
The Parliament of the Commonwealth of Australia

**Inquiry into future water
supplies for Australia's rural
industries and communities
- Interim Report**

House of Representatives
Standing Committee on Agriculture, Fisheries and Forestry

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Terms of reference

The House of Representatives Standing Committee on Agriculture, Fisheries and Forestry is to inquire into the provision of future water supplies for Australia's rural industries and communities, particularly:

- The role of the Commonwealth in ensuring adequate and sustainable supply of water in rural and regional Australia.
- Commonwealth policies and programs, in rural and regional Australia that could underpin stability of storage and supply of water for domestic consumption and other purposes.
- The effect of Commonwealth policies and programs on current and future water use in rural Australia.
- Commonwealth policies and programs that could address and balance the competing demands on water resources.
- The adequacy of scientific research on the approaches required for adaptation to climate variability and better weather prediction, including the reliability of forecasting systems and capacity to provide specialist forecasts.

List of recommendations

Interim Report

Recommendation 1 15

In light of the Committee's severe reservations about the science, the Committee recommends that the Australian Government urge the Murray-Darling Basin Ministerial Council to postpone plans to commit an additional 500 gigalitres in increased river flows to the River Murray until:

- a comprehensive program of data collection and monitoring by independent scientists is completed;
- non-flow alternatives for environmental management are considered and reported upon more thoroughly; and
- a full and comprehensive audit focussed specifically on the Murray-Darling Basin's water resources, including all new data, is conducted.

Recommendation 2 15

The Committee recommends that the Australian Government ask the Murray-Darling Basin Ministerial Council to allocate sufficient funds out of the \$500 million allocated to the River Murray by COAG to the abovementioned tasks, prior to proceeding with the proposal to obtain increased river flows.

Interim Report

- 1.1 During the course of its inquiry, the Committee has received a considerable amount of evidence pointing to the lack of scientific data, which raises doubts about the scientific opinions underpinning the Living Murray Initiative. This is of great concern to the Committee because this science is being used to justify decisions on the allocation of water for the environment which will have a long term impact on rural industries and communities and could be detrimental to the health of the river system. Decisions made on the basis of faulty or incomplete scientific assessments can only result in outcomes detrimental to both the community and the environment. Indeed, the Committee is so concerned about this matter that it has postponed consideration of its full report in order to address this particularly urgent issue.
- 1.2 In November 2003, the Murray–Darling Basin Ministerial Council announced its intention to commit up to 500 GL per annum (built up over five years) to a range of ecological objectives, a first step in increasing river flows as part of the Living Murray process.¹
- 1.3 This decision was the culmination of several reports which looked at the ecological condition of the Murray–Darling Basin with a view to restoring some degree of natural flow to the river. The decision, and the reports underpinning it, have been the subject of considerable controversy. The Committee believes that the science behind the Living Murray has paid insufficient attention to the natural variability, uncertainty and unpredictability of the Murray–Darling Basin environment, and that the focus on increased river flows is not appropriate if the science is in dispute. There is also insufficient emphasis on the vital link between catchment health and river health, of which increased river flows is only one factor.

¹ Murray–Darling Basin Ministerial Council, communiqué, 14 November 2003.

Public perceptions

- 1.4 Community concerns about the state of the science behind the Living Murray were highlighted at the roundtable conducted by the Committee at Deniliquin in July 2003. Mrs Deborah Kerr, representing Irrigators Inc, a peak industry group, told the Committee:

I think an opportunity was missed when the MDBC cap on diversions was put in place in 1994–95 as at the 1993–94 levels. There was no physical research program put into place to actually collect physical data on the improvements in the river system. Everything that we are basing our knowledge on now is modelled. It is literature review and it is modelling of what could happen if we tweak this and tweak that.

With the opportunity missed in developing a benchmark scenario at 1993–94, we have lost 10 years worth of data. In our present situation with the discussion on the Living Murray environmental flows et cetera, we would have been in a better position to make an informed decision about what is the condition of the river system. In any of the discussions going on at the moment, there has still not been any discussion about: how we are going to benchmark it; what is the impact of the cap; what is the improvement in the riverine health; what has happened with the New South Wales water sharing plans. What have they contributed to the improved river health as well?²

- 1.5 As Mr Bill Hetherington, Chairman of Murray Irrigation Limited, explained to the Committee, the absence of hard data raised questions not only about the actual health of the Murray, but the integrity of the Living Murray process itself:

Almost daily the public are indoctrinated with the message of doom and gloom by the media of the future of our river systems. The fact that available data are at odds ... not only with public perceptions but also with the pronouncement of official agencies and experts indicates that something is seriously amiss.

The gulf between belief and fact on this issue will not surprise the experienced observer. It is standard green practice to manufacture problems to support their beliefs with a selected presentation of facts or, if necessary, no facts at all. We often see the big headline but there is nothing to back it up. However, it is our view that the increasingly political stance of CSIRO scientists and the

involvement of some key CSIRO staff in the Wentworth Group undermines the integrity and scientific independence of this organisation.³

1.6 Mr Hetherington concluded:

We [Murray Irrigation] are currently employing five scientists ... to review the principles adopted in the Living Murray project for the MDBC. From our research to date, the facts are that salinity at Morgan has actually improved by 100 per cent in the past 20 years. There has been no change in turbidity, phosphorous and nitrate levels since they were collated in 1978. As well, the Murray cod are more plentiful than ever and carp numbers have diminished considerably. The water quality to our irrigators is 60 to 80EC, which is a top world standard. So we might say: what is wrong?⁴

1.7 When challenged about the integrity of the science behind the Living Murray, at a public hearing in May 2003, Dr Don Blackmore, Chief Executive of the Murray-Darling Basin Commission (MDBC) replied that real progress was being made in developing systems to objectively analyse problems and solutions in the Basin environment:

A Murray flow assessment tool is being developed to help us understand those issues. It will look at fish and fish production. So, if we change the flow from here to here and reconnect the flood plains like this, the best evidence we have shows that fish will do this; and, if there is a change in flow from 350 gegalitres to 750 or 1,500 gegalitres, this is what you will get—this is what you get with wetlands connected and, hence, bird production; this is what you get with algal suppression; and this is what you get with habitat condition on the flood plain trees.

There are 60 scientists working on 10 reaches of the river and on the Murrumbidgee and the Goulburn systems. So in the next 10 weeks you will be overwhelmed with information. [This refers to the interim ecological assessment released in October 2003. See paragraph 1.19]⁵

1.8 He also defended the integrity of the science involved, stating:

Professor Gary Jones, the CEO of the Cooperative Research Centre for Freshwater Ecology [which has taken a leading role in the

3 *Transcript of Evidence*, p. 514.

4 *Transcript of Evidence*, p. 515.

5 *Transcript of Evidence*, p. 409.

science behind the Living Murray], has a very strict rule that the science community cannot be advocates for the environment; they have to be advocates for objective science. They have an evidence trail for every bit of evidence, and you can follow it. So if at the end of the day we are not satisfied we can say, 'Hang on, we are making a key decision on material which is speculation. So we will invest in fixing that up because we cannot go forward with that piece of information; it is such a key issue for us.'⁶

Scientific opinion

- 1.9 Despite this, the integrity of the Living Murray process continues to be called into question. Evidence has been placed before the Committee that the 'decline' in the health of the River Murray has been greatly exaggerated. In an article entitled 'Myth & the Murray: Measuring the real state of the river environment', Dr Jennifer Marohasy, head of the environment unit with the Institute of Public Affairs, noted that there was no substantive evidence of a serious decline in River health at all:

We have all heard about the declining health of the Murray River, including poor water quality, dying red gums and threats to the continued survival of the Murray cod—this is the popular view in urban Australia. Along the river, communities believe that the end of commercial fishing, a substantial restocking effort, improvements in on-farm practices and the construction of salt-interception schemes have resulted in a healthier river. The available evidence supports the local view and suggests that, with the possible exception of native fish stocks, the river environment is healthy.⁷

- 1.10 Dr Marohasy stressed that:

- Diversions for irrigation average approximately 34% of total inflow and approximately 41% of inflows flow to the sea in an average year—quite a bit more than is represented by scientists or the media;
- Salinity levels have been steadily improving since their peak in 1982;
- Water tables had dropped significantly in substantial areas of the basin, and that in the last twenty years the amount of land impacted by shallow water tables had dropped from 127 000 ha to 14 000 ha;

6 *Transcript of Evidence*, p. 411.

7 Jennifer Marohasy, 'Myth & the Murray: Measuring the real state of the river environment', *IPA Backgrounder*, vol. 15/5, December 2003, p. 1.

- A number of studies of macroinvertebrate populations had demonstrated healthy and diverse populations, which was at odds with the conclusions drawn in the *Snapshot of the Murray–Darling Basin River Condition*⁸ based on computer modelling;
- Evidence of a decline in fish stocks are inconclusive and contradictory;
- There was no evidence of increasing levels of sediment or nutrient loads;
- The impression given that red gum populations along the Murray are in general decline are not substantiated by the available evidence.⁹

1.11 Dr Marohasy postulated that the cause of misconceptions about the health of the Murray River was the tendency of scientific reports to ignore natural variations in river condition—natural extremes of wet and dry. They make their comparison of current conditions with natural conditions, but only natural wet conditions.¹⁰ She concluded:

We have not really thought through the implications of 'natural' as opposed to 'healthy' in the context of an old river that runs through a semi-arid environment. In such an environment, during the inevitable frequent droughts, 'natural' logically equals dead fish and stressed red gums as surface water recedes and groundwater levels drop.

Our scientists are currently compiling environmental indicators of river health all-the-while making their comparisons with hypothetical pristine environments where 'pristine' falsely equals 'well watered'. If, instead, we set our management goal as improving trends based on current conditions (that is, a healthy working river), then the issue of trying to estimate the natural or pristine environment becomes redundant...

Assuming that the agreed objective is a healthy river environment rather than a natural environment, there will be a need to separate the myths from the reality and to start making relevant comparisons. *There will be a need to apply the scientific method in a disciplined way, including through the direct measurement of useful indicators so that relevant environmental statistics can be compiled [emphasis added].*¹¹

8 Richard H. Norris et al., *Snapshot of the Murray–Darling Basin River Condition*, MDBC, September 2001.

9 Marohasy, 'Myth & the Murray', pp. 5–21.

10 Marohasy, 'Myth & the Murray', p. 21.

11 Marohasy, 'Myth & the Murray', p. 24.

- 1.12 Another critic of the science behind the Living Murray Initiative is Dr Lee Benson of Ecology Management Pty Ltd, who has been employed by Murray Irrigation Limited to review the science behind the Living Murray. His first report, released in October 2003, examined the science behind the Living Murray from its inception with the *Report of the River Murray Scientific Panel on Environmental Flows* (Thoms et al. June 2000), through the *Snapshot of the Murray–Darling Basin River Condition* (Norris et al. September 2001), to the *Independent Report of the Expert Reference Panel on Environmental Flows and Water Quality* (Jones et al. February 2002).
- 1.13 Dr Benson was critical first of the overall methodology behind the Living Murray Initiative—its reliance on expert panels. He noted:
1. Expert panels do not supersede the need for basic data collection.
 2. The excuse that urgent input is needed therefore there is no time for data collection is not supported by the historical pace of decision making.
 3. Outputs from the panels can vary significantly depending on their membership, their Terms of Reference and the timing of their conduct.
 4. As the outputs are largely based on opinion, they are subjective. If an engineering project were planned and it had the same level of potential consequence, this level of subjectivity would simply not be contemplated but for some reason it passes as acceptable with respect to ecology.
 5. The advice from expert panels should be independent and of the highest scientific integrity but there is a tendency for advocacy of conservation orientated outcomes.¹²
- 1.14 His next concern was that the Living Murray Initiative was proceeding despite glaring shortcomings in data, a problem highlighted by the Independent Sustainable Rivers Audit Group in their overview of the *Snapshot*. The Audit Group itself thought that the *Snapshot* argued 'strongly for the need to obtain better data':
- Coverage across the Basin—the Murray–Darling Basin environment is inherently variable in space. For example, unseasonal drought and floods may prevail in different areas of the Basin at one time. But data do not exist across valleys or regions in a form that is either comprehensive or standardised.

12 Ecology Management Pty Ltd, *The Science behind the Living Murray Initiative*, Murray Irrigation Limited, Deniliquin NSW, October 2003, p. ix.

Comparisons cannot therefore be made between areas, nor can relative priorities be established.

- Coverage across time—the natural variability of the riverine environments in the Basin demands comprehensive data sets, collected in a standardised manner on more than one occasion, or over more than one period. In the absence of these data sets, trends have not been able to be even guessed at in most cases.
- Masking—by grouping data into broad zones and averaging them, extreme values are quashed and variability is obscured.
- Sensitivity—by design, the indicators used by the Snapshot are both selective and simplified, and there is no suggestion that they are definitive. There is also a danger that even periodic 'snapshots' would be insensitive to many of the changes that contribute to the decline of the Basin environment. A good understanding of the dynamics of the system will require access to a wider range of data.¹³

1.15 Dr Benson was also concerned that the emphasis in the Living Murray process remains the restoration of increased river flows, despite the fact that problems relating to low flows formed only two of twenty-two issues identified as impacting on river health by the *Report of the River Murray Scientific Panel on Environmental Flows*, and that the *Snapshot* 'clearly recognises that non-flow related attributes can be significant factors affecting river condition and addressing them can provide significant benefits'.¹⁴

1.16 Dr Benson's strongest criticism was reserved for the *Independent Report of the Expert Reference Panel on Environmental Flows and Water Quality*, which for the first time attempted to quantify and assess the possible outcomes of increased river flows. He regarded it as 'probably the most influential but least scientific report with respect to environmental flows in the River Murray':

The conclusion from this [Benson's] review is that the qualitative and at times almost arbitrary nature of the ERP process leads to very risky decision-making when those decisions can lead to very significant social and economic consequences. In fact the ERP report and process actually adds very little to assist management because the approach used has little foundation, the volumes discussed are largely irrelevant to the system as it exists today, management will by necessity be focussed on smaller geographic units than assessed here (other than the Ramsar wetlands) and

13 Norris et al., *Snapshot*, p. iii.

14 Ecology Management Pty Ltd, *The Science behind the Living Murray Initiative*, pp. x-xi.

management must include the tributaries in order to produce a balanced and meaningful outcome.¹⁵

- 1.17 Once again, Dr Benson highlighted the shortcomings in available data and the scientifically unsustainable emphasis on increased river flows. He concluded:

To be absolutely clear, this review does not conclude that flow or volume are not important. What it does conclude is that the process to date has placed an inappropriate emphasis on volumetric aspects of flow at the expense of what might be more environmentally beneficial and less socially impacting options to improve river health. The review provides several examples, supported by the literature, of actions which can improve river health independent from actions related to flow. This is contrary to the ERP report which put forward a range of structural and operational adjustments in order only that the benefits from environmental flows were maximised.¹⁶

- 1.18 Dr Blackmore's response to this criticism, given in evidence before the Committee in November 2003, was simply to note that with the publication of the Scientific Reference Panel's interim report, the Living Murray process had moved on:

What he [Benson] reported on was history, which is important. His observations were [regarding] one-off expert panel approaches to the science of these large rivers, which have huge flows in, which we all broadly support. So we know it when we started them. They are just a call to action issue. So what he has actually been critical of is the expert panel approach, which is not repeatable ... At the end of the day, you get a snapshot but no predictive capacity, no modelling capacity. So we would agree with his observations. In fact, we could have written the same thing. So we are very supportive of what he has had to say about it.¹⁷

The interim ecological assessment 2003

- 1.19 In October 2003, the Living Murray Initiative moved into a new phase with the release of the *Ecological Assessment of Environmental Flow Reference Points for the River Murray System*, an interim report prepared by the
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15 Ecology Management Pty Ltd, *The Science behind the Living Murray Initiative*, pp. xii—xiv.

16 Ecology Management Pty Ltd, *The Science behind the Living Murray Initiative*, p. xv.

17 *Transcript of Evidence*, p. 737.

Scientific Reference Panel for the MDBC. Its starting point was the contention that the health of the river is poor and declining, the very point disputed by Dr Marohasy.

- 1.20 The report provided scientific assessments of three different flow regimes—350GL, 750GL and 1500GL—each under three different operating scenarios, at local regional and system levels. Regional Evaluation Groups were employed to conduct the study at each of ten different sections of the river system, with the scientific reference panel providing the overall evaluation. The Murray Flow Assessment Tool (MFAT)—a system designed to model the ecological impact of different flow scenarios—was the principal method of evaluation.
- 1.21 While the Committee is aware that the Living Murray Initiative has involved work on programs directed at non-flow solutions to environmental problems, it considers that the commissioning of the interim report unnecessarily narrowed the response opportunities to river flow change notwithstanding the other opportunities available. The outcome is that socially acceptable reductions in diversions will achieve little or no environmental benefit, while those achieving environmental benefits are likely to be socially unacceptable and economically destructive.
- 1.22 In broad terms, the findings of the interim report may be summarised as follows:
- A further 350 GL environmental allocation, however operationalised, will provide little 'whole of river' ecological benefit. This assessment is strongly supported by the reported MFAT analyses—none of the 350 GL options provide any 'substantial' improvement in combined MFAT index scores. Targeting flows to selected high conservation floodplain areas may provide some localised benefits.
- If fully optimised from an operational perspective, a further 750 GL may provide some whole of river ecological benefits. Comparison of the MFAT index scores with reference condition, and of the 750 'c' option with the other 750 GL options, provides support for this assessment. Substantial improvement in MFAT scores mostly occurs with the 750 'c' option.
- A further 1500 GL can provide considerable whole of river and local ecological habitat benefits. The MFAT index scores for all options support this proposition. Substantial improvement in MFAT index scores is predicted in 10–20% of years in all assessed

biological components except fish (blue-green algae risk is reduced by more than 40% for the 1500 'b' and 'c' options).¹⁸

- 1.23 This report provided the basis for the Murray–Darling Basin Ministerial Council's decision to commit 500GL to additional environment flows in the near future.
- 1.24 While the Committee recognises that the interim report represents a considerable step forward from its predecessors in terms of scientific analysis and confidence in results, the Committee is concerned at the level of uncertainty which remains. The report itself highlights this ongoing uncertainty and the need for further research and improvements in modelling,¹⁹ while the peer review commissioned by the Murray–Darling Basin Commission underlined the need for greater investment in research to underpin decision making processes.²⁰ Beyond the final report, the reviewers urged the development of a long-term scientific strategy for the Murray–Darling Basin:

A focused, well structured program should commence to develop a detailed ecological modelling framework to complement MFAT (and possibly succeed it in the future). This should not be a decision support system in the same style as MFAT, though it could provide information to support other uses of MFAT. Its aim should be to provide detailed, regional/reach scale information on quantitative ecological outcomes from flow management coupled with management of the other main drivers of river health in the Basin (salinity, water quality, thermal, exotic species etc). It should have a strong hydraulic–hydrologic focus, have detailed empirical coverage of the physical form of the Murray system, have a groundwater component, and be focussed on key ecosystem processes and their responses to a range of human interventions, interactions and interdependences.

This investment and its planning should be substantial, and should be forward-thinking in its planning ...

A minimum 5 year timeframe should be envisaged. A change in water management of this magnitude will take decades to

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- 18 Cooperative Research Centre for Freshwater Ecology, *Ecological Assessment of Environmental Flow Reference Points for the River Murray System: Interim Report prepared by the Scientific Reference Panel for the Murray–Darling Basin Commission, Living Murray Initiative*, October 2003, p. 13.
- 19 CRCFE, Interim Scientific Panel Report, pp. 14–15.
- 20 Peter Davies & Mike Acreman, Review of the Interim report of the SRP, the Murray Flow Assessment Tool and the SRP–REG process for the Murray Darling Basin Commission.

complete (not forgetting the time required for any regional community adjustment to water reform).²¹

- 1.25 Moreover, in part two of his review of the science behind the Living Murray Initiative, Dr Benson was critical both of MFAT and the overall report—particularly its almost exclusive focus on flow. With regard to MFAT he noted:
- MFAT primarily models flow related habitat, hence is very limited in its real world application, where many more variables actually exist.
 - The outputs of MFAT cannot be validated in the real world so it has little application to target setting or adaptive management.
 - MFAT is an expert opinion based model hence does not increase our data but simply formalises the expert panel process.²²
- 1.26 He thought that the Scientific Reference Panel had 'failed to provide advice to decision-makers which is relevant to the aim of the Living Murray process, that is, seeking the best outcome for the environment, with least impact on water users'.²³ He made the following recommendations with regard to the Living Murray Initiative with a view to substantially changing the scientific and decision making processes:
- The aims of the Living Murray initiative and how they are being achieved should be reassessed.
 - ⇒ In particular greater priority should be given to non-flow actions, which have less socio-economic impact.
 - Knowledge-based management should replace the perceived need for urgency.
 - ⇒ The urgency that has driven the process thus far has not been justified in terms of outcomes.
 - ⇒ Taking the time to collect data and analyse trends will give greater certainty to the decision making process.
 - ⇒ A proportion of the funds currently earmarked to acquiring water could be more productively directed to enhancing our knowledge base.
 - Practicality should now take precedence over theory in scientific reports.

21 Davies & Acreman, Review of the Interim report of the SRP.

22 Ecology Management Pty Ltd, *The Science behind the Living Murray Initiative, Part 2*, Murray Irrigation Limited, Deniliquin NSW, February 2004, p. ix.

23 Ecology Management Pty Ltd, *The Science behind the Living Murray Initiative, Part 2*, p. ix.

- Management of significant ecological assets needs to be addressed.
 - ⇒ Management of icon sites needs to combine local management of each asset with coordination across all assets to maximise return on investment.
 - ⇒ This management process requires a commitment to all management options and not just those requiring additional flows.
- Real, meaningful, measurable results must come from implementation.
 - ⇒ This requires monitoring of management actions and assessments based on realistic, observable attributes, not the outputs of models such as MFAT.
- Stakeholder involvement must be increased.
 - ⇒ There needs to be a meaningful partnership between the MDBC and stakeholders 'in which stakeholders take greater responsibility for setting objectives, developing plans, implementing the plans and monitoring progress both in their local areas and across the icon sites'.²⁴

1.27 On the critical issue of collecting and analysing data, Dr Benson stated:

Good, information-based science is essential to successful management of natural systems. "*Best scientific information available*" should not be interpreted to mean "best guess" or "best opinion". Real information is critical. The role of scientists, stakeholders and managers in the implementation process for the first step, and future planning processes, needs to be carefully reconsidered. Good science needs to be supported and used where appropriate and the use of processes which diminish the value or integrity of science require serious reassessment.²⁵

1.28 In the Committee's view, these criticisms of the Living Murray Initiative cannot be lightly dismissed. It is the Committee's hope that in its final report the Scientific Reference Panel will identify and address gaps in our knowledge of the Murray-Darling Basin environment.

Scientific roundtable

1.29 In an effort to cut through the conflicting evidence it was receiving on the science behind the Living Murray, on 5 March 2004 the Committee convened a science roundtable. The participants were Dr Marohasy, Dr

24 Ecology Management Pty Ltd, *The Science behind the Living Murray Initiative, Part 2*, pp. xi-xii.

25 Ecology Management Pty Ltd, *The Science behind the Living Murray Initiative, Part 2*, p. xii.

Benson, Dr John Williams (CSIRO), Dr Peter Gehrke (CSIRO) and Professor Gary Jones (CRC for Freshwater Ecology).

- 1.30 The roundtable revealed that while there was agreement on certain points, there was fundamental disagreement on the quality and integrity of the science underpinning the Living Murray Initiative. While Professor Jones argued that the vast majority of water scientists agreed that there were problems with the River Murray and that there was a compelling body of evidence that change was needed, Drs Marohasy and Benson argued that the Living Murray process had been overtaken by environmental advocacy. Dr Williams argued that while more data was needed, we already had enough data to demonstrate that there were real problems in the Murray–Darling Basin. Drs Marohasy and Benson believed that a much more intensive research effort was required to identify problems and solutions before any water should be diverted for increased river flows.
- 1.31 When the participants were invited to give their views on how much water should be returned to the River Murray, Dr Williams was broadly supportive of the current Ministerial Council proposal; Dr Benson agreed that if used effectively 500GL could have beneficial results; while Dr Marohasy argued that there was no need for additional flows at present and that we should test the results of current environmental measures before committing to more. She once again emphasised that in her opinion the available data does not provide evidence of a stressed system.

Conclusions

- 1.32 Given the magnitude of what is at stake, the potential economic and social dislocation that could emerge from any decision to allocate water to increased river flows, the Committee is of the view that there is insufficient certainty in the science underpinning the Living Murray Initiative. The level of disagreement between scientists is itself cause for concern. Of greater concern is the weight of evidence against the scientific reports. The Committee asks 'would scientists promoting new treatments or pharmaceuticals to address the health problems of human beings be so cavalier in terms of paucity of data and testing as appears to be the case with the decision making process associated with the health of the Murray–Darling Basin?' This issue has to be addressed before the Living Murray process moves forward.
- 1.33 The principal problem facing the Living Murray Initiative, in the Committee's opinion, is the lack of data underpinning the decision making process. The Committee is aware of the historical evidence for

extreme variability with the flow regimes of the River Murray and has sought, and is still seeking, comprehensive historical data on river flow to guide its understanding of the River's needs. There is also some confusion about what constitutes an 'environmental flow', and about how such increased river flows will apply and their likely outcomes. These issues must also be addressed and will be dealt with in greater detail in the Committee's final report. The Committee notes here that the Murray-Darling Basin Commission is currently undertaking a Sustainable Rivers Audit to assess river health and ecological condition. It is also aware of the work of the National Land and Water Resources Audit, which revealed not only the information available about the condition of the Murray-Darling Basin, but the substantial gaps in our knowledge as well.

- 1.34 The Committee is of the view that a full audit of the Murray-Darling Basin's water resources and their use should be undertaken, along with the collection of detailed data sets on ecological condition which will allow reliable analysis of all sections of the biota in all parts of the Basin system over time. These tasks should be undertaken before the commitment of further increased river flows. In August 2003, as part of the National Water Initiative, COAG committed \$500 million to address the problem of over-allocation of water in the Murray-Darling Basin. The opportunity is there to fund these tasks from the \$500 million allocated by COAG to the Murray River. In his comments to the committee at the science roundtable and in his review of the Living Murray, Dr Benson suggested that \$50 million of the funds allocated by COAG, could be allocated to these tasks and that this would represent the largest single commitment to river research and data collection ever undertaken in Australia.²⁶
- 1.35 The Committee is also of the view that greater emphasis should be placed on environmental management regimes which require non-flow actions. This is in keeping with the principle that environmental management should be undertaken with minimum disruption to economy and society. It will also allow us to better gauge the likely impacts of increased river flows.
- 1.36 Finally, the Committee believes that the science behind the Living Murray must be undertaken free of agendas—that in order to protect the integrity of the process, all scientific research be undertaken by independent scientists untainted by advocacy or rent seeking. It is critical that the Living Murray Initiative is free from bias and is seen to be free from bias.

26 Ecology Management Pty Ltd, *The Science behind the Living Murray Initiative, Part 2*, pp. 59-60.

Recommendation 1

1.37 In light of the Committee's severe reservations about the science, the Committee recommends that the Australian Government urge the Murray-Darling Basin Ministerial Council to postpone plans to commit an additional 500 gigalitres in increased river flows to the River Murray until:

- a comprehensive program of data collection and monitoring by independent scientists is completed;
- non-flow alternatives for environmental management are considered and reported upon more thoroughly; and
- a full and comprehensive audit focussed specifically on the Murray-Darling Basin's water resources, including all new data, is conducted.

Recommendation 2

The Committee recommends that the Australian Government ask the Murray-Darling Basin Ministerial Council to allocate sufficient funds out of the \$500 million allocated to the River Murray by COAG to the abovementioned tasks, prior to proceeding with the proposal to obtain increased river flows.

Kay Elson
Committee Chair
24 March 2004

DISSENT

Hon Dick Adams MP

I do not agree with the interim recommendation of this report which proposes that the Government seek to postpone the plans to commit an additional 500 ggalitres to increase river flows in the River Murray.

Concerns have been raised about the science underlying these plans but my view is that the results of previous research, assessment and auditing of river systems ought to be acknowledged.

The Living Murray Initiative is based on extensive scientific research and I think we should acknowledge this research rather than dismiss it out of hand. The roundtable discussion the committee held with certain scientists did indicate that there was scope for more research but in my view the discussion, on balance, did not make a case for the previous research and auditing to be set aside.

More research should and can be done, however much has already been completed and we know enough to at least make a start on making more water available to increase flows.

Science underpinning the Living Murray Initiative

In 2000, two reports based on expert scientific opinion were presented concerning the ecological health of the River Murray.

The Report of the River Murray Scientific Panel on Environmental Flows, River Murray-Dartmouth to Wellington and the Lower River Darling, dealt with the main stem of the Murray and the lower Darling. The other report, River Murray Barrages Environmental Flows: An evaluation of environmental flow needs in the Lower Lakes and Coorong, dealt with the specific environmental needs of the Lower Lakes, Coorong and Murray mouth.

These reports and the Snapshot of the Murray-Darling Basin River Condition (Norris et al. 2001), identified a range of problems with the health of the river and outlined a range of solutions including increased environmental flows and a range of non-flow initiatives. As part of its response to these reports, the Murray-Darling Basin Ministerial Council (MDBMC) authorised a seven year, \$150 million, program of capital works to improve the ecological health of the

Murray through a range of non-flow related activities.¹ It also authorised a study into possible options for environmental flow regimes, and the possible costs and benefits of increasing environmental flows in the Murray.

The Independent Report of the Expert Reference Panel on Environmental Flows and Water Quality Requirements for the River Murray System, presented in February 2002, assessed a range of flow regimes and assessed them as having a low, moderate, or high probability of success in achieving a 'healthy working river' against a range of environmental indicators. In broad terms, the Expert Reference Panel found that the larger the amount of water returned to the river the higher the likelihood of restoring it to health. There was never any intention, however, to return the river to 'natural' conditions. Moreover, there was explicit recognition that any flow regime had to be carefully managed and operated in conjunction with non-flow actions

The next step in the Living Murray process was to commission more detailed scientific studies, using verifiable data and modelling to test a range of flow options using the Murray Flow Assessment Tool (MFAT). The interim report of the Scientific Reference Panel, titled Ecological Assessment of Environmental Flow Reference Points for the River Murray System, largely confirmed the findings of the Expert Reference Panel and identified areas for further study. The final report is due out in mid 2004.

In the meantime, the MDBMC has decided to restore up to 500 gigalitres, over five years, in environmental flows to the Murray River, targeted at the restoration of a range of well researched icon sites. The bulk of this water is to come from engineering works and improvements in water use efficiency. With the caveat that this water be used efficiently, this proposal has been endorsed by Dr Benson.²

Validity of the research

There are several points arising from the scientific reports and the criticism directed at them by Drs Marohasy and Benson.

- The vast majority of river scientists would agree that there are serious problems with the health of the Murray River, and that these problems need to be addressed.
- There has never been any pretension at any stage that the science is conclusive or perfect. The Living Murray has been a process of identifying knowledge gaps and moving to fill them. This process is ongoing.

¹ Transcript of Evidence pp. 728-9

² Ecology Management Pty Ltd, *The Science behind the Living Murray Initiative*, Part 2, p. x

- Environmental flows have never been about simply sending large volumes of water down the river. The term 'environmental flow' is shorthand for a range of actions to restore river health of which increased flows is just a part. It has been recognised all along that maximising the benefits of environmental flows requires non-flow solutions.
- Finally, while there are still gaps in our knowledge, we know enough about what is wrong and how to fix it to proceed at the pace set out by the MDBMC. Our knowledge is good enough to support the decisions already made.

I conclude from this that the proposed commitment of water to increase flows in the River Murray should proceed and that the release of this water should be accompanied by rigorous, independent research and monitoring which will provide us with more and better indicators of river health.

Dick Adams
25 March 2004