Australian Academy of Science
Ian Potter House, Gordon Street, Canberra ACT 2601

10 April 2018

Mr Andrew Broad, MP
Chair, Standing Committee on the Environment and Energy
PO Box 6021
Parliament House
Canberra ACT 2600

By email: Environment.Reps@aph.gov.au

Dear Mr Broad and Members of the Committee,

Re: Inquiry into the management and use of Commonwealth environmental water

The Australian Academy of Science National Committee for Geographical Sciences (NCGS) welcomes the opportunity to provide a submission to the Committee's inquiry into the management and use of Commonwealth environmental water.

The Committee is inquiring into and will report on the management and use of Commonwealth environmental water, with particular consideration to the role of the Commonwealth Environmental Water Holder (CEWH). The Terms of Reference are:

1. maximising the use of environmental water for the protection and restoration of environmental assets
2. considering innovative approaches for the use of environmental water
3. monitoring and evaluating outcomes of the use of environmental water
4. options for improving community engagement and awareness of the way in which environmental water is managed

The Terms of Reference also include any other matter of relevance the Committee wishes to consider. Reflecting the NCGS's focus, this submission relates especially to Terms 3 and 4.

The NCGS considers the recent water reforms in the Murray Darling Basin to be critical to the ongoing environmental health of the region and downstream areas. For this reason, it is critical these reforms be informed by the best and most rigorous scientific assessments, and their impacts are studied in detail and used to inform future water policy.

Surface processes, particularly hydrology and geomorphology, are of particular interest in geographical research, and Australian geographers make rich contributions to the understanding of Australia's landscape, particularly in relation to its unique hydrology and vegetation. Many the NCGS's strategic priorities align with the goals of the CEWH in managing the Murray Darling Basin. A key goal is to provide integrated assessments of water planning and management in Australian river basins, especially the Murray Darling. **There is a strong need for critical evaluations of the role of markets in mediating scarcity; the**

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Murray Darling water presents a strong opportunity for research, which would inform future developments of the market and future policy settings.

Australia is unlikely to be restricted by a lack of water for food production, as the increasing efficiency of water use in agriculture, and the diversion of food from exports, will enable production growth to keep up with population demand. However, this presents high risks to environmental quality and biodiversity as more water is diverted to human uses. It is imperative the environmental constraints on agriculture production are understood if that production is to be increased. Research is needed on planning and governance of land and water management at a catchment scale. This research must integrate social and natural sciences, considering the landscape as a linked socio-ecological system.

With that in mind, management of the Murray Darling Basin should continue to be based on detailed appraisals of the available evidence. As noted in its submission to the Inquiry, the CEWH has invested over $40 million in monitoring, evaluation and research to inform its activities. The submission notes this activity is managed in conjunction with over 30 research bodies, including regional universities, scientific research institutions and state agencies. This activity is fundamental to the CEWH's operations, and should be fully supported.

The NCGS has identified several strategic research needs identified for the Murray Darling system. These include:

- Integrated assessments of water planning and management in the continuing transformation of the overall management of the Murray Darling Basin.
- Integrated assessments of water planning and management at the interface between rural and urban areas.
- Leveraging existing geographical information systems projects – known as "big spatial data" – to integrate physical, social and cultural information across space, driving insights into Australia's agricultural landscapes and communities.
- Analysis of indigenous interests, rights and management of water and land in the Basin.
- Research into farmers' knowledges around sustainable production at all scales (e.g. intensive and extensive farming) and that of other community members and organisations e.g. Landcare.
- Analysis of climate change effects on water, agriculture, and Australian landscape in inland agricultural areas and rangelands. Impacts on food systems and adaptation of rural communities should be a particular focus.
- Analysis of social and economic impacts of the continuing structural changes in the economies of rural areas.
- Analysis of Australia's agricultural and agro-ecological systems in the context of global developments.
- Research into sustainable limits for productive use of soil, freshwater, river flows and water rights, terrestrial and marine ecosystems.
- Evaluation of cross-property collaboration for landscape-scale benefits for productivity and conservation initiatives.

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The Murray Darling Basin water reforms present in themselves a powerful opportunity to understand the role of markets in mediating scarcity. There is also an imperative to critically apply the knowledge gained in management of the Murray Darling Basin to other river systems, especially in the proposed development of Northern Australia. Environmental water management protocols should be included at an early stage of such development.

The CEWH should continue to work closely with the scientific community to ensure policy development, implementation and review harnesses contemporary thinking and existing knowledge regarding the effective management of the Murray Darling Basin. Geographical sciences provide the ability to integrate knowledge from the natural and social sciences, research grounded in field work, and a focus on places and their communities.

If you would like to discuss any aspect of this submission or to arrange an appearance before the Committee, please contact Dr Stuart Barrow at [redacted] or [redacted]

Yours sincerely,

[redacted]

Professor Steve Turton
Chair, National Committee for Geographical Sciences
Australian Academy of Science