

# Locks 8 and 9 Weir Pool Manipulation, Carrs, Capitts and Bunberoo Creeks connectivity and Frenchman’s Creek fish passage

February 2017

The Basin Plan sets a sustainable diversion limit (SDL) for each catchment and aquifer in the Basin, as well as an overall limit for the Basin as a whole. In order to meet the new limits, 2,750 GL of water needs to be recovered Basin-wide. NSW’s share of this “SDL gap” is 1,310 GL, with approximately 965 GL<sup>1</sup> of water recovered to date. For the remaining 345 GL of recovery, NSW is pursuing investment by the Commonwealth Government in a range of projects and programs, with infrastructure projects being prioritised over water buybacks.

This document provides an overview of *the Locks 8 and 9 Weir Pool Manipulation, Carrs, Capitts and Bunberoo Creeks connectivity and Frenchman’s Creek fish passage* (Murray Weirs) supply measure project being proposed by NSW.

The proposal involves an operating rule change and a suite of works and measures that provides a rare opportunity to restore habitat for native fish as the pre-existing creek system has the characteristics required to support all stages of fish recruitment, spawning and self-supporting mature life cycles for Murray cod and golden perch. This will be achieved through increasing weir pool variability, in-channel habitat enhancement and fish passage measures.

The resulting outcome will be the delivery of equivalent environmental outcomes as proposed in the Basin Plan with less water, thus generating a possible Sustainable Diversion Limit (SDL) offset.

## Fast Facts

<b>Location</b>	NSW Lower Murray River
<b>Type of project</b>	Supply measure involving a change to river operation rules which allow greater flexibility in weir pool levels together with works and measures to create greater in-channel fish habitat and passage
<b>Status</b>	Business case submitted in November 2015 and is being assessed by SDLAAC
<b>Estimated SDL adjustment</b>	Potentially 5 GL/year
<b>Related SDL adjustment projects</b>	Implementation of this proposal is not reliant on any other projects. There is however significant interactions between the proposed works and parallel projects at regional sites under TLM and proposed Victorian works based SDL projects along the River Murray. A full understanding of interdependencies across the final package of projects will require MDBA’s modelling of a final package of proposed supply

<sup>1</sup> Information sourced from MDBA website. Includes Commonwealth water recoveries contracted through the Sustainable Rural Water Use and Infrastructure Program (SRWUIP) Infrastructure projects, the South Australian River Murray Sustainability Program (SARMSP) and the Water Smart Australia Program. Estimates do not take into account potential changes as a result of the Northern Basin Review, and proposed changes to the long term diversion limit equivalent factors.

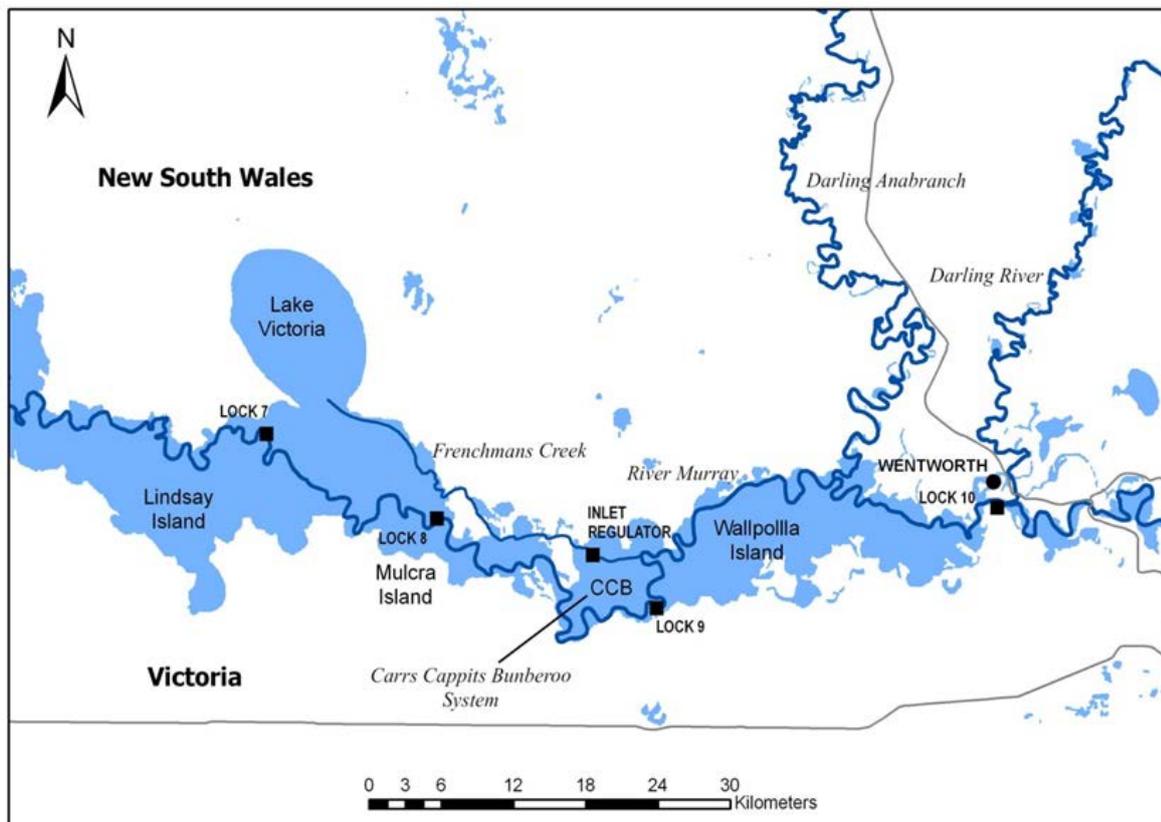
measures in September 2017

## The project area

The program area is in the lowland reaches of the River Murray and Darling Rivers in south west NSW. The project is within the Riverland-Chowilla Floodplain hydrologic indicator site under the Murray Darling Basin Plan, which includes the Riverland Ramsar site and The Living Murray (TLM) Chowilla Floodplain and Lindsay-Wallpolla Islands icon sites (MDBA 2012a).

There are significant synergies between the proposed works and parallel projects at regional sites under TLM and other SDL initiatives. However, the benefits and outcomes assessed under this initiative are separate from the outcomes sought at these other locations.

Figure 1: Project location – Locks 8 and 9 and Lake Victoria



## The proposal

The proposal covers three main components:

- Component 1: Locks 8 and 9 weir pool manipulation.** This operating rule change aims to increase the variability of the weir pool height at both Locks 8 and 9 within and between seasons. The objective is to promote a broader riparian and littoral zone of macrophytes which will increase productivity and habitat quality, promote habitat use by aquatic fauna and waterbirds as well as fish growth and reproduction. An option of holding the weir pool at a lower height over summer also reduces water losses from evaporation. This project builds on the enhanced connections now possible along the River Murray reach from Lock 1 to Lock 15.

Trials over the last four years have proven the operational and risk profile of the proposal. There are current design limits to the extent of surcharge and drawdown achievable and particular attention will be given to the consideration of the functionality of existing fishways on Locks 8 and 9.

- Component 2: Carrs, Capitts and Bunberoo Creeks system connectivity (CCB Creeks).** This environmental works measure involves restoring high flows and hydro-dynamic diversity to creeks isolated by earlier works at Lock 9, by providing regulators and fishways at existing fixed weirs. The project will increase the diversity and quality of aquatic habitat, promote fish populations by providing regionally important spawning and nursery areas and support bird breeding events through habitat and food provision.
- Component 3: Frenchmans Creek fish passage.** This element involves the construction of a fish passage around the inlet regulator between Frenchmans Creek and Lake Victoria. The inlet regulator is one of the last major barriers to fish passage along the River Murray and blocks fish passage upstream from Lake Victoria which is an important breeding site for native fish species. The fish passage will promote connectivity between breeding sites, feeding grounds and migratory routes along the River Murray, effectively generating benefits at a regional scale.

## Ecological Outcomes

It is anticipated that the proposal will result in improvements to Murray cod and golden perch populations. The investment will also provide opportunities to support the engagement of local Indigenous groups in land and water management to meet cultural heritage objectives.

There are significant interactions between the proposed works and parallel projects at regional sites under TLM and proposed SDL initiatives. This proposal has the potential to significantly enhance the environmental outcomes from existing TLM investment in the Lower Murray.

## Risks and Impacts

A rigorous risk assessment was completed as part of the Business Case development. The table below shows a summary of the risks which had an initial rating of high. Once the mitigation was applied the residual risk was low or moderate. Please refer to the business case for the full risk assessment.

Description of threat	Mitigation
<b>Locks 8 and 9 weir pool manipulation</b>	
No high risks were identified	
<b>CCB Creeks System</b>	
Costs exceed approved funds due to errors or emissions or because of costly mitigation requirements	Contingencies factored into cost estimates. Provision for additional modelling is factored into estimates.
Unforeseen delays in project delivery due to flooding	Contingencies for flooding are factored in.
Artefacts are damaged or lost due to construction activities	Cultural heritage approval processes and proactive engagement with Indigenous stakeholders. Small construction footprint at weirs.
<b>Frenchmans Creek fish passage</b>	
Geotechnical related construction risks compromise the project e.g. groundwater infiltration into works area, it will be a deep excavation due to bank height relative to the depth to invert of the lock (around 8 m)	Provision made for geotechnical testing, laboratory analysis and reporting. A suitable construction approach will be adopted to manage these issues.

## Consultation

Components of this project have had community engagement for several years. The Weir pools trial has been undertaken for four years, with pool variability already known to the general community and river users.. The additional works (Carrs regulators and Frenchmans Fish passage) are located on SA Water Land. Consultation will still be required with SA Water and

surrounding landholders with regard to access. A communication program will also be implemented to the general community and river users during the detail design and commissioning stage of the project.

Much of the land affected by the CCB Creek project is traditional Tar-Ru lands. Phase 1 of this project involved early consultation with Tar-Ru Lands Aboriginal Traditional Owners who are providing advice on the impending Tar-Ru Lands Transfer. A Tar-Ru Lands Board of Management will be established under the Barkandji Native Title Group Aboriginal Corporation who has been nominated to take ownership of the Tar-Ru Lands.

## Next steps for adjustment mechanism confirmation

Date	Details
30 June 2017	BOC notification of final approved SDL adjustment package
Late October 2017	MDBA public consultation on proposed SDL adjustment
15 December 2017	MDBA recommend SDL adjustment to Commonwealth Water Minister
February 2018	Amendments tabled in parliament
From March 2018	Commence detailed design Commence construction and commissioning under Commonwealth funding

### More information

Background on the Basin Plan implementation and the SDL adjustment process can be obtained from:

[www.mdba.gov.au](http://www.mdba.gov.au)

DPI Water is the lead agency for the implementation of the Basin Plan agreements within NSW. Reports on NSW SDL adjustment activities reports can be obtained from:

<http://www.water.nsw.gov.au/Water-management/Water-recovery>

### Acknowledgements

NSW DPI is the proponent of this project. NSW DPI Water wishes to acknowledge South Australian Water, the Murray-Darling Basin Authority, Mallee Catchment Management Authority, and NSW National Parks and Wildlife who have all contributed to the development of the Business Case for this NSW SDL adjustment project.

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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (February 2017). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of the Department of Primary Industries or the user's independent adviser..