

# Flexible Rates of Fall in River Levels Downstream of Hume Dam

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, 2750 GL of water needs to be recovered Basin-wide. NSW's share of this "SDL gap" is 1310 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 *Flexible Rates of Fall in River Levels Downstream of Hume Dam* supply measure project being proposed by NSW.

This business case proposes to relax the current operating rules for the maximum rate of fall in river levels allowed downstream of Hume Dam due to regulated releases (the six inch rule). 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>	Murray River below Lake Hume.
<b>Type of project</b>	Supply measure involving a change to river operation rules which allow relaxing of current operating rules for the maximum rate of fall in river levels allowed downstream of Hume Dam during regulated releases within the River Murray.
<b>Status</b>	Business case submitted in November 2015 and is being assessed by inter-jurisdictional SDL adjustment advisory committee (SDLAAC).
<b>Estimated SDL adjustment</b>	Potentially 0-10 GL/year. A possible increase of 30 GL in the plausible supply contribution is the total for all projects modelled in the 10 pack collectively.
<b>Related SDL adjustment projects</b>	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.

## The project area

Research suggests that bank slumping from a sharp rate of fall is not a material risk in the reach below Hume Dam. This business case therefore proposes a more flexible approach to the rate of fall allowed at times when the impact of un-seasonal watering is most severe for the Barmah-Millewa Forest and when rainfall rejection events are most likely to occur.

<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.

The proposed rule change would:

- Increase the allowed maximum daily rate of fall at both sites to nine inches (225 mm)
- Within an overall average rate of fall over four days equal to the current constraints
- Apply only during the period from January to May
- Not apply at times of low flows < 12,000 ML/day

The resulting outcome should be a reduction in operational losses and in risks of un-seasonal watering of sites below Yarrowonga Weir.

Hume Dam is the major storage on the River Murray. Water is released from the dam to supply irrigation and environmental customers downstream. There are constraints on the rate at which that outflow can be reduced in order to minimise the risk of the bank slumping below the dam if the water level is reduced suddenly. The current operating rule limits the maximum daily rate of fall:

- At Doctors Point to six inches (150 mm)
- At Heywoods to eight inches (200 mm)

This risk management measure can generate two unintended adverse outcomes:

- It can result in excess water being released from Hume Dam, as dam releases cannot be scaled back quickly in response to a severe rainfall rejection event. If it is not possible to re-regulate that excess water, application of the rule will create a raised operational loss
- The excess flows can then result in un-seasonal flooding of the Barmah-Millewa Forest downstream of Yarrowonga Weir.

Figure 1. Location of control points for release rule



## The proposal

This business case proposes to relax the current constraints on the rate of reduction allowed in regulated releases from the dam. However, this relaxation is a prudent and balanced measure as:

- It permits an increase in the maximum daily rate of fall, but only within an average four day cap set at the current constraints.
- The relaxation only applies during the height of the irrigation season between January and May inclusive, when risks of rainfall rejection events are highest and when unseasonal impacts on the Barmah-Millewa Forest are greatest. This limits any potential increased risk of bank slumping during higher rainfall periods (from June to October) when the river bank is more likely to be saturated.
- The change will only be introduced after completion of the current two-year trial which includes detailed monitoring of bank condition to check for risks of increased slumping.
- Greater relaxation of the current constraints may be possible, however the proposal put forward has been selected as it addresses the key issues identified with the current rule, whilst taking a precautionary approach and minimising the potential for unintended consequences from higher rates of flow reduction.

## Ecological Outcomes

The intention of the proposed rule change is to ensure better integration of environmental demands into the management of Hume Dam. This should increase the level, extent and focus of environmental benefits as were assumed in the benchmark modelling for the Basin Plan.

## Risks and Impacts

A rigorous risk assessment was completed as part of the Business Case development. None of the identified risks met the “high” criteria consistent with the AS/NZS ISO 31000:2009 (as required under the guideline requirements).

## Consultation

Due to the scope and scale of the proposal (operational rule changes), the drafting of the business case did not include a detailed consultation process with local landholders and interest groups. Engagement undertaken to date has involved consultation with key agencies and providing information about the proposal to other interested parties. However it is proposed that following approval of this business case, further consultation will be undertaken with key agencies, local landholders, and other interest groups. In anticipation of this future consultation a stakeholder map is part of the business case.

## 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](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**

This is a joint proposal between NSW DPI, 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.

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