

Questions from Edward Fessey

Have read the Modelling report and have some questions for you, mainly to clarify what and how to respond to the proposed amendments.

1. Can you clarify what BD model has been included in the NBR , and what considerations if any have been made to the modelling in light of the Ministers changes to the Barwon Darling plan in 2012.

The Barwon Darling model version utilised in the NBR and its implications are described in the modelling report (section 2.2.4). The relevant extract from the report is given below.

“The model used for the Northern Basin Review was unchanged from the Basin Plan development version. This model represents 2007/08 level of development and incorporates cap accounting rules of July 2007.

NSW have recently finalised an updated model representing the water sharing rules of the interim water sharing plan. This model was available relatively late in the Northern Basin Review process, hence there was not sufficient time to incorporate the model in the framework and fully assess the flow and diversion changes resulting from these updates.

*As a result, the MDBA version of the model does not include the embargo on diversions of Class B and C licences, and also does not include the water sharing rules of interim WSP, such as limiting take to 300% limit in any water year. Although the updated model was not used as part of the Northern Basin Review, a comparison of two versions of the model indicated only small differences in long term average flow values and environmental flows (see **Error! Reference source not found.**) along the system and confirmed that the use of the water sharing plan model would not have impacted the key findings from the Northern Basin Review modelling.*

Community consultation conducted as part of the Northern Basin Review has emphasised the social and cultural importance of low flows through the Barwon–Darling. Work by the MDBA suggests that rule changes in recent years may have reduced the protection of low flows, but this reduction will not be reflected in the Northern Basin Review modelling results. The Authority have therefore recommended (as part of the ‘toolkit’) improvements to state water management arrangements to safeguard low flows across the North (MDBA 2016).”

2. Given that Cap and compliance to cap is the guiding principle in the model, how is it that 16 of the last 17 Cap reports in the Barwon Darling did not balance and only balanced out when the Lower Darling was included?

Ed we may not of quite understood your point. We have prepared a quick response but if we have missed the point please give Matt Coleman a call on 02 -6279 0468.

The Barwon-Darling model used in the NBR used a capping mechanism (i.e. volumetrically limited diversions) to ensure the SDL was met over the 114 year historical climate sequence.

Into the future the SDL will be enforced by a Barwon-Darling water sharing plan that, in order to be accredited by the MDBA, will need to demonstrate that the SDL will not be exceeded over the 114 year historical climate sequence.

3. Considering this line ,that Cap is king, and that the high jinks now possible in the Barwon Darling where temp trade between reaches and all sorts of inter pumping class trade is possible, and that none of this is modelled (Brewsher) . How many times did MDBA run the model to find movement for the 6000 SFI in the BD?

Nine whole of North scenarios (in addition to baseline and without development model runs) testing settings around environmental water recovery and use informed the Authority's recommended 320 GL recovery volume. All Basin Plan model scenarios (including the 'current recovery' 278 GL scenario) showed an increase in the frequency of 6,000 ML/d events compared to baseline conditions.

However, MDBA acknowledge that the Barwon–Darling model used for Basin Planning purposes does not include some of the more recent changes in water sharing arrangements in this system, and that this may impact the achievement of low flows. For this reason, MDBA have identified the protection of environmental water as part of the toolkit, and made the recommended change from 390 to 320 GL conditional upon States addressing the toolkit issues.

4. Considering that Wise determined the increase in actual low flow interval and therefore this is a key indicator of longitudinal connectivity since Cap was introduced. How does the Authority propose to explain that it considers 6000 SFI as a key low flow indicator?

The justification behind the parameters of SFIs is described in the document linked below. See section 5.1 specifically for information on longitudinal connectivity.

<http://www.mdba.gov.au/publications/mdba-reports/assessment-environmental-water-requirements-northern-basin-review>

5. The CB modelling appears to be robust but I would suggest that some very significant massaging has taken place in the environmental watering space to drop the number there. There is no evidence that you can do more with less. What is the evidence to prove this?

The hydrological analysis (and associated SFI results) in Section 6 show that implementing targeted recovery (targeted both by location and license type) can enhance the effectiveness of recovered water in the Condamine-Balonne. Targeted recovery has therefore been identified as a 'toolkit' measure.

The outcomes achieved in practice will depend on the future pattern of water recovery and, if water is recovered upstream of Beardmore Dam, it will also depend on the mechanism adopted to protect recovered water from extraction through the Lower Balonne.

6. Recovery of sleeper licences, currently they are treated as active , yet the physical water is in the river and if recovered it is still in the river so how is that considered in the model?

The recovery of sleeper licences provides certainty that this water will remain in the river system to achieve desired outcomes. If these entitlements were not recovered, they could be traded (temporarily or permanently) to other users in the system, reducing flows through the system.

7. Considering that there has been 10 years since any work on private storages , interceptions etc , has there been any provision made in the model for reduced yield into the system ?

No, the inflows are the same for all scenarios. Rainfall is based on historical climate data (114 years, 1895-2009), and the rainfall-runoff model is calibrated to the 1970 to 2006 period. This period was chosen by CSIRO as a compromise between a shorter period (which would better represent current development) and a longer period (that would better account for climate variability).

This is one of the issues underlying the determination that the models are considered to be robust when comparing scenarios, but are less robust when used to predict future outcomes. That is, they provide a reliable indication of net change, not gross change.

8. Noting the heavy qualifiers in about Downstream deliverability in 9.3, I would have thought those should have been front and centre of the Ex report.

Pages 9–11 of the executive summary provided an overview of the deliverability issue as one of the key assumptions underlying the modelling work. The comments on downstream deliverability in section 9.3 of the modelling report provide a more detailed description.

Both reports make the same two core points, namely that coordinated watering would provide environmental outcomes more efficiently, but the level of coordination that can be achieved in practice is highly dependent on future investment in enhanced tools and practices. A point also covered in the toolkit.

9. The downstream interests tell me that irrigation interests got to look at the modelling last year when NBAC were denied access. Is that correct?

MDBA's standard practice throughout the Northern Basin Review was to expose all modelling results to NBAC at the earliest opportunity, and to do so before revealing results to the wider community. We are not aware of any time at which this process was not followed.