



WATER SHARING PLAN IMPLEMENTATION

# Active Management Procedures Manual

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for the Barwon–Darling Unregulated Rivers Water  
Source

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## Part A – Purpose and scope

### Purpose

This Active Management Procedures Manual (manual) outlines procedures the New South Wales (NSW) Government will use to implement the resumption of flow rules and active management to protect active environmental water (AEW) in the Barwon–Darling Unregulated River Water Source (Barwon–Darling Water Source).

This manual is established under clause 52A of the *Water Sharing Plan for the Barwon–Darling Unregulated and Alluvial Water Sources 2012* (Barwon–Darling WSP).

### Approval

This manual was approved by the NSW Department of Planning, Industry and Environment – Water (the Department) – Executive Director Water Policy, Planning and Science on 30 November 2020.

This manual was published on the Department’s website on 1 December 2020.

### Period manual applies

This manual applies until it is replaced.

This manual will be reviewed annually in accordance with Procedure 31 – Annual evaluation and review of active management. It may be improved as we collect more information for this annual review.

Updates will be published on the Department’s website when approved.

### Context

Active management protects held environmental water (HEW) from extraction by unregulated access licence holders in the Barwon–Darling Water Source, allowing this water to remain in the water source for its intended environmental purpose.

HEW is water available under a water access licence (WAL) for the purposes of achieving environmental outcomes. The NSW and federal governments have acquired WALs for environmental purposes in the Barwon–Darling Water Source and its regulated and unregulated tributaries.

In NSW, HEW includes water available under a WAL that:

- is in an environmental water subcategory
- has a non-statutory environmental purpose agreed between the Department and the WAL holder
- is subject to an adaptive environmental water condition imposed under sections 8B, 8C, 8D or 62B of the *Water Management Act 2000* (WM Act), or
- is of a class prescribed by the regulations for environmental purposes.

The HEW identified as AEW in accordance with the Barwon–Darling WSP and this manual will be protected from extraction.

In addition, clause 43 of the Barwon–Darling WSP allows unregulated, A Class, B Class and C Class access licence holders to protect water from extraction that is otherwise permitted to be taken. This allows environmental water holders to protect unregulated water from extraction. Other licence holders can also protect unregulated water if they choose to.

## Area where this manual applies

This manual applies to the 14 management zones within the Barwon–Darling Water Source described in the Barwon–Darling WSP and shown in Appendix A.

References to management zones in this manual refer to the 14 management zones of the Barwon–Darling unless otherwise stated.

## Objectives and principles underpinning the implementation of active management

Active management is to be implemented in accordance with this manual and the objectives and principles of active management set out in the Active Management in Unregulated Rivers Policy (the active management policy) and outlined below.

### Primary objective

The primary objective of active management in NSW is to:

*Manage access to water in unregulated systems to allow held environmental water to remain and be used in-stream for environmental purposes.*

### Secondary objectives

The secondary objectives are to:

- support compliance with the protection of planned environmental water (PEW), transparency and equity of access
- provide certainty through enduring arrangements, and
- avoid reliance on temporary arrangements to protect HEW from extraction.

### Principles

In implementing active management, solutions:

- avoid, mitigate or offset any material change to reliability and access characteristics, including unintended gains
- are evidence-based and outcomes-focused
- are simple, practical and cost-effective
- support cultural and social outcomes, and
- continuously improve through an adaptive management process.

### Interpretation

Clauses referred to in this manual are clauses in the Barwon–Darling WSP unless otherwise stated.

Terms and abbreviations used in this manual are defined in Appendix B.

Appendices contain supporting information.

## Part B – Regulatory framework

This chapter explains the regulatory framework that enables and guides implementation of active management in unregulated water sources in NSW.

## Water Management Act 2000

The WM Act establishes the overarching water management priorities and provides the regulatory tools to manage flows to protect water for the environment, including preparing water sharing plans.

While active management will protect HEW from extraction in the Barwon–Darling Water Source, temporary water restrictions under section 324 of the WM Act will remain a tool for protecting other sources of environmental water if such restrictions are determined to be in the public interest.

## Water sharing plan provisions

This manual must be implemented in accordance with the Barwon–Darling WSP.

The Barwon–Darling WSP sets out objectives and strategies and the rules for sharing water between water users and the environment.

Restricting the water take to protect AEW is identified as a strategy to meet the targeted environmental objectives of the plan (refer to clause 10 (3)(b)).

The following rules in the water sharing plan enable water take to be restricted to protect AEW.

- Clause 42A (3) limits the maximum volume of water that is permitted to be taken on any day under a licence with an individual daily extraction component (IDEC)
- Clause 42A (2) before setting a limit under clause 42A (3), this clause requires the Minister to invite interested parties to lodge an expression of interest (EoI) in taking water from relevant access licence holders in accordance with the manual before setting a limit under clause 43A (3)
- Clause 43 allows a licence holder to notify the Minister that they intend to protect water from extraction that would otherwise be permitted to be taken and their account debited by an amount determined by the Minister in accordance with this manual
- Clause 47 (4) allows adjustment to access rules for specified licences in schedules 2 and 2A by the amount necessary to protect AEW
- Clauses 46 (1) and 47 (5) prohibit water take under an unregulated river A Class, B Class or C Class access licence or specified licences under schedules 2 and 2A during any period that the Minister has made an announcement under clause 42A (3), unless the licence holder has lodged an EoI to take that water in accordance with the manual and the water take is in accordance with the announcement
- Clause 49A (1) allows the Minister to announce the flow class that applies at any time
- Clause 49A (4) allows adjustments to flow class thresholds for unregulated river, A Class, B Class and C Class access licences by the amount necessary to protect AEW
- Clause 52A requires that a manual is prepared and published on the Department's website
- The Dictionary of the WM Act defines AEW that requires protection from extraction.

All rules under Part 8 of the Barwon–Darling WSP for managing access must be considered in implementing active management. For example, clause 50 outlines rules to protect the resumption of flows after a dry period.

## Active Management Procedures Manual

This manual is established under clause 52A of the Barwon–Darling WSP.

Part F includes procedures for:

- identifying and determining AEW on any given day
- determining and making announcements under clause 42A (3)



- identifying the requirements for access licence holders intending to protect water from extraction to notify the Minister under clause 43
- assessing a notification and determining the amounts to be debited from access licence water allocation accounts under clause 43
- determining the amounts necessary to protect AEW under clauses 47 and 49A
- determining the circumstances set out in clause 50 to enable the management of resumption of flows, and
- any other matter the Minister considers relevant.

This manual includes information on:

- the regulatory framework that this manual is part of (Part B)
- responsibilities of agencies in implementing active management in the Barwon–Darling (Part C)
- operational overview (Part D)
- procedures (Part E)
- managing risk (Part F)
- consultation (Part G), and
- compliance (Part H).

## Access licence and works approval conditions

Mandatory conditions imposed on WAL and water supply works approvals (works approvals) under Part 11, Division 2 and Division 3 of the Barwon–Darling WSP in accordance with sections 17 (c), 20, 66 (1)(a) and 100 (1)(a) of the WM Act:

- give effect to the Barwon–Darling WSP rules including those that enable active management
- provide limits or restrictions on what is authorised by the WAL or works approval, and
- place obligations on the holder that relate to what is authorised by the WAL or works approval.

WAL and works approval holders must comply with mandatory conditions.

Mandatory conditions take legal effect once the licence or approval holder has been given written notice of any changes to licence or approval conditions under sections 67 (4) and 102 (4) of the WM Act.

## Active Management in Unregulated Rivers Policy

This manual has been prepared to be consistent with the active management policy.

## WaterNSW operating licence

WaterNSW will perform some of the Ministerial responsibilities identified in the Barwon–Darling WSP.

The Minister has conferred functions of the Minister under the WM Act to WaterNSW through the WaterNSW Operating Licence. The operating licence enables WaterNSW to exercise its functions under the *Water NSW Act 2014*, in addition to the conferred functions of the WM Act.

Functions deemed relevant to active management in accordance with the Barwon–Darling WSP include:

- managing water allocation accounts

- imposing daily access rules, and
- managing access to daily flows other than supplementary water.

Each year, the Independent Pricing and Regulatory Tribunal audits and reports on WaterNSW's performance against the WaterNSW Operating Licence provisions.

## Part C – Responsibilities

Responsibilities for implementing active management are shared between:

- NSW Department of Planning, Industry and Environment – Water
- WaterNSW
- NSW Department of Planning Industry and Environment – Environment, Energy and Science, and
- Natural Resource Access Regulator (NRAR).

Table 1: Responsibilities and accountabilities for implementing active management outlines each organisation's specific responsibilities in relation to active management.

**Table 1: Responsibilities and accountabilities for implementing active management**

Organisation	Responsibilities
NSW Department of Planning, Industry and Environment – Water	<ul style="list-style-type: none"> <li>• Prepare, review and amend the active management policy and regulatory framework where required following the annual review process</li> <li>• Evaluate and recommend changes to water sharing rules to support active management</li> <li>• On behalf of the Minister: <ul style="list-style-type: none"> <li>○ prepare and publish the manual under clause 52A, and</li> <li>○ amend the manual as necessary following the annual review and publish revisions</li> </ul> </li> <li>• Annually review and evaluate the implementation of the manual against the objectives and principles of the policy</li> <li>• Consult with WaterNSW, the NSW Department of Planning, Industry and Environment – Environment, Energy and Science, NRAR and the Murray–Darling Basin Authority (MDBA) when conducting each annual review</li> <li>• Consult with licence holders and peak stakeholder groups when conducting each annual review</li> <li>• Consult with licence holders and peak stakeholder groups following any determination to vary the operation of active management including the policy, regulatory framework and the manual</li> <li>• Draft and impose mandatory conditions to effect water sharing rules relevant to active management</li> </ul>
WaterNSW	<ul style="list-style-type: none"> <li>• Forecast river flows</li> <li>• Maintain flow forecasting tools</li> <li>• Keep an account of AEW through each management zone</li> <li>• Issue flow advice for water users and the public</li> <li>• On behalf of Minister: <ul style="list-style-type: none"> <li>○ announce the maximum volume of water that can be taken under</li> </ul> </li> </ul>

Organisation	Responsibilities
	<p>clause 42A (3), adjustments to access rules for schedules 2 and 2A licences under clause 47 (4) and flow classes under clause 49A (4)</p> <ul style="list-style-type: none"> <li>○ invite interested parties to lodge an Eol to take water from relevant access licence holders under clause 42A (2)</li> <li>○ receive notifications from licence holders who want to protect water otherwise permitted to be taken under clause 43, and</li> <li>○ announce a no flow class under clause 50 when access is to be restricted to protect the resumption of flow after an extended dry period and determine relaxation triggers that are likely to be met if a No Flow Class ceases to apply</li> </ul> <ul style="list-style-type: none"> <li>● Establish and operate systems to enable Eol lodgement and analysis of Eol</li> <li>● Provide operational reporting on active management, including regular environmental water use accounting during events</li> <li>● Provide access to data to NRAR to enable compliance monitoring and enforcement with active management</li> <li>● Submit an Annual River Operations Report on the management of access to water to protect AEW</li> <li>● Consult with unregulated river access licence holders or their representative groups prior to submitting the Annual River Operations Report</li> <li>● Contribute to the annual review of the manual</li> <li>● Contribute to the review of the active management policy</li> </ul>
NSW Department of Planning, Industry and Environment – Environment, Energy and Science	<ul style="list-style-type: none"> <li>● Work collaboratively with other environmental water holders (that is, the Commonwealth Environmental Water Office) in the planning and coordinated use of HEW to improve flows in the Barwon–Darling River</li> <li>● Work collaboratively with WaterNSW when planning and using HEW to improve flows in the Barwon–Darling River</li> <li>● Submit an annual active management statement to the NSW Department of Planning, Industry and Environment – Water</li> <li>● Contribute to the annual review of the manual</li> <li>● Contribute to the review of the active management policy</li> </ul>
Natural Resources Access Regulator	<ul style="list-style-type: none"> <li>● Monitor compliance with water sharing rules and licence conditions</li> <li>● Undertake inspections to ensure water use is occurring in accordance with announcements by applying risk-based strategies, policies and procedures</li> <li>● Conduct compliance investigations and take enforcement actions where appropriate</li> <li>● Submit an annual active management statement to the NSW Department of Planning, Industry and Environment – Water</li> <li>● Contribute to the annual review of the manual</li> <li>● Contribute to the review of the active management policy</li> </ul>

## Part D – Operational overview

Under active management, we will identify and determine the AEW at each gauge in each management zone along the Barwon–Darling River and control access so that a volume equivalent to that defined as AEW is protected from extraction and remains in the water source for environmental purposes.

In the Barwon–Darling River, we will protect:

- HEW from upstream water sources, and
- water otherwise permitted to be taken from the Barwon–Darling Water Source, including water arising from unregulated HEW licences that the licence holder nominates to protect.

The Barwon–Darling WSP establishes five flow classes (no flow class, Low Flow Class, A Class, B Class and C Class) and specifies the flow classes under which water may be taken for each licence category. The flow class that applies to each licence is expressed on WALs as a commence-to-pump/cease-to-pump (CtP) condition.

Licences listed in schedules 2 and 2A can take during any flow class provided the conditions of their licence are met including the access conditions outlined in schedules 2 or 2A.

To protect AEW from extraction in the Barwon–Darling Unregulated Water Source, we will:

- adjust flow class thresholds by the volume of AEW present and announce the flow class that applies in each management zone
- announce access rules for schedules 2 and 2A licences that are adjusted by the volume of AEW present, and
- determine and announce daily volumetric limits for each licence (expressed as ML/daily flow share) where the sum of IDECs for licence holders that have expressed interest to take water exceeds the water available to be taken under those licences for the relevant flow class.

At the end of each management zone, we will adjust the volume of AEW by its share of river transmission losses (for example, losses to the riverbanks and bed, evaporation and transpiration).

We intend that the sharing of flows between the environment and licensed water users is achieved (as closely as possible) on an event basis.

Table 2 outlines the procedures to protect AEW and determine access for licences in the Barwon–Darling and procedures to support reporting and adaptive management. Each step is described further in subsequent sections. Some of these procedures are iterative.

**Table 2: Daily, weekly and annual procedures for active management**

Procedure	Purpose of procedure
Forecast flows in upstream tributaries and along the Barwon–Darling Procedure 1 – Forecasting flows from upstream gauged tributaries <sup>4</sup>	To determine for each management zone a) total flows; b) AEW entering the zone, leaving the zone, and contributing environmental purposes in each management zone (that is, the volume of AEW that seeped into the riverbed and banks, evaporated or was taken up by vegetation); and c) water available
Issue flow advice Procedure 11	To inform water users and the public on likely flows along the river, potential for AEW to be in the river, the likelihood of access and progress of river flows

Procedure	Purpose of procedure
<p>Invite unregulated access licence holders to lodge an EoI</p> <p>Procedures 12 – Procedure 14</p>	<p>To establish who wants to receive a share of the water available to either extract or protect</p> <p>In submitting an EoI to protect water, a licence holder is notifying the Minister under clause 43 of their intent to protect water</p>
<p>Determine the volume of Active Environmental Water entering each management zone</p> <p>Procedure 5 – Identifying active environmental water Procedure 10 – Determining the rate of active environmental water used in-stream for environmental purposes (assigning losses to active environmental water)</p>	<p>To determine the amount necessary to adjust flow class thresholds and access rules for Schedule 2 and 2A licences to protect AEW and water below the base flow class thresholds</p>
<p>Determine the water available for unregulated river access licences</p> <p>Procedure 16 – Determining the water available to each flow class</p>	<p>To determine whether the water available must be shared between licence holders who have expressed an interest to protect the AEW and flows below the flow class thresholds</p>
<p>Determine the maximum volume permitted to be extracted on a given day (ML/daily flow shares)</p> <p>Procedure 20 – Determining the maximum volume permitted to be taken under clause 42A (3)</p>	<p>To distribute the water available between licence holders who have expressed an interest when the water available is not enough for all licences to extract a 1 ML/daily flow share</p>
<p>Announce flow classes, access conditions for schedules 2 and 2A licences and, if necessary, volumetric limits (flow shares)</p> <p>Procedure 23 – Announcing adjusted access rules for licences listed under schedules 2 and 2A Procedure 25 – Announcing the maximum daily volume of water that is permitted to be taken (otherwise called a flow share announcement) under clause 42A (3)</p>	<p>To inform licence holders whether they can take water and, if necessary, the maximum volume they can take on any given day</p>

Procedure	Purpose of procedure
<p>Determine the volume of AEW arising from a notification by an unregulated licence holder to protect water from extraction (under clause 43)</p> <p>Procedure 27 – Determining the amount to be debited from access licence water allocation accounts under clause 43 (when unregulated water has been identified as active environmental water)</p>	<p>To determine the volume of additional AEW that flows into the next management zone and the volume of water that is to be debited from the water allocation accounts of the licence holder who wanted water protected from extraction</p>
<p>Assign losses to the AEW at the end of the management zone</p> <p>Procedure 10 – Determining the rate of active environmental water used in-stream for environmental purposes (assigning losses to active environmental water)</p>	<p>To determine the volume of AEW entering the management zone that reaches the next management zone or water source</p>
<p>Assess cumulative mismatches between forecast losses and actual unaccounted differences during a flow event</p> <p>Procedure 26 – Monitoring mismatches between forecast and observed flows and intended sharing of flow</p>	<p>To determine if an operational response is required to more closely achieve the desired sharing between AEW and unregulated river access licences</p>
<p>Data capture, archiving and accessibility</p> <p>Procedure 29 – Data capture, archiving and record-keeping requirements</p>	<p>To support reporting, adaptive management and compliance monitoring and enforcement</p>
<p>Annual reporting and evaluation</p> <p>Procedure 30 – Annual reporting requirements Procedure 31 – Annual evaluation and review of active management</p>	<p>To inform annual evaluations of the appropriateness, efficiency and effectiveness of active management</p> <p>To inform improvements to active management and amendments to this manual</p>

## Part E – Procedures

### Forecasting flows and river transmission losses

#### Intent

Active management relies on forecasting flows entering and travelling along the river to:

- inform water users and the public on likely flows entering the water source, the potential for AEW to be present, the likelihood of access and progress of flows
- determine the AEW in each management zone
- determine the water available in each management zone
- determine the AEW that contributed to environmental purposes in each management zone (that is, the AEW that seeped into the riverbed and banks, evaporated or was taken up by vegetation), and
- determine the adjusted access thresholds, flow class and daily volumetric limits in each management zone to protect the AEW.

Uncertainty in forecasting flows can arise from uncertainty in estimating water use, tributary inflows, river transmission losses (these arise due to seepage into the bed and banks and evapotranspiration and can vary significantly between events) or flow routing effects. We must strike a balance between managing the uncertainty to minimise any potential effects in overestimating or underestimating the AEW protected or the water available within the limits of operational feasibility and cost-effectiveness.

While impossible to eliminate uncertainty, we intend to minimise the mismatch between the forecast and observed flows by:

- considering the best information available on daily extraction volumes including metering and Eol numbers
- making the forecast – and access announcements that rely on that forecast – as close as possible to the period of access
- basing initial and ongoing river transmission loss estimates on an assessment of the average losses for comparable past historical events, and
- adaptively adjusting ongoing river transmission loss forecasts based on the observed unaccounted differences so that mismatches don't compound as an event proceeds.

#### Procedure 1 – Forecasting flows from upstream gauged tributaries

1. WaterNSW must forecast inflows from upstream gauged tributaries to estimate the:
  - a. total daily inflows into each management zone of the Barwon–Darling Water Source, and
  - b. daily inflows arising from AEW into each management zone of the Barwon–Darling Water Source that satisfy the definition of AEW under categories A, B, C, D and E in **Table 3**.
2. WaterNSW must document procedures to forecast flow within the tributaries used to determine the forecasts of total daily inflows and the proportion of inflows that satisfy the definition of AEW in **Table 3** into the Barwon–Darling Water Source.

#### Procedure 2 – Forecasting flows from upstream ungauged tributaries

1. WaterNSW must estimate ungauged tributary inflows for management zones when either:
  - a. there has been significant local rainfall along the Barwon–Darling in that management zone or in an ungauged tributary catchment that flows into that management zone, or

- b. there is evidence of flows in ungauged tributaries, and there has been a response in the calculated unaccounted differences that indicates an increase in ungauged inflows.
2. Ungauged tributary inflows must be estimated by comparing the observed unaccounted difference in the relevant management zone with the observed trends in the preceding days and weeks, and considering any other relevant information.
3. If WaterNSW assesses that local rainfall has caused ungauged tributary inflows from smaller streams and the residual catchment along the Barwon–Darling, or high flows in tributaries bypassing flow gauges, the unaccounted difference must be adjusted for the purposes of estimating river transmission losses.
4. Where ungauged tributary inflows are not attributable to HEW, they will contribute to the assessment of water available to access licences, subject to the access rules set out in the Barwon–Darling WSP.

### Procedure 3 – Forecasting flows along the Barwon–Darling River

1. WaterNSW must forecast flows along the Barwon–Darling to determine the AEW as it moves and attenuates through the water source and to determine the water available for unregulated river, A, B and C class access licences.
2. WaterNSW must document procedures for forecasting flows in the Barwon–Darling and make them available on its website.

### Procedure 4 – Forecasting river transmission losses

1. WaterNSW must estimate river transmission losses between gauges in order to forecast flows expected at each gauge and to assign losses.
2. WaterNSW must estimate the river transmission losses in each management zone for each 24-hour period, based on a water balance approach, using the best available estimates of the following information, with appropriate allowance for travel times:
  - a. upstream, downstream and relevant tributary or effluent flow
  - b. water use in each management zone, and
  - c. changes in weir pool volumes (where relevant).
3. WaterNSW must forecast the initial river transmission losses in each management zone based on an assessment of the observed average or typical initial losses for past events with comparable antecedent conditions.
4. WaterNSW must document the method for determining 'initial' river transmission losses and make it publicly available.
5. WaterNSW must adjust forecasts of river transmission losses based on the observed unaccounted differences in the preceding days and weeks when flows have been established.
6. Mismatches in forecast losses and observed unaccounted differences must not be reconciled between events.

### Notes

- 1 WaterNSW will forecast flows in each management zone using a computer-aided river management system (CARM).
- 2 The information used to forecast flows may include, but is not limited to:
  - orders for water in upstream water sources, made under HEW licences listed in the environmental water register
  - Expressions of interest to access supplementary water in upstream water sources, under HEW licences listed on the environmental water register
  - flow gauge readings from Hydstra (WaterNSW and Queensland)
  - metering data
  - WAL details, including licence category (flow class), IDEC, extraction point location, water account balance and authorised pumping capacity



- the list of WALs with special licence conditions relating to water take and details of these conditions
  - EoI from each licence holder (including for water to be extracted or protected)
  - the weather forecast (from the Bureau of Meteorology)
  - simulated water distribution provided by a water distribution microservice
  - unregulated water identified as AEW, and
  - water required for critical needs, basic landholder rights, native title and licence categories within the water source that the Barwon–Darling WSP and WM Act gives a higher priority to.
- 3 Appendix C lists the river gauges used in forecasting.
  - 4 Estimates of likely water use will be determined after considering a range of information including EoIs, history of water use (where available), IDECs and pump capacity (where available).
  - 5 River transmission losses – one of the significant sources of uncertainty – can be determined retrospectively by calculating the difference between flow recorded at the gauges at the top and bottom of a management zone (referred to as an unaccounted difference).
  - 6 Unaccounted differences can be influenced by extraction estimation errors. These include ungauged tributary inflows, flow and extraction measurement errors (for example, a river flow gauge not accurately measuring flow). They can also include routing effects (for example, changes in channel storage and associated alterations in apparent travel times). This may result in fluctuations in the calculated unaccounted difference (including unaccounted differences that are not always negative) for a management zone.
  - 7 A positive unaccounted difference could arise if a licence holder does not take all the water they are permitted to take under a daily flow share announcement.

## Identifying, determining and monitoring active environmental water

### Intent

Only water defined in the Barwon–Darling WSP determined to be AEW in line with this manual will be protected from extraction under active management to minimise the effect on access licences.

AEW will include HEW arising from upstream water sources. HEW is water available under a WAL for the purposes of achieving environmental outcomes. In NSW, HEW arises from licences listed on the NSW Environmental Water Register.

In addition, the Barwon–Darling WSP allows unregulated river access licence holders in the Barwon–Darling (including environmental water holders) to protect water from extraction through the Barwon–Darling Water Source. This enables unregulated HEW to be left in the water source for environmental purposes, realising the investment made in recovering these licences. All unregulated river access licences can protect water otherwise permitted to be extracted. This ensures an equitable approach is applied to all licences and provides opportunities for environmental interests to negotiate environmental outcomes.

PEW from upstream water sources is not protected from extraction under active management in the Barwon–Darling.

As water moves through a river system, some water will evaporate, be used by plants or seep into the ground. These processes contribute to the health of the river system and associated ecosystems. These fluxes are referred to as river transmission losses.

The volume of AEW must be reduced by its share of these fluxes. This reduced volume of AEW at the end of each management zone becomes the forecast inflow of AEW in the next downstream management zone.

## Procedure 5 – Identifying active environmental water

1. AEW in the Barwon–Darling is the water in the Barwon–Darling Water Source identified or determined by the Minister on any given day as requiring protection from extraction arising from:
  - a. HEW flowing from a water source that is upstream of the Barwon–Darling Water Source, and
  - b. a licence holder notification to the Minister of their intention to protect the water from extraction under clause 43 of the Barwon–Darling WSP.
2. **Table 3** describes how AEW defined under the Barwon–Darling WSP is identified.
3. Inflows to the Barwon–Darling Water Source arising from HEW licences not identified in Table 5 must not be recognised as AEW until the Department agrees to a method for determining the volume of water that arrives at the Barwon–Darling Water Source. This includes:
  - a. flows arising from HEW originating in Queensland that flow into the Barwon–Darling River via the Intersecting Streams Unregulated Water Sources, and
  - b. flows arising from HEW licences originating from other upstream NSW unregulated water sources that flow into the Barwon–Darling Water Source (either directly or through a regulated river water source) that are not actively managed, such as the unregulated HEW licences held in the Warrego River water source.

**Table 3: Water to be identified as active environmental water in the Barwon–Darling Water Source**

Water identified as active environmental water	
Water arising from HEW flowing from a water source that is upstream of the Barwon–Darling Water Source	
A	Inflows to the Barwon–Darling Water Source arising from delivery of account water under general security and high security regulated river access licences listed on the NSW Environmental Water Register from one of the following water sources: <ul style="list-style-type: none"> <li>• Border Rivers Regulated River Water Source</li> <li>• Gwydir Regulated River Water Source</li> <li>• Lower Namoi Regulated River Water Source, and</li> <li>• Macquarie and Cudgong Regulated Rivers Water Source.</li> </ul>
B	Inflows to the Barwon–Darling Water Source at the Mungundi gauge arising from Queensland supplemented water allocations held by the Commonwealth Environmental Water Holder (CEWH) in the Queensland Border Rivers Water Supply Scheme.*
C	Inflows to the Barwon–Darling Water Source arising from regulated river supplementary WALs listed on the NSW Environmental Water Register during a supplementary access event in the following water sources: <ul style="list-style-type: none"> <li>• Border Rivers Regulated River Water Source</li> <li>• Gwydir Regulated River Water Source</li> <li>• Lower Namoi Regulated River Water Source, and</li> <li>• Macquarie and Cudgong Regulated Rivers Water Source.</li> </ul>
D	Inflows to the Barwon–Darling Water Source from the Border Rivers Regulated River Water Source arising from unsupplemented water licences held by the CEWH in the Queensland Border Rivers Water Management Area.

Water identified as active environmental water	
E	Inflows to the Barwon–Darling Water Source arising from access licences listed in the NSW Environmental Water Register in the unregulated Lower Macquarie River Water Source.
Water arising from a notification by a licence holder within the Barwon–Darling Water Source to the Minister of the licence holder's intention to protect the water from extraction under clause 43 of the Barwon–Darling WSP.	
F	The volume determined on any given day as requiring protection from extraction that is otherwise permitted to be taken in accordance with clause 42A (1), where a licence holder has notified the Minister that they intend to protect the water from extraction.

\*Flows arising from HEW licences originating from Queensland (other than releases from the regulated Border Rivers system) will be recognised as AEW and managed through NSW systems once NSW and Queensland agree to a method for determining the volume of HEW arriving at the NSW–Queensland border. This work is due for completion in July 2021.

## Procedure 6 – Determining the rate of active environmental water arising from HEW flowing from a water source that is upstream of the Barwon–Darling Unregulated River Water Source (categories A–E)

- WaterNSW must determine the daily rate of AEW under categories A and B in **Table 3** entering each management zone based on:
  - orders received for water to the relevant end-of-system locations or last gauge in the relevant upstream regulated system, less
  - losses forecast to the Barwon–Darling Water Source.
- WaterNSW must determine the volume of AEW under categories C and D in Table 3 based on a method documented by WaterNSW and agreed by the Department and published.
- WaterNSW must determine the volume of AEW under Category E as the volume determined to be leaving the Lower Macquarie River Downstream Zone and entering the Barwon–Darling in accordance with the Macquarie Active Management Procedures Manual.

## Procedure 7 – Determining the rate of active environmental water arising from a licence holder's notification to the Minister of their intention to protect the water from extraction under clause 43 of the Barwon–Darling WSP (Category F)

- Unregulated river access licence holders (including A, B and C class access licence holders) wanting to protect water from extraction must notify the Minister of their intention to protect water from extraction under clause 43 by submitting an EoI and indicating in their EoI under clause 42A that they want to protect the water from extraction.
- WaterNSW must determine the volume of AEW arising from each unregulated river, A, B and C class access licences under clause 43 (Category F in **Table 3**) as the:
  - IDEC x ML/daily flow share announced under clause 42A (3) if a flow share announcement is made under clause 42A (3), or
  - IDEC x 1 ML/daily flow share if a flow share announcement under clause 43A (3) is not made.
- The volume determined as a result of Procedure 23 and Procedure 29 will be identified as AEW entering the management zone downstream from the management zone it arises from.

## Procedure 8 – Determining the rate of active environmental water flowing into a management zone

1. WaterNSW must determine the rate of AEW flowing into a management zone as:
  - a. the rate of AEW flowing into the management zone directly from an upstream water source, plus
  - b. the rate of AEW flowing through the upstream Barwon–Darling management zone (lagged for travel time) less its proportional share of the forecast losses in the upstream management zone, plus
  - c. the rate of AEW determined as arising in the management zone immediately upstream from a notification by a licence holder of their intention to protect the water from extraction under clause 43 (Category F AEW).

## Procedure 9 – Determining the rate of active environmental water flowing out of the Barwon–Darling Unregulated River Water Source

2. WaterNSW must determine the daily rate of AEW flowing out of the Barwon–Darling Unregulated River Water Source as:
  - a. the rate of AEW flowing into the Wilcannia to Upstream Lake Wetherell management zone (lagged for travel time), reduced by its proportional share of the forecast losses (determined under Procedure 4) in that management zone, plus
  - b. the rate of AEW determined as arising in the Wilcannia to Upstream Lake Wetherell management zone from a notification by a licence holder of their intention to protect the water from extraction under clause 43.

## Procedure 10 – Determining the rate of active environmental water used in-stream for environmental purposes (assigning losses to active environmental water)

1. WaterNSW must determine the daily rate of AEW used in-stream in each management zone as: total losses x (AEW entering the zone/total flow entering zone).

### Notes

- 1 The NSW Environmental Water Register is maintained by WaterNSW and may be accessed at <https://www.industry.nsw.gov.au/water/environmental-water-hub/public-register/environmental/licences>.  
The Intergovernmental Agreement on Implementing Water Reform in the Murray–Darling Basin includes a commitment for an accounting method supported by protocols and procedures for Queensland–NSW cross-border HEW. Flows arising from HEW licences originating from Queensland (other than releases from the regulated Border Rivers system) will be recognised as active environmental water and managed through NSW systems once NSW and Queensland agree to a method for determining the volume of HEW arriving at the NSW–Queensland border. This work is due for completion in July 2021.
- 2 Tributary inflows arising from WALs that do not meet the requirements in categories A, B, C, D and F in **Table 3** will not be classified as AEW in the Barwon–Darling Water Source. For example, the Macquarie Environmental Water Allowance Sub-Allowance 2 is identified as AEW in the Lower Macquarie River Water Source but does not meet the definition of AEW in the Barwon–Darling Water Source. Therefore, it will not be protected in the Barwon–Darling Water Source under active management.
- 3 The water identified and determined as AEW will not be protected from extraction once it flows out of the Barwon–Darling Water Source. It is important to determine and report on the rate of AEW leaving the Barwon–Darling Water Source.
- 4 As AEW flows through each management zone it will be reduced by its share of the forecast river losses, based on the ratio of AEW to the total flow that is forecast at the start of the management zone. For example:

- If 100 ML has entered a management zone and 70 ML of that is recorded at the downstream gauge and there was no extraction occurring, then the total river transmission losses (known as unaccounted difference) was 30 ML.
  - If 20 ML of the 100 ML entering the river reach was environmental water, then 6 ML is attributed to the AEW, as calculated by  $(20/100) \times 30$ . The 6 ML of water was 'used' for environmental purposes.
  - This means that at the end of the zone, there is 14 ML of AEW remaining and 56 ML of system flows.
- 5 Losses are not applied to the AEW that arises from a notification under clause 43 in the management zone where it applies as they have already been considered in determining the water available to licence holders.

## Issuing flow advice

### Intent

WaterNSW will issue timely flow advice before and during an event to provide information to licence holders and the public on the flows that may occur, the AEW likely to be protected, and when and where licence holders are likely to be restricted from taking water.

### Procedure 11 – Issuing flow advice

1. WaterNSW must issue flow advice on the WaterNSW website for the Barwon–Darling at least weekly, when:
  - a. a flow event is occurring in the upstream tributaries that is likely to result in inflow to the Barwon–Darling River, or
  - b. a flow event is occurring in the Barwon–Darling.
2. Flow advice may include, but is not limited to:
  - a. inflow to the Barwon–Darling River
  - b. the management zones and dates where pumping would be likely to be permitted
  - c. the management zones where AEW is forecast to be present
  - d. the timing and magnitude of flows forecast
  - e. the observed and forecast total flow at key locations for that event
  - f. the observed and forecast AEW at key locations for that event
  - g. the observed and forecast total flow likely to reach Menindee Lakes
  - h. a reminder of requirements to submit an EoI, and
  - i. reasons for any change to forecasts.

### Notes

- 1 Broad seasonal outlook may be based on:
  - the Bureau of Meteorology outlook
  - the circumstances in upstream storages, and
  - any HEW releases that are likely to be actively managed in the Barwon–Darling.
- 2 Flow advice will be based on:
  - conservative estimates of inflows and river transmission losses that are at the upper end of what could be expected to be consistent with similar past events, and
  - the maximum volume of unregulated water likely to be extracted or protected taking into account the current EoI numbers and likely water available.

## Expressions of interest

### Intent

The Eol process is intended to maximise economic opportunities from the water available while meeting the environmental objective of protecting AEW. The Eol is also the mechanism for a licence holder to notify WaterNSW that they want to protect water from extraction.

The Eol will determine which unregulated river access licence holders (including A, B and C class licence holders) intend to take or protect water.

The water available, if limited, is shared among those who have expressed an interest in either extracting or protecting water. It is used to determine the maximum volume of water that may be taken or protected in a 24-hour period under each licence.

Licence holders who want to protect water from extraction are to follow the same process required of licence holders who want to extract water.

### Procedure 12 – Establishing an expression of interest process under clause 42A (2)

1. WaterNSW must make an Eol process available to unregulated river, A, B and C class access licence holders who meet the requirements of this manual in order to establish who wants to receive a share of the water available to extract or who intends to protect water.
2. The Eol process must:
  - a. require licence holders to opt in if they want to extract or protect water
  - b. allow licensed water users or their authorised representatives to submit, withdraw or revise an Eol to take water or protect water during a specified 24-hour period up to 9am the day before an announcement is made for the period the licence holder is expressing an interest in
  - c. require a licence holder to indicate if they want to extract water or protect water from extraction
  - d. prevent a licence holder from entering an invalid Eol and advise a licence holder if their Eol entry is invalid
  - e. allow licence holders to submit Eol default values into the future, and
  - f. set defaults for the minimum and maximum volume of water to be protected or extracted as 0 ML/daily flow share.
3. WaterNSW may communicate information about the Eol process when issuing flow advice.

### Notes:

- 1 Under clause 42A (2), the Minister must invite interested parties to lodge an Eol to take water from relevant access licence holders in accordance with this manual before making an announcement under clause 42 (3). Announcements under clause 42A (3) may be made to reduce the maximum volume of water permitted to be taken per daily flow share to protect the AEW or water below the flow class thresholds for each flow class in Table B in clause 49A. This may be required if the sum of IDECs exceeds the water available to be taken or protected by unregulated access licence holders for the relevant flow class.
- 2 The Barwon–Darling WSP doesn't preclude seeking an Eol at other times – for example to support flow forecasting – however, the information in the Eol would not be used to determine the maximum volume of water permitted to be taken per daily flow share (that is, the flow share announcement).
- 3 When the water available to licences in a relevant flow class exceeds the sum of IDECs for licences eligible for take during that flow class, licences can take 1 ML/daily flow share and a flow share announcement is not required.

- 4 Initially until a licence holder changes their Eol status, they will receive a zero share of flows. Licence holders may then set a new non-zero default or submit an Eol for each individual day or event period.

### Procedure 13 – Requirements for licence holders to lodge an expression of interest under clause 46 (1)

1. An Eol must be submitted for each WAL covering each 24-hour period in which the licence holder wants to extract or protect water.
2. Licence holders must submit an Eol in accordance with the requirements of the Barwon–Darling WSP, this manual and the system or process provided by WaterNSW.
3. A valid Eol must:
  - a. indicate if water is to be extracted or protected from extraction for each 24-hour period
  - b. provide the minimum and maximum requested volume for each 24-hour period, and
  - c. be submitted by 9am on the day before water is intended to be taken or protected.
4. An Eol will be invalid if:
  - a. the WAL is not current
  - b. the WAL has no daily flow share or a daily flow share equal to zero, and/or
  - c. mandatory fields for the Eol are incomplete.
5. A licence holder may:
  - a. submit an Eol for either a single 24-hour period or multiple 24-hour periods
  - b. submit default values for their Eol that will apply into the future unless amended by the licence holder, and
  - c. submit, withdraw or revise an Eol up to 9am on the day before water is to be taken or protected.
6. The maximum volume that can be protected or extracted is the licence holder's IDEC x 1 ML/daily flow share.

### Procedure 14 – Requirements for licence holders intending to protect water from extraction by lodging a notification under clause 43

1. Only unregulated river, A, B and C class licence holders can protect water from extraction.
2. Unregulated river, A, B and C class licence holders must:
  - a. notify the Minister of their intent to protect water from extraction under clause 43 by submitting an Eol under Procedure 13 – Requirements for licence holders to lodge an expression of interest under clause 46 (1), and
  - b. submit an Eol for each WAL for each 24-hour period in which the licence holder wants to protect water.
3. The maximum volume that can be protected from extraction is the:
  - a. IDEC x ML/daily flow share announced under clause 42A (3), or
  - b. IDEC x 1 ML/daily flow share if there is no announcement under clause 42A (3).

#### Notes

- 1 WaterNSW will provide details on how to submit an Eol on the WaterNSW website and through educational programs and advice.
- 2 A licence holder cannot protect and extract water under a licence during the same 24-hour period.
- 3 An Eol will not be limited by the account balance or annual take limit as the account balance and annual take on a given day may not be known if metering and telemetry are not in place. Licence holders are responsible

for ensuring they adhere to all licence conditions including, for example, account balances and annual take limits.

- 4 An Eol is an Expression of Interest only. The volume permitted to be taken will be announced.
- 5 Water must not be taken by an unregulated river, A, B or C class licence holder for any period when an announcement under clause 42A (3) applies, unless the licence holder has submitted an Eol.
- 6 While an Eol is not required if an announcement is not made under clause 42A (3), it is unlikely that this will be known before an Eol for the next access period closes. This effectively means that an Eol must be submitted under all scenarios.
- 7 Licence holders will receive a mandatory condition requiring them to have placed an Eol with WaterNSW in situations where announcements are made under clause 42A(3). Taking water in this circumstance without an Eol is a breach of licence conditions. Licence holders will receive further educational materials when they are formally notified and receive their Statement of Conditions.
- 8 WaterNSW will not roster access among licence holders. Licence holders may choose to roster access among themselves in circumstances where the volume of available water is likely to be less than the sum of the IDECs in a management zone and enter the rostering results as expressions of interest. The maximum volume a licence holder can apply for through an Eol is that of the licence's IDEC.
- 9 Temporary trading of IDECs is not permitted.



## Adjusting access thresholds

### Intent

Extraction by licence holders in the Barwon–Darling is governed by flow class thresholds specified in the plan or by access thresholds for those listed in schedules 2 and 2A.

Flow class thresholds regulating access under unregulated, A, B and C class access licences will be increased by the amount necessary to protect the AEW from extraction.

Access thresholds for licences listed in schedules 2 and 2A will be increased by the amount necessary to protect the AEW from extraction where those access rules refer to a flow at a river gauge.

We do not intend to restrict access to AEW by specific purpose access licences, including supplementary water (Aboriginal environmental) access licences, domestic and stock licences, and local water utility licences. Therefore, the upper threshold for the Low Flow Class will be increased by the amount of AEW, while the lower threshold (when these licences must cease pumping) will remain unchanged. This has the effect of not restricting access by these licence holders if flows have exceeded the lower threshold of the Low Flow Class, even if AEW is present. If, however, a licence has different conditions in Low Flow Class and A Class, it will be affected by the floating CtP at the upper end of the Low Flow Class.

Access thresholds for licences listed in Schedule 2, where access does not relate to flow at a river gauge, cannot be adjusted.

In determining access, WaterNSW must also consider water sharing plan rules, including PEW provisions, access rules – such as the resumption of flow rules – and exemptions and discretionary conditions.

### Procedure 15 – Determining adjusted flow class thresholds under clause 49A (4) and adjusted access rules for licences listed in schedules 2 and 2A under clause 47 (4)

1. For each management zone, WaterNSW must adjust the following flow class thresholds each day when AEW is forecast to be present:
  - a. the lower and upper thresholds for the A, B and C class access licences, and
  - b. the upper threshold for the Low Flow Class (those listed in Column 3 in Table B in the Barwon–Darling WSP under point 2 for each Low Flow Class).
2. WaterNSW will not adjust the No Flow Class thresholds or the lower threshold for the Low Flow Class (those listed in Column 3 in Table B in the Barwon–Darling WSP under point 1 for each Low Flow Class).
3. WaterNSW will adjust the access rules specified in column 2 of schedules 2 and 2A when AEW is forecast to be present, except for the following WALs:
  - a. 33722
  - b. 33622
  - c. 33667
  - d. 33671
  - e. 35396, and
  - f. 36274.
4. The amount necessary to protect AEW equals the forecast rate of AEW entering the management zone from an upstream management zone or water source (Procedure 8 – Determining the rate of active environmental water flowing into a management zone).
5. No adjustment to flow class thresholds or access thresholds in schedules 2 and 2A is to be made if no AEW is forecast to enter the management zone.

## Notes

1. The upper threshold for the Low Flow Class is listed in the Baron–Darling WSP in Column 3 of Table B under point 2 for the Low Flow Class.
2. The lower threshold for the Low flow Class is listed in the Barwon–Darling WSP in Column 3 of Table B under point 1 for the Low Flow Class.
3. The No Flow Class and the bottom of the Low Flow Class thresholds are not to be adjusted, to ensure that the presence of AEW does not affect access by domestic and stock and local water utility access licence holders.
4. Take by domestic and stock access licences must not exceed 0.6 ML/day when the Low Flow Class is announced.
5. Access thresholds for the following licences listed in schedules 2 and 2A will not be adjusted to protect AEW:
  - WAL 33622, 35396, 36274, 33671 – these are domestic and stock access licences that are not to be affected by the presence of AEW
  - WAL 33722, 33622 and 33667 – these access licences do not reference a flow rate at a river gauge as a cease to take condition. Therefore, their access thresholds cannot be adjusted based on the AEW.

## Determining the water available and maximum volume permitted to be taken

### Intent

The water available is the volume of water available for extracting or protecting under unregulated river access licences (including A, B and C class access licences) on any given day.

The water available will be shared if the take by all licence holders eligible to take can collectively exceed the water available and therefore would not protect AEW or flow below the flow class thresholds.

Maximum daily extraction limits (called ‘flow share announcements’) will be determined and announced when the water available in each class is less than the 1 ML/daily flow share for each licence eligible to take from that flow class.

Each licence will share in the water available above the adjusted flow class threshold or access threshold relevant to their licence.

IDECs for each licence holder who has submitted an EoI will be used to distribute the water available and determine maximum daily extraction limits.

The flow class is only determined once extraction under licences with less restrictive conditions are taken into account.

### Procedure 16 – Determining the water available to each flow class

1. The water available is the volume of water that can be protected or extracted under unregulated river, A, B and C class access licences over a 24-hour period in a management zone.
2. For each 24-hour period, WaterNSW must assess whether the flow at the upstream and downstream gauges in each management zone will exceed the:
  - a. adjusted flow class thresholds for low flow, A, B and C class licences, and
  - b. adjusted access thresholds for schedules 2 and 2A licences.
2. WaterNSW must determine the water available in each flow class if river flows are forecast to exceed Low Flow Class thresholds at both gauges.
3. Using the adjusted flow class thresholds for the downstream gauge in each management zone, WaterNSW will determine the water available in each flow class as follows:
  - a. Water available to A Class licence holders is the forecast flow for the management zone, minus the A Class adjusted threshold.

- b. Water available to B Class licence holders is the forecast flow for the management zone, minus the B Class adjusted threshold and the take permitted from water available under the A Class licence.
- c. Water available to C Class licence holders is the forecast flow minus the C Class adjusted threshold and the take permitted from water available under A and B class licences.
4. WaterNSW must determine the water available to access licence holders in each of the low flow, A, B and C classes, sequentially.
5. Where schedules 2 or 2A licences are included in a management zone and access is conditional on an adjusted threshold at the zone's downstream gauge, the following applies:
  - a. The water available to schedules 2 or 2A licence holders is the forecast flow at the management zone, minus the adjusted threshold for the licence and the take permitted under any class or licence with a lower adjusted threshold at the downstream gauge.
  - b. Any Schedule 2 licence holders in the same management zone with the same access conditions will share the volume of water available above the adjusted threshold.
  - c. The water available under classes or licences with higher adjusted thresholds at the downstream gauge is reduced by the take permitted to schedules 2 or 2A licences.
6. Where Schedule 2 licences are present in a management zone and access is conditional on an adjusted threshold in another zone, the following applies:
  - a. The water available to the Schedule 2 licence holder is the forecast flow at the management zone, minus the AEW at the downstream gauge.
  - b. The water available to licence holders in the zone is reduced by the take permitted under the Schedule 2 licence.

## Notes

1. Extraction by licences with less restrictive conditions must be considered before determining the water available in each flow class, to minimise the possibility of extractions leading to the observed flows dropping below the flow class thresholds. For this reason, the water available is determined sequentially in each of the Low Flow Class, A, B and C class licences, taking into account potential extraction arising from the results of water distribution by eligible licence holders.
2. For example, if total flows are forecast to be 2,500 ML/day without extraction and the A Class adjusted threshold is 1,500 ML/day and the B Class adjusted threshold is 2,000 ML/day, then:
  - the water available to A Class licence holders equals 1,000 ML/day ( $2,500 - 1,500 = 1,000$  ML)
  - the water available to B Class licence holders equals zero if the volumes in EoI lodged by A Class licence holders are greater than or equal to 500 ML/day
  - the water available to B Class licence holders equals 200 ML/day if the volumes in EoI lodged by A Class licences is only 300 ML/day. This is because the forecast flows will be 500 ML/day above the B Class threshold, and
  - licence holders listed in schedules 2 and 2A will only share in the volume above their adjusted access thresholds.

## Procedure 17 – Determining which licence holders are eligible for a share of the water available

1. Each licence holder who has submitted a valid EoI is eligible for a share of the water available above the:
  - a. adjusted thresholds for the flow class specified in the Barwon–Darling WSP, or
  - b. adjusted access thresholds for licences listed under schedules 2 and 2A.
2. The water available to A Class licence holders is to be distributed among:
  - a. A Class licence holders who have submitted a valid EoI, and

- b. Schedule 2 licence holders (where respective conditions allow access) who have submitted a valid EoI.
3. The water available to B Class licence holders is then to be distributed among:
  - a. B Class licence holders who have submitted a valid EoI, and
  - b. Schedules 2 and 2A licence holders (where respective conditions allow access) who have submitted a valid EoI.
4. The water available C Class licence holders is to be distributed among:
  - a. Schedules 2 and 2A licence holders (where respective conditions allow access) who have submitted a valid EoI, and
  - b. C Class licence holders who have submitted a valid EoI.
5. Licence holders listed in schedules 2 and 2A who have submitted an EoI are eligible for a share of the water available above the adjusted access thresholds for their licence.

### Procedure 18 – Adjusting for mismatches in the water available

1. WaterNSW may adjust the water available at its discretion. This adjustment may be based on the cumulative total of the daily difference between the forecast and post-calculated AEW or the water available during the flow event, where the flow event occurs for a period that is longer than one day.
2. Any adjustments and reasons for adjustments must be documented by WaterNSW.
3. Adjustments to the water available in response to observed cumulative mismatches during an event to date should be distributed across the remaining period of access where possible. Consideration should also be given to the potential for further mismatches between announced and post-calculated water available.
4. Mismatches between the forecast and post-event calculated water available must not be reconciled between events.

#### Notes

- 1 Criteria for defining when action must be taken to manage cumulative mismatches during an event have not been defined. Instead, WaterNSW will report on cumulative differences between forecast and observed AEW and when adjustments were made by the end of September each year.
- 2 Adjustments to the water available will be applied in subsequent assessments and announcements.
- 3 No changes will be made to announcements once they are made.
- 4 Mismatches between events will not be reconciled. Instead, approaches will be reviewed through annual reporting and the adaptive management approach to improve how uncertainty is managed.
- 5 The NSW Department of Planning, Industry and Environment – Water will consider during the annual review if criteria are required to define when a response to a mismatch between forecast and observed AEW should be taken.

### Procedure 19 – Determining if a flow share announcement under clause 42A (3) is required

1. A flow share announcement under clause 42A (3) is not required and not to be made if the water available exceeds 1 ML/day x the sum of IDECs for all licence holders eligible to take from all classes.
2. A flow share announcement under clause 42A (3) is required for all classes if the sum of IDECs eligible to take x 1 ML/day exceeds the water available for any flow class.
3. WaterNSW must communicate on the WaterNSW website that licence holders with an IDEC can take up to 1 ML/daily flow share for periods when a flow share announcement is not required under clause 43A (3) of the Barwon–Darling WSP. They must also communicate

when flow share announcements are in effect. Licence holders should consult their individual flow share announcements.

## Notes

1. Access licences can take up to 1 ML/daily flow share if a flow share announcement is not made under clause 42A (3).

## Procedure 20 – Determining the maximum volume permitted to be taken under clause 42A (3)

1. Daily volumetric limits must be calculated and flow share announcements made (under clause 42A (3) of the Barwon–Darling WSP) if the water available is less than 1 ML/day x the sum of daily flow shares for any flow class eligible to take water in a management zone.
2. Daily flow shares will be calculated sequentially for unregulated, A, B and C class licences, including licences listed in schedules 2 and 2A.
3. The total volume allocated under a flow class after consideration of each EoI lodged will be used to estimate extraction and determine the available volume for the next flow class.
4. The maximum volume permitted to be taken cannot exceed 1 ML/daily flow share.
5. For each flow class, WaterNSW must:
  - a. determine the total eligible requested volume by identifying which licence holders in the class have submitted an eligible EoI and, of those licence holders, identify the lesser of:
    - the maximum requested, or
    - 1 ML x IDEC.
6. For each licence holder in the flow class, WaterNSW must:
  - a. determine the equivalent ML/daily flow share requested as:
    - 1 ML/daily flow share if the lowest volume is IDEC, or
    - the maximum requested divided by the IDEC if the lowest volume is the maximum requested.

If the *total eligible requested volume* is equal to or less than the water available, the daily flow share for each licence holder is the volume ML/daily flow share, which equals the requested equivalent ML/daily flow share.

If the *total eligible requested volume* exceeds the water available, WaterNSW must determine which licence holders, if any, will not be able to receive a volume based on their minimum volume requested (Step 1).

WaterNSW will need to repeat Step 1 for each licence, unless otherwise stated, going in reverse order of *minimum requested volume/IDEC*; that is, from the highest *minimum requested volume/IDEC* down to the lowest.

To perform Step 1 for a licence holder (for example, the holder of Licence A), Water NSW will define:

- the *test volume share*, which is the *minimum requested volume/IDEC* of the Licence A holder, and
- *the test volume* will be equal to the total volume to be distributed if each licence holder is to receive the lesser of the *test volume share* or their *requested equivalent ML/daily flow share*.

The *test volume* is calculated by summing up for each licence that has not yet been eliminated by this step, including Licence A (that is, the licence holder's *IDEC*) x (*minimum*, which either the *test volume share* or the licence holder's *requested equivalent ML/daily flow share*):

- If the *test volume is less than or equal to the water available*, it is possible for each remaining licence holder to receive a volume if the announced volume ML/daily flow share was the *test volume share*. Therefore, all remaining licences, including the holder of Licence A, will receive a volume. Step 1 is now complete.

However, if the *test volume was greater than the water available*, then:

- the holder of Licence A will not receive a volume. That is, they will receive 0 ML/daily flow share, and
- any licence holder with the same *minimum requested volume/IDEC* will also not receive a volume.

WaterNSW will repeat Step 1 for the next licence with the next lowest *minimum requested volume/IDEC*.

For licence holders not eliminated in Step 1, WaterNSW will determine the maximum volume each licence holder can receive by following this process (Step 2):

- a. For each licence holder (for example, the holder of Licence B) who will receive volume, WaterNSW will repeat Step 2 unless otherwise stated, going from the licence holder with the smallest *requested equivalent ML/daily flow share* to the one with the largest. To do so, WaterNSW will define:
    - the *test volume share*, which will be equal to the *requested equivalent ML/daily flow share* for the holder of Licence A
    - the *sum of remaining licence holders' IDEC*, which will be the sum of *IDEC* of licence holders who will receive a volume but have yet to receive one, including the holder of Licence A.
  - b. WaterNSW will determine whether it is possible for each remaining licence holder to share volume so that each receives at least the *test volume share*, i.e. is the following true:
    - the *test volume share* (the sum of remaining licence holders' *IDEC*) is less than or equal to the *water available*:
      - If it is, then:
        - the holder of Licence A receives their full *requested equivalent ML/daily flow share*, and
        - the *water available* is reduced by the volume of water distributed to A Class licence holders.  
Repeat Step 2 for the next licence on the list.
      - If it is not, then:
        - all remaining licence holders, including the holder of Licence A, will receive the same ML/daily flow share, which is the *water available* divided by the *sum of remaining licence holders' IDEC*.
7. Water available will not be calculated for schedules 2 and 2A licences with less than 2 unit shares. These licences will receive 1 ML/daily flow share if their schedules 2 and 2A conditions permit.

## Notes

- 1 In all management zones of the Barwon–Darling Water Source, the total maximum daily extraction limit for a flow class is less than the total volume that would be available for that flow class before the next class could access water. This means that licences in a class will have a full daily flow share (1 ML/daily flow share) before any class with a higher threshold is given a share. The available volume to be distributed and the total shared for each flow class will be calculated before the next flow class is assessed.

## Determining the flow class

### Intent

The flow class will be based on forecasts rather than observed gauge readings.

In determining the flow class that applies, WaterNSW must consider:

- if the no flow class is required to protect the resumption of flows after an extended period or if a class other than the no flow class announcement can be made, and
- if the flow class thresholds for more restrictive flow classes (including adjustments to protect AEW) are likely to be exceeded, based on likely extraction by licence holders who can take from less restrictive flow classes.

This means the resumption of flow triggers are to be assessed first.

If a class other than a no flow class is permitted under clause 50, then the water available in each flow class must be determined by considering the likely extraction by licence holders in less restrictive classes before announcing a flow class.

### Procedure 21 – Determining if a No Flow Class is to be announced under clause 50 to protect the resumption of flows after an extended dry period

1. Each day during a flow event, WaterNSW will assess whether:
  - a. the observed flow at the flow reference points identified in **Table 4**, Column 1 has been less than the flow in Column 2 for the number of consecutive days in Column 3
  - b. the forecast flow at the flow reference points identified in **Table 4**, Column 1 will exceed the flow in Column 4 for the number of consecutive days in Column 5 if an announcement of a class other than a no flow class is made, and
  - c. it is likely that the total flow at the Darling River at Bourke Town (425003) since the start of the period when the flow in the Darling River at Wilcannia (425008) has been less than 200 ML/day for more than 90 consecutive days, will exceed 30,000 ML if an announcement of a class other than No Flow Class is made.
2. Observed flows arising from all sources are to be considered when assessing if a no flow class announcement is triggered under the resumption of flow rule (clauses 50 (1), (3), (5) and (7)).
3. Forecast flows arising from all sources are to be considered when assessing whether a resumption of flow rule is to be relaxed in accordance with clauses 50 (2), (4), (6) and (8) and a flow class other than a No Flow Class is to be announced.

**Table 4: Resumption of flow trigger thresholds**

Column 1		Column 2	Column 3	Column 4	Column 5
		Triggers for announcing a No Flow Class		Triggers for announcing a flow class other than a No Flow Class	
Flow reference point		Flow rate (ML/day) is less than	Number of consecutive days	Flow rate (ML/day) is greater than	Number of consecutive days
422001	Barwon at Dangar Bridge	326	150	706	10



Column 1		Column 2	Column 3	Column 4	Column 5
422002	Barwon River at Brewarrina	468	150	1008	10
425003	Darling River at Bourke Town	450	120	972	10
425008	Darling River at Wilcannia	200	90	400	10

## Notes

1. AEW may contribute to the resumption of flows. The resumption of flow triggers are not adjusted by the volume of AEW present.
2. AEW may contribute to the triggers for resumption of flow rules being relaxed, as all flows are considered in determining if a forecast is likely to exceed the relaxation triggers.

## Procedure 22 – Determining the flow class

1. WaterNSW will determine the flow class announcement after conducting a full assessment of the water available in each flow class.
2. WaterNSW will determine the flow class as:
  - a. No Flow Class if:
    - flows are forecast to not exceed the Low Flow Class thresholds
    - for management zones within Section 1, the circumstances set out in clause 50 (1) of the Barwon–Darling WSP apply unless clause 50 (2) applies
    - for management zones within Section 2, the circumstances set out in clause 50 (3) of the Barwon–Darling WSP apply unless clause 50 (4) applies
    - for management Zones within Section 3, the circumstances set out in clause 50 (5) of the Barwon–Darling WSP apply unless clause 50 (6) applies, and
    - for management zones within Section 4, the circumstances set out in clause 50 (7) of the Barwon–Darling WSP apply unless clause 50 (8) applies.
  - b. Low Flow Class if:
    - flows are forecast to exceed the Low Flow Class thresholds and not the A Class thresholds.
  - c. A Class if:
    - the water available to A Class is greater than 0 ML/day and water available to B Class is 0 ML/day.
  - d. B Class if:
    - the water available to B Class is greater than 0 ML/day, and
    - the water available to C Class is 0 ML/day.
  - e. C Class if:
    - the water available to C Class is greater than 0 ML/day.

## Notes

- 1 If WaterNSW announces that the flow class is A Class, only A Class licence holders can take water subject to any flow share announcements and additional licence conditions.
- 2 If WaterNSW announces that the flow class is B Class, A and B class licence holders can take water subject to any flow share announcements and additional licence conditions.
- 3 If WaterNSW announces that the flow class is C Class, A, B and C class licence holders can take water subject to any flow share announcements and additional licence conditions.

## Access announcements

### Intent

The Barwon–Darling has two types of announcements: daily flow class announcements and daily flow share announcements. Daily flow class announcements are public, and daily flow share announcements are for individual licence holders.

Access for licensed water users in the Barwon–Darling is determined by daily flow class announcements. The protection of AEW is achieved by adjusting the flow class thresholds for the associated flow class.

The most restrictive flow class that receives an available volume greater than zero will be the class that is announced for that management zone. This cannot be determined until available volumes and daily flow shares – and therefore forecast extractions – are calculated for each class.

Daily flow share announcements will be made when the total available volume is less than the extraction capacity of the eligible licences.

Figure 1 depicts the access announcement process.

### Procedure 23 – Announcing adjusted access rules for licences listed under schedules 2 and 2A

1. WaterNSW must announce adjusted access rules for licences listed in schedules 2 and 2A when the volume of AEW forecast to flow into a relevant management zone under Procedure 10 is greater than 0.
2. The announcement must specify the:
  - a. time and date the announcement is made
  - b. licence/s the announcement applies to
  - c. period that the announcement applies for
  - d. amount the access rule is adjusted by, and
  - e. the rule under which the announcement is made.
3. An announcement adjusting access rules made for licences listed in schedules 2 and 2A cannot be amended or retracted.
4. If an announcement adjusting access rules for licences listed in schedules 2 and 2A is not made the access rules defined in schedules 2 and 2A apply.
5. Where Schedule 2 access rules are based on conditions in addition to or instead of gauging station flow, WaterNSW will indicate in the announcement that access is still determined by these conditions.

### Notes

- 1 An announcement adjusting access rules for schedules 2 and 2A licences may apply for one or multiple 24-hour periods, depending on forecasting certainty.

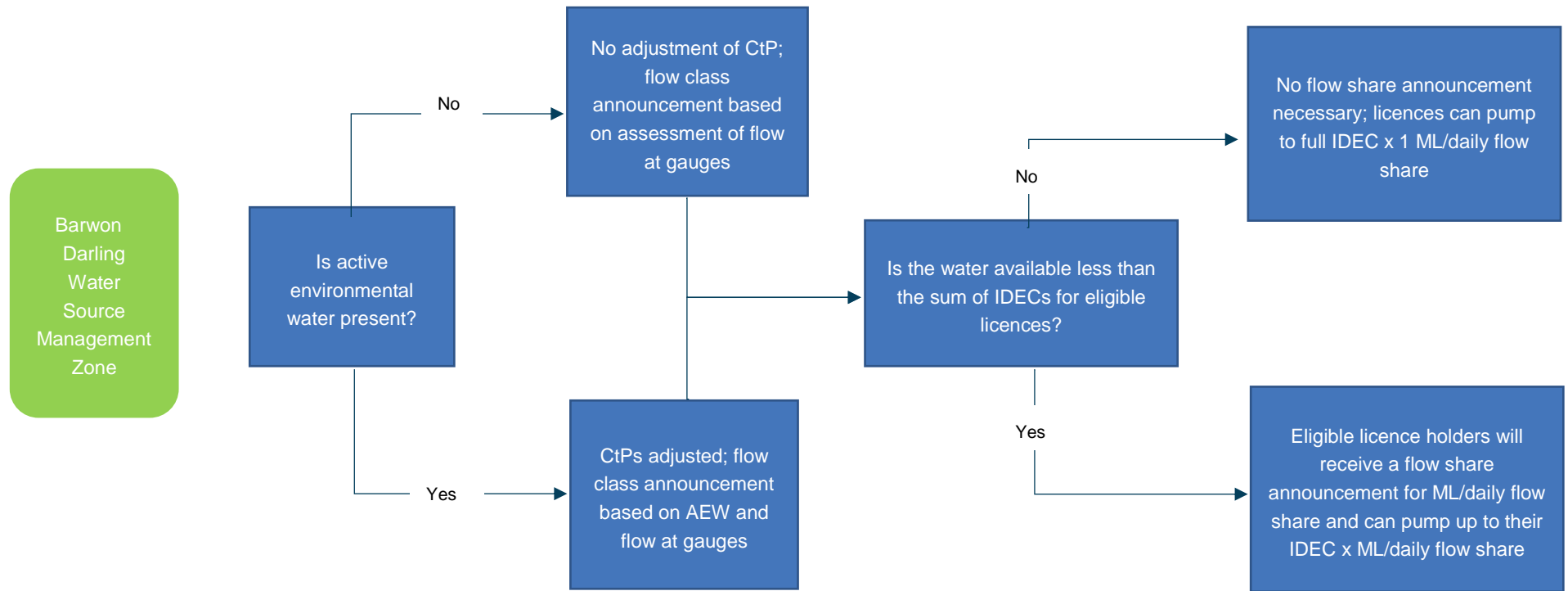


Figure 1: Flow diagram of the access announcement process

## Procedure 24 – Announcing flow classes

1. Water NSW must:
  - a. make flow class announcements by 7 am daily
  - b. publish flow class announcements on the WaterNSW website, and
  - c. communicate flow class announcements to licence holders via email and SMS.
2. Flow class announcements must apply for 24 hours from 9am on that day.
3. The flow class announcement must specify:
  - a. the time and date the announcement is made
  - b. the management zones the announcement applies to
  - c. the flow class that applies, and
  - d. the period that the announcement applies for (the period may be for one 24-hour period or several).
4. If WaterNSW has not announced a specific flow class for a specific period of time, then the flow class that was previously announced continues to apply for each subsequent 24-hour period until a new flow class is announced (refer to clause 49A (7)).
5. Flow class announcements can be made for more than one 24-hour period at a time, if there is confidence in the flow forecast for the period of the announcement.
6. Flow class announcements for each management zone can be made for different periods (for example, there may be an announcement for Zone 1 that is for one 24-hour period and an announcement for Zone 2 that is for three 24-hour periods).
7. A flow class announcement cannot be amended or retracted.

### Note

- 1 A flow class announcement may apply for one 24-hour period or several, depending on forecasting certainty.

## Procedure 25 – Announcing the maximum daily volume of water that is permitted to be taken (otherwise called a flow share announcement) under clause 42A (3)

1. Water NSW will
  - a. make flow share announcements by 7am daily when required
  - b. publish flow share announcements on the WaterNSW website, and
  - c. communicate flow share announcements to licence holders via email and SMS.
2. A flow share announcement:
  - a. will be made for periods when a flow share announcement is determined to be required under clause 42A (3)
  - b. will be made by 7am on the day the flow share announcement applies, and
  - c. will apply for a 24-hour period from 9am.
3. Flow share announcements must include:
  - a. the management zone the announcement applies to
  - b. the period the announcement applies to
  - c. the date and time that the access announcement was made, and
  - d. the flow share announcement under clause 42A (3) as ML/daily flow share for each licence class, licence or group of licences. There may be different ML/daily flow shares for different licences in each management zone.
4. A flow share announcement cannot be amended or retracted.

## Notes

- 1 A flow share announcement will apply for one 24-hour period only. Flow share announcements for multiple 24-hour periods are not feasible as expressions of interest may change after each 24-hour period.
- 2 A flow share announcement will be made if WaterNSW determines under Procedure 19 that a flow share announcement is required. Otherwise, 1 ML/daily flow share can be taken.
- 3 Water must not be taken under an unregulated river, A, B or C class access licence or a licence listed in schedules 2 and 2A during any period that an announcement under clause 42A (3) is made, unless the licence holder has submitted an EoI to take that water in accordance with this manual and the licence has been allocated more than 0 ML/daily flow share.

## Monitoring the intended sharing of river flows

### Intent

We aim to manage take so that an equivalent volume to that defined as AEW is protected from extraction during each event.

At the conclusion of each 24-hour period, we will compare the unaccounted differences with the forecasts to assess how well the forecasts used to determine the AEW and water available in each management zone protected AEW, and determine the water available under WALs.

**The difference between the forecast and observed AEW flowing out of the management zone can be used to adjust the forecasts of AEW flowing into the next management zone. This improves the likelihood that an equivalent volume to that defined as AEW is protected during an event and that there is no unintended consequence to licence holders.**

### Procedure 26 – Monitoring mismatches between forecast and observed flows and intended sharing of flow

1. For each management zone, WaterNSW must:
  - a. calculate the observed river losses from the previous 24-hour period using observed flows and water use data
  - b. use the observed river losses to calculate the post-calculated water available and the post-calculated AEW that passed out of the management zone in the previous 24 hours
  - c. maintain a cumulative total of the daily difference between the forecast and post-calculated AEW leaving each management zone
  - d. maintain a cumulative total of the daily difference between the forecast and post-calculated water available, and
  - e. maintain a cumulative total of the daily difference between the forecast and the observed water use.

## Debiting water allocations accounts

### Intent

Water extracted or protected must be debited from water allocation accounts to ensure equitable distribution among licences.

This manual establishes a procedure for debiting water allocation accounts when unregulated water that is otherwise permitted to be extracted is protected from extraction. This ensures the water allocation account is reduced by the volume determined as requiring protection from extraction. The water debited is 'used' in the water source for environmental purposes.

## Procedure 27 – Determining the amount to be debited from access licence water allocation accounts under clause 43 (when unregulated water has been identified as active environmental water)

1. WaterNSW will debit the volume determined by WaterNSW as AEW from the water allocation account of a licence holder where the licence holder has notified in their EoI that they want to protect water under clause 43 (3) for a specified day.
2. The volume determined as AEW and to be debited from the water allocation account of a licence where the licence holder has notified WaterNSW in their EoI that they want to protect water under clause 43 (3) for a specified day is:
  - a. the IDEC x ML/daily flow shares announced under clause 42A (3), or
  - b. 1 ML/daily flow share if there is no announcement under clause 42A (3).

### Notes

- 1 Water allocation accounts of licence holders (including environmental water holders) who have notified WaterNSW in their EoI that they intend to protect water will be debited by the volume of water otherwise permitted to be extracted.
- 2 A compliance issue arises if water take exceeds the volume of water permitted to be taken. AEW or water below the flow class thresholds for flow class listed in Table B to clause 49A is reduced if take exceeds the volume permitted to be taken.

## Procedure 28 – Debiting unregulated water allocation accounts when water is extracted

1. Expressions of interest and announcements will not be considered in debiting water allocation accounts when water is extracted.
2. WaterNSW must debit water allocation accounts for extractive use based on take in accordance with existing procedures.
3. WaterNSW must provide a method for licence holders to specify their preference for the order accounts are debited where multiple access licences are linked to one works approval and take is permitted from multiple access licences.
4. WaterNSW must document water allocation account debiting procedures.
5. Debiting procedures in this manual may be reviewed if there is evidence that water allocated to unregulated river (including A, B and C class) access licences under clause 42A (3) as a result of an EoI is not extracted, impacting on access by other licence holders in a management zone.

### Notes

- 1 If water permitted to be extracted is not taken, the volume not taken will be available in the next management zone for redistribution (as a positive unaccounted difference).
- 2 A compliance issue arises if take exceeds water permitted to be taken. AEW or water below the flow class thresholds for the flow class listed in Table B to clause 49A is reduced if take exceeds the volume permitted to be taken.

## Monitoring, evaluation, reporting and improvement

### Intent

Active management in the Barwon–Darling unregulated river is a significant change in how unregulated rivers are managed.

The Department will review the implementation of active management annually to support learning and provide for improvements to rules and procedures. The review relies on data and reports provided by agencies.

Data used in active management is to be recorded, archived and made accessible to NSW government agencies to support reporting, compliance monitoring and enforcement, and continuous improvement.

The annual cycle starts with reports that provide information to inform the annual evaluation of active management and ensure that active management is conducted transparently.

Reporting from WaterNSW will document the forecasting and accounting of river flows, river losses, AEW, licensed water use, management responses and recommendations for how active management is implemented.

Reports from the NSW Department of Planning, Industry and Environment – Environment, Energy and Science and NRAR will document any issues that arose in protecting AEW, and monitoring and enforcing compliance. They will also provide recommendations for improvements to ensure the objectives and principles of active management are met.

Appendix D summarises the annual review cycle.

## Procedure 29 – Data capture, archiving and record-keeping requirements

1. WaterNSW will capture and archive the information in Table 5 for each management zone for each day.
2. WaterNSW will make the data outlined in Table 5 accessible to the Department for reporting, evaluation and compliance monitoring, and enforcement purposes.

**Table 5: Data to be captured, archived and made accessible**

Purpose	Recording and archiving requirements
Issuing flow advice	Flow advice issued
Forecasting flows	<ul style="list-style-type: none"> <li>• Installed irrigation infrastructure (number of pumps and their capacities, and on-farm storage capacities)</li> <li>• All observed or reported input data (observed flows, water use, on-farm storage volumes, weir pool levels/volumes, rainfall, evaporation and EoI) to forecast losses and flows, and calculate the water available announced each day for each management zone</li> <li>• Daily outputs of flow forecasting</li> <li>• Actual unaccounted differences</li> <li>• Adjustments in response to mismatches between forecasts and unaccounted differences and reasons for adjustments</li> <li>• Adjustments to loss estimates and reasons for adjustments</li> </ul>

Purpose	Recording and archiving requirements
Identifying and determining AEW	<ul style="list-style-type: none"> <li>• Volume of AEW entering from each tributary or upstream water source (and its licence source)</li> <li>• Volume of AEW entering the management zone from an upstream management zone of the same water source</li> <li>• Volume of AEW identified as coming from within the management zone (that is, the unregulated water determined to be protected under clause 43) and the WAL number that the AEW is attributed to</li> <li>• Volume of AEW flowing out of the Barwon–Darling Water Source</li> </ul>
Accounting for losses of AEW	<ul style="list-style-type: none"> <li>• Losses assigned to AEW in each management zone</li> </ul>
Eol	<ul style="list-style-type: none"> <li>• Data each Eol was submitted and a log of changes to each Eol</li> <li>• Date and time Eols for each 24-hour period were locked</li> <li>• Data exported from Eol at 9am on the day before each announcement that is used to share water</li> </ul>
Requirements for licence holders intending to protect water from extraction under clause 43	<ul style="list-style-type: none"> <li>• Notifications (through an Eol) to protect water must include the: <ul style="list-style-type: none"> <li>- licence number</li> <li>- maximum volume the licence holder would like to protect from extraction for each 24-hour period, and</li> <li>- minimum volume they would like to protect from extraction for each 24-hour period</li> </ul> </li> <li>• The volume identified and determined as AEW on each day</li> </ul>
Determining the adjusted flow class thresholds and access rules for schedules 2 and 2A licences	<ul style="list-style-type: none"> <li>• Adjusted flow class thresholds</li> <li>• Adjusted access rule for licences listed in schedules 2 and 2A</li> </ul>
Determining and making flow class announcements under clause 49A (2) and flow share announcements under clauses 42A (3) and 43A (4)	<ul style="list-style-type: none"> <li>• Flow class announcements made (including details of announcements)</li> <li>• Flow share announcements (including details of announcements) made</li> <li>• Licence holders permitted to take on each day</li> <li>• Water available for each day</li> <li>• Maximum volume permitted to be taken for each access licence with an IDEC</li> <li>• Adjustments to the water available to reduce any mismatches between announced and post-calculated volumes of water available and AEW</li> </ul>
Monitoring the intended sharing of access to river flows	<ul style="list-style-type: none"> <li>• Daily post-calculated water available and AEW for each management zone</li> <li>• Daily mismatches between announced and post-calculated volumes available and AEW</li> </ul>



## Procedure 30 – Annual reporting requirements

1. By 30 September each year, WaterNSW must submit to the NSW Department of Planning, Industry, Environment – Water, the following information:
  - a. a description of the active management undertaken during the relevant water year
  - b. the performance in meeting:
    - the intended sharing outcomes for each flow event during the relevant year
    - the relevant requirements of the Barwon–Darling WSP
    - the requirements set out in this manual, and
    - a general description of the flow events and water use that occurred
  - c. a summary account on a monthly or event basis of the:
    - inflows of AEW
    - additional volumes of water identified as requiring protection arising from notifications to the Minister (under clause 43)
    - volumes of AEW passing key points
    - volumes of AEW protected
    - volumes of AEW used instream (that is, losses assigned to AEW)
    - volumes of AEW flowing into Lake Wetherell, taking account of any corrections to relevant information that occurred after the flow event, such as hydrographic flow corrections
    - expressions of interest placed by unregulated river access licences, and
    - water available to unregulated river access licences (to be protected or extracted)
  - d. a comparison on a monthly or event basis of the:
    - announced water available with the post-calculated volume of water available
    - forecast and actual river losses, and
    - forecast AEW with post-calculated volume of AEW
  - e. documentation of:
    - feedback received from consultation with stakeholders on implementation of active management
    - issues that arose in the implementation of active management and details of how any issues were managed, and
    - deviations from the procedures outlined in this manual and details of why the deviations were necessary
  - f. recommendations to:
    - address issues that arose in implementing active management
    - improve the efficiency or effectiveness of active management, and
    - avoid future deviations, where possible, and
  - g. any other matter relevant to active management that the Department may request following consultation with WaterNSW.
2. WaterNSW may consult with Barwon–Darling unregulated river access licence holders to seek feedback on the implementation of active management for that water year and include a summary of any such feedback in the Annual Rivers Operation Report.

3. By 30 September each year, the NSW Department of Planning, Industry and Environment – Environment, Energy and Science must submit to the NSW Department of Planning, Industry, Environment – Water, the following information:
  - a. a brief description of environmental events that used active management to protect environmental water during the previous water year
  - b. the degree to which active management enabled the environmental water holder to achieve its environmental objectives
  - c. documentation of:
    - any issues that arose in the Eol process
    - any issues that arose in accounting of AEW, and
    - feedback from consultation with stakeholders on active management
  - d. recommendations to:
    - address issues, and
    - improve the implementation of active management.
4. The NSW Department of Planning, Industry and Environment – Environment, Energy and Science may consult with environmental water holders and stakeholders in preparing their annual statement.
5. By 30 September each year, NRAR must submit to the NSW Department of Planning, Industry, Environment – Water, documentation of:
  - a. relevant compliance outcomes
  - b. any issues that arose in monitoring or enforcing compliance with active management provisions, and
  - c. recommendations to address those issues or improve the operation of active management.

### Procedure 31 – Annual evaluation and review of active management

1. The NSW Department of Planning, Industry, Environment – Water must conduct an annual evaluation and review of the implementation of active management after considering reports provided by WaterNSW, NRAR and the NSW Department of Planning, Industry and Environment – Environment, Energy and Science.
2. In undertaking the review, the NSW Department of Planning, Industry, Environment – Water must consider the objectives and principles set out in the active management policy.
3. By 31 March each year, the NSW Department of Planning, Industry, Environment – Water will prepare an active management annual evaluation and review report. This report will include:
  - a. reporting on the implementation of improvements from previous reviews
  - b. issues relating to active management raised through consultation with stakeholders
  - c. a summary of results and recommendations contained in reports provided by WaterNSW, NRAR and the NSW Department of Planning, Industry and Environment – Environment, Energy and Science
  - d. proposals for variations or new procedures brought forward by agencies or stakeholders
  - e. an assessment of whether:
    - procedures for active management were followed
    - whether any deviations from the procedures occurred and any possible modifications to the procedures that may be required to avoid future deviations, where possible

- the current active management procedures and associated operations provide for AEW to remain in the water source for environmental purposes
  - the risk management measures in place are effective at protecting AEW and ensuring that access by water users to water above the access thresholds arising from other sources by water users has not been affected
  - the active management procedures should be expanded, modified or remain unchanged, and
- f. recommendations to change this manual, the active management policy or the Barwon–Darling WSP rules relating to active management.
4. Proposals to support changes or improvements to the operation of active management may be brought forward for consideration in the review by WaterNSW, NRAR, environmental water holders, including the NSW Department of Planning, Industry and Environment – Environment, Energy and Science or CEWH, the MDBA, water users or any other party. Proposals must be supported by appropriate evidence and analysis.
5. By 31 March each year, the Department will publish a summary of the annual review, including any findings of the review and recommendations.

## Procedure 32 – Amendments to the manual

1. The NSW Department of Planning, Industry, Environment – Water is responsible for ensuring that appropriate changes to the regulatory framework are made to give effect to any recommendations arising from this review, in consultation with key stakeholders. The Department will endeavour to complete amendments by 30 June each year, depending on the complexity of any proposed improvements.
2. The NSW Department of Planning, Industry, Environment – Water may make non-material amendments to this manual without consulting stakeholders.

### Note

- 1 WaterNSW may issue a report on the progressive outcomes of sharing at any time during an event.

## Deviating from procedures outlined in this procedures manual

### Intent

The Barwon–Darling WSP defines the water to be identified as AEW and protected from extraction. This manual outlines how the AEW present is determined and access adjusted based on this determination. It is critical that the AEW and the water available for unregulated licence holders is appropriately quantified to meet the objectives and principles of active management.

Since active management is a new process, flexibility in applying the procedures may be required to meet its objectives and principles, as it is possible that circumstances may arise that have not been anticipated.

Outlining how deviations from the procedures are managed supports transparency and improves the implementation of active management over time.

Any deviations from the manual are to be documented by WaterNSW and reported annually to the Department. This report will be considered by the Department during the annual evaluation and review of the implementation of active management.

The only circumstances in which procedures are to be deviated from are if current procedures are not feasible or compromise the primary objective or principles of active management.

Under no circumstances is WaterNSW to deviate from the rules outlined in the Barwon–Darling WSP.

1. Under all circumstances, WaterNSW and the Department must implement active management in line with water sharing rules outlined in the Barwon–Darling WSP.
2. Applying the procedures outlined in this manual should be guided by the objectives and principles in this manual (as outlined in section 1.6) and the intent of each procedure. Where there is uncertainty, WaterNSW and the Department will adopt a precautionary approach to minimise potential harmful impacts or any unintended benefits for licence holders.
3. WaterNSW must notify the Department in writing of the deviation within five working days of the deviation happening.
4. WaterNSW must:
  - a. seek clarification from the Department when the manual is not explicit on procedures
  - b. document the deviation in the annual River Operations Report that is submitted to the Department, including the reason for deviating from the procedures and outlining possible modifications to the manual that may be required, and
  - c. ensure that any deviations from procedures are guided by the objectives and principles outlined in this manual and the intent of the procedures.
5. The Department must document and consider in the Active Management Annual Evaluation and Review report:
  - a. any deviation from the procedures outlined in this manual
  - b. any circumstances identified during the implementation of active management where the manual is not explicit on the procedures to be used, and
  - c. if and how deviations from the manual can be addressed by amendments to the manual.

## Part F – Managing risk

How we implement active management is important in managing the risk of:

- not protecting the AEW in a water source or management zone, and
- affecting access by licence holders to water above access thresholds arising from sources other than AEW.

Some of the risk is managed by limiting the water that can be protected from extraction.

### Causes of residual risk

The principal residual risk arises from uncertainty in forecasting flows due to the inherent variability in natural river systems and limitations in measuring factors.

Uncertainty in forecasting flows can arise from uncertainty in estimating water use, river transmission losses, tributary inflows, errors in flow or use measurements, or flow routing effects.

Forecasting flows primarily relies on forecasting river transmission losses arising from seepage, evaporation and evapotranspiration. The losses associated with these processes cannot be measured.

### Consequence of risk

If observed flow in a management zone is subsequently found to be higher than forecast because forecast losses were overestimated, less water is made available for access than was intended.

Similarly, the reverse risk also exists. This is where observed flows are lower than forecast because forecast losses were underestimated and as a result, more water is made available than intended and the full rate of AEW is not protected.

## Managing risk

A balance must be struck in managing the uncertainty within the limits of operational feasibility and cost-effectiveness to minimise overestimating or underestimating the AEW to be protected, or the potential effects on water available to unregulated river access licences.

While it is impossible to eliminate the mismatch between the forecast and actual flows, to minimise it, we will:

- take into account the best information available on daily extraction volumes at each pump site, including metering and each EoI
- make the forecast – and the access announcements that rely on that forecast – as close as possible to the period of access. This means announcements may only be made for one 24-hour period. Where the forecast uncertainty is lower, announcements may be made for longer periods
- share river transmission losses proportionally by assigning river transmission losses to the AEW at the end of each management zone, based on the ratio of AEW at the start of the management zone compared to the total flows
- base initial and ongoing loss estimates on an assessment of the average losses for comparable historical events
- adjust ongoing loss forecasts based on observed unaccounted differences so that mismatches arising from uncertainty in loss forecasts don't compound as an event proceeds
- adjust access during a flow event to address previous days' cumulative mismatches between forecast and observed unaccounted differences
- increase the frequency of announcements to allow for operational responses to be made, and
- ensure active management continuously improves and is responsive to improved information, insights, infrastructure, tools and systems, including:
  - improving information to reduce flow forecasting uncertainty by reviewing existing flow and rainfall measurements, and where opportunities arise, increasing these measurement points
  - introducing the new NSW non-urban water metering framework to improve the standard and coverage of non-urban water meters, and
  - evaluating and reviewing the operation of active management annually to allow for reporting and consultation, including any amendments to active management procedure manuals to give effect to recommendations arising from the review.

## Part G – Consultation

Consultation is important to ensure active management evolves and improves in response to new information, insights and stakeholder feedback.

Table 6 outlines the minimum consultation requirements for the annual review of this manual.

**Table 6: Minimum consultation requirements**

Who will be consulted	When will they be consulted	What will they be consulted on	How will they be consulted	Who is responsible
WaterNSW, NRAR, the NSW Department of Planning, Industry and Environment – Environment, Energy and Science and the MDBA	When conducting each annual review	The appropriateness, effectiveness and efficiency of the manual in meeting the objectives and principles of the active management policy and any proposed substantive changes to the manual arising from the annual review	The NSW Department of Planning, Industry and Environment – Water may establish an interagency working group or use an existing interagency forum for this purpose	The NSW Department of Planning, Industry and Environment – Water
Licensed water users including environmental water holders and stakeholder representatives	When conducting each annual review	The appropriateness, effectiveness and efficiency of the manual in meeting the objectives and principles of the active management policy and any proposed substantive changes to the manual arising from the annual review	The NSW Department of Planning, Industry and Environment – Water may establish a stakeholder consultative group, use an existing forum or use an alternative engagement approach for this purpose	The NSW Department of Planning, Industry and Environment – Water
Licensed water users or their representative groups	Prior to submitting the Annual River Operations Report	Implementation issues	WaterNSW will determine the most appropriate means of consulting and may use existing forums for this purpose	WaterNSW

## Part H – Compliance

The Natural Resources Access Regulator (NRAR) is the independent regulator and is, responsible for monitoring and enforcing compliance with the WM Act, and associated WSP rules.

The WSP rules and associated mandatory conditions set the active management operational framework. NRAR will apply its risk-based approach to active management compliance. Ensuring compliance from water users is key to the ongoing success of the environmental reforms, IDECs and resumption of flow rules.

Licence holders need to comply with their licence conditions. This includes complying with announcements and the requirements to submit Eols.

NRAR runs a range of compliance, monitoring and auditing campaigns in the WSP area. Campaigns may be focused regionally, on particular industries or other targeted programs. The

regulator relies on a wide range of data sources, such as metering records, logbooks, satellite and aerial imagery and conducting site inspections.

To determine if a licence holder (other than licences listed in schedules 2 and 2A) was permitted to take water — and the maximum volume permitted to be taken under that licence in a specified period — NRAR refers to data sets, including, but not limited to:

- flow class announcements
- flow share announcements, and
- whether an EoI was required and submitted.

For licences listed in schedules 2 and 2A, NRAR refers to data sets, including but not limited to:

- adjusted access announcements
- flow share announcements
- whether an EoI was required and submitted, and
- the flows recorded at flow reference points.

Beyond compliance, monitoring and audits, NRAR responds to suspected breach reports with a range of enforcement actions and/or by investigating. A risk-based approach is applied to ensure proportionate enforcement action is taken in accordance with the [NRAR Regulatory Policy](#) and [NRAR Regulatory Framework](#).

Enforcement actions are published in the [NRAR Public Register](#). Reports on NRAR's compliance activities and outputs to date are also published on NRAR's website.

This approach ensures that NRAR delivers on its principal legislative objectives to:

- ensure effective, efficient, transparent and accountable compliance and enforcement measures for natural resources management legislation, and
- maintain public confidence in the enforcement of natural resources management legislation.





## Appendix B – Terms and abbreviations

Term or abbreviation	Definition
AEW	<p>Active environmental water</p> <p>AEW is the water in the water source identified or determined by the Minister on any given day as requiring protection from extraction, in accordance with this manual, that arises from:</p> <ol style="list-style-type: none"> <li>HEW flowing from a water source that is upstream of the water source, and</li> <li>a notification by a licence holder to the Minister of the licence holder's intention to protect the water from extraction under clause 43 of this Plan.</li> </ol>
Barwon–Darling WSP	The <i>Water Sharing Plan for the Barwon–Darling Unregulated and Alluvial Water Sources 2012</i>
Barwon–Darling Water Source	Barwon–Darling Unregulated River Water Source
CEWH	Commonwealth Environmental Water Holder
Cease-to-pump rules	Any term or condition on a water supply works approval or an access licence or <i>Water Act 1912</i> entitlement that prohibits the taking of water in a particular circumstance
CtP threshold	<p>Commence-to-pump/cease-to-pump threshold</p> <p>The minimum flow rate at which a licence in an unregulated river or stream may commence to pump, or the flow rate below which the licence must cease to pump.</p>
Daily flow share	A number specified in the extraction component of an access licence as part of the IDECs
Day	The 24-hour period from 9am on any day to 8.59am the following day
Department	NSW Department of Planning, Industry and Environment – Water
Eol	Expression of interest
NSW Environmental Water Register	<p>The register of HEW maintained by WaterNSW. The NSW Environmental Water Register is accessible at <a href="https://www.industry.nsw.gov.au/water/environmental-water-hub/public-register/environmental/licences">https://www.industry.nsw.gov.au/water/environmental-water-hub/public-register/environmental/licences</a>.</p>
Flow class	<p>A flow class is determined based on flow class thresholds at flow reference points defined in the Barwon–Darling WSP. The flow class thresholds can be adjusted to protect AEW</p> <p>Defines the size of a flow level in an unregulated river</p>
Flow class thresholds	The flow class thresholds defined in the Barwon–Darling WSP

Term or abbreviation	Definition
HEW	<p>Held environmental water</p> <p>HEW is water available under a WAL for the purposes of achieving environmental outcomes</p>
IDEC	<p>Individual daily extraction component</p> <p>An IDEC is expressed as:</p> <ol style="list-style-type: none"> <li>a. a specified number of daily flow shares, and</li> <li>b. an entitlement to take a volume of water per daily flow share per day, as determined in accordance with the Barwon–Darling WSP.</li> </ol> <p>The maximum volume of water that may be taken on any day under an access licence with an IDEC is 1 ML/daily flow share, or an amount per daily flow share announced by the Minister in accordance with the Barwon–Darling WSP clause 42 (3).</p> <p>An IDEC is specified on all unregulated river WALs and unregulated river (A Class), unregulated river (B Class) and unregulated river (C Class) access licences in the Barwon–Darling Water Source.</p>
Management zone	<p>An area within a water source in which rules particular to that management zone will apply; for example, daily extraction limits and restrictions on dealings</p> <p>Management zones are defined in the Barwon–Darling WSP</p>
MDBA	Murray–Darling Basin Authority
NRAR	Natural Resource Access Regulator
PEW	<p>Planned environmental water</p> <p>PEW is water committed for fundamental ecosystem health or other specified environmental purposes, either generally or at specified times or in specified circumstances, and it cannot be taken or used for any other purpose.</p> <p>PEW is identified and managed through rules in water sharing plans established under the WM Act.</p>
Regulated river	A river that is declared by the Minister, by order published in the Gazette, to be a regulated river.
Regulated river supplementary water access licence	A supplementary WAL (including a subcategory of such a licence) that entitles its holder to shares of water from a water source that is a regulated river
River	<ol style="list-style-type: none"> <li>a. Any watercourse, whether perennial or intermittent and whether comprising a natural channel or a natural channel artificially improved</li> <li>b. Any tributary, branch or other watercourse into or from which a watercourse referred to in paragraph (a) flows, and</li> </ol>

Term or abbreviation	Definition
	c. Anything declared by the regulations to be a river, whether or not it also forms part of a lake or estuary, but does not include anything declared by the regulations not to be a river.
River section	The water source is divided into river sections as described in clause 6 of the Barwon–Darling WSP.
Schedule 2	Schedule 2 in the Barwon–Darling WSP
Schedule 2A	Schedule 2A in the Barwon–Darling WSP
Specific purpose access licence	<ul style="list-style-type: none"> <li>a. A major utility access licence</li> <li>b. A local water utility access licence</li> <li>c. A domestic and stock access licence</li> <li>d. An access licence of a subcategory of access licence, or</li> <li>e. An access licence of a type that is declared by the regulations to be a specific purpose access licence</li> </ul>
Unregulated rivers	Any river not declared by the Minister in the Gazette as a regulated river
Unregulated river access licences	<p>For the purposes of this manual, ‘unregulated river access licences’ include:</p> <ul style="list-style-type: none"> <li>• unregulated river access licences</li> <li>• unregulated river (A Class) access licences</li> <li>• unregulated river (B Class) access licences, and</li> <li>• unregulated river (C Class) access licences.</li> </ul>
WAL	Water access licence
water available	The volume of water available to unregulated river access licences (including A, B and C class licences) on any given day
works approval	Water supply works approval
Water Source	<p>The whole or any part of:</p> <ul style="list-style-type: none"> <li>a. one or more rivers, lakes or estuaries, or</li> <li>b. one or more places where water occurs on or below the surface of the ground (including overland flow water flowing over or lying there for the time being).</li> </ul> <p>This includes the state’s coastal waters.</p> <p>Each water source referred to in this manual is defined in the relevant water sharing plan.</p>
<i>WM ACT</i>	<i>Water Management Act 2000</i>
WSP	Water sharing plan

## Appendix C – Hydrometric stations used for active management in the Barwon–Darling Unregulated River Water Source

**Table 7: River flow gauges required for active management in the Barwon–Darling**

Gauge number	Gauge name
416050	Barwon River upstream of Presbury
422004	Barwon River at Mogil Mogil
416001	Barwon River at Mungindi
422003	Barwon River at Collarenebri Main Channel
422025	Barwon River at Tara
422001	Barwon River at Dangar Bridge
422026	Barwon River at Boorooma
422027	Barwon River at Geera
422002	Barwon River at Brewarrina
422028	Barwon River at Beemery
425039	Darling River at Warraweena
425003	Darling River at Bourke Town
425004	Darling River at Louth
425900	Darling River at Tilpa
425008	Darling River at Wilcannia Main Channel

## Appendix D – Annual active management reporting and review cycle

Activity	Year for implementing	Year for reporting, review and amendments				
	Implement active management	Report	Consult	Review	Consult	Prepare revised manual (if required)
<b>Responsibility</b>						
NSW Department of Planning, Environment and Industry – Water						
WaterNSW						
NSW Department of Planning, Industry and Environment – Environment, Energy and Science						
Natural Resources Access Regulator						
<b>Timing</b>	<b>Year 1</b>		<b>Year 2</b>			
July						
August						
September						
October						
November						

	Year for implementing	Year for reporting, review and amendments				
December						
January						
February						
March						
April						
May						
June						