The Secretary
Senate Rural and Regional Affairs and Transport
Parliament House
Canberra ACT 2600

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Submission from:

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To the Secretary

Re: Inquiry into Additional Water Supplies for South East Queensland - Traveston Crossing Dam

I wish to make the following submission to the Inquiry on behalf of myself and my colleague, Professor Stuart Bunn, Griffith University, Brisbane, Queensland, Australia.

Firstly, I will summarise our scientific credentials and experience in matters relating to:

(a) the merits of all options, including the Queensland Government's proposed Traveston Crossing Dam as well as raising the Borumba Dam: and

(b) the social, environmental, economic and engineering impacts of the various proposals

Professor Stuart Bunn is Director of the Australian Rivers Institute, a multidisciplinary research centre located at Griffith University, Brisbane, Queensland, Australia. Professor Bunn is a prominent member of the Australian and international community of scholars researching issues in river ecology and the management of healthy rivers. His research is focused on ecosystem processes and aquatic foodweb structure/dynamics in rivers and floodplain wetlands, the influence of riparian zone processes on rivers, and the science and management of environmental flows. He has published widely (over 140 technical publications, including 80 in refereed journals), supervised 17 PhDs, and worked extensively with Local, State, Federal and international agencies and community groups and scientific advisory bodies. Stuart led the development of freshwater health indicators for South East Queensland's *Ecosystem Health Monitoring Program* and is the Deputy Chair of the *Moreton Bay Waterways and Catchments Partnership's Scientific Advisory Panel*. He is a member of the Scientific Steering Committee of the *Global Water Systems Project*, an international forum for the study and promotion of sustainable water management worldwide.

Professor Angela Arthington has wide-ranging Australian and international experience and publications on fish ecology in rivers, lakes and floodplains and their environmental water requirements, environmental flow methods, and fish as indicators of aquatic ecosystem health. She is co-author of the recent book *Freshwater Fishes of North-Eastern Australia* (2004, CSIRO Publishing, 684pp), has published over 190 technical publications, including 145 in refereed journals/books, and supervised 28 Honours, Masters and Ph Ds. She has worked extensively on environmental flows for rivers and wetlands with Local, State, Federal and international agencies (e.g. Mekong River Commission, South African Water Research Commission) and is an Editor of the International Journal *Environmental Biology of Fishes*. She is a member of the Scientific Steering Committee of the *Freshwater Cross-cutting Network of DIVERSITAS*, a global program focused on the science and protection of biodiversity, and a co-author of the *DIVERSITAS Freshwater Science Plan* published in 2006.

Professor Bunn and Arthington have worked together for over two decades on river ecology in south-eastern Queensland, and in particular, on the impacts of dams and flow regulation and the definition of the water requirements of freshwater ecosystems. They and their research staff have served on the Technical Advisory Panels (TAPs) appointed by the Queensland Government to advise on environmental flow objectives and quantitative water levels, timing, variability etc, for Queensland's major river systems (Gold Coast to Wet Tropics, inland rivers of the Lake Eyre Basin, and northern Murray-Darling Basin). Both have deep scientific knowledge of the ecology and flow requirements of the Mary, Brisbane, Logan and Albert rivers. Details of research projects, Ph D topics and publications can be provided upon request.

Our submission:

Firstly, we draw to the attention of the Inquiry the existence of a substantial document commissioned by the Department of Natural Resources and Water in mid - 2006 to advise on various development scenarios in the Mary and Logan/Albert catchments of south-east Queensland. This document evaluated the environmental impacts of alternative development proposals in the Mary catchment:

- **Traveston Dam** – large dam (30 m) on the Mary River at Traveston Crossing;
- **Four Dams** – Kidaman Dam, Amamoor Dam, Cambroon Dam and raising of Borumba Dam, plus Coles Crossing Weir.

The objectives of this study were to:

- Identify environmental issues associated with each development scenario, including effects on ecosystems upstream and downstream of the new dam(s) and within the ponded area(s); and

- Provide advice on potential measures that could be undertaken to mitigate key environmental issues associated with each development scenario.

The details of this document are as follows:

Brizga, S.B. et al. (2006). South-east Queensland Water Supply Strategy: Environmental Assessment of Logan/Albert and Mary Catchment Development Scenarios. FINAL DRAFT. Submitted to Department of Natural Resources and Water, 4 December 2006.

Study Team:
Dr Sandra Brizga, S. Brizga & Associates Pty Ltd (Study Coordinator)
Professor Angela Arthington, Griffith University
Mr Pat Condina, Pat Condina and Associates
Ms Marilyn Connell, Tiaro Plants
Associate Professor Rod Connolly, Griffith University
Mr Neil Craigie, Neil M. Craigie Pty Ltd
Dr Mark Kennard, Griffith University
Mr Robert Kenyon, CSIRO
Mr Stephen Mackay, Griffith University
Mr Robert McCosker, Landmax Pty Ltd
Ms Vivienne McNeil, Department of Natural Resources, Mines & Water

We draw the Inquiry's attention to the fact that, to the best of our knowledge, the results of this study have not been made public at this time. We submit that this assessment of development options represents a major collation of scientific knowledge and expert opinion on the general impacts associated with large dams, and the specific impacts of these dam options. It was prepared by the combined TAPs for the Mary and Logan/Albert Water Resources Plans (WRPs), and therefore contains a very informed evaluation of alternative development options.

We recommend that the Inquiry gain access to, and take into consideration, this significant information resource and the assessments of various development options contained therein.

Secondly, based on our own knowledge and experience, we submit that Traveston Crossing Dam will have significant ecological impacts with respect to:

- Rare and endangered species and ecosystems
- Water quality
- Freshwater habitats and biodiversity
- Alien plant and animal species
- The Great Sandy Region World Heritage Area
- Fisheries in the Mary River estuary and coastal waters
- Ecosystems of the Mary River catchment

The Mary River contains the last remaining unregulated habitat, where river flows are not modified by large dams, for several of Australia's rare and endangered freshwater species: the endangered Mary River turtle (*Elusor macrurus*), the southern snapping turtle (*Elseya albagula*), the endangered Mary River Cod (*Maccullochella peelii mariensis*), the vulnerable Queensland Lungfish (*Neoceratodus forsteri*), and the vulnerable Honey Blue-eye (*Pseudomugil mellis*).

The Mary River is clearly a very important river system from a conservation perspective, containing habitats that provide the specific requirements for all of these

species, some of which presently maintain viable populations only in the Mary River, or only in the Mary and Burnett rivers, or are very patchily distributed in rivers/streams/wetlands in south-eastern Queensland.

From our scientific knowledge, our experience in working on TAPs for all Queensland WRPs, and our involvement with the *Moreton Bay Waterways and Catchments Partnership* and associated research programs, we are of the opinion that the Mary River is the most significant unregulated coastal river system in south-east Queensland from a biodiversity and conservation perspective

The Mary River offers society the opportunity to protect valuable ecological assets and the ecological goods and services provided by a healthy, largely unregulated river system and its associated estuary and coastal waters.

By protecting the Mary River system and restoring its many ecological assets and values to society, we would retain the best example of an unregulated coastal river as a reference system against which to benchmark the health of other coastal river systems in this part of Queensland.

The Mary is the ideal river system for the study of a wide range of scientific research questions, e.g. the influence of flow regime on natural asses such as the lungfish, cod and turtles; the importance of freshwater flows to estuaries, the influence of hydrological regime and water quality on fisheries productivity, the ecological roles of riparian vegetation, and the collective suite of environmental factors and interactions that governs river ecosystem health.

No other river system in this part of Queensland offers the same opportunities to study these significant ecological questions that arguably must be answered if we wish to manage large river systems for the ecological assets and values, and for long-term societal benefit.

Other development options

We fully appreciate the problem of providing secure water supplies for SEQ, but recommend full inquiry into other options such as water conservation at all levels of society, water recycling, desalination, demand management, etc, before another large main channel dam is built in south-east Queensland.

The Australian Rivers Institute at Griffith University would be pleased to provide further advice to the Inquiry on the above and related environmental matters.

Yours sincerely

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