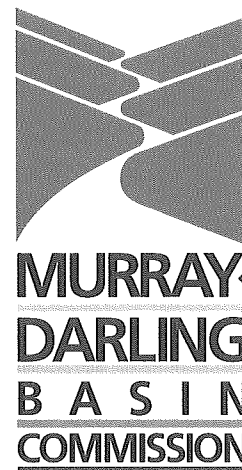


MDBC: JS/ps
In reply please quote:
Your reference

18 November 2008

Ms Jeanette Radcliffe
The Secretary
Senate Standing Committee on Rural and Regional Affairs and Transport
Parliament House
CANBERRA ACT 2600



Dear Ms Radcliffe

Further to the Commission's initial submission to the *Inquiry into Water Management in the Coorong and Lower Lakes*, please find in attachment A to this letter additional information addressing the second part of the Inquiry Terms of Reference (ToR).

This submission provides technical information primarily against ToR 2 (d), 2(e) 2 (f) and 2 (g). This information is from the Commissions 'Risks to Shared Water Resources' Program which investigates processes that impact on water availability.

It is expected that the arrangements enabled by the *Water Act 2007*, specifically the creation of a Murray Darling Basin Authority which can set sustainable diversion limits, will substantially address ToR 2(c).

It is envisaged that the Authority would assess the prospects of adequate flow to Ramsar Sites (ToR 2 (c)) in the context of the available information on processes which are impacting on water availability. The types of information referred to in Attachment A and information emanating from the CSIRO Murray Darling Basin Sustainable Yields (MDBSY) Project relevant. A specific challenge will be the predicted variation in impacts of climate change on water users versus the environment, with the MDBSY showing that the environment bears the majority impact of climate change under current water sharing arrangements.

Finally, it is appropriate to advise that in considering the Lower Lakes and Coorong last Friday, the Murray Darling Basin Ministerial Council *noted that South Australia is developing longer term management options [for Coorong Lower Lakes & Murray Mouth] with funding support from the Commonwealth, and the Commission and other Basin States may assist with advice and expertise.* The Council also agreed to a real time management strategy designed to manage the short-term risk of acidification in the Lower Lakes. Details of this Strategy are attached to the MDB Ministerial Council Communiqué which can be found at www.mdbc.gov.au/news/MC_communique

Yours sincerely,

A handwritten signature in black ink, appearing to read "Wendy Craik".

Wendy Craik
Chief Executive

Murray Darling Basin Commission submission to the Senate Rural and Regional Affairs and Transport Committee ;
Inquiry into water Management in the Coorong and Lower Lakes

Risks to Shared Water Resources – Estimates of potential impacts

The MDBC has been actively investigating processes that impact on water availability over a number of years through a ‘Risks to Shared Water Resources’ Program.

In 2004, the MDB Ministerial Council identified climate change, bushfire, afforestation, groundwater extraction, irrigation return flows, and farm dams as priority risk factors to the shared water resources of the MDB. These were selected for further investigation based on their potential effects on water volume. Initial investigations identified that annual stream flows in the Basin could potentially be reduced by between 2,500GL-5,500GL over the next 20 years - 10-23% of annual stream flow. While there was a large degree of uncertainty about these impacts, further investigations have found that the main risks derive from climate change.

There are many variables which affect the impact of these risk factors such as climate variability, periodicity, duration and intensity of rain events etc. To date the MDBC, through the Risks to Shared Water Resources Program, has commissioned work to assess and better manage these potential impacts. These reports can be found on the MDBC Web Page at: http://www.mdbc.gov.au/nrm/Risks_to_Shared_Water_Resource

A range of current estimates of the scale and location of the likely impact of the risk factors on river flows in the Basin is provided in Table 1. Note that the risk factors are ‘located’ in terms of where the activities are occurring, not necessarily where the impacts of the risk factors manifest. Note also that the figures are highly uncertain, are not additive, and represent variously runoff, water yield and flows (as identified in footnotes to Table 1).

Table 1: Estimates of impacts of risk factors on the water resources of the Murray Darling Basin (Source Webb, McKeown & Assoc, Draft, 2007)

Risk Factor	Scale of Impact (GL/annum)	Timeframe	Location
Climate change	1100 ^a (4400 ^b)	20 years	Whole basin
	3300 ^a (11000 ^b)	50 years	
Groundwater extractions	254 ^c (to 500)	Current	<i>See note d</i>
	637 (to 711)	50 years	
Reduced Return Flows	500 ^e (to several thousand)	20 years	Concentrated in the southern irrigation areas
Farm dams	250 ^f (to 2370)	20 years	Mainly unregulated rivers
Bushfires ^g	0 (130)	10 years	Upland areas in the southern valleys

Note:

- a: Likely impact on ‘runoff’
- b: Worst case impact on ‘runoff’
- c: Impact on surface water ‘flows’
- d: Upper Lachlan alluvium; Shepparton; Mid Murrumbidgee alluvium; Lachlan Fold Belt; Katunga; Upper Macquarie Alluvium; Peel Valley Fractured Rock; Mid Loddon; Upper Namoi Alluvium; Lower Macquarie Alluvium; Campaspe; New England Fold Belt; Gunnedah Basin, and; Murrumbidgee

- e: *Impact on river 'flows'.*
- f: *Impact on surface water runoff*
- g: *Impact of 2003 bushfires only*

MDBC has also invested in the South Eastern Australian Climate Initiative (SEACI) which provides a more detailed analysis of climate change impacts for the MDB. It has identified that in 2030 run-off, in the northern part of south eastern Australia is likely to change by between -25% and 20% with a median of -5%, while the southern part of South Eastern Australia has a likely change between -30% to 0% with a median of -15%. Winter rainfall and run-off are expected to decrease over all of South Eastern Australia. These results are based on a median greenhouse gas emissions scenario which may significantly underestimate the likely impact on runoff if greenhouse gas emissions continue on the current trajectory.

The CSIRO Murray-Darling Basin Sustainable Yields (MDB SY) Project is also producing more accurate estimates of the impacts of climate change and the other risk factors within the MDB utilising information gathered through the Risks to Shared Water Resources Program. The committee may wish to source these revised estimates directly from CSIRO. In broad terms, however, the MDBSY regional assessments are indicating that, in volumetric terms, the majority of climate change would be borne by the environment rather than by consumptive users under current water sharing arrangements.

Regulatory approaches to the management of (interception) risk factors

In December 2006 the Murray-Darling Basin Commission requested jurisdictions report on the regulatory approaches, and identify potential growth, for the risks over which they have direct legislative control – farm dam construction, groundwater extraction, and afforestation.

The jurisdictional reports were specifically developed to outline:

- current legislation, policy, regulation and planning frameworks;
- capacity of legislation to address the three risk factors;
- implementation and compliance of legislation, policy, regulation, planning; and
- potential for growth in groundwater extraction, farm dam construction and afforestation.

Copies of the Reports can be found at:

[http://www.mdbc.gov.au/nrm/Risks to Shared Water Resource/managing the risks](http://www.mdbc.gov.au/nrm/Risks%20to%20Shared%20Water%20Resource/managing%20the%20risks)

The key issues identified through the reports were:

- approval for water use is not required in most jurisdictions for farm dams and groundwater bores for stock and domestic purposes;
- uncertainty in estimating the potential cumulative future impact on shared water resources due to a lack of regulation of farm dams and extraction from groundwater for stock and domestic purposes;
- difficulty defining a sustainable yield for groundwater extraction;
- limited capacity in most jurisdictions to regulate water use for afforestation; and
- policy response development has been complicated by the use of different approaches and definitions in the regulation of the risk factors by the jurisdictions.

A key issue specifically for the ACT Government is its inability to regulate groundwater extraction on areas of the Territory designated as National Land where ACT legislation does not apply.

Each jurisdiction claims that existing regulatory mechanisms are sufficient to limit future growth in farm dam establishment and groundwater extraction.

The Murray Darling Basin Risks Strategy

The Murray-Darling Basin Risks Strategy was developed and agreed by the six partner governments of the Murray-Darling Basin Commission in 2007. The strategy provides an objective operating framework and a broad process to ensure a consistent and flexible approach to the management of risk factors now and into the future. It builds on existing water management arrangements and is consistent with the National Water Initiative (NWI). Its implementation is designed to deliver on the interception components of the NWI.

The objective of the strategy is to protect both the integrity of the water access entitlements system and the achievement of environmental objectives as they relate to the shared water resources of the Murray Darling Basin.

Jurisdictions are accountable for management of the risk factors and have a range of responses already in place. They have agreed to implement the Risks Strategy by:

1. Submitting independently audited annual reports of priorities and responses, in relation to the risk factors, using a consistent risk assessment framework.
2. Assessing the effectiveness of current policy responses and actions.
3. Improving knowledge of the current risk factors, both individually and cumulatively, and their potential impacts.
4. Researching innovative approaches to the management of the risk factors.

MDB Independent Audit Group – Review of Risks

The Terms of Reference for the Independent Audit Group's (IAG) Review in relation to the Risks to shared Water Resources is:

The IAG will conduct in the first instance a review of the risk matrices and then an annual review of how the activities and processes that pose a risk to the Shared Water Resources of the Murray-Darling Basin ('the risk factors') are taken into account in water management arrangements for each valley and the Basin, and make suggestions for improvements in accounting for and reporting on the risk factors.

The Jurisdictional Reports are submitted to the IAG for review in October each year. The Risk Assessment Framework used in the reports will be continuously refined and improved. This framework will assist in targeting the other activities of the Risks Program and will be informed by the outcomes of a range of investigations (including those external to the Risks Program eg. Sustainable Rivers Audit).

A preliminary risk assessment was reviewed by the IAG in 2007. The resulting report will be published and is currently being considered by the Murray Darling Basin Commission.

The recommendations from this report have already been incorporated into the further development and refinement of the Risk Assessment Guidelines for the 2008 Review. These guidelines have been developed through a consultancy with SKM and CSIRO and extensive dialogue with MDBC Office and jurisdictions.

The application of the Guidelines in 2008 will represent a substantial improvement on the approach used in 2007. Specific improvements include:

- (i) Jurisdictions will all consistently use the scenarios and data from the CSIRO Murray Darling Basin Sustainable Yields Project as a minimum;
- (ii) The Climate Change and Bushfire risk factors will be assessed;
- (iii) Risk factors will be assessed both individually and cumulatively;

- (iv) The risk assessment will be conducted at three scales, namely:
- Environmental asset scale (at least two assets for each valley and will include all Ramsar sites);
 - Catchment/Cap valley scale; and
 - Basin scale;
- (v) A consistent set of indicators which link back to agreed objectives will be used for the assessments at each scale;
- (vi) Consistent/comparable likelihood, consequence and risk ratings will be used by all jurisdictions; and
- (vii) Assessments will include consideration of baseline (or current) condition of the catchment and/or environmental asset.

The IAG's 2008 Review will continue to focus on improving and refining the risk assessment method over the next 12 months in order to meet the agreed aim of carrying out the first comprehensive Risk Assessment and subsequent Audit in 2009. However the IAG have also asked for jurisdictions to make submissions in 2008 in regard to how the risk factors will be taken into account in water management arrangements for each valley and the basin including:

- Information and evidence in relation to the effectiveness of compliance with legislative and regulatory controls, and
- Extent to which relevant water plans include and provide for the management of the risk factors