

MURRAY DARLING BASIN PLAN: IMPLEMENTATION REVIEW 2023

SUBMISSION TO THE PRODUCTIVITY COMMISSION

1. Thank you for the opportunity to provide a submission for this Review. Having regard to the Commission's "key questions", I have addressed items 8, 1 and 4 (in that order).

Key Question 8: "Does the implementation of the Plan reflect a commitment to the best available scientific knowledge?"

ESLT determination did not reflect best science

2. The short answer to this question is "no". With respect though, the question could arguably be phrased differently. The word "reflect" is not to be found in s 21(4)(b) of the *Water Act* 2007 (Cth) (**Water Act**). This provision requires the MDBA (and the relevant Minister) to "act on the basis of the best available scientific knowledge" in exercising their functions. For the MDBA, this included the development of the Basin Plan, and in particular the setting of the "environmentally sustainable level of take" (**ESLT**) for the Plan. The ESLT is itself defined in s 4 of the Water Act by purely scientific environmental criteria (see [9] below). Perhaps because the constitutional validity of the Basin Plan depends on the external affairs power (Water Act, s 9A), and hence the "faithful implementation" through the Plan of a variety of international environmental treaties and agreements, there is none of the wiggle room here that some might prefer. The Basin Plan is not to be merely "informed by best science", nor is it lawful to simply "have regard to" best science.
3. The MDBA had to "act on" best science in developing the Plan, and determining the ESLT. This did not happen. No-one who has examined this matter in detail could rationally or reasonably (in both the legal and broader sense of that word) reach a different conclusion. Yet politicians and bureaucrats maintain the farcical position that the Basin Plan is lawful. With so much taxpayer money involved (not to mention matters like the Rule of Law, or ethical considerations) it is beyond time the Basin Plan was made lawful.
4. Picking up this theme, the statutory language of the Water Act did not go unlost on the Commission in its March 2010 research report titled "Market Mechanisms for Recovering Water in the Murray-Darling Basin" (**Market Mechanism Report**). Specifically, the

Commission noted that the ESLT was defined by only environmental criteria, and as a level of take that cannot “compromise” those criteria.¹ It was suggested that some of the statutory language was “ambiguous”, but that it “would appear to establish a very high hurdle that could consign all other users to share whatever remains after meeting the environment’s needs”². Reference was had to the objectives of the Water Act set out in s 3, and a recommendation was made that if “strict legal interpretation” precludes the ability to “optimise economic, social and environmental outcomes” then “the Water Act should be amended”.³

5. The statutory language defining the ESLT is not ambiguous. It is clear. The objects of legislation are a tool for construction. They do not change clear text. The setting of the ESLT is by means of consideration only of environmental criteria. No other interpretation is open. Should it be thought desirable to “massage” or reduce the water to be recovered for the environment under the Basin Plan, then as the Commission has observed the Water Act would need to be amended. Remembering though that for validity the Basin Plan must “faithfully implement” a myriad of treaty obligations, there are legal risks in amending the Act in such a manner that would allow the ESLT to be determined by more than environmental criteria. That said, simultaneous optimisation of economic, social and environmental criteria seems a vague notion in any event.
6. The unlawfulness of the Basin Plan was also noted, indirectly, by the Commission in its 5-year Assessment dated 19 December 2018. At page 3 of the 2018 Assessment, the Commission (correctly) said this:

“The development of the Basin Plan was a lengthy and contested process, involving negotiation and compromise before it was finalised and became law in November 2012. Making the Plan involved a series of substantial trade-offs between balancing the environmental benefits across the Basin and the socioeconomic impacts on industries and regional communities of a permanent reduction in water available for irrigation.”

¹ Market Mechanism Report p. xxix to xxxi

² Ibid

³ Ibid

7. The “negotiation and compromise”, and the “trade-offs”, are addressed below. None is authorised by the Water Act. The drafters of the Plan attempted to dress politics up as science. They failed if they thought no one would notice. At a practical level, so far they have succeeded. The integrity of the Plan, the environment, and good governance are the losers.
8. None of the above, or what follows, should be taken as a preference for a legal challenge to be commenced seeking to have all or part of the Basin Plan declared unlawful. That risk remains, but there is evidence that even the current unlawfully determined water recovery (ESLT/SDL) under the Basin Plan has been of some environmental benefit, especially at times of low flows. Improving the Plan is preferable to legal challenge. This could have the added advantage of making it lawful.
9. The ELST is defined in the Water Act as a level of take which, if exceeded, would compromise (i.e., damage):
 - (a) key environmental assets; or
 - (b) key ecosystem functions; or
 - (c) the productive base⁴; or
 - (d) key environmental outcomes of the Basin.
10. These are solely environmental criteria, within the judgment of appropriately qualified scientists, not policy or law makers. Unsurprisingly then, the Basin Plan, and the ESLT are be prepared and determined by the drafters acting “*on the basis of the best available scientific knowledge*”: s.21(4)(b) of the *Water Act*.
11. As mentioned above, because of the reliance on the external affairs power, The Basin Plan must “*faithfully implement*” international environmental conventions upon which the *Water Act* is based. It has to “*give primacy to the environment*” before social or economic effects are considered. If the Basin Plan is “*incompatible with the environmental conventions, then it will be unconstitutional because it is those conventions that were “relied upon to get the constitutional power for the Water Act.”*”⁵

⁴ “ecologically” productive base

⁵ Quote of Professor George Williams: see RC Report, Page 194

12. Science (including “best available science”) involves rigour, transparency (not just to reflect what is “science”, but in giving effect into the word “available” in the statutory text), testing, and replication. Eminent scientists have said repeatedly (both under oath, and in peer reviewed scientific literature) that the manner in which the 2750GL annual recovery figure was determined is opaque, and as such incapable of being replicated⁶. It either does not reflect an ESLT, or there is no defensible scientific evidence to establish (peer reviewed or otherwise) that it does⁷. Our scientific community, and hence the public, has not been informed in any meaningful way as to how the volume of 2750GL (or the 605GL SDL Adjustment) was determined, and how so called “social and economic” considerations were used to reduce the original volumetric range for Basin-wide recovery (approximately 4000GL to 7000GL⁸) to 2750GL. That was an unacceptable state of affairs in 2012, and remains so today. It means scientists do not have the data and information necessary to interrogate the volumes determined by the MDBA. That is the inverse of good governance⁹. In any event, that the ESLT recovery target “had to commence with a 2” was well known at the MDBA in 2011-12¹⁰. Sworn evidence was given at the Royal Commission into the Murray Darling Basin was given to this effect, corroborated by many others too fearful to give evidence because of concerns for their employment. Further, at the time the Basin Plan was being finalised, it is beyond argument that the final water recovery target was a “political outcome” not a “best available science outcome”¹¹. In short, science was hijacked by politics.
13. There are numerous scientific reports which evidence that the Basin-wide water recovery target does not represent an ESLT. For example, in 2011 the CSIRO (at the invitation of the MDBA) performed a review of the water recovery target which resulted in a report titled “Science Review of the Estimation of an Environmentally Sustainable Level of Take for the Murray-Darling Basin”¹². Of the many criticisms of the MDBA’s then 2800GL target for water recovery, the authors of this report stated:

⁶ Combined evidence of, amongst others, Professor Jason Brookes; Professor Richard Kingsford, Professor John Williams, Dr Matthew Colloff, Mr Peter Cosier, Dr Theresa Heneker, Professor Jamie Pittock, Dr Celine Steinfeld, at the Murray Darling Basin Royal Commission.

⁷ Ibid

⁸ See “The Guide” to the proposed Basin Plan, 2010

⁹ The OECD has long identified poor water governance as a major risk to the environment/water resources.

¹⁰ Sworn evidence of David Bell at Royal Commission, plus multiple other sources

¹¹ For example, evidence of Karlene Maywald at Royal Commission

¹² Young et al, CSIRO, November 2011

- (a) Modelling data for climate change impacts to 2030 was available, but not used.
 - (b) A level of take “*represented by the 2800GL/yr. is not consistent with the hydrologic and ecological targets.*”
 - (c) A 2800GL scenario does “*not achieve the majority of the hydrological targets*” and meets only “*55% of the achievable targets at either “high risk” or “low risk” frequency.*”
 - (d) “*The modelling indicates that the proposed SDLs would be highly unlikely to meet the specified ecological targets even in the absence of future climate change. Operational constraints are a key reason for this, but a large number of achievable targets are also not met in the modelling.*”
14. The Productivity Commission should make the same findings as Commissioner Bret Walker SC at 5.5 of in his Murray Darling Basin Royal Commission Report (RC Report, p 54) (January 2019) – that is, in “determining the Basin-wide ESLT and then SDL, the MDBA failed to act on the best available scientific knowledge”. In short, the ESLT does not reflect best science. It should recommend new determinations be done according to law.

SDL Adjustment does not reflect best science

15. This part of the submission relates to Chapter 7 of the Basin Plan, and Schedules 6 to 6A. The Productivity Commission is well acquainted with the SDL Adjustment mechanism which, through “supply measures”, mean 605GL (or perhaps 543GL) of water need not be recovered for the environment due to asserted “environmental equivalency”.
16. The best thing that can be said about the SDL Adjustment for supply measures is that it is a good thing that the Basin Plan is adjustable. Nothing else about it is good, or lawful, or could be said to “reflect” the best available science. It could otherwise be described as some kind of “pea and thimble” trick with the environment, or probably more accurately a fraud on it. That word is used in the full understanding and broadest sense of that word.
17. The SDL Adjustment mechanism is an idea or “concept.” Whatever word is picked, at the level of concept, using less water for the same environmental outcomes is obviously a good thing if it can be achieved. A mechanism for water recovery under the Plan to be adaptable is also potentially of benefit. The SDL Adjustment mechanism however cannot properly be described even as a scientific “hypothesis,” much less a theory, as it appears only to be

based on certain modelling outcomes, not (and contrary to the Basin Plan) actual empirical observations¹³. As such, any contention that it reflects “best available scientific knowledge” (or is lawful) is currently an impossible assertion to make good. The SDL Adjustment on its own risks both the ecological and legal legitimacy of the Basin Plan.

18. The 605GL SDL Adjustment is founded on, in large part, an “Ecological Elements Method”. An increase in sustainable diversion limits as a result of the various supply measure projects must have “equivalent environmental outcomes” compared with “benchmark environmental outcomes”: section 7.15 of the Basin Plan. The benchmark environmental outcomes are assessed on model runs following the assessment of “benchmark conditions of development.” A model run comparing the “benchmark environmental outcomes” is compared to a model run which includes an SDL adjustment for the supply measure contributions. The comparison is conducted using ecologically weighted “scores” using twelve ecological elements: four waterbirds, two fish species, and six “vegetative elements.”
19. The Commission should recommend the repeal of Schedule 6 of the Basin Plan. Putting it most politely, legislating complex and uncertain “science” is unwise. What has been legislated more than risks being described as incomprehensible. Whether or not what has been legislated is best science, or only something masquerading as science, no one really seems to know. Not even scientists, as is made clear from what follows.
20. Reports commissioned to support the Ecological Elements Method are highly qualified. Brewsher Consulting conducted one review, and expressed the opinion that the models used had been operated in accordance with Schedule 6 of the Basin Plan. This is hardly of comfort, given that their review expressly excluded the components of the modelling¹⁴. A computer model might be fine as a form of simplification of reality, but the inputs should be disclosed. A second independent review panel concluded that the Ecological Elements Method was defensible and fit for purpose within the limits of its terms of reference. However – and this is crucial both legally and environmentally – it described the method as “*novel and untried,*” “*without precedent,*” and one in which “*no one should assume that the adoption*

¹³ See Royal Commission Report p297 and s.7.17(2)(a) of the Basin Plan

¹⁴ Brewsher Consulting, “Independent Review of Hydrologic Modelling for SDL adjustments,” 30/9/17

*of the [method] is without significant uncertainty or risk*¹⁵, that is based on a “*limited*” state of scientific knowledge. A separate expert advisory panel said there was a “*substantial error space*” inherent in the model used which was “*heavily reliant on expert judgments*” and “*only partly based on knowledge of robust providence.*”¹⁶

21. If the above is not sufficient to sound the alarm on the SDL Adjustment as not reflecting anything that could be described as best science, there is currently no available report, or independent review, which provides support for the volumetric change to the water recovery target under the Basin Plan as a result of the adjustment. That is, there is no publicly available or tested science that supports the 605GL figure. A volume which could have been written on the back of an envelope.¹⁷

22. It may be that one day the uncertainties in the Ecological Elements Method will be reduced. With improved science, maybe, one day, some iteration of it might constitute “best available scientific knowledge.” The fact is, for now, it represents no more than a speculative hope and an uncertain experiment with the environment. It is untenable to suggest that such an approach is countenanced by the Water Act. It should shock nobody that in his Royal Commission Report Commissioner Walker SC found Ch 7 and Schedules 6 and 6A of the Basin Plan to be “an attempt to put into legislative form a complex, and distinctly imperfect, scientific procedure”.¹⁸ He found that the Ecological Element Method in Schedule 6 of the Basin Plan had “alarming shortcomings”, and the supply measure contribution to be “the result of a highly uncertain experiment with the environment to the Basin ... that is not consistent with the requirements of the *Water Act*”.¹⁹ Such findings are based on an eminent lawyers consideration of the statutory language of the Water Act, and his analysis of the grave reservations about the Ecological Elements Method made in the reports referred to.

23. The word “fraud” to describe the SDL Adjustment is not used flippantly. The Basin Plan is a scheme that anticipates that it will change, be reviewed, and evolve. That is a good

¹⁵ Justin Brookes et al, “SDL Adjustment Ecological Elements Method Development Report: Review of Final Project Report,” 30/3/14

¹⁶ Peter Davies et al, “Murray Darling Basin Plan SDL Limits of Change Review: Independent Expert Advisory Panel Report,” September 2017

¹⁷ And is rumoured to have been arrived at this way.

¹⁸ Key Finding 7.1, page 56

¹⁹ Key Finding 7.6, page 57

thing. However, no rational person that has read the published expert opinion concern the SDL Adjustment could be left with any other view than there is tremendous uncertainty about the science behind it, particularly the Ecological Elements Method. How it all amounts to a volume of water – be it 543GL, or 605GL, or even 10GL – is a mystery. That would not be such a problem if it were not also a mystery to people with relevant scientific qualifications and experience. It certainly does not look an adjustment to the Basin Wide Sustainable Diversion (of a huge volume of water) that appears sufficiently science based to be lawful. It more than flirts with falling foul of s.21(4) of the Water Act (“based on best available scientific knowledge”), and it is very difficult to see how in its development or implementation any regard was had to Environmentally Sustainable Development, and in particular the “precautionary principle”: see s 21(4)(a) of the Water Act.

24. The Productivity Commission should recommend that the Government establish a full and comprehensive independent review by relevant experts of this part of the Basin Plan. There is sufficient uncertainty regarding the “science” behind it that a responsible government has no proper option but to ensure that there is a fully independent scientific inquiry into the supply measures aspect of the Basin Plan.

Climate science

25. The failure of the Basin Plan to reflect best science concerning climate change is another aspect of its unlawfulness. This is discussed below in response to Key Question 4.

Key Question 1: “What needs to change to ensure water recovery targets are met and that supply and efficiency measures are delivered?”

26. Supply measures should not be delivered. They should be subject to an independent science review as described above. As to efficiency measures, this part of the submission addresses them, and the 450GL referred to in s 86AA(3) of the Water Act, and Schedule 5 of the Basin Plan.
27. The Productivity Commission is also well informed about the issue of the 450GL for the enhanced environmental aims set out in s 86AA(2) of the Water Act, and Schedule 5 of

the Basin Plan. The Commissions December 2018 Review addressed these matters and “efficiency measures”.

28. Before making any submission on the 450GL part of the Plan, the following can be briefly noted about efficiency measures as a means of recovering environmental water. First, in its 2010 Market Mechanisms Review, the Commission advised that “purchasing water from willing sellers is generally the most effective and efficient means of acquiring water” and that “[f]unding irrigation upgrades is generally not a cost-effective way for governments to recover water for the environment”: see Finding 6.3 and 6.4. Nothing in the Commissions 2018 Assessment contradicts these findings (see, for example, p 107).
29. Secondly, at the current rate of “delivering” the 450GL, another thousand years will be required. Thirdly, there is about 50 years of peer reviewed work throwing real doubt on whether efficiency measures actually recover the water they claimed to. The Commission would no doubt be well aware of all the published material concerning the issue of “return flows”.
30. In summary then, efficiency measures have this against them:
 - (a) They are expensive and inefficient.
 - (b) They are slow to deliver water (at least for the Basin Plan).
 - (c) They have reliability/integrity doubts.
31. These are all good reasons for recovering water for the environment, including the 450GL, by means other than such measures.
32. Turning to the 450GL, modelling shows that a Basin Plan that returns 3200GL of water on average per year will hit 17 out of 18 key environmental flow indicator markers in circumstances where constraints are addressed.²⁰ This can be compared to a 2800GL Plan which only hits 11 out of 18 markers. It is sometimes contended that until “constraints” are addressed, a 3200GL plan would cause flooding and damage, and hence there is no point in recovering the extra 450GL until all issues relating to constraints are addressed.

²⁰ MDBA, “Hydrologic Modelling of the Relaxation of Operational Constraints in the Southern Connected System: Methods and Results,” October 2012.

This is now a fallacious argument, advanced only by those who fail to comprehend the reality of the current Basin Plan and water recovery pursuant to it.

33. In its 2018 Assessment, the Commission addressed the lack of progress on “constraints”: see pages 150 to 159. The Commission referred to modelling of the flow rates needed to achieve the s 86AA/Schedule 5 objectives, and it was said that “constraints need to be eased”.
34. There is no doubt that progress on constraint management has been slow to say the least. This has probably been deliberate, and is an indictment on some governments. As such it is time that lack of progress on constraints was no longer used in the manner it is as (part of) the excuse for not recovering the 450GL. Further, it is important to remember that the modelling and flow rates referred to address a 3200GL Basin Plan. There is no such Plan. Nor is there a 2800GL Plan, or a 2750GL, or 2670GL Plan. We have a (perhaps at best) 2100GL Plan. Adding 450GL to that does not make it a 3200GL Plan in relation to which constraints might (or might not) cause a delivery issue for planned environmental water flows. There is no evidence that constraints become an issue for any plan less than 2800GL (properly managed environmental flows would not cause flooding at this level of recovery). As such, there is no basis for any claim that the 450GL of water for enhanced environmental outcomes should not be recovered until constraints are fully addressed. The 450GL should be recovered now. It would not be surprising, should this happen, that suddenly progress is made on constraints issues.

Recovery of the 450GL should be largely by buybacks in the southern Basin, supplemented by efficiency measures with integrity

35. The Commission should recommend that the 450GL should largely be recovered for the environment by the voluntary purchase of water entitlements. This must take place in the southern Basin. Not only has the modelling for the benefits of the 450GL been done on the basis of recovery in the southern Basin, as was made clear in the MDBA’s “ELST Report”, it is almost impossible to achieve positive environmental outcomes in the south from water recovered in the northern Basin (a matter that the Commission has also previously noted) ²¹. This is ultimately a matter for science, not policy makers, but there is

²¹ MDBA, “The Proposed ‘Environmentally Sustainable Level of Take’ for Surface Water in the Murray Darling Basin,” 2011.

no science that properly supports some wild idea that the 450GL can be recovered from the northern Basin and still achieve the environmental aims of s.86AA of the *Water Act* and Schedule 5 of the Basin Plan.

36. Assertions have been made in the past (and are currently being made) that voluntary purchases of water for the environment (usually called “buy-backs”) cause economic damage to rural or regional communities²². What is said is that water entitlement purchases:
- (a) cost jobs; and
 - (b) create a “Swiss cheese” effect leaving irrigation suppliers with customers spread out over greater distances; and
 - (c) harm the social fabric of local communities because they lead to population reduction (and hence closure of schools and services).
37. These assertions are not fully supported by peer reviewed economic research or papers, or defensible economic reports. What has been established by such work concerning the voluntary purchase of water entitlements is that:
- (a) there is no proportional relationship between a reduction in water use and a reduction in agricultural production (and the assertion of such a relationship could be debunked by an “economics undergraduate²³); and
 - (b) buying water is by many factors cheaper to government (and hence all taxpayers) than seeking to recover it through efficiency measure infrastructure upgrades; and
 - (c) the money obtained from sales of water entitlements in the past was almost always spent locally; and
 - (d) a majority of farmers/irrigators sold only a partial entitlement, kept their delivery rights, and remained in farming/irrigation; and
 - (e) resulting reductions and debt meant people had more money to spend locally; and
 - (f) the economic impacts in rural and regional Australia from things like technological change and mechanisation (alone), increased urbanisation, changes in soil condition, and fluctuations in commodity prices are far greater than any impact of the Basin Plan: and

²² For certain very water-dependent towns this might have been true for some acquisitions of water entitlements

²³ RC Report, finding 9.5 page 61.

(g) water entitlement purchases are a more certain means of recovering water²⁴.

38. The Commission addressed the impacts and effects of recovering water for the environment in its 2018 Assessment: see especially pages 109-117. I would defer to the Commissions work in relation to some districts or towns that suffered adverse consequences from water recovery for the environment, not all of which was perhaps done strategically in the past. I note however that when the Basin Plan and Water Act were first discussed, it was anticipated that such a large reform would almost certainly have some negative impacts for some towns or irrigation districts. This is perhaps stating no more than that large environmental and economic reform has positive and negative consequences. The idea was though for structural adjustment, and not to leave affected areas unassisted or ignored. That, as a matter of obviousness, should not happen.
39. Often forgotten in the debate concerning the voluntary purchase of water is the economic value of recovering it for the environment. Almost every report prepared on the economic impacts of water recovery has neglected the non-market benefits of the recovery of water for the environment. The Water Act and Basin Plan seek to protect and restore the rivers, wetlands, and watercourses of the Murray-Darling Basin²⁵. Some people might consider this a moral obligation, not just a legislative one. It is certainly part of the concept of intergenerational equity, itself an aspect of “environmentally sustainable development” (ESD). Are healthy rivers and wetlands (many of international significance) of no value?
40. The principles of ESD are matters the MDBA was bound to take into account when preparing the Basin Plan, and must also be taking into account by the relevant Minister: *Water Act* s.21(4)(a). Accepting though that money is very important, there is real economic value associated with increased environmental flows. It seems however this is another fact that can be ignored by those that do not support further lawfully required water recovery for the environment. That does however mean relegating almost to insignificance that post the millennium drought domestic tourists alone made more than 17 million trips to the Basin, staying a total of 50 million nights, and generating more than \$6.5 billion in revenue. Expenditure from international tourists amounts to about a billion.²⁶ The direct and

²⁴ There are too many papers (most peer reviewed) to cite here, as well as other evidence. Note also the ONLY independent review of social and economic impacts from on farm efficiency measures.

²⁵ Water Act, s.3(d)

²⁶ See Tourism Australia; see also “Australian Regional Tourism NSW” submission to MDBRC.

indirect economic activity from tourism in the NSW and Victorian Murray regions alone amounts to hundreds of millions of dollars.²⁷ Presumably none of these tourists came to see dead fish, algal blooms, dead trees, or degraded wetlands. As a matter of obviousness, tourism in the Basin is heavily dependent on the health and wildlife of its watercourses and wetlands.

41. While the 450GL should be recovered by voluntary purchases of entitlements, in principle some of this water might be recovered through efficiency measures, provided real water is recovered. It can be noted here too that even water recovery from efficiency measures has been claimed by some, including governments, to have harmed rural communities. That was debunked by the only independent review of efficiency measures, conducted by Ernst & Young in 2017-18. The authors of that report concluded off-farm measures were of positive benefit, and on-farm measures had no negative impacts²⁸. The Murray-Darling Basin Ministerial Council commissioned this report. It appears to be collecting dust somewhere. Not because it does not represent best economic opinion based on rigorous analysis of data, but seemingly because that opinion was inconvenient to some governments²⁹. Similarly, a Report prepared by Marsden Jacobs on the economic impacts of buybacks in the Murrumbidgee Irrigation Area (commissioned by the then Department of Agriculture, Water and Resources) is usually not quoted by governments or opponents of the Basin Plan, presumably because the authors' opinion was that the economic impacts of buybacks were likely to be "very small if not neutral"³⁰.

42. Following these reports, certain socio-economic criteria were agreed to at MinCo in December 2018. These criteria are absurd. They appear designed to stymie the recovery of the 450GL rather than to ensure it happens. I am sure that the Commission does not want a legal opinion, but they are also almost certainly invalid. I have a reasonable degree of confidence that I am not the only lawyer that would hold this view. They are simply not consistent with s.7.17(2)(b) of the Basin Plan. The Commission should recommend their abandonment.

²⁷ Regional Tourism Satellite Account Tourism Research Australia.

²⁸ Ernst & Young, "Analysis of Efficiency Measures in the Murray-Darling Basin: Opportunities to recover 450GL in additional Environmental Water by 2024 through Efficiency Measures by 2024 with Neutral or Positive Socio-Economic Impacts – Independent Report to the Murray-Darling Basin Ministerial Council", Jan 2018.

²⁹ The fierce determination of those governments in respect to the Basin Plan to ignore facts, as well as best science and economics, has at least been consistent.

³⁰ Dwyer, Clarke, Carr, "Economic Effects of the Commonwealth Water Recovery Programs in the Murrumbidgee Irrigation Area" (Marsden Jacobs), October 2017.

Key Question 4: “How well is the Plan responding to a changing climate? How should this be improved?”

There’s this notion that you hear, “Australia has always been a land of droughts and flooding rains and it will rain again and it will all be right”, and we hear that routinely. It lulls some people into a very dangerous false sense of security. Yes, it will rain again, yes this drought will break, but if droughts start lasting a little longer, start a little earlier – so instead of a three year drought, you get a five year drought, that’s catastrophic to people on the land. And we lull them into a false sense of security by the narrative we get from our senior decision makers. I think that’s really regrettable.³¹

43. In 2006, significant parts of the Basin were near environmental collapse. Two factors were at play: a changing climate (less run-off into the rivers), and decades of overallocation of water (by state governments) for the expansion of irrigated agriculture. The Basin Plan does not sufficiently contemplate the likelihood of such conditions not just returning, but returning suddenly.
44. In October 2008, the CSIRO published a report titled “Water Availability in the Murray Darling Basin”. It informed us that it’s going to get hotter and dryer in most of the Basin in the decades to come. For every 1 degree Celsius the average daily temperature goes up (we are currently on track for a 2 to 4C daily average rise), we will have 15% less run off.
45. When the MDBA was preparing the Basin Plan, the CSIRO told it that in doing its sums on the amount of water that has to go back to the rivers, “future climate scenarios” need to be incorporated into the modelling. The MDBA instead determined the ESLT based on climate data from 1895 to 2009. The CSIRO then advised that not including climate projections into the modelling for the Basin Plan was “*not scientifically defensible*”, reminding it that without more water for the environment, “*climate change will be likely to lead to irreversible ecological degradation*”.
46. Commissioner Walker SC made these findings in his Royal Commission Report about using the data of “stationarity” only (1895 to 2009) instead of also incorporating climate change projections:

³¹ Evidence of Prof. A Pitman at Murray Darling Basin Royal Commission

- “a head in the sand approach to the certainty of higher temperatures and less water in the Southern Basin”.
 - “flawed from a standard risk management approach”.
 - “represents a failure to prepare the Basin Plan on the basis of the best available scientific knowledge”.
 - Not consistent with obligations in the Climate Change Convention.
 - “unambiguously demonstrates the almost farcical approach to climate change”.
47. Whatever the reasons were for not including climate projections for the 2012 Basin Plan, the Commission should recommend that decision be reversed for the Review of the Plan in 2026. That work should have started.

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