

Modernising Supply Systems for Effluent Creeks - Murrumbidgee River

March 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 GL¹ 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 *Modernising supply systems for the effluent creeks – Murrumbidgee River* supply measure project being proposed by NSW.

This business case sets out proposals for investment to modernise the supply arrangements for diversions from the Yanco Creek system. Current arrangements involve high flows down lengthy creek systems and result in significant water losses, poor levels of service and disrupted ecosystem functionality. The proposal identifies a series of controls and alternative supply arrangements that will meet the same level of demand, at a higher level of service, with lower losses. The resulting outcome will be the delivery of equivalent environmental outcomes as proposed in the Murray-Darling Basin Plan (Basin Plan) but with less water, so generating a possible Sustainable Diversion Limit (SDL) offset.

Fast Facts

Location	Murrumbidgee River between Narrandera and Jerilderie
Type of project	Supply measure involving updates to infrastructure, improved monitoring and changes to river operation rules which allow more flexibility and control in when water is delivered to the effluent creeks.
Status	Business case submitted in November 2015 and is being assessed by inter-jurisdictional SDL adjustment advisory committee (SDLAAC).
Estimated SDL adjustment	Potentially 10 - 20 GL/year
Related SDL adjustment projects	This proposal is one of the three related SDL-offset initiative being progressed for the Murrumbidgee River System. The others being Computer Aided River Management (CARM) and the Yanco Creek Regulator. Any potential inter-dependencies between this supply measure and other measures cannot be formally ascertained at this time, until a final package of proposed supply measures is identified and modelled by the MDBA.

¹ 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.

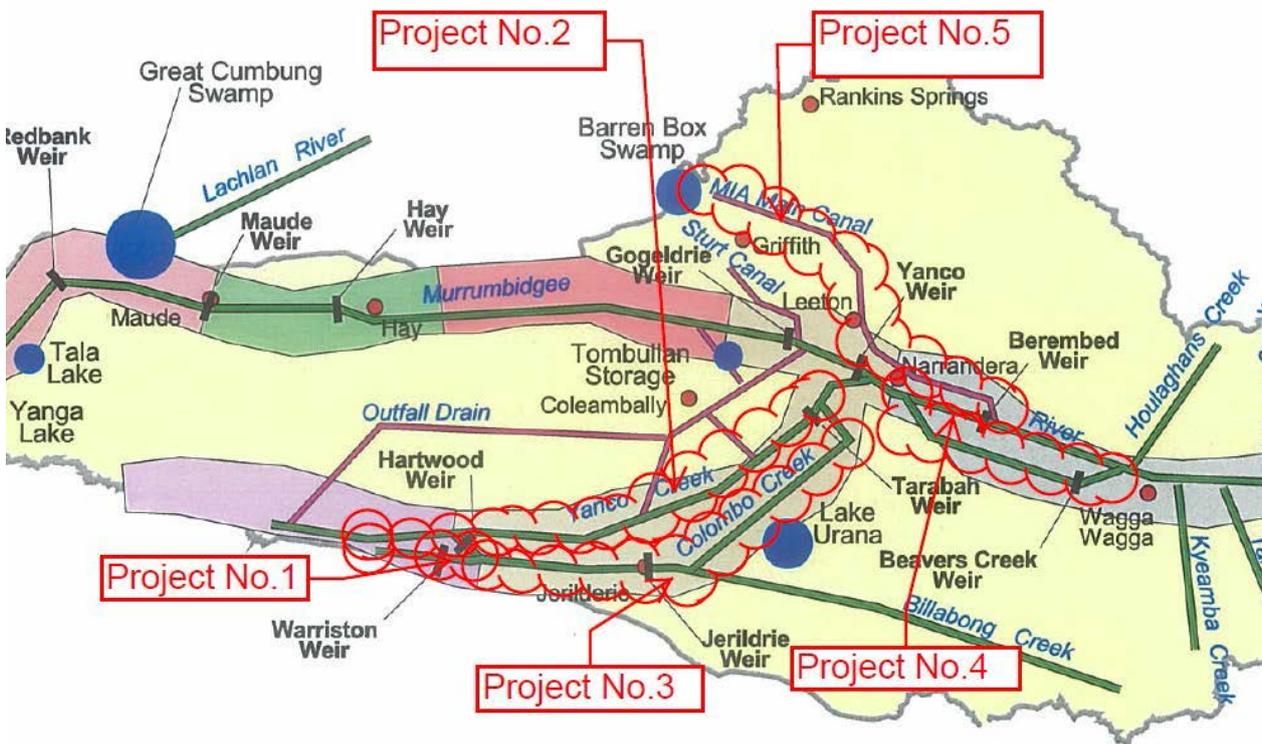
The project area

The project reviewed supply systems for irrigation diversions in five project areas supplied from the Murrumbidgee River between Narrandera and Jerilderie in New South Wales.

- Project Area 1: Forest Creek - between Billabong Creek and Warriston Weir
- Project Area 2: Yanco Creek - from the Murrumbidgee offtake to the confluence with the Billabong Creek
- Project Area 3: Colombo and Billabong Creeks - from the Yanco Creek to the confluence of the Billabong Creek with the Edward River
- Project Area 4: Old Man Creek/Beavers Creek - from the Beavers Creek Regulator to the confluence with the Murrumbidgee River
- Project Area 5: Bundidgerry Creek - from the Berembled offtake to the Murrumbidgee Irrigation supply point just upstream of Narrandera.

This business case focuses on Project Areas 1 to 3. Project Area 4, Old Man's Creek, was not progressed as it was not cost effective, while Project Area 5, Bundidgerry Creek, was identified as technically feasible but expensive to deliver and of marginal value.

Figure 1: The project area for the effluent creeks proposals around Narrandera, NSW.



The proposal

WaterNSW manages the Yanco Creek system to deliver around 110GL/year to 480 licensees along multiple creeks, listed above in Project Areas 1 to 3. The present arrangement involves the great majority of that irrigation supply being delivered the full length of the system from the Murrumbidgee at the Yanco Weir off-take. This involves high flows along 800km of creeks resulting in raised operational surplus and transmission losses. The continuous high 'unseasonal' summer flows also result in poor ecological outcomes. Key aspects of the proposal include:

a) Operational surplus

There are few controls over flows within the 800km creek system and very long order periods, of up to 26 days between releases from the dam and final deliveries to some diverters. As a result, customers place a generic order and WaterNSW maintains high levels of flow in the Yanco system throughout the season to avoid risks of non-supply. The outcome is that flows within the system are greater than would be required to meet actual irrigation demand.

b) Transmission losses

These are exacerbated by running the creeks at a high level, as this enhances evaporative losses from the wider creek width, spillage into flood runners and side billabong channels. The construction of weirs and block banks along the length of the creek system has increased the width of the creeks and extended their length along back flood runners, further increasing the area for evaporation and seepage.

The proposal recommends a number of approaches to improve operational efficiency and generate water savings within the creek system, including through additional monitoring, regulation controls, alternative supplies and operating rules.

This will improve the creek supply system into a more efficient delivery system that will provide enhanced levels of service and environmental and social outcomes.

Ecological Outcomes

The proposed approach will generate environmental benefits including:

- Provide a robust platform for the introduction of an enhanced environmental watering regime as it will reduce the current dominance of unnaturally high diversion flows throughout the irrigation season, allowing greater variability in flows to meet eco-system outcomes; and
- Promote improved fish habitat and movement through the introduction of flows and fishways at weir pools and modifications to block banks on the creeks.

Risks and Impacts

A 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, with the exception of fire risk related to project construction.

Description of threat	Mitigation
Failure to negotiate an Inter Valley Transfer (IVT) would reduce access to supplementary flows.	Implementing a rules based approach will mitigate potential third party impacts.
Failure to reach agreement between relevant agencies and community on an environmental watering strategy and regime.	WaterNSW and DPI Water will continue to lead discussions with other agencies to agree to a consensus outcome.
Construction activities triggering fires that may damage native vegetation and neighbouring crops.	Manage through properly established safety procedures.
Workplace injuries during the construction phase.	Manage through properly established safety procedures.
Stakeholder concern regarding the viability of the project.	Maintenance of active stakeholder engagement program to retain and build community understanding and support.
Construction works disturbing sites of cultural significance.	Develop a Cultural Heritage Management Plan.
Construction works particularly along the creek line will disturb Flora and Fauna	Complete a local level survey once detailed designs have been completed to identify and avoid high risk areas.
Assets constructed are of a sub-standard quality.	Following of standard procurement practice and retention of a bond or appropriate insurance.

Failure to develop an optimal environmental watering regime.	DPI Water and OEH to collaborate over the development of a revised regime.
New Billabong Creek regulator may introduce a new fish barrier.	Vertical slot fishways to be included to be included at all locations where works are to be undertaken.

Consultation

A staged engagement strategy was implemented. This involved:

- Meetings with local WaterNSW staff to take advice and test proposed solutions
- Meetings with key regional and local stakeholders through a series of visits and meetings along the creek system through WaterNSW Murrumbidgee Customer Service Committee and Yanco Creek and Tributaries Advisory Council (YACTAC)
- Meetings with landholders and local councils to test the practical aspects of the proposed approach.

The broad approach and the suite of specific proposals are strongly aligned with the stated objectives of the local community and have their in-principle support.

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, 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

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

This is a joint proposal between NSW DPI Water, and the Victorian Department of Environmental, Land, Water and Planning DELWP. Goulburn-Murray Water, Water NSW, North East Water and North East and Goulburn Broken Catchment Management Authorities have all contributed to the development of the Business Case for this NSW SDL adjustment project.

© State of New South Wales through the Department of Trade and Investment, Regional Infrastructure and Services 2017. You may copy, distribute and otherwise freely deal with this publication for any purpose, provided that you attribute the NSW Government as the owner.

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..