

Northern Disclosure

Inconsistencies in the Murray Darling Basin Authority's Northern Basin Review

The MDBA review recommends a major reduction in water recovered from the Northern Basin. Estimates of the impact of such a reduction on downstream users such as South Australia have changed dramatically, varying between 20 GL and 4 GL, but with minimal disclosure of working or reasoning.

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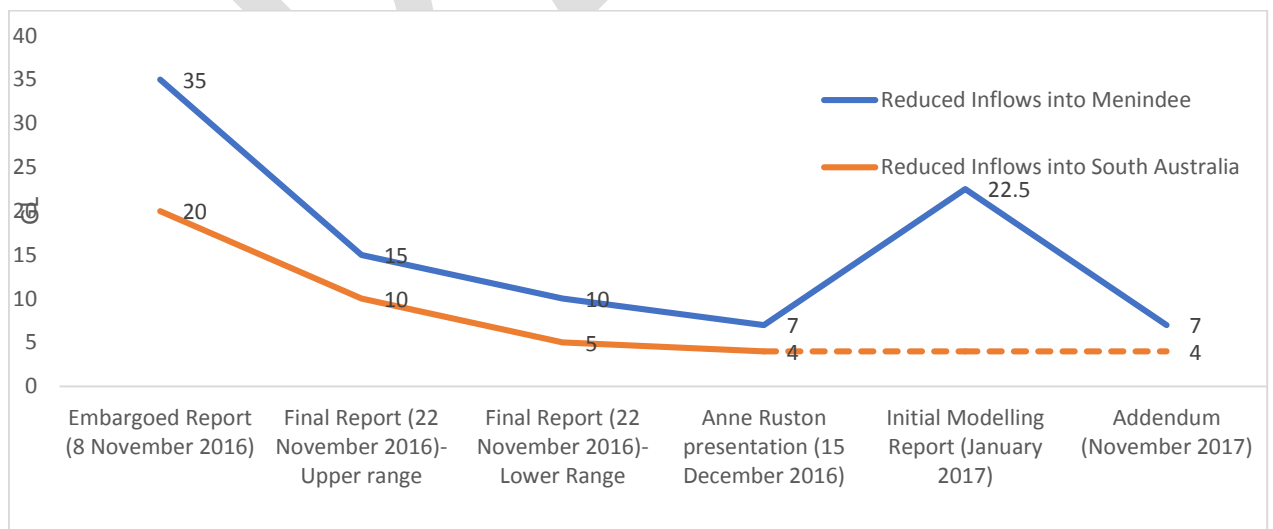
Summary

The Murray Darling Basin Authority (MDBA) is proposing a major amendment to the Murray Darling Basin Plan based on its Northern Basin Review, conducted over four years. The amendment would reduce the water recovery targets for the Northern Basin from 390 GL to 320 GL per year, a reduction of 70 GL.

This 70 GL reduction will impact how much water is available for downstream users and the environment in South Australia and also Menindee Lakes and the Lower Darling River, the source of Broken Hill’s drinking water. Estimates of how large this impact will be have been changed many times, but the justification for these changes is unclear.

Initial versions of the Northern Basin Review estimated the impact on Menindee Lakes and South Australia at 35 GL and 20 GL respectively. Such a large impact on South Australia was rejected by the South Australian Water Minister. The estimated impacts revised down to under 10 GL just days later, even though the Northern Basin Review had taken four years to complete. Further revisions took place in the following year:

Figure 1: Estimates of impacts on flows into Menindee Lakes and South Australia under Northern Basin Review



After spending four years on better science, MDBA changed the end of system numbers several times in the final weeks of the Northern Basin Review and again in the months following. The reasons for these changes and the working behind them are unclear and aren't publicly available. Importantly, there are no differences in other numbers published by the MDBA, which might justify the reduced impacts on the end of system flows. Whilst the impacts on South Australia were claimed to be reduced, no upstream data was changed. Without clarification, they appear to be changed to avoid objections from South Australia. The reasoning and working behind the changes should be fully transparent to give all stakeholders confidence in the work of the MDBA and the process of the Basin Plan.

The amendments to change the Sustainable Diversion Limit (SDL) for the Northern Basin are currently the subject of a disallowance motion in the Australian Senate. Given the importance of this issue for the Basin Plan and the lack of transparency around the impacts on downstream stakeholders, the amendments to the Basin Plan should be disallowed by the Senate in its current form.

Recommendation: That the Senate support the disallowance of the Basin Plan Amendment Instrument 2017 (No. 1).

Introduction

The management of the Murray Darling Basin (MDB) has been a major feature of Australian politics and policy on water, agriculture, regional development and the environment for many years. The Murray Darling Basin Plan was made in November 2012, which sets out limits – known as Sustainable Diversion Limits (SDL) – on the water that can be extracted out of the Murray-Darling Basin for consumptive use. It also sets out targets for water to be purchased for the environment.

The MDBA acknowledged that the science underpinning the SDLs in the Northern Basin was inadequate and committed to review the Northern Basin SDLs based on better science. That process was the Northern Basin Review (NBR), a four year project (2012-2016) undertaken by the Murray Darling Basin Authority (MDBA) and advised by the multi stakeholder Northern Basin Advisory Committee.

The Northern Basin covers a huge area across New South Wales and Queensland, and includes the Barwon Darling River and its eight tributaries, from the Paroo in the north-west to the Macquarie in the south-east. The Northern Basin supports major irrigated and dry land agricultural industries, as well as significant environmental areas such as the Menindee Lakes, Narran Lake and the Macquarie Marshes. Major towns, including Broken Hill, Bathurst, Tamworth and Dubbo rely on the northern basin for drinking water, and water from the northern Basin contributes to many industries and communities in Queensland, New South Wales, South Australia and northwest Victoria.

The SDL for the Northern Basin is an annual average of 3,436 GL. The corresponding water recovery target under the Basin Plan was set at 390 GL. This water would be returned to the river to improve ecological health. The MDBA released the NBR report in November 2016, and recommended that 320 GL instead be returned to the river to reduce social and economic impacts on industries and communities in the Northern Basin, a reduction of 70 GL.

A lower water recovery target for the Northern Basin means less water is available for downstream users and the environment. However, 70 GL less recovered from the northernmost parts of the basin does not mean 70 GL less flowing into South Australia, as evaporation, seepage and use reduce the amount of water along the way. About 40% of the water in Menindee Lakes evaporates each year, so the water into South Australia (that is, outflows from Menindee Lakes) would typically be 50 – 60% less than the inflows into Menindee Lakes.

This report does not address the merits of the NBR recommendation to change the water recovery target. Rather, this report focuses on MDBA and government statements of the impact of the 70 GL reduction of water recovery on South Australia and the Menindee Lakes region. Their estimates have changed significantly following the completion of the NBR and its initial presentation to the Murray Darling Basin Ministerial Council.

This is not simply a matter of upstream versus downstream, or of irrigation versus the environment. This is about process, transparency and accountability in the management of the MDB. Confidence in water management and the implementation of the Basin Plan is at a very low point after allegations of water theft and poor compliance were aired on Four Corners and subsequent media reports.

Confidence and transparency in the MDBA and its processes are important for all stakeholders. Real people's decisions are made on the basis of the MDBA's estimates. Their estimates affect personal and business decisions. MDBA estimates affect the costs of finance to all water users and therefore a large part of Australia's food and fibre industries.

For all of these reasons, the MDBA has a statutory requirement to use the "best available science". In this report we outline several occasions where MDBA figures appear to be based on convenience rather than science and transparent analysis.

The many versions of the Northern Basin Review

The first version of the NBR report dated 8 November 2016 was distributed to Basin governments prior to its public release. That report estimated that the 70 GL recommended reduction in water recovery target would result in 35 GL less flowing into Menindee Lakes and 20 GL less flowing into South Australia.

At time of writing in February 2018, those impacts had been revised down to 7 GL less into Menindee Lakes and 4 GL less into South Australia, based on a modelling report released in November 2017. Since the embargoed report, five revisions to the end-of-system numbers have been made. None of the five revisions have outlined the methodology by which these estimates were made.

The following sections outline the chronology of the different estimates of the impact on the end of system flows from the recommended reduction in the Northern Basin water recovery target.

8 NOVEMBER 2016

Menindee Lakes reduction – 35 GL
SA reduction – 20 GL

The Australia Institute has seen an embargoed version of the NBR dated 8 November 2016,¹ which says the 70GL reduction of the northern Basin's water recovery target would reduce the inflows into Menindee by 35GL and inflows into South Australia by 20GL.

18 NOVEMBER 2016

Menindee Lakes reduction – 20 GL
SA reduction – NA

The NBR was presented to the Murray-Darling Basin Ministerial Council on Friday, 18 November 2016. The Agenda papers for that meeting, seen by The Australia Institute, address the proposed changes to the water recovery target and downstream impacts.² The papers include an estimate that long term average flows into the Menindee Lakes would be

¹ MDBA (8 November 2016), *The Northern Basin Review* (Embargoed)

² MDBA (18 November 2016), *Murray-Darling Basin Ministerial Council: Basin Plan amendments including Northern Basin Review*

around 170GL. The proposed new sustainable diversion limits would reduce this by an estimated 20GL.

It is not clear whether this was a change of numbers in the NBR from 35 GL to 20 GL for the reduction to Menindee Lakes, or whether the wording in the agenda papers was imprecise.

South Australian Water Minister, Ian Hunter was reportedly concerned at this outcome and opposed such an impact on South Australia.³

21 NOVEMBER 2016

Menindee Lakes reduction – 5-10 GL and 7-10GL SA reduction – 7 GL and 5GL

MDBA presented the final Northern Basin Review to the Northern Basin Advisory Committee (NBAC) on the following Monday 21 November 2016. MDBA initially presented the reduction of flows into Menindee and South Australia as 5-10GL and 7GL respectively.

This 5-10 GL claim is unusual as while hydrological modelling is imprecise, model outputs are typically presented as one number, rather than as a range.

NBAC members say that the committee questioned the numbers in the MDBA presentation, upon which a senior MDBA executive directed a policy officer to change the numbers in the presentation to 7-10GL into Menindee and 5GL into South Australia in the presence of the NBAC members.⁴

At the time MDBA explained the original numbers as a simple mistake. However, this is very unlikely. After four years of analysis based on best available science, the MDBA staff must have known these figures intimately. It would be extraordinary for a mistake like that to be made.

22 NOVEMBER 2016

Menindee Lakes reduction – 10-15 GL SA reduction – 5-10 GL

The Northern Basin Review Report was published on Tuesday 22 November 2016, the day after it was presented to NBAC.⁵ The impact to South Australia was reported as 50-75% lower than was stated in the embargoed copy of the report released to partner governments two

³ Long (18 November 2016) *South Australia Water Minister Ian Hunter delivers expletive-riddled tirade at other ministers*, <http://www.abc.net.au/news/rural/2016-11-18/ian-hunter-delivers-expletive-tirade-on-murray-darling-plan/8037710>

⁴ Reported to The Australia Institute by NBAC Chair, Mal Peters and committee member Ed Fessey

⁵ MDBA (22 November 2016), *The Northern Basin Review*

weeks earlier. The reduction of flows into Menindee Lakes and South Australia was reported as 10-15GL and 5-10GL respectively (page 31).

Despite such an important change in estimated impacts on South Australia, there are no other changes between the embargoed report of 8 November 2016 and the final report of 22 November 2016, apart from minor edits.

Some stakeholders and NBAC members refused to submit a response to the northern Basin review until modelling reports were published. The delay in publishing begs the question as to whether these reports existed at the time the review was released. MDBA did not produce a modelling report to support their final statement on the impact on flows into South Australia until November 2017 – 12 months after their initial recommendation.

Importantly, the water recovery targets for each valley are identical in both the earlier embargoed copy and the final NBR. That is, there are no differences in any other numbers which might justify the reduced impact on the end of system flows. While the impacts on SA were claimed to be reduced, no upstream data was changed, leading to the concern that the impacts were only reduced to pressure SA to support the measure.

30 NOVEMBER 2016

Menindee Lakes reduction – <10 GL SA reduction – NA

Following a stakeholder briefing by the MDBA on the NBR, the Environmental Defenders Office NSW (EDO NSW) emailed a member of the MDBA executive on 24 November 2016 and asked for the MDBA to:

provide more specific information about the mix of entitlements the Commonwealth is planning on purchasing (that is, would need to purchase) in order to minimize the impact on inflows into Menindee Lakes to under 10GL/year?

MDBA replied (30 November 2016):

*Compared to the existing 390GL benchmark, the 320GL recovery pattern provides flow through the Barwon-Darling and into Menindee Lakes more efficiently. Therefore, although the difference is 70GL, the change in Menindee inflows **is less than** 10GL (Emphasis added).*

This is largely because less water is recovered from those catchments with a relatively low level of ‘downstream connectivity’ – that is, those catchments with a lower ability to pass water downstream.

Despite the claim of greater efficiency due to lower connectivity, the MDBA provided EDO NSW with the same valley water recovery targets that were published in both the embargoed report and the final Northern Basin Review report. That is, there was no change in the level of downstream connectivity to justify the changed impact on Menindee flows from 35GL in the embargoed report to 10-15GL in the final report or to this latest estimate of less than 10 GL.

15 DECEMBER 2016

Menindee Lakes reduction – 7 GL ***SA reduction – 4 GL***

Assistant Minister for Agriculture and Water Resources Anne Ruston addressed landholders and community groups in South Australia during the week ending 15 December 2016. She presented the proposed Northern Basin Review amendments that would reduce flows into Menindee and South Australia.

Several attendees claim the Assistant Minister reported the impacts on Menindee Lakes and South Australia as 7GL and 4GL respectively. MDBA did not produce a modelling report to support these figures until 11 months later – see below.

JANUARY 2017

Menindee Lakes reduction – 22.5 GL ***SA reduction – NA***

The MDBA published the *Hydrologic Modelling for the Northern Basin Review* (initial modelling report) in January 2017, three months after the end of the Northern Basin Review. Hydrological reports describe how models are developed and used to support policy decisions. They are critical for the transparency of SDL determinations and other policy decisions.

MDBA extended its period of public submissions on the Northern Basin Review, because the initial modelling report was not available until less than two weeks before the original submission deadline, and several stakeholders complained about its absence. MDBA is required to provide an eight week submission process, by law.

That initial modelling report discussed nine different modelling scenarios (B to J) that were undertaken to inform their recommendation on the Northern Basin Review. However, the report did not describe a model run that supported the final numbers quoted by MDBA:

This report describes the model scenarios that were provided as an input to the Authority triple-bottom line decision making process. The 320GL option recommended

by the Authority is not provided as a model scenario in this report, but most aspects were drawn from existing scenarios. (Page 3)⁶

The initial modelling report is not explicit on the impact of water recovery scenarios and the impact on flows into South Australia or Menindee. The report says:

The first scenario completed for the NBR was Scenario B (390GL; a fully implemented Basin Plan under its current settings).

390GL scenario B (model run 1089) has long term average inflows into Menindee of 1,894.1GL (page 104).

320GL scenario E (model run 1112) is the 320GL model run quoted the most in the initial modelling report. The long term average inflows into Menindee for that model run are 1,871.6GL.

The difference between the Menindee inflows for the 390GL scenario B (1089) and 320GL scenario E (1112) is 22.5GL.

NOVEMBER 2017

Menindee Lakes reduction – 7 GL SA reduction – 4 GL

MDBA published the *Hydrological Modelling for the Northern Basin Review – Interim Decision Scenario Addendum* (addendum) in November 2017, twelve months after the release of the Northern Basin Review and ten months after the initial modelling report. The addendum introduces a tenth modelling scenario K, which was not referred to in the initial modelling report published in January 2017. The addendum says:

this scenario had been completed and results were presented to the Authority prior to the release of the recommended change to Northern Basin settings in November 2016. (Page 1)

There is no explanation why the scenario was not included in the initial modelling report in January 2017.

This report also describes that the recommended reduction in the water recovery target of 70GL would impact flows into Menindee and South Australia by 7GL and 4GL respectively. This has been determined by using a 390GL and 320GL model run that were not referred to in the initial modelling report (model runs 847 and 1117 respectively).

The addendum explains why the comparison of Menindee inflows was based on the 390GL 847 model run:

⁶ MDBA, *Hydrologic Modelling for the Northern Basin Review*, January 2017

The SDL adjustment benchmark scenario was chosen for this comparison because this is the extant (as of late-2016) MDBA-State-Commonwealth agreed scenario representing Basin Plan 2012 settings.

The report does not explain why the 390GL scenario B described in the initial modelling report as representing the Basin Plan under its current settings was not used instead. This is important as the different model runs produce different results for both 390 GL and 320 GL scenarios, as summarised in Table 1 below:

Inflows into Menindee	Initial Modelling Report (Jan 2017) (GL)		Addendum Modelling Report (Nov 2017) (GL)	
390GL model run	Scenario B (1089)	1,894.1	Model run (847)	1,877
320GL model run	Scenario E (1112)	1,871.6	Scenario K (1117)	1,870
Difference in Menindee inflows		22.5		7

It is important to understand what this table signifies. These model runs are being used to justify changes to an important legal instrument, the Murray Darling Basin Plan. It appears as though the proposed amendments to the Basin Plan are based on one model run, but the impact of those amendments are based on a different model run that was not used in the analysis to support those amendments.

SUMMARY OF CHANGES

The following graph shows the MDBA statements over time on the impacts on flows into Menindee Lakes and South Australia as a result of lower water recovery in the Northern Basin.

Figure 1: Estimates of impacts on flows into Menindee Lakes and South Australia under Northern Basin Review

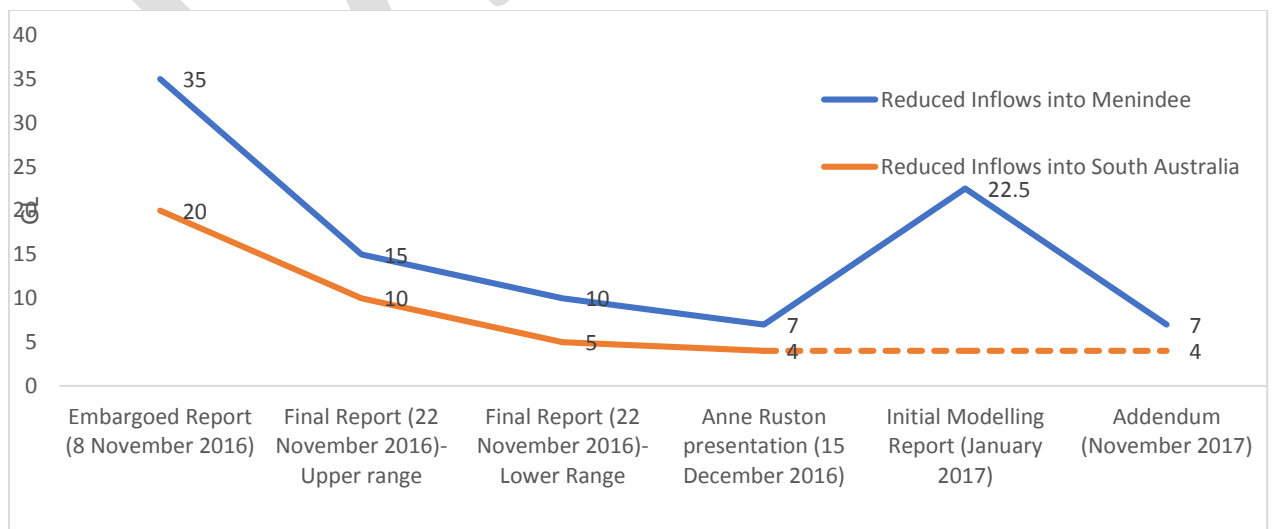


Figure 1 shows that the estimated impact on Menindee Lakes and South Australia has varied wildly between different versions of the NBR and different statements based on it. None of these has been explained by the MDBA or responsible ministers.

CONCLUSION

After spending four years on better science, MDBA changed the end-of-system numbers several times in the final weeks of the Northern Basin Review and again in the months following. The reasons for these changes and the working behind them are unclear and aren't publicly available. Importantly, there are no differences in other numbers published by the MDBA, which might justify the reduced impacts on the end of system flows. Without clarification, they appear to be changed to avoid objections from South Australia. The reasoning and working behind the changes should be fully transparent to give all stakeholders confidence in the work of the MDBA and the process of the Basin Plan. Given the importance of this issue for the Basin Plan and the lack of transparency around the impacts on downstream stakeholders, the amendments to the Basin Plan should be disallowed by the Senate in its current form.