

**Draft Western Regional Water Strategy  
Commonwealth Environmental Water Office Submission**

**Regional Water Strategies Public Exhibition 2 Submission Questionnaire**

**Do you agree that these are the key water challenges for the Western region that we need to focus on?**

**Yes** No

**4.1: Improving water security for towns and industries**

1. Promote groundwater desalination for industry and towns  
**Yes** No
2. Seek to increase secure and reliable access to groundwater for towns#  
Yes No (*see comment below*)
3. Investigate managed aquifer recharge feasibility and policy  
**Yes** No
4. Review groundwater extraction limits  
**Yes** No
5. Better manage the Great Artesian Basin  
**Yes** No
6. Assess the possibility of water recycling projects  
**Yes** No
7. Investigate residential and non-residential water use efficiency in towns  
**Yes** No
8. Maintain water related amenities during droughts  
Yes No (*see comment below*)
9. Repurposing Umberumberka Reservoir for recreation  
Yes No (*no comment provided*)
10. Investigate potential pipelines for surface water and groundwater sources  
Yes No (*see comment below*)
11. Modify or renew town weirs#  
Yes No (*no comment provided*)
12. Determine potential for covered off-stream storage#  
Yes No (*no comment provided*)
13. Investigate options to secure water for water for small communities  
**Yes** No
14. Study the resilience of water dependent industries  
**Yes** No

**Do you have any comments on the proposed options identified?**

The Commonwealth Environmental Water Office (CEWO) is supportive of examining a range of options that may improve water security for towns and industries and meet the needs of these communities, which can be particularly challenging during dry times. The environmental (including any impacts to matters of national environmental significance), economic, and social/cultural impacts and benefits of the various options need to be assessed as part of these investigations. Potential impacts on surface and groundwater systems, planned environmental water, implications for the Sustainable Diversion Limit would need to be considered. Facilitated impacts, which are made possible by the action (e.g. increase in growth, development and land use changes etc), would also need to be carefully considered when assessing the options.

Towns and communities along the Barwon-Darling and Lower Darling are reliant on groundwater as an essential supply or to augment supplies. This will become of much greater importance under a drying future climate. Options such as 1, 2 and 10 may result in an increased reliance on or use of groundwater and require careful evaluation to ensure the ongoing sustainability of the resource is not compromised and surface and groundwater dependent ecosystems are protected. Improved understanding of groundwater

processes and sustainable access to groundwater is essential to implementing the existing water sharing plan and options in the strategy that increase reliance on groundwater resources. Further consideration of groundwater options should be informed by the additional work proposed in options such as 4, 5, 21, 26, 35 and 39.

Options such as managed aquifer recharge may support sustainable access to water in some locations, however, further investigation of managed aquifer recharge options would need to assess the potential environmental impacts on both aquifers and surface water systems.

The development and implementation of the Great Artesian Basin Strategic Management Plan to clarify rights and responsibilities, compliance, improve water efficiency and cross-border management and support sustainable management of the Great Artesian Basin is important. Engagement with Aboriginal Nations will be important part of this plan.

Investigating a suite of water efficiency options to reduce demand on potable supplies and reduce extraction from rivers and groundwater systems would be beneficial. Investigation of reuse and recycling options may increase water supply, result in water savings and reduce reliance on town water supplies, river and groundwater systems in some areas. Assessment of impacts on the quantity or quality of surface and groundwater systems would be required. Some reuse and recycling projects may also improve the quality of run-off to the local rivers and streams. Water efficiency and reuse and recycling options may be able to contribute to options such as *Maintaining water dependent amenities during droughts* (option 8).

Piping water can improve delivery efficiency, substantially reducing the volume of water required for transmission from the source to the demand point. However, the economic and environmental costs and benefits of regional and inter-regional pipelines need careful evaluation. The impact on surface and groundwater systems, their associated biota, and ecological processes in both the originating and receiving water sources would require a thorough assessment. Implications for the Basin Plan, including the Sustainable Diversion Limit and planned environmental water also need to be clearly identified and assessed.

#### **4.2 Delivering on Aboriginal people's water rights and improving access to water (Option Group 2)**

15. Cawndilla Creek Watering#

Yes No (see CEWO comment below)

16. Support long-term participation of local Aboriginal people in water-related matters

Yes No

17. Review Aboriginal cultural water access licenses

Yes No

18. Fund water entitlements for Aboriginal communities

Yes No

19. Secure flows for water-dependent cultural sites

Yes No

20. Shared benefit project (environment and cultural outcomes)

Yes No

21. Integrate Aboriginal knowledge into groundwater decision making

Yes No

22. Incorporate Aboriginal history of water and culture in the Northern Basin into water data

Yes No

#### **Do you have any comments on the proposed options identified?**

The CEWO strongly supports the implementation of new arrangements that enable greater participation of Aboriginal communities in water management and these programs should be delivered as a high priority. The CEWO is committed to working meaningfully with First Nations peoples. Our aim is to include First

Nations peoples, values and knowledge in the planning and management of water for the environment. We will continue to build relationships with First Nations' organisations and communities, to learn from and identify ways to support cultural values alongside environmental outcomes.

Where cultural water is likely to be supplied from Lake Wetherell and Menindee weir pool water sources, there is potential for conflict between objectives and local stakeholder groups over diversion of this water.

Delivery of water for cultural purposes must consider both the volume and quality of the water. For example, consideration could be given to water supplied to Morton Boolka during hot dry summer periods, and whether it would provide the amenity and cultural outcomes intended and expected by Aboriginal Communities. Assessment of other local wetland systems may present as more appropriate options to practice their culture and to support cultural tourism opportunities (such as Wetlands in Kinchega Park adjacent to the old Kinchega Homestead which are closer to the Darling River as a water source, closer to town and offer similar environmental values and cultural opportunities).

#### **4.3: Protecting and enhancing natural systems (Option Group 3)**

**Government Commitment 2:** Fully implement the NSW Floodplain Harvesting Reforms in the Barwon-Darling Valley#

Yes No

The Commonwealth Environmental Water Holder (CEWH) has previously made submissions on floodplain harvesting, the most recent to NSW's Select Committee Inquiry into floodplain harvesting, which sets out our position. These submissions can be found here: <https://www.dcceew.gov.au/water/cewo/publications>. It will be critical the NSW government demonstrates in practical terms, perhaps using case studies, how floodplain harvesting will be rigorously measured and monitored to allow effective compliance activities. The CEWO is aware of the compliance challenges of this form of take, which highlights the importance of integrating floodplain harvesting regulation with other rules to protect downstream outcomes.

**Government Commitment 3:** Implement fish-friendly water extraction#

Yes No

The CEWO is supportive of further implementation of this option. Fish friendly water extraction technologies reduce the loss of native fish from waterways and improve the ability to achieve environmental outcomes for native fish from environmental water deliveries and other flows. The measures and technology adopted to mitigate the impact of water infrastructure on native fish (including installation of fish screens on irrigation pump intakes) need to be effective, reliable and reasonably easy to implement, adjust and maintain. The multiple benefits of this option are being realised at many sites where the technology has been implemented.

**Government Commitment 4:** Improving floodplain connections: modifying or removing flood work structures causing adverse impacts#

Yes No

The CEWO supports this commitment on the basis that the negative impacts to downstream connectivity have been considered in the granting of any approvals, and that it is possible to remove unapproved infrastructure that impedes the movement of flows over a floodplain. The Floodplain Management Plan for the Barwon-Darling Valley 2017 identifies areas of the floodplain that are important for flood flow connectivity or contain flood dependent environmental and/or cultural assets and values. The Improving Floodplain Connections Program has identified 110 priority areas (hotspots), which may contain unapproved flood works that impede flood flows in the northern Basin creating social, economic, ecological, and cultural impacts. The CEWO supports modifying or removing flood work structures that are causing adverse impacts and assumes that any approved works have also been evaluated against these potential impacts.

23. Remediate fish passage

Yes No

24. Restore riparian habitat and re-establish threatened fish species

Yes No

25. Remove constraints to enable flows to reach important ecological sites

Yes No

26. Improve protection of groundwater dependent ecosystems

Yes No

27. Consider listing the Menindee Lakes under the Ramsar Convention on Wetlands of International Importance

Yes No (See comment below)

28. Develop and implement technology to create fish refuges

Yes No

29. Recognition of Queensland gifted water

Yes No

**Do you have any comments on the proposed options identified?**

The CEWO supports the projects to address priority barriers to fish passage in the Western Region proposed through the Northern Basin toolkit (option 23). Providing effective fish passage for all life stages is critically important to improve native fish populations in the Basin. Addressing barriers to fish passage through the Barwon-Darling would improve the ability to achieve outcomes for native fish from all water sources including environmental water deliveries and other flows. Operational protocols need to be developed with input from relevant agencies (e.g., DPIE-EES and DPI Fisheries) and implemented to ensure they support effective fish passage. Please also refer to our previous submissions on other NSW Regional Watering Strategies for more detail.

Restoring riparian habitat and re-establishing threatened fish species (option 24) would complement the delivery of water for the environment and other flows in the Barwon-Darling and Lower Darling systems and would work towards outcomes in the Basin Plan and Environmental Watering Strategy. The Barwon-Darling Long-Term Water Plan also describes potential management actions, which may also be relevant for this option.

The CEWO supports effort to remove constraints (policy, physical and operational) to improve flows to ecological assets in the Western Region in order to support effective environmental water and other delivery and improve ecological outcomes (option 25).

The CEWO is supportive of options to improve knowledge and protection of groundwater dependent ecosystems (option 26). This would help improve understanding of the potential impacts to these systems from water resource development, climate change, groundwater extraction and other factors. This work should be considered in implementation of other options including 1,2, 3, 4.

The nomination of Menindee Lakes as a Ramsar site (option 27) is a matter for the relevant land manager/owner. For a Ramsar listing to occur a number of steps are required, including nomination by the relevant state or territory, and the completion of a comprehensive assessment supported by community consultation. Queensland gifted water (option 29) contributes to Basin Plan environmental water recovery targets, but NSW does not recognise the gifted entitlement. This water becomes part of the general flows in the river once it reaches NSW and can be accessed by consumptive users. NSW current position on the protection of gifted water is inconsistent with its Intergovernmental Agreement on Water Reform in the Murray-Darling Basin commitment to protect environmental water. The Queensland Government could have allocated the gifted water for consumptive purposes within the Basin Plan's sustainable diversion limits. The gifted water has the same entitlement characteristics as all other water entitlements recovered by the Commonwealth in Queensland and should be protected to help ensure that the Basin plan environmental objectives are met.

#### 4.4: Managing the impacts of poor water quality (Option Group 4)

30. Review the environmental water allowance rule for the Lower Darling Water source  
Yes No (*see comment below*)

31. Investigate the costs and benefits of river and catchment recovery program#  
Yes No (*no comment provided*)

32. Better integrate strategic planning for land use and water management  
Yes No

33. Analyse gaps in water quality research and modelling  
Yes No

34. Collect water quality data in the Lower Darling  
Yes No

35. Manage groundwater salinity  
Yes No (*no comment provided*)

#### Do you have any comments on the proposed options identified?

Any review of the Lower Darling Environmental Water Allowance (EWA) to broaden its purpose should include consideration of governance, including who is responsible for making the decision to use the allowance and the circumstances and triggers under which it can be accessed. This review could also consider the use of the EWA in a preventative manner to avoid critical incidents by monitoring behaviour of key water quality indicators. Collaboration on the review should include NSW Department of Primary Industries – Fisheries and the NSW Department of Planning and Environment – Environment and Heritage.

The CEWO is supportive of any increase in knowledge of water quality and water flows (option 33) and has conducted its own modelling research on discrete areas around the Murray-Darling Basin. Real-time water quality monitoring key parameters such as dissolved oxygen and temperature would be beneficial during both normal and drought operations and river re-start protocols.

#### 4.5: Making water information more accessible and meaningful (Option Group 5)

36. Better understand water use through data collection and analytics  
Yes No (*no comment provided*)

37. Develop water education and capacity building programs  
Yes No (*no comment provided*)

38. Develop a culturally appropriate water knowledge program  
Yes No (*see comment below*)

39. Improve understanding of groundwater sources  
Yes No

40. Improve information about the impacts of state significant developments and state significant infrastructure on water  
Yes No

41. Review the allocation and accounting framework for surface water  
Yes No (*see comment below*)

42. Review water markets and trade  
Yes No (*see comment below*)

43. Improve cross-border management of flows  
Yes No

#### Do you have any comments on the proposed options identified?

The CEWO supports improving recognition of Aboriginal people's water rights, interests, and access to water. Option 38 and options under 4.2 would help build capacity, support inclusion and real participation of Aboriginal people in water planning and management. Improved understanding of cultural values and traditional ecological knowledge would improve the ability of environmental water managers and river operators to support cultural values and sites with a range of water deliveries.

Whilst our focus is mainly on surface water, we are supportive of improved understanding of groundwater sources (option 39). Improved understanding of groundwater processes and sustainable access to

groundwater is essential to implement existing water sharing plans and options in the strategy that increase reliance on groundwater resources. This is even more important under the climate change predictions.

Any review of allocation and accounting in the Lower Darling (option 41) should acknowledge the significant proportion of entitlements that are held environmental water, and seek to enhance the capacity of the allocation framework to meet environmental objectives while also meeting the needs of third parties. Any detrimental impact on the overall capacity to meet environmental objectives arising from changes to the water management framework would need to be examined and fully mitigated.

In relation to option 42, in general the CEWO supports water market reform initiatives that increases the transparency of water markets to enable all water entitlement holders to be better informed regarding the pricing of water entitlements, water allocations and the trading of water, as well as supporting educating users about the operation of and rules governing water trading. The CEWO does not support any initiative that reduces the ability of water entitlement holders to manage their holdings. Any growth in the use of unused allocations must still comply with the Basin Plan, including the Sustainable Diversion Limits and the protection of planned environmental water.

The CEWO considers option 43 a high priority, particularly protection of all Commonwealth environmental water from Queensland through the Intersecting Streams and the Barwon-Darling. There is now a method to account for held environmental water at the Queensland NSW border agreed by New South Wales and Queensland governments. Protection of held environmental water originating in Queensland through the Intersecting Streams and into the Barwon-Darling would help to improve the cross-border management of flows.

#### **4.6: Improve connectivity across the Northern Basin (Option Group 6)**

##### **A) Do you think these are appropriate objectives for connectivity actions to focus on?**

Yes  No

**Government Commitment 5:** Review the North-West Unregulated Flow Plan rules#

**Note:** there are further questions about this option in section 7 of this questionnaire

Yes  No

There has been significant advancement in our understanding of environmental requirements and our capacity to meet them since the Interim Unregulated Flow Management Plan for the North-West since the targets were first included in water sharing plans in 2004.

Environmental flow targets and associated rule triggers that are based on best available science and have clear, achievable water management pathways are an important step towards restoring the patterns of connectivity necessary for maintaining and improving river system health. Flow targets are a useful surrogate provided they are closely related to environmental requirements through robust scientific study and ongoing environmental monitoring. To this end, targets should be linked to the best contemporary information available, and consideration should be given to alignment with best available evidence:

- Targets should align with long term watering plans, flow ranges and their associated objectives, and consistently apply targets for a specific purpose across management zones.
- Clear documentation and communication of peer-reviewed scientific literature upon which the targets are based should be referenced and available to the public.
- Targets should be subject to revision on a timely basis with new scientific developments and ongoing monitoring of key outcomes e.g., algal suppression.

**Government Commitment 6:** Develop critical dry targets for the Barwon–Darling River#

**Note:** there are further questions about this option in section 8 of this questionnaire

Yes  No

The CEWO supports the objectives of critical flow targets designed to reflect the connected nature of the Northern Murray Darling Basin. We support targets that are based on best available information, and have clear, achievable water management pathways. Where possible, targets should align with existing rules, and any restrictions should be applied fairly and equitably across administrative water management areas. Additionally, targets should:

- Have clear documentation and communication of peer-reviewed scientific literature upon which the targets are based should be referenced and available to the public.
- be subject to revision on a timely basis with new scientific developments and ongoing monitoring of key outcomes.

44. Modify and remove non-town weirs

Yes No

45. Making six of the seven Intersecting Streams free-flowing

Yes No

46. Deliver replenishment flows from the Border Rivers, Gwydir, Namoi and Macquarie valleys

Yes No

47. Review cease-to-pump flow-class thresholds

Yes No

48. Regulate the Barwon-Darling River

Yes No

49. Better protect a range of flows under a changing climate

Yes No

50. Deliver water down the Great Darling Anabranch

Yes No

51. Develop sustainable total daily extraction limits for the Barwon Darling Water Sharing Plan

Yes No

52. Review how the Menindee Lakes are operated

Yes No

**A) Do you have any comments on the proposed options identified?**

Restoring the natural longitudinal connectivity from the tributary catchments of the Barwon-Darling is critical to helping reinstate and maintain ecological resilience, and in supporting many of the ecological functions in both the tributary providing flow, and the Barwon-Darling which receives it. The CEWO is supportive of options that improve connectivity along river and wetland systems and remove impediments to passage of fish and other aquatic biota. This may include removing and modifying weirs and other structures (option 44 and 45). However, CEWO also recognises that some structures may play an important role such as stock and domestic supply, social amenity or other requirements, which would need to be considered in assessment of these options.

The removal of connection flows from tributaries leads to significant impacts to the wellbeing and sustainability of downstream communities and industries, as was seen during the recent extended dry conditions, with fish kills, low water quality and algal blooms occurring across large areas in the absence of flushing flows. The CEWO is supportive of delivering replenishment flows from the tributary catchments (option 46). However, these flows cannot be met consistently by relying on held environmental water alone, or on a regular basis. Relying on held environmental water alone is inadequate and is unlikely to meet replenishment requirements. Held environmental water availability is highly variable and subject to the same allocations and licence conditions as other licences and is also required to meet environmental objectives in northern Basin tributaries. See also response to 7.5 D.

The CEWO considers investigating actions 44, 45, 46, 49, 50, 51 in the list above may provide significant benefit to the outcomes sought from providing more regular connection flows along the length of the Barwon-Darling.

In relation to options 47, 49 and 51, the CEWO is supportive of adaptive management to best account for the variable climatic conditions seen in the Barwon-Darling using best available public information, including any review of cease-to-pump flow class thresholds and IDECs that allow for better protection of water to allow for connectivity to occur along the length of the system. The CEWO would appreciate being part of ongoing review of these thresholds and limits.

The CEWO does not support the action to regulate the Barwon-Darling River (option 48). The scale of operations needed to successfully operate the river through intermittent restarts, to limit cease-to-flow conditions over such a large distance, or to maintain/improve the reliability of supply to extractive users would require a very large headwater storage. Additionally, the intermittent nature of inflows to the system would lead to large system losses associated with storing water long-term. The CEWO considers the environmental impacts of regulating the river greatly outweigh any benefits to be seen to the small number of extractive users in the system.

The Great Darling Anabranch is highly significant in terms of its diverse habitats, flow path for native fish dispersal and threatened vegetation communities. The CEWO welcomes exploration of options that would enable accessing 'dead storage' in Lake Cawndilla or recognising the Great Darling Anabranch as a flow path that could be used for delivery of water to meet consumptive demands in the Lower River Murray (option 50). Such options have the potential to create mutually beneficial outcomes for the environment, Anabranch landholders and consumptive water users, subject to close examination of options and implications. The CEWO is willing to help provide advice on the ecological implications of any proposed changes in management of the Great Darling Anabranch, including linkages with flow patterns and ecological requirements of the inextricably linked Lower Darling river system.

The CEWO is willing to help provide advice on the ecological implications of any proposed structural or operational changes in management of the Menindee Lakes (option 52). We have been involved in the various technical groups investigating options to date. In any operational approach, there should be realistic recognition of northern inflows of environmental water and arrangements established to enable its active use for downstream environmental benefits. Under a changed management strategy, it should not be expected that Commonwealth environmental water is solely required to meet the environmental needs of the lakes themselves. Similarly, environmental water should not be assumed to be used to meet requirements that have been met historically by other means (such as water quality, end of system flows or critical human water needs).

## **5. Other comments about the proposed options**

### **A) Should any proposed options in the draft Western Regional Water Strategy not be shortlisted and why?**

A few options proposed in the draft Western Regional Water Strategy may reduce river flows, reduce connectivity and increase groundwater use. These options may exacerbate risks to the environment and compromise the achievement of environmental water requirements as specified in the Barwon-Darling Long-Term Water Plan, the Basin Environmental Watering Strategy, and the Basin Plan. This could potentially increase environmental demands in the Barwon-Darling River that need to be met by other water. If considered, these options would need to be packaged with mitigation measures, rules and options that help counterbalance these impacts and ensure compliance with the Basin Plan and Sustainable Diversion Limit.

### **B) Should any other options be considered in the draft Western Regional Water Strategy and why?**

The CEWO supports efforts to improve the frequency of the delivery of connection flows, which should include progress to improve or provide protection for planned environmental water within tributaries and

along the Barwon-Darling through existing active management rules. Such protection would allow water for the environment to reach its full potential in delivering benefits during dry times. Protecting and restoring connectivity is an objective of the Basin Plan and an expected outcome of the Basin-wide Environmental Watering Strategy and will continue to be an increasing priority for the CEWO under a drying climate.

## **6. Implementation of the Western Regional Water Strategy**

**Which options should be prioritised for implementation over the next three to five years, and which ones should be implemented in the medium or longer term?**

The CEWO is supportive of the options identified to enhance participation of Aboriginal people in water management as a high priority. The suite of actions would build capacity, support inclusion and real participation of Aboriginal people in water planning and management. The CEWO also recognises that the Traditional Owners were the first managers of Country and that incorporating their culture and knowledge into management of water in the region is a significant step for closing the gap.

All options should be evaluated in terms of their ecological sustainability and economic viability and consider the priorities under the *Water Management Act 2000*. Options that enable environmental outcomes to be achieved from all water sources (e.g. improving fish passage, connectivity options) should be a priority and complement each other. These options support achievement of the environmental objectives/outcomes in the water sharing plans, Long-Term Water Plan and Basin Plan.

We are also supportive of further development of the following actions as a high priority for the reasons outlined above in no particular order of priority:

- Implement fish friendly water extraction and remediate fish passage
- Improving floodplain connections: modifying or removing flood work structures causing adverse impacts
- Fully implement the NSW Floodplain Harvesting reforms
- Improve cross-border management of flows
- Recognise QLD gifted water
- Remove constraints to enable flows to reach important ecological sites
- Restore riparian habitat and re-establish threatened fish species
- Improve understanding of groundwater systems

### **7.1 Key Principles**

**A) Do you agree with the key principles to assess whether the connectivity targets in the North West Flow Plan should be updated?**

Yes No

We support the principles to assess the North West Flow Plan (NWFP) with the exception of the reference to reviewing the need for fish migration flows once fish passage works are complete. Although the NWFP states that the fish passage flow could be suspended once all fishways were functional, it also states that research to improve fish health should be undertaken. The original fish passage target was focused on flooding weirs to promote temporary free movement. We now know that this flow is also of sufficient velocity and timing to promote recruitment, productivity and dispersal, which still require Large Fresh flows consistent with the Barwon Darling Long Term Water Plan.

### **7.2 Riparian Targets**

**A) Do you agree with using the proposed critical dry conditions triggers to replace the existing riparian target?**

Yes No

While we are supportive of the riparian targets in the NWFP and critical needs triggers in principle, we do not support the size of the NWFP flow targets or the lower critical needs targets. In particular, the targets

that only protect water in the very low flow range of the LTWP, and only after extended dry conditions. We recommend that riparian targets be aligned with the instream non woody vegetation objective in the Barwon-Darling Long Term Water Plan.

### **7.3 Algal suppression targets**

#### **A) Do you agree with the proposed updated algal suppression targets?**

**Yes** No

We support these targets based on best contemporary evidence. The NWFP algal suppression target was based on the best available science at time of publication and has now been superseded by a new proposed flow rate and corresponding triggers.

The CEWO is also supportive of the revised 3,000ML/day target, based on more recent work done by Simon Mitrovic et al (2011) in the Lower Darling, which is the flow required for 7 days to breakup and disperse an established algal bloom. We note that 3,000 ML/day was also used as the peak flow to design the hydrograph to successfully resume flow from Menindee Lakes to the lower Darling in 2020.

The CEWO is also supportive of the proposed restriction triggers, based on the earlier work by Mitrovic et al (2006) which identified critical velocities and discharges required to mix the water column within weir pools to prevent stratification and suppress blooms.

### **7.4 Fish migration targets**

#### **A) Do you agree with the proposed updated fish migration targets?**

**Yes** No

The CEWO supports fish migration targets as one component of the flow regime that will contribute to the recruitment, productivity and dispersal of native fish populations. These outcomes are crucial for the Barwon-Darling, but also in the case of species like Golden perch, imperative for maintaining the survival of the species throughout the Basin. We support this option on the basis that it is designed on best contemporary information. However, the CEWO notes that flows of this magnitude will still be required once fish passage is operational to help meet the environmental water requirements of native fish populations. We also note that these targets cannot be met consistently by relying on held environmental water alone.

Functioning fish passage is essential to the health of a river. Biological connectivity between northern Basin, the Menindee Lakes, the Lower Darling and Murray River during critical spawning and migration periods will support native fish outcomes and contribute to improved outcomes in the Barwon–Darling and northern basin catchments. Maintaining the health of fish populations is not solely dependent on the capacity of fish to longitudinally move through the system. Other aspects of fish requirements need to be considered such as creating and maintaining sufficient channel depth at critical times for periods of their breeding cycle, or sufficient velocity to trigger spawning in the appropriate season. Fish flow requirements should be designed to increase the overall likelihood of successful recruitment of fish, productivity and dispersal. We also note that the NWFP fish target is framed around fish passage, it also states that further research should continue on the environmental water requirements for native fish.

### **7.5 Implementing the targets**

#### **A) How do you think the targets and triggers should be implemented?**

When restrictions on extraction are being applied during a severe water shortage, there should be equity between equivalent priorities of use in connected river systems. Under normal operating conditions, the Water Management Act 2000i (sections 5(3) and 9(1)) prioritises water for the riverine environment and basic landholder rights. During a severe water shortage and for the purposes of distributing allocations, critical human needs are prioritised, followed by the needs of the environment (sections 49A and 60(3)). In

the northern Basin for example, if water levels fall below a Menindee Lakes storage target, this could be an appropriate measure of a severe water shortage. In this circumstance, the priorities under the Act ought to be applied consistently to the restrictions on use in connected river systems upstream.

We view the northern Basin as a connected system across jurisdictional and administrative borders. We support the general principles of simplicity and equity: opportunities to (i) simplify the rule set; and (ii) consistently apply restrictions across equivalent licence types throughout the connected northern river system.

Where one rule could achieve equivalent outcomes compared to multiple rules, this ought to be prioritised. This would assist with general understanding, reduced risks of unintended interactions with other rules and allow for simpler enforcement of compliance. However, the CEWO recognises that multiple rules may be required to achieve a range of ecological outcomes. In developing an appropriate rule set, the interaction of rules across the full range of flows should be considered. This includes linking the size, duration and timing of flows to their intended ecological outcome (e.g. riparian targets, LTWP baseflow, A Class thresholds).

**B) Do the benefits of the algal suppression and fish migration connectivity targets outweigh the potential impacts on licence holders?**

Yes No *(no comment provided)*

**C) Are there any additional steps that can be taken to offset potential impacts?**

Yes No *(no comment provided)*

**D) Do you think held environmental water should be used to help meet the algal and fish connectivity targets?**

Yes **No**

These targets cannot be met consistently by relying on held environmental water alone, or on a regular basis. Held environmental water availability is highly variable and subject to the same allocations and licence conditions as other licences. The recent drought demonstrated that relying on general security held environmental water alone to meet connectivity objectives is inadequate. While the connectivity releases during the recent drought played an important role in helping some native fish populations to survive, the volumes available for the Northern Fish Flow were not sufficient to provide connectivity along the length of the Barwon-Darling. It is important to note that held environmental water, is also required to meet environmental objectives in northern Basin tributaries. The assumption that existing planned environmental water provisions, high security held environmental water, and other inflows would be able to meet environmental objectives in tributaries is incorrect. Held environmental water in the volumes currently held are best used opportunistically to supplement other flows.

## **8 Critical Dry Conditions Triggers**

### **8.1 Storage levels in Menindee Lakes**

**A) Do you agree that temporary water restrictions should be implemented when the Menindee Lakes storage level is forecast to drop below 195 GL?**

Yes No *(see comment below)*

The CEWO supports a Menindee Lakes storage level target to prioritise critical needs during a severe water shortage throughout the northern Murray-Darling Basin. This should be applied consistent with the priorities of water access under the Water Management Act 2000. This type of rule would also need to account for connectivity in the Lower Darling. Further work and transparency regarding the storage target is required (e.g. consideration and clarification of how the trigger relates to active storage and the seasonality of when the target is met).

The storages to which the target applies should be clarified. If the storage target is just Lake Wetherell, the 195 GL target could be problematic because Lake Wetherell operating procedures require the operator to periodically draw down water levels to prevent drowning of floodplain vegetation. This could result in perverse outcomes whereby operating rules regularly trigger upstream restrictions.

**B) Do you agree that temporary water restrictions should be lifted when the storage level is forecast to increase above 195 GL or high enough to include 60 GL to restart the river if the Lower Darling has ceased to flow?**

Yes **No**

A single volume target (195 GL) could result in oscillation between restriction and access upstream. Consideration should be given to a higher target coming out of the restriction. If it were designed to be consistent with the 480/640 rule (33% more), then the easing target as the storage rises should be ~260 GL coming out of drought.

## **8.2 Cease-to-flow triggers for implementing and lifting temporary water restrictions in the northern valleys**

**A) Are the locations below the most appropriate places to monitor cease-to-flow conditions in the context of a drought?**

Yes **No**

The most downstream reliable gauges in each tributary should be used to monitor cease to flow conditions as it is the best reflection of system condition. There are significant lengths of river and important environmental assets downstream of the proposed gauges that may require monitoring in the context of drought and lifting temporary water restrictions. Some of the locations may need to be reviewed to ensure that they are fit for purpose. For example, during the last drought the Macquarie River was shortened to Warren so cease to flow conditions occurred downstream of the proposed gauge for extended periods of time. We would welcome the opportunity to work with you ensuring the locations are fit for purpose. We note that as part of the new gauging network there may be additional gauges that may be more viable options over time.

**B) Do you agree that a cease-to-flow duration of 30 days at the below locations is appropriate?**

Yes No *(see comment below)*

The CEWO notes that the 30 days is broadly consistent with the environmental water requirements for cease to flow conditions set out in NSW Long Term Water Plans. CEWO welcomes the opportunity to work with NSW to ensure cease-to-flow durations are appropriate at each location.

**C) Do you agree that the resumption of flow targets below should be used as the trigger for lifting restrictions?**

Yes No *(see comment below)*

We note that the northern valley triggers are interim proposals linked to when the regulated valleys are in Drought Stage 4, and that NSW will continue to research the most appropriate trigger locations and durations. Further information is required on how the triggers were developed and how they would provide connectivity downstream into the Barwon-Darling following a dry spell. We would welcome the opportunity to work with you in refining the triggers.

## **8.3 Wilcannia and Bourke triggers**

**A) Do you agree that water restrictions should be imposed when there is a high confidence forecast of no flow**

Yes No *(see comment below)*

The CEWO supports restriction triggers at these locations as initial triggers for implementing water restrictions. However, we would support moving to triggers based on real time information regarding the condition of refuge pools along the Barwon–Darling between Mungindi and Lake Wetherell, and also in northern tributaries.

**B) Do you agree with the proposed trigger for lifting temporary water restrictions at Bourke and Wilcannia?**

**Yes** No

The triggers for relaxation are consistent with those of the existing resumption of flows rule, and therefore represent a fair, consistent and evidence-based approach. The critical needs triggers for initiating restrictions should also be in line with the resumption of flows rule.

**C) If Menindee Lakes falls below 195 GL, temporary water restrictions will not be lifted until the Lakes are forecast to have enough water to provide up to 12 months supply for human needs and allow the river to be restarted in a way that reduces the risk of water quality issues downstream and fish deaths.**

Yes No (*see comment above in section 8*)

**8.4 Including the triggers in water sharing plans**

**A) Do you think the proposed critical dry conditions triggers should be included in water sharing plans rather than being operated as Section 324 restrictions?**

**Yes** No

The CEWO favours predictable, permanent solutions over temporary restrictions or interim measures, acknowledging the framework should be adaptive and flexible when better information emerges.