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To whom it may concern

Re: Senate inquiry into the management of the Murray Darling Basin

As the peak conservation body for South Australia, representing over 50 of the State's environment and conservation organisations, the Conservation Council of South Australia (Conservation SA) is pleased to make comment on the Senate Inquiry into the management of the Murray Darling Basin.

The environment is the biological underpinning for all of our communities and all the wealth created in Australia. The natural environment provides water for us to grow food. Healthy ecosystems support fertile soils and numerous distinctive species with benefits to humans. Vegetation and the sea take carbon from the atmosphere and mediate the warming and drying effects of climate change.

These are just a few of the immense number of un-costed services provided to us by healthy ecosystems and healthy ecosystems will be one of the main outcomes of the Murray Darling Basin Plan, if we get the Plan right.

In this submission we make comments in a number of areas that the inquiry is focusing on.

If you have any questions regarding this contribution please contact Te Raehira Wihapi on 8223-5155 or via email: teraehira.wihapi@conservationsa.org.au

Yours sincerely,

Tim Kelly
Chief Executive

(a) The implications for agriculture and food production and the environment;

The implications of the current over-allocation of water from the Murray-Darling Basin have materialised in the worst possible way over the past decade of reduced streamflows and prolonged drought. Across the Basin, irrigators highly dependent on their water allocations have suffered. Permanent plantings have been removed. Wetlands have deteriorated. Water supplies have been placed at risk for river communities and Adelaide. Impacts in the lower regions of the Murray have been simply unacceptable, with the collapse of large parts of ecosystems affecting local communities, flora and fauna, including endangered fish species and migratory birds. The Lower Lakes experienced a major increase in salinity and exposure of acid sulphate prone lake beds.

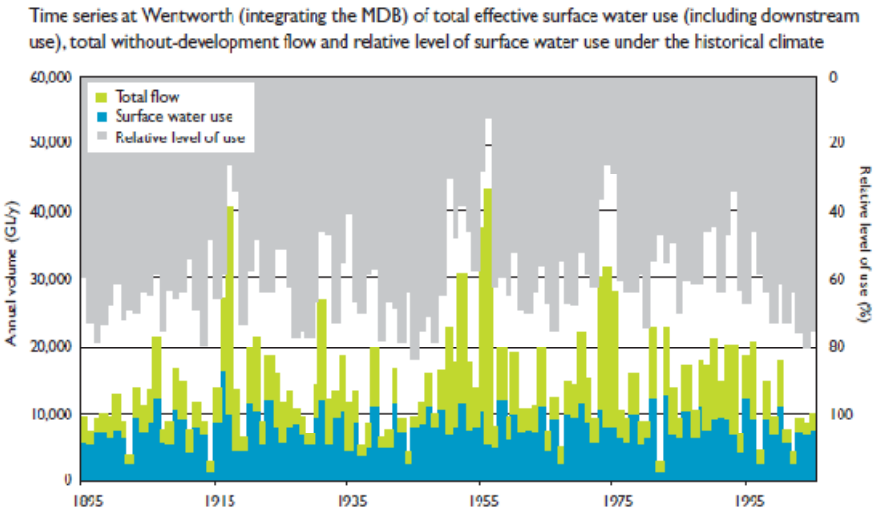
The Murray Darling Basin Plan has the potential to prevent these types of impacts from occurring when we experience the next prolonged dry period and droughts. The lowering of water allocations will be a difficult but necessary step in reducing irrigators' dependence on unsustainable levels of water extraction. With more sustainable water allocation levels, it is likely that the agriculture and food production sector will make better decisions and become more resilient and prepared for further climate variability and change.

This can only happen if enough water is returned to achieve a fully functioning Basin and River system. The science indicates that the level of water required to return resilience to the Basin is 3000GL/y to 7600 GL/year.

Why returning water less than this range should not be contemplated

Conservation SA has concerns that the methodology used to determine the 3000 GL/year to 7600 GL/year range includes some rather optimistic assumptions about long term averages and climate change.

In reference to this diagram from CSIRO's Sustainable Yields project (CSIRO 2008a, p 33), John Caldecott of the Water Action Coalition notes that the MDBA's use of long-term average for water availability is skewed by big floods (Caldecott, 2009).



Also, surface water use ranges from a peak of 15,000 GL in 1915 to only a few thousand gigalitres. The MDBA's 13,700 GL longterm average of consumptive use of surface water use the Murray Darling Basin

has rarely happened.

The Guide claims that the long-term average flow through the Murray Mouth is 5100 GL. As there has been no flow through the mouth since 2001, there will have to be substantial flows for the next couple of decades to maintain this long-term average. The Authority provides no methodology for how this is going to be achieved in practice.

The Authority needs to provide the full time-series statistics for their models and actual conditions so that the likelihood of their proposals can be evaluated.

What has been experienced in the last decade or so is well below the normal range as indicated by long-term averages, and we have to consider what role climate change may be playing in this.

At the moment, the Guide's allowances for climate change impacts into the future are minimal: a 3% reduction in water availability is considered to be an appropriate allowance for the effect of climate change. This 3% is a proportion of the predicted 10% reduction in water availability from 1990 levels by 2030 (given that the Basin Plan must be reviewed by around 2021).

Table 4.7 Percentage change in mean annual run-off in the Murray region[a] under different potential levels of global warming

Global climate model	High global warming	Medium global warming	Low global warming
Second wettest global climate model	+7% ('wet extreme' climate scenario)	+4%	+2%
Median global climate model	–14%	–10% ('median' climate scenario)	–5%
Second driest global climate model	–37% ('dry extreme' climate scenario)	–26%	–12%

a The region is as used in the CSIRO Murray–Darling Basin Sustainable Yields Project.

Source: CSIRO (2008)

The projection of a 10% water reduction warrants further examination. As Table 4.7 from the Guide reveals, it is based on two assumptions. Firstly, it uses the median global climate model. This is *not* the model that has the greatest probability of happening, it is simply the model that has the middle ranking. Secondly, it assumes a medium level of global warming. This medium level of warming is the average of the low and high warming scenarios for 2030, using values developed by CSIRO and the Australian Bureau of Meterology.

However in its 2007 Technical Report *Climate Change in Australia*, CSIRO stresses (more than once) that:

> The upper limits of warming presented here… are conservative. There is a significant possibility that warming may occur in excess of these values, particularly later in the century, although the likelihood of this occurrence is impossible to estimate at this stage. It is worth noting that observed carbon dioxide concentrations, global mean temperatures and sea level rise have been tracking the upper end of the IPCC scenario range from 1990 to 2006 (Rahmstorf et al. 2007). Although this 17-year period

is very short, it suggests that the mid and low projections may be less likely than the high projections, with significant implications for risk management.

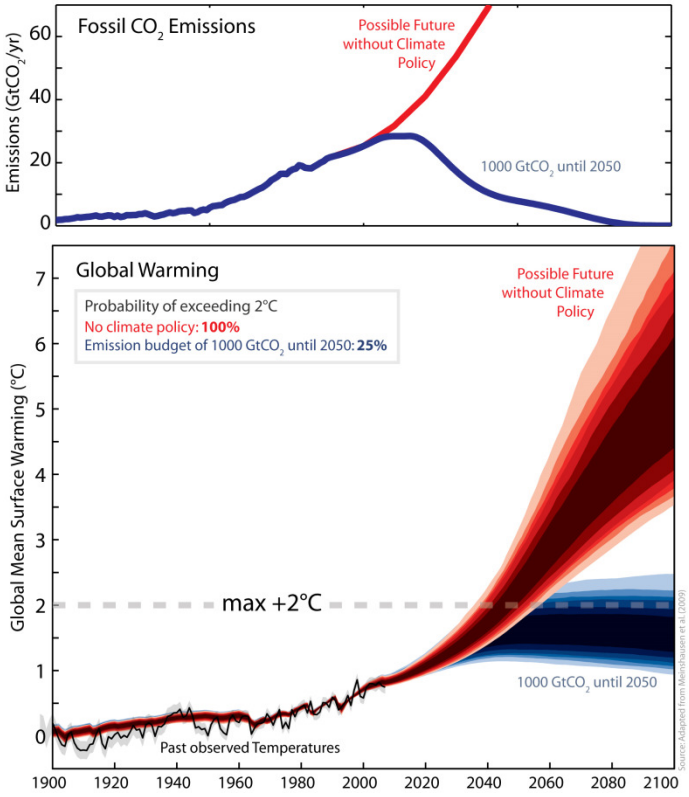
Likewise, in the report from its Sustainable Yields Project, CSIRO (2008a, p 26) notes that "runoff in the past ten years (1997 to 2006) in the southern MDB is similar to the **extreme dry** estimate for 2030 (from the **high global warming** scenario)" and **lower** than the median estimate for 2070 (from the medium global warming scenario) (emphasis added).

Looking at the future impacts of Climate Change

As shown in this diagram, for the period towards 2030, the choice of model is most important in considering plausible climate behaviour in the Murray Darling Basin. At 2030, the scenarios for high, medium and low climate change are not significantly different. The continued divergence of climate change impacts based on global human behaviour increases rapidly after 2030.

Governments and communities should keep this context in mind to understand the full scale of potential challenges that lie ahead, and the unacceptability of continued high global emissions.

The Guide could assist in this by describing how the MDB would look if the current trajectory of high fossil fuel usage continues (eg, the Intergovernmental Panel on Climate Change A1FI emission storyline).



http://www.pik-potsdam.de/news/press-releases/on-the-way-to-phasing-out-emissions-more-than-50-reductions-needed-by-2050-to-respect-2b0c-climate-target

As Conservation SA noted in its 2009 Blueprint for a Sustainable Future (p 44), "it is entirely possible that the impact of climate change has been underestimated. Without any guarantees of action towards a lower emission future we need to examine the consequences of 2.5–6.5°C of warming by 2100. These scenarios would see the flow of the Murray Darling Basin reduced between 16–48% with devastating consequences". In fact, reductions during the Millennium Drought were even greater.

By describing reductions of 10% associated with climate change by 2030 without the broader context of the impacts in extreme events and trends towards 2100, the Guide is underselling the urgency for taking strong adaptation action now.

Furthermore, the 3% allowance assumes no reduction in groundwater as a result of climate change.

Considering all this, the decision to allow for a water reduction of only 3% for climate change seems to err towards a concerning level of optimism. In a system as devastated as the Murray-Darling Basin, Conservation SA believes it is long overdue for the Precautionary Principle to be replacing such optimism.

So there is uncertainty that the 3000-7600 GL range will allow the Basin to achieve true resilience to climate variability and change.

Furthermore, the Guide to the Basin Plan acknowledges that the lowest end of this range will not allow all environmental objects of the Water Act 2007 to be met. Certainly, consideration of anything lower than this range cannot be justified.

Success will not be achieved if the lower end of the range of return flows is the starting point, which is then eroded. We simply won't get the plan right.

(b) The social and economic impacts of changes proposed in the Basin

Contrary to what has been stated by some, Conservation SA believes that the relevant object of the Water Act does *not* require the Basin Plan itself to optimise economic, social and environmental outcomes. It requires the Basin Plan to **"promote the use and management of the Basin water resources in a way that"** optimises those outcomes. This sort of qualifier is not found in the wording of objects of the Act such as:

(b) **To give effect to relevant international agreements**

(d)(i) **To ensure the return to environmentally sustainable levels of extraction** for water resources that are overallocated or overused; and

(d)(ii) **To protect, restore and provide for the ecological values and ecosystem services of the Murray-Darling Basin** (taking into account, in particular, the impact that the taking of water has on the watercourses, lakes, wetlands, ground water and water-dependent ecosystems that are part of the Basin water resources and on associated biodiversity)

Conservation SA also believes that the information on which assumptions about social and economic impacts were based is flawed.

The MDBA's assumptions about impacts on communities were based largely on the

findings of the Marsden Jacob Associates report. One of the key steps in the process to produce this report was interviews to assess the impact of reducing allocations to irrigators at the farm, industry, and regional community levels. As explained in the report (Marsden Jacob Associates et al 2010, p 16):

> As agreed by the MDBA, these face-to-face interviews sought to understand how regions and irrigation sectors of the regional economy would respond to permanent reductions in the order of 20%, 40% and 60% of the long-term cap equivalent (LTCE).
>
> The supply reduction scenarios were discussed as **no compensation, no transitional support scenarios**. That is, interviewees were told that the regional water allocations would be reduced, but were *not told* that they would be compensated for this reduction by some mechanism.

The report describes this as an "extreme scenario". In fact it is more than just an extreme scenario – it ignores various clauses in the Water Act 2007, which provide:

- Phase-in time for States to comply with the Basin Plan through transitional water resource plans and interim water resource plans (up to eight years for Victoria)
- A temporary diversion limit that allows extra water to be taken for up to five years to minimise negative social and economic impacts when SDLs are lower than the amount of water taken historically
- A risk allocation framework that requires the Commonwealth to provide payments for changes to water allocations as a result of a change of government policy or certain other circumstances.

And of course, this scenario also does not include any of the other forms of support and compensation that will be provided outside of the Basin Plan.

Given all this, Conservation SA therefore has serious misgivings about the current social and economic modeling that the Murray Darling Basin Authority is using to determine its Sustainable Diversion Limits.

To put into perspective some of the fear regarding social and economic impacts, Fair Water Use Australia points out:

> Even in 2000-1, before the recent drought took hold in the Basin, the value of IRRIGATED production in the region was only 13% of Australia's total agricultural output (Source data: Australian Bureau of Statistics).
>
> The vast majority (nearly 70%) of agricultural output from the Basin is NOT dependent upon irrigation (Source data: ABS).

Gross value of agricultural commodities and related irrigation data 2005-2006*

* All calculations based on data obtained from the Australian Bureau of Statistics

	Water Use National (Billion litres)	Value National ($ AU)	Litres irrigated / $ AU generated (National)	Water Use Murray Darling (Billion litres)
All commodities	< 11,000	37.3 billion	295	7,400
All crops	7,850	19.6 billion	400	5,400
Cotton	> 1,730	< 1 billion	**1828**	> 1,500
Rice	> 1,250	1/4 billion	**4569**	>1,250
Non-rice grains	< 700	7.4 billion	228	< 625
Wheat		5.1 billion		

John Caldecott of the Water Action Coalition says (Caldecott 2009):

> The majority of irrigated water use in the MDB is for export. This is OK when there is a surplus of water but not during low flows and droughts when the needs of Australians for food and water must be put first. The proportion used for Australian needs is approximately indicated by the water required for fruit and veg which in 2004-05 totalled 551 GL or just 7% of the total water diverted in that year.

Modeling by ABARE-BRS (2010) that factored in the Government's Water for the Future program and additional water purchases found that a 3500GL SDL would only reduce the MDB's Gross Regional Product by 0.7% in 2018-19, and employment in the region would actually *increase* by 0.1%.

The level of angst that has surrounded the Guide seems entirely out of proportion to these findings. It is true that impacts will not be distributed evenly, with small, irrigation-dependent towns likely to suffer worse effects. However this is exactly where the Government's Regional Development portfolio should target assistance. The potential effect of such programs is yet to be quantified, and in this submission we argue that our economy needs some fundamental changes to create employment opportunities from protecting ecosystems – this is discussed further below.

There has been no acknowledgement that free trade in water also creates social and economic risks - that public and private investment in irrigation communities could be stranded by allowing the water market to transfer water to whoever will pay the highest price. And to date, there has been no modeling to look at the social and economic *benefits* of taking action – or, for that matter, the costs of taking no action.

The modeling seems to be very skewed towards exploration of negative impacts of

taking action. Yet the MDBA has used this skewed modeling to justify the decision to rule out the SDLs that are needed to restore the MDB to reasonable health, to satisfy the legal obligations of the Water Act 2007, and the requirements of the international agreements that Australia is party to. Conservation SA is astounded that this critical process contains such a one sided perspective.

Conservation SA believes this needs to be corrected, and we call for modeling to get the full picture about environmental, social and economic costs ***and*** benefits for the 3000-7600GL range of SDLs.

One alternative approach that we believe would mitigate some of the social and economic impacts is by focusing on the many benefits of investing in healthy ecosystems, which we discuss under (d) below.

(c) The impact on sustainable productivity and on the viability of the Basin;

The sustainable productivity and viability of the basin depends on ensuring that a repeat of climate conditions experienced in recent years does not result in as severe impacts on irrigators and the environment in the future. We should not need to witness large scale removal and burning of permanent plantings, loss of river height, drying of lakes, and impacts right across river and basin communities if there is sufficient water left in the system to maintain resilience and viability of the basin.

This minimum level of water required to return resilience to the Basin is in the range of 3000- 7600 GL/year, and not less than within this range.

(d) The opportunities for a national reconfiguration of rural and regional Australia and its agricultural resources against the background of the Basin Plan and the science of the future

In our Blueprint for a Sustainable Future (p 53), Conservation SA called for these key elements to address the problems in the Basin:

- A strategic approach to water buyback that is based on the viability of different irrigation regions in the face of climate change, and infrastructure investment in areas that will remain viable.
- Accounting for all water in the basin and consistent metering across jurisdictions.
- Structural adjustment support for communities to diversify their economies.
- A market for ecosystem services so that restoration of the land and environmentally beneficial practices such as organic agriculture can be recognised and generate income for farming communities.

Instead of the current 'scattergun' approach to infrastructure investment and buyback, there should be a process to first identify the areas that will be viable for irrigated agriculture in the long-term, determined using land capability data and climate change projections. These regions can then be targeted for modernisation

and efficiency measures, while other areas transition to either dryland agriculture or the provision of vital ecosystem services.

Environmental watering programs should also be strategic, prioritising sites that contribute to the health of the river system as a whole and where water can be reused at downstream sites. As with irrigated agriculture, there should be investment in infrastructure works to achieve maximum benefit from the available environmental water.

Farmers in non-viable regions would be paid compensation for real water and benefit from an exit package. Under these circumstances, the water buyback would be exempted from all restrictions on water trade. However this does not mean that communities in these regions should cease to exist.

Where possible, communities must be empowered to diversify their economies. A range of programs and support from all levels of government are needed to provide fresh opportunities. But a vital part of this is to recognise and reward ways of relating to the land other than agricultural ones.

To do this, we need to fix the gaping hole in our economic system as it applies to the Murray-Darling Basin: its omission of ecosystem services. The Economics of Ecosystems and Biodiversity (TEEB) project suggests six steps for including ecosystem services in local/regional policy (TEEB 2010, p 6).

Table 1: Six steps for including ecosystem services in local/regional policy	
Steps	**Strategies and tools**
Step 1: Specify and agree on the policy issue with stake-holders	This ensures that all important aspects are being considered and avoids misunderstandings during decision making and implementation • Initial stakeholder analysis and participatory appraisal methods elucidate different perspectives and opinions on the policy issue (Chapter 3). • Management frameworks such as ecoBudget facilitate mainstreaming concern for ecosystem services in different public management areas (Chapter 4).
Step 2: Identify which services are most relevant	For a first appraisal, discuss these questions with colleagues (Chapters 2 and10): • **Which** ecosystem services are central to my local/regional society and economy? • **Who** depends on them most? • **Which** services are at risk? • **How** do policies affect them?
Step 3: Define infor-mation needs and select appropriate methods	Before commissioning an assessment determine what kind of information on which ecosystem services you need. This depends on how you want to use results (Chapter 3 and 10). Options: • Qualitative description - e.g. of the importance of regulating or cultural services, for raising public awareness • Biophysical Quantification – e.g. of trends in ecosystem change under different scenarios, for decision support • Monetary valuation – e.g. of selected provisioning services, for fine-tuning a payment scheme
Step 4: Have eco-system services assessed	• Frameworks that conceptualize ecosystem services (Chapter 2). • Instruments for valuing ecosystem services (Chapter 3) • Options for ecosystem services analysis within spatial planning and environmental assessments (Chapter 6). • Manuals, tools and databases (Annex)
Step 5: Identify and appraise policy options	Insights from the assessment can feed into policy in different ways (Chapters 3 and 10): • Inform debate within a participatory process, • Provide the basis for a cost-benefit analysis • Serve as input for a multi-criteria analysis
Step 6: Assess distributional impacts	Changes in availability or distribution of ecosystem services affect people according to their dependence. These sometimes hidden effects need to be anticipated (Chapters 2 and 10). Options: • Sustainable Livelihoods Approach to determine dependence • poverty assessment tools

This approach requires that ecosystem services are ascribed a monetary value, and it also engages affected stakeholders from the start, in defining the issue and being part of the solution. However it does not do this to the extent of allowing commercial demands to override the requirements of biological systems, as seems to be occurring with the Basin Plan. It allows science to determine the response required, and then has procedures to address the human impacts associated with this.

One TEEB case study looked at quantifying the economic value of the ecosystem services provided just by the Murray River (not the whole Basin) in 2007 $AUD/Year:

Ecosystem Service	Valuation Method	Source	Total Value ($m)
Recreation and tourism	Market Prices	Howard, 2008	2,970
Food production	Market Prices	Australian Bureau of Statistics, 2008	1,600
Water Quantity (environmental flows)	Contingent Valuation	Bennett, 2008	80
Water Quality (no salinity)	Avoided Cost	Connor, 2008	18
Total Economic Value			**4,668**

(TEEB 2010a, p 19)

This nearly $4.7 billion is undoubtedly a small proportion of the total value of all ecosystem services provided within the Murray Darling Basin, when you consider the full spectrum of services described by the TEEB project (TEEB 2010, p 8):

Conservation SA believes that the Basin Plan needs to take much fuller account of the value of all these services, and consider in its various scenarios the costs of not providing adequate water for them to flourish.

We also need to start funding these services. Irrigation communities that move to ecosystem service provision such as revegetation for salt and sediment mitigation, water quality control, biodiversity provision and carbon sequestration should receive an income that reflects the real value of the services they provide. The Government is currently developing guidelines for its Carbon Farming Initiative, which is an example of at least one such income stream that will soon be available to farmers and landholders. We need many more to follow.

These new sources of income would allow communities to remain viable, with people staying on the land and becoming land stewards. Landscapes would remain productive, biodiversity would benefit and problems of weed and pest infestation would be reduced.

(g) The national implications of foreign ownership, including:
(i) corporate and sovereign takeover of agriculture land and water, and
(ii) water speculators

Maude Barlow, Senior Advisor on Water to the President of the United Nations General Assembly, said in her keynote address to the Australian Water Summit in Sydney last year (Barlow 2009):

> Governments at all levels have bought into the notion that water is a commodity, best allocated by the market, and now increasingly in the hands of largely unregulated private water brokers. This development dates back to the 1994 decision to establish an open water market in Australia, basically gifting massive amounts of water to irrigators who did not pay for this public investment in the first place, and giving them pre-emptive rights to this once public water.
>
> .. This is the privatization of the Murray Darling River where private owners and brokers.. have more say over these depleted water supplies than governments.
>
> The whole plan lacks focus toward an end goal with no distinction between water sold to supply overseas markets and water sold for domestic purposes and holds no guarantee of water for where it is most needed – in the lakes, rivers and aquifers desperate for survival.

We cannot allow the necessary reforms to the management of the Murray Darling Basin to be continually deferred by domestic and foreign corporate interests.

(j) Any other related matters

The Guide does not acknowledge South Australia's voluntary diversion cap, or the fact that efficiencies achieved by substantial infrastructure investment make further water savings relatively much harder to achieve.

Conservation SA understands that the establishment of the Murray Darling Basin

Authority and the development of the Basin Plan are part of an effort to overcome the competing interests of the separate Basin jurisdictions. For this reason, the MDBA has not tended to appear very receptive to grievances expressed by individual states about their specific circumstances.

However we think it is important that it is acknowledged that South Australia voluntarily capped its diversions decades ago, and as a result, South Australian irrigators have been far ahead of other states in their highly efficient water use. There are valid queries about equity when allocation reductions are borne equally across states, but the capacity to achieve further efficiencies is far from equal.

Conservation SA recommends that a mechanism be established to ensure that the most efficient water regions are not overly penalised, and that allocation reductions are encouraged where there are less efficient operations. This could be achieved via targets for water efficiency.

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TEEB (2010a) Appendix C: Estimates of Monetary Values of Ecosystem Services