

Rural and Regional Affairs and Transport Legislation Committee

ANSWERS TO QUESTIONS ON NOTICE

Agriculture and Water Resources Portfolio

Hearing: Additional Estimates, March 2018

Question Number: 158

Division/Agency: Murray–Darling Basin Authority

Topic: Modelling

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Senator GALLACHER asked:

Senator PATRICK: Can you please provide the committee with a detailed explanation of how we got from 20; what modelling took place between there, if any; and any decisions that were taken that got us between the 20 and the four, and the other points within?

Mr Binning: I'm happy to take that on notice.

Answer:

If the Northern Basin amendment were adopted, modelling anticipates that it would result in 7 GL/y less inflow to Menindee Lakes and 4 GL/y less flow to South Australia, compared to the 2012 option. These numbers are based on the comparison between the 390 GL scenario (2012 Basin Plan settings) and the '320 GL + toolkit' scenario. That is, the difference in flows is the combined result of two changes: 70 GL less recovery and the introduction of a set of 'toolkit measures'.

The toolkit measures are essential for the achievement of the relatively small change in downstream flows. The measures will provide improved water management practices in the Northern Basin (such as the coordinated use and protection of environmental water) that will largely mitigate any reduction in downstream flows resulting from the 70 GL reduction in Northern Basin recovery. Furthermore, these measures will improve the social, economic and environmental outcomes of the Basin Plan.

Some of the model scenarios completed by Murray-Darling Basin Authority (MDBA) represented the toolkit measures. Other scenarios included no toolkit measures, or sometimes only a partial representation. These decisions were not accidental — each scenario was carefully designed to answer a specific question posed by the Authority as part of their decision-making process. Interpreting the model results therefore requires appropriate use of the available model results. The appropriate comparison of the 2012 and 2017 Basin Plan settings is made by comparing the 390 GL (2012 Basin Plan settings; model 971) to the '320 GL + toolkit' scenario (model 1117).

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Draft MDBA reports from the 8th and 22nd of November 2016 contained initial estimates made prior to the completion of the 320 GL + toolkit scenario. The first estimate (20 GL/y to SA) did not include the benefits provided by the toolkit; the second set of numbers (5 to 10 GL/y to SA) included an estimate of the toolkit benefits, but the modelling process was still going through its final quality assurance process.

A number of other estimates that have been reported in the media (including by the Australia Institute) relate to earlier scenarios and options considered by the Authority. These comparisons do not reflect the 2012 or 2017 proposed Basin Plan settings — both scenarios were completed as part of the Northern Basin Review to inform the Authority’s decision-making process. The list of whole-of-Northern Basin model scenarios completed by MDBA for the review is given in the table below.

The final numbers (7 and 4 GL/y to Menindee and SA respectively) were included in the addendum to modelling results published in November 2017. Figure 1 below shows a chart from a report released by the Australia Institute annotated by the MDBA while Figure 2 shows, in a similar format, how the MDBA would describe the refinement of estimates of downstream impacts over time.

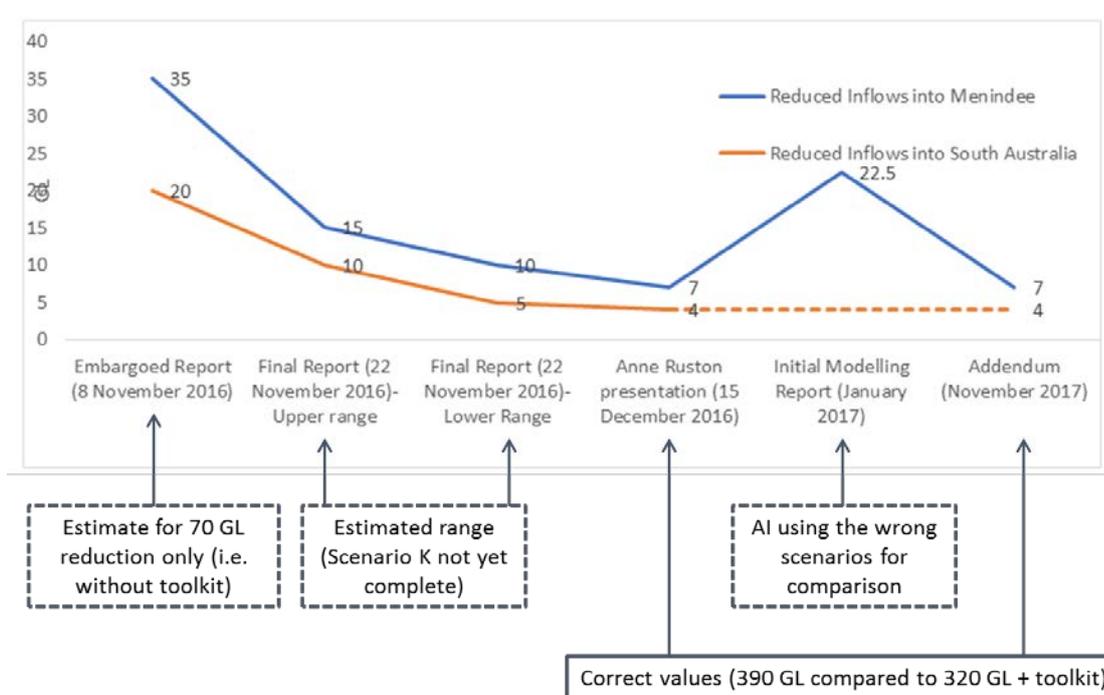


Figure 1 Chart from Australia Institute report "Northern Disclosure" annotated by the MDBA

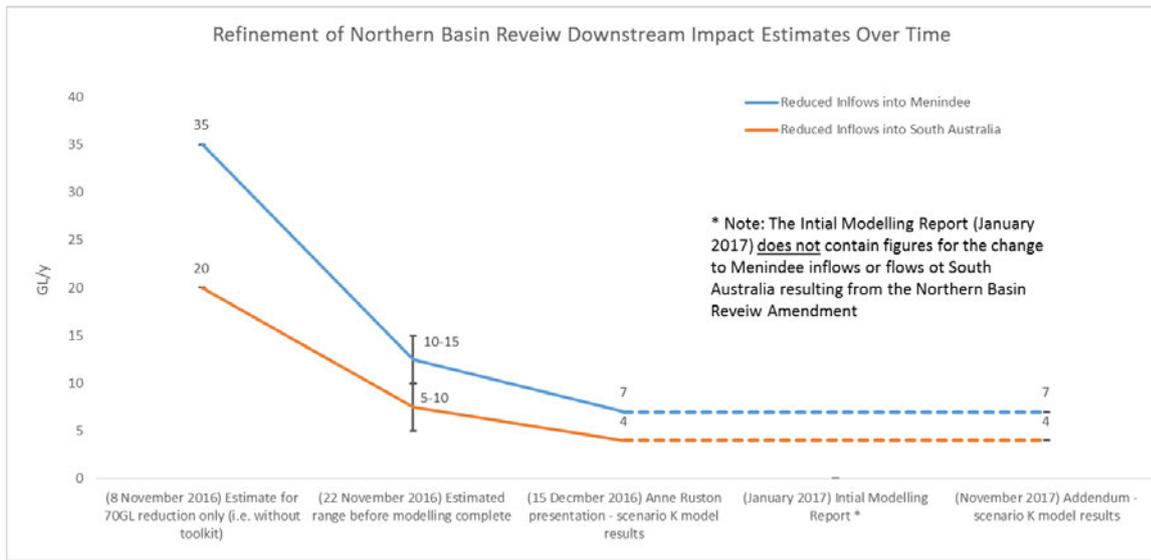


Figure 2 MDBA chart of progression in estimates of Northern Basin Review downstream impacts

Category	Scenario	Run Number	Northern Basin Recovery (GL)	Toolkit ¹ Modelled?	Purpose of Scenario
Foundation Scenarios	Without Development	844	—	N/A	River system without human development (such as towns, dams, weirs, extraction) — estimate of the 'natural system', but without accounting for land use changes
	Baseline	845	0	N/A	Representation of water sharing arrangement prior to the Basin Plan (i.e. at 30 June 2009)
	Benchmark	971	390	No	MDBA-State-Commonwealth agreed scenario representing 2012 Basin Plan settings in the Northern Basin
SDL exploratory scenarios (2015/16)	D	1113	278	Partial (e-water coord)	Current water recovery (as of December 2015)
	E	1112	320	Yes	Initial testing of outcomes from additional water recovery
	B	1089	390	Yes	
	A	1108	415	Yes	
Alternative Recovery and Management (2015/16)	G	1111	320	Partial (e-water coord)	Realignment of recovery to a pro rata (by catchment) distribution
	C	1114	350	Yes	Targeted 100 GL Condamine–Balonne recovery
	H	1110	390	Partial (targ recovery)	Testing the difference in outcomes between a coordinated (i.e. future) water delivery and not coordinated (i.e. current) operating practices
Refined Scenarios (Apr – Dec 2016)	J	1115	321	Yes	First scenarios bringing together all learnings from the NBR, testing recoveries 320 – 345 GL
	I	1103	345	Yes	
	K	1117	320	Yes	Final scenario representing the Basin Plan settings recommended by the Authority in November 2016

Comparison between 390 GL (2012) and 320 GL + toolkit (2017)

¹The toolkit comprises seven non-recovery measures to improve Basin Plan outcomes. Of these, two can be represented in the modelling framework — targeted water recovery (by location and type) and coordination of environmental water use. The other five relate to supplementary actions that are outside model capability.