years</p> <p>Account limit: maximum of 3 ML per unit share at any time</p>
Available water determination	<p>Initial available water determination of 1 ML per unit</p> <p>Available water determination of 1 ML per unit share every year after that, subject to decreases to respond to growth.</p>
Permanent trade	<p>Permanent trade of floodplain harvesting (unregulated river) access licences will reflect the existing permanent trade rules that are applied to unregulated river access licences in the Namoi Unregulated Water Sources.</p> <p>No nomination of works located outside the Upper Namoi valley floodplain or Lower Namoi valley floodplain.</p> <p>No nomination of new works located in management zones AD or D of the relevant floodplain management plan.</p>

Type of rule	Proposed rule for floodplain harvesting (unregulated river)
<p>Granting or amending water supply works nominated by a floodplain harvesting (unregulated river) access licence</p>	<p>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:</p> <ul style="list-style-type: none"> <li>• outside the Upper Namoi valley floodplain or Lower Namoi valley floodplain, or</li> <li>• for new works – within management zones AD or D of the relevant floodplain management plan, or</li> <li>• for existing works – within management zones AD or D of the relevant floodplain management plan and the modification would result in an increased capacity for that work, or</li> <li>• outside management zones AD or D of the relevant floodplain management plan and would result in an increase in the rate of take for an existing work located within these management zones.</li> </ul> <p>A water supply work approval will not be granted or amended until a flood work approval is granted if:</p> <ul style="list-style-type: none"> <li>• the water supply work approval is, or is proposed to be, nominated by a floodplain harvesting (unregulated river) access licence, and</li> <li>• the water supply work is located or proposed to be located within management zone AID, and</li> <li>• the water supply work is also a flood work.</li> </ul>

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## Introduction

This report has been prepared to provide detail on the rules that will be included in the *Water Sharing Plan for the Upper and Lower Namoi Regulated River Water Source 2016* for floodplain harvesting (regulated river) access licences, the *Water Sharing Plan for the Namoi and Peel Unregulated Rivers Water Sources 2012* for floodplain harvesting (unregulated river) licences and how those rules interact with modelling and provide potential environmental and downstream benefits. The report also includes information on the submission process and the rules that are subject to consultation outcomes.

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## Relevant declared floodplains

The Namoi valley contains two declared floodplains: the Lower Namoi valley floodplain and the Upper Namoi valley floodplain. There are also a few eligible floodplain harvesting properties located within the southern edge of the Gwydir valley floodplain, which receive floodwater from the Lower Namoi Regulated River. All these declared floodplains are described below.

The Lower Namoi valley floodplain (Figure 1) was established as part of the commencement of the *Floodplain Management Plan for the Lower Namoi Valley Floodplain 2020*. The Lower Namoi valley floodplain has areas of high flood flow connectivity and ecological and cultural significance designated as management zones AD and D.

The Upper Namoi valley floodplain (Figure 2) was established as part of the commencement of the *Floodplain Management Plan for the Upper Namoi Valley Floodplain 2019*. The Upper Namoi valley floodplain has areas of high flood flow connectivity and ecological and cultural significance designated as management zones AD and D.

The Gwydir valley floodplain (Figure 3) was established as part of the commencement of the *Floodplain Management Plan for the Gwydir Valley Floodplain 2016*. The Gwydir 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 Lower Namoi valley floodplain and Upper Namoi valley floodplain will result in the issuing of floodplain harvesting (unregulated river) access licences in the Namoi Unregulated River Water Sources. This means that rules pertaining to floodplain harvesting will be included in the *Water Sharing Plan for the Namoi and Peel Unregulated Rivers Water Sources 2012*.

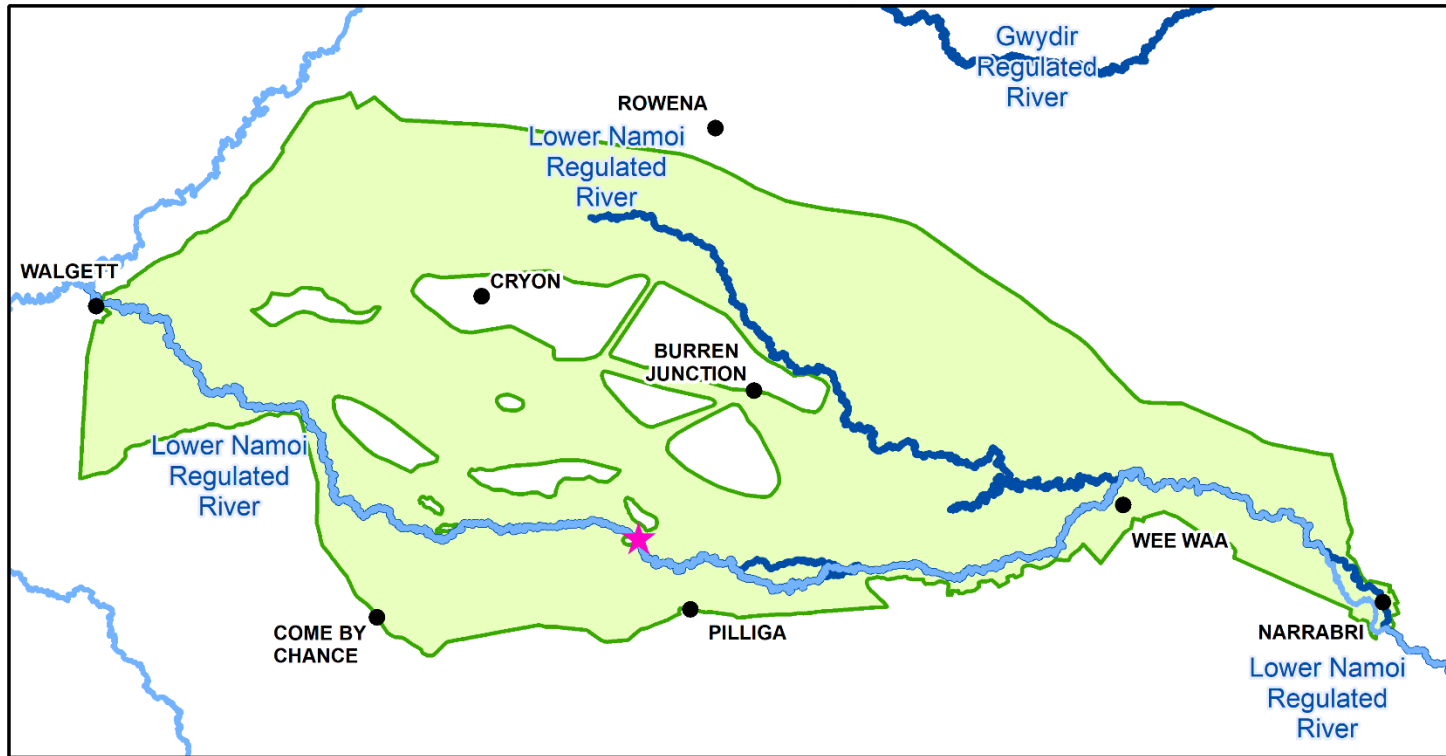
Implementation of the NSW Floodplain Harvesting Policy in the Lower Namoi valley floodplain, Upper Namoi valley floodplain and southern edge of the Gwydir valley floodplain will result in the issuing of floodplain harvesting (regulated river) access licences in the Lower Namoi Regulated River Water Source. This means that rules pertaining to floodplain harvesting will be included in the *Water Sharing Plan for the Upper and Lower Namoi Regulated River Water Source 2016*.

Figure 1. Lower Namoi Valley Floodplain



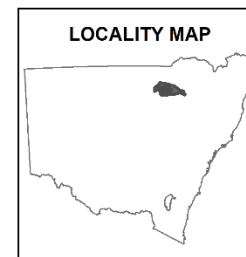
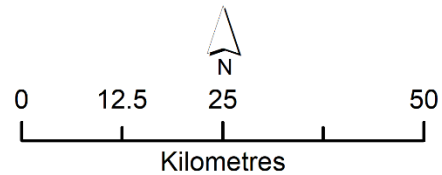
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# Lower Namoi Valley Floodplain



**Legend**

- ★ Bugilbone Gauge (419021)
- Town
- Lower Namoi Regulated River Water Source
- Rivers (unregulated)
- Lower Namoi Valley Floodplain



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Completion Date: 7/11/2022

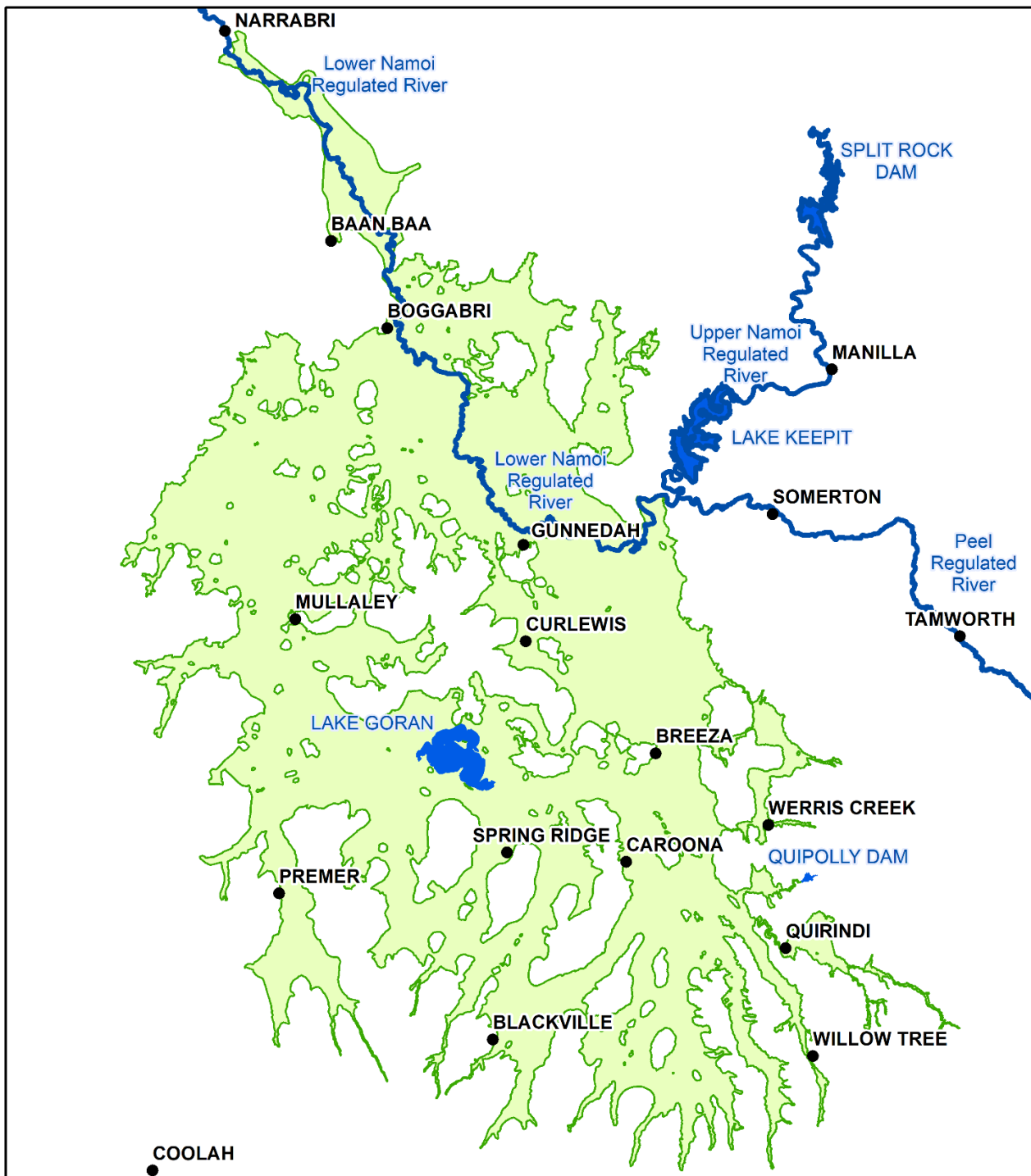


Figure 2. Upper Namoi Valley Floodplain



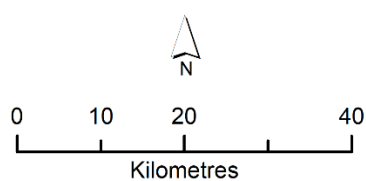
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# Upper Namoi Valley Floodplain



**Legend**

- Town
- Regulated River Water Sources
- Reservoirs and Lakes
- Upper Namoi Valley Floodplain



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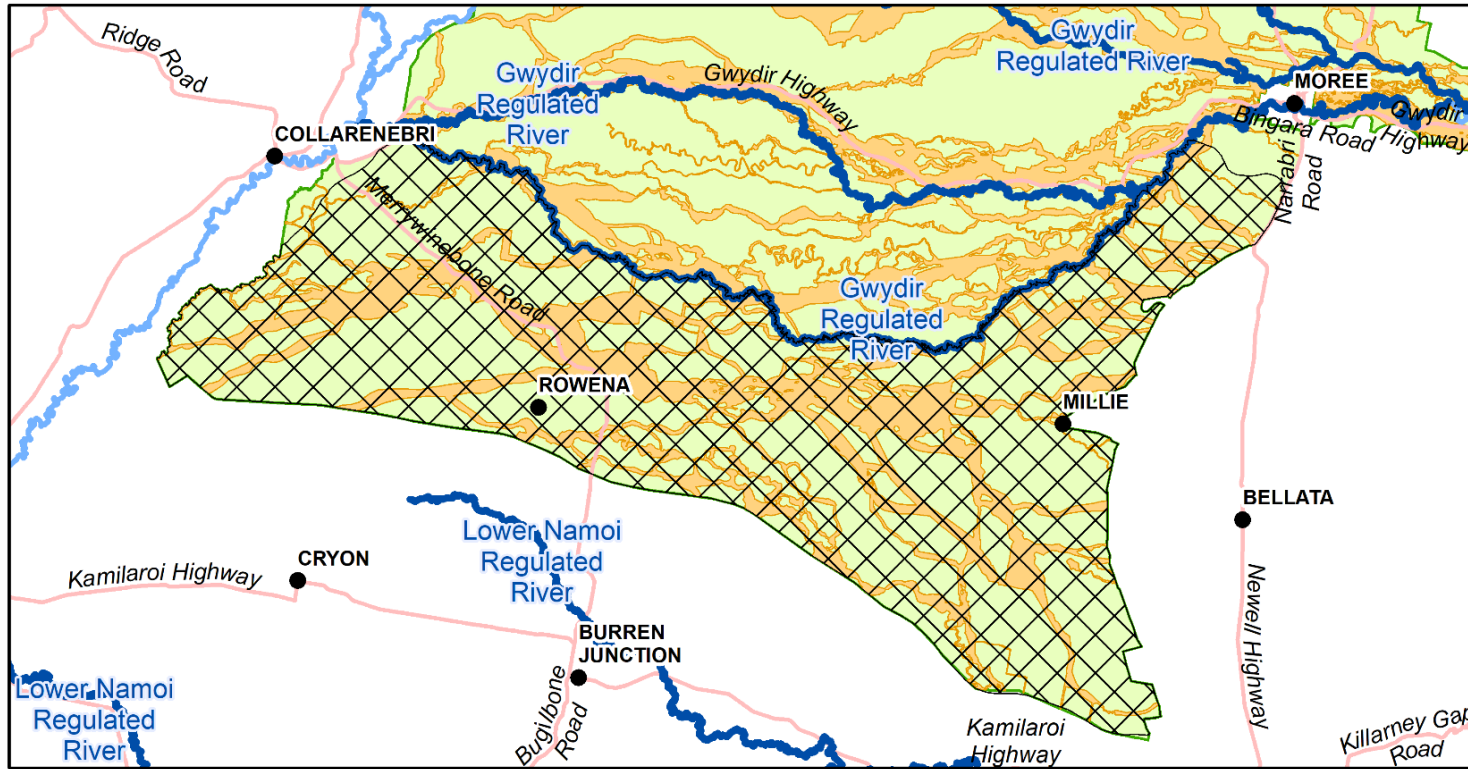
Completion Date: 3/11/2022

Figure 3. Gwydir Valley Floodplain, Thalabah Creek management zone and FMP management zones A and D



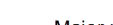


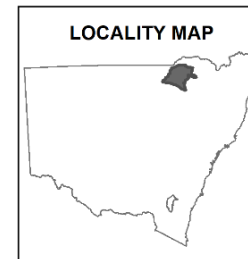
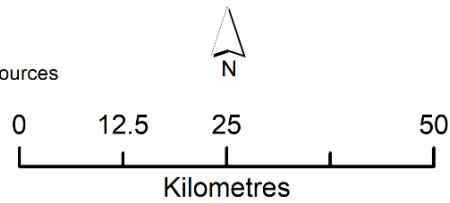
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## Gwydir Valley Floodplain



### Legend

-  Thalabah Creek management zone
-  FMP Management Zone A
-  FMP Management Zone D
-  Gwydir Valley Floodplain
-  Town
-  Regulated River Water Sources
-  Rivers (unregulated)
-  Major road



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## 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).

### Difference between floodplain harvesting regulated river and floodplain harvesting unregulated river access licences

Floodplain harvesting (regulated river) access licences will be issued in the Lower Namoi Regulated River Water Source. Floodplain harvesting (unregulated river) access licences will be issued in 10 of the Namoi Unregulated River Water Sources. The method for determining regulated and unregulated entitlements is different. This difference has implications for the type of rules that are placed on each type of licence in order to manage water take.

A brief explanation of the two licence determination processes and a summary of differences (Table 3) has been provided. For a more detailed understanding of the process please refer to the [Guideline for the implementation of the NSW Floodplain Harvesting Policy](#) on our website.

Table 3. Summary of differences between floodplain harvesting (regulated) and floodplain harvesting (unregulated) access licences

Licence category	Determination process	Rules	Number of licences
Floodplain harvesting (regulated river)	Modelling based on eligible works	Subject to public consultation outcomes	~ 113
Floodplains harvesting (unregulated river)	Repeat of the volumetric conversion	Reflect those for unregulated river access licences where appropriate and subject to public consultation outcomes	~ 53

### Determining floodplain harvesting (regulated river) access licences

In accordance with the NSW Floodplain Harvesting Policy, modelling is being used to determine floodplain harvesting (regulated river) access licences in the Lower Namoi Regulated River Water Source. The entitlement determination process has implications for the types of water sharing rules.

The combined extraction limit for the Upper Namoi Regulated River Water Source and Lower Namoi Regulated River Water is calculated using a computer model that simulates river basin behaviour based on more than 100 years of climatic data, the amount of irrigation development in the water sharing plan area at specified points in time, and the applicable water sharing plan rules. This model has 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 Lower Namoi Regulated River 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.

### Determining floodplain harvesting (unregulated river) access licences

In unregulated river water sources (other than the Barwon–Darling), most floodplain harvesting is already catered for within existing unregulated river access licence share components. This is because when licences in unregulated rivers were converted from the *Water Act 1912* to the *Water Management Act 2000*, the volumetric conversion process effectively considered all forms of water take including that from the floodplain.

However, for some properties where it can be clearly demonstrated that the volumetric conversion process did not sufficiently cater for floodplain harvesting, a floodplain harvesting entitlement may be issued. The share component will be determined by a repeat of the same volumetric conversion process.

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## 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.

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## 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 explicitly 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 improve the representation of return flows in river system models and further improve the management of floodplain harvesting in the Northern Basin. Without an improved model representation of 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 in our river system models. This work has now commenced but will take at least 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.

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## 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 5% or more over 3 consecutive years in the Namoi and Peel Unregulated River Water Source or by 3% or more in any year or any exceedance over any 3 consecutive years in the Upper Namoi Regulated River Water Source and Lower Namoi Regulated River Water Source, steps must be taken to reduce extraction to back within the limit.

In water sharing plans where floodplain harvesting licences are issued, the following rules will be included to allow for extraction under these licences to be managed in response to an exceedance in the extraction limit:

- In unregulated river water sharing plans, floodplain harvesting (unregulated river) access licences will be reduced at the same rate as unregulated river access licences to respond to an exceedance, and
- In regulated river water sharing plans, 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, there is a requirement under the Basin Plan 2012 to comply with the sustainable diversion limit (SDL) specified for the Namoi 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 Namoi Surface 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 Lower Namoi Regulated River Water Source, the total share components for floodplain harvesting (regulated river) access licences are estimated to be 54,750 unit shares.

In the Namoi Unregulated Rivers Water Sources, the total share components for floodplain harvesting (unregulated river) access licences are estimated to be 85,070 unit shares.

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

The share components for a licensed form of take will be larger than the long-term average volume of water taken. For floodplain harvesting (regulated) access licences, modelling indicates that the 54,750 unit shares will equate to an approximate long-term average usage of 46,000 ML/year.

For floodplain harvesting (unregulated) access licences, we expect long-term usage to be in the order of 47,130 ML/year. Floodplain harvesting (unregulated) access licences have been determined in the same manner as unregulated river access licences across NSW and hence in the absence of better information, we have assumed the same rate (ML/unit share) of long-term usage as the unregulated river licences in the Namoi Valley.

## 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.

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## Floodplain harvesting rules in the Lower Namoi Regulated 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 (regulated river) access licences in the Lower Namoi Regulated River Water Source 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 Lower Namoi Regulated River Water Source is provided below, along with information on the intent of the rules for floodplain harvesting (regulated river) access licences. The proposed rules for floodplain harvesting (regulated 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 (regulated river) access licences in the Lower Namoi Regulated River Water Source, as specified in the *Water Sharing Plan for the Upper and Lower Namoi Regulated River Water Source 2016*, are summarised in Table 4 for context.



Table 4. Existing account management rules for the Lower Namoi Regulated

Licence category	Account limit (at any time)	Carryover
Regulated river (General security)	2 ML per unit share	Permitted, subject to account limit not being exceeded
Regulated river (High security)	1 ML per unit share	Not permitted
Supplementary	N/A	Not permitted
Local water utility	100%	Not permitted
Domestic and stock	100%	Not permitted

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 5 and outlined below.

Table 5. 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 (regulated river) access licences in the Lower Namoi Regulated 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 (regulated river) access licences in the Lower Namoi Regulated 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 access to flood flows during the flood events in 2021 and 2022.

Proposed initial available water determination for floodplain harvesting (regulated river) access licences in the Lower Namoi Regulated 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 (regulated river) access licences in the Lower Namoi Regulated 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 Upper and Lower Namoi Regulated River Water Source 2016* are summarised in Table 6.

Table 6. Existing trade rules for the Lower Namoi Regulated River Water Source

Licence category	Permanent trade restriction	Temporary trade restriction
All licences	N/A	<p>From Upper Namoi Regulated to Lower Namoi Regulated permitted subject to sufficient water remaining in Keepit Dam</p> <p>From Lower Namoi to Upper Namoi permitted unless maximum allocations have been credited to regulated river (general security) on Upper Namoi and there is insufficient water in Split Rock Dam.</p>

Licence category	Permanent trade restriction	Temporary trade restriction
Regulated River (High security)	No net gain for works downstream of the Namoi River at Mollee Weir	N/A
Domestic and stock, Regulated River (General security) and Regulated River (High security)	No net gain from 1 July 2004 in the Gunidgera/Pian Creek system	No net gain from 1 July 2004 in the Gunidgera/Pian Creek system
Supplementary	Only to/from supplementary water access licences  No net gain from 1 July 2004 in the Gunidgera/Pian Creek system	Only to/from supplementary water access licences  No net gain from 1 July 2004 in the Gunidgera/Pian Creek system

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 Lower Namoi Regulated River 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 (regulated 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 management zones that largely reflect one or more existing boundaries for the Namoi Unregulated River Water Sources and the Thalabah Creek Water Source in the Gwydir Unregulated River Water Sources. The proposed management zones are limited to within the three declared floodplains, as shown in Figures 3, 4 and 5.

In the Lower Namoi Regulated River Water Source, trade rules would involve:

- trade permitted within a management zone
- trade not permitted between management zones

The establishment of management zones and associated restriction of trade between management zones will prevent concentration of entitlement within the relevant declared floodplains and support the significant improvements to in-valley environmental assets shown in the *Environmental Outcomes of licensing floodplain harvesting in the Namoi Valley* report. Movement of entitlement,

particularly concentration of entitlement in areas highly connected to environmental assets, may erode the benefits quantified in this report.

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

The Lower Namoi Valley floodplain, Upper Namoi Valley Floodplain and Gwydir Valley Floodplain were established under the *Water Management (General) Regulations 2018* and are shown in Figures 1, 2 and 3, respectively. The restriction to within the relevant declared floodplain will also be imposed through a rule that restricts floodplain harvesting access licences nominating works located outside the relevant declared floodplains.

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 (regulated river) access licences in the Lower Namoi Regulated River Water Source:

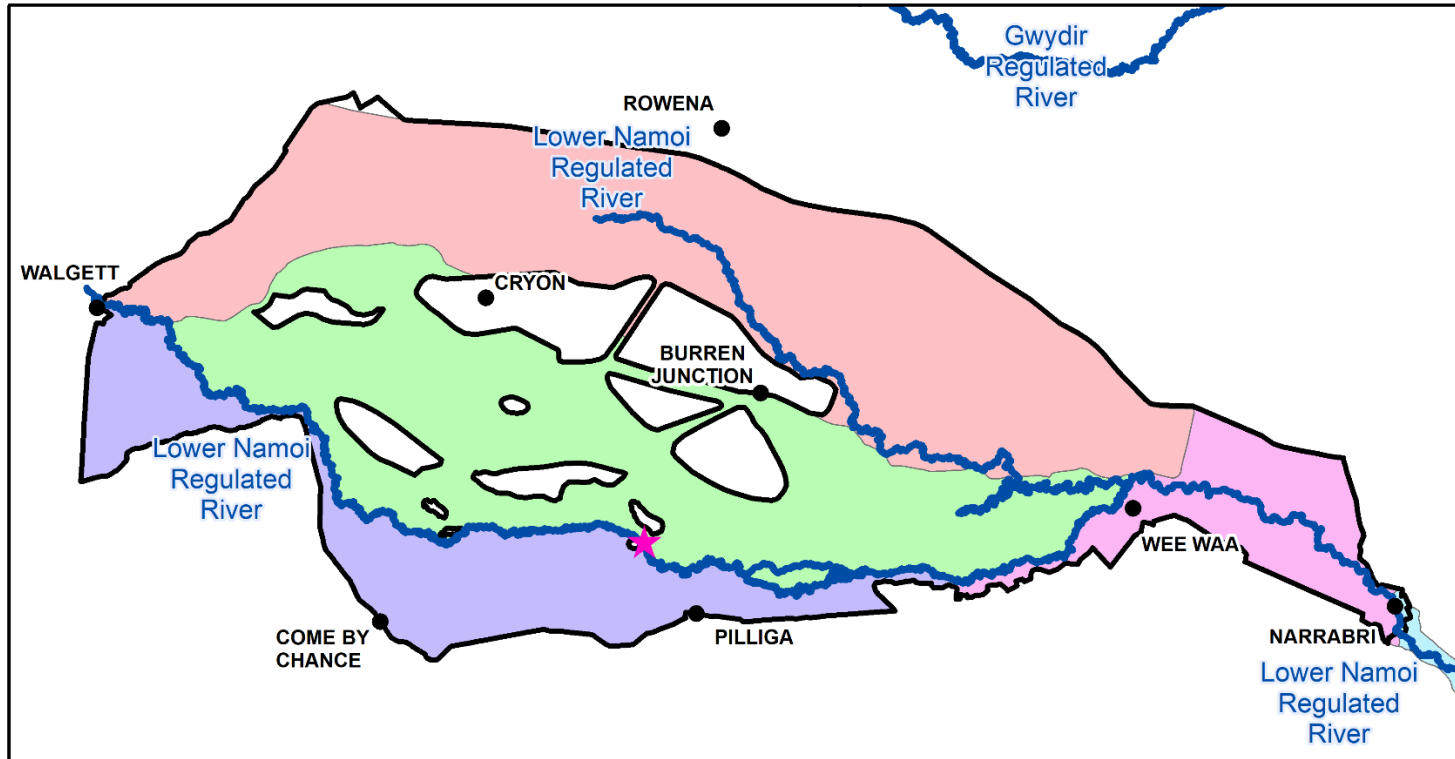
1. Establishing management zones that largely reflect one or more existing unregulated river water source boundaries (Figures 3, 4 and 5)
2. No trade between management zones
3. No nomination of works located outside the Lower Namoi Valley floodplain, Upper Namoi Valley Floodplain or Gwydir Valley Floodplain by a floodplain harvesting (regulated river) access licence

Figure 4. Lower Namoi Valley Floodplain proposed management zones



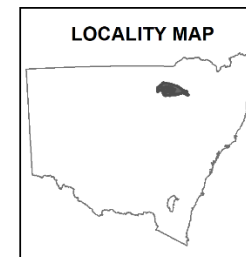
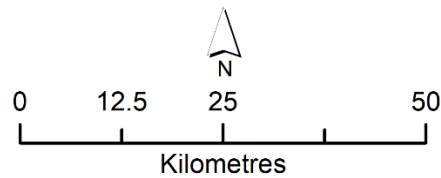
Planning and Environment

## Lower Namoi Valley Floodplain



### Legend

- Bugilbone Gauge (419021)
- Town
- Lower Namoi Regulated River Water Source
- Lower Namoi Valley Floodplain
- Baradine Etoo Management Zone
- Lower Namoi Management Zone
- Maules Eulah Management Zone
- Other (Lower Namoi) Management Zone
- Pian Creek Management Zone



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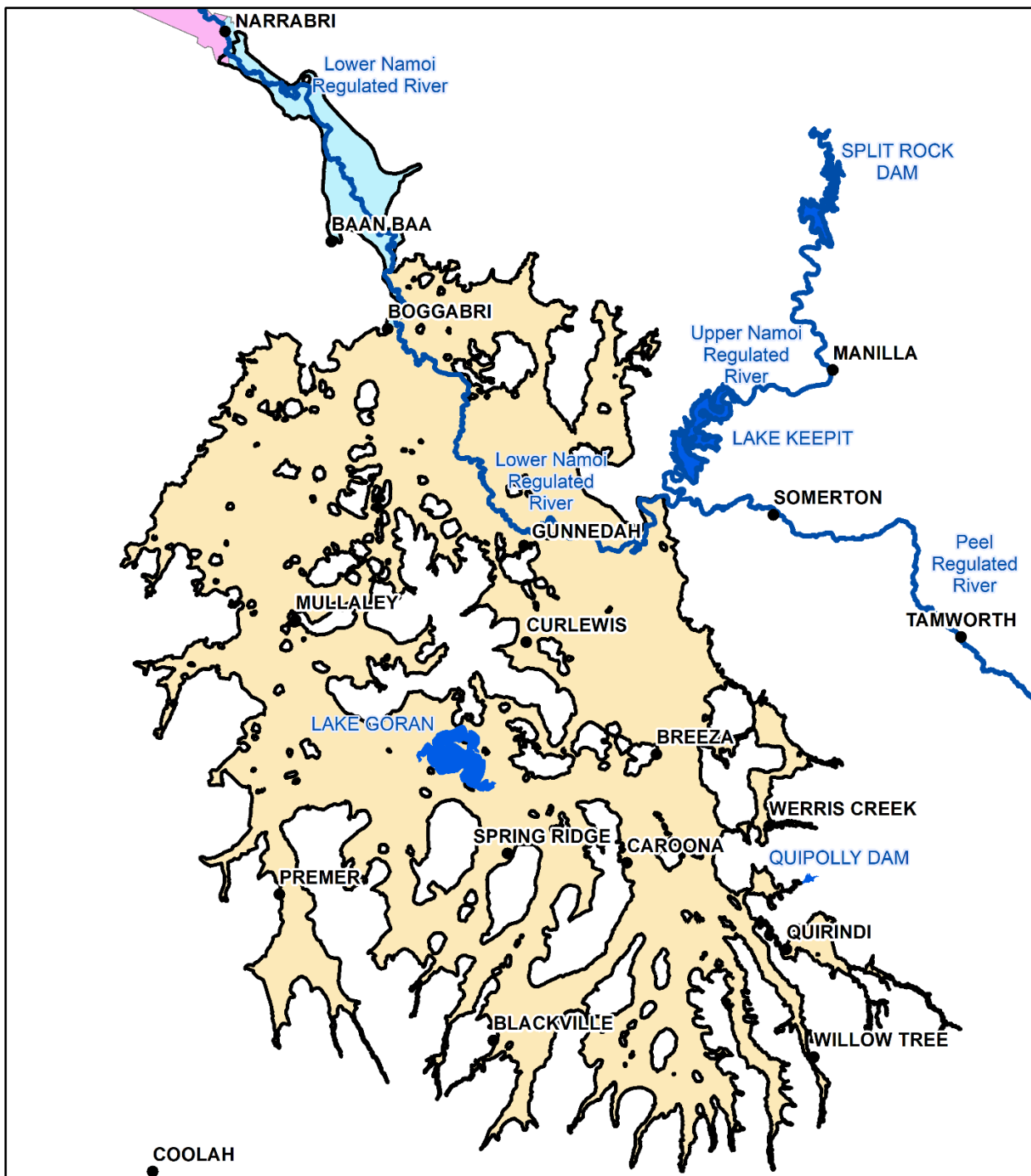
Completion Date: 7/11/2022

Figure 5. Upper Namoi Valley Floodplain proposed management zones



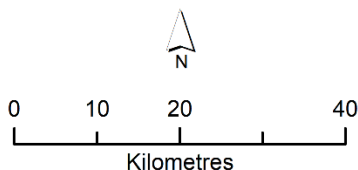
Planning and Environment

### Upper Namoi Valley Floodplain



**Legend**

- Town
- Regulated River Water Sources
- Reservoirs and Lakes
- Upper Namoi Valley Floodplain
- Maules Eulah Management Zone
- Other (Lower Namoi) Management Zone
- Other (Upper Namoi) Management Zone



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Completion Date: 7/11/2022

## 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 Lower Namoi Valley Floodplain 2020* as management zones AD and D (Figure 6), in the *Floodplain Management Plan for the Upper Namoi Valley Floodplain 2019* as management zones AD and D (Figure 7) and in the *Floodplain Management Plan for the Gwydir Valley Floodplain 2016* as management zones A and D (Figure 3).

To protect the identified assets in management zones A, AD and D, we propose a rule for floodplain harvesting (regulated 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 (regulated river) access licences in the Lower Namoi Regulated River Water Source is no nomination of new works located in management zones A, AD or D, as specified in the relevant floodplain management plan

## 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, AD or D of the relevant floodplain management plan, 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.

Further, the *Floodplain Management Plan for the Lower Namoi Valley Floodplain 2020* and *Floodplain Management Plan for the Upper Namoi Valley Floodplain 2019* identify areas of the floodplains characterised by overland flow paths without defined channels and banks as management zones AID. Rules in the floodplain management plans require that flood works proposed to be located in these areas maintain an appropriate flood flow corridor.

To ensure that the intent of the current rule for flood works proposed to be located in management zone AID is maintained, it is proposed to prevent a water supply work approval being granted for works located in management zone AID if the work is considered to also be a flood work and a flood work approval has not been obtained.



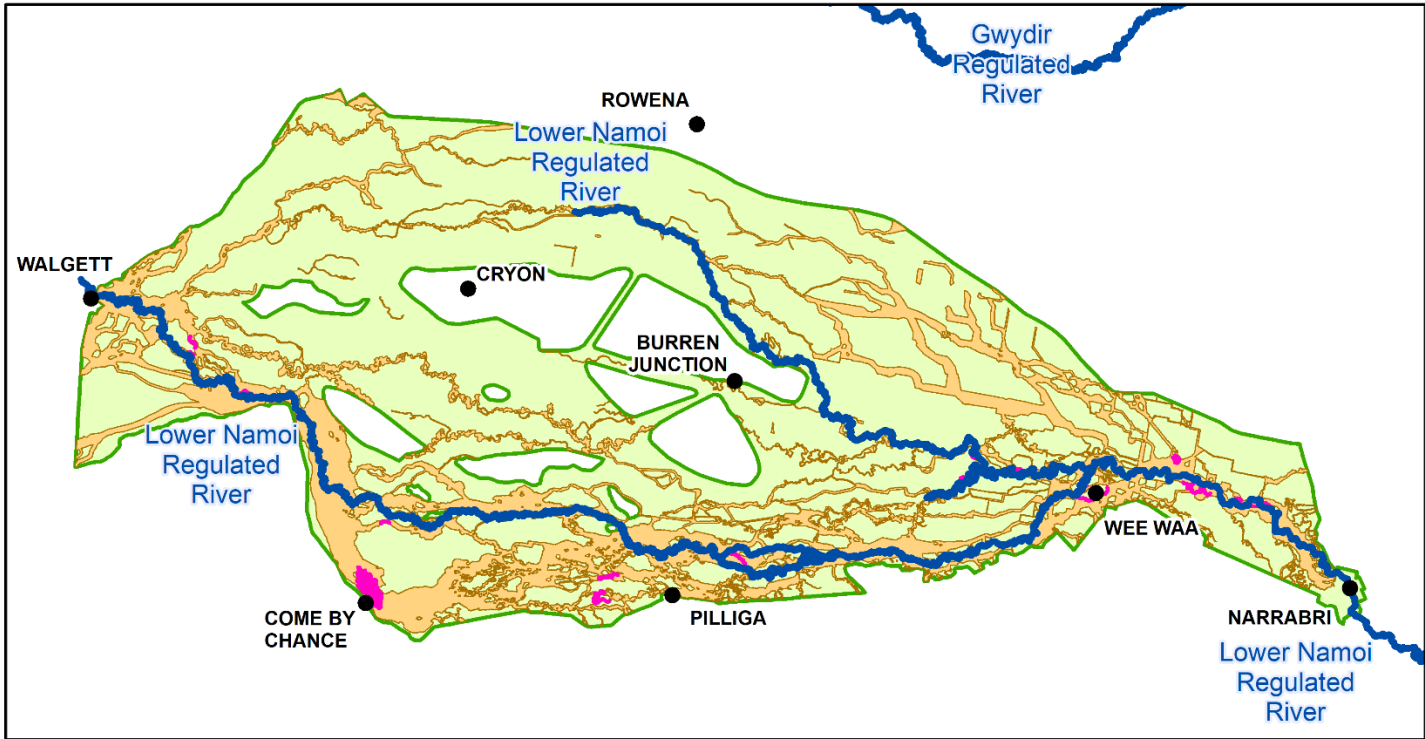
Proposed rules for water supply works nominated by a floodplain harvesting (regulated river) access licences in the Lower Namoi Regulated River Water Source:

1. No new works constructed in management zones A, AD or D, as specified in the relevant floodplain management plan, and
2. No modification of existing works located in management zones A, AD or D in the relevant floodplain management plan if the modification would result in an increase in capacity for that work, and
3. No new or modified works outside management zones A, AD and D in the relevant floodplain management plan if the construction or modification would result in an increased rate of take for works located in these management zones
4. No new works located management zone AID, as specified in the relevant floodplain management plan, if the work is also a flood work and a flood work approval has not been obtained.

Figure 6. Lower Namoi FMP management zones AD and D

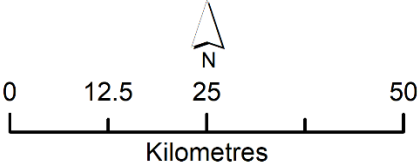


### Lower Namoi Valley Floodplain



**Legend**

- Town
- Lower Namoi Regulated River Water Source
- FMP Management Zone AD
- FMP Management Zone D
- Lower Namoi Valley Floodplain



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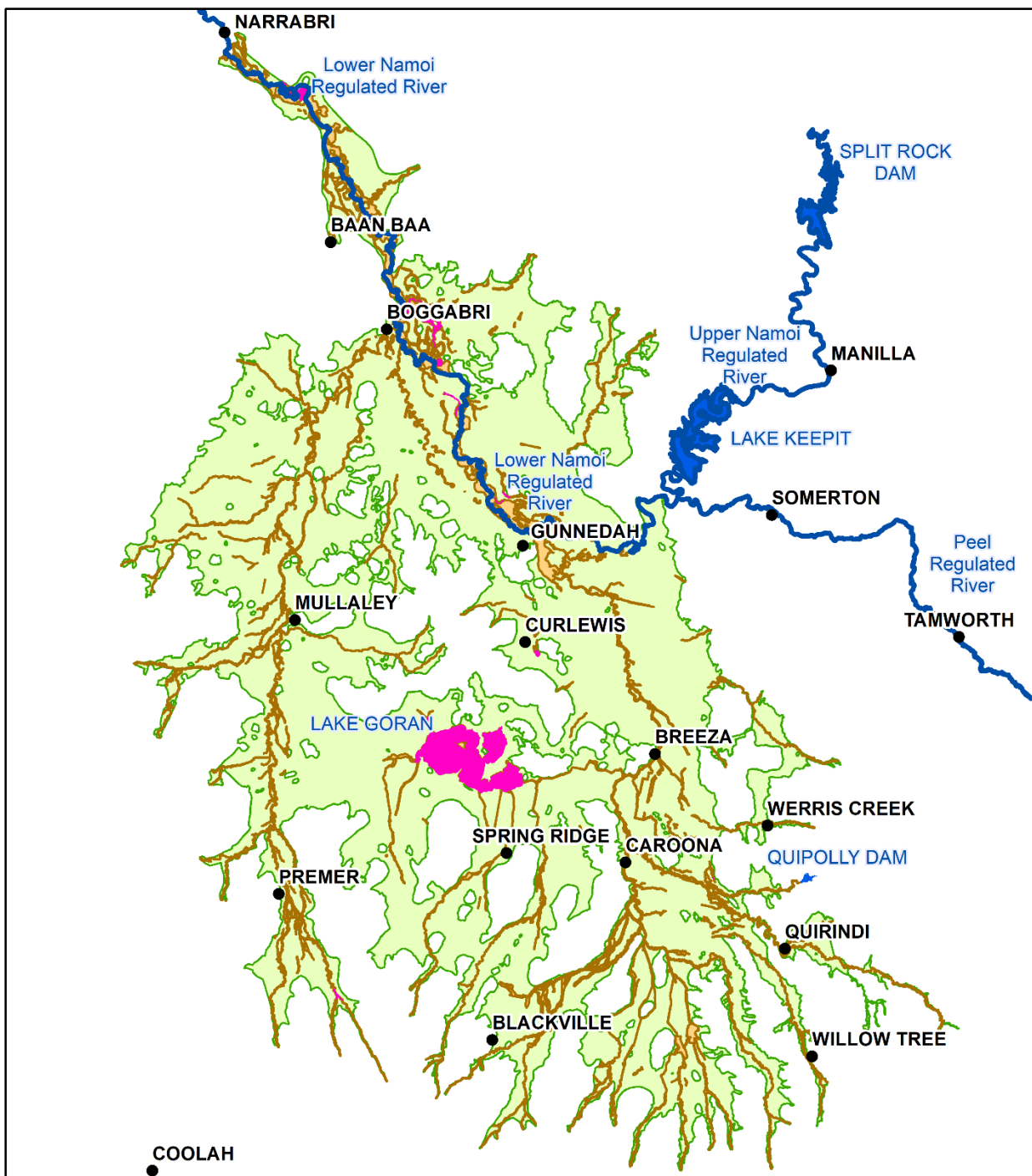
Completion Date: 7/11/2022

Figure 7. Upper Namoi FMP management zones AD and D



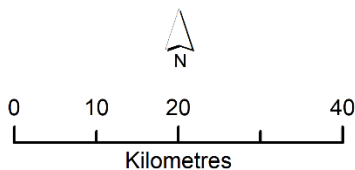
Planning and Environment

### Upper Namoi Valley Floodplain



**Legend**

- Town
- Regulated River Water Sources
- FMP Management Zone AD
- FMP Management Zone D
- Reservoirs and Lakes
- Upper Namoi Valley Floodplain



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## Access rules

Access rules are specified in water sharing plans for the purpose of environmental protection. In the *Water Sharing Plan for the Upper and Lower Namoi Regulated River Water Source 2016* there are access rules specified for supplementary water access licences. These are summarised in Table 7.

Table 7. Existing access rules for supplementary water access licences

Access rule	Description
Limit on volume taken	<p>This rule limits the amount that can be taken under supplementary access licences to:</p> <ul style="list-style-type: none"> <li>• 10% of the supplementary event volume between 1 July and 31 October.</li> <li>• 50% of the supplementary event volume between 1 November and 30 June.</li> </ul> <p>This ensures that the remained of the supplementary event volume is reserved for the environment.</p>
Flow targets in the Barwon–Darling	<p>This rule restricts supplementary access, when required, to ensure outflows contribute to meeting flow targets specified for the Barwon–Darling Unregulated River Water Source. This rule is part of an overarching suite of rules designed to improve connectivity between the northern valleys and maintain flows into the Barwon–Darling.</p>

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 that are linked to water levels in Menindee Lakes and applied to floodplain harvesting access licences across the northern Basin.

Proposed access rule for floodplain harvesting (regulated river) access licences in the Lower Namoi Regulated River Water Source:

Water cannot be taken when there is less than 195 GL stored in the Menindee Lakes system except during periods when there is a flow of at least 4,500 ML/day in the Namoi River at the Bugilbone gauge (419021 – see Figure 1).

The NSW Government has committed through the Floodplain Harvesting Action Plan to improving our river system models to better represent return flows from the floodplain to the rivers and to use this as a tool 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 at least 2025.

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

## 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 Upper and Lower Namoi Regulated River Water Source 2016*. 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 Lower Namoi Regulated River Water Source:

1. An amendment provision to add, modify or remove provisions for floodplain harvesting (regulated 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 Namoi Unregulated Rivers Water Sources.

3. An amendment provision that requires a review of the access rules for floodplain harvesting (regulated river) access licences prior to 30 June 2025. This review would include obtaining and publishing independent expert advice on the adequacy of the access rules and seeking public comment on that advice. Based on this process, changes could be made to the access rules.

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## Floodplain harvesting rules in the Namoi Unregulated River Water Sources

Current estimations show that a total of approximately 53 floodplain harvesting (unregulated river) access licences will be issued in the following water sources:

- Bluevale Water Source,
- Bundock Water Source,
- Coxs Creek Water Source,
- Eulah Creek Water Source,
- Lake Goran Water Source,
- Mooki River Water Source,
- Pian Creek Water Source,
- Quirindi Creek Water Source,

- Rangira Creek Water Source,
- Werris Creek Water Source.

The process for determining floodplain harvesting (unregulated river) access licences is the same as that used to determine unregulated river access licences. As the entitlement determination process is the same, it is proposed to apply the same rules to floodplain harvesting (unregulated river) access licences as currently exist for unregulated river access licences in the relevant water source and/or management zone, where appropriate. This will ensure consistency, equality of rights and access to the water source while avoiding any unintended consequences such as restricting the take of localised rainfall.

Rules that are specifically designed to protect water flowing within rivers and streams, and not flows on the floodplain, will not be applied to floodplain harvesting (unregulated river) access licences.

## Account management

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 unregulated river access licences, as specified in the *Water Sharing Plan for the Namoi and Peel Unregulated Rivers Water Sources 2012*, are summarised in Table 8 below for context.

Table 8. Existing account management rules in the Namoi Unregulated

Licence category	Take limit	Carryover limit
Unregulated river	3 ML per unit share +/- trade over three consecutive years	1 ML per unit share
Unregulated river (special additional flow)	1 ML per unit share +/- trade in any year	Not permitted
Local water utility	100% +/- trade in any year	Not permitted
Domestic and stock	100% +/- trade in any year	Not permitted

It is proposed to apply the same take limit to floodplain harvesting (unregulated river) access licences. However, it not proposed to apply the carryover limit. Instead, an account limit of 3 ML per unit share is proposed. This would allow the accounting framework to align with the frequency of access to flood flows.

Proposed account management rules for floodplain harvesting (unregulated river) access licences in the Namoi Unregulated River Water Sources:

1. Take limit: 3 ML per unit share over 3 consecutive years.
2. Account limit: 3 ML per unit share at any time

## Available water determinations

The *Water Sharing Plan for the Namoi and Peel Unregulated Rivers Water Sources 2012* provides for a maximum available water determination of 1 ML per unit share to be made for unregulated river access licences at the start of each water year. It is proposed to align floodplain harvesting (unregulated river) access licences with this provision.

In considering the initial available water determination to be applied to floodplain harvesting (unregulated river) access licences, the recent flood events provide justification to propose 1 ML per unit share.

Proposed available water determination rules for floodplain harvesting (unregulated river) access licences in the Namoi Unregulated River Water Sources:

1. An initial available water determination of 1 ML per unit share.
2. An on-going available water determination of 1 ML per unit share every year after the first year (or a lesser amount to ensure compliance with the extraction limit).

## Permanent trade

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.

Existing permanent trade rules specified in the *Water Sharing Plan for the Namoi and Peel Unregulated River Water Sources 2012* focus on trade between management zones and some water sources. More detail can be found in Part 10 of the *Water Sharing Plan for the Namoi and Peel Unregulated River Water Sources 2012*.

The department proposes to apply the trade rules that currently exist for unregulated river access licences to floodplain harvesting (unregulated river) access licences. This will ensure consistency, equality of rights and access to the water source.

In addition to the existing trade rules, the department proposes a permanent trade rule that will restrict trade to within the Lower Namoi Valley floodplain and Upper Namoi Valley Floodplain. This will ensure that floodplain harvesting (unregulated river) access licences only take water within these floodplains. This restriction is consistent with the implementation of the NSW Floodplain Harvesting Policy and licence determination process. The Lower Namoi Valley floodplain and Upper Namoi Valley Floodplain were established under the *Water Management (General) Regulation 2018* and are shown in Figures 1 and 2, respectively.

Consistent with floodplain harvesting (regulated river) access licences, consideration of identified areas with high environmental value and/or cultural values has been undertaken. These areas are identified through the designation of management zones AD and D in the *Floodplain Management Plan for the Lower Namoi Valley Floodplain 2020* and *Floodplain Management Plan for the Upper Namoi Valley Floodplain 2019* (Figures 6 and 7, respectively).



To protect the identified assets in management zones AD and D, the intent is to develop 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 nor increase in number. Put simply, the rules will cap the capacity for or rate of diversion in these areas. The rules will not impact works that are currently installed.

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.

Trade rules in the Namoi Unregulated River Water Sources are being reviewed as part of the upcoming plan remake. Amendment provisions have been included to support change to the proposed trade rules as a result of that review.

Proposed permanent trade rules for floodplain harvesting (unregulated river) access licences in the Namoi Unregulated River Water Sources:

1. Rules that reflect existing trade rules for unregulated river access licences.
2. Permanent trade of a floodplain harvesting (unregulated river) access licence restricted to within the Lower Namoi Valley Floodplain and Upper Namoi Valley Floodplain.
3. No nomination of works located outside the Lower Namoi Valley Floodplain and Upper Namoi Valley Floodplain.
4. No new nomination of works located in management zones AD or D of the relevant floodplain management plan by a floodplain harvesting (unregulated river) access licence

## New or amended water supply work approvals

A series of rules has been developed 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 AD or D of the relevant floodplain management plan and the water supply work approval is nominated by a floodplain harvesting access licence.

The intended outcome of the proposed rule is to restrict growth in the take capacity of works located within areas of identified environmental and/or cultural value.

Further, the *Floodplain Management Plan for the Lower Namoi Valley Floodplain 2020* and *Floodplain Management Plan for the Upper Namoi Valley Floodplain 2019* identify areas of the floodplains characterised by overland flow paths without defined channels and banks as management zones AID. Rules in the floodplain management plans require that flood works proposed to be located in these areas maintain an appropriate flood flow corridor.

To ensure that the intent of the current rule for flood works proposed to be located in management zone AID is maintained, it is proposed to prevent a water supply work approval being granted for works located in management zone AID if the work is considered to also be a flood work and a flood work approval has not been obtained.



Proposed rules for water supply works nominated by a floodplain harvesting (unregulated river) access licences in the Namoi Unregulated River Water Sources:

1. No new works constructed in management zones AD or D of the relevant floodplain management plan, and
2. No modification of existing works located in management zones AD or D of the relevant floodplain management plan if the modification would result in an increase in capacity for that work, and
3. No new or modified works outside management zones AD and D if the construction or modification would result in an increased rate of take for works located in these management zones, and
4. No new works located management zone AID of the relevant floodplain management plan if the work is also a flood work, and a flood work approval has not been obtained.

## Amendment provisions

A water sharing plan may be amended under section 45 of the *Water Management Act 2000*. To improve transparency and confidence among stakeholders, it is proposed to include specific amendment provisions in relation to floodplain harvesting (unregulated river) access licences in the *Water Sharing Plan for the Namoi and Peel Unregulated Rivers Water Sources 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 Namoi Unregulated River Water Sources:

1. An amendment provision to allow for access rules to be introduced:
  - (a) to allow flexibility should environmental flows be targeted to create overbank flow, or
  - (b) in response to monitoring, evaluation and reporting outcomes of environmental benefits from licencing floodplain harvesting, or
  - (c) in response to improved understanding of the influence of floodplain harvesting on downstream flows.
  - (d) 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 Namoi Unregulated River Water Sources.

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## Interaction of water sharing plan rules and modelling

The *Floodplain Harvesting entitlements for Namoi Regulated River system, Model Scenarios Report* describes how the Namoi river system model (Namoi model) was used to re-estimate the long-term diversion limit (plan limit) set in the *Water Sharing Plan for the Upper and Lower Namoi Regulated River Water Source 2016*, 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 Namoi, this reflects the level of development and management conditions in place at 1999/00
- 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 Namoi model and run for the period of climate record (1889-2020). 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 9.

Table 9. 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
Local water utility, domestic and stock, and regulated river (high security)	2.6	2.6	2.6
Regulated river (general security)	142.0	142.0	144.0
Supplementary	34.4	42.1	32.3
Floodplain harvesting (excludes exempt rainfall runoff)	46.5	51.3	46.0
<b>TOTAL</b>	<b>225.6</b>	<b>238.3</b>	<b>225.2</b>

The results show that there has been significant growth in supplementary access and floodplain harvesting, and no significant increase in general security water use. Supplementary access has increased by 7.7 GL/year (22%) and, with the tailwater exemption in place, floodplain harvesting has

increased by 4.8 GL/year (10%) above that for the Plan Limit Scenario. The overall growth in water use for the regulated river system has been 12.7 GL/year (5.6%).

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## Interaction of water sharing plan rules and environmental benefits

The *Environmental outcomes of implementing the Floodplain Harvesting Policy in the Namoi Valley* report considers the predicted hydrological and environmental benefits (that is, ecological responses) to changed floodplain harvesting volumes in the Namoi 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 minimal change in achieving the environmental flow requirements of native vegetation, native fish and waterbirds in across the Namoi floodplain in the scenario modelled with licencing of floodplain harvesting compared to without licencing of floodplain harvesting. There are some small improvements (<10%) in achieving these requirements in specific breakout zones, primarily those between Wee Waa and the Bugilbone flow gauge.

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

In addition to assessing the predicted environmental benefits of licencing floodplain harvesting, it is important to undertake on-going monitoring, evaluation, and reporting (MER) of the environmental benefits into the future. A MER program has been established specific to floodplain harvesting.

This program will assess the on-going environmental benefits associated with licencing of floodplain harvesting and inform the approach to adaptive management.

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## Interaction of water sharing plan rules and cultural outcomes

A report is being developed to outline the identified cultural assets and values in the Lower Namoi valley floodplain and Upper Namoi 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 Namoi valley. Note that a similar report has already been published for the Gwydir and Border Rivers Floodplain areas.

The report will focus on areas where identified cultural assets and values in the Lower Namoi valley floodplain and Upper Namoi 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 Lower Namoi Valley Floodplain 2020*, *Floodplain Management Plan for the Upper Namoi Valley Floodplain 2019* and the *Namoi Surface Water Resource Plan*.

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## 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 Upper and Lower Namoi Regulated River Water Source 2016* and *Water Sharing Plan for the Namoi and Peel Unregulated Rivers Water Sources 2012*. As part of this consultation, we will provide a formal submission period of 60 days. During this period, you can make a submission giving feedback on the proposed rules. The formal submission period will be from **1 December 2022 until 29 January 2023**, inclusive.

We will host a webinar for all stakeholders and the public followed by a face-to-face meeting in Wee Waa.

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## Amendments to water resource plans

The *Namoi Surface Water Resource Plan*, currently awaiting accreditation, will require amendment once we have issued floodplain harvesting access licences in the *Lower Namoi Regulated River Water Source* and *Namoi Unregulated River Water Sources*. 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 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 *Namoi 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 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 access licences in the *Namoi*, any proposed changes to the *Namoi 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*.

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## 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 10.

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 10, 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 10, 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 10. 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 Namoi Surface Water Resource Plan

Table 11. Summary of proposed amendments to the Namoi Surface WRP

Water resource plan reference	<i>Basin Plan 2012</i> 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 Upper Namoi and Lower Namoi Regulated River Water Sources 2016</i> and <i>Water Sharing Plan for the Namoi and Peel Unregulated Rivers Water Sources 2012</i> following the issue of floodplain harvesting access licences.</p> <p>Floodplain harvesting access licences will be issued in the Lower Namoi Regulated River Water Source and Namoi Unregulated River Water Sources. Therefore, amendment is required for the <i>Water Sharing Plan for the Upper Namoi and Lower Namoi Regulated River Water Sources 2016</i> and <i>Water Sharing Plan for the Namoi and Peel Unregulated Rivers Water Sources 2012</i>.</p> <p>Remove reference to floodplain harvesting in text immediately underneath 'Box 1-4. Circumstances under which this Plan may be amended'.</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 Namoi SDL resource unit in a water accounting period. The <i>Water Sharing Plan for the Upper Namoi and Lower Namoi Regulated River Water Sources 2016</i> and <i>Water Sharing Plan for the Namoi and Peel Unregulated Rivers Water Sources 2012</i> will specify these rules.</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 11 to include number of access rights, total volume (ML per unit share) and mandatory conditions for floodplain harvesting (regulated river) access licences in the Lower Namoi Regulated River Water Source.</p> <p>Update row 17 to include number of access rights, total volume (ML per unit share) and mandatory conditions for floodplain harvesting (unregulated river) access licences in the Namoi Unregulated River Water Sources</p>

Water resource plan reference	<i>Basin Plan 2012</i> 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 Upper Namoi and Lower Namoi Regulated River Water Sources 2016</i> and <i>Water Sharing Plan for the Namoi and Peel Unregulated Rivers Water Sources 2012</i> that ensure the quantity of water taken under floodplain harvesting 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 first blue box.
5.4.4 Floodplain harvesting	Non-accredited text	Amend text to reflect the issuing of floodplain harvesting (unregulated river) access licences in the Namoi Unregulated River Water Sources and floodplain harvesting (regulated river) access licences in the Lower Namoi Regulated River Water Source, and rules associated with these licences included in the <i>Water Sharing Plan for the Upper Namoi and Lower Namoi Regulated River Water Sources 2016</i> and <i>Water Sharing Plan for the Namoi and Peel Unregulated Rivers Water Sources 2012</i> .
5.4.4 Floodplain harvesting further information	Non-accredited text	Remove this subheading and associated explanatory text.
5.4.7 Floodplain harvesting compliance	Non-accredited text	<p>Amend text to reflect compliance measures for floodplain harvesting 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 access licences.</p>
5.6 Annual permitted take	10.10 10.12	<p><b>Blue-boxed text</b></p> <p>Remove last paragraph that refers to anticipated amendment of the water resource plan, BDL and annual permitted take models.</p> <p>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.</p>



Water resource plan reference	<i>Basin Plan 2012</i> reference	Proposed amendment
5.7 Interception activities	10.23 10.24 10.25	<b>Blue-boxed text</b> Remove reference to floodplain harvesting as an interception activity
5.7.4 Floodplain harvesting	Non-accredited text	Update text to reflect implementation of the NSW Floodplain Harvesting Policy in the Namoi valley, issuing of floodplain harvesting (unregulated river) access licences in the Namoi Unregulated River Water Sources and floodplain harvesting (regulated river) access licences in the Lower Namoi Regulated River Water Source, and rules associated with these licences included in the <i>Water Sharing Plan for the Upper Namoi and Lower Namoi Regulated River Water Sources 2016</i> and <i>Water Sharing Plan for the Namoi and Peel Unregulated Rivers Water Sources 2012</i> .
5.7.4 Floodplain harvesting	10.23 10.24 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 Namoi Unregulated River Water Sources and floodplain harvesting (regulated river) access licences in the Lower Namoi Regulated River Water Source.  Also insert reference for rules for floodplain harvesting access licences in the <i>Water Sharing Plan for the Upper Namoi and Lower Namoi Regulated River Water Sources 2016</i> and <i>Water Sharing Plan for the Namoi and Peel Unregulated Rivers Water Sources 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.



Water resource plan reference	<i>Basin Plan 2012</i> reference	Proposed amendment
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 (unregulated river) access licences in the Namoi Unregulated River Water Sources and floodplain harvesting (regulated river) access licences in the Lower Namoi Regulated 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 Namoi Unregulated River Water Sources and floodplain harvesting (regulated river) access licences in the Lower Namoi Regulated River Water Source.  Update footnote to clarify finalisation of the <i>Floodplain Harvesting Measurement Policy</i> .

Water resource plan reference	<i>Basin Plan 2012</i> reference	Proposed amendment
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 Namoi Unregulated River Water Sources and floodplain harvesting (regulated river) access licences in the Lower Namoi Regulated River Water Source.  Update table to ensure that floodplain harvesting is included in the entitlements in the Namoi SDL resource unit annual permitted take model include floodplain harvesting.
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 Namoi modelling reports.