

BASIN PLAN IMPLEMENTATION

Intersecting Streams Surface Water Resource Plan

SW13 Water Resource Plan Area

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## Acknowledgement of Traditional Owners

The New South Wales Government proudly acknowledges the Aboriginal community of NSW and their rich and diverse culture and pays respect to their Elders past, present and future.

NSW acknowledges Aboriginal people as Australia's First Peoples practising the oldest living culture on earth and as the Traditional Owners and Custodians of the lands and waters.

We acknowledge that the people of the Barkandji and Maljangapa, Budjiti, Euahlayi, Gomeroi/Kamilaroi/Gamilaroi/Gamilaraay, Guwamu/Kooma, Kunja, Murrawarri and Ngemba Nations hold a significant connection to the lands to which the Intersecting Streams Water Resource Plan Area applies.

The Intersecting Streams Water Resource Plan Area is of spiritual, cultural and economic importance to the First Nation people and NSW recognises the connection of the people of these nations to water.

We recognise the intrinsic connection of Traditional Owners to country and acknowledge their contribution to the management of the Intersecting Streams Water Resource Plan Area landscape and natural resources.

The Department of Planning and Environment understands the need for consultation and inclusion of Traditional Owner knowledge, values and uses in water planning to ensure we are working towards equality in objectives and outcomes.

The Department of Planning and Environment is committed to continuing relationships and building strong partnerships with our First Nation People.

We thank the Elders, representatives of the Barkandji and Maljangapa, Budjiti, Euahlayi, Gomeroi/Kamilaroi/Gamilaroi/Gamilaraay, Guwamu/Kooma, Kunja, Murrawarri and Ngemba Nations and Aboriginal community who provided their knowledge throughout the planning process.

## Artist's Acknowledgement

As a proud Tubba-gah man from Dubbo in the Wiradjuri Nation, I respectfully acknowledge all nations which the NSW DPIE operates on. I acknowledge this artwork will be viewed off my home country of the Tubba-gah people and therefore ask you accept this artwork as an offering on behalf of my family as a gesture of continuing the legacy of the knowledge of our ancestors.

I would also like to pay respect to all traditional custodians of the country whose ancestral lands we all walk upon. I thank the Elders for their wisdom, courage and sacrifice and pledge my commitment to preserving their legacy for future generations.

- Nathan Peckham

## Glossary

Abbreviation	Description
AAT	Annual Actual Take
ANZECC	Australian and New Zealand Environment and Conservation Council
APT	Annual Permitted Take
AWD	Available Water Determination
BCD	The Department's Biodiversity and Conservation Division (Formerly NSW Office of Environment and Heritage (OEH))
BDL	Baseline Diversion Limit
BLR	Basic Landholder Rights
BWS	Basin-wide Environmental Watering Strategy
CEWH	Commonwealth Environmental Water Holder
CEWO	Commonwealth Environmental Water Office
Cth	Commonwealth
DWMS	Drinking Water Management System
EMPLAN	NSW State Emergency Management Plan
EWR	Environmental Watering Requirements
HEVAE	High Ecological Value Aquatic Ecosystem
HEW	Held Environmental Water
IAP2	International Association of Public Participation
IPART	Independent Pricing and Regulatory Tribunal
IQQM	Integrated Quantity and Quality Model
LLS	Local Land Services (NSW)
LTAAEL	Long-Term Average Annual Extraction Limit
LTWP	Long-Term Water Plan
LWU	Local Water Utility
MAR	Managed Aquifer Recharge
MDBA	Murray–Darling Basin Authority
MER Plan	Monitoring, Evaluation and Reporting Plan

MLDRIN	Murray Lower Darling Indigenous Nations
NBAN	Northern Basin Aboriginal Nations
NRAR	Natural Resources Access Regulator
PEA	Priority Environmental Asset
PEF	Priority Ecosystem Function
PEW	Planned Environmental Water
Ramsar	Ramsar Convention on Wetlands of International Importance
SDL	Long-Term Average Sustainable Diversion Limit
SEED	NSW Sharing and Enabling Environmental Data (Portal)
WMA 2000	Water Management Act 2000
WQMP	Water Quality Management Plan (combines the NSW Water Quality and the NSW Salinity Management Plan)
WRP	Water Resource Plan
WRPA	Water Resource Plan Area
WSP	Water Sharing Plan

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## How to read this document

This document is set out with the following structure and form:



### Water resource plan body

This water resource plan (WRP) has eight sections:

- Introduction
- Identification of WRP area and other matters
- Risks to water sources
- Environmental water, cultural flows and sustainable management
- Take for consumptive use
- Water quality management
- Measuring and monitoring
- Information used to prepare the WRP.

### Grey boxed text for Basin Plan components

Grey boxed text is included at the start of each section and details the Basin Plan components addressed in that section.

### Blue boxed text for MDBA accreditation

Blue boxed text in each section is provided for accreditation. This text may refer to all or part of an attached schedule, and in these instances, that schedule or part thereof is also provided for accreditation.

### **Clear boxed text for extracts**

Clear boxed text provides extracts of legislation, excerpts from quoted texts or other summarised information.

### Schedules:

- contain information that supports the WRP body
- parts of Schedules directly referenced in blue-boxed text within the WRP body are intended for accreditation

### **Appendices:**

- contain information that supports the WRP body
- are not intended for accreditation

Section 1.5 provides further explanation.

## 1. Introduction

### This section includes the following components of the Basin Plan

- 10.04 Form of water resource plan
- 10.06 Responsible persons
- 10.07 and 10.53 Consultation
- 10.52 Objectives and outcomes based on Indigenous values and uses
- 10.47 and 10.48 Review and amendment

## 1.1. Purpose

The purpose of the Intersecting Streams Surface Water Resource Plan (this Plan or the Intersecting Streams WRP) is to set out how NSW will meet its obligations under the Murray– Darling Basin Plan 2012 (Basin Plan) in the Intersecting Streams Surface Water Resource Plan Area (Intersecting Streams WRPA or this WRPA).

This Plan addresses the requirements of Chapter 10 of the Basin Plan. A WRP must comply with these requirements under Division 2 of Part 2 of the *Water Act 2007* (Cth).

## 1.2. Status and scope

This Plan operates in accordance with Division 2 of Part 2 of the *Water Act 2007* (Cth) and the Basin Plan and applies to all surface water resources in the Intersecting Streams SDL resource unit (SS17) within the Intersecting Streams WRPA (SW13). This Plan meets the NSW Government's Basin Plan water resource planning obligations shown in Table 1-1.

Ch. 10 Basin Plan Part	Matters addressed
2	Identification of the Intersecting Streams WRPA and other matters
3	Incorporation and application of the long-term annual diversion limit for the SDL resource unit in the Intersecting Streams WRPA
4	Sustainable use and management of water resources of the Intersecting Streams Surface WRPA
5	Interception activities in the Intersecting Streams Surface WRPA
6	Planning for environmental watering
7	Water quality objectives for the Intersecting Streams Surface WRPA
8	Trade of water rights in the Intersecting Streams Surface WRPA
9	Approaches to addressing risks to the water resources of the Intersecting Streams Surface WRPA
10	Measuring and monitoring in the Intersecting Streams Surface WRPA
11	Reviews of this Plan
12	Information used to prepare the Intersecting Stream Surface WRP

### Table 1-1. Chapter 10 Basin Plan obligations for the Intersecting Streams WRP.

Ch. 10 Basin Plan Part	Matters addressed
13	Extreme events
14	Aboriginal values and uses in the Intersecting Streams Surface WRPA

## 1.3. Objectives and guiding principles

This Plan recognises the objectives in Chapter 5 of the Basin Plan. The Basin Plan outcomes and objectives are refined for the Intersecting Streams WRPA through:

- the objectives in Part 2 of the Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011 (Schedule A to this Plan)
- the objectives of the Intersecting Streams Water Quality Management Plan (Schedule G to this Plan).

NSW water sharing plans (WSPs) are regulatory instruments under the NSW *Water Management Act 2000* (WMA 2000), and specific provisions in these are fundamental components of this Plan. These WSP objectives are guided by the following under the WMA 2000:

- Section 3, Objects and section 5, Water Management Principles
- Part 3, Requirements of Management Plans
- The access licence dealing principles established in accordance with section 71Z of the WMA 2000.

Additionally, this Plan has regard to the objective identified in section 1.2 of the 2017 Intergovernmental Agreement on Implementing Water Reform in the Murray Darling Basin. (https://federation.gov.au/about/agreements/intergovernmental-agreement-implementing-waterreform-murray-darling-basin)

The objectives for the Basin as a whole, as specified in the Basin Plan, are shown in Box 1-1.

### Overarching objectives

- to give effect to relevant international agreements through the integrated management of Basin water resources
- to establish a sustainable and long-term adaptive management framework for the Basin water resources, that takes into account the broader management of natural resources in the Murray–Darling Basin
- to optimise social, economic and environmental outcomes arising from the use of Basin water resources in the national interest
- to improve water security for all uses of Basin water resources.

### Outcomes

- communities with sufficient and reliable water supplies that are fit for a range of intended purposes, including domestic, recreational and cultural use
- productive and resilient water-dependent industries, and communities with confidence in their long-term future
- healthy and resilient ecosystems with rivers and creeks regularly connected to their floodplains and, ultimately, the ocean.

### Box 1-1. Basin Plan objectives and outcomes recognised by this WRP.

## 1.3.1. Objectives and outcomes based on Aboriginal peoples' values and uses

The Intersecting Streams WRPA is located within the traditional lands of, and is significant to, the Barkandji and Maljangapa, Budjiti, Euahlayi, Gomeroi/Kamilaroi/Gamilaroi/Gamilaraay, Guwamu/Kooma, Kunja, Murrawarri and Ngemba Nations and traditional owners.

Chapter 10 requires that objectives and outcomes of Aboriginal people relating to the management and use of water resources in a WRPA are identified and have regard to the Aboriginal peoples' values and uses of the water resources of the WRPA. This information is to be determined *"through consultation with relevant Indigenous organisations"*.

The consultation process undertaken when developing this Plan was informed by the MDBA guidelines for meeting the Basin Plan (Chapter 10) requirements in relation to Aboriginal peoples' objectives and outcomes for managing water resources. The consultation process is further explained in section 1.7 below, in section 2.4 of Schedule C to this Plan (Consultation Report), and in each of the Nations reports in Attachments B, C and E to H of Schedule C.

NSW engaged with the Barkandji and Maljangapa Traditional Owners through the Barkandji Native Title Group Aboriginal Corporation, who advised that Barkandji and Maljangapa Traditional Owners should be consulted together. NSW also engaged with the Gomeroi/Kamilaroi/Gamilaroi/Gamilaraay Traditional Owners.

Further information on the consultation process with these Nations to date can be found in section 2.4 Schedule C of this Plan. NSW will continue to seek further opportunities to consult with the Gomeroi/Kamilaroi/Gamilaroi/Gamilaraay Nation and the Barkandji and Maljangapa Nations. Subject to the Nations' agreement, this WRP will incorporate the Nations' objectives and outcomes for the management and use of water resources of the WRPA based on their values and uses. NSW will provide a progress report on this work to the MDBA within two years of accreditation of this WRP.

Aboriginal peoples' values and uses of the water resources of the WRPA identified through this consultative process for the Budjiti, Euahlayi, Guwamu/Kooma, Kunja, Murrawarri and Ngemba Nations can be seen in the following parts of the Consultation Reports attached to Schedule C of this Plan:

- Table 3 of Attachment B Budjiti
- Tables 14 16 of Attachment C Euahlayi
- Table 3 of Attachment E Guwamu/Kooma
- Table 3 of Attachment F Kunja
- Tables 11, 12 and 13 of Attachment G Murrawarri
- Tables 13 15 of Attachment H Ngemba

Aboriginal peoples' objectives and outcomes for the management of the water resources of the WRPA can also be seen in these Schedule C reports at sections 5.3 of Attachment B, section 6 of Attachment C, section 5.3 of Attachment E, section 5.3 of Attachment F, section 5.3 of Attachment G and section 6.5 of Attachment H respectively for the Budjiti, Euahlayi, Guwamu/Kooma, Kunja, Murrawarri and Ngemba Nations.

Work undertaken with Nations of the Intersecting Streams Surface Water Resource Plan area has established that there is a *"direct, causal relationships between the availability of water and Aboriginal socio-cultural life"*. Water is considered to be crucially important to the current and future social, environmental, spiritual, economic and cultural wellbeing of Aboriginal people.

The following are extracts from the Nation reports that summarise the deep cultural connections and values and uses that the Nations place on the water resources of the WRPA.

### <u>Budjiti</u>

The Budjiti Nation are the Paroo River people. The Budjiti people are deeply connected to their country and waterways. A deep attachment to the land, water and wildlife of Budjiti country means a healthy environment is the foundation of the Budjiti Nation. Caring for country is the essence of being Budjiti. With the granting of Native Title to the Budjiti nation, they know that their country gives them the chance to undertake cultural activities such as meetings, with both social and spiritual aspects, on their country. Ceremonies and gatherings help Budjiti elders with passing on traditional knowledge. Time on country helps Budjiti elders deal with modern day social issues such as incarceration. Bringing young people onto country, and introducing cultural practices and teachings, such as hunting, gathering and cooking can have a powerful effect with rehabilitation and healing.

### <u>Euahlayi</u>

Euahlayi culture and spirituality are inextricably link to Country and Water. 'Culturally now our people for thousands of years relied on river, relied on water and we want that to keep going." For Euahlayi people, water 'is the essence of life.' The Euahlayi people are deeply connected to water, as it is connected to all things. For Euahlayi people, water plays an important part in spirituality. Dreaming stories are linked to water-dependent sites and Euahlayi people share Dreaming stories while on water. Water is also bound up in cultural knowledge, lore and ceremony. 'it gives us our rights and knowledge of things like marriage when we go to these places to learn.' Cultural practice and lore is passed down through the transfer of knowledge from one generation to the next. Water bodies are meeting places for Euahlayi and other First Nations peoples. Euahlayi people enjoy social and recreational practices together by water. Changes in waterways on Euahlayi Country are making big impacts on these spiritual and cultural connections. Euhalayi people are coming together less as families, as they are unable to spend time by water. Many of their important ceremonial and cultural sites have been adversely impacted. This strongly affects their ability to pass on cultural knowledge. The Euahlayi people want water returned to their Country so they can replenish their spiritual and cultural connections.

### Guwamu/Kooma

The Guwamu people are deeply connected to their land and water. They have been successful in winning Native Title across the Guwamu nation, and also own large properties in the heart of Guwamu country – Murra Murra and Bendee-Downs. Guwamu country is semi-arid and can be very dry. As a result, the rivers, creeks and lake systems are integral to the Guwamu Nation. As one TO noted "we start life in the womb, surrounded by water. In life we want to always be close to water." Prior to European occupation, the Guwamu relied on the deep permanent pools on the Nebine Creek. These held water during even during the driest periods. Combined with the "native wells," which are artesian springs scattered across the country, Guwamu people inhabited a rich landscape and the Guwamu culture thrived. Water is central to Guwamu life. When water is abundant, the Guwamu people thrive. Lots of water means plentiful food resources and a rich and strong culture. Recently, for the first time, the permanent water holes on Nebine Creek have dried up. The Guwamu people fear that the actions of upstream farmers and irrigators are causing catastrophic impacts on the creeks. One TO lamented "the river never stopped flowing when I was a kid." Cultural/recreational and spiritual activities of the Guwamu people correspond with the availability of water. The Nebine and Wallam Creeks in particular are a focus of Guwamu community life, with many really important meeting places for the Guwamu people. Many of the dreamtime stories relate to water features, including the Rainbow Serpent.

### <u>Kunja</u>

Water is central to Kunja life. When water was abundant, the Kunja people would thrive. Lots of water meant plentiful food resources and a rich and strong culture. Kunja people have been inhabiting the Warrego floodplain for thousands of generations, living on the river banks, in harmony with the natural patterns and seasonal changes. South West Queensland can be harsh, so being near water was always the focus of Kunja life. Whilst the Kunja people have

attachments to all of their Nation's country, the Warrego River is the heart of Kunja country. Flows in the Warrego are especially fickle. Rain events hundreds of kilometres away can generate flow events in the Warrego system. These "dry floods" were tremendously important to the Kunja people, bringing slow moving floodwaters down the Warrego and out into the surrounding channel country. At these times, the channel country, especially Cuttaburra Creek, was an abundant source of waterbirds and yellow belly. Cultural and recreational and spiritual activities of the Kunja people corresponds with the seasons and water. Water features, especially the Warrego River is the focus of community life, with many really important meeting places for Kunja people.

### <u>Murrawarri</u>

As 'river people', Murrawarri people have water at the core of their cultural identity. 'We're river people, and we love the river, we love going down to the river, you know, and seeing water in the river.' The sovereign Nation of the Murrawarri Republic enables the continuity of ownership, custodianship, and traditional cultural practices of the Murrawarri people on their own Country. These practices are intimately connected with water and water systems. 'We rely on our water and that's for livelihood, cultural things and other purposes.' Many cultural sites on Murrawarri Country are reliant on a naturally flowing, connected water system. These sites, such as Gooraman Swamp, the Murrawarri section of Narran Lakes (South-Western), Garera Springs and the Nghunnu (fish traps) have deep significance for the Murrawarri people, as locations where they conduct ceremony, hold Nation gatherings and connect to their Dreaming. Their creation being, the Murrawarri people and culture. Murrawarri people also have strong connections to natural elements requiring water, particularly the River Red Gum, for spiritual purposes.

### Ngemba

Some Ngemba people found it difficult to state what water means to them in words because it's not separate from them, their life and their culture. Water is at the centre of their community life, connecting the cultural, social, environmental, spiritual and economic aspects. Ngemba people see water as essential to their life and their identity as a Nation. *'It's our whole existence as us as a people.' 'Without our river, we're nothing. Without our river, we've got nothing.'* Ngemba people depend on water for cultural knowledge, spirituality, community and cultural practice. 'Water is a major part of our culture, lifestyle and existence.' Ngemba cultural knowledge is dependent on elements of water ecosystems. The Ngemba people use various components of the healthy, well-functioning ecosystem, reliant on water, as indicators for cultural practices and ceremony.

An example of the links between existing water management and Aboriginal cultural values and uses, risks, objectives and outcomes for Murray Cod are illustrated in Figure 1-1. '*This is of a Murray Cod (Wiradjuri - munya). The background design is of a water plant with its flower in bloom. Around the munya is a representation of the deep waterholes (ngulburnan) of the Murray River (Yindi or Milawa) where they usually live and breed'<sup>1</sup>.* 

<sup>&</sup>lt;sup>1</sup> Nathan Peckham, artist's statement, 2021



Figure 1-1. Aboriginal peoples' values, uses, risks, objectives and outcomes as considered in water resource management.

The objectives and outcomes as stated by the Budjiti, Euahlayi, Guwamu/Kooma, Kunja, Murrawarri and Ngemba Nations is the basis for further developing a process for considering Aboriginal peoples' objectives and outcomes in water resource management. Table 2 in Schedule C provides a summary of First Nations' objectives in relation to water sharing plan objectives in the Intersecting Streams Surface WRPA.

The Nation consultations have identified areas for further development in pursuit of Aboriginal peoples' objectives and outcomes in water management. The NSW government has instigated several initiatives in this regard, with the most important of these being the development and implementation of the 2021 NSW Water Strategy<sup>2</sup>. A new inland waters 'closing the gap' target is also under active consideration by governments across the country.

Priority 2 of the NSW State Water Strategy is to recognise First Nations/Aboriginal People's rights and values and increase access to and ownership of water for cultural and economic purposes. The strategy goes on to identify actions to achieve this priority including:

- strengthening the role of First Nations/Aboriginal people in water planning and management
- developing a state-wide Aboriginal water strategy
- providing Aboriginal ownership of, and access to, water for cultural and economic purposes
- working with First Nations/Aboriginal people to improve shared water knowledge, and
- working with First Nations/Aboriginal People to maintain and preserve water-related cultural sites and landscapes.

<sup>&</sup>lt;sup>2</sup> https://dpie.nsw.gov.au/water/plans-and-programs/nsw-water-strategy

There will be opportunity to further consider First Nations perspectives in groundwater management as the NSW Water Strategy moves to the implementation phase.

In some cases, there are links between existing water management initiatives and some of the values and uses, risks, objectives and outcomes identified by Aboriginal people:

- The water sharing plan contains an environmental objective "to protect and contribute to the enhancement of the recorded distribution or extent, and population structure of target ecological populations" (native fish, significant habitat for fish) along with associated strategies and performance indicators to achieve this.
- The Risk Assessment for the Intersecting Streams Surface Water Resource Plan Area identifies Murray Cod as a "key aquatic ecological asset" and their presence is factored into the risk ratings for that water source.
- The Monitoring, Evaluation and Reporting Plan for the Intersecting Streams Surface Water Resource Plan describes annual monitoring of fish communities across 15 randomly selected survey sites. Data collected includes abundance, distribution, population structure/recruitment and prevalence. This data informs the evaluation and reporting cycle.
- NSW Long Term Water Plans contain ecological objectives for Murray Cod that include improving native fish population structure and increase in abundance of mature fish.

For the purpose of sections 10.52 of the Basin Plan:

- Aboriginal peoples' values and uses were identified during consultation with First Nations, and are outlined in the following part of the attachments to Schedule C of this Plan for the Budjiti, Euahlayi, Guwamu/Kooma, Kunja, Murrawarri and Ngemba Nations respectively:
  - Table 3 of Attachment B
  - o Tables 14 16 of Attachment C
  - Table 3 of Attachment E
  - o Table 3 of Attachment F
  - o Tables 11, 12 and 13 of Attachment G
  - Tables 13 15 of Attachment H
- Aboriginal peoples' values and uses were developed into objectives and outcomes for water management as part of the consultation process. The objectives and outcomes of Aboriginal people in relation to the management of water resources in the WRPA are outlined in the following part of the attachments to Schedule C of this Plan for the Budjiti, Euahlayi, Guwamu/Kooma, Kunja, Murrawarri and Ngemba Nations respectively:
  - Table 5 of Attachment B
  - Tables 18 22 of Attachment C
  - Tables 5 7 of Attachment E
  - Tables 5 7 of Attachment F
  - Tables 15 19 of Attachment G
  - Tables 17 21 of Attachment H
- The consultation process undertaken to determine social, spiritual and cultural values of Aboriginal people is outlined in sections 2 of Schedule C, section 3 of Attachment B, C, E, F and G to Schedule C in respect of the Budjiti, Euahlayi, Guwamu/Kooma, Kunja, and Murrawarri Nations respectively, and section 4 of Attachment H to Schedule C of the Ngemba Nation.
- The alignment of objectives and outcomes identified by the Budjiti, Euahlayi, Guwamu/Kooma, Kunja, Murrawarri and Ngemba Nations with the objectives and

outcomes for the water sharing plans in the Intersecting Streams Surface WRPA are summarised in Table 2 of Schedule C

- Regard to Aboriginal peoples' objectives and outcomes, values and uses, risks and impacts is demonstrated through consultation with First Nations. That consultation identified the objectives and outcomes listed in the Attachments to Schedule C. Those objectives and outcomes will inform future updates to the provisions relevant to Aboriginal people in relation to water management in the Intersecting Streams WRPA as set out in Part 2 of the *Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011* (Schedule A). Each matter in section 10.52 of the Basin Plan was considered having regard to a range of Aboriginal organisations involved in this consultation. For example, NSW had regard to advice from NBAN about the engagement process with First Nations to ensure that the consultation was culturally appropriate and relevant to water resource planning.
- NSW is working to strengthen the engagement and input from First Nations into water resource planning, including as the water sharing plan within the WRPA is reviewed and replaced. NSW is also working to strengthen the protection of Aboriginal peoples' values and uses in accordance with the objectives and outcomes through the development and implementation of the NSW Water Strategy and the development of the associated Aboriginal Water Strategy and the draft Western Regional Water Strategy.
- The Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011 is due to expire in June 2022. It is anticipated that the plan will be replaced. Any replacement plan must be completed within two years of the date of the expired plan. This represents a major opportunity to improve recognition of Aboriginal social, spiritual and cultural values in water management in the Intersecting Streams Surface WRPA.
- Protection of Indigenous values and uses has been strengthened through the consultation process and adoption of a definition and protocols for First Nations Cultural Knowledge. There is currently no specific legal protection for cultural knowledge under Australian law. Participants entered into agreements during the consultation process, allowing them to exercise control over the disclosure and use of cultural knowledge. A statement has been included in each Nation report which allows copyright in each report to be managed, while giving Traditional Owners rights to control the use of the material within the report and establishing protocols for third party requests to use any information from the report. Further opportunities to strengthen protection of Indigenous values and uses may be identified through ongoing consultation. The effectiveness of these opportunities for Aboriginal people will be identified through future monitoring and evaluation in line with plan objectives and outcomes
- NSW will continue to seek further opportunities to consult with the Barkandji and Maljangapa and the Gomeroi/Kamilaroi/Gamilaroi/Gamilaraay Nations and incorporate into this WRP the Nations' objectives and outcomes for the management and use of water resources of the WRPA based on their values and uses of these. NSW will provide a progress report on this to the MDBA within two years of accreditation of this WRP.

Our people are drawn to the water. When it rains and the flows are good, we gather at the waterways to fish, the children play and swim, and we enjoy being together. We hear laughter and we are happy which is good for the wellbeing of our people. We are happy because Country is happy; when Country is happy our spirits are happy.

Good flows clean the waterways out. Food grows so we can hunt, fish and harvest wild tucker. Wild tucker is good for our physical health including our immune systems. When it rains and things grow we begin to see how the growth of one thing leads to the growth of another. That's when our Aboriginal science becomes visible to us: we see how the growth of certain plants leads to the increase in certain insect populations which leads to increases in bird populations. These populations of living things are related to our totemic obligations.

We teach our science, obligations and the ceremonies — these are all a part of healthy Country — to our children; and we do this teaching on the waterways where the growth is actually happening. When flows are right our sacred sites, like burial sites, are protected. Our Elders can walk their traditional pathways across Country which connects them to the footprints of our Ancestors. When seasonal water is available to the environment our culture strengthens and the health and wellbeing of our people improves. When our rivers and waterways are dying we are dying with our Country. Our science dies, our culture dies, and our ceremony dies.

Collective statement by the Northern Basin Aboriginal Nations Board, 14 January 2016, Moree.

### Box 1-2. The importance of water to Aboriginal Nations.

Source: Our water, our life: An Aboriginal study in the northern basin (MDBA 2016) (https://www.mdba.gov.au/publications/mdba-reports/aboriginal-study-northern-basin)

## 1.4. Relationship between this Plan and other instruments

NSW will meet its water resource plan obligations under Chapter 10 of the Basin Plan largely through its existing water management framework. The Chapter 10 requirements, outlined in section 1.2, deal with water sharing and water quality management. Water sharing in this context is viewed broadly, and includes:

- sharing between the environment, other instream uses or values and extractive water use
- managing access to water resources and river operations to achieve the agreed objectives.

Water resource management in NSW is complex. The primary legislation regulating water management in NSW is the *Water Management Act 2000* (WMA 2000). A conceptual view of the relationship between the WMA 2000, this Plan and the Commonwealth water management framework is shown in Figure 1-2.



Figure 1-2. Relationship between Basin Plan, WRP and other instruments.

As outlined in section 1.3, WSPs are regulatory instruments under the WMA 2000, and specific provisions in these are fundamental components of this Plan. NSW is amending current WSPs

(where necessary) to meet the relevant Basin Plan requirements. For the Intersecting Streams WRPA, the relevant WSP that will operate under the provisions of the WMA 2000 as a 'standalone' statutory plan, as well as contributing to the Intersecting Streams WRP, is (as amended and attached at Schedule A):

• Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011.

Where this Intersecting Streams WRP specifies a provision of the statutory WSP, that provision is 'incorporated' into this Plan, and operates to make that part of the NSW statutory WSP a part of the Intersecting Streams WRP. Section 48 of the WMA 2000 requires the Minister for Water, when exercising functions under the WMA 2000, to take all reasonable steps to give effect to the provisions of a WSP and, in particular, to ensure that any environmental water rules established by the WSP are observed.

This WRP references provisions in the WMA 2000 that enable implementation of the specific WSP provisions. Examples include the water access licensing and enforcement provisions of the WMA 2000, and orders made under section 324 of the Act.

Many stakeholders have a broad range of water quantity and quality obligations and provide a range of products and services relevant to development and implementation of this Plan. Table 1-2 describes the key stakeholders, their links to water resource management processes, and the primary instruments governing their responsibility. In addition, NSW has adopted key national guidelines including, of relevance for this Plan, the Australian Drinking Water Guidelines and the Australian and New Zealand Environment and Conservation Council Guidelines for Fresh and Marine Water Quality (ANZECC Guidelines).

Stakeholder	Links to water resource management/WRP	Primary instruments <sup>3</sup>	
Minister for Water	Responsible for the development, amendment and implementation of Water Sharing Plans.	Water Management Act 2000	
Water Division of	Responsible for water allocation and access.	See also Figure 1-2.	
NSW Department of Planning and	Responsible for development and implementation of WRPs.	Local Government Act 1993	
Environment	Responsible for development and implementation of water policies and management frameworks across the State.		
	Responsible for administering and reviewing works approvals for river operators.		
	Advises on key operational aspects of drinking water supply and review/approval of section 60 ( <i>Local Government Act 1993</i> ) applications including ability of a process train to treat water from a particular raw water source.		
Murray–Darling Basin	Basin Plan implementation.	Water Act 2007	
Authority	Responsible for assessing whether WRPs are consistent with the Basin Plan and advising the Minister for Water Resources, Drought, Rural Finance Natural Disaster and Emergency Management (Cth) if they should be accredited. Supporting Basin Plan compliance and enforcement.	Basin Plan 2012	

#### Table 1-2. Key water resource management stakeholders and responsibilities within NSW.

<sup>&</sup>lt;sup>3</sup> All Acts are Acts of NSW unless otherwise stated. A reference to an Act implies a reference to its accompanying regulation/s. This table is intended to be illustrative for the purposes of the WRP, not comprehensive.

Minister for the Environment Biodiversity and Conservation Division of the NSW Department of Planning and Environment	Responsible for protecting NSW's environment and heritage, which includes the natural environment, Aboriginal country, culture and heritage, and built heritage. Concurrence role for making and amending water sharing plans. Holder and manager of environmental water licences. Responsible for convening and managing local environmental water advisory groups in relevant valleys. Responsible for developing and administering the long-term water plans (LTWPs) under the Basin Plan.	Protection of the Environment Operations Act 1997 National Parks and Wildlife Act 1974
WaterNSW	State-owned corporation, bulk water supplier, river operator and responsible for service provision to NSW Department of Planning and Environment, including hydrometric and in-stream water quality monitoring. Licensing of water take under access licences Measurement of water take under access licences Responsible for catchment management in declared catchments.	Water NSW Act 2014 Operating licence under the Water NSW Act 2014
Natural Resources Access Regulator (NRAR)	Responsible for compliance with and enforcement of the regulatory framework for water in NSW, including water management rules and licence and approval conditions.	Water Management Act 2000 Natural Resources Access Regulator Act 2017
Environment Protection Authority	Primary environmental regulator for NSW. Responsible for responding to pollution incidents and emergencies and enforcing environmental regulation (both of which may impact on WRP objectives).	Protection of the Environment Operations Act 1997 Protection of the Environment Administration Act 1991
Fire and Rescue NSW and other emergency services including Rural Fire Service, SES and NSW Police	Responds to emergencies, and responsible for controlling incidents and emergencies (those happening near a water source have the potential to impact the resource and therefore, objectives of the WRP). Contribute to the development and deployment of EMPLAN (relevant to management of extreme events, which may impact implementation of the WRP).	Protection of the Environment Operations Act 1997 Acts relevant to the operation of those emergency services such as the State Emergency and Rescue Management Act 1989
IPART	Oversight of private and major water utilities in NSW, including WaterNSW. Responsible for carrying out annual operating licence audits, noting that licence requirements include various responsibilities relating to catchment and water resource management. Setting rural and urban water prices.	Independent Pricing and Regulatory Tribunal Act 1992 Water Industry Competition Act 2006
Local government authorities	Local governments implement planning requirements, which may impact on land management, which in turn may impact on water quality and quantity and WRP objectives.	Local Government Act 1993

	May be responsible for development and implementation of an Integrated Water Cycle Management Strategy (IWCMS). The Unincorporated Far West, Cobar, Bourke, Central Darling Brewarrina and Walgett Shire Councils are local government authorities within the Intersecting Streams WRPA.	Environmental Planning and Assessment Act 1979
Local Land Services	<ul> <li>Work with land managers and the community to improve primary production within healthy landscapes, including better management of water, land, soil, vegetation, biodiversity and cultural heritage.</li> <li>Deliver actions through LLS strategic plans and other plans such as for natural resource management.</li> <li>Role in natural disaster planning and management.</li> <li>The Intersecting Streams WRPA is in the North West and Western LLS regions.</li> </ul>	Local Land Services Act 2013
Local water utilities (LWUs)	Must hold a WMA 2000 water access licence and hold a water supply work approval. Must develop and maintain a drinking water management system (DWMS), which involves understanding the water from source to tap (linkage to WRP objectives in terms of critical human water needs and objectives for raw water for drinking purposes). May be responsible for management of dam infrastructure. May be responsible for development and implementation of an Integrated Water Cycle Management Strategy (IWCMS). Local water utilities are often local councils and the Brewarrina and Central Darling Shire Councils are LWUs within the Intersecting Streams WRPA. May be responsible for development and implementation of Integrated Water Cycle Management Strategy (IWCMS).	Dams Safety Act 2015 Local Government Act 1993 Public Health Act 2010 Water Management Act 2000
National Parks and Wildlife Service	NSW National Parks, a Directorate within the Department of Planning & Environment, manages protected areas in NSW, including historic sites, places of Aboriginal cultural significance and habitats that protect wildlife. NPWS declares sites of special cultural significance to the Aboriginal people as Aboriginal Places under the <i>National</i> <i>Parks and Wildlife Act 1974</i> . NPWS also partners with Aboriginal and broader communities to promote and support the continuation of the Aboriginal peoples' connections and access to their traditional lands and engage in the management of cultural landscapes known as Country.	National Parks and Wildlife Act 1974
NSW Health - Water Unit/Local Health Department	Regulator with responsibility for implementation / oversight of the DWMS. Raw water objectives and fitness for treatment are considered within the DWMS.	Public Health Act 2010

## 1.5. Form of water resource plan and responsible persons

For the purpose of section 10.04 of the Basin Plan:

- this WRP consists of material in a number of documents
- all text that is boxed and highlighted blue in this document, and any instruments or provisions, text or tables to which such text refers, form part of this Plan for accreditation purposes.
- any reference to an instrument as a whole does not have the effect of incorporating the entire instrument for accreditation purposes. For example, there are references to the *Water Management Act 2000, Water Act 2007 (Cth),* the Basin Plan and a water sharing plans. These are for reference and not accreditation of the whole instrument
- where blue boxed text references a section of the WRP, only the blue boxed text in that referenced section is provided for accreditation purposes
- all text that is not contained in or referenced by, the blue boxed sections of this document is for explanatory purposes only and does not form part of this Plan for accreditation purposes
- where blue boxed text references the LTWP, or a schedule that contains details from the LTWP, this is for explanatory purposes only and does not form part of this Plan for accreditation purposes
- where the Risk Assessment for the Intersecting Streams Surface WRPA (Schedule D) or any part of this WRP refers to dealings (trade limits, rules or related mechanisms), those dealings (limits, rules or mechanisms) do not form part of this Plan for accreditation purposes
- Schedule B (the WRP Index) identifies the parts of this Plan addressing each requirement in Chapter 10 of the Basin Plan
- with the exception of Schedule C, which is incorporated in its entirety, other Schedules to this Intersecting Streams WRP form part of this Plan, but only to the extent that provisions are directly referenced in the blue boxed and highlighted sections of this document
- Appendices to this Plan contain supporting information and additional documentation, and do not form part of this Plan for accreditation
- the Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011 applies to all of the water resources within the Intersecting Streams WRP area. An indicative map of the water resources that this instrument applies to is shown in Figure 1-3. Specifically:
  - the Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011 applies to the water sources listed in clause 4 of that Plan
- the clauses in the Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011 that are directly referenced in the WRP and are in force at the time of accreditation, and for 10 years from its date of commencement, must be reviewed prior to the end of this 10 year term to inform any replacement plan under section 43(1) of the WMA 2000. For clarity, only clauses that are directly referenced in this WRP are part of the accredited WRP.
- no other instruments or texts for accreditation in this WRP are subject to cessation or review.

For the purposes of section 10.06 of the Basin Plan, the WRP Index in Schedule B identifies the person responsible for matters associated with each requirement in Chapter 10 of the Basin Plan (including implementation). Unless otherwise identified in this WRP, this person is also responsible for undertaking a measure or action under the instrument or text identified.

To be clear, the schedules to this Intersecting Streams WRP form part of this Plan, but only to the extent that provisions are directly referenced in the boxed and highlighted sections of this document. For example, although Schedule A includes dealing rules for licences under the WMA 2000 (Part 10 of the *Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011*), as those provisions are not referenced in boxed and highlighted sections of this document, they do not form part of this Plan, or the accredited WRP.



Figure 1-3. Intersecting Streams unregulated river water sources.

### 1.6. Enforcement

To the extent that this Plan is implemented under the WMA 2000, the implementation and enforcement provisions of the WMA 2000 will apply (see section 1.4). These include provisions relating to management plans (Chapter 2, Part 3), basic landholder rights and access licences (Chapter 3, Parts 1 and 2) and enforcement (Chapter 7).

Separately, MDBA enforcement powers are set out in Part 8 of the *Water Act 2007* (Cth). Sections 58 and 59 of the *Water Act 2007* (Cth) impose obligations not to act, or fail to act, in a manner that is inconsistent with a WRP.

Therefore, where this Plan imposes an obligation on a person, in the event of non-compliance, that person may be subject to enforcement action by the MDBA under the *Water Act 2007* (Cth) and by NSW under the WMA 2000, if non-compliance is a breach of both frameworks.

- Require a holder of a water access right to comply with the conditions of that right (s.10.08(2))
- Limit take under basic rights, by runoff dams, or by commercial plantations to levels specified in the Basin Plan, unless any increased take can be offset by another form of take and that other form of takes can be accurately measured (s.10.13(2))
- Ensure that there is no net reduction in the protection of planned environmental water from the protection provided for under NSW law immediately before the commencement of the Basin Plan, (s.10.28)
- Require that if a review of the plan (or part of the plan) is undertaken, the report of the review must be given to the Authority within 30 days after the report is completed, (s.10.47)
- Require that any proposed amendment to the plan arising from a review gives the reasons for the amendment to the Authority (s.10.48).

Box 1-3. Specific enforceable WRP provisions of the Basin Plan.

### 1.7. Consultation undertaken

For the purpose of section 10.07 of the Basin Plan:

- A Consultation Report is attached at Schedule C to this Plan.
- The Intersecting Streams WRP is not being presented for the purpose of an amendment accreditation under section 65 of the *Water Act 2007*.

For the purpose of section 10.53 of the Basin Plan:

- NSW consulted with relevant Aboriginal organisations about the process for engaging with Nations to prepare the WRP.
- The WRP was prepared having regard to the views of First Nations with respect to the requirements under section 10.52 and the specific matters in subsections (1)(a) to (1)(f).
- Section 3 of Attachments B, C, E, F and G and section 4 of Attachment H to Schedule C to this Plan demonstrates how the consultation process is viewed as informed participation.
- For section 10.53(1)(a) of the Basin Plan:
  - Native Title Services Corporation was contacted as part of WRP consultation activities
  - Native Title determinations relevant to the Intersecting Streams WRP are specified in Part 5 of the *Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011* (Schedule A)
  - a full list of the current registered native title claimant applications in NSW is available from the National Native Title Tribunal register of claims, along with the list of current Indigenous Land Use Agreements linked to the Native Title determinations. Table 1 of Schedule C sets out details of the consultation outcomes regarding Native Title.
- For section 10.53(1)(b) of the Basin Plan:
  - registered Aboriginal heritage recorded in the Aboriginal Heritage Information Management System must be considered as part of the application processes for water management works and use approvals]. Where required, relevant Local Aboriginal Land Councils may be contacted as part of this process
  - Registered Aboriginal heritage, as held by the NSW Department of Planning and Environment, has also been considered as part of the development of Long-Term Water Plans for WRPAs. Aboriginal cultural heritage considerations

as defined under Commonwealth law are triggered as part of NSW land use planning.

- The Department acknowledges that 'Aboriginal cultural heritage' has generally focused on physical artefacts. For First Nations their cultural heritage encompasses much more, including intangible values. Some First Nations may also have their own registers, lists or data bases that capture cultural heritage. Where this information is shared and incorporated into the water planning process, it forms part of considerations for water management decisions. Information about cultural heritage shared during the First Nations consultation is summarised in Table 1-3.
- For section 10.53(1)(c) of the Basin Plan:
  - a range of Aboriginal organisations were involved in the consultation, including NBAN. NBAN were consulted about the appropriate Traditional Owners to engage in First Nation consultation in the WRP area.
- For section 10.53(1)(d) of the Basin Plan:
  - Aboriginal peoples' objectives and outcomes for water management are included in section 1.3.1 of this Plan. Where strategies for achieving desired objectives were expressed during the First Nations' consultation process, those views are included in each of the respective Nation Reports.
  - A review was undertaken to identify similarities and gaps between the social, cultural, spiritual and customary objectives identified through the First Nation engagement and existing objectives in water sharing plans. A summary of instruments that address risks and impacts identified during consultation with First Nations is provided in Table 3-2. Insofar as those instruments are relevant to First Nation objectives, strategies to address will be included as considerations in the work to establish a monitoring, evaluation and reporting framework for water sharing plans.
  - Water sharing plans can be replaced at the end of their ten-year term. As part of future plan replacements, consultation will build on learnings and relationships developed with First Nations to ensure that social, cultural, spiritual and customary objectives and strategies are considered. All inland unregulated water sharing plans are due to expire in 2022/2023 and replacement of these plans is currently underway.
  - The processes for developing water strategies at state (Priority 2 of the State Water Strategy and the development of a proposed state-wide Aboriginal Water Strategy) and regional levels (Regional Water Strategies) continues to include specific engagement with Aboriginal communities about social, cultural, spiritual and customary objectives. It is a priority to recognise cultural values in water management, as well as Aboriginal rights and values and increase access to and ownership of water for cultural and economic purposes.
- For section 10.53(1)(e) of the Basin Plan:
- Based on guidance from NBAN, the Department engaged with First Nations in a way that encouraged active and informed participation, for example the use of Data Use Agreements to ensure that information is managed and used in accordance with First Nations rights to cultural information that they share.
- Further, the Department is strengthening First Nations' participation in water planning and management, for example through implementation of Priority 2 of the State Water Strategy and a proposed state-wide Aboriginal Water Strategy based on a co-design approach that includes capacity building and sharing of water planning and management knowledge with communities.
- The Department is also progressing work to support Aboriginal water literacy and engagement in regulatory water planning.
- For section 10.53(1)(f) of the Basin Plan:

- The risks and impacts raised by the Budjiti, Euahlayi, Guwamu/Kooma, Kunja, Murrawarri and Ngemba Nations during consultation are summarised in Table 3-2 of the WRP
- the risks to Aboriginal peoples' values and uses for each Nation in the Intersecting Streams WRPA are included in the following attachments to Schedule C of this Plan
  - Table 4 of Attachment B
  - Table 17 of Attachment C
  - Table 4 of Attachment E
  - Table 4 of Attachment F,
  - Table 14 of Attachment G
  - Table 16 of Attachment H
- The development of these tables was informed by section 5.2 of Attachments B C, E and F, sections 5.2.1 and 5.2.2 of Attachment G and sections 6.4.1 and 6.4.2 of Attachment H to Schedule C of this Plan.
- NSW will continue to strengthen the engagement with First Nations regarding risks and impacts to cultural values and uses through the water planning processes.

For "registered Aboriginal Heritage" (10.53(1)(b)), Aboriginal people of the Intersecting Streams WRPA describe their heritage in their own terms. Information shared about cultural heritage is included in the Intersecting Streams First Nation consultation reports by references to "cultural sites", "sacred sites" or "significant sites", and is summarised in Table 1-3 below.

First Nation	Information shared about cultural heritage
Budjiti	Budjiti cultural sites are comprehensively water dependent, but also take in other important landscapes away from water features
Euahlayi	Euahlayi cultural sites and water bodies are being damaged and impacted by lower flow and level.
Guwamu (Kooma)	The country immediately adjacent to creeks and lakes tends to be the focus of Guwamu culture
Kunja	Insufficient flows into sites of cultural significance, and degraded water quality impacts social, spiritual and commercial outcomes
Murrawarri	Many cultural sites on Murrawarri Country are reliant on a naturally flowing, connected water system
Ngemba	Cultural sites are being damaged and impacted by lower flow and level and the Ngemba people are losing access to their sites and waterways

## Table 1-3. Information about cultural heritage as shared by First Nations of the IntersectingStreams WRPA.

An overview of this WRP development process is at Figure 1-4, which shows the interaction of the consultation process with other aspects of WRP development.



### Figure 1-4. Consultation process in WRP development.

During the water resource planning process, the NSW Department of Planning and Environment (the Department) consulted with stakeholders and considered their suggestions for improved water resource management. This consultation took the following forms:

- Broad public consultation via submissions processes on the Status and Issues paper early on in the process, and on release of the Draft Plan. The Status and Issues paper captured issues previously raised in submissions received during the 2014 WSP replacement process, jointly undertaken by the Natural Resource Commission and the department.
- Targeted consultation with key stakeholders through the Intersecting Streams Stakeholder Advisory Panel (SAP), and with other local stakeholders where additional consultation was required with specific groups directly affected or which hold detailed knowledge on a particular issue
- Consultation through the Healthy Floodplains Program
- Consultation through the Water Renewal Task Force
- Consultation with Aboriginal people.

To help inform stakeholders and support the Department's consultation activities, a number of documents were developed including:

- Status and Issues Paper
- Issues Assessment Report
- Fact sheets to provide plain English information during public exhibition.

For more information about consultation during the development of this WRP, please see Schedule C to this Plan.

### 1.7.1. Aboriginal consultation

To improve outcomes for Aboriginal peoples in water, there is a need for genuine and ongoing consultation with traditional owners and Aboriginal organisations across NSW. The NSW Government is committed to continue engaging genuinely with Aboriginal people with culturally appropriate timeframes and processes. NSW is committed to furthering the discussion to meet the requirements of Part 14 of Chapter 10 of the Basin Plan through engagement with Aboriginal people, including Traditional Owners and Aboriginal people and organisations, over the coming 12 months.

The consultation undertaken as part of the development of the WRPs is the first step in an ongoing process that will work with traditional owners and Aboriginal people and organisations to achieve the following objectives as identified in the NSW Water Strategy:

- enhance cultural flows, economic opportunities and access to water entitlements
- seek shared benefits by using water allocated for environmental and consumptive purposes to deliver cultural benefits where synergies exist
- acknowledge water is critical to the health and wellbeing of communities
- enable access to Country
- embed Aboriginal participation, partnerships and communication into water management and government decision making

The process undertaken for Aboriginal consultation followed the MDBA Guidelines for meeting Basin Plan (Chapter 10) requirements in relation to Aboriginal peoples' objectives and outcomes for water. Those guidelines suggest appropriate consultation processes to ensure that the concerns of Traditional Owners are taken into account and draw on the *Akwé: Kon Guidelines in a water resource planning context*. Consultation with First Nations must be meaningful and fulfil the requirements of the Basin Plan.

A Nation based consultation method ensures Aboriginal people continue in their traditional roles of custodians and that each individual Nation can contribute to the WRPs. It allows First Nations people to work with government to make better decisions in water planning within the context of their cultural boundaries.

Where appropriate, consultation with other Aboriginal organisations (land councils and native title claimant groups etc.) was undertaken as part of or separate to the Nation-based consultation.

A range of Aboriginal organisations were engaged and referenced in the water resource planning process. The NSW Aboriginal Land Council, NBAN and MLDRIN were involved at a number of levels of engagement, from board meetings and gatherings to individual First Nation consultation events. This included input to the design of the NSW First Nations engagement, nomination of appropriate delegates and contacts in Community, assisting with communication of upcoming workshops, and participating in workshops as appropriate. The Native Title Services Corporation assisted in relation to native title matters and the former NSW Office of Environment and Heritage assisted in matters related to registered Aboriginal heritage.

An overview of the development of the Nation-by-Nation engagement process is shown in Figure 1-5.





#### Figure 1-5. Nations engagement plan overview.

A consultation program specifically was undertaken for each of the Barkandji and Maljangapa, Budjiti, Euahlayi, Gomeroi/Kamilaroi/Gamilaroi/Gamilaraay, Guwamu/Kooma, Kunja, Murrawarri and Ngemba Nations. Figure 1-6 shows the location of each Nation.

Consultation workshops were established as detailed in Table 1-4 and venus were chosen according to the instruction of the Nation organiser following culturally appropriate knowledge and protocols. The consultation consisted of targeted workshops on Country with invited Traditional Owner Elders.

Table 1-4 also provides a description of the location of each nation and other details of the consultation.

For more details on the consultation undertaken:

- the Budjiti Nation Consultation Report is available at Attachment B to Schedule C
- the Euahlayi Nation Consultation Report is available at Attachment C to Schedule C
- the Guwamu/Kooma Nation Consultation Report is available at Attachment E to Schedule C
- the Kunja Nation Consultation Report is available at Attachment F to Schedule C
- the Murrawarri Nation Consultation Report is available at Attachment G to Schedule C
- the Ngemba Nation Consultation Report is available at Attachment H to Schedule C

Nation	Relevant surface WRPAs	Date of workshops	Location of workshops	Family groups represented during consultation
Barkandji and Maljangapa Nation	Intersecting Streams, Barwon—Darling Watercourse and NSW Murray and Lower Darling, Lachlan	26 September – 31 October 2019	Bourke, Wentworth, Menindee, Wilcannia and Broken Hill	Not identified in the draft report Approximately 30 people attended the workshops.
Budjiti Nation	Intersecting Streams and Warrego—Paroo—Nebine	27 – 28 August 2019	Cunnamulla, Eulo	2
Euahlayi Nation	Intersecting Streams, QLD Border Rivers – Moonie and Condamine—Balonne	4 November	Walgett	13
Gomeroi/Ka milaroi/Gamil aroi/Gamilar aay Nation	Intersecting Streams, Gwydir, Macquarie– Castlereagh, Namoi and Border Rivers	9–13 May 2018	Tamworth, Walgett, Moree, Tingha and Boggabilla (in partnership with Queensland government)	25
Guwamu (Kooma) Nation	Intersecting Streams, Warrego—Paroo—Nebine and Condamine—Balonne	2 October 2019	Cunnamulla	3
Murrawarri Nation	Intersecting Streams, Barwon—Darling Watercourse and Warrego—Paroo— Nebine	9 August 2019	Brewarrina	
Kunja Nation	Intersecting Streams, Warrego—Paroo—Nebine	24 June 2019	Cunnamulla	4
Ngemba Nation	Intersecting Streams, Macquarie– Castlereagh and Barwon–Darling Watercourse	31 October – 1 November 2018	Bourke and Brewarrina	9

### Table 1-4. Aboriginal consultation undertaken in respect of the Intersecting Streams WRP.



Figure 1-6. Traditional Owner groups of the surface water WRPAs.

### 1.8. Review and amendment

For the purpose of section 10.47 of the Basin Plan, if a review of this Plan is undertaken, the report of that review will be given to the Murray–Darling Basin Authority within 30 days after the report is completed.

The requirement in section 10.47A of the Basin Plan does not apply to SDL resource units within the Intersecting Streams WRPA, and therefore, does not apply to this Plan.

For the purpose of section 10.48 of the Basin Plan, if review of this Plan results in a proposed amendment to any accredited provision, the reasons for the amendment will be provided to the Murray–Darling Basin Authority. Reasons for the amendment may include those set out in Box 1-4.

- Within 3 years of an amendment to the Basin Plan that requires changes to WRP accreditation requirements
- under section 23B of the Water Act 2007 (Cth) following approval of proposals for adjustment under Chapter 7 of Murray-Darling Basin Plan
- if any amendment to State water resource management arrangements, including an amended or replaced WSP, materially affects this WRP.

### Box 1-4. Circumstances under which this Plan may be amended.

For example, amendments to provisions in the WSP that apply to this WRP may result in an amendment to this WRP, as they are likely to have a material effect on this WRP. NSW are undertaking a review of the *Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011* and the WSP is legally required to be remade before 30 June 2024. It is expected that there will be changes to the WSP that have a material effect on the WRP.

# 2. Identification of water resource plan area and other matters

### This section includes the following components of the Basin Plan

- 10.02 Identification of WRP area and water resources
- 10.03 Identification of SDL resource units and water resources
- 10.05 Regard to other water resources
- 10.14 Effects, and potential effects, on water resources of the water resource plan area

For the purposes of 3.03 and 6.02 of the Basin Plan, the official map and spatial data of the Intersecting Streams WRPA and associated SDL resource units are available from https://www.mdba.gov.au/publications/maps-spatial-data.

# 2.1. Identification of WRP area, SDL resource unit and water resources

For the purpose of section 10.02 of the Basin Plan:

- this Plan applies to the WRPA and the water resources specified in section 3.05 of the Basin Plan as 'Intersecting Streams'
- no variation to boundaries under section 3.04 of the Basin Plan applies to this WRPA.

For the purpose of section 10.03 of the Basin Plan:

- The SDL resource unit in the Intersecting Streams WRPA is that described in section 6.02 and Schedule 2 to the Basin Plan as being within the Intersecting Streams water resource plan area, and
- The water resources within this SDL resource unit are those described in section 6.02 and Schedule 2 to the Basin Plan as being within the Intersecting Streams water resource plan area.

Appendix A to this Plan contains a description of the Intersecting Streams WRPA, and Figure 2-1 shows a map of the area. The SDL resource unit is SS17, which corresponds to all water resources under to the *Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011* - this includes water sources known as the Intersecting Streams Unregulated River Water Sources within the Western Water Management Area, as defined in clause 4 of that WSP.



Figure 2-1. Map of Intersecting Streams WRPA
### 2.2. Regard to other water resources

For the purpose of section 10.05 of the Basin Plan:

- the Intersecting Streams WRP has been prepared having regard to the management and use of water resources with significant connectivity as described in Part 3.3 of the Risk Assessment for the Intersecting Streams WRPA (SW13). Specifically:
- the respective Part 4 of the *Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011* (Schedule A to this Plan) contain environmental water provisions that contribute to the maintenance of connected water resources of the Intersecting Streams WRPA and downstream connected water resources and to connected groundwater resources
- the Intersecting Streams Surface WRP area has significant hydrological connection to the to surface water resource plan units within the upstream Warrego-Paroo-Nebine (SW20), Condamine-Balonne (SW19), Queensland Border Rivers – Moonie (SW17) and the downstream Barwon–Darling Watercourse (SW12).
- The Intersecting Streams Surface WRPA does not have a significant hydrological connection to the Lachlan (SW10), Macquarie-Castlereagh (SW11) and NSW Murray and Lower Darling (SW8) surface WRP areas
- clauses 45 and 46 of the *Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011* has regard to, and manages for, the hydrologic connection between connected water sources
- the Paroo River is managed consistently with water sharing agreements and commitments between New South Wales and Queensland as described in 1.1, 2.2, 2.3, 4.2 and Part 7 of the Intergovernmental Agreement for the Paroo River 2003.
- the hydrologic connection between groundwater resources and the water resources of the Intersecting Streams WRPA are shown in Table 2-1, which is based on the risk assessment for relevant groundwater WRP using the best available information, at the time this Plan was prepared
- the method for determining the volume of water that can be taken each year has regard to water resources with a significant hydrological connection. This is described further in section 5.6 of this Plan
- the need for rules to ensure hydraulic relationships and properties are maintained between groundwater and surface water systems and to protect environmental watering requirements where there is a connection between groundwater and surface water was considered. This is described further in section 4.7 of this Plan. In particular:
  - there are rules in the Water Sharing Plan for the for the Darling Alluvial Groundwater Sources 2020 which have regard to, and manage for, the significant hydrologic connection between the water resources of the Intersecting Streams WRPA and the alluvial groundwater resources of the Darling Alluvium WRPA
  - there are rules in the Water Sharing Plan for the NSW Murray Darling Basin Porous Rock Groundwater Sources 2020 which have regard to, and manage for, the significant hydrologic connection between the water resources of the Intersecting Streams WRPA and the porous rock groundwater resources of the NSW MDB Porous Rock WRPA.
  - there are rules in the Water Sharing Plan for the NSW Great Artesian Basin Shallow Groundwater Sources 2020 which have regard to, and manage for, the localised areas of significant hydrologic connection between the water resources of the Intersecting Streams WRPA and the GAB Shallow groundwater resources of the NSW GAB Shallow WRPA

- interception activities that have potential to have a significant impact on water resources that are hydrologically connected to the WRPA are identified in section 5.7 of this Plan
- a process to monitor the impact of those interception activities on hydrologically connected water resources is described in section 5.7 of this Plan
- the actions that will be taken if there are significant impacts relating to interception activities are described in section 5.7 of this Plan.

For the purposes of the Basin Plan the Intersecting Streams Surface WRPA is not significantly connected with the NSW Murray and Lower Darling (SW8). The Intersecting Streams (SW13) is adjacent to the NSW Murray and Lower Darling (SW8) in two locations – Yanda Creek Water Source and Paroo River Water Source. Yanda Creek Water Source is disconnected from the Lower Darling. A connection between these two WRP areas could occur via the Paroo River, however, this river system has limited hydrological connection to the Lower Darling and is considered disconnected as described in MDBA Water Resource Plan Requirements Position Statement 2B – Interpreting 'significant hydrological connection' available at https://www.mdba.gov.au/sites/default/files/pubs/WRP-position-statement-2B-significant-hydrological-connection.PDF

The Intersecting Streams WRP area is also adjacent to the Lachlan (SW10) and the Macquarie-Castlereagh (SW11) WRP areas via Yanda Creek Water Source. They are disconnected from one another.

The LTWP for the Intersecting Streams WRPA also includes environmental watering requirements that recognise the connectivity between the Intersecting Streams WRPA and other water resources. The LTWP is not an accredited part of the WRP.

The Intergovernmental Agreement for the Paroo River between New South Wales and Queensland 2003 provides for a collaborative framework to consider water related cross-border planning issues and to promote the sustainable management of the Paroo River.

New South Wales – Queensland Border Rivers Intergovernmental Agreement 2008 (IGA 2008) directs the sustainable management and sharing of water of the Border Rivers (including the Intersecting Streams). Whilst there is no reference to Intersecting Streams in the IGA 2008, the Border Standing Committee which was created under clause 47 of the IGA 2008 is responsible for the management of the bifurcation weirs in the Intersecting Streams.

In 2013 the Intergovernmental Agreement on Implementing Water Reform in the Murray Darling Basin came into effect to implement water reforms that further improve the Basin's health and supports the objectives of the Murray-Darling Basin Plan. New South Wales became a signatory of this agreement in 2014. Each Basin state is implementing the reforms in accordance with the milestones set out in the agreement. In 2019, amendments were made to this agreement relating to the implementation of measures to improve environmental outcomes in the northern Murray–Darling Basin. Environmental measures intended to be implemented under this agreement comprise of:

- Targeted recovery of water
- protection of environmental flows
- event-based mechanisms, including temporary trade by event, options for pumping into wetland sites, and store and release of environmental water
- improved coordination of environmental flows
- removal of constraints in the Gwydir catchment
- environmental works and measures to promote fish or broader ecological health.

The Commonwealth, New South Wales and Queensland are jointly responsible for implementing environmental measures outlined in the agreement.

New South Wales and Qld have worked together to develop, and agreed to, a rigorous and transparent accounting method to calculate the contribution of HEW crossing the Queensland-NSW border and the timing of contributions. This also includes direction for the two States to work together to develop supporting operational protocols and procedures. This accounting method will operate in the following catchments: Border Rivers, Moonie, Lower Balonne (including the Nebine) and Warrego. In NSW, in the Intersecting Streams WRP area these catchments include the following water sources:

- Moonie River
- Culgoa River
- Warrego River
- Narran River.

The agreed method will facilitate future work by NSW to protect that water from extraction so that it can meet the intended environmental outcomes.

The level of impact on the hydraulic relationships and properties between this WRPA and connected surface and groundwater resources was considered in setting the SDLs for the surface and some groundwater SDL resource units. It was also considered in setting LTAAELs for surface and groundwater sources where these manage long term extraction in smaller areas within an SDL resource unit or within non-Basin resources.

The environmental water provisions of surface water WSPs primarily maintain the hydraulic relationships within and between the surface water systems of the WRPA:

 limits to extraction when river flow is low such as cease to pump triggers ensure that very low flows are protected which contributes to connectivity within the unregulated rivers between surface water resources

While the primary focus of the environmental water provisions in this WRPA is the maintenance of surface water connections, they may also provide incidental groundwater recharge and as a result possibly protect groundwater dependent ecosystems that also have some surface water dependence.

Parts of the Barwon-Darling Valley Floodplain fall within the Intersecting Streams WRP area. During major flooding the river (Barwon-Darling) overtops its banks and inundates part or all of the floodplain. The flooding regime in the Intersecting Streams WRP area is complex, as flood flows may initiate from a range of Qld watercourses, NSW waterways and local rainfall. Outflows from the Barwon River occur in major floods, principally into Sparkes Warrambool which re-joins the Barwon River downstream of Walgett. Upstream overflows from Sparkes Warrambool and inflows from the Big Warrambool also re-enter the Barwon River.

Downstream of Bourke and further west, the Paroo and Warrego rivers contribute intermittent flows to the Darling River and can provide water during flood events. During Darling River flood events some floodwaters cross the Warrego River in the area upstream of its confluence, including Ross Billabong and Talowa Billabong (downstream of the confluence).

Flood management in NSW occurs under floodplain management plans. These plans provide for coordinated development of flood works on floodplains to meet the social, economic, ecological and cultural needs and to ensure the orderly passage of floodwater, while minimising the risk to life and property from flooding. Floodplain management plans provide clarity about where flood works can be constructed on the floodplain and streamline the approval process for new and amended flood works.

However, floodplain management plans do not manage flood waters for the purpose of connectivity between water resources under the Basin Plan. The water sharing plans contain

rules that provide for the management of connectivity and ensure environmental watering requirements are met.

## 2.3. Connectivity between groundwater and surface water

In NSW, many alluvial groundwater sources are considered to have a relatively high degree of hydrologic connectivity with their associated surface water sources. Porous rock, fractured rock and Great Artesian Basin (GAB) shallow groundwater sources are considered to have a lesser degree of connectivity.

NSW acknowledges the potential for the impact of groundwater take on surface water resources. The hydraulic relationships and properties between groundwater and surface water systems and the environmental outcomes relating to groundwater are managed through the NSW groundwater WSPs.

If a need for management rules is identified through the relevant groundwater risk assessment, these rules will be included in the relevant groundwater WRP. The level of impact on the hydraulic relationships and properties between groundwater systems and connected surface water systems was considered in setting the SDLs for the SDL resource units.

The Risk assessment (Schedule D to this plan) section 3.3 identifies the SDL resource units and non-Basin resources that are adjacent to the Intersecting Streams WPRA. Adjacent water resources have a varying degree of connectivity with the Intersecting Streams water resources, ranging from not significant to low levels of significance. The connectivity of groundwater resources with the surface water resources of the Intersecting Streams is outlined in Table 2-1.

		Hydrologic connection			
Groundwater SDL resource unit or	Water resource plan area	Not significant		Significant	
Source		Not highly connected	Not highly connected	Less highly connected	Highly connected
GS19 Kanmantoo Fold Belt	GW11 NSW Murray-Darling Basin Fractured Rock WRP	Х			
GS20 Lachlan Fold Belt MDB	GW11 NSW Murray-Darling Basin Fractured Rock WRP	х			
GS42 Upper Darling Alluvium	GW7 Darling Alluvium WRP		Х		
GS50 Western Porous Rock	GW6 NSW Murray- Darling Basin Porous Rock WRP		X <sup>2</sup>		
GS34 NSW GAB Surat Shallow	GW13 NSW Great Artesian Basin Shallow WRP	X1			

## Table 2-1. Hydrological connection to adjacent groundwater resources for the Intersecting Streams WRPA.

GS35 NSW GAB Warrego Shallow	GW13 NSW Great Artesian Basin Shallow WRP	X1		
GS36 NSW GAB Central Shallow	GW13 NSW Great Artesian Basin Shallow WRP	X1		
NSW Non-Basin resources (GAB) GAB Surat GAB Warrego GAB Central	Water Sharing Plan for the NSW Great Artesian Basin Groundwater Sources 2008	X1		
GS66 Warrego Alluvium	GW22 Warrego - Paroo – Nebine WRP GW22		Х3	
GS60 Sediments above the Great Artesian Basin: Warrego–Paroo– Nebine	GW22 Warrego - Paroo – Nebine WRP GW22		X <sup>3</sup>	

<sup>1</sup> localised significant connections for mound springs

<sup>2</sup> salinity management in place

<sup>3</sup> interstate resource managed under the applicable water resource plan and interstate agreements

For the purpose of section 10.14 of the Basin Plan there are localised areas of significant hydrologic connection between the water sources within this WRPA and the Great Artesian Basin (GAB) water sources. The GAB water sources are managed under:

 Water Sharing Plan for the NSW Great Artesian Basin Groundwater Sources 2008 (or relevant replacement plan). The GAB WSP identifies the planned environmental water for the Surat, Warrego and Central Groundwater Sources which is protected from take. The WSP also imposes an extraction limit for the take of water from the Surat, Warrego and Central Groundwater Sources within the GAB water sources.

For the purpose of section 10.14(1)(b) of the Basin Plan, in light of these arrangements there is no identified effect, or potential effect on the use and management of water resources of the Intersecting Streams WRPA arising from the taking of groundwater that is not a Basin water resource resulting in water that would otherwise flow directly or indirectly into an SDL resource unit in the water resource plan area no longer flowing into that unit.

As the GAB does not fall within the definition of Basin water resources under section 4 of the *Water Act 2007* (Cth), the *Water Sharing Plan for the Great Artesian Basin Groundwater Sources 2008* does not form part of this WRP for accreditation purposes.

Section 10.14(1)(a) of the Basin Plan does not apply to this WRP as it relates to the taking of groundwater that is not a Basin water resource resulting in water being removed from a groundwater SDL resource unit in the WRPA, and there are no groundwater SDL resource units in this WRPA.

## 3. Risks to water resources

#### This section includes the following components of the Basin Plan

- 10.41 Risk identification and assessment methodology
- 10.42 Description of risks
- 10.43 Strategies for addressing risks

An assessment of the current and future risks to the condition and/or continued availability of the water resources of the Intersecting Streams WRPA has been undertaken, and strategies have been identified to address medium and high risks. The assessment has been undertaken in accordance with the requirements outlined in Chapter 10 of the Basin Plan, having regard to the risk management strategies listed in Chapter 4 of the Basin Plan. Specific risks to the condition and availability of Basin water resources considered include:

- (a) insufficient water available for the environment
- (b) water being of a quality unsuitable for use
- (c) poor health of water-dependent ecosystems.

The full risk assessment for the Intersecting Streams WRPA (SW13) (the Risk Assessment) is provided in Schedule D to this Plan.

For the purpose of sections 10.41(1), 10.41(2) and 10.41(3) of the Basin Plan, the provisions for accreditation in section 3 of this WRP and section 9.5 of the Risk Assessment demonstrate that this Plan has been prepared having regard to current and future risks to the condition and continued availability of the water resources of the WRPA.

For the purpose of section 10.41(3)(b) of the Basin Plan, no guidelines have been published by the Authority in relation to risk identification and risk assessment under s. 4.02 of the Basin Plan.

## 3.1. Risk identification and assessment methodology

For the purpose of section 10.41(7) of the Basin Plan:

- Table A-1 in the Risk Assessment at Schedule D to this Plan provides a summary of data used to identify and assess the current and future risks to the condition and continued availability of the water resources in the Intersecting Streams WRPA
- Sections 2.2, 2.3, 3.3, 4.1, 4.2, 4.3, 5, 6.1, 7.1 and 8.1 and 9 of the Risk Assessment describe the methods used to identify current and future risks to the condition and continued availability of the water resources of the water resource plan area
- The following sections of the Risk Assessment detail the methods used to assess current and future risks to the condition and continued availability of the water resources of the water resource plan area, and the uncertainties in the level of risk:

Risk of insufficient water available for the environment

- Section 4.2 dealing with the consequence of impacts to ecological functions and assets
- Section 4.3.1 dealing with the likelihood of risk to sufficient water being available for the environment or to meet environmental water requirements
- Section 4.4.1 dealing with the likelihood of risk to sufficient water being available for the environment due to extraction under basic landholder rights

- Section 4.5.1 4.5.4 dealing with the likelihood of risk to sufficient water being available for the environment due to interception activities
- Section 4.6.1 4.6.4 dealing with the likelihood of risk to sufficient water being available for the environment due to climate change

Risk to health of water dependent ecosystems from pest plants and animals

• Section 5 dealing with the consequences and likelihood of risk to the health of water dependent ecosystems due to pest plants and animals

Risk to health of water dependent ecosystems from poor water quality

- Section 6.3 6.3.3 dealing with the consequence and likelihood of risk to the health of water-dependent ecosystems due to water temperature being outside natural ranges
- Section 6.4 6.4.3 dealing with the consequence and likelihood of risk to the health of water-dependent ecosystems due to turbidity, TP, TN, pH and DO
- Section 6.5 6.5.3 dealing with the consequence and likelihood of risk to the health of water-dependent ecosystems due to elevated levels of instream salinity
- Section 6.6 6.6.3 dealing with the consequence and likelihood of risk to the health of water-dependent ecosystems due to pathogens and toxicants

Risk to other water users due to unsuitable water quality

- Section 7.3 dealing with the consequence and likelihood of risk to irrigation water due to elevated instream salinity
- Section 7.4 7.4.4 dealing with the consequence and likelihood of risk to water used for recreational purposes
- Section 7.5 dealing with the consequence and likelihood of risk to water used for human consumption due to unsuitable water quality
- Section 7.6 dealing with the consequence and likelihood of risk to other values

Risk to water available for other users

- Section 8.2 8.2.4 dealing with the consequence and likelihood of risk to other water users due to interception activities
- Section 8.3 8.3.4 dealing with the consequence and likelihood of risk to other water users due to climate change
- Section 8.4 8.4.4 dealing with the consequence and likelihood of risk to other water users due to growth in basic landholder rights in unregulated rivers.

For the purpose of section 10.41(8) of the Basin Plan, section 2.4 and Appendix A of the Risk Assessment for the Intersecting Streams WRPA (Schedule D) outline the limitations and uncertainties associated with the level of risk attributed to each risk.

For the purposes of the water resource plan accreditation, where the Risk Assessment refers to trade limits, rules or related mechanisms, those limits, rules or mechanisms do not form part of the accredited WRP.

A hydrology report and the HEVAE technical report support the data observed in the Risk Assessment for the Intersecting Streams WRPA. These reports are available on the NSW Department of Planning and Environment website at

www.industry.nsw.gov.au/water/science/surface-water/monitoring/river-health/ecological-value.

The risk assessment approach taken for each NSW WRP follows the process illustrated in Figure 3-1. This process is consistent with the *NWI Policy Guidelines for Water Planning and Management* and NSW's Basin Plan obligations. The risk assessment framework adopts a cause/threat/impact model that describes the pathway for impacts to a receptor. Adopting this approach provides a systematic way to identify the full range of factors that may lead to an

impact, while also being consistent with the internationally recognised risk standard which considers both likelihood and consequence.

Causes have the potential to induce a threat to various extents, depending upon the characteristics of the water resource. Receptors are considered in an intergenerational context, that is, current and future uses and users, as required under subsection 10.41(1) of the Basin Plan.

The risk level of an impact is a function of the *likelihood* of a cause and threat occurring, and the *consequence* of the impact on the receptor. For this risk assessment, the following definitions have been adopted:

- likelihood: the probability that a cause will result in a threat. It is not an indication of the size of the threat, but rather conveys the probability that the threat will be significant.
- consequence: the loss of value for an impacted receptor.

Risk levels are calculated using the standard risk assessment matrix used under the NSW water sharing plan macro-planning approach. Specific matrices for each risk are provided within the respective sections of the Risk Assessment.



Source: AS/NZS ISO 31000:2009 (Standards Australia 2009)

Figure 3-1. The NSW Basin Plan risk assessment framework

## 3.2. Description of risks

For the purpose of sections 10.41(1) to 10.41(6) of the Basin Plan, the following sections in the Risk Assessment for the Intersecting Streams WRPA at Schedule D of this Plan detail the risk assessment outcomes:

Risk outcomes of insufficient water being available for the environment

- Section 4.3.3 regarding the risk due to insufficient water being available for the environment and capacity to meet environmental water requirements
- Section 4.4.3 regarding the risk to water being available for the environment due to basic landholder rights

- Sections 4.5.1.4, 4.5.2.4, 4.5.3.2 and 4.5.4.4 regarding the risk to water being available for the environment due to interception activities
- Section 4.6.4 regarding the risk to water being available for the environment due to climate change

Risk to health of water dependent ecosystems from pest plants and animals

• Section 5 regarding the risk to the health of water dependent ecosystems due to pest plants and animals

Risk to health of water-dependent ecosystems from poor water quality

- Section 6.3.3 regarding the risk to the health of water-dependent ecosystems due to water temperature being outside natural ranges
- Section 6.4.3 regarding the risk to the health of water-dependent ecosystems from turbidity, TP, TN, pH and DO
- Section 6.5.3 regarding the risk to the health of water-dependent ecosystems due to elevated levels of instream salinity
- Section 6.6 6.6.3 dealing with the consequence and likelihood of risk to the health of water-dependent ecosystems due to pathogens and toxicants.

Risk to other water uses due to unsuitable water quality

- Section 7.3 regarding the risk to irrigation due to unsuitable water quality
- Section 7.4.4 regarding the risk to water used for recreational purposes due to unsuitable water quality
- Section 7.5 regarding the risk to water use for human consumption due to unsuitable water quality
- Section 7.6 regarding the risk to other values

Risk to water available for other uses

- Sections 8.2.1.4, 8.2.2.3, 8.2.3.2 and 8.2.4.3 regarding the risk to other water users due to interception activities
- Section 8.3.4 regarding the risk to other water users due to climate change
- Section 8.4.4 regarding the risk to other water users due to growth in basic landholder rights in unregulated rivers.

Risk to other values

 Section 8.5 regarding risk to the availability and suitability of water for public benefit values

Risks that may cause structural damage to an aquifer (whether within or outside the WRPA) arising from take within the long-term annual diversion limit for an SDL resource unit and risks that may cause damage to hydraulic relationships and properties between groundwater and surface water systems, between groundwater systems, and within groundwater systems are considered in Section 3.3.2 and 4.5.3 of the Risk Assessment.

For the purposes of section 10.42 of the Basin Plan the "consolidated risk tables" of the Risk Assessment describe all of the medium and high risks. The factors that contributed to these risks are set out in the Schedule D referenced for section 10.41(7) of the Basin Plan in the blue box text in WRP section 3.1. The consolidated risk tables in Schedule D also include a 'risk rating' column that defines the level of each risk as low, medium or high.

In undertaking the Risk Assessment NSW determined that mining is the only risk factor with the potential for significant impact on structural integrity of aquifers and on the hydraulic relationships and properties between groundwater and surface water systems. In the

Intersecting Streams WRP area, the Risk Assessment has concluded that mining has a low risk rating.

## 3.3. Strategies for addressing risks

For the purpose of section 10.43 of the Basin Plan:

- Columns 1, 5 and 6 of Table 9-7, and Table 9-8 of the Risk Assessment detail the strategies to manage the current and future risks to the condition and continued availability of the surface water resources of the Intersecting Streams WRPA.
- Tables 9-1 and 9-3 of the Risk Assessment explain why a risk is tolerable, or cannot be addressed by the water resource plan in a manner commensurate with the level of risk
- For the purpose of 10.43(3)(b), no guidelines have been published by the Authority in relation to risk strategies under Section 4.04 of the Basin Plan.

Section 9 of the Risk Assessment provides detail of the strategies to manage risks to the condition and continued availability of the water resources of the Intersecting Streams WRPA. A summary of management strategies and the risks they address is provided in Table 3-1 below.

For medium and high risks that cannot be addressed, Tables 9-1 and 9-3 of the Risk Assessment set out the approach to reviewing existing strategies and rationale for why a level of risk is tolerable, or why the risk cannot be addressed in a manner commensurate with the level of risk as required by the Basin Plan.

Strategy	Description
1	Limit consumptive water extractions in the WRP area to the predefined share of available water.
2	Protect a portion of flow events in the NSW Intersecting Streams WRPA through flow event management in Queensland water management areas.
3	Manage environmental water to meet flow targets specified in the Intersecting Streams LTWP. This strategy aims to improve environmental water management in the WRP area.
4	Protect low flow habitats from accelerated rates of drying.
5	Protect pools in streams, wetlands, lagoons and floodplains within the WRP area during dry periods.
6	Protect important lagoons and wetlands within the WRP area.
7	Implement the WQM Plan for the WRP area.
8	Protect stream flow from reduced runoff attributable to farm dam interception.
9	Protect stream flow from reduced runoff attributable to plantation forestry interception.
10	Protect the environment and water users from changes in flow attributable to climate change.

#### Table 3-1. Strategies to address risks in the Intersecting Streams WRPA.\*

Strategy	Description
11	Protect the environment from changes in flow attributable to growth in BLR extractive use.
12	Protect the other water users from changes in flow attributable to growth in BLR extractive use.
13	Improve knowledge used to assess risk in unregulated sections of the WRP area.
14	Improve knowledge of effectiveness of existing strategies.
15	Improve knowledge of effectiveness of existing QLD strategies

\* Adapted from the Risk Assessment for the Intersecting Streams WRPA, Table 9-7.

## 3.4. Risks and impacts to water resources as identified by First Nations

Aboriginal peoples' values and uses of surface water provide a cultural connection to the land and First Nation peoples are acknowledged as the first managers and carers of this natural resource.

'First Nations Peoples have rights and a moral obligation to care for water under their law and customs. These obligations connect across communities and language groups, extending to downstream communities, throughout catchments and over connected aquifer and groundwater systems'<sup>4</sup>.

<sup>&</sup>lt;sup>4</sup> MLDRIN, NBAN & NAILSMA 2017, *Dhungala Baaka: Rethinking the Future of Water Management in Australia (Project Summary Report)*, National Cultural Flow Research Project Report.



Figure 3-2. Ghi-dhuray - Connection to the River (Wiradjuri - having river)

Figure 3-2. Ghi-dhuray - *Connection to the River (Wiradjuri - having river)* is an artist's impression of how First Nations Peoples effectively have become separated from many locations of cultural significance along rivers.

'The design depicts an aerial view of a river, flanked by farmland. The intent if this piece to convey how the introduction of farming practices and the land's mistreatment has destroyed many of our cultural practices and connections to the waterways that our people depended on for thousands of years.

It also speaks to the disruption farming has caused to the habits and life cycles of the wildlife which once depended on the waterways also.

The image also tells the story of the shrinking of our waterways from what were once mighty rivers and lakes, now reduced to dry riverbeds and claypans in some places and mere creeks and ponds in others.

It is hoped that people will understand that it has been our responsibility to care for these lands and waterways for generations, and to see them in their current state causes our collective spirits to feel a great sense of shame and sorrow, for we have failed our ancestors.<sup>5</sup>

#### Artist: Nathan Peckham, 2021

During the First Nation workshops several risks were identified. These include risks that are directly related to water resources and water management as well as risks that are indirectly

<sup>&</sup>lt;sup>5</sup> Nathan Peckham, *Artists' statement (2021)* 

related to water resources. The risks identified across the state by the First Nations are listed in Table 3, and grouped by the typical impact they represent:

- barriers to accessing areas with cultural significance
- loss of cultural links due to declining ecological health, and
- barriers to participating in policy making, planning and management processes

In broad terms, direct risks are risks that can be addressed through the established water management instruments and mechanisms. Where risks relate to water resource management and planning, the existing instruments and mechanisms are identified in Table 3. Indirect risks are those that primarily falls under other areas of management and influenced by conditions outside the scope of water management. Often these risks related to historic and systemic issues, such as the dispossession and discrimination that First Nations have continued to experience since colonialisation.

A reference in Table 3-2Table 3 to the NSW Water Strategy includes a reference to the strategy itself, released in 2021 (https://dpie.nsw.gov.au/water/plans-and-programs/nsw-waterstrategy/the-strategy) in which strategic priority 2 is to Recognise First Nations/Aboriginal People's rights and values and increase access to and ownership of water for cultural and economic purposes. It also includes a reference to the strategy's commitment to implement five strategic actions, being to:

- Strengthen the role of First Nations/Aboriginal People in water planning and management
- Develop a state-wide Aboriginal water strategy
- Provide Aboriginal ownership of and access to water for cultural and economic purposes
- Work with First Nations/Aboriginal People to improve shared water knowledge
- Work with First Nations/Aboriginal People to maintain and preserve water-related cultural sites and landscapes

#### Table 3-2. Risks identified by First Nations and current management.

Risks	Relevant WRP management/ instrument	Other management/ policy area
Barriers to access		
Significant cultural sites and locations for conducting rituals have been damaged or destroyed and are not receiving adequate water flow.	WSP: Cultural water entitlements LTWP: Considerations for First Nations' cultural values WQMP: Water quality targets for water dependent ecosystems FPH: Regulation of floodplain harvesting	Land use planning Crown lands management Conservation/heritage management (public and private land) NSW Water Strategy Regional Water Strategy
Travelling stock routes, locked gates, restricted access and fencing off areas adjacent to rivers, streams billabongs and rockholes result in an inability to walk country and visit sites for cultural, spiritual and social activities.	(No specific instrument)	Land use planning Crown lands management Conservation/heritage management (public and private land) NSW Water Strategy

Risks	Relevant WRP management/ instrument	Other management/ policy area
		Regional Water Strategy
Cultural flow water rights are essentially non- existent. Cultural flows are not given, or when they are, there is not enough water for cultural purposes. First Nations people would prefer a simpler and/or cheaper way to access cultural water; the licensing process is prohibitive and unclear.	WSP: Cultural water entitlements	NSW Water Strategy and Regional Water Strategy
First Nations peoples' connection to country continues to be affected by the impacts of colonisation, dispossession, relocations, and lack of jurisdiction. First Nations people feel they are disconnected from their role as caretakers of the land and have the knowledge to maintain healthy, viable waterways into the future. State water managers need to understand the whole system is interconnected, not separate.	(No specific instrument)	Land use planning Crown lands management Conservation/heritage management (public and private land) NSW Water Strategy and Regional Water Strategy
The application of Native Title does not apply to water in the waterways; contrary to the cultural understanding of how people, place and water are connected.	WSP: Native title (basic landholder rights)	Native Title system
First Nations people feel water sharing is inequitable and the system prioritises irrigators and miners. Water is over-allocated and over- extracted from systems that are too fragile for irrigation. First Nations people also believe that there is not enough transparency around water allocations.	WRP: Sustainable diversion limits WSP: extraction limits, available water determinations WSP: Cultural water entitlement	National Water Initiative Murray-Darling Basin Plan NSW Water Strategy and Regional Water Strategy Water Register and other transparency initiatives
Cultural links to ecological values		
Industrial and agricultural land uses (farming, cattle, mining) at a large scale have altered the landscape and led to erosion, reduced soil moisture, siltation of the river, barren land, poor riparian zones and river system impacts.	(No specific instrument)	Economic development Land use planning Crown lands management Conservation/heritage management (public and private land) Natural resource access regulation

Risks	Relevant WRP management/ instrument	Other management/ policy area
		NSW Water Strategy and Regional Water Strategy
Invasive plants, animals and fish (carp and redfin perch) are threatening and out competing native species and causing damage to the land and rivers including deoxygenating water and bad water quality (willows and carp) and riverbank erosion (hard-hoofed animals and carp).	WSP: Cultural water entitlements, environmental water rules, management of environmental water (held and planned), river operations LTWP: Considerations for First Nations' cultural values WQMP: Water quality targets for water dependent ecosystems FPH: Regulation of floodplain harvesting	Conservation/heritage management (public and private land) Fisheries management NSW Water Strategy
Native animals, birds, fish and aquatic life are in decline or gone completely. There is less diversity of species, not enough suitable habitat and breeding sites for waterbirds have been lost. There is not enough water flow to support wildlife and fish populations and animals frequently come into towns looking for water.	WSP: Cultural water entitlements, environmental water rules, management of environmental water (held and planned), river operations LTWP: Considerations for First Nations' cultural values WQMP: Water quality targets for water dependent ecosystems FPH: Regulation of floodplain harvesting	Conservation/heritage management (public and private land) Fisheries management NSW Water Strategy and Regional Water Strategy
Decline of native plants and water plants, changes to fruiting times, loss of native bush medicine plants (old man weed), reeds for cultural practices and loss of overall vegetation diversity. Bush medicine plants available are poor quality due to poisons, there has been a reduction of in water habitat for river life (from large dead trees). The changing landscape has also led to overgrowth of certain trees like river red gum.	WSP: Cultural water entitlements, environmental water rules, management of environmental water (held and planned), river operations LTWP: Considerations for First Nations' cultural values WQMP: Water quality targets for water dependent ecosystems	Land use planning Crown lands management Conservation/heritage management (public and private land) NSW Water Strategy and Regional Water Strategy

Risks	Relevant WRP management/ instrument	Other management/ policy area
	FPH: Regulation of floodplain harvesting	
There is less opportunity to collect bush tucker - to fish, spear, dive or hunt to collect food and food collected is not good quality. First Nations people feel this is due to the disturbance of natural flow regimes and restricted water flow, water pollution and limited access.	WSP: Cultural water entitlements, environmental water rules, management of environmental water (held and planned), river operations LTWP: Considerations for First Nations' cultural values WQMP: Water quality targets for water dependent ecosystems FPH: Regulation of floodplain harvesting	Land use planning Crown lands management Conservation/heritage management (public and private land) Fisheries management Environmental protection (EPA) Regional Water Strategy
The timing and volume of flows (including irrigation and environmental flows) is not adequate and is having a major impact on the environment, particularly floodplains, billabongs, waterholes and anabranches and doesn't support the requirements of native plants and animals. The pace of delivering water for irrigators has reduced some sections of river to narrow canals, while others run dry.	WSP: Cultural water entitlements, environmental water rules, management of environmental water (held and planned), river operations LTWP: Considerations for First Nations' cultural values WQMP: Water quality targets for water dependent ecosystems FPH: Regulation of floodplain harvesting	Regional water strategy for the area
Water quality is often poor. It is affected by pollution, chemical runoff, mining, blue-green algae, salinity, siltation, turbidity and a lack of flow. First Nations people are unable to drink it and the poor quality affects cultural activities including gathering, swimming, and fishing.	WSP: Cultural water entitlements, environmental water rules, management of environmental water (held and planned), river operations LTWP: Considerations for First Nations' cultural values WQMP: Water quality targets for water dependent ecosystems	Land use planning Crown lands management Conservation/heritage management (public and private land) Fisheries management Environmental protection (EPA)

Risks	Relevant WRP management/ instrument	Other management/ policy area
	FPH: Regulation of floodplain harvesting	
Drought, floods, and climate change are affecting waterways, damaging Country, animals and plants.	WRP: Sustainable diversion limits WSPs: LTAAELs and AWDs, environmental water rules, management of environmental water (held and planned), river operations Refer to section 5.8 of this WRP for measures in response to extreme events	Regional water strategy for the area
First Nations storylines, culture and connection to Country are threatened by bad water management practices. This has left the rivers degraded and sick. First Nations people are unable to pass on cultural knowledge and responsibility or educate the young people. There has been a loss of social connection and spiritual identity as rites of passage and ceremonies can't be performed.	WRP and WSPs	Regional water strategy for the area NSW Water Strategy
Unhealthy waterways have an impact on physical and mental health and overall wellbeing. First Nations people feel disconnection and cultural loss from poor waterways management. First Nations people see water as part of themselves, and when waterways are damaged and stressed, so too are the people. Cultural uses of water and waterways are restricted and custodianship of Country can't be conducted.	WRP and WSPs	Land use planning Crown lands management Conservation/heritage management (public and private land) Regional water strategy for the area NSW Water Strategy
First Nations economies are affected by poor water management practices. Cultural tourism and employment opportunities are limited when waterways are in bad condition. First Nations groups are not able to use water licences for their economic benefit like other stakeholders.	WRP and WSPs	Economic development Land use planning Crown lands management Conservation/heritage management (public and private land) Natural resource access regulation

Risks	Relevant WRP management/ instrument	Other management/ policy area
		Commonwealth funding program NSW Water Strategy
There are grave concerns about the lack of compliance and accountability in the system. First Nations people believe water users are illegally pumping water and using illegal infrastructure. They also believe that some rules in water sharing plans are too lenient and that there is inadequate monitoring of the system.	WRP and WSPs	Metering Natural resource access regulation
Cease to pump rules are too lenient. Floodplain harvesting structures and floodplain infrastructure redirect overland flow away from wetlands. Floodplain development does not seem to protect critical cultural and environmental assets and floodplain mapping does not account for connectivity adequately. More stringent rules and compliance would make the river healthier.	WRP: Connectivity between water sources WSP: Rules for water take, environmental water rules, management of environmental water (held and planned) FPH: Regulation of floodplain harvesting	Land use planning Floodplain management plans Natural resource access regulation Regional water strategy NSW Water Strategy
First Nations water management is impacted by inappropriate and poor quality infrastructure (dams, weirs, bores) on waterways. Blockbanks and canals divert water away from natural flow paths and fragment the environment. First Nations people believe weirs benefit irrigators at the cost of native flora and fauna.	WSPs Floodplain management planning	Water delivery and operational management Regional water strategy NSW Water Strategy
Groundwater quality and quantity is essential to healthy ecosystems. The quality of the water from bores is increasingly saline and the amount available is also decreasing.	WRP and WSPs	Regional water strategy NSW Water Strategy and State Groundwater Strategy foreshadowed in this
Water does not cross the border between NSW and QLD. The water management systems in each state don't complement one another.	WRP	Murray-Darling Basin Plan
Participation in water management, planning and	policy	
Cultural burning is restricted or not allowed and native vegetation regeneration projects or Indigenous ranger programs that could maximise opportunities for river restoration and management are not being fully utilised.	(No specific instrument)	Conservation/heritage management (public and private land) Bushfire management Commonwealth Ranger program Regional water strategy NSW Water Strategy

Risks	Relevant WRP management/ instrument	Other management/ policy area
First Nations people feel that they are not involved enough in developing water sharing plans and water resource plans and their knowledge is not properly included in water policy. As a result, rules don't reflect cultural interests and the lack of cultural input into water management has left Nations feeling disempowered and believing the government does not care about cultural concerns.	WRP and WSPs	Regional water strategy NSW Water Strategy
First Nations people struggle with 'water literacy' - policy and engagement language is complicated and hard to understand, rules change frequently. Decision-making processes are not transparent, bureaucrats block outcomes, Traditional Owners are not in charge of, and are often overlooked in decision making processes.	WRP and WSPs	NSW Water Strategy Regional water strategy Water literacy program
There is a need for better scientifically based mapping for environmental needs and environmental flows. Lack of research puts rivers at risk from poor decision making.	WRP: Risk assessment and HEVAE mapping. monitoring	NSW Water Strategy Regional water strategy
First Nations people feel that the policy framework for water management is not culturally inclusive, and that their cultural authority and governance over water and Country is not recognised. First Nations people believe that cultural flows are often managed too similarly to environmental flows. First Nations people believe that a lack of cultural awareness results in worse consultation outcomes.	WRP and WSP	NSW Water Strategy Regional water strategy
First Nations people feel ignored. Consultation practices are too infrequent or of insufficient quality, First Nations people feel that consultation with them is an afterthought and was rushed. Best practice engagement principles are not adhered to and can show a lack of cultural understanding.	WRP and WSP	NSW Water Strategy Regional water strategy
Insufficient/inadequate structures and support in place to enable collaboration and information sharing between nations.	(No specific instrument)	Murray-Darling Basin Plan NSW Water Strategy
Commonwealth Environmental Water Office's approach to cultural flows and engagement on cultural interests is not satisfactory.	(No specific instrument)	Basin wide environmental watering strategy

## 4. Environmental water, cultural flows and sustainable management

#### This section includes the following components of the Basin Plan

- 10.09 Identification of planned environmental water (PEW) and register of held environmental water (HEW)
- 10.17 Priority environmental assets and priority ecosystem functions
- 10.18 Priority environmental assets dependent on groundwater
- 10.19 Groundwater and surface water connections
- 10.20 Productive base of groundwater
- 10.21 Additional requirements for Western Porous Rock, Gunnedah Oxley Basin MDB, Sydney Basin MDB and Goulburn – Murray: Sedimentary Plain SDL resource units
- 10.22 Description of how requirements have been met
- 10.26 Planning for environmental watering
- 10.27 Enabling environmental watering between connected water resources
- 10.28 Ensure no net reduction in the protection of PEW
- 10.54 Cultural flows
- 10.55 Retention of current protection for Indigenous values and uses

### 4.1. Identification of environmental water

The WMA 2000 defines environmental water and requires a water sharing plan to commit water as planned environmental water. In addition water access licences can be purchased/acquired and held for an environmental purpose.

Section 8 of the WMA 2000 defines environmental water as comprising:

- water that is committed by management plans for fundamental ecosystem health or other specified environmental purposes, either generally or at specified times or in specified circumstances, and that cannot to the extent committed be taken or used for any other purpose (planned environmental water)
- water (licensed environmental water) that is:
  - o committed by an adaptive environmental water condition
  - o taken or permitted to be taken under a licence of an environmental subcategory
  - taken or permitted to be taken under a licence of a class prescribed by the regulations for the purposes of section 8.

The Act also requires a WSP to:

- commit water as planned environmental water in at least two of the following ways (whether by two separate ways or a combination of two ways):
  - $\circ\;$  by reference to the commitment of the physical presence of water in the water source
  - by reference to the long-term average annual commitment of water as planned environmental water

- by reference to the water that is not committed after the commitments to basic landholder rights and for sharing and extraction under any other rights have been met.
- contain provisions for the identification, establishment and maintenance of planned environmental water (environmental water rules). The environmental water rules relating to a water source do not need to specify that a minimum quantity of water is required to be present in the water source at all times.

In addition to environmental water defined under section 8 of the WMA 2000, NSW Department of Planning and Environment recognises that water access licences may be purchased and/or held for an environmental purpose.

For the purposes of s10.09 of the Basin Plan, PEW is defined in s6 of the *Water Act 2007* (Cth) which meets the following criteria:

- it is committed by a plan made under a State water management law or any other instrument made under a law of a State, or is preserved by a law of a state or an instrument made under a law of a State; and
- 2. it is committed or preserved for the **purposes of achieving environmental outcomes** or, in the case of committed water, other environmental purposes specified in the plan or instrument; and
- 3. **the water cannot**, to the extent to which it is committed or preserved for such purposes, **be taken or used for any other purpose**.

Planned environmental Water can be identified in the Basin Plan or a water resource plan.

4.1.1. Identification of planned environmental water for the Intersecting Streams WRP

Section 10.09 of the Basin Plan requires that this WRP identifies PEW, as defined in the *Water Act 2007* (Cth), and the associated rules and arrangements relating to this water. Water sharing rules that establish PEW and specify how it is managed or protected have been included.

While the NSW and Commonwealth definitions of planned environmental water are similar, they are not identical. Under the NSW Water Management framework, notes in water sharing plans have no legal effect.

In NSW, water that becomes available as a result of more efficient delivery of water orders (and is therefore no longer required to account for water losses associated with delivering consumptive and environmental water) may be made available for allocation under available water determinations. Some examples of more efficient delivery in NSW include changes to release patterns from dams or tributary inflows being used to meet water orders within regulated river water sources. It is not considered to form part of planned environmental water under the water resource plan or the relevant water sharing plan(s) unless:

- a water sharing plan requires that, for example, water is to be credited to a planned environmental water allowance. In that case, some of that saved water may be credited to that allowance.
- the enhanced efficiency in delivering water orders is to specifically create planned environmental water either through changes to infrastructure or changes to a water sharing plan.

This water is not currently considered to be planned environmental water as any that is water set aside or released for operational purposes, but not actually used for those purposes, may be made available for future allocations. Therefore, it is not committed for exclusively environmental purposes or prohibited from being taken for any other purpose. Further, under the SDL adjustment mechanism, water savings from projects to enhance these efficiencies are being converted to held environmental water, which is demonstrative of the fact that this water was not planned environmental water.

In the Intersecting Streams unregulated river water sources, the WSP reserve all water in excess of the relevant Long-Term Annual Average Extraction Limit (LTAAEL) as PEW on a long-term annual average basis. The long-term average sustainable diversion limit in the WSP is the Basin Plan SDL for the Intersecting Streams SDL resource unit (as it relates to that part of the WRPA). To ensure PEW is protected, the WSPs contain rules which provide for a reduction in water take under licences when an assessment indicates extraction has exceed the LTAAEL or SDL.

In the Intersecting Streams unregulated river, PEW is the physical presence of water in the water source, the long-term annual average commitment of water and the water remaining after commitments under all other rights have been met. Additional rules and arrangements relating to PEW include those that ensure compliance with the LTAAEL and SDL, and set flow rates, levels or conditions which specify when water is not permitted to be taken.

There are additional specific rules that commit or preserve PEW for achieving environmental outcomes and ensure it cannot, to the extent to which it is committed or preserved for such purposes, be taken for any other purpose. These are outlined below.

For the Intersecting Streams unregulated rivers, in addition to the PEW reserved in excess of the LTAAEL, PEW is the water remaining after commitments under all other rights have been met, and there are also rules that set flow rates, levels or conditions which specify when water is not permitted to be taken.

A full list of PEW and the associated rules and arrangements relating to PEW are set out in the blue box below to meet requirements under s 10.09.

For the purpose of section 10.09(1) of the Basin Plan, this water resource plan identifies the following planned environmental water and associated rules and arrangements established in the relevant water sharing plan (Schedule A):

- In respect of the unregulated river water sources within the WRPA under the Water Sharing Plan for Intersecting Streams Unregulated River Water Sources 2011:
  - o clauses 15 and 16
  - $\circ$  Part 6 Divisions 1 4
  - clause 45 and 46 (2 − 9)

#### 4.1.2. Register of Held Environmental Water (HEW)

Held environmental water (HEW) represents a group of licences that are committed to the environment at any one time. This group of licences reserves water from the consumptive pool, in addition to PEW, specifically for environmental water purposes or delivery. HEW, as a water access entitlement, may be available to trade (where permitted) on the temporary market. HEW is commonly held by entities such as the CEWH and Department of Planning and Environment Biodiversity and Conservation Division (formerly OEH).

Table 4-1 illustrates the breakdown of HEW unit shares in the Intersecting Streams WRPA.

#### Table 4-1. Breakdown of HEW unit shares in the Intersecting Streams WRPA.

	CEWH
Unregulated River unit shares	8,106
Unregulated River (Special Additional High Flow) unit shares	9,720
TOTAL	17, 826

At the time of writing, all HEW in the Intersecting Streams WRPA is located in the Warrego River Water Source and HEW in the Warrego accounts for approximately 85.9% of all unregulated river unit shares and 80% of all unregulated river (special additional high flow) unit shares in the water source.

Toorale station was jointly purchased by the NSW and Commonwealth Government's in 2008. The NSW Government was interested in acquiring Toorale for its natural and cultural values, while the Australian Government recognised the unique contribution Toorale would make to the National Reserve System and the value of the property's extensive water entitlements, which were at the time tied to land ownership (Department of Planning, Industry and Environment BCD, 2018).

The acquisition and reservation of Toorale Station as a park recognises the importance of preserving inland river water flows. The transfer of water access licences to the Commonwealth Environmental Water Holder (CEWH) has allowed water in the park to be managed as environmental water to improve the health of rivers, wetlands and floodplains (Department of Planning, Industry and Environment BCD, 2018).

Most Commonwealth unregulated entitlements are left in-stream to provide environmental benefits by restoring flows that were formerly extracted and improving flow variability (Commonwealth of Australia, 2018).

For the purpose of 10.09(2) of the Basin Plan, the Department of Planning and Environment is responsible for the establishment and maintenance of a published register of held environmental water in the Intersecting Streams WRPA that records:

- the characteristics of held environmental water in the WRP area (for example, quantity, licence category, licence type)
- who holds that water.

This register is available online (https://www.industry.nsw.gov.au/water/environmental-waterhub/public-register/environmental/licences).

Should water be traded into existing or new accounts for HEW purposes, the published register will reflect the licence type, category, quantity and holder of the HEW.

## 4.2. Priority environmental assets and priority ecosystem functions

Environmental assets have been defined in the LTWP and are defined in accordance with Part 5 of Chapter 8 of the Basin Plan.

Each priority environmental asset (water dependent ecosystem) meets one or more of the following criteria:

- it is formally recognised in international agreements or, with environmental watering, it is capable of supporting species listed in those agreements
- it is natural or near-natural, and rare or unique
- it provides vital habitat
- it supports Commonwealth, state or territory listed threatened species or communities
- it supports, or with environmental watering is capable of supporting, significant biodiversity.

Each priority ecosystem function meets one or more of the following criteria:

• it supports the creation and maintenance of vital habitats and populations

- it supports the transportation and dilution of nutrients, organic matter and sediment
- it provides longitudinal connections along a watercourse
- it provides lateral connections across floodplains, adjacent wetlands and billabongs.

In the Paroo region, 251 key environmental assets have been identified. Of the 106 hydrological indicator sites across the Basin, the Paroo region contains 4 hydrological indicator sites for key ecosystem functions. The environmental water requirements for the Paroo region have been estimated as 678 GL/y (678 GL/y are currently available for the environment). Figure 4-1 illustrates the NSW portion of the Paroo region.



Source: Modified from MDBA website. https://www.mdba.gov.au/publications/products/key-environmental-asset-maps

#### Figure 4-1. Paroo Region Key environmental assets and hydrologic indicator sites.

In the Warrego region, 278 key environmental assets and 5 hydrological indicator sites have been identified. The environmental water requirements for the Warrego region have been estimated between 515 GL/y and 523 GL/y (an increase between 5 GL/y and 13 GL/y from the 510 GL/y currently available for the environment). Figure 4-2 illustrates the NSW portion of the Warrego region.



Source: Modified from MDBA website. https://www.mdba.gov.au/publications/products/key-environmental-asset-maps

#### Figure 4-2. Warrego Region Key Environmental Assets and Hydrologic Indicator Sites

In the Condamine-Balonne region, 294 key environmental assets and 7 hydrological indicator sites have been identified. Five of those hydrological indicator sites are for key ecosystem functions and two are for key environmental assets. These are listed below:

- Lower Balonne River Floodplain System
- Narran Lakes

The environmental water requirements for the Condamine-Balonne region have been estimated

between 995 GL/y and 1,312 GL/y (an increase between 203 GL/y and 520 GL/y from the 792 GL/y currently available for the environment). Figure 4.3 illustrates the NSW portion of the Condamine-Balonne region.



Source: Modified from MDBA website. https://www.mdba.gov.au/publications/products/key-environmental-asset-maps

#### Figure 4-3. Condamine—Balonne Region Key Environmental Assets and Hydrologic Indicator Sites

In the Moonie region, 27 key environmental assets and 1 hydrological indicator site for key ecosystem functions have been identified. The environmental water requirements for the Moonie region have been estimated between 49 GL/y and 52 GL/y (an increase between 1 GL/y and 13 GL/y from the 48 GL/y currently available for the environment). See Figure 4-4 illustrates the NSW portion of the Moonie region.



Source: Modified from MDBA website. https://www.mdba.gov.au/publications/products/key-environmental-asset-maps

#### Figure 4-4. Moonie Region Key Environmental Assets and Hydrologic Indicator Sites

In the Barwon–Darling region (including Yanda Creek Water Source), 64 key environmental assets and 3 hydrological indicator sites for key ecosystem functions have been identified. The environmental water requirements for the Barwon–Darling region have been estimated between 1,734 GL/y and 1,755 GL/y (an increase between 228 GL/y and 249 GL/y from the 1,506 GL/y currently available for the environment). Figure 4-5 illustrates the Yanda Creek portion of the Barwon–Darling region.





#### Figure 4-5. Barwon—Darling Region Key Environmental Assets and Hydrologic Indicator Sites

For the purpose of sections 10.17 and 10.22 of the Basin Plan, regard was had to whether it is necessary for this Plan to include rules which ensure that the operation of the plan does not compromise the meeting of environmental watering requirements (EWRs) of priority environmental assets and priority ecosystem functions, including whether it is necessary for the rules to prescribe:

- the times, places and rates at which water is permitted to be taken from the SDL resource unit
- how water resources in the water resource plan area must be managed and used.

In particular:

- Section 4 of the Risk Assessment for the Intersecting Streams WRPA at Schedule D considers the risks of insufficient water being available for the environment, including risks to the capacity to meet environmental watering requirements. Risks to environmental watering requirements were assessed with existing water sharing plan rules in place
- Consolidated Risk Tables in the Risk Assessment identify the level of risk at the water source or river reach scale for a range of flow components. Rules that help manage these risks are identified in the columns labelled 'Current Critical Mechanisms' (existing rules) and 'New Critical Mechanisms' (new rules). This includes rules about the times, places and rates at which water can be taken, and how water must be managed and used. The development of the WRP included (but was not limited to) consideration of the following:
  - o rules to limit extraction during natural flow events and low flow periods
  - o cease/commence to pump rules and compliance with extraction limits
  - o protecting a certain daily rate of unregulated tributary flows
  - o reserving all water above the long-term average annual extraction limit as PEW
  - available water determinations
  - requiring all take to be licensed (except basic rights)
  - strategic use of PEW and HEW.

For the purpose of sections 10.17(3) and 10.22(b) of the Basin Plan:

- the text within the Consolidated Risk Tables in the column titled '*Explanation of tolerable risk application OR Explanation of why risk cannot be addressed*' set out the rationale for why strategies (including rules in WSPs) are included or not included to manage the risks
- the Risk Assessment was conducted with existing management arrangements in place (see section 4.3.2 of the Risk Assessment at Schedule D). The rationale in the Consolidated Risk Tables explains whether it is necessary to include additional rules in the WRP to manage residual risks to Environmental Watering Requirements (EWRs)
- the Consolidated Risk Tables provide explanations for why some of these residual risks are considered to be managed at a tolerable level
- the supporting evidence at Section 9 of the Risk Assessment sets out the process used to determine whether the levels of risk were considered tolerable, and therefore additional rules were not considered necessary (Figure 9-1)
- the rationales used to determine tolerable levels of risk to EWRs is set out in supporting evidence at Section 9.2 and Table 9-3 of the Risk Assessment. These rationales relate to the significant changes to the flow regime as a result of river regulation
- this information sets out a structured, logical approach to considering whether rules are necessary, and whether the risk can be managed in a manner commensurate with the level of risk
- for medium and high risks that cannot be addressed, the Consolidated Risk Tables in the Risk Assessment also set out the reasons why the current level of risk is tolerable, or the risk cannot be addressed in a manner commensurate with the level of risk. These are the reasons why rules (or additional rules) have not been included in this Plan to address these risks. Where the level of risk is low, it is not necessary to include any new rules, but existing rules that maintain the current levels of risk have been included in this WRP
- the rules to ensure the operation of this Plan does not compromise environmental watering requirements of priority environmental assets and priority ecosystem functions included in this WRP are:

- In respect of the unregulated rivers within the WRPA under the Water Sharing Plan for Intersecting Streams Unregulated River Water Sources 2011:
  - Part 4 that identifies and commits water as planned environmental water within the unregulated rivers within that WSP area and provides for the establishment and maintenance of that water
  - $\circ$  Part 6, Divisions 1 4 that sets out the limits to the availability of water
  - o clause 45 that provides for flow classes to manage flows
  - clause 46 (2-9) that restrict access to unregulated flows, providing water for instream and downstream environmental outcomes
  - clause 50 specifies a water supply work approval must not be granted or amended to authorise the taking of water from the Paroo River and its tributaries.

New rules to protect environmental watering requirements are not necessary where the level of risk is low. The consolidated risk tables in the Risk Assessment set out why current medium or high risks are either tolerable or cannot be addressed in a manner commensurate with the level of risk. This explains why additional rules have not been included in this plan to address these risks.

## 4.3. Planning for environmental watering

The WRP has regard to environmental watering requirements of priority environmental assets and priority ecosystem functions set out in the most recent version of the Intersecting Streams LTWP prepared in accordance with Chapter 8 of the Basin Plan and attached at Appendix B.

The purpose of the Intersecting Streams LTWP is to inform annual decision-making and guide the management of water to maximise river and wetland health outcomes over the next 20 years in the Intersecting Streams catchments, and the Murray–Darling Basin. There are many factors that influence water management decisions, including predicted and annual rainfall, town and agriculture water uses, and plant and animal habits. The range of factors means that it is essential that decision-makers maintain flexibility to respond to emerging priorities. Consequently, the LTWP has been developed to guide water management decisions, rather than prescribe future water use.

Implementation of the LTWP requires strong partnerships and coordination between all land managers and water users. The LTWP provides the foundation to support future coordination efforts by:

- informing and guiding annual and longer-term water management deliberations and planning by the Department of Planning and Environment and the Commonwealth Environmental Water Office (CEWO)
- informing planning processes that influence river and wetland health outcomes, including development of water sharing plans and water resource plans
- identifying opportunities for more strategic river operations and strengthening collaboration between holders of environmental water
- helping target investment priorities for complementary actions that will effectively contribute to progressing the outcomes sought by this LTWP
- building broad community understanding of river and wetland health issues.

In the Intersecting Streams WRPA, water has been used to meet a range of ecological requirements, including to:

• Improve the extent and condition of vegetation within or closely fringing river channels of the Intersecting Streams following flood events

- Maintain the extent and improve the condition of important floodplain woodlands
- Maintain and increase number of waterbirds
- Improve foraging and breeding habitat for waterbirds
- Provide improved conditions for native fish recruitment and dispersal in rivers and wetlands of the Intersecting Streams
- Improve the connection between the Intersecting Streams and Darling rivers for fish dispersal
- Maintain and improve river and floodplain habitat
- Support lifecycles of plants and animals
- Connect riverine floodplain systems

While environmental water use objectives and operations may be refined to improve outcomes these types of environmental water use are expected to continue to dominate in the future.

For the purpose section 10.26 of the Basin Plan:

- section 4.1.1 of this Plan includes planned environmental water rules that:
  - recognise and contribute to meeting the environmental watering requirements of priority environmental assets and priority ecosystem functions set out in the most recent version of the Intersecting Streams Long Term Water Plan prepared in accordance with Chapter 8 of the Basin Plan
  - contribute to meeting the environmental objectives established in Part 2 of the water sharing plans at Schedule A (see also Schedule E)
- section 2.3 of Schedule C to this WRP outlines consultation undertaken in relation to environmental water planning. These views were considered when preparing the WRP
- sections 4.2 and 4.3, and Tables 4-4 and 4-9 in the Risk Assessment at Schedule D to this WRP demonstrate that the Intersecting Streams LTWP provides for environmental watering that relates to the surface water component of the environmental watering requirements of groundwater dependent Priority Environmental Assets (PEAs) and Priority Ecosystem Functions (PEFs), and that regard was had to the most recent version of that plan. The provisions in the LTWP are given effect by this WRP
- Table E-1 of Schedule E to this WRP sets out how the objectives and outcomes in the WRP align with the objectives and outcomes outlined in chapter 5 and chapter 8 of the Basin Plan, and the most recent versions of the Basin-wide environmental watering strategy and the Intersecting Streams LTWP (as at the date of writing)
- Table E-2 of Schedule E to this WRP identifies the water management actions and mechanisms that provide for environmental watering consistent with the objectives of this WRP and the Intersecting Streams LTWP.

The Intersecting Streams LTWP is not part of the accredited WRP.

## 4.4. Environmental watering between connected water resources

Existing cooperative arrangements to coordinate environmental water in the Intersecting Streams:

• New South Wales – Queensland Border Rivers Intergovernmental Agreement 2008 directs the sustainable management and sharing of water of the Border Rivers (including

the Intersecting Streams). Whilst there is no reference to Intersecting Streams in the IGA 2008, the Border Standing Committee which was created under clause 47 of the IGA is responsible for the management of the bifurcation weirs in the intersecting streams.

- Intergovernmental Agreement for the Paroo River between New South Wales and Queensland 2003 provides for a collaborative framework to consider water related crossborder planning issues and to promote the sustainable management of the Paroo River.
- Regular communication between CEWO, Water NSW, Department of Planning and Environment – Biodiversity and Conservation Division, Department of Planning and Environment and Department of Primary Industries – Fisheries to produce multi-year and annual water plans. Communication also occurs at the beginning of the water year, and during watering events.
- Communication between Department of Planning and Environment Biodiversity and Conservation Division and Water NSW regarding the best methods for flow delivery to meet desired ecological outcome and where possible use of operational water, that is seeking opportunities to 'piggyback' on operational events.
- Intergovernmental Agreement on Implementing Water Reform in the Murray Darling Basin 2013 (revised August 2019) Schedule 3 Appendix A commits NSW under measures 2, 3 and 4 to protect environmental flows, develop event-based mechanisms to meet flow targets and improved coordination of environmental flows. The Northern Basin Environmental Watering Group (NBEWG) was established in conjunction with this IGA. It provides a forum to coordinate planning and delivery of water for the environment across the northern Basin, including managing connectivity between the Queensland and NSW valleys.

NSW and Queensland will continue to work together to develop a method to quantify the volume of environmental water entering the Intersecting Streams from Queensland. Once a method for determining this volume has been agreed, active management of environmental water may be considered in the Intersecting Streams WRPA. To enable this, an amendment provision has been included in Part 10 of the *Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011* so that access rules for unregulated river access licences can be included to protect active environmental water from extraction. Environmental water can be protected from extraction prior to implementation of active management through the issuing of an order under Section 324 of the WMA 2000.

For the purpose of sections 10.26 and 10.27 of the Basin Plan:

- Part 8 Division 2 of *Water Sharing Plan for Intersecting Streams Unregulated River Water Sources 2011* sets flow rates or flow levels below which the taking of water is not permitted. These restrictions facilitate the co-ordination of flows to meet environmental outcomes within the Barwon–Darling Watercourse (SW12) WRP Area.
- the objective in clause 9(2)(b) of the Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011 reflects the connectivity between connected water resources.

Existing cooperative arrangements to coordinate environmental water in the Intersecting Streams include:

- water sharing agreements and commitments between New South Wales and Queensland as described in 1.1, 2.2, 2.3. 4.2 and Part 7 of the Intergovernmental Agreement for the Paroo River 2003
- Schedule 3, paragraphs 2, 3 and 4 of the Intergovernmental Agreement on Implementing Water Reform in the Murray Darling Basin 2013 (revised August 2019) commits the Commonwealth, Queensland and New South Wales governments to a series of environmental ('toolkit') measures, that will deliver improved environmental

outcomes and improved coordination of environmental flows between New South Wales and Queensland

- regular communication between Department of Planning and Environment BCD and CEWO to produce multi-year water plans. Communication also occurs at the beginning of the water year and during watering events
- communication between Department of Planning and Environment Biodiversity and Conservation Division and WaterNSW regarding the best methods for flow delivery to meet desired ecological outcomes
- the use of held environmental water is at the discretion of the holders of the licence in accordance with the licence conditions and entitlements. In the case of the CEWH, use of held environmental water must be undertaken consistently with the Basin Plan as required under Part 6 of the *Water Act 2007* (Cth)

The Intersecting Streams LTWP also establishes objectives and environmental watering requirements which target flows to meet environmental outcomes within downstream WRP areas (but note that the Long Term Water Plan for the Intersecting Streams WRP area is not part of the accredited WRP).

For the purpose of 10.27 of the Basin Plan:

The Intersecting Streams Surface WRP area does not have a significant hydrological connection to the Lachlan (SW10), Macquarie-Castlereagh (SW11) or NSW Murray and Lower Darling (SW8) WRP areas and there are no practically feasible opportunities to coordinate environmental watering that respond to any non-significant hydrological connections. Therefore, the requirement for coordinated environmental watering between these water resource plan areas is not relevant to address further.

### 4.5. No net reduction in the protection of PEW

NSW has used the WRP development process to review specific water sharing rules which could be refined to provide better outcomes for licence holders or the environment. Proposals to change PEW rules have been developed in close consultation with Department of Planning and Environment BCD and NSW Department of Primary Industries—Fisheries consistent with WSP objectives and, where possible, using environmental water requirements (EWR) in the LTWPs to ensure the best environmental outcomes using PEW.

For the purpose of section 10.28 of the Basin Plan the following rules and arrangements for planned environmental water identified in section 4.1.1 of the WRP are different to the rules in place immediately before the commencement of the Basin Plan:

- clauses 15 and 16
- Divisions 1 4 of Part 6

The PEW rules currently in place result in no net reduction in the protection of planned environmental water compared to the protection provided under state water management law on 23 November 2012 as outlined in section 4.5.1 below.

#### 4.5.1. Demonstrating no net reduction in the protection of PEW

The effect of rules within the WSP that commit or preserve PEW have either remained the same or been improved since the commencement of the Basin Plan

#### Changes to the Long-term Average Annual Extraction Limit

Changes have been made to Divisions 1 to 4 of Part 6 to meet requirements of the Basin Plan. The provisions now specify how the SDL, APT and AAT will be calculated, and how compliance against the limit will be assessed. Changes have been made to clauses 27 (c) of the Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011. This clause previously included Floodplain Harvesting activities in the LTAAEL for future Floodplain Harvesting access licences to be issued. As Floodplain harvesting access licences will not be issued in the Intersecting Streams water source, this clause has been removed. The annual extraction of water averaged over the period from July 1993 to July 1999 by floodplain harvesting activities for which floodplain harvesting access licence were later issued is zero. Therefore, removing this rule has no effect on the LTAAEL.

The reference to the estimated take of water from the respective water source by commercial plantations that existed on 30 June 2009, in clause 27(c) has also been included in order to align with the Basin Plan. The estimated take for commercial plantations that existed on 30 June 2009 is zero as there was no commercial plantations in this water source at that time.

These changes to the LTAAEL have no material effect on the on the quantity of PEW protected by these provisions. In the Intersecting Streams WRPA, the long-term average annual planned environmental water under this Plan (Schedule A) is no less than the long-term average annual planned environmental water that was in place under water management arrangements prior to the commencement of the Basin Plan. The WSP rules that maintain PEW, by limiting extraction to the LTAAEL, are reflected in the WRP to meet the requirements of s. 10.11 of the Basin Plan.

As the legal protection and quantity of PEW remains unchanged, there is also no reduction in the effectiveness of PEW in the Intersecting Streams WRPA.

#### **Removal of the Alluvial Groundwater Sources**

As a part of the WRP process, the alluvial groundwater sources and all rules relating to these groundwater sources under Part 4 have been removed from the *Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011* and will be incorporated into the *Water Sharing Plan for the Darling Alluvial Groundwater Sources 2020* as part of the remake process. There is no change to the legal protection of PEW as a result of this change.

## 4.5.2. Changes made to the Intersecting Streams Unregulated Rivers WSP

The Basin Plan allows for trade of surface water between states in an unregulated system, when the boundary between the unregulated systems is based solely on the border between the two Basin States. Currently, the WSP does not allow the interstate transfer of access licences and assignment of water allocation. The WSP does include an amendment provision which allows interstate trading to occur, as a result of an interstate agreement.

A framework to allow for interstate trade, as well as administration arrangements between the states will be progressed further only if requested by water users and there is sufficient interest to warrant the investment by both states.

The Department has made minor changes to the wording of the interstate trade provision. Trade will only be progressed in water resource planning if NSW water users are interested in interstate trade. Interest will be monitored between QLD and NSW.

The Department has also included a new amendment provision to enable active management in the future in the water sharing plan.

# 4.6. Cultural connections to water and retention of current level of protection of Aboriginal peoples' values and uses

#### 4.6.1 Cultural water and flows

Water is considered to be crucially important to the current and future social, environmental, spiritual, economic and cultural wellbeing of Aboriginal people. However, Aboriginal people feel as though their voices are not heard in water management. There is a shared concern among First Nations that cultural assets are not considered a priority compared to environmental water and water for irrigation. 'There is currently no policy framework within which cultural flows can be considered, and environmental water managers do not consider cultural outcomes.'

Nations of the Intersecting Streams WRPA have expressed a lack of cultural awareness and respect to be a risk to their water dependent values and uses. Partnerships and communications are poor regarding cultural flows and generally it is not well understood that cultural flows differ from environmental flows, nor that environmental flows do not supplement the need for cultural flows.

'Cultural flows provide for different outcomes' such as replenishment of billabongs, creeks and streams in which are important for heritage and practice of culture'. The Barkandji and Maljangapa, Budjiti, Euahlayi, Guwamu/Kooma, Kunja, Murrawarri and Ngemba people have a strong focus on collection of food from on Country, particularly surrounding water, and thus follow the seasonal change of the river. 'Collecting bush tucker has been a cultural practice for generations and various social, cultural and food gathering events align with the different times of the year'.

Nations would like to be involved in the design and management of their own flows so they can support such cultural gatherings and ceremony in future. They would like to support the 'maintenance of traditional medicines, and natural events' such as breeding seasons of fish species and key bush tucker animals. Overall, they would like to see the plants and animals they rely on for practising culture to come back and share concern 'that teachings of these values and practices are in danger of dying off' due to declining health of the river and reduced access.

As quoted by one Euahlayi Nation elder, 'We want water in the river first off, on our sites.' 'I know in the modern sense we need to think about economics, but as a traditional person, I have to think about going back to what our cultural knowledge and our beliefs in that save me.' 'I'd just like to see the river healthy, people back dancing, and culture... doing a bit of the cultural stuff around on the river and telling stories.' 'I would like to see people return to Country. I would like to see us interact culturally with Country and water again.' 'To bring back the community and the way we come together as a family.'

For the purpose of section 10.54 of the Basin Plan:

- this Plan has regard to the views of Aboriginal people with respect to cultural flows by including Attachment B, C and E – H to Schedule C. Considerations for cultural flows is part of the ongoing work to strengthen consideration for First Nations objectives and outcomes for Aboriginal people as specified in section 1.3.1 of this WRP
- The development of the State Water Strategy has identified the need for additional work to achieve cultural water flows and the water management aspiration. Several key pieces of work provide the foundation for the way forward, including First Nations-led work developed under the National Cultural Flows Research Project. The Government will continue to work with First Nations and Aboriginal people and organisations, and apply the processes developed in the Pathway to Cultural Flows in Australia, Cultural Flows—A guide for First Nations and Cultural Flows—A guide for Water Managers

#### 4.6.2 Aboriginal cultural heritage

A range of rules currently operate to protect Aboriginal cultural heritage at both State and Commonwealth levels. In NSW, the main legislation under which protected areas are created and managed is the National Parks and Wildlife Act 1974 (NSW). The Heritage Act 1997 (NSW) provides for a State Heritage Register where items of significance can be listed. Heritage Orders to control potential developments that may harm the heritage value of items are issued under this Act. There are also protections for Aboriginal heritage under a range other legislation, policies and strategies. Table 4-2 lists key legislation in NSW that is relevant to Aboriginal cultural heritage. Figure 4-6 is an example of how a marked tree has cultural heritage value for Aboriginal People.

As part of a long-standing reform initiative, Heritage NSW under the Department of Premier and Cabinet, will manage Aboriginal cultural heritage regulation. NSW is undertaking consultation with peak Aboriginal bodies on Aboriginal cultural heritage legislation to ensure self-determination and custodianship is at the centre of any legislation that deals with Aboriginal cultural heritage.



Figure 4-6 Cultural heritage protection of a marked tree

Artist, Nathan Peckham 2021

Table 4-2. Key legislation in NSW	I that protects water related Aboriginal heritage.
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NSW Legislation	Relevance to Aboriginal cultural heritage protection
Water Management Act 2000, and Water Sharing Plans	Aboriginal representation on water management committees; Aboriginal cultural access and community development licences as part of Water Sharing Plans. Water sharing plans provide for recognition of Native Title determinations and have provision for water entitlements for Aboriginal cultural purposes as part of basic landholder rights. Applications for most water management work approvals are advertised.
National Parks and Wildlife Act 1974	Provides for the protection of Aboriginal objects and declared Aboriginal Places in NSW; and to foster appreciation, understanding and enjoyment of Aboriginal cultural heritage. Provides protection by establishing offences for 'harm' (damage, destroy, deface or move). Requires that information on Aboriginal cultural heritage be maintained in the Aboriginal Heritage

	Information Management System (AHIMS). Allows for the reservation of Aboriginal Areas and for the co-management of some national parks through Boards of Management.
Heritage Act 1977	Lists and gives protection to places of Aboriginal heritage significance that are of 'State' heritage significance on the State Heritage Register. Consultation is undertaken with Aboriginal groups for places listed specifically for Aboriginal significance.
Environmental Planning and Assessment Act 1979	Provides planning controls and requirements for environmental assessment. Oversees land-use planning for local areas. Compulsory clause in standard Local Environmental Plan template specifically for conservation of locally significant Aboriginal heritage.
Crown Lands Act 1989	Sets out processes and principles for using and managing Crown land. The Act enables covenants to be placed over Crown land to protect environmental and cultural and heritage values before the land is sold or transferred.
Aboriginal Land Rights Act 1983	Establishes a system of Local Aboriginal Land Councils (LALC) across NSW. LALCs and NSWALC can also acquire and deal in land and negotiate agreements for access to private land for cultural resource use. LALCs have a role in the protection and promotion of awareness of Aboriginal culture and heritage.
Native Title Act (NSW) 1994	Enables full ownership of land via native title as well as provision for making agreements via Indigenous Land Use Agreements (ILUA).
Forestry Act 1916	Allows for the co-management of State Forests. Boards of Management have been established and resourced for three State Forests. Under this Act, Aboriginal people can gain access to state forests for obtaining forest products and materials.
Fisheries Management Act	The Fisheries Management Act issues permits for taking fish for cultural community events.
1994, and the Marine Parks Act 1997	The Marine Parks Act permits Aboriginal cultural resource use in certain areas/zones of marine parks in particular circumstances.
Rural Fires Act 1997	When hazard reduction and wildfire control is carried out, Aboriginal heritage is taken into account via AHIMS (Aboriginal Heritage Information System) searches and consideration of relevant management plans.
Game and Feral Animals Control Act 2002	Certain Aboriginal people are exempt from licence requirements for hunting feral animals.
Land Acquisition (Just Terms Compensation) Act 1991	An authority of the State of NSW may acquire land in exceptional circumstances.
Threatened Species Conservation Act 1995	Requires that Aboriginal peoples' interests be considered in threatened species recovery plans.

### 4.6.3 Protecting Aboriginal peoples' values and uses

Various state instruments and policies apply to the protection of cultural connections to surface water. Provisions for surface water for cultural purposes are implemented through water sharing plans in NSW. Table 4-3 summarises the key provisions in the protection and development of Aboriginal peoples' surface water values and uses in the WRPA.

Table 4-3. Existing protection	of Aboriginal peoples	values and uses for	or water under NSW
legislation/regulations.			

Relevant NSW Legislation/ Regulation	Where Implemented	Changes as a result of WRP
s.3 (c) (iv) of WMA 2000	Specified in Part 2 of the Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011.	Improved
	Acknowledgement of and identification of First Nations' cultural objectives, strategies and performance indicators.	
s.5 (2) (e) of WMA 2000	Specified in Part 2 of the Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011.	Improved
Schedule 4(16) of WMA 2000	Land vested in an Aboriginal Land Council declared as exempt from the payment of rates and fees	Retained from pre WRP arrangements
ss.55, 5(3) and 9(1) of the WMA 2000	Native Title basic landholder rights established under s.55 of the WMA 2000 provides for any water access as determined in the area under <i>Native Title Act 1993</i> (Cth). Clause 19 of the <i>Water Sharing Plan for the Intersecting</i> <i>Streams Unregulated River Water Sources 2011.</i>	Retained from pre WRP arrangements
61(1)(a) of the WMA 2000	An application may be made for specific purpose access licences (subcategory "Aboriginal cultural"), for Aboriginal cultural purposes Clause 39 of the Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011.	Retained from pre WRP arrangements
cl.8(1) of the Access Licence Dealing Principles Order 2004	Dealings (trade) should not affect geographical and other features of Aboriginal significance.	Retained from pre WRP arrangements
Water Management (General) Regulation 2018 (NSW) where permitted to be applied for.	The NSW Water Management (General) Regulation 2018 (Schedule 3) establishes (of relevance to this Plan) Aboriginal commercial, Aboriginal cultural, and Aboriginal community development subcategories of access licences. This Regulation replaces the Water Management (General) Regulation 2011.	Retained from pre WRP arrangements
Relevant NSW Legislation/ Regulation	Where Implemented	Changes as a result of WRP
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Water Management (General) Regulation 2018 (NSW), cl.26	The NSW Water Management (General) Regulation 2018 cl.26 provides that applications for most water management works approvals must be advertised. This Regulation replaced the Water Management (General) Regulation 2011.	Retained from pre WRP arrangements
Formal data use agreements with First Nations	The agreements clearly describe the limited purposes that the information collected during the consultation can be used for. Third parties are directed to the relevant First Nations to seek permission to use information for any other purpose.	Improved

For the purpose of section 10.55 of the Basin Plan, this Plan provides a level of protection of Aboriginal peoples' values and Aboriginal uses in the Intersecting Streams WRPA that is, at a minimum, equal to that which existed under State water management arrangements prior to this this Plan, as shown in Table 4-3.

A transitional WRP operated for the water sharing plans for the Intersecting Streams Unregulated River Water Source (as at 6 July 2012) (*Water Sharing Plan for the Intersecting Streams Unregulated and Alluvial Water Sources 2011*). The transitional plan included some of the arrangements identified in Table 4-3. This plan retains or improves the protection of Aboriginal peoples' values and uses as identified in Table 4-3.

## 4.7. Groundwater management

For the purposes of sections 10.18 - 10.20 and 10.22 of the Basin Plan, this WRP was prepared having regard to whether it is necessary to include rules to ensure the operation of the WRP does not compromise:

- environmental watering requirements for priority environmental assets and priority ecosystem functions that depend on groundwater
- environmental watering requirements for groundwater that has a significant hydrological connection to surface water
- the overall structural integrity of an aquifer arising from take within the long-term annual diversion limit for the Intersecting Streams SDL resource unit
- the overall hydraulic relationships and properties between groundwater and surface water systems, between groundwater systems and within groundwater systems.

Section 3.3.2 and 4.5.3 of the Risk Assessment (Schedule D to this Plan) shows regard has been had to the hydrological connections between surface water and groundwater.

Rules to ensure the WRP does not compromise environmental water requirements dependent on surface water, or a combination of surface water and groundwater have been included in the WRP to meet section 10.17 (section 4.2 of this Plan).

For the purposes of meeting the requirements of sections 10.18-10.20 of the Basin Plan, the rules to meet section 10.17 of the Basin Plan (section 4.2 of this Plan) provide protections within and outside of the Intersecting Streams WRP area for:

- the meeting of groundwater EWRs
- not compromising the productive base of groundwater or environmental outcomes relating to groundwater
- maintaining structural integrity of aquifers

• maintaining the hydraulic relationships.

These rules are fit-for-purpose as described in the Risk Assessment and are sufficient to maintain a low risk of impacts to groundwater. As such, it is not considered necessary to provide additional rules to:

- manage timing, places and rates at which water is permitted to be taken from the groundwater in this area
- place resource condition limits relating to discharge of groundwater into surface water
- place restrictions on the water permitted to be taken
- otherwise ensure that the operation of the plan does not compromise the meeting of EWRs related to groundwater that has a significant hydrological connection to surface water.

For clarity, the provisions under section 4.2 of the WRP ensure that the EWR for PEAs and PEFs in the WRP area are not compromised. Therefore the volume of water available as groundwater recharge throughout the Intersecting Streams WRP area is protected and the likelihood rating is 'low'.

For the purpose of 10.21 of the Basin Plan, the Intersecting Streams WRP area does not include any of the water resource plan areas listed in that section, therefore this requirement does not apply in this water resource plan.

For the purpose of s10.22(b) of the Basin Plan, rules to address risks relating to groundwater matters are not required because none were identified in the Risk Assessment for the Intersecting Streams WRP area.

While NSW acknowledges the potential for groundwater take to impact surface water resources (as described in section 10.19 of the Basin Plan), the hydraulic relationships and properties between groundwater and surface water systems (as described in section 10.20 of the Basin Plan) and environmental outcomes relating to groundwater (as described in section 10.21 of the Basin Plan), these are managed in NSW through WSPs and WRPs relating to groundwater. Specifically, if a need for management rules is identified through a risk assessment, these rules will be included in the relevant groundwater WRP.

Section 3.3.2 of the Risk Assessment for the Intersecting Streams WRPA identifies existing groundwater management actions that address risks relating to the connections and relationships between groundwater and surface water. Groundwater-related risks were not identified or considered any further in the Risk Assessment, because these are considered in the Risk Assessment for the NSW Great Artesian Basin Shallow (GW13), Darling Alluvium (GW7), and the NSW Murray-Darling Basin Fractured Rock (GW11) WRP Areas, and rules to address these risks will be included in the relevant groundwater WRPs. The Risk Assessment for the three relevant groundwater, including how this can impact the environment (Chapter 6), impacts of aquifer compaction (Chapter 4.3), and risk of connections with poor quality groundwater (Chapter 4.4).

For clarity, section 3.3.2 of the Risk Assessment states that in NSW connectivity between surface and groundwater is primarily managed through rules for specific areas in groundwater WSPs and by managing surface and groundwater extraction to LTAAELs and SDLs. Any potential groundwater risks from surface water extraction are managed by PEW rules in the surface water WSPs that also protect the surface water resources.

Section 4.3.2 of the Risk Assessment describes the existing rules for the surface water resources which protect EWRs of groundwater dependent PEAs and PEFs and are included in the WRP for the purpose of 10.17.

To continue to support groundwater dependent ecosystems in the Intersecting Streams WRPA, objectives in the LTWP relate to maintaining the mapped extent of groundwater-dependent vegetation communities and groundwater levels within their long-term natural ranges.

## 5. Take for consumptive use

#### This section includes the following components of the Basin Plan

- 10.08 Water access rights must be identified
- 10.10 Annual determination of water permitted to be taken
- 10.11 Rules for take including water allocation rules
- 10.12 Matters relating to accounting for water
- 10.13 Limits on certain forms of take
- 10.15 Actual take
- 10.23 Types of interception activities
- 10.24 Monitoring impact of interception activities
- 10.25 Actions to be taken regarding interception activities
- 10.37 Circumstances in which conditions in s.12.24 are met regarding trade
- 10.38 Circumstances in which conditions in s.12.25 are met regarding trade
- 10.39 Circumstances in which conditions in s.12.26 are met regarding trade
- 10.51 Measures in response to extreme events

Figure 5-1 shows the NSW approach to determining the amount of water available to be taken in the Intersecting Streams WRPA, and how that take will be managed within the SDL set by the Basin Plan. The elements of this approach are discussed in this section, with reference to the Chapter 10 Basin Plan requirements.



Figure 5-1. NSW approach to determining amount of water available for 'take' and compliance with SDLs in the WRPA.

## 5.1. Water access rights and other take

# 5.1.1. Identifying water access rights and other take in the Intersecting Streams WRPA

Water access rights in the Intersecting Streams WRPA are enabled under the WMA 2000, and include access licences (known as 'take from a watercourse', and 'take by runoff dam' under the Basin Plan) and basic landholder rights (known as 'take under basic rights' under the Basin Plan).

Take from the Intersecting Streams WRPA is associated with access licences issued in the Intersecting Streams WRPA and is specified on the access licences either as a volume in megalitres per year (ML/yr) for local water utility access licences and domestic and stock access licences, or as 'unit shares' in the resource made available for all other categories of access licence.

Take under basic rights in the Intersecting Streams WRPA is a right conferred under Part 1 of Chapter 3 of the WMA 2000 to take water for domestic use and stock watering, in the exercise of native title rights, or subject to harvestable rights without the need for an access licence. The extraction permitted under this form of take is that required to satisfy the right. Volumes (in ML/yr) attributed to take under basic rights in this chapter are estimates only.

Section 5(3) of the WMA 2000 gives priority of access for basic landholder rights over all categories of access licences. Section 58(1)(a) of the WMA 2000 gives priority to local water utility access licences, major utility access licences and domestic and stock access licences over all other categories of access licences.

For the purpose of section 10.08 of the Basin Plan:

- Table 5-1 identifies the forms of take, the classes of access right that apply to the forms of take, and the characteristics of each class of access right that exist in the Intersecting Streams SDL resource unit (SS17) at the time of the writing of the plan.
- Part 11 of the *Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011* set mandatory conditions on water access licences and approvals in the Intersecting Streams WRPA with which the holders must comply.

The number of water access rights in the Intersecting Streams WRPA may change as a result of granting, consolidation, subdivision or cancellation of water access rights provided for under NSW legislation.

Take from surface water sources may change if, for example:

- a local water utility access licence volume is increased or decreased as provided for in the WMA 2000
- access licences are cancelled as provided for in the WMA 2000
- access licences are granted as provided for in the WMA 2000
- a 'dealing' under the WMA 2000 changes the relative volumes or shares of access licences.

Take under basic rights may change, if for example:

- there is subdivision of waterfront land, in the case of domestic and stock basic rights
- native title rights are determined under the *Native Title Act 1993* (Cth), in the case of Native Title basic landholder rights.

Table F-1 and Table F-2 in Schedule F further detail the sources of information used to define these rights, the methods used for estimated values, and the circumstances in which they can change.

## 5.1.2. Complying with conditions of water access rights

The WMA 2000 (s.17, s.66 and s.67) enables NSW water sharing plans to include provisions that impose conditions on access licences and water supply work approvals. These conditions specify the particular circumstances under which water access rights may be used.

The Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011 sets out the conditions to be imposed on access licences and approvals in the Intersecting Streams WRPA.

Under section 60A and section 91B of the WMA 2000 it is an offence to operate in breach of a condition imposed by a water sharing plan. Significant penalties can apply to such offences.

Section 66 (1AA) and Part 5 of Chapter 3 of the WMA 2000 also provide for conditions to be imposed on access licences and approvals by regulation. Part 10 of the *Water Management (General) Regulation 2018* imposes conditions relating to metering equipment and logbooks.

For the purpose of section 10.08(2) and 10.08(1)(c) of the Basin Plan:

- Table 5-1 identifies the conditions that are required to be imposed on access licences and water supply work approvals in the Intersecting Streams WRPA.
- sections 60A D, 60F of the WMA 2000 makes it an offence to take water without, or otherwise than authorised by, an access licence. This includes any contravention of any condition of the access licence
- sections 91A and 91B of the WMA 2000 makes it an offence to use water supply work without, or otherwise than as authorised by, a water supply work approval. This includes any contravention of any condition of the approval.
- Section 324 (excluding sub section 2) of the WMA 2000 authorises the Minister for Water to direct that, within a specified area and for a specified period, the taking of water from a water source, is prohibited, or is subject to specified restrictions, as the case requires to maintain or protect water levels within that water source.

Note: Section 324 (2) of the WMA 2000 deals with the application of s324 orders for the management of groundwater (aquifers) and is therefore not relevant and has not been accredited as part of this surface water WRP.

	Basin Plan requirement for		Basin Plan requirement s10.08(1)(c)			
	s10.08(1)(a),(b)		Characteristics of	of each class of right (who	ere appropriate)	
	Form of take	Class of Water Access Right	Number of Water Access Rights in the class	Total volume issued to the class (as at date of submission for WRP accreditation)	Any conditions on the exercise of the Water Access Right	
1	Take from a watero	course				
2		Unregulated River access licence	23,083 unit shares	NSW issues share components of unregulated river water access licences. The available water determination cannot exceed 1ML per unit share per year. Therefore the maximum volume that can be issued each year cannot be greater than 23,083 GL	As specified under Parts 5 to 9 and 11 of Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011. May include water taken and stored in excess of the maximum harvestable right volume (ie. take by runoff dam) as it is currently not possible to separate the component from unregulated river access licences.	
3		Unregulated river (special additional high flow) access licences	12,150 unit shares	NSW issues share components of unregulated river water access licences. The available water determination cannot exceed 1ML per unit share per year. Therefore the maximum volume that can be issued each year cannot be greater than 12,150 GL in the	As specified under Parts 5 to 9 and 11 of Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011.	

#### Table 5-1. Forms of take and their related access rights and characteristics in the Intersecting Streams WRPA.

	Basin Plan requirement for s10.08(1)(a),(b)		Basin Plan requirement s10.08(1)(c) Characteristics of each class of right (where appropriate)		
	Form of take	Class of Water Access Right	Number of Water Access Rights in the class	Total volume issued to the class (as at date of submission for WRP accreditation)	Any conditions on the exercise of the Water Access Right
				Warrego River Water Source.	
4		Domestic and Stock licensed	22 licences	0.482 GL/year	As specified under Parts 5 to 9 and 11 of Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011.
5		Local Water Utility	1 licence	0.221 GL/year	As specified under Parts 5 to 9 and 11 of Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011.
6	Take by runoff dan	าร			
7 8		Harvestable Rights 'Exempt dams'	Not determined. The right is based on the geomorphology of each property, the plan area and the number of properties.	Not specified volumetrically	Harvestable Rights – Western Division Order as described under NSW Government Gazette 40 dated 31 March 2006 p. 1628, and the Harvestable Rights (central inland- draining catchments) Order 2022. Also, Section 53 & 54 WMA 2000. As specified under Part 5 Division 2 of <i>Water</i> <i>Sharing Plan for the Intersecting Streams</i>
					Unregulated River Water Sources 2011 Within the Intersecting Streams Surface WRP area the Paroo River Water Source, Warrego River Water Source, Narran River Water Source and Moonie River Water Source fall entirely within the Western Division. Yanda Creek Water Source falls within the central

	Basin Plan requirement for s10.08(1)(a),(b)		Basin Plan requirement s10.08(1)(c) Characteristics of each class of right (where appropriate)		
	Form of take	Class of Water Access Right	Number of Water Access Rights in the class	Total volume issued to the class (as at date of submission for WRP accreditation)	Any conditions on the exercise of the Water Access Right
					inland-draining catchments and the Western Division. The Western Division has the right to capture 100% of average rainfall runoff. The central inland-draining catchments has the right to capture 10% of average rainfall runoff.
9		Water taken and stored in excess of the maximum harvestable right volume (licensed as 'unregulated river access')	Not determined separately	Not specified volumetrically	Water taken and stored in excess of the maximum harvestable right volume is licensed under unregulated river access (row 2 above). It is not possible to separate this component from other take from watercourse under an unregulated river access license.
10		Exempt rainfall runoff collection (relating to use of tailwater drain)	Not determined separately	Not separately specified volumetrically	Water Management General Regulation 2018 cl 39B, Schedule 4 cl 17C, under the Water Management Act 2000. No estimate is available yet to account for ss 10.10, 10.15 and 10.44.

	Basin Plan requirement for s10.08(1)(a),(b)		Basin Plan requirement s10.08(1)(c) Characteristics of each class of right (where appropriate)		
11	Form of take	Class of Water Access Right	Number of Water Access Rights in the class	Total volume issued to the class (as at date of submission for WRP accreditation)	Any conditions on the exercise of the Water Access Right
12		Domestic and Stock	Not determined. The right is based on landholding and constrained by purpose.	Not issued. 2.46 GL/year estimated	Part 5 Division 2 of Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011. Section 52 WMA 2000.
13		Native Title	Not determined. The right is based on determination of Native Title.	<ul> <li>Section 55, WMA 2000</li> <li>A Native Title determination has been made for the Barkandji Traditional Owners but no associated volume has yet been assigned or negotiated under the determination or indigenous land use agreement</li> </ul>	Part 5 Division 2 of Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011. Section 55 WMA 2000.
14	Net take by comme	ercial plantations			
15		No water access right issued	0	Not specified volumetrically	No licence required. More information on how this is managed outside The WRP is provided in section 5.7 of this document.
16	Take from waterco	urse, basic rights and	runoff dams		

	Basin Plan requirement for s10.08(1)(a),(b)		Basin Plan requirement s10.08(1)(c) Characteristics of each class of right (where appropriate)			
	Form of take	Class of Water Access Right	Number of Water Access Rights in the class	Total volume issued to the class (as at date of submission for WRP accreditation)	Any conditions on the exercise of the Water Access Right	
17		State water access rights - WMA 2000, s 392(4)(a) & (c)	Not determined separately	Not specified volumetrically	No licence required as it establishes a right to take water from a water resource for firefighting purposes and for stock watering purposes. The conditions and characteristics associated with these rights are those referred to by the specified WMA clauses.	
					No estimate available and not considered consumptive take so not included in methods to address Basin Plan ss 10.10, 10.11 and 10.15.	

## 5.2. Trade of water access rights

## 5.2.1. General overview

In the context of the WMA 2000, 'trade' refers to several transactions known as 'dealings' that result in a change to one of the fundamental components of an access licence. The trade characteristics and conditions for this water access right are described in water sharing plans. The type of dealing that an access licence holder may use to affect a trade depends on what they are trying to achieve, their existing situation with respect to access licences and approvals and administrative considerations. Table 5-2 summarises the dealings available under different section of the WMA 2000.

#### Table 5-2. Dealings under the WMA 2000.

Section WMA 2000	Transaction Description
71M	Transfer holder of an access licence
71N	Transfer holder of an access licence for a set term only
71Q	Assignment of a share component of an access licence from one access licence to another
71R	Change of water source of an access licence
71S	Change of an extraction component of an access licence, including change of its location in terms of management zone
71T	Assignment of water allocation from one access licence water allocation account to another
71U	Interstate transfer of a share component of an access licence
71V	Interstate transfer of water allocation in a water allocation account
71W	Change of work nominated by an access licence

This Plan is subject to the water trading rules in Chapter 12 of the Basin Plan. The Basin Plan has requirements that apply to all trades (dealings). Note that basic rights cannot be traded, and as and such the dealings provision do not apply to this form of access right.

### 5.2.2. Trade between groundwater and surface water

For the purpose of section 10.39 of the Basin Plan, under the Intersecting Streams WRP, there is no trade (either of allocation or entitlement) permitted between any surface water SDL resource unit and any groundwater SDL resource unit.

## 5.2.3. Groundwater trade

For the purpose of section 10.37 of the Basin Plan the Intersecting Streams WRP does not apply to groundwater water access rights. As such, the s10.37 requirement of the Basin Plan does not apply to this WRP.

For the purpose of section 10.38 of the Basin Plan, the Intersecting Streams WRP does not apply to groundwater water access rights. As such, the s10.38 requirement of the Basin Plan does not apply to this WRP.

## 5.3. Long-term average sustainable diversion limit (SDL)

## 5.3.1. Establishing the initial SDL

The SDL for the Intersecting Streams WRPA is the long-term average annual diversion limit for the Intersecting Streams water resource plan area (SW13) as specified in Schedule 2 to the Basin Plan (being the baseline diversion limit (BDL), minus the SDL resource unit shared reduction amount, plus the SDL adjustment amount). This SDL is also established in clause 28 of the *Water Sharing Plan for Interesting Streams Unregulated River Water Sources 2011.* 

The BDL re-estimate table (Schedule F, Table F-6) shows the components of the BDL for the Intersecting Streams WRPA as estimated at the commencement of this Plan, and as defined in words in Schedule 3 to the Basin Plan for the Intersecting Streams SDL resource unit SS17.

### 5.3.2. SDL adjustments

The Basin Plan and the NSW water management framework provide for adjustments to the SDL as a result of changes to the BDL arising from, but not limited to:

• better information on baseline diversions for BDL components that are estimated.

## 5.4. Determining available water - rules for take

For the purpose of section 10.11 of the Basin Plan, the rules that ensure that, as far as practicable, the quantity of water actually taken from the Intersecting Streams SDL resource unit (SS17) for consumptive use in a water accounting period beginning on or after 1 July 2019 does not (after making any adjustments for the disposal or acquisition of held environmental water) exceed the annual permitted take for the period are set out below:

**Take from a watercourse** – Part 5 Division 3, Part 6 divisions 1, 3, 4 and 5, Part 7, Part 8, and Part 11 Division 2 of the *Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011*. Licenses in the unregulated river water sources permit some floodplain harvesting activities. This extraction is managed and accounted for under the existing access licence conditions.

**Take by runoff dams** — Section 53 and 54 of the WMA 2000 and the Harvestable Rights – Western Division Order in the NSW Government Gazette 40 (31 March 2006) (p. 1628), the Harvestable Rights (central inland-draining catchments) Order 2022 and Water Management General Regulation 2018 cl 39B, Schedule 4 cl 17C. If there is any growth in actual take section 10.13(2) of the Basin Plan applies.

**Take by basic rights** –Part 5 Division 2 of the *Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011* and Sections 52 and 55 of the WMA 2000.

**Net take by commercial plantations** – this type of take is not currently licensed under the NSW water management framework. In the Intersecting Streams SDL resource unit the risk to water availability from net growth in commercial plantations is low (Table 4-20 and Table 8-3 of the Risk Assessment at Schedule D to this Plan).

For the purpose of section 10.11 of the Basin Plan:

- clauses 29B, 29C and 31 of the of the *Water Sharing Plan for the for the Intersecting Streams Unregulated River Water Sources 2011* establish the rules for compliance with a long-term annual diversion limit for the Intersecting Streams SDL resource unit in a water accounting period
- for the purposes of the Basin Plan, in the event that take by basic rights, run off dams and commercial plantations is assessed as exceeding the SDL volume and contributing to an SDL non-compliance at a SDL resource unit scale, clause 31 of the *Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011* may be applied.

For the purpose of section 10.13(1) of the Basin Plan:

- the long-term average annual quantity of water that can be taken:
  - under basic rights is 2.5 GL/year, as described in table F-2
  - take under basic rights by runoff dams and net take by commercial plantations is limited to the level specified in column 2 of Schedule 3 of the Basin Plan (2012) for the Intersecting Streams SDL resource unit (SS17).

For the purpose of section 10.13(2) of the Basin Plan:

- any growth in these forms of take will be offset by a volume to be determined at the time by the operation of Part 6 of the *Water Sharing Plan for the Intersecting Streams* Unregulated River Water Sources 2011
- consistent with the requirements of section 10.13(2) of the Basin Plan, any form of take that would be offset using this mechanism would be able to be measured or reasonably estimated
- growth in these forms of take will be considered during any review of the relevant NSW
  water sharing plans within the WRPA to determine if the level specified in column 2 of
  Schedule 3 for that form of take is exceeded.

### 5.4.1. General overview

As a general rule, an annual available water determination (AWD) is made at the commencement of the water year (1 July) for each category of access licence.

Note also, for all licences in the unregulated rivers, the AWD represents a right to take water if specified flow conditions are met.

AWDs are the key method to undertake corrective action in the event that non-compliance with the SDL occurs.

### 5.4.2. AWDs in the unregulated river water sources

In the unregulated river water sources, generally:

- an AWD of 100% of entitlement or 1 ML/unit share of entitlement is made for all categories of access licence at the start of each water year
- the maximum amount of water that can be carried over from one water year to the next in the water allocation account for any access licence is 100% of entitlement or 1 ML/unit share of entitlement.
- water taken any three consecutive water years must not exceed the lesser of:
  - water allocations accrued to the water allocation account for the access licence from available water determinations in the previous three water years, plus the water allocations carried over in the water allocation account from the water year prior to those three water years, plus the net amount of water allocations assigned to and from the water allocation account in those three water years, or
  - the sum of the share components of the access licence at the beginning of each of the three water years, plus the net amount of water allocations assigned to and from the water allocation account in those three water years.

This is subject to any growth in use response required in relation to unregulated river access licences to ensure compliance with the SDL, or any measure taken in response to an extreme event. If there is non-compliance with the SDL, the Minister must make future available water determinations for unregulated river access licences of less than 1 ML per unit share.

## 5.4.3. Assessing compliance

Division 3 of Chapter 6 of the Basin Plan establishes the method for determining compliance with the SDL within each SDL resource unit. SDL compliance will be assessed in accordance Chapter 6, Part 4 of the Basin Plan. Where a finding of 'non-compliant' or 'compliant with a reasonable excuse' is made, the *Water Act 2007* (Cth) would require NSW to 'make good' by advising actions it proposes take to rectify the situation and ensure future SDL compliance.

Make good actions could range from improving methods for determining permitted take to triggering a 'growth in use response' under the *Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011* to comply with the SDLs.

In NSW, two separate but concurrent processes will be used to assess compliance with the SDL at the **end** of each water accounting period (1 July - 30 June):

- The Basin Plan compliance method a comparison of 'actual take' over a water accounting period with the 'annual permitted take' determined using the approved APT method, and
- the NSW compliance method a comparison of the long-term average annual extraction limit with the long-term average annual take as outlined in the *Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011.*

While the estimate used for the WSP compliance assessment is robust over the long-term, they represent average or typical water user behaviour. Under the MDBA's proposed SDL compliance methodology water users run the risk of triggering a breach of the SDL if:

- they behave the same as they have always done but the estimate does not represent their behaviour well under those particular climatic or flow conditions, or
- their short-term behaviour is different to their typical behaviour because of any of a number of factors including unusual climate conditions, spikes in commodity prices and the like.

Chapter 6 of the Basin Plan proposes a comparison of <u>the sum of the</u> modelled and unmodelled annual permitted take against annual actual take at the SDL resource unit level. Differences between the annual actual take and annual permitted take will be recorded in the register of take maintained by the MDBA for the SDL resource unit. If the cumulative difference exceeds 20% of the SDL and NSW does not have a 'reasonable excuse' for the excess, then corrective action (application of growth in use measures) would be required.

It is therefore possible with this approach alone, that the 20% trigger could be exceeded in a single year, even if this does not represent actual growth. This is most likely in the north where inflows, and therefore plantings, are more variable, and estimates are less able to reflect such variation. A trigger result in this instance may well be due to the nature of the SDL compliance approach rather than any on-the-ground development or operational changes.

There is nothing in this plan that restricts annual actual take increasing to, or remaining at, the annual permitted take. Similarly, there is nothing in this plan restricting take over a long-term average annual basis increasing to, or remaining at, the Sustainable Diversion Limit (SDL). Where annual actual take is consistently below the annual permitted take, this plan allows for annual actual take to increase to the annual permitted take/SDL, in accordance with the allocation and account management rules in Schedule A.

### 5.4.4. Corrective actions

NSW will report on SDL compliance in the Intersecting Streams WRPA as a whole. However, for practical management purposes and the application of corrective actions:

• the unregulated river sources will be treated, as specified in the relevant water sharing plans

The water sharing plan provisions outline the broad approach to corrective actions as outlined below:

• Under clause 31 of the *Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011* if there is non-compliance with the SDL, the Minister must make future available water determinations for unregulated river access licences of less than 1ML per unit share.

## 5.5. Annual actual take (AAT)

### 5.5.1. General overview

The AAT for each SDL resource unit is the sum of the quantity of water that is taken for consumptive use in a water year in that SDL resource unit.

AAT can be considered as the total volume of water extracted annually and is used for the purpose of assessing compliance with the SDL over time.

### 5.5.2. Determining actual take

In the Intersecting Streams SDL resource unit, the volume of take from the WRPA in any water year under access licences is estimated, as outlined in Table F1 of Schedule F to this Plan.

Take under basic rights pursuant to Basic Landholder Rights—Domestic and Stock in the Intersecting Streams SDL resource unit (SS17) is estimated as being the total amount of water specified in clause 18 of *Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011*. An area-based method was used to specify these volumes. The details of this method are specified in section F-5 of Schedule F. A summary of methods used to determine AAT for each type of take in each SDL resource unit is shown in Table F1 in Schedule F to this Plan.

For the purpose of section 10.15(1) to 10.15(3) of the Basin Plan:

 annual actual take for the Intersecting Streams SDL resource unit (SS17) will be determined for each water accounting period at the end of each water accounting period, according to the following formula and using the methods described in Table F-1 and section F-5 of this Plan:

#### Intersecting Streams SDL resource unit (SS17) annual actual take =

- Watercourse actual take
- + runoff dams actual take
- + basic rights actual take
- + net take by commercial plantations actual take
- + the SDL adjustment amount
- where the method for the determination of annual actual take is estimated, it is consistent with the method in this WRP for the determination of annual permitted take under s10.10(1) of the Basin Plan.

Methods to determine annual actual take may improve over time with:

- the implementation of the NSW Non-Urban Water Metering Policy and the *Water Management (General) Regulation 2018*
- updated methods employing new technologies and/or better information
- other methods implemented by NSW Department of Planning and Environment and other relevant agencies.

For the purposes of section 10.15(4) and 10.12(3), 10.12(1)(h) and 10.10(3) of the Basin Plan:

- actual take includes any held environmental water that was disposed of and used in the SDL resource unit for consumptive use
- water sourced from the Great Artesian Basin cannot be taken from this SDL resource unit. Therefore, the method does not need to consider water released into and taken from the GAB.

## 5.6. Annual permitted take (APT)

For the unregulated rivers, in the absence of any use metering or other long term data upon which to develop hydrologic models, the APT will be the sum of the BDL components associated with the unregulated rivers, as specified in Table 5-1, noting these volumes may be amended as outlined in section 5.3.2.

Held environmental water (HEW) will be accounted for as part of the SDL process. Use will be deemed to have occurred when the HEW is released from a dam or it has flowed past a nominated place along a river. The use of HEW will be accounted for through its exclusion as part of the SDL accounting process.

For the purpose of section 10.10 and 10.12 of the Basin Plan:

 annual permitted take for the Intersecting Streams SDL resource unit (SS17) will be determined for each water accounting period at the end of each water accounting period, according to the following formula (and the methods described in table F-2 and section F-5 in Schedule F to this Plan):

#### Intersecting Streams SDL resource unit (SS17) annual permitted take =

Watercourse permitted take

- + runoff dams permitted take
- + basic rights permitted take
- + net commercial plantations permitted take
- + the SDL adjustment amount

For the purpose of section 10.10 (3)(a) of the Basin Plan see 10.12 accredited text. A detailed explanation for how the annual permitted take methods account for the matters listed in section 10.12 of the Basin Plan is provided in Schedule F, Table F-4.

For the purpose of section 10.10(3)(b) of the Basin Plan, the method for determining annual permitted take is consistent with the other provisions of this WRP.

For the purpose of section 10.10(4) of the Basin Plan, the demonstration that the annual permitted take method is capable of meeting the SDL over a repeat of the historical climate conditions (1895 – 2009) is provided in Schedule F, Table F-3.

For the purpose of section 10.10(5) of the Basin Plan:

 the SDL that must be demonstrated as met for section 10.10(4) of the Basin Plan is taken to be the SDL as published on the MDBA website for that water year, including dates listed in section 10.10(5)(a)-(c) of the Basin Plan

## 5.7. Interception activities

The Basin Plan identifies runoff dams, commercial plantations, mining activities (including coal seam gas mining) and floodplain harvesting as types of interception activities that may have the potential to significantly impact on the resources of a water resource plan area, and other water resources hydrologically connected to those water resources.

Where an interception activity has not been identified as having the potential to have a significant impact on the water resources of the water resource plan area NSW will undertake a review of the risk assessment when the Intersecting Streams WRP is reviewed.

NSW has not prescribed actions to be taken under section 10.25 of the Basin plan as practically and pragmatically it is difficult to determine what the most appropriate action will be at this time rather than at the time the action is required. NSW will not place a future obligation on itself given the number of unknowns and potential actions that could be taken. Additionally, it is unclear if any action that would be prescribed under the Intersecting Streams WRP could be met at a future date.

Each type of interception activity, and the potential impact, is discussed below.

For the purpose of section 10.23, 10.24 and 10.25 of the Basin Plan, with the exception of runoff dams, as described in sections 4.5.1 and 8.2.1 of the Risk Assessment for the Intersecting Streams WRPA (Schedule D to this Plan), no other types of interception activity were found to have the potential to have a significant impact on the following, on an activity-by-activity basis, or cumulatively:

- the water resources of the plan area
- water resources which are hydrologically connected to the water resources of the water resource plan area.

For clarity, under section 10.23(2) of the Basin Plan, interception activities with a low risk ranking and therefore to which sections 10.24 and 10.25 do not apply, include interception by:

- commercial plantations as outlined in sections 4.5.2 and 8.2.2 of the Risk Assessment
- mining activities, including coal seam gas mining as outlined in sections 4.5.3 and 8.2.3 of the Risk Assessment
- floodplain harvesting as outlined in sections 4.5.4 and 8.2.4 of the Risk Assessment

For the purposes of section 10.23 of the Basin Plan, the risk associated with growth in runoff dams in the catchment of the Paroo River at Willara Crossing, Warrego River at Fords Bridge and Bokhara River at Bokhara, Culgoa River at Brenda and Narran River at Wilby Wilby were rated as 'medium or higher/'tolerable'. Risk to other water users associated with growth in runoff dams in the catchment of the Culgoa River at Brenda and Narran at Wilby Wilby were rated as medium. Further information about the risk is set out in section 4.5.1 and 8.2.1 of the Risk Assessment (Schedule D). From July 2022, take by runoff dams in all NSW WRP areas includes exempt rainfall runoff collection via tailwater drains. However, as this is a new class of access right, risks associated with this class of take by runoff dams was not assessed as a separate component of the Risk Assessment.

For the purposes of section 10.24 of the Basin Plan, the process for monitoring ecological impacts is described section 3 of the Monitoring, Evaluation and Reporting Plan (Schedule I). Some ecological impacts can be indicators of impacts on environmental watering requirements. In addition, NSW will undertake monitoring of potential growth in number of runoff dams (including tailwater drains) where risks are medium or higher. The risk of interception by runoff dams (including tailwater drains) will be reviewed as part of the 5 yearly audit and remake of applicable water sharing plans.

For the purpose of 10.25 of the Basin Plan, where ecological monitoring indicates impacts on environmental watering requirements from interception by runoff dams (including tailwater

drains), this will be managed under compliance mechanism for limits on runoff dams. In respect of increase in quantity of water being intercepted, compliance mechanisms under LTAAEL would be considered.

Given the above, sections 10.24 and 10.25 of the Basin Plan is applicable to this Plan for the following interception activity:

- runoff dams in the catchments of:
  - Paroo River at Willara Crossing
  - o Warrego River at Fords Bridge
  - o Bokhara River at Bokhara
  - o Culgoa River at Brenda
  - Narran River at Wilby Wilby.

### 5.7.1. Runoff dams

For the purpose of this WRP, runoff dams refer to private dams that intercept catchment runoff which would otherwise have contributed to stream flow. The impacts of runoff dams are considered to have implications primarily for surface flow – any potential impact on recharge to aquifers is generally considered to be minor. Interception by runoff dams is considered only in surface water risk assessments.

An assessment of the risk of a growth in runoff dams reducing the availability and quality of surface water for the environment and water available for other uses has been undertaken and is addressed in sections 4.5.1 and 8.2.1 of the Risk Assessment respectively (Schedule D to this Plan).

The risk was rated as medium for the Paroo, Warrego and Bokhara river catchments and medium – high for the Culgoa and Narran river catchments. Risk rated as higher than 'low' for certain sub-catchments are considered tolerable because take is under basic landholder rights. This form of take is managed under the *Water Management Act* 2000, the Harvestable Rights – Western Division Order and the Harvestable Rights (central inland-draining catchments) Order 2022. Under these instruments, this form of take is limited to 10% in the central and eastern divisions of the Intersecting Streams WRP area and 100% of rainwater runoff in the western division. This take limit is applied at the scale of landholdings. Where a subdivision has occurred, the landholder is responsible for ensuring compliance with the new limit of the landholding and may be required to reduce the capacity of a run-off dam.

For the Culgoa and Narran Rivers the medium and high risks are considered tolerable because farm dams that capture runoff into them as a basic right are permitted in NSW and under the Basin Plan. In the central and eastern divisions of NSW a landholder has the right to capture 10% of the average regional rain water run-off on the land by means of a dam or dams which are located on "minor streams". In the western division a landholder has the right to capture all rain water runoff by means of a dam or dams which are located on "minor streams". Any take above those amounts requires a licence.

From July 2022, take by runoff dams includes access to take water under an exemption for rainfall runoff relating to the use of tailwater drains. This exemption did not operate at the time of the risk assessment and therefore was not considered separately to the assessment of risks associated with take by runoff dams.

NSW will assess the impact of the newly exempt rainfall runoff collection via tailwater drains on the overall risk outcomes for take by runoff dams across the WRP area as part of the 5 yearly monitoring and review arrangements set out in this WRP.

### 5.7.2. Commercial plantations

Following a 2008 assessment by the CSIRO in 2010, the then NSW Office of Water carried out a risk assessment relating to commercial plantation impacts as part of the assessment of risk to NSW Murray–Darling Basin shared water resources (NOW, 2010, Assessment of risk to NSW Murray–Darling Basin shared water resources – 2008).

This concluded that overall, *"increased plantation forestry hazard poses a low risk to every environmental asset in NSW, and to all classes of water access entitlement, and that growth in this industry, which is quite often driven by managed investment schemes, is unlikely in the current financial and economic climate".* The impact for the Intersecting Streams WRPA was assessed as nil. The area of commercial plantations in the Intersecting Streams is currently low (< 0.73% of total area) and is not projected to increase substantially due to the local semi-arid climatic conditions. The impact of any projected commercial plantation development on regional average annual runoff would be negligible.

### 5.7.3. Mining and coal seam gas activities

In NSW, the impacts of mining and coal seam gas activities are assessed under the *Environmental Planning and Assessment Act 1979.* If approved, these developments are conditioned to mitigate impacts on water and related resources. As part of the development approval process, proponents must assess not only their process requirements for water take, but also the impact the activity may have on the quantity of water in all water sources. This includes impacts on immediate or adjacent groundwater sources both directly and indirectly via interception or recharge and/or inducing groundwater flows. Access licences under the WMA 2000 must be obtained for any impacts on the quantity of water in immediate or nearby water sources. In most of the Basin, including the Intersecting Streams WRPA, where no additional licences can be granted, these must be obtained via the market. As such, these activities are no different to any other type of surface water take and are considered outside of the 'interception' construct of the Basin Plan.

An assessment of the risk of a growth in mining and coal seam gas activities reducing the availability and quality of surface water for the environment and water available for other uses has been undertaken and is addressed in sections 4.5.3 and 8.2.3 of the Risk Assessment respectively (Schedule D to this Plan). The overall risk is low because of the legislative and licencing arrangements controlling water quantity impacts from mining.

### 5.7.4. Floodplain harvesting

Floodplain harvesting is listed in the Basin Plan as an interception activity. Interception by floodplain harvesting and potential growth in use under the SDL accounting framework will be met through the existing mechanisms in the water sharing plan. Combining the 'high' consequence and 'low' likelihood results for floodplain harvesting results in a in a low risk ranking in the Intersecting Streams WRPA.

## 5.8. Measures in response to extreme events

An extreme event is defined in section 10.51 of the *Basin Plan 2012* and in the WMA 2000. It includes extreme dry periods, extreme water quality events, and any other type of event that has led to a management plan previously being suspended in the past 50 years.

An extreme event may include:

- an extreme dry period, such as the conditions during the Millennium drought or the more recent drought
- the actual or imminent structural failure of a state-owned water storage that may cause a severe water shortage
- an extreme water quality event, such as blackwater, salinity, water pollution or a bluegreen algae outbreak.

For the purpose of section 10.51(1)(a), 10.51(1)(b) and 10.51(3) of the Basin Plan, the following sections and tables in the Intersecting Streams WRP describe how the water resources of the water resource plan area will be managed during an extreme dry period (known as an 'extreme water quantity event') and a water quality event that renders water acutely toxic or unusable for established local uses and values (known as an 'extreme water quality event'):

- Section 5.8.1 and Table 5-5 describe the process for determining the criticality of an extreme water quantity event and an extreme water quality event.
- Table 5-3 describes the order of priority in which water can be taken during an extreme event.
- Section 5.8.3 including Table 5-6 and Table 5-7 sets out the possible operational measures available to manage the surface water resources of the Intersecting Streams WRPA during drought and extreme water quality events, including meeting critical human water needs.
- The management responses in Table 5-6 and Table 5-7 constitute options for consideration by the resource managers and are not exhaustive and where provisions of the WMA 2000 are specified in these tables they do not form part of the accredited WRP.
- Section 5.8.4 provides for a review process and triggers for review in relation to determining if water resources in the Intersecting Streams WRPA should be managed differently as a result of new information.

Section 5.8.2 describes the management responses for unregulated rivers in extreme events. Additionally, the water access rules (clause 45 and 46) in the *Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011* for a Very Low Flow Class includes other access rules that licence holder must comply with. These clauses, 45 and 46 of the water sharing plan ensure that very low flows are protected from extraction.

For the purposes of section 10.51(2) of the Basin Plan, the arrangements set out above ensure that critical human water needs during extreme events will not be compromised and is consistent with the NSW Extreme Events Policy and the priority of access under the *Water Management Act 2000*.

These management arrangements are sufficient to ensure critical human water needs will not be compromised during an extreme event.

For the purposes of section 10.51(1)(c) of the Basin Plan, no event has resulted in the suspension of a water sharing plan in the Intersecting Streams Water Resource Plan Area in the past 50 years.

The definition of an extreme event in this context does not include flood events. Table 5-3 describes the order of priority that water can be taken that is applicable during extreme event management.

Table 5-3. WMA 2000 water take priority under s 60(3) and s 49A order

Tak	ae Type / Use	Priority
•	The taking of water for domestic purposes by persons exercising basic landholder rights, and	First
•	The taking of water for domestic purposes or essential town services authorised by an access licence	

Nee	ds of the environment	Second
•	The taking of water for stock purposes by persons exercising basic landholder rights, and	Third
•	In the case of regulated rivers, the taking of water for purposes (other than domestic purposes) authorised by a regulated river (high security) access licence, and	
•	The taking of water for the purposes of supply of commercial and industrial activities authorised by a major utility access licence or local water utility access licence, subject to the water made available being in accordance with any drought management strategy established by the Minister for that purpose, and	
•	The taking of water for the purposes of electricity generation authorised by a major utility access licence (not applicable in this WRPA), and	
•	The taking of water for purposes authorised by a domestic and stock access licence or by persons exercising any other water rights in relation to stock, and	
•	The taking of water for purposes authorised by a conveyance access licence in connection with the supply of water for any other purpose or need referred to in this paragraph (not applicable in this WRPA).	
Taki acce	ng of water for purposes authorised by any other category or subcategory of ess licence	Fourth

Potential and past extreme events as defined in section 10.51(1) of the Basin Plan are summarised in Table 5-4.

Event type Description		WRPA context – actual event or risk		
Severe water shortage	Extreme dry period (drought)	• The rivers and streams in the Intersecting Streams experienced are ephemeral in nature and there were periods of no flow throughout the period of record with the most recent major occurrence being the 2017 – 2020 drought.		
Water quality events	Algal blooms within the WRPA	• There are medium risks from increased phosphorus in the Narran, Bokhara, Birrie and Culgo Rivers and high risk from increased nitrogen in the Narran, Bokhara and Culgoa Rivers. These are generally caused by runoff and erosion during rainfall events when there are high flows. Algal blooms have occurred as nutrients in disconnected pools become concentrated.		
	<ul> <li>Low dissolved oxygen/hypoxic blackwater events in the rivers of the WRPA</li> </ul>	<ul> <li>There have been no recorded dissolved oxygen/hypoxic blackwater events in the Intersecting Streams WRPA.</li> </ul>		
	Spill/discharge of contaminants into surface waters of the WRPA	• There is a medium risk in the WRPA. With chemical use increasing in the agricultural sector for the control of invasive and pest flora and fauna species, it can be expected that residues from these substances may be present in the waterways of the Intersecting Streams		
	Salinity events	<ul> <li>River salinity is generally not a major water quality issue in the Intersecting Streams.</li> </ul>		

#### Table 5-4. Section 10.51(1) possible extreme event types in the Intersecting WRPA context.

Event type	Description	WRPA context – actual event or risk		
		Electrical conductivity in the Narran, Culgoa and Warrego Rivers fluctuates throughout the years, with no results exceeding a level generally considered safe for agriculture and irrigation. The ephemeral nature of the Intersecting Streams can result in higher salinity readings as salts in disconnected pools become concentrated.		
	<ul> <li>National security event</li> </ul>	<ul> <li>No known water resource related national security event has occurred in the Intersecting Streams WRPA.</li> </ul>		
Suspension of WSP	<ul> <li>Event causing suspension of WSP within the WRPA</li> </ul>	• The Water Sharing Plan for Interesting Streams Unregulated River Water Sources 2011 has not been suspended.		

## 5.8.1. Determining the criticality level of an extreme event

Determining the criticality level of an extreme event will be guided by the approaches outlined in Table 5-5. As events escalate in criticality, a range of measures may be adopted by governments and non-government LWUs.

NSW Department of Planning and Environment may seek advice from relevant agencies before increasing the level of criticality above Stage 1. This will depend on the type of event. For example, for:

- Water shortage events, WaterNSW is a relevant agency
- Water quality events, WaterNSW, NSW Environment Protection Authority, NSW Office of Environment and Heritage, local councils would be relevant agencies.

Stage based on level of risk		Water sharing plan approaches			
	Agency/management approaches	Normal Rules	Contingency / Operational Measures	Suspension of parts of a water sharing plan	
Stage 1	Normal management operations - long term planning, including drought security planning.	In force			
Stage 2	Operational adjustments may be required. Emergency management readiness implemented. Inter-agency Critical Water Advisory Panel for surface water sources established and updated regularly (by WaterNSW). Minister advised. Initial communications with potentially affected communities and stakeholders.	In force	Possibly activated		

#### Table 5-5. Extreme event stages of criticality

Stage	age		Water sharing plan approaches		
based on level of risk	Agency/management approaches	Normal Rules	Contingency / Operational Measures	Suspension of parts of a water sharing plan	
Stage 3	Adjustments to management operations. Emergency management on stand-by. Critical Water Advisory Panel operational and meeting for both groundwater and surface water sources, with regular Ministerial updates. Communications with affected communities and stakeholders increased.	Possibly also in force	In force	Possibly activated	
Stage 4	Normal operations untenable, emergency management activated. State agency/regional response implemented if required/triggered. Critical Water Advisory Panel maintained, with regular Ministerial updates. Regular communications with affected communities and stakeholders increased.		In force	In force	

Stage 1 is a precursor to a potential extreme event and normal management operations continue during this stage. It includes situations where inflows are lower than usual or where minor water quality incidents may have occurred.

Stage 2 is where it has become apparent that there is:

- an emerging water shortage or potential drought, characterised by an inability to deliver 100% of high priority account water and maximum expected use of general security, under normal river operations practices
- an emerging water quality issue characterised by:
  - the need for minor adjustments to treat raw water to the minimum quality required for the intended use (minor cost), and
  - o water quality can still meet other established local values and uses.

Stage 3 is where there is:

- a severe drought and/or water shortage where only restricted high priority demands and restricted remaining general security account water can be delivered
- a severe local water quality event to the extent that:
  - major adjustments are needed to treat raw water to the minimum quality for the conditions (major cost), and
  - o water quality cannot meet some established local values and uses.

Stage 4 is where there is:

- a critical drought and/or water shortage where only restricted town water supply, stock and domestic and other restricted high priority demands can be delivered
- a critical water quality event where one or more of the following applies:
  - it is not possible to treat raw water with standard processes to meet health-related values identified in the Australian Drinking Water Guidelines
  - o raw water is likely to remain untreatable over the longer term
  - $\circ$   $\,$  water quality is unable to meet most established local values and uses.

### 5.8.2. Water Shortage Assessment and supply of BLR

In the WRPA, where the flow in rivers is not controlled by headworks (dams etc.), state water managers have no ability to guarantee access for high priority uses such as for local water

utilities (LWUs), BLRs, (including Native Title rights) and the environment. That said some LWUs have relatively small in-stream dams that prolong their supply or have access to groundwater. The cease to pump rules also do not apply to BLR or Native Title rights users, providing them, and environmental assets and values, with a higher-level priority of access from instream pools. In addition, landholders in most unregulated areas can harvest 10% of the rainfall runoff from the property by constructing small dams on minor streams on their land. This harvestable right helps landholders to secure their own BLR domestic and stock requirements. In more extreme drought circumstances, it is not uncommon that landholders obtain water for BLR domestic and stock purposes from other sources (e.g. rainwater tanks, on other larger (licensed) on-farm storages, or carted water).

The rules in water sharing plans are designed to protect the very low flows and instream pools for domestic and stock rights, Native Title rights and environmental uses by requiring other access licence holders to cease to pump when the flows are low or very low. In a more persistent drought, there is little the water manager can do to protect domestic and stock rights and Native Title rights. It is not uncommon in these circumstances that landholders obtain water for domestic and stock purposes from other sources (e.g. rainwater tanks, on farm storages, or carted water).

#### 5.8.3. Management responses to extreme events

The generic toolkit of measures for drought or water shortage events for surface water is provided in Table 5-6 and Table 5-7 respectively. This toolkit of measures allows water managers to select and introduce more stringent measures to support the highest-priority needs as an event becomes more critical. Providing a range of management options allows responses to extreme events to be adapted to each WRP area. The use of these measures will ensure critical human water needs are met during extreme events.

Under section 49A of the WMA 2000, part or all of a water sharing plan can be suspended during severe water shortages. If this section is triggered, temporary alternate water sharing arrangements can be established. The priorities for allocating available water is determined under section 60(3) of the WMA 2000 when a section 49A order is in place.

Section 324(1) of the WMA 2000 also empowers the minister, if satisfied that it is necessary to do so in the public interest (such as to cope with a water shortage or threat to public health or safety), to direct that, for a specified period, the taking of water from a specified water source is prohibited, or is subject to specified restrictions, as the case requires.

Extreme events in the Intersecting Streams WRPA will be managed in accordance with these statutory provisions.

Criticality	Evidence— surface water	Intent of responses	Example Management Response Toolkit Options and Responsibility
Stage 1	Can deliver all	Provide certainty for	NSW Department of Planning and Environment and WaterNSW:
			<ul> <li>Maintain WSP rules for distribution of access</li> </ul>
			<ul> <li>Planning under Regional</li> </ul>

#### Table 5-6. Drought management responses to meet critical human water needs

Criticality	Evidence— surface water	Intent of responses	Example Management Response Toolkit Options and Responsibility
Normal management	account under normal river operations practices	water use planning Long term water security and emergency/drought contingency planning	Water Strategy
			LWUs: • Long term water security and emergency/drought contingency planning as part of IWCM strategy
Stage 2 Emerging drought/water shortage	Unable to deliver 100% of high priority account water and maximum expected use of general security under normal river operations practices	Operational measures in the current water year to reduce transmission losses and prevent potential future failure to supply water in accounts (surface water). Limit potential impacts in local areas via dealings restrictions and potential local area access restrictions (groundwater)	<ul> <li>NSW Department of Planning and Environment and WaterNSW:</li> <li>Maintain WSP rules for distribution of access</li> <li>In consultation with water users and CWAP, progressively introduce measures to reduce transmission losses (e.g. 'block' deliveries, 'piggybacking' replenishment flows)</li> </ul>
		readiness (LWUs)	LWUs: Accelerate implementation of the IWCM Strategy measures and commence readiness planning of Emergency/drought contingency response plan measures
Stage 3 Severe drought/water shortage	Only able to deliver restricted high priority demands and restricted remaining general security account water	Restricting access to account water, restricting trade and suspending some WSP rules in addition to increased operational measures to prevent potential future failure to supply water in accounts (surface water). Drought management/ restrictions (LWUs)	S.324 WMA 2000 order restricting/prohibiting take within unregulated rivers and cease announcing periods of access under supplementary water access licences. Explore use of alternative supplies with LWUs Suspend relevant WSP rules to enable restriction of delivery of planned environmental water to be explored with Department of Planning and Environment BCD

Criticality	Evidence— surface water	Intent of responses	Example Management Response Toolkit Options and Responsibility
			S.324 WMA 2000 order restricting access to general security water in accounts Suspend relevant WSP rules to enable delivery to, or reduce allocations to, high priority access licences to be limited LWUs: Continue accelerated implementation of the IWCM Strategy measures, commence implementation of demand-side emergency/drought contingency response plan measures, and continue readiness planning of supply-side emergency
Stage 4 Critical drought/water shortage	Only able to deliver restricted town water supply, stock and domestic and other restricted high priority demands	Suspension of some WSP rules. Severe restrictions required to prioritise remaining supplies for critical human water needs Emergency drought management measures/restrictions (LWUs)	Temporary structures (e.g. earth weirs/block banks to store water moreefficiently in the deeper river channels) Implement reasonable use restrictions on BLR diversions Suspension water sharing plan rules to enable access to water in accounts to be limited to prioritise critical human water needs LWUs: Complete implementation of the IWCM Strategy, review and enhance implementation of demand-side emergency/drought contingency response plan and commence implementation of supply-side emergency measures

Criticality	Evidence— surface water and groundwater	Intent of responses	Example managem toolkit options and responsibility	ent response
Stage 1 Normal management	Raw water able to be treated with usual methods Water quality able to meet other established local values and uses	Long term water quality management planning Ongoing monitoring and reporting of water quality and pollution events Water quality risk assessments	Stage 1 and Stage 2	
Stage 2 Emerging water quality issue	Raw water able to betreated with someadjustments (minor cost) to usual methods Water quality able to meet other established local values and uses	As for Stage 1, and Deployment of additional treatment processes (LWUs)	NSW Department of Planning and Environment and WaterNSW: Maintain WSP rules for distribution of access Ongoing monitoring of water quality Mapping of risks to water quality by EPA and LWUs LWUs: Implementation of Quality Assurance Program— Drinking Water Management System (DWMS) under the <i>NSW</i> <i>Public Health Act</i> 2010 and Public Health Regulation 2012 Report any pollution incidents to NSW Department of Planning and Environment and EPA Deploy additional treatment processes as required CI. 136 WMA 2000 regulation notices as	Delegated officers, Department of Planning and Environment LWUs (based on approved IWCM plans and in consultation with NSW Department of Planning and Environment's Director Water Utilities) Delegated officers, Department of Planning and Environment

#### Table 5-7. Water quality management responses to meet critical human water needs

				required Others: • EPA reporting to NSW Department of Planning and Environment of any: • existing or new declarations of • significantly contaminate d land under Division 2, Part 3 of the NSW Contaminate d Land Management Act 1997 • pollution incidents reported under the NSW Protectio n of the Environm ent Operation s Act 1997 EPLs in the water sources	
Stage 3 Severe water event	local quality	Raw water able to betreated with major adjustments (major cost) to usual methods Water quality unable to meet some established local values and uses	Restricting/prohi biting access and associated trade to protect publichealth and safety Communication of waterquality risks to water users Deployment of major treatment processes (LWUs) Preparedness/dep loyment of emergency response measures (LWUs)	As for Stage 1 & 2 criticality, and in addition: NSW Department of Planning and Environment and WaterNSW: • Apply WMA 2000 s.324 and/or s.331 orders restricting or prohibiting take if necessary in affected areas • Notify works approval holders in affected areas of	If s324 order, Minister for Regional Water or delegated officers, Department of Planning and Environment Otherwise, LWUs (based on approved IWCMplans and in consultation with NSW Department of Planning and Environment's Director Water Utilities)

	potential water quality	
	<ul> <li>Apply WMA 2000 s.110 order placing an embargo on application s for new bores</li> </ul>	Delegated officers, Department of Planning and Environment
	<ul> <li>(water supply works) in specified areas</li> <li>Broad public communica tions re: quality/cont amination risks</li> <li>NSW Department of</li> </ul>	Executive Director Water, Department of Planning and Environment
	Planning and Environment notification of groundwater quality contamination to EPA, NSW Health and LWU	
	LWUs: • Major process adjustment s if required, and in consultatio n with NSW Departmen t of Planning	
	and Environme nt and Departmen t of Health • Commence implement ation of demand- side emergency /drought contingenc	
	y response	

	plan	
	measures	
	and	
	supply-side	
	emergencv	
	measures	
	Others:	
	• EPA	
	implementi	
	ng and	
	reporting to	
	NSW	
	t of	
	Planning	
	and	
	Environme	
	nt of any	
	contaminat	
	ed lands	
	manageme	
	nt actions	
	triggered	
	under the	
	ed Land	
	Manageme	
	nt Act 2007	
	or the	
	Protection	
	of the	
	nt	
	Operations	
	Act 1997	
	• EPA	
	notification	
	of	
	groundwat	
	er quality	
	on to NSW	
	Health,	
	NSW	
	Departmen	
	t of	
	Planning	
	Environme	
	nt and	
	LWU	
	As for Stage 3	
	criticality, and in	
	addition:	
	NSW Department of	
	Planning and	
	Environment,	
	WaterNSW and	

	OEH: • If required, activate provisions of the Essential Services Act 1988 and the State Emergency and Rescue Management Act 1989 as required therein	
	merein.	

### 5.8.4. Extreme events evaluation and review

The evaluation framework outlined below will be used to assess the effectiveness of the extreme events policy and to inform policy reviews. The evaluation framework is consistent with NSW Government Program Evaluation Guidelines. This policy will be evaluated and reviewed every five years or earlier if there is a stage 3 or 4 event, to:

- review context and ongoing appropriateness of policy content
- assess whether implementation was efficient and as intended
- evaluate effectiveness in improving water security during extreme events.

Policy evaluation will identify any issues arising or opportunities for improvement that occur during the review period, particularly if there was a need to declare Stage 2 or above for any water sources. Evaluation findings will be considered in policy reviews.



#### Figure 5-2. Extreme events policy evaluation framework

## 6. Water quality management

#### This section includes the following components of the Basin Plan

- 10.29 Water resource plan to include a WQM Plan
- 10.30 WQM Plan to identify key causes of water quality degradation
- 10.31 Measures addressing risks arising from water quality degradation
- 10.32 WQM Plan must identify water quality target values
- 10.33 WQM Plan must identify measures
- 10.34 WQM Plan must identify locations of target for irrigation water
- 10.35 Impact of WQM Plan on another Basin State
- 10.35A WQM Plan to identify key causes of water quality degradation
- 10.35B WQM Plan to identify water quality target values
- 10.35C Consideration to be given to rules or measures
- 10.35D Additional requirements for Western Porous Rock, Gunnedah Oxley Basin MDB, Sydney Basin MDB and Goulburn – Murray: Sedimentary Plain SDL resource units

This section focuses on the causes or likely causes of water quality degradation and identifies current and future measures to protect and maintain water quality in the Intersecting Streams WRPA. For the purpose of this Plan, water quality includes salinity as defined in s 1.07 of the Basin Plan.

Water quality in NSW is managed across many legislative and regulatory instruments by several government agencies, as outlined in Figure 1-3 of Schedule G to this Plan.

The water quality management plan for the Intersecting Streams WRPA (SW13) is attached at Schedule G.

For the purpose of 10.29 of the Basin Plan:

- the Intersecting Streams WRP includes a WQM Plan
- the Intersecting Streams WRPA applies only to a surface water SDL resource unit (s3.05 of the Basin Plan) therefore the Intersecting Streams WQM Plan was made in accordance with Part 7 Division 2 of Chapter 10 of the Basin Plan.

Requirements under Part 7 Division 3 of Chapter 10 (sections 10.35A, 10.35B, 10.35C and 10.35D) of the Basin Plan are not applicable for this plan to address as they apply to groundwater SDL resource units (s3.06 of the Basin Plan).

Water quality in the Intersecting Streams WRPA varies from Fair to Good, as shown in Figure 6-1 and Table 6-1.





#### Figure 6-1. Intersecting Streams WRPA water quality index (WaQI) scores.

For the purpose of 10.30 of the Basin Plan:

- Table 3-1 in Schedule G identifies the causes or likely causes of water quality degradation in the Intersecting Streams WRPA
- the table of causes or likely causes has been prepared having regard to the risk assessment and key causes of water quality degradation identified in Part 2 of Chapter 9 and set out in Schedule 10 of the Basin Plan.

For the purpose of 10.31 of the Basin Plan:

- Table 4-3 in Schedule G identifies strategies that address medium and high risks arising from water quality degradation identified in the *Risk Assessment for the Intersecting Streams water resource plan area* (Schedule D to this Plan)
- each strategy has been prepared having regard to the causes or likely causes of water quality degradation listed in Table 3-1 and the water quality targets listed in Table 5-1 to Table 5-3 of Schedule G.

For the purpose of 10.33 of the Basin Plan:

- Table 4-3 in Schedule G identifies strategies that contribute to achieving water quality objectives set out in section 9.04 to 9.08 of the Basin Plan
- the water quality objectives of the Basin Plan are identified in Table 4-1 of Schedule G
- the "strategies" referred to in Table 4-3 of Schedule G constitute measures for the purposes of 10.31 and 10.33 of the Basin Plan

- strategies which relate to a management plan identified as 'A' in Table 4-3 of Schedule G are provided for accreditation. Strategies which relate to a management plan identified as 'N' are for information only and are not for accreditation
- a strategy is recommended for accreditation in the Intersecting Streams WQM Plan if:
  - o level of risk is medium or high
  - appropriate water quality target values are identified in Section 5 of Schedule G
  - the strategy is an action within the scope of the *Water Act 2007* (Cth) and NSW *Water Management Act 2000*
  - the strategy is fit-for-purpose and cost effective
- to ensure a sustainable framework for the management of water quality in the NSW Murray–Darling Basin, the WQMP under the Basin Plan recognises the strategies identified as N apply to improve water quality in the Intersecting Streams WRPA. This includes strategies that contribute to Basin Plan water quality objectives listed in Table 4-2 of Schedule G.

For the purpose of 10.32 of the Basin Plan, Tables 5-1, 5-2 and 5-3 in Schedule G identify water quality target values that apply to the Intersecting Streams WRPA. The water quality targets listed reflect those set out in s 10.32(2) of the Basin Plan.

For the purpose of 10.34 of the Basin Plan, there are no irrigation infrastructure operators that deliver services in the Intersecting Streams WRPA

For the purpose of 10.35 of the Basin Plan, the Intersecting Streams WRPA has direct hydrological connection to Warrego-Paroo-Nebine, Condamine-Balonne and Moonie-Queensland Border Rivers WRPA. NSW have consulted with Queensland and confirmed the water quality measures outlined in this plan will not impact the ability of another Basin State to meet water quality targets or result in adverse impacts for water resources in another Basin State as outlined in section 2.2 of Schedule C to this plan.

The Intersecting Streams WRP has regard for the direct hydrological connection to the Warrego-Paroo-Nebine, Condamine-Balonne and Moonie-Queensland Border Rivers WRPA through strategies and measures detailed in the Water Quality Management Plan and through the New South Wales-Queensland Border Rivers Intergovernmental Agreement 2008 and the Intergovernmental Agreement for the Paroo River.

The key causes or likely causes of water quality degradation in the Intersecting Streams WRPA are described in the WQMP (Schedule G). The objectives relating to key water quality degradation, causes and measures to address these, is presented below (Table 6-1). These findings align with the Risk Assessment for the Intersecting Streams WRPA (see section 3 above and Schedule D to this Plan). Where relevant, the WQMP also addresses any other causes of water quality degradation outside of those identified in Part 2 of Chapter 9 of the Basin Plan (and Schedule 10 to the Basin Plan).

Table 6-1. Summary of water quality objectives and strategies to address water quality degradation in the Intersecting Streams WRPA.

WQ Objective	Strategies
Protect, maintain or enhance water quality to ensure it is fit for purpose	Provide a regulatory framework for the sustainable extraction and management of water resources for all water users

WQ Objective	Strategies
Manage water source salinity concentrations and salt mobilisation within Intersecting	Maintain diffuse distribution of salt load in riverine ecosystems and irrigated land from salt load generating landscapes
Streams end-of-valley targets	Protect low flow and pool habitats to prevent accelerated rates of drying, deterioration in water quality or loss of connectivity
Maintain turbidity (T), total nitrogen (N) and total phosphorus (P) within target ranges to minimise	Improve the condition of riparian zones, cropping/grazing practices, stock management, potential waste water discharges. Protect low flow and pool habitats to prevent accelerated rates of drying, deterioration in water quality or loss of connectivity
Area.	Manage turbidity effects due to high concentrations of the noxious fish carp ( <i>Cyprinus carpio</i> )
Maintain dissolved oxygen (DO) and pH measurements within target ranges that support water dependent ecosystems.	Improve the condition of riparian zones, cropping/grazing practices, stock management, potential waste water discharges. Protect low flow and pool habitats to prevent accelerated rates of drying, deterioration in water quality or loss of connectivity
Maintain water temperature in the Intersecting Streams within	Improve the condition of riparian zones to provide shading for rivers and pools
target ranges that support water dependent ecosystems.	Protect low flow and pool habitats to prevent accelerated rates of drying, stratification and deterioration in water quality or loss of connectivity.
Manage the risk of harmful algal blooms in recreational use areas.	Improve riparian integrity, cropping/grazing practices, stock management, potential effluent discharges to reduce nutrient inputs into rivers and weirs. Protect low flow and pool habitats to prevent accelerated rates of drying, deterioration in water quality or loss of connectivity Implement risk management framework to notify users of potential health risks and to minimise exposure
Reduce the mobilisation of toxicants and pesticides.	Reducing mobilisation of toxicants and pesticides is largely related to land, vegetation and natural resource management. Strategies to improve the condition of riparian zones, best management practices for chemical handling and application, cropping practices, runoff from paricultural land and discharges from ming sites.
Reduce contamination from pathogens into water sources.	Reducing contamination from pathogens is mostly achieved through land and industry management. Strategies to avoid animal faeces contamination include fencing to prevent stock entering waterways and runoff management from agricultural land. Reducing point and diffuse contamination from wastewater discharges – sewage treatment facilities, septic systems and stormwater
Protect, maintain or enhance connectivity between water sources to support downstream processes including priority carbon and nutrient pathways	Protect low flow and pool habitats to prevent accelerated rates of drying, stratification and deterioration in water quality or loss of connectivity.

## 7. Measuring and monitoring

#### This section includes the following components of the Basin Plan

- 10.44 Information relating to measuring take-water access entitlements
- 10.45 Supporting measuring
- 10.46 Monitoring water resources

Several NSW agencies have responsibilities for measuring and monitoring water and related resources, as well as water take.

WaterNSW now takes carriage of monitoring both river flows in the Intersecting Streams WRPA, and metered take associated with water access licences.

In the Intersecting Streams WRPA there are currently 42 flow gauging stations in the Intersecting Streams WRPA, with many of these providing real time data.

## 7.1. Information relating to measuring take

Section 5.5 of this Plan outlines how actual take is measured or estimated for each class of water take on an ongoing basis.

Although take associated with water access licences in the unregulated water sources is largely unmetered, the NSW Government is committed to delivering a robust metering framework across NSW.

The NSW Non-Urban Water Metering Policy commenced on 1 December 2018 and will improve the standard and coverage of non-urban water meters in NSW. This is a commitment under the Water Reform Action Plan released in December 2017. Under the framework, an infrastructure size threshold links the requirement to have a meter to the risks of individual users and their physical ability to take water. For surface water, all works (including open channels and closed pipes) that meet the infrastructure-size threshold will need a meter, unless the water supply work approval authorises the use of only one surface pump of a size less than 100 mm. In addition, if the relevant water supply work approval does not specify a size for the pump, the work will need a meter.

Users with multiple works permitted by the same water supply work approval, entitlement or nominated by one access licence, or situated on the same landholding meet the multiple works threshold and are required to have meters on all their works, unless there are:

- no more than 2 pumps, each of which is less than 75 mm
- no more than 3 pumps, each of which is less than 50 mm, or
- no more than 4 pumps, each of which is less than 40 mm.

The multiple works threshold does not apply to back-up surface water pumps, where a user is authorised to have a secondary pump that can only be used if the primary pump fails because of a mechanical or electrical failure.

All new and replacement meters installed from 1 April 2019 must be pattern-approved, and installed by a duly qualified person in accordance with the requirements of Australian Standard 4747 (AS4747). By December 2020, all users with pumps of 500mm or greater required meters that were pattern approved and validated by a duly qualified person or met requirements for accuracy. By December 2021 all remaining users with pumps of 100mm or more must meet the requirements. Users will not need to replace existing accurate, well-performing meters if they can demonstrate that the measurement performance of the meter in situ is within the limits of error of +/-5% by December 2021. Users will also need to install a data-logger, tamper-evident seals and telemetry, if not already installed.
A work used to take water pursuant to a basic landholder right will not require a meter. However, if a work is used to take both basic landholder rights water and licensed water, a meter will be required if the work meets one of the metering thresholds previously stated.

For the purpose of section 10.44 and 10.45 of the Basin Plan:

- Table 7-1 of this WRP shows, in relation to each class of water access right relating to the water resources of the Intersecting Streams WRPA:
  - the best estimate of the total long-term annual average quantity of water taken that is measured
  - $\circ$  the best estimate of the total long-term annual average quantity of water taken that is not measured
  - o how the quantities under paragraphs (a) and (b) were calculated
- the proportion of measured take that is done so in accordance with standards for measuring agreed by the Basin States and the Commonwealth is 0% at the commencement of this Plan, as meter verification has not been completed. This will change as meter verification and the installation of new meters occurs over time.

For the purpose of section 10.45 of the Basin Plan:

- Clauses 65, 66(2) (5), and 67(1)(b), (1A), (1B), (2), (2A) and (2B) of the Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011 specify the mandatory conditions for access licenses and water supply works approvals, which include the installation of flow measurement devices, including the mandatory conditions imposed by the Water Management (General) Regulation 2018 outlined below when applicable
- section 101A of the WMA 2000 imposes a mandatory condition on all water supply work approvals requiring metering equipment to be installed, used and properly maintained. . Section 115 of the WMA 2000 provides for the making of regulations to impose mandatory conditions on access licences and approvals in specified circumstances, including in relation to metering equipment and measurement of water flows and reporting of water take.
- Clause 229 of the *Water Management (General) Regulation 2018* imposes mandatory metering requirements, and clauses 230 to 234 specify exemptions to these requirements, either for a specified period or more generally.
- Division 3 of Part 10 and Schedule 8 of the *Water Management (General) Regulation* 2018 specify the standard to which take must be measured under the regulation (metering equipment standards). Sections 91H, 91I, 91J and 91K of the WMA 2000 impose penalties respectively for:
  - o failure to install, use or maintain metering equipment as prescribed
  - o taking water when metering equipment is not working
  - o failure to keep metering records as required
  - o tampering with water meters
- Over time, the NSW Government will increase the amount of take measured. For the purposes of accreditation additional improvements will be made over time in line with NSW's commitments under the Murray–Darling Basin Compliance Compact and future intergovernmental agreements on compliance, and in accordance with the relevant requirements of the *Water Management (General) Regulation 2018* as outlined above.

Note: The Water Management (General) Amendment (Metering) Regulation 2018 commenced on 1 December 2018 and amended the Water Management (General) Regulation 2018.

As floodplain harvesting is insignificant in the Intersecting Stream WRPA, the proportion of take that is measured will not increase (Schedule D Risk assessment sections 4.5.4 and 8.2.4).

Form of take	Class of water access right	Average annual quantity of water taken that is measured since plan commencement in ML/yr (% of category included)	Average annual quantity of water taken that is not measured since plan commencement in ML/yr (% of category included)	Calculation method
Take from a watercourse	Unregulated river access licence	0	3,000 (100%)	
	Unregulated river (special additional high flow) access licences	0	Included above	
	Domestic and stock access licenses	0	Included above	A
	Local water utility	0	Included above	As specified in Table F-2
Take by runoff dams (Including Harvestable Rights)	<ul> <li>Harvestable rights</li> <li>'Exempt dams'</li> <li>Water taken and stored in excess of the maximum harvestable right volume<sup>1</sup></li> </ul>	0	111,000 (100%)	
	Exempt rainfall runoff collection (relating to tailwater drain)	0	0	No method yet available to estimate volume
Take under basic rights	Domestic and stock (BLR)	0	2,456 (100%)	
	Native Title	0	0	As specified in Table F-2
Net take by commercial plantations	Not a class of access right	0	0 (100%)	

<b>Fable 7-1. Information relating to n</b>	neasured and estimated ta	take by class of	access right.
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<sup>1</sup> data used to calculate the average quantity is the 'usage YTD (ML)' figure for each class of water access right over the period described, as observed on the NSW Water Register https://waterregister.waternsw.com.au/water-register-frame.

<sup>2</sup> May include *water taken and stored in excess of the maximum harvestable right volume* as it is currently not possible to separate this component from *take from a watercourse* under unregulated river access licences.

## 7.2. Monitoring water resources

A monitoring, evaluation and reporting plan (MER Plan) has been prepared for the Intersecting Streams WRPA (Schedule I to this Plan). Parts of the MER Plan have been informed by the:

- Objectives, strategies and performance indicators in Part 2 of the Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011
- The Risk Assessment for the Intersecting Streams WRPA (Schedule D).

The objectives, strategies and performance indicators in the Intersecting Streams water sharing plan have been updated to make them more specific, measurable, achievable, relevant and time-bound (SMART) than previous objectives, and relate to the environmental, economic, social and cultural outcomes of management of the water resources of the Intersecting Streams WRPA. They also align with the objectives of the BWS and Intersecting Streams LTWP.

Table 7-2 summarises the monitoring programs for the Intersecting Streams WRPA, with particular reference to the monitoring required to inform reports of matters 8, 9, 12 and 19 of Schedule 12 to the Basin Plan that are as follows:

- Matter 8: The achievement of environmental outcomes at an asset scale
- Matter 9: The identification of environmental water and the monitoring of its use
- Matter 12: Progress towards the water quality targets in chapter 9
- Matter 19: Compliance with water resource plans.

## Table 7-2. Monitoring of water resources.

Schedule 12 item	Responsibility	Monitoring	Detail contained in
8 – The achievement of environmental outcomes at an asset scale	Department of Planning and Environment BCD	Waterbirds, wetland hydrology, native vegetation, frogs, water quality	Long-term Water Plan (Appendix B)
	Department of Planning and Environment Water Division	Fish, macroinvertebrates, riparian vegetation, water quality, frogs	Intersecting Streams Water MER Plan (Schedule I)
9 – The identification of environmental water and the	Department of Planning and Environment	River and wetland hydrology monitoring	Long-term Water Plan Intersecting Streams Water MER Work Plan
monitoring of its use	BCD		
	NRAR	Flow and release monitoring, inundation monitoring	Annual compliance report
12 – Progress towards the water quality targets	Department of Planning and Environment BCD	Event-based of water quality conditions	Long-term Water Plan
	Department of Planning and Environment Water Division	Water quality parameters various	WQMP (Schedule G)
19 – Compliance with water resource plans,	NRAR	Compliance with WSP rules	Annual compliance reports
particularly in relation		Surface water take	

Schedule 12 item	Responsibility	Monitoring	Detail contained in
to permissible water diversions	Department of Planning and Environment Water Division	WSP implementation	Assessment of WaterNSW Compliance Report Annual water accounts Five-yearly review of WSPs

Note: to the extent that monitoring undertaken for a matter in this table is relevant to fulfilling a reporting obligation in relation to any other matter in Schedule 12 of the Basin Plan (including another matter listed in this table), that monitoring may also be used by NSW to enable it to fulfill its reporting obligations in relation to that other matter.

For the purpose of section 10.46 of the Basin Plan:

- column 3 of Table 7-2 specifies the monitoring of water resources that will be undertaken in the Intersecting Streams WRPA
- this resource monitoring will contribute to enabling NSW to fulfil its reporting obligations under section 13.14 and matters 4, 8, 9, 10, 12, 14, 18 and 19 of Schedule 12 to the Basin Plan, as set out in tables 1-1, 3-1 and 5-1 of Schedule I (Intersecting Streams Monitoring, Evaluation and Reporting Plan)
- NSW will continue to use an existing process of reporting via the annual reporting required under section 71 of the *Water Act* 2007 (Cth)
- data and monitoring requirements for NSW to fulfil Schedule 12 Basin Plan obligations are subject to ongoing discussion and collaboration between the MDBA and Basin States.

# 8. Information and methods used to prepare the WRP

### This section includes the following components of the Basin Plan

- 10.49 Best available information
- 10.50 Methods used to develop water resource plan

Much of the information used to develop the Basin Plan has also been used in the WRP development process. Likewise, the MDBA's *Handbook for Practitioners*, and its other guidelines and position statements have guided the WRP development.

For the purposes of section 10.49 and 10.50 of the Basin Plan:

- Table H-1 of Schedule H identifies and describes the information, tools, methods and models used in developing this WRP that are not otherwise explicitly identified and described elsewhere in this Plan
- information and methods explicitly identified and described elsewhere in the Plan should be read as additional information and methods
- the best available information has been used in the development of the WRP.

Additional information and methods explicitly identified and described elsewhere include information contained in:

- Schedule C—Aboriginal issues, values and objectives
- Schedule D—Risk assessment
- Schedule E Planning for environmental water
- Schedule F Water for consumptive use information
- Schedule G—Water quality management plan
- Schedule I— Monitoring, evaluation and reporting plan.

A number of information products were also developed as part of the WRP development process. These are outlined and described in Table H-2 in Schedule H.

# Schedule A. Water sharing plan information

This Schedule links to the Water Sharing Plan associated with the Water Resource Plan.

The development of water resource plans (WRP) under the *Basin Plan 2012* involved the remake or amendment of existing water sharing plans (WSPs). In addition to making changes to WSP rules to address requirements of the *Basin Plan*, WSPs have been updated to reflect current water policy frameworks and drafting requirements.

Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011

# Schedule B. Water Resource Plan index

As outlined in section 1.5 of this WRP, all text that is boxed and highlighted in blue forms part of this Plan for accreditation purposes. Where reference is made in that text to all or part of a Schedule to this Plan, those provisions in the Schedule also form part of this Plan for accreditation purposes.

Likewise, a reference made in this index to a section in the main document refers only to the boxed and highlighted text within that section. Where those boxed and highlighted sections refer to all or part of a schedule to this Plan, this index should be read as referring to those referenced provisions as well.

This Schedule details the requirements of Chapter 10 of the *Basin Plan*, the parts of the water resource plan that address each requirement and the body responsible for implementing that part of the water resource plan.

BP Requirement	Section of this Plan that addresses the requirement/s	Responsible Person
10.02 Identification of water resource plan area and water resources	S. 2.1	NSW Department of Planning and Environment
10.03 Identification of SDL resource units and water resources	S. 2.1	NSW Department of Planning and Environment
10.04 Form of water resource plan	S. 1.5	Minister for Water*
10.05 Regard to other water resources	S. 2.2	Minister for Water*
10.06 Matters relating to requirements of Chapter	S. 1.5 and this index	Minister for Water*
10.07 Consultation to be demonstrated	S. 1.7	NSW Department of Planning and Environment
10.08 Water access rights must be identified	S. 5.1	NSW Department of Planning and Environment
		The holder of a water access right.
10.09 Identification of planned environmental water and register of held environmental water	S. 4.1	NSW Department of Planning and Environment
10.10 Annual determinations of water permitted to be taken	S. 5.5, S. 5.6	Minister for Water* (or delegate)
10.11 Rules for take, including water allocation rules	S. 5.4	Minister for Water* (or delegate)
10.12 Matters relating to accounting for water	S. 5.5, S. 5.6	NSW Department of Planning and Environment

BP Requirement	Section of this Plan that addresses the requirement/s	Responsible Person
10.13 Limits on certain forms of take	S. 5.4	NSW Department of Planning and Environment
10.14 Effects, and potential effects on water resources of the water resource plan area	S. 2.3	Take from a non-Basin groundwater source does not affect or have potential to affect resources of the SDL resource units of this WRPA
10.15 Determination of actual take must be specified	S. 5.5	NSW Department of Planning and Environment
10.16 Sustainable use and management of water resources	There is no specific requirement to be addressed in this section.	Descriptive requirement only Not assessed
10.17 Priority environmental assets and priority ecosystem functions	S. 4.2	NSW Department of Planning and Environment
10.18 Priority environmental assets dependent on groundwater	S. 4.7	NSW Department of Planning and Environment
10.19 Groundwater and surface water connections	S. 4.7	NSW Department of Planning and Environment
10.20 Productive base of groundwater	S. 4.7	NSW Department of Planning and Environment
10.21 Additional requirements for Western Porous Rock, Gunnedah – Oxley Basin MDB, Sydney Basin MDB and Goulburn – Murray: Sedimentary Plain SDL resource units	S. 4.7	Requirement applies to groundwater sources that are out of scope of this WRPA
10.22 Description of how requirements have been met	S. 4.2, S. 4.7, Schedule D Consolidated risk tables and Sections 4 and 8	NSW Department of Planning and Environment
10.23 Listing types of interception activity	S.3, S. 5.7	NSW Department of Planning and Environment

BP Requirement	Section of this Plan that addresses the requirement/s	Responsible Person
10.24 Monitoring impact of interception activities	S. 5.7	NSW Department of Planning and Environment
10.25 Actions to be taken	S.5.7	NSW Department of Planning and Environment
10.26 Planning for environmental watering	S. 4.3, S. 4.4	NSW Department of Planning and Environment
		Biodiversity and Conservation Division of the Department of Planning and Environment
10.27 Enabling environmental water between connected water resources	S. 2.2, S. 4.4	Department of Planning and Environment
		Biodiversity and Conservation Division of the Department of Planning and Environment
10.28 No net reduction in the protection of planned environmental water	S. 4.5	Minister for Water*
10.29 Water resource plan to include WQM Plan	S. 6	NSW Department of Planning and Environment
10.30 WQM Plan to identify key causes of water quality degradation	S. 6	NSW Department of Planning and Environment
10.31 Measures addressing risks arising from water quality degradation	S. 6	NSW Department of Planning and Environment
10.32 WQM Plan to identify water quality targets values	S. 6	NSW Department of Planning and Environment
10.33 WQM plan to identify measures	S. 6	NSW Department of Planning and Environment
10.34 WMA 2000 Plan to identify locations of targets for irrigation water	S.6	NSW Department of Planning and Environment
10.35 Impacts of WQM Plan on another Basin State	S. 6	Not required
10.35A WQM Plan to identify key causes of water quality degradation	S. 6	Requirement applies to WRPA that contain groundwater and as such out of scope of this WRP

BP Requirement	Section of this Plan that addresses the requirement/s	Responsible Person
10.35B WQM Plan to identify water quality target values	S. 6	Requirement applies to WRPA that contain groundwater and as such out of scope of this WRP
10.35C Consideration given to rules or measures	S. 6	Requirement applies to WRPA that contain groundwater and as such out of scope of this WRP
10.35D Additional requirements for Western Porous Rock, Gunnedah – Oxley Basin MDB, Sydney Basin MDB and Goulburn – Murray: Sedimentary Plain SDL resource units	S. 6	Requirement applies to WRPA that contain groundwater and as such out of scope of this WRP
10.36 Application of Part	S. 5.2.2 S. 5.2.3	Requirement applies to WRPA that contain groundwater and as such out of scope of this WRP
10.37 Circumstances in which conditions in section 12.24 are met	S. 5.2.3	Requirement applies to WRPA that contain groundwater and as such out of scope of this WRP
10.38 Circumstances in which conditions in section 12.25 are met	S. 5.2.3	Requirement applies to WRPA that contain groundwater and as such out of scope of this WRP
10.39 Circumstances in which conditions in section 12.26 are met	S. 5.2.2	Minister for Water*
10.40 Definitions	There is no specific requirement to be addressed in this section.	Not assessed
10.41 Risk identification and assessment methodology	S. 3	NSW Department of Planning and Environment
10.42 Description of risks	S. 3	NSW Department of Planning and Environment
10.43 Strategies for addressing risks	S. 3	NSW Department of Planning and Environment
10.44 Information relating to measuring take – water access entitlements	S. 7.1	NSW Department of Planning and Environment
10.45 Supporting measuring	S. 7.1	NSW Department of Planning and Environment
10.46 Monitoring water resources	S. 7.2	Minister for Water*
10.47 Review of water resource plans	S. 1.8	Minister for Water*

BP Requirement	Section of this Plan that addresses the requirement/s	Responsible Person
10.47A Additional requirements for Western Porous Rock, Gunnedah – Oxley Basin MDB, Sydney Basin MDB and Goulburn – Murray: Sedimentary Plain SDL resource units	S. 1.8	Not required as this Plan is not a WRP relating to the Western Porous Rock, Gunnedah-Oxley Basin MDB, Sydney Basin MDB or Goulburn-Murray: Sedimentary Plain SDL resource units
10.48 Amendment of water resource plan	S. 1.8	Minister for Water*
10.49 Best available information	S. 8	NSW Department of Planning and Environment
10.50 Methods used to develop water resource plan	S. 8	NSW Department of Planning and Environment
10.51 Measures in response to extreme events	S. 5.8	NSW Department of Planning and Environment/Water NSW and the Minister* (10.51(2)) NSW Department of Planning and
		Environment (10.51(3))
10.52 Objectives and outcomes based on Indigenous values and uses	S. 1.3	NSW Department of Planning and Environment
10.53 Consultation and preparation of water resource plan	S. 1.7	NSW Department of Planning and Environment
10.54 Cultural Flows	S. 4.6	NSW Department of Planning and Environment
10.55 Retention of current protection	S. 4.6	Minister for Water*

\*Means the NSW Minister who from time to time has responsibility for management of Murray-Darling Basin water resources in NSW.

## Schedule C. Consultation Report

A Consultation Report for the Intersecting Streams Water Resource Plan has been prepared which covers consultation undertaken during WSP preparation, any additional consultation for WRP, Aboriginal consultation as well as processes, outputs and outcomes.

Schedules are available from www.dpie.nsw.gov.au.

# Schedule D. Risk assessment information

This Schedule contains the technical 'risk assessment' for the water resource plan area. WRPs must be prepared having regard to current and future risks to the condition and continued availability of the water resources of the WRPA. Risks include that water quality or quantity is insufficient to meet consumptive, economic, environmental, and public benefit (social, cultural, Aboriginal) uses and values. The assessment includes identification of the risk pathways, the likelihood and consequence of manifestation of risks, categorisation of risks (high, medium or low), and identification of measures to address the medium and high risks.

Schedules are available from www.dpie.nsw.gov.au.

# Schedule E. Planning for environmental water

Table E- 1. Objective alignment between BWS, LTWP and WSPs.

Basin Plan objective	BWS expected outcomes	LTWP objectives	WSP Objectives (Note: Ecological Objectives are located in Clause 9 of the Unregulated WSP)	How the WSP and LTWP give regard to BWS expected outcomes
Chapter 5: Management objectives and outcomes to be achieved by Basin Plan 5.03 (1)(a), (b), (c), (d) Chapter 8: Environmental Watering Plan 8.04 (a), (b), (c) 8.05 (2)(c) 8.06 (2) 8.06 (3)(a), (b), (f) 8.06 (4) 8.06 (5) 8.06 (6)(a), (b) 8.07 (2) 8.07 (3) 8.07 (4) 8.07 (5) 8.07 (6) 8.51 (1)(b) Chapter 10: Water Resource	<ul> <li>River flows and connectivity theme</li> <li>To keep base flows at least 60% of the natural level</li> <li>A 10% overall increase in flows in the Barwon-Darling: from increased tributary contributions from the Condamine-Balonne, Border Rivers, Gwydir, Namoi and Macquarie-Castlereagh catchments, collectively</li> <li>A 30 to 60% increase in the frequency of freshes, bank-full and lowland floodplain flows in the Murray, Murrumbidgee, Goulburn-Broken and Condamine-Balonne catchments</li> <li>Current levels of connectivity maintained in the Paroo, Moonie, Nebine, Ovens and Warrego catchments</li> </ul>	<ul> <li>EF1: Provide and protect a diversity of refugia across the landscape</li> <li>EF2: Create quality instream, floodplain and wetland habitat</li> <li>EF3a: Provide movement and dispersal opportunities within catchments for water-dependent biota to complete lifecycles and disperse into new habitats</li> <li>EF3b: Provide movement and dispersal opportunities between catchments for water-dependent biota to complete lifecycles and disperse into new habitats</li> <li>EF3b: Provide movement and dispersal opportunities between catchments for water-dependent biota to complete lifecycles and disperse into new habitats</li> <li>EF4: Support instream and floodplain productivity</li> <li>EF5: Support nutrient and carbon exchange along channels, and between channels and floodplains/wetlands</li> </ul>	<ul> <li>Unregulated WSP 9 (2) (a): protect, and contribute to the enhancement of, the recorded distribution or extent, and population structure, of target ecological populations</li> <li>Unregulated WSP 9 (2) (b): protect, and contribute to the enhancement of, the longitudinal and lateral connectivity within and between water sources to support target ecological processes</li> <li>Relevant WSP notes associated with this objective:         <ul> <li>Target ecological processes in these water sources include fish movement across significant barriers, as identified by NSW Department of Primary Industries (Fisheries) and described in the MER plan for these water sources in this Plan, or between water sources in this Plan and the Water Sharing Plan for the Barwon-Darling Unregulated River Water Source 2012</li> </ul> </li> </ul>	In order to achieve the WSP and LTWP environmental objectives, strategies were developed to provide the environmental watering requirements (EWRs) of key species and assets. These strategies are consistent with the EWR flow components identified in section 8.51(1)(b) of the Basin Plan. Objective (2) (b) in the unregulated WSP aims to protect, and contribute to the enhancement of, lateral and longitudinal connectivity. However, the provision of river flows and connectivity has generally been treated as part of EWR strategies rather than objectives within the WSP and LTWP. Consequently, the BWS expected outcomes under this theme are implicit in the strategies for a wide range of EWRs.

Basin Plan objective	BWS expected outcomes	LTWP objectives	WSP Objectives (Note: Ecological Objectives are located in Clause 9 of the Unregulated WSP)	How the WSP and LTWP give regard to BWS expected outcomes
Plan requirements 10.27 Schedule 7: Targets to measure progress towards objectives 1(a), (b), (c) 2(a), (b), (c)		EF6: Support groundwater conditions to sustain groundwater-dependent biota EF7: Increase contribution from Intersecting Streams to Barwon-Darling	<ul> <li>Connectivity may be between water sources in this Plan and connected water sources in Queensland, where an intergovernmental agreement between New South Wales and Queensland governments has been made to shepherd water for environmental benefits</li> <li>Connectivity includes flows into and out of significant wetlands, including Ramsar and DIWA listed wetlands, including Narran Lakes, Nocoleche Nature Reserve, Paroo-Darling National Park and Yantabulla Swamp</li> <li>Unregulated WSP 9 (2) (c): protect, and contribute to the enhancement of, water quality within target ranges for these water sources to support water-dependent ecosystems and ecosystem functions</li> </ul>	
Chapter 5: Management objectives and outcomes to be achieved by Basin Plan 5.03 (1)(a), (c), (d) Chapter 8: Environmental Watering Plan	<ul> <li>Vegetation theme</li> <li>To maintain the current extent of non-woody, forest and woodland vegetation</li> <li>No decline in the condition of river red gum, black box and coolibah across the Basin</li> </ul>	<ul> <li>NV1: Maintain the extent of non-woody vegetation communities occurring within or closely fringing channels</li> <li>NV2: Maintain or increase the extent and maintain the viability of non-woody vegetation communities occurring in wetlands and on floodplains</li> </ul>	<ul> <li>Unregulated WSP 9 (2) (a): protect, and contribute to the enhancement of, the recorded distribution or extent, and population structure, of target ecological populations</li> <li>Relevant WSP notes associated with this objective:         <ul> <li>Target ecological populations in these water sources may include known or predicted populations of</li> </ul> </li> </ul>	<ol> <li>Each of the BWS expected outcomes for vegetation is included in either LTWP objectives, WSP objectives or both.</li> <li>BWS Appendix 2 Table 3 outlines the expected extent outcomes for the Intersecting Streams WRP Area, however these are not consistent with NSW Government's own estimates of native vegetation extent in the</li> </ol>

Basin Plan objective	BWS expected outcomes	LTWP objectives	WSP Objectives (Note: Ecological Objectives are located in Clause 9 of the Unregulated WSP)	How the WSP and LTWP give regard to BWS expected outcomes
8.04 (a), (b), (c) 8.05 (2)(a), (b), (c) 8.05 (3)(a), (b) 8.06 (3)(a), (b) 8.06 (5) 8.06 (6) 8.07 (1) 8.07 (2) 8.07 (4) 8.07 (5) 8.07 (6) Schedule 7: Targets to measure progress towards objectives 1(a), (b), (c), (e), (f) 2(a), (b), (c), (e), (f), (g)	<ul> <li>By 2024, increased periods of growth for communities that closely fringe or occur within the main river corridors</li> <li>By 2024 improved recruitment of trees within river red gum, black box and coolibah communities - in the long term achieving a greater range of tree ages</li> <li>By 2024, improvement in the condition of lignum shrublands</li> <li>Maintain the current extent of forest and woodland vegetation</li> <li>Maintain the current extent of extensive lignum shrubland areas within the Basin</li> <li>Appendix 3 expected outcomes for vegetation in the Intersecting Streams WRP area:</li> <li>Maintain 2,300ha of river red gum, 38,300ha of black box and 22,800ha of coolabah in the Paroo</li> </ul>	NV3: Maintain the extent and improve the condition of river red gum communities closely fringing river channels NV4: Maintain or increase the extent and maintain or improve the condition of native woodland and shrubland communities on floodplains NV4b: River red gum woodland NV4c: Black box woodland NV4c: Coolibah woodland NV4e: Lignum shrublands	<ul> <li>the following: river red gum, coolibah-black box woodland and wetland communities, high diversity hotspots and significant habitat for native fish, frogs, waterbirds and vegetation</li> <li>Ecological communities that are associated with Ramsar and Directory of Important Wetlands Australia (DIWA) listed wetlands, including waterbirds and lignum vegetation, will be monitored under a range of government and academic programs</li> </ul>	Intersecting Streams WRP Area, so Part A, Section 3.2 of the Intersecting Streams LTWP may have different estimates of extent. Despite this difference, the LTWP and WSP are still consistent with the broader BWS expected outcomes.

Basin Plan objective	BWS expected outcomes	LTWP objectives	WSP Objectives (Note: Ecological Objectives are located in Clause 9 of the Unregulated WSP)	How the WSP and LTWP give regard to BWS expected outcomes
	<ul> <li>Maintain 7,300ha of river red gum, 90,400ha of black box and 121,400ha of coolabah in the Warrego</li> <li>Maintain 11,500ha of river red gum, 36,100ha of black box and 62,900ha of coolabah in the Condamine-Balonne</li> <li>Maintain 2,200ha of river red gum, 2,500ha of black box and 7,900ha of coolabah in the Moonie</li> </ul>			
Chapter 5: Management objectives and outcomes to be achieved by Basin Plan 5.03 (1)(a), (b), (c), (d) Chapter 8: Environmental Watering Plan 8.04 (a), (b), (c) 8.05 (2)(a), (b),	<ul> <li>Waterbird theme</li> <li>Number and type of waterbird species present in the Basin will not fall below current observations</li> <li>Breeding events (the opportunities to breed rather than the magnitude of breeding per se) of colonial nesting waterbirds to increase by up to 50% compared to the baseline scenario</li> </ul>	<ul> <li>WB1: Maintain the number and type of waterbird species</li> <li>WB2: Increase total waterbird abundance across all functional groups</li> <li>WB3: Increase opportunities for non- colonial waterbird breeding</li> <li>WB4: Increase opportunities for colonial waterbird breeding</li> </ul>	<ul> <li>Unregulated WSP 9 (2) (a): protect, and contribute to the enhancement of, the recorded distribution or extent, and population structure, of target ecological populations</li> <li>Relevant WSP notes associated with this objective:         <ul> <li>Target ecological populations in these water sources include high diversity hotspots and significant habitat for waterbirds</li> <li>Ecological communities that are associated with Ramsar and</li> </ul> </li> </ul>	Each of the BWS expected outcomes for waterbirds is included in either LTWP objectives, WSP objectives or both. The LTWP has a broader range of management actions because it guides the use of held environmental water (HEW), hence it contains more objectives that are directed towards waterbird breeding sites. The WSP outlines the operating rules for Planned Environmental Water (PEW) and those rules that facilitate the use of HEW, but does

Basin Plan objective	BWS expected outcomes	LTWP objectives	WSP Objectives (Note: Ecological Objectives are located in Clause 9 of the Unregulated WSP)	How the WSP and LTWP give regard to BWS expected outcomes
(c) 8.05 (3)(a), (b) 8.06 (3)(a), (b) 8.06 (5) 8.06 (6) 8.07 (1) 8.07 (2) 8.07 (3) 8.07 (4) 8.07 (5) 8.07 (6) Schedule 7: Targets to measure progress towards objectives 1(a), (b), (c), (e), (f) 2(a), (b), (c), (e), (f), (g)	<ul> <li>Breeding abundance (nests and broods) for all of the other functional groups to increase by 30– 40% compared to the baseline scenario, especially in locations where the Basin Plan improves over-bank flows</li> <li>Significantly improve waterbird populations in the order of 20-25 % over baseline scenario with increases in all waterbird functional groups</li> <li>Appendix 4 expected outcomes for waterbirds in the Intersecting Streams WRP Area</li> <li>Maintain total abundance and diversity of waterbirds, colonial waterbird breeding opportunities and shorebird abundance and diversity of waterbirds, colonial waterbird breeding opportunities and shorebird abundance and diversity of waterbirds, colonial waterbird breeding opportunities and shorebird abundance and diversity of waterbirds, colonial waterbird breeding opportunities and shorebird</li> </ul>	WB5: Maintain the extent and improve condition of waterbird habitats	Directory of Important Wetlands Australia (DIWA) listed wetlands, including waterbirds and lignum vegetation, will be monitored under a range of government and academic programs	not contain objectives to direct its use.

Basin Plan objective	BWS expected outcomes	LTWP objectives	WSP Objectives (Note: Ecological Objectives are located in Clause 9 of the Unregulated WSP)	How the WSP and LTWP give regard to BWS expected outcomes
	<ul> <li>abundance in the Cuttaburra Channels</li> <li>Maintain total abundance and diversity of waterbirds, colonial waterbird breeding opportunities and shorebird abundance in the Paroo overflow lakes</li> <li>Maintain total abundance and diversity of waterbirds at Yantabulla</li> </ul>			
Chapter 5: Management objectives and outcomes to be achieved by Basin Plan 5.03 (1)(a), (b), (c), (d) Chapter 8: Environmental Watering Plan 8.04 (a), (b), (c) 8.05 (2)(c) 8.05 (3)(a), (b) 8.06 (3)(a), (b), (f) 8.06 (6) 8.06 (7)	<ul> <li>Fish Theme</li> <li>No loss of native species currently present within the Basin</li> <li>Restored distribution and abundance to levels recorded pre-2007 for short-lived species</li> <li>Expanded distribution of key species and populations in the northern and southern Basin</li> <li>Improved population structure of key species through regular recruitment</li> <li>Improved population structure (i.e. a range of</li> </ul>	<ul> <li>NF1: No loss of native fish species</li> <li>NF2: Increase the distribution and abundance of short to moderate-lived generalist native fish species</li> <li>NF3: Increase the distribution and abundance of short to moderate-lived floodplain specialist native fish species</li> <li>NF4: Improve native fish population structure for moderate to long-lived flow pulse specialist native fish species</li> </ul>	<ul> <li>Unregulated WSP 9 (2) (a): protect, and contribute to the enhancement of, the recorded distribution or extent, and population structure, of target ecological populations</li> <li><i>Relevant WSP notes associated with this</i> objective:</li> <li>Target ecological populations in these water sources may include known or predicted populations of the following: Murray cod, olive perchlet, silver perch and high diversity hotspots and significant habitat for native fish</li> <li>Ecological communities that are associated with Ramsar and Directory of Important Wetlands</li> </ul>	1) Each of the BWS expected outcomes for native fish is included in the LTWP objectives and WSP objectives. The LTWP has a broader range of management actions because it guides the use of held environmental water (HEW), hence it contains more objectives that are directed towards providing strategic flow events at specific times and of specific magnitudes that are required by fish species. 2) Regular monitoring of fish communities will take place during the terms of the WSP and LTWP. If any new species or populations are detected within this WRP Area, the WSP and LTWP would

Basin Plan objective	BWS expected outcomes	LTWP objectives	WSP Objectives (Note: Ecological Objectives are located in Clause 9 of the Unregulated WSP)	How the WSP and LTWP give regard to BWS expected outcomes
8.07 (1) 8.07 (2) 8.07 (3) 8.07 (4) 8.07 (5) 8.07 (6) Schedule 7: Targets to measure progress towards objectives 1(a), (b), (c), (e), (f) 2(a), (b), (c), (e), (f), (g)	<ul> <li>size/age classes for all species and stable sex ratios where relevant) in key sites for long-lived species</li> <li>A 10–15% increase of mature fish (of legal take size) for recreational target species (Murray cod and golden perch) in key populations</li> <li>Appendix 6 priorities for native fish species in the Intersecting Streams</li> <li>WRP Area:</li> <li>Expand the core range of at least 2 existing populations of silver perch, freshwater catfish and olive perchlet</li> <li>Establish additional populations of silver perch in in the Warrego, Paroo and Condamine rivers</li> </ul>	NF5: Improve native fish population structure for moderate to long-lived riverine specialist native fish species NF5: A 25% increase in abundance of mature (harvestable size) golden perch and Murray cod	<ul> <li>Australia (DIWA) listed wetlands, including waterbirds and lignum vegetation, will be monitored under a range of government and academic programs</li> <li>Unregulated WSP 9 (2) (b): protect, and contribute to the enhancement of, the longitudinal and lateral connectivity within and between water sources to support target ecological processes</li> <li>Relevant WSP notes associated with this objective:</li> <li>Target ecological processes in these water sources include fish movement across significant barriers, as identified by NSW Department of Primary Industries (Fisheries) and described in the MER plan for these water sources</li> </ul>	immediately prioritise their conservation.
Chapter 5: Management objectives and outcomes to be	<i>No equivalent BWS theme</i>	<b>EF1:</b> Provide and protect a diversity of refugia across the landscape	<b>Unregulated WSP 9 (2) (c):</b> protect, and contribute to the enhancement of, water quality within target ranges for these	The LTWP and WSP objectives listed here are not directly referenced in the BWS themes, but are consistent with, and contribute

Basin Plan objective	BWS expected outcomes	LTWP objectives	WSP Objectives (Note: Ecological Objectives are located in Clause 9 of the Unregulated WSP)	How the WSP and LTWP give regard to BWS expected outcomes
achieved by Basin Plan 5.03 (1)(a), (c), (d) Chapter 8: Environmental Watering Plan 8.04 (a), (b), (c) 8.05 (2)(a), (b),(c) 8.05 (3)(a), (b) 8.06 (3)(a), (b) 8.06 (3)(a), (b) 8.06 (5) 8.06 (6)(a), (b) 8.06 (7) 8.07 (1) 8.07 (2) 8.07 (3) 8.07 (4) 8.07 (5) 8.07 (6) Schedule 7: Targets to measure progress towards objectives 1(a), (b), (c), (e), (f) 2(a), (b), (c), (e),		<ul> <li>EF2: Create quality instream, floodplain and wetland habitat</li> <li>EF3a: Provide movement and dispersal opportunities within catchments for water-dependent biota to complete lifecycles and disperse into new habitats</li> <li>EF3b: Provide movement and dispersal opportunities between catchments for water-dependent biota to complete lifecycles and disperse into new habitats</li> <li>EF4: Support instream and floodplain productivity</li> <li>EF5: Support nutrient and carbon exchange along channels and floodplains/wetlands</li> <li>EF6: Support groundwater conditions to sustain groundwater-dependent biota</li> <li>EF7: Increase contribution into the Barwon-Darling)</li> </ul>	<ul> <li>water sources to support water-dependent ecosystems and ecosystem functions</li> <li><i>Relevant WSP notes associated with this objective:</i> <ul> <li>Water quality target ranges for these water sources are defined in the Water Quality Management Plan for the Intersecting Streams Water Resource Plan Area SW13 and NSW State Water Quality Assessment and Monitoring Plan.</li> </ul> </li> <li>Unregulated WSP 9 (2) (b): protect, and contribute to the enhancement of, the longitudinal and lateral connectivity within and between water sources to support target ecological processes</li> <li><i>Relevant WSP notes associated with this objective:</i> <ul> <li>Target ecological processes in these water sources include fish movement across significant barriers, as identified by NSW Department of Primary Industries (Fisheries) and described in the MER plan for these water sources in this Plan, or between water sources in this Plan and the Water Sharing Plan for the Barwon-Darling</li> </ul></li></ul>	to achieving, the broad Basin Plan and BWS expected outcomes

Basin Plan objective	BWS expected outcomes	LTWP objectives	WSP Objectives (Note: Ecological Objectives are located in Clause 9 of the Unregulated WSP)	How the WSP and LTWP give regard to BWS expected outcomes
			<ul> <li>Unregulated River Water Source 2012</li> <li>Connectivity may be between water sources in this Plan and connected water sources in Queensland, where an intergovernmental agreement between New South Wales and Queensland governments has been made to shepherd water for environmental benefits</li> <li>Connectivity includes flows into and out of significant wetlands, including Ramsar and DIWA listed wetlands, including Narran Lakes, Nocoleche Nature Reserve, Paroo-Darling National Park and Yantabulla Swamp</li> </ul>	

## Table E- 2. Intersecting Streams WRP/WSP environmental objectives

Broad environmental objectives					
1) Protect, and contribut of this Plan.	te to the enhancement of, the e	ecological condition of these water	sources and their water-dependent eco	osystems over the term	
Targeted environmental objectives	Targeted objective performance indicators	Strategies	Water Management Actions and Mechanisms	Relevant management plan(s) For information only – not for accreditation	
1) Protect, and contribute to the enhancement of, the recorded distribution or extent, and population structure of target	<ol> <li>silver perch</li> <li>golden perch</li> <li>Murray cod</li> </ol>	1) Protect low flow habitats from accelerated rates of drying.	1) Cease-to-pump rules for streams, in-stream pools and off- river pools	Water Sharing Plan for the Intersecting Streams Unregulated Water Sources	
structure of, target ecological populations	<ol> <li>4) olive perchlet</li> <li>5) eel-tailed catfish</li> <li>6) High fish diversity</li> </ol>	2) Protect pools in streams, wetlands, lagoons and floodplains within the WRP area during dry periods 2 c p s	1) Cease-to-pump rules for streams, in-stream pools and off- river pools	Water Sharing Plan for the Intersecting Streams Unregulated Water Sources	
	7) Black box and Coolabah woodland 8) Lignum shrubland		2) Authorised in-river dam construction, operation, and passing flow requirements as specified on the dam approval		
	<ul> <li>9) River red gum</li> <li>10) High diversity hotspots and significant habitat for native fish, waterbirds and native vegetation</li> </ul>	3) Protect a portion of flow events in the NSW Intersecting Streams WRPA through flow event management in Queensland water management areas	1) Environmental, stock and domestic water storage and release (QLD)	Water Sharing Plan for the Intersecting Streams Unregulated Water Sources Intersecting Streams Long Term Water Plan	
			2) Low flow event management in the Lower Balonne (QLD)		
			3) Medium flow event management in the Lower Balonne (QLD)	Warrego, Paroo, Bulloo and Nebine	

Targeted environmental objectives	Targeted objective performance indicators	Strategies	Water Management Actions and Mechanisms	Relevant management plan(s) For information only – not for accreditation
			4) Narran Lakes filling flow event management (QLD)	Water Plan and Water Management Protocol. 2016
			5) Warrego Rivers flow event management (QLD)	Queensland Border Rivers- Moonie Water Plan and Water Management Protocol 2019
				Condamine and Balonne Water Plan and Water Management Protocol 2019
		4) Manage environmental water to meet flow targets specified in the Intersecting Streams LTWP. This strategy aims to improve environmental water management in the WRP area	1) Protection of environmental water from extraction by including active management of environmental water as an amendment provision in the WSP	Water Sharing Plan for the Intersecting Streams Unregulated Water Sources Intersecting Streams Long Term Water Plan
		5) Implement the WQM Plan for the WRP area. This includes but is not limited to strategies that aim to:	1) Refer to the WQM Plan for detailed listing	Water Quality Management Plan for the Intersecting Streams WRP area
		Poor water quality		Basin Salinity Management Strategy

Targeted environmental objectives	Targeted objective performance indicators	Strategies	Water Management Actions and Mechanisms	Relevant management plan(s) For information only – not for accreditation
		6) Limit consumptive water extractions in the WRP area to the predefined share of available water	<ol> <li>Reserve all water above the long-term average annual extraction limit (LTAAEL) for the environment as PEW (defined and managed by the listed WSPs)</li> <li>Available Water Determinations (AWD) adjust extractive use according to water availability</li> <li>Sustainable Diversion Limits</li> <li>Require all take to be licensed except for BLR or where a policy indicates otherwise</li> <li>Extraction limits for individual extractors and associated accounting provisions to manage extraction at the extraction point</li> <li>Compliance with individual extraction limits</li> <li>Trade limits or prohibitions between surface water plan areas, water sources, and management zones to manage entitlement growth</li> </ol>	Water Sharing Plan for the Intersecting Streams Unregulated Water Sources Water Take Measurement and Metering Policy Water Management (General) Amendment (Metering) Regulation

Targeted environmental objectives	Targeted objective performance indicators	Strategies	Water Management Actions and Mechanisms	Relevant management plan(s) For information only – not for accreditation
			8) Prohibit trade between surface water and groundwater sources	
<ol> <li>Protect, and contribute to the enhancement of the longitudinal and lateral connectivity within and</li> </ol>	1) Fish movement across significant barriers, as identified by NSW	1) Protect a portion of flow events in the NSW Intersecting Streams WRPA through flow	1) Environmental, stock and domestic water storage and release (QLD)	Water Sharing Plan for the Intersecting Streams Unregulated Water Sources
between water sources to support target ecological outcomes	Industries Fisheries and described in the MER Plan for these water sources	Queensland water management areas	2) Low flow event management in the Lower Balonne (QLD)	Intersecting Streams Long Term Water Plan Warrego, Paroo, Bulloo and Nebine Water Plan and Water Management Protocol 2016 Queensland Border Rivers- Moonie Water Plan and Water Management Protocol 2019
			3) Medium flow event management in the Lower Balonne (QLD)	
			4) Narran Lakes filling flow event management (QLD)	
			5) Warrego Rivers flow event management (QLD)	
				Condamine and Balonne Water Plan and Water Management Protocol 2019

Targeted environmental objectives	Targeted objective performance indicators	Strategies	Water Management Actions and Mechanisms	Relevant management plan(s) For information only – not for accreditation
		2) Manage environmental water to meet flow targets specified in the Intersecting Streams LTWP. This strategy aims to improve environmental water management in the WRP area	1) Protection of environmental water from extraction by including active management of environmental water as an amendment provision in the WSP	Water Sharing Plan for the Intersecting Streams Unregulated Water Sources Intersecting Streams Long Term Water Plan
		3) Limit consumptive water extractions in the WRP area to the predefined share of available water	1) Reserve all water above the long-term average annual extraction limit (LTAAEL) for the environment as PEW (defined and managed by the listed WSPs)	Water Sharing Plan for the Intersecting Streams Unregulated Water Sources Water Take
			2) Available Water Determinations (AWD) adjust extractive use according to water availability	Measurement and Metering Policy Water Management (General) Amendment (Metering) Regulation
			3) Sustainable Diversion Limits	
			4) Require all take to be licensed except for BLR or where a policy indicates otherwise	
			5) Extraction limits for individual extractors and associated accounting provisions to manage extraction at the extraction point	
			6) Compliance with individual extraction limits	

Targeted environmental objectives	Targeted objective performance indicators	Strategies	Water Management Actions and Mechanisms	Relevant management plan(s) For information only – not for accreditation
			7) Trade limits or prohibitions between surface water plan areas, water sources, and management zones to manage entitlement growth	
			8) Prohibit trade between surface water and groundwater sources	
3) Protect, and contribute to the enhancement of, the water quality within target ranges for these water sources to support water- dependent ecosystems and ecosystem functions	1) Water quality target ranges for these water sources are defined in the Water Quality Management Plan for the Intersecting Streams Water Resource Plan Area and NSW State Water Quality Assessment and Monitoring Plan.	<ol> <li>Implement the WQM Plan for the WRP area. This includes but is not limited to strategies that aim to:</li> <li>Poor water quality</li> </ol>	1) Refer to the WQM Plan for detailed listing	Water Quality Management Plan for the Intersecting Streams WRP area Basin Salinity Management Strategy

## Schedule F. Water for consumptive use information

## Water access rights and other take

#### Table F-1. Parameters for the method for determining Annual Actual Take.

AAT method parameters	AAT method sub-parameters	Method description	Responsible agency	Additional information
Watercourse actual take	N/A	Equal to 3 GL/y as per MDBA report <i>Review of Cap Implementation 2008-09</i> (p 40-41).	NSW Department of Planning and Environment	To NSW knowledge when WRP is accredited, the MDBA report represented the best available information for this form of take.
Runoff dams actual take	N/A	Equal to the <b>runoff dams permitted take</b> volume described in Table F-2.	NSW Department of Planning and Environment	To NSW knowledge when WRP is accredited the BDL represents the best available information for this form of take
Basic rights actual take	N/A	Equal to the <b>basic rights permitted take</b> volume described in Table F-2.	NSW Department of Planning and Environment	To NSW knowledge when WRP is accredited the BDL represents the best available information for this form of take
Net take by commercial plantations actual take	N/A	Equal to the <b>commercial plantations permitted</b> <b>take</b> volume described in Table F-2.	NSW Department of Planning and Environment	To NSW knowledge when WRP is accredited the BDL represents the best available information for this form of take
SDL adjustment amount	N/A	Equal to the long-term volume of the SDL adjustment amount including any SDL adjustment amendments under section 23B of the Commonwealth Water Act 2007	NSW Department of Planning and Environment	Efficiency measures in Intersecting Streams are unlikely. However, the AAT method accounts for any future efficiency measures by adding its long term average (i.e noting the SDL adjustment amount is negative in absence of supply measures.

The Water Management (General) Regulation 2018 and associated metering policies require that:

- all authorised works (including open channels and closed pipe), except pumps less than 100 mm, to have a meter that is pattern-approved and installed in accordance with Australian Standard 4747 by December 2021;
- from April 2019, all new and replacement meters are pattern-approved and installed and validated by a duly qualified person in accordance with the requirements of the Australian Standard 4747;
- users with works that meet the infrastructure size or multiple works thresholds who wish to keep their existing meters will need to
  demonstrate, by the roll-out date, that the meter is pattern-approved and validated, or accurate. They will also need to install a data logger
  and tamper evident seal, if not already installed.

The new metering requirements will be implemented in a staged manner. The staged roll-out takes a risk-based approach, aiming to ensure the largest water users in NSW are metered and telemetered in the first year of the roll-out. The roll-out will also allow time for the market to adjust to meet demand for both pattern-approved meters and certified meter installers.

The roll-out dates are:

- Stage 1: Surface water users with pumps of 500 mm or larger must comply by 1 December 2020
- Stage 2: Remaining users in northern inland regions must comply by 1 December 2021
- Stage 3: Remaining users in southern inland regions must comply by 1 June 2023.

Table F-2. Parameter	s for the method for	<sup>,</sup> determining	g Annual Permitted Take	e.
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APT method parameters	APT method sub-parameters	Method description	Responsible agency	Additional information (not for accreditation)
Watercourse permitted take	N/A	<ul> <li>The estimated average annual extraction of water from watercourses in the Intersecting Streams SDL resource unit (SS17), over the period from 1 July 1993 to 30 June 1999, under entitlements issued under Part 2 of the <i>Water Act 1912</i>.</li> <li>This covers the water access rights: <ul> <li>unregulated river access licence</li> <li>unregulated river (special additional high flow) access licence</li> <li>stock and domestic (take from watercourse)</li> <li>local water utility.</li> </ul> </li> </ul>	NSW Department of Planning and Environment	Annual watercourse permitted take will equal the estimate of consumptive take that is 3 GL/y. This approach is specific to Intersecting Streams as there is currently no model available to determine an annually variable APT. This estimate is sourced from the MDBA report Review of Cap Implementation 2008-09 (p40), which is based on surveys of use over the period 1993-99, and remains the best available information. Unregulated river access licence includes water taken and stored in excess of the maximum harvestable right volume. NSW notes the runoff dams permitted take method accounts for all dam impact and so there may be a minor potential double count in the methods. NSW and MDBA commit to improve the APT methods for take from watercourses and take by runoff dams in future.
Runoff dams permitted take	N/A	The estimated annual runoff dams (under basic rights and excluding basic rights) permitted take will equal the long term average as specified for the Intersecting Streams SDL resource unit (SS17) under Schedule 3 column 2 of the Basin Plan	NSW Department of Planning and Environment	Annual runoff dams permitted take will equal the long term average as specified for the Intersecting Streams SDL resource unit (SS17) under Schedule 3 column 2 of the Basin Plan. The Basin Plan estimates this to be 111 GL.
		<ul><li>This covers the water access right:</li><li> 'Harvestable rights (runoff dam)'.</li></ul>		This information is the best available and is sourced from the National Water Commission report Surface

APT method parameters	APT method sub-parameters	Method description	Responsible agency	Additional information (not for accreditation)
		<ul> <li>Harvestable rights (runoff dam)' 'exempt classes of dam' (as prescribed by Schedule 2 of the Harvestable Rights Order)</li> <li>Water taken and stored in excess of the maximum harvestable right volume (licensed as 'unregulated river access')</li> </ul>		and/or groundwater interception activities: initial estimates (SKM, CSIRO & BRS, 2010), p165 and Murray-Darling Basin Sustainable Yields Project: Projections of effect of future Farm Dam Development to the year 2030 on runoff, SKM 2007).
		Exempt rainfall runoff collection		The APT method does not distinguish between exempt dams and permitted dams under the Harvestable Rights Order, and they are both included in the APT calculation.
				Parts of Intersecting Streams Surface WRP area falls within the central inland-draining catchments which has the right to capture 10% of average rainfall runoff. Other parts fall within the Western Division, with the right to capture 100% of average rainfall runoff.
				An estimate for rainfall run-off collection relating to the use of tailwater drains is not available in the Intersecting Streams.
Basic rights permitted take	Domestic and stock basic rights	The sum of water estimated as required to be taken under domestic and stock basic rights	NSW Department of	The number, average size and length of riparian properties with river
	BLR unregulated	(unregulated) and native title basic rights from the Intersecting Streams SDL resource unit (SS17) in the relevant water year. At the start of the WRP this volume was estimated to be 2.46 GL from clause 18 of the <i>Water</i> <i>Sharing Plan for Intersecting Streams</i> <i>Unregulated River Water Sources 2011.</i>	Planning and Environment	trontage were measured using shire property maps. BLR requirements for each property were determined using Departmental farm water supplies data. The demand per property was expressed as demand per km river and extrapolated to estimate total demand for the length of the river. The overall method for calculating

APT method parameters	APT method sub-parameters	Method description	Responsible agency	Additional information (not for accreditation)
		APT equals BDL as described in F-5 of this schedule.		BLR will not change, however, the assumptions that apply to individual water sources may be altered where local hydrogeological knowledge can supply better information.
	Native title basic rights	The annual estimate of water required for Native Title rights in the Intersecting Streams unregulated system, as outlined in clause 19 of the Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011.	NSW Department of Planning and Environment	At the start of the WRP, there is no volume attached to the native title determination for Barkandji Traditional Owners. Relevant areas are in the Paroo River Water Source and Yanda
		At the start of the WRP this volume was estimated to be zero		Creek Water Source
		APT equals BDL as described in section F-5 of this schedule.		
Net take by commercial plantations permitted take	N/A	The long-term average estimate of net water taken by commercial plantations in the Intersecting Streams SDL resource unit (SS17), as described in SKM, CSIRO & BRS (2010) Surface and/or groundwater interception activities: initial estimates Waterlines report No. 30, National Water Commission, Canberra.	NSW Department of Planning and Environment	The long-term average estimate of net water taken by commercial plantations in the Intersecting Streams SDL resource unit will equal the long term average as specified for the Intersecting Streams SDL resource unit (SS17) under Schedule 3 column 2 of the Basin Plan.
SDL adjustment amount		The long-term volume of the SDL adjustment amount including any SDL adjustment amendments under section 23B of the Commonwealth Water Act 2007.	NSW Department of Planning and Environment	Efficiency measures in Intersecting Streams are unlikely. However, the APT method accounts for any future efficiency measures by adding its long term average.

Form of take	Class of water access right	Sustainable Diversion Limit (GL/year) calculation <sup>1</sup>	Annual average permitted take, applied over a repeat of the historical climate conditions – 1895 – 2009 (GL/year)	
	Unregulated river access licence			
Watercourses (excluding Basic Rights)	Unregulated river (special additional high flow) access licence	19.3 <sup>2</sup>	3.00 <sup>3</sup>	
	Domestic and Stock (licensed)			
	Local Water Utility			
Basic rights	Domestic and Stock (BLR)	2.50 <sup>4</sup>	2.50 <sup>4</sup>	
	Native Title		0	
Runoff Dams (including Basic Rights)	Harvestable rights 'Exempt classes of dam' Water taken and stored in excess of	6.00	111.0	
Runoff Dams (excluding Basic Rights)	the maximum harvestable right volume <sup>5</sup> Exempt rainfall runoff collection	105.0		
Net take by commercial plantations	Not a class of access right	0	0	
The SDL adjustment amount <sup>6</sup>		0	0	
SDL reduction amount (shared)		-13.8	-	
TOTAL		119.0	116.5 <sup>7</sup>	

#### Table F-3. Demonstration of APT method with the SDL.

<sup>1</sup> The SDL equals the BDL of 132.8 GL/y minus the shared reduction amount (13.8 GL/y) to give an SDL of 119.0 GL/y. There is no local reduction amount (retrieved from https://www.mdba.gov.au/sites/default/files/pubs/murray-darling-basin-sustainable-diversion-limit-compliance-outcomes-2019-20-report.pdf)

<sup>2</sup> Schedule 3 of the Basin Plan 2012 estimated the BDL for take from watercourse as 3 GL/year, see Table F-6 in this Schedule F, in which a re-estimate of the watercourses BDL is proposed to be 19.3 GL/year

<sup>3</sup> The 'best estimate' of consumptive take for the purpose of the Basin Plan 2012 is 3 GL/year

<sup>4</sup> Schedule 3 of the Basin Plan 2012 states take from watercourses under basic rights is yet to be estimated. See Table F-6 in Schedule F, in which an estimate of the watercourses under basic rights BDL is proposed to be 2.46 GL/year, consistent with Part 5 Division 2 of *Water Sharing Plan for the Intersecting Streams Unregulated River Water Sources 2011* 

<sup>5</sup> Water taken and stored in excess of the maximum harvestable right volume is licensed as 'unregulated river access', see table F-2 Water Course Permitted take for further information

<sup>6</sup> For the purpose of this SDL demonstration, the SDL as at 30 June 2019 is given, at which point there were no efficiency measures in Intersecting Streams

<sup>7</sup> For the purpose of this demonstration, APT applied over a repeat of the historical climate conditions (1895 – 2009) is on average 2.5 GL below the SDL, as the method does not include the 'over-recovered' HEW related to the purchase of Toorale.

10.12 sub- clause	10.12 sub-sub- clause	How this is accounted for in the method for 10.10	Supporting information (not for accreditation)
(1)	(a) Forms of take	Table F-2 sets out how the methods account for all forms of take and all classes of water access rights in the Intersecting streams SDL RU.	
	(b) Carryover allocations - Watercourse permitted take	The estimate reflects long-term average use, and use of this form of take reflects account rules which govern carryover. Carryover volume is treated according to the description in Table F-2	(b) Carryover allocations-Watercourse permitted take
	(c) Return flows	There are no permitted return flows (as defined by NSW) in the Intersecting Streams WRPA	Reference WMA 2000 Chapter 3 Part 2 Division 5
	(d) Trade	The net volume of consumptive water traded into and out of the Intersecting Streams SDL resource unit (SS17) at 30 June of the relevant water year will be 0.	Under Part 10 of the <i>Water Sharing Plan for Intersecting</i> <i>Streams Unregulated River Water Sources 2011</i> dealings between water sources relating to the assignment of water allocations are prohibited. Interstate trade is not permitted unless administrative arrangements have been made between NSW and QLD.
	(e) Hydrological connection	The methods for watercourse permitted take, runoff dams permitted take, basic rights permitted take and commercial plantations permitted take are based on long term average estimates which are the best available information. The long-term average watercourse estimate indirectly considers significant hydrological connections and the estimate will be improved in future.	The provisions in Part 9 of the <i>Water Sharing Plan for</i> <i>Intersecting Streams Unregulated River Water Sources 2011</i> prevent the granting or amendment of a water supply work approval for an in-river dam on a third order or higher stream in the Paroo River and its tributaries in the Paroo River Water Source.
	(f) Circumstances in which there is a change in way water held or taken	Any material change to the circumstances in which there is a change in way water held or taken will be factored into the estimate in consultation with the MDBA	The Intersecting Streams SDL estimate reflects current conditions in the unregulated river, including updated inflow information, planning assumptions etc.
	(g) Change in utilisation	Growth in use provisions in the WSP are how the plan responds to changes in utilisation. Changes over time in the extent to which water allocations in the SDL resource unit are utilised will be addressed through the	NSW manages growth in use through managing extraction to the long term annual average extraction limit or SDL. Any management action to growth in extraction from rivers will be managed through managing take from the unregulated

Table F-4. Explanation of how the APT method accounts for matters listed under 10.12 of the Basin Plan.
		related provisions in section 5.4 (under s10.11 of the Basin Plan) which will ensure SDL compliance. Changes to the permitted take model/method will be given effect consistent with the responses implemented by NSW. An amended method needs to demonstrate SDL under s10.10(4) and finally the WRP re- accreditation.	rivers e.g. reducing unregulated river or unregulated river (special additional high flow) take
	(h) Great Artesian Basin (GAB)	No water is sourced from the Great Artesian Basin and released into the Intersecting Streams SDL resource unit.	No water is sourced from the Great Artesian Basin and released into the Intersecting Streams SDL resource unit.
	(i) Managed aquifer recharge	MAR does not occur in the Intersecting Streams SDL resource unit	This requirement is not applicable to surface water WRPs.
(2)	No other matters are accounted for	No other matters are accounted for	Not a requirement that needs to be demonstrated as being met.
(3)	Disposal and acquisition of held environmental water	For the purposes of meeting section 10.12(3) of the Basin Plan, permanent disposal or acquisition of held environmental water will be accounted for by the method listed in Table F-2. The temporary disposal and acquisition of HEW will be accounted for after annual permitted take is determined. This would be reported to the MDBA as part of the yearly section 71 data submission. This will allow the cumulative balance to be adjusted as per s. 6.12(1)(a) of the Basin Plan and outside of the permitted take method.	

# F- 5. Additional information on the calculation of Basic Landholder Rights, Native Title and Harvestable Rights

### Stock and Domestic Basic Landholder Rights:

Take under basic rights for domestic and stock use in the WRPA was calculated using reasonable take and use zones and the domestic and stock consumption allowances as summarised below:

- determining the areas of significant reliance on surface water,
- land use data (2005 dataset<sup>6</sup>) to determine grazed area and a volume allocated by applying the stock consumption allowance (ML/ha) to determine stock use in each water source.
- Australian Bureau of Statistics population and housing census data (2009 dataset) was then used to calculate the number of houses in each water source and the domestic consumption allowance (ML/house) was applied to determine the total domestic use for each water source.

While the overall method for calculating BLR will not change, the assumptions that apply to individual water sources such as the buffer distances used for calculating surface water volumes may be altered were issues arise during the planning process for individual water sources.

### Stock Use (ML/year)

• Excluding areas of reticulated town water supply, establish the potential grazed area by selecting the stream orders as detailed in Table 1 by zone. The stream orders were selected for each zone based on the streams reliability to provide basic right for the majority of the year on average.

### Table 1

Zone	Stream Order
Eastern	2 <sup>nd</sup> and above
Tablelands	2 <sup>nd</sup> and above
Slopes	2 <sup>nd</sup> and above
Plains	3 <sup>rd</sup> and above

- Each side of the selected streams was then buffered based on the assumed distance stock will walk to water:
  - For the slopes, tableland and eastern (coastal) zones a buffer of 400m either side of a river was used.
  - For the plains zone, a buffer of 1km either side of the river was used.
  - Divide the buffered streams into water sources.
- Within each water source, identify reasonable proportions of unimproved, improved, irrigated grazed and non-grazed pasture using Land Use data.

<sup>&</sup>lt;sup>6</sup> The land use information was based on remotely sensed data held by NSW (air photo, satellite imagery from Landsat and SPOT) from relevant time periods. The mapping analysis was done in 2005. Where available, field data was used to increase the reliability of the remotely sensed data. The features of data were classified according to ACLUM categories for land use.

- Determine the total area of unimproved, improved and irrigated grazed land within each water source and multiply by the stock watering allowances for rural land in Table 3 to determine the stock use volume for that water source.
- It is assumed a percentage of use within the buffered areas is sourced from groundwater, calculate the percentage of surface water and groundwater use within the buffered areas by multiplying the total stock use volume by the values in Table 2, assign the volume allocated to groundwater to the underlying aquifer water source:

Table 2

Zone	Groundwater (Aquifer type)	Surface Water
Eastern	ТВА	ТВА
Tablelands	Alluvials 20% Other 10%	remainder
Slopes	Alluvials 20% Other 10%	remainder
Plains	Alluvials 40% Other 30%	remainder

Table 3: Stock watering allowance by zone.

Zone	Pasture Type	ML/ha
Eastern	Unimproved Pasture	0.025
	Improved and Fertilised	0.050
Tablelands	Unimproved Pasture	0.015
	Improved and Fertilised	0.040
Slopes	Unimproved Pasture	0.020
	Improved and Fertilised	0.04
Plains	Unimproved Pasture	0.005
	Improved and Fertilised	0.010
All Zones	Licensed Irrigated Pastures	0.05

### Domestic Use (ML/year)

- Use the reticulated town water supply area layer to differentiate urban and rural areas.
- Assume domestic use within urban areas is covered by reticulated town water supply that is covered by a surface water and/or groundwater entitlement and therefore any private surface water extraction for domestic consumption would be negligible.
- Excluding areas of reticulated town water supply, determine the area of significant surface water use by selecting the stream orders as detailed in Table 4 by zone. The stream orders were selected for each zone based on the streams reliability to provide basic right for the majority of the year on average.

#### Table 4

Zone	Stream Order
Eastern	3 <sup>nd</sup> and above
Tablelands	3 <sup>nd</sup> and above
Slopes	3 <sup>nd</sup> and above
Plains	4 <sup>th</sup> and above

- Each side of the selected streams was then buffered by 500m.
- Using the ABS Population and Housing census data, calculate the average number of houses per collector district by dividing the total number of houses in that collector district by the area of that collector district.
- Determine the area of buffered river within each collector district and multiply by the average number of houses per hectare for that collector district, add these together of each water source to determine the number of houses in each water source.
- Multiply the number of homes in each water source by the domestic consumption allowances for rural land (Table 5) to determine the rural domestic volume for a water source.

Table 5: Domestic water consumption for rural lots (per year) by zone.

Zone	Rural consumption (ML/yr)
Eastern/Coast	1.0
Tablelands	1.1
Slopes	1.4
Plains	2.1

• It is assumed a percentage of use within the buffered areas is sourced from groundwater, calculate the percentage of surface water and groundwater use within the buffered areas by multiplying the total rural domestic volume by the values in Table 6, assign the volume allocated to groundwater to the underlying aquifer water source:

### Table 6

Zone	Groundwater (Aquifer type)	Surface Water
Eastern	ТВА	ТВА
Tablelands	Alluvials 20% Other 10%	remainder
Slopes	Alluvials 20% Other 10%	remainder
Plains	Alluvials 40% Other 30%	remainder

### Native Title Basic Rights:

The Native Title rights as set out in any determination under the Native Title Act 1993 (Cth) will determine the nature and extent of the water access rights in the WRPA.

This is not a specified volume of water take. The volume of water take may be identified through Indigenous Land Use Agreement (ILUA) negotiations with the recognised Native Title holders. This volume of water take will vary between Native Title holder groups and WRPAs. The method for determining take volumes under Native Title basic rights will need to be determined on a case by case basis, noting these volumes are included with the LTAAEL.

The method for estimating annual actual take will assume full utilisation based on the lesser of:

- 1. the allowable volume as set out in any determination under the Native Title Act 1993 (Cth), or
- 2. an alternate volume estimated using best available information in relation to any determination under the Native Title Act 1993 (Cth).

Native title claims, determinations and ILUAs relevant to the WRPA can be searched for on the National Native Tribunal Website http://www.nntt.gov.au/searchRegApps/Pages/default.aspx

At the commencement of this Plan, no water requirements have been identified for native title holders. It should also be noted that under the Native Title Act 1993 (Cth) a planning instrument such as a WRP or NSW water sharing plan cannot fetter the take of water under a Native Title determination. As there were no Native Title Determinations at 30 June 2009, the BDL for Native Title Rights for the Intersecting Streams WRP is zero.

### Estimating take under Harvestable Rights

Landholders can collect a proportion of the rainfall run-off from their property in one or more dams on non-permanent, mapped minor streams, or unmapped streams, without a water licence, water supply work approval or water use approval.

The proportion of rainfall run-off you can capture under your harvestable right depends on where your land is located:

- in the central inland-draining catchments of NSW, up to 10% of average annual regional rainfall run-off can be captured
- in the Western Division of NSW, all rainfall run-off can be captured

See the Harvestable Rights – Western Division Order, NSW Government Gazette number 40, 31 March 2006, page 1628, and the Harvestable Rights (central inland-draining catchments) 2022 for further information.

Table F-6. Intersecting Streams water resource plan (WRP) area baseline diversion limit (BDL) reestimate for the Intersecting Streams (SS17) SDL resource unit

Form of take	Classes of access right	BDL in Basin Plan 2012 (schedule 3) (GL/y)	BDL re- estimate – NSW WRP 2022 proposal (GL/y)	Supporting information (justification for change)
Intersecting Str	reams (SS17) SDL	resource unit	:	
Take from a watercourse (excluding take under basic rights)	Unregulated river Unregulated river (special additional high flow) Domestic and stock (licensed) Local water utility	3.0	19.3	Intersecting streams - 2022 updated estimate of the BDL, LTDLE factors and the held environmental water recovered (nsw.gov.au) defines how the volume of 19.3 GL/y was calculated A total of 16.3 GL/y of HEW has been recovered to date. However, the shared reduction amount was set at 13.8 GL/y (amount set and bilaterally agreed between MDBA and NSW and confirmed in accordance with the processes in s 6.05 of the Basin Plan)
Take from a watercourse (including under basic rights)	Domestic and stock (BLR) Native Title	(Not estimated)	2.5	WRP <b>Schedule F section F-5</b> . Estimated to be 2.46 GL.
Take by runoff dams (excluding under basic rights)	Harvestable rights Exempt dams Water taken and	105.0	105.0	No change from the Basin Plan 2012 estimates. There is no estimate available for exempt rainfall runoff collection. No available estimate yet to account for exempt rainfall-runoff collection
Take by runoff dams under basic rights	stored in excess of maximum harvestable right Exempt rainfall runoff collection	6.0	6.0	
Net take by commercial plantations	(not a class of access right)	0	0	No change from the Basin Plan 2012 estimates
TOTAL		114.0	132.8	The Basin Plan 2012 originally estimated the BDL for Intersecting Streams as 114 GL/year

## Schedule G. Water Quality Management Plan

This Schedule is the Water Quality Management Plan (WQMP) for the water resource plan area, as required by the Basin Plan. The WQMP identifies key causes of water quality degradation, water quality target values and measures that support the maintenance of water quality within a WRP area.

Schedules are available from www.dpie.nsw.gov.au.

## Schedule H. Information and tools used in preparing WRP

### Data sets and methods

Primary data sets and methods used in the development of the WRP are shown in Table I-1.

#### Table H-1. Data sets and methods used in formation of Intersecting Streams WRP.

Information	Description	
Spatial data - ArcGIS 10 file geodatabase	Spatial data for areas gazetted as Surface Water Sources and management zones in which Water Sharing Plan rules are applied	
BOM Climate data	Bureau of Meteorology—climate data online	
River height and flow data	Hydstra database available real time online Surface water level and streamflow gauging data	
On farm floodplain works	Property survey data from Healthy Floodplains project	
Satellite imagery 2004/05	By Geoscience Australia for MDBA assessment of runoff dams	
Water quality	KiWQM Database NSW Water quality database Pineena WQ Historical water quality database for NSW	
Fish	Risk Assessment for the Intersecting Streams WRPA provides a summary of data used	
Riparian condition	Risk Assessment for the Intersecting Streams WRPA provides a summary of data used	
Geomorphological condition	Risk Assessment for the Intersecting Streams WRPA provides a summary of data used	
Instream and wetland biota	Risk Assessment for the Intersecting Streams WRPA provides a summary of data used	
SEED Database	A portal for Sharing and Enabling Environmental Data (seed.nsw.gov.au/en/EDPHome/About.aspx) To facilitate collation, access and visualisation of data relevant to the ongoing implementation of this WRP.	

Information	Description	
Access licences	NSW water register—Public access to information about water licences, approvals, water allocations water dealings (trading), environmental water and other matters related to water entitlements in NSW.	
Water use	Metering data—As collected by WaterNSW for metered water use	
Cth regulatory instruments	legilslation.gov.au All Commonwealth regulatory instruments	
NSW regulatory instruments	legislation.nsw.gov.au All State regulatory instruments	
Submissions Database System	A system used to facilitate collation and assessment of stakeholder feedback on issues papers, draft plans and other documentation associated with the WRP.	
Aboriginal issues, values and objectives	Report on outputs of Aboriginal consultation process	
Aboriginal heritage database (AHIMS)	This database contains information and records about Aboriginal objects and places reported to the Department of Premier & Cabinet and Department of Environment as well as archaeological reports.	
IQQM lumped models for unregulated rivers	Hydrologic modelling method used by NSW for modelling of unregulated river water sources. Report: Modelling used for the Basin Plan risk assessment (NSW Department of Planning and Environment, draft)	
General Purpose Water Accounting Method	Consolidated, comparable and publicly accessible set of water accounting information for a regulated river water source	
Risk assessment approach	Addresses the requirements of section 10.41 and 4.02 of the Basin Plan. Combines a number of methodologies for assessing risk to water resources. Based on inputs from HEVAE, hydrology report, 2010 risk assessment report, SRA report re interception, MDBA 2010 hydrology report. The risk assessment provides a summary of data used, see table A- 1	
Estimating unmeasured use	Schedule F of the Intersecting Streams WRP and Section 5.4 of the Intersecting Streams WRP	
Water Quality Index (WaQI)	Tool for evaluating changes in water quality over the life of a water quality management or water resource plan. Can be calculated both for individual water quality parameters and as an overall integrated score. The WaQI	

Information	Description
	scores water quality data collected by NSW Department of Planning and Environment against predetermined water quality targets.
IAP2 Resources	International Association of Public Participation Resources - including the Core Values for Public Participation for use in the development and implementation of public participation processes to help make better decisions which reflect the interests and concerns of potentially affected people and entities.
Harvestable Rights Order Describes the proportion of rainfall run-off that can be collected from a property without a water water supply work approval or water use approval.   Western Division: NSW Government Gazette 40, 31 March 2006 p. 1628.   https://gazette.legislation.nsw.gov.au/so/download.w3p?id=Gaz_Gazette%20Split%202006_2   Central inland-draining catchments: https://legislation.nsw.gov.au/view/pdf/asmade/sl-2022-2	

## NSW information products and policies

Other key sources of information are referenced in the main body of the WRP, and include the Schedules and Appendices, and references therein. These references are not repeated here, but should be read as additional information sources.

Table H- 2 shows other key NSW information outputs supporting the WRP preparation process. Statewide policy documents, and Intersecting Streams specific plans. Again, note that other information sources, methodologies and standards are referenced in these output documents, and these should also be read as additional information sources.

### Table H- 2. Key NSW information outputs supporting the WRP preparation process.

Name	Description
WRP Factsheets	Fact sheets were developed to provide 'plain English' information on key aspects of the WRP development process during the public exhibition of WRPs. Fact sheets include; What is a WRP?; SDL Compliance; Proposed changes for the <i>Water Sharing Plan for Intersecting Streams Unregulated River Water Sources 2011</i> ; Managing floodplain harvesting in the intersecting streams WRPA
Intersecting Streams Status and Issues Paper	Summarises the status of water resources and issues that the NSW Department of Planning and Environment will consider when developing the Intersecting Streams Water Resource Plan
Intersecting Streams Risk Assessment Report	Provides the risk assessment to meet Basin Plan requirements
Intersecting Streams Issues Assessment report	Collates issues raised by stakeholders prior to an including issues raised in submissions received in response to the release of a Status and Issues Paper for the Intersecting Streams Water WRP
Strategy Prioritisation Methodology & Preferred Strategies	Table listing the issues raised and the identified strategies that would be explored during the rule development phase. Information also includes criteria and metrics to be used to analysis different strategies.
Water Quality Technical report	Provides information on water quality degradation issues in the Intersecting Streams WRPA using actual data collected from monitoring sites across the resources.
Salinity Technical report	Provides information on salinity issues in the Intersecting Streams WRPA using actual data collected from monitoring sites across the resources.
Extreme Events Policy	Outlines what the NSW Government will do to manage water resources should an extreme water shortage or water quality event occur that requires a change to normal water sharing arrangements.
NSW WSP MER Strategy	Describes the principles for establishing and implementing an adaptive management framework for MER activities.
Guidelines for setting and evaluating plan objectives for water management (NSW Department of Industry, 2017)	Outlines the approach for setting and evaluating objectives for water management to ensure they are specific, measurable, achievable, relevant and time bound.

Name	Description
Guidelines to Management Response to Harmful Algal Blooms – Regional guidelines	Plans for responses to algal blooms occurring in all NSW catchments. Contains information relating to algal blooms and pre-cursor conditions in assessing and managing risks to resources.
Guidelines to Management Response to Harmful Algal Blooms – Procedures for monitoring, alert levels and communications.	Procedure to monitor and assess algal blooms.
Draft Algal Risk Management Sub-Plan under the NSW Emergency Management Energy and Utility Services Supporting Plan	Centralised system for planning, monitoring, reporting and evaluation for algal risk management within NSW. Assisting in the mitigation of the impact of algal blooms.

### MDBA information sources

The many documents and information relied upon in the preparation of the Basin Plan have been also used in the preparation of this WRP. In addition to these, the following key MDBA advisory and information documents have been used:

- MDBA, 2013, *Handbook for Practitioners Water resource plan requirements*, Licensed from the Murray–Darling Basin Authority, under a Creative Commons Attribution 3.0 Australia Licence
- MDBA Position Statements for some requirements of Chapter 10
- MDBA, 2017, Proposed Guidelines for meeting Basin Plan requirements for considering Aboriginal Values and Uses, Draft version 2, Distributed to MLDRIN, NBAN, Basin States on 9 May 2017
- MDBA, 2016, Our water, our life: An Aboriginal study in the northern basin
- MDBA, 2014, *Basin-wide environmental watering strategy*, Licensed from the Murray–Darling Basin Authority, under a Creative Commons Attribution 3.0 Australia Licence
- MDBA, 2009, Review of Cap Implementation 2008-09, Copyright MDBA

### Other information sources

- Sinclair Knight Merz, CSIRO and the Bureau of Rural Sciences 2010, *Surface and/or groundwater interception activities: initial estimates* Waterlines report, National Water Commission, Canberra.
- Commonwealth of Australia, 2018, Commonwealth Environmental Water Portfolio Management Plan: Northern Unregulated Rivers 2018–19.
- Commonwealth of Australia, 2018, Toorale National Park and Toorale State Conservation Area Draft Plan of Management,
- Department of Industry, 2019. Intersecting Streams—updated estimates of the BDL, LTDLE factors and the held environmental water recovered (water management information sheet).

## Schedule I. Intersecting Streams Surface Water Monitoring, Evaluation and Reporting Plan

This Schedule is the Monitoring, Evaluation and Reporting (MER) Plan for the WRP area. It details the arrangements for monitoring, evaluation and reporting of water take, as well as of the resource itself (water flows or levels, and where applicable water quality), and of water dependent ecosystems.

MER programs improve the performance of plans through measuring and assessing the outcomes and actions of specific environmental objectives. The MER plan focuses on risk-informed performance indicators to determine if a relevant objective has been met. MER also provides a mechanism to reinforce, review and refine activities as part of the adaptive planning process.

The Intersecting Streams Water MER Plan is available from the NSW Department of Planning and Environment's website at https://www.dpie.nsw.gov.au.

# Appendix A. Intersecting Streams WRPA description

This appendix gives a more detailed description of the water resource plan area, including its physical setting and hydrogeology, environmental values, key uses and users, and water rights within the area.

The Intersecting Streams Surface Water Resource Plan—Surface water resource description is available from the NSW Department of Planning and Environment's website at https://www.dpie.nsw.gov.au.

## Appendix B. Long Term Water Plan

The Long-term Water Plan (LTWP) is an important step to describing the flow regimes that are required to maintain or improve environmental outcomes.

The plan identifies water management strategies for maintaining and improving the long-term health of the riverine and floodplain environmental assets and the ecological functions they perform. This includes detailed descriptions of ecologically important river flows and risks to water for the environment. It will help water managers and advisory groups make decisions about where, when and how available water can be used to achieve agreed long-term ecological objectives.

The Intersecting Streams Long-term Water Plan is available from the NSW Department of Planning and Environment – Biodiversity and Conservation Division's website at <a href="https://www.environment.nsw.gov.au/topics/water/water-for-the-environment/planning-and-reporting/long-term-water-plans">https://www.environment.nsw.gov.au/topics/water/water-for-the-environment/planning-and-reporting/long-term-water-plans</a>