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**RE: Draft Terms of Reference for Environmental Impact Statement –
Proposed Traveston Crossing Dam**

Dear Sir/Madam,

I am writing to you regarding the draft Terms of Reference for the EIS of the proposed Traveston Crossing Dam. Specifically, there are a number of deficiencies in the draft ToR which I believe need to be addressed if the study is to fully evaluate the environmental impacts of the project.

- 1. Scope of the EIS.** In their referral of the project, the proponents Queensland Water Infrastructure (QWI) only asked for consideration of Stage 1 of the project – with a full supply level of 71m RL and a yield of 70 GL/yr. However, their stated intention is to build the dam wall to it's full Stage 2 height as part of Stage 1, and the dam will thus be fully capable of filling to it's Stage 2 full supply level of 79.5m. There is every indication that the dam will be operated in Stage 2 mode far sooner than the 30 year timeframe referred to by QWI. It should be noted that QWI are already aggressively purchasing land for both stages of the project. The additional impacts of the Stage 2 dam are therefore clearly "likely consequences" of the project and as such must be assessed as part of the EIS.
- 2. Yield from the Dam.** The draft ToR aims to assess Stage 1 of the project, with a stated yield of 70 GL/yr. However, I understand that the installed pumping and pipeline capacity will be greater than this amount. QWI must be asked to confirm the installed pumping capacity being built as part of the project, and all environmental impacts (including but not limited to the constraints of the Mary Basin WRP) must be assessed based on the maximum yield figures, not the nominal 70 GL/yr.
- 3. River flow modelling.** The hydrological modelling upon which the Mary Basin WRP and the hydrological feasibility of the project are based, is fundamentally flawed because it fails to account for the effect of climate change. The 109 year modelling period ended in June 1999, thus coincidentally including the major flooding of February 1999 and the minor flooding of March and May 1999, but excluding the subsequent eight years – described by many including the Queensland Premier as "the worst drought in 100 years". It is imperative that the

EIS includes revisions of the river flow modelling to account for the last eight years of drought. Furthermore, as climate change is a well established phenomenon amongst scientists and the wider community, the EIS must specifically account for the likely effects of climate change, and the magnified environmental impacts of the dam project in this context. Reference to the National Biodiversity and Climate Change Action Plan should be an explicit requirement.

- 4. Compliance with the Mary Basin WRP.** Because the final, re-drafted version of the WRP contains many “rubbery” constraints such as “limit the extent to which X is exceeded” instead of “X must not be exceeded”, it is important that QWI specifically address how they intend to comply with the few “hard” constraints. The EIS must stipulate a mechanism of checks and balances, with harsh penalties for non-compliance. With regards to the most well known of the constraints – 85% mean annual flow at the river mouth - QWI must explain how the flow at the river mouth will be monitored / measured.
- 5. Environmental flows in the section of the river from the dam wall to Gympie.** In the Mary Basin WRP, the first monitoring node downstream of the proposed dam wall is at Fisherman’s Pocket, near Gympie and downstream of other significant inflows. Whilst the WRP chose to ignore the effects of the proposed dam on environmental flows for the first 30km downstream of the dam and their deleterious environmental impacts, it is crucial that the EIS address these impacts. For example, based purely on the IQQM flow modelling data published in conjunction with the draft WRP (widely known as “Appendix A”), I have calculated flow statistics for this section of the river. Even though the IQQM simulations specifically ignore the last eight years – the “worst drought in 100 years” – the impact of the dam are devastating on environmental flows. The %MAF (mean annual flow) is just 69%, and the median annual flow is just 31.5%. The number of “no-flow days” is 4,031 (10.1%). The APFD statistic is 2.39 (where anything above 2.0 is considered to be “extreme”) and the 1.5 year ARI (minor flushing flows) are reduced to just 20.6% of the pre-development value. It is essential that the EIS address the massive impacts of the dam on the environmental flows for this 30km stretch of the river.
- 6. The “fish ladder”.** The impacts of the dam in terms of loss of habitat, connectivity and fragmentation for threatened species such as the Queensland Lungfish and the Mary River Turtle cannot be understated. The proponent QWI seem satisfied that a “fish ladder” will adequately address these issues – an almost identical stance to that taken by Burnett Water Pty Ltd in relation to the Paradise Dam on the Burnett River. Indeed, the EIS for Paradise Dam accepted the “fish ladder” as an appropriate mitigation for these issues, subject to some very weak stipulations for “ongoing monitoring”. Unfortunately, the monitoring of the performance of the Paradise Dam fish ladder has not even commenced, due to its major mechanical flaws. Studies by the EPA and the DPI&F into the effects of other fish ladders and fishways at other weirs on the Burnett have demonstrated very serious failings and massive environmental impacts for both lungfish and turtles. It is

therefore imperative that the EIS for the current project strictly applies the “precautionary principle” enshrined in the Environmentally Sustainable Development (ESD) Charter.

- 7. Poorly defined requirements for “mitigation strategies”.** Further to Point 6, it is imperative that the ToR for the EIS study explicitly requires the proponent to accept full responsibility for any and all “mitigation strategies” proposed to counter environmental impacts. It is not acceptable to repeat the failure of the Paradise Dam project, where weak strategies focussed primarily on “monitoring” have either not been adhered to, or have demonstrated serious unmitigated environmental impacts but with no obligation upon the proponents to take any responsibility or do anything about it. If any example beyond the Paradise Dam fish ladder is required, then consider the turtle hatchery. While recently held up by the Queensland Government as a paragon of success because it produced its first batch of hatchlings, the turtle hatchery is in fact totally unproven. This year's hatchlings were neither conceived nor laid in the hatchery – the eggs were raided from nests in the wild. To ensure that any and all mitigation strategies put forward by QWI as part of the EIS are serious, then it is imperative that they are accompanied by strict and harsh penalties for non-compliance and non-performance.
- 8. Past track record of the proponent.** With reference to Points 6 and 7, the ToR should include an assessment of the proponent on basis of track record of staff, directors and contractors. Key staff, directors and contractors associated with QWI were previously associated with Burnett Water Pty Ltd, and/or otherwise responsible for the Paradise Dam. The environmental performance of that project should be assessed to determine whether the proponent is capable of performing in a satisfactory manner on this project. Under the EPBC, the Federal Minister can take into account a person's environmental history in determining whether to approve a controlled action.
- 9. Health Impact Assessment.** The TOR should include a comprehensive Health Impact Assessment of public health risks associated with the project such as mosquito borne disease, water borne disease, blue green algal toxins, manganese and other heavy metals and the potential impact of the transfer of toxins and pathogens between catchments. Refer to the National Environmental Health Strategy (1999) and Guidelines for Economic Evaluation of Environmental Health Planning and Assessment (Federal Government, Australia). The HIA guidelines also recommend any major EIS include detailed assessment of social impacts and associated health issues, currently lacking in the ToR for the EIS.
- 10. Salinity.** The Intergovernmental Agreement on the Environment (IGAE) and the National Action Plan for Salinity and Water Quality should be referred to in the ToR. The Mary Basin Catchment is a priority catchment under NAP for salinity and consideration must be given to this in the EIS.

- 11. Population Viability Analysis.** The Terms of Reference do not appear to make any explicit mention of the risk of extinction to rare and threatened species. The onus of proof is on proponent to demonstrate that species will not be affected. This will require a proper Population Viability Analysis (PVA) and detailed modelling of the base case (no dam) and the disturbance regime (with dam). The impact on threatened species must consider loss of habitat, connectivity and fragmentation.
- 12. Aquatic Weeds.** With an average depth of just 5.1m (at the full supply level) the proposed dam will be an ideal environment for the propagation of exotic weeds such as water hyacinth and salvinia. Both are already present in the Mary River, particularly in shallow, still regions. For an example of the impacts of such weed infestations, one need look no further than Noosa's Lake Macdonald. Although they are a significant environmental risk in their own right (obliterating natural species, etc.) these weeds have another major impact which must be considered. With reference to the environmental flows in the river (Points 2, 3, 4 and 5 above) and the modelling of these flows, serious infestations of water hyacinth and salvinia will have a major impact. Based on Bureau of Meteorology data, the average (pan) evaporation rate in the dam region is 1,460 mm per year. Empirical adjustment of the pan evaporation rate to "lake" evaporation gives a figure around 960 mm/yr. However, weeds such as water hyacinth and salvinia are well known to increase evaporation rates (through transpiration) by a factor of 2 to 3. An evaporation rate of nearly 3 metres per year in a dam with a full supply depth of 5.1 metres will obviously have a dramatic effect on both the yield and the environmental flows. The ToR must explicitly require both of these effects to be addressed in the EIS.
- 13. Upstream Flooding.** During major floods, areas upstream of the proposed dam location already experience significant impacts. These are likely to be considerably exacerbated by the dam. The ToR should include as assessment of the locations impacted by the Probable Maximum Flood (PMF) with the proposed dam and without the proposed dam. A similar exercise should be undertaken in relation to the 1% Annual Exceedence Probability (AEP) – ie. the 1:100 year flood, including the hydrodynamic effects in the regions around the inflows to the ponded area.
- 14. Alternatives.** A great deal more rigor is necessary in regards to the consideration of alternative water supply options. Since the environmental impacts of the proposed dam are likely to be significant, and its actual performance questionable in light of climate change, evaporation and salinity, the Traveston Crossing dam must not be considered in isolation. There are far less environmentally damaging alternatives which also have a higher probability of success due to reduced dependence on rainfall, and these other options have not received proper consideration. Viable options include desalination, stormwater harvesting, waste recycling, urban water tanks and dry-cooling of process water at coal fired power stations. The ToR for the EIS must include a rigorous evaluation of these alternatives, and the relative environmental impacts of the proposed dam in comparison. A

valuable reference source for this investigation is the recently released report by the Mary River Council of Mayors.

- 15. Spillway design.** A recent study by the DPI&F on the Ned Churchward Weir on the Burnett River and its effects on turtles found that many turtles were being killed by injuries sustained from going over the spillway, and others from injuries caused by smashing into rocks at the bottom of the spillway due to turbulence. It is imperative that the ToR require an investigation of the spillway design for the proposed dam and its effects on the Mary River Turtle and other turtle species. An obvious corollary is that QWI must complete the detailed engineering design of the spillway before the EIS can proceed.

I trust that the issues raised above will be given due consideration and included in the Terms of Reference for the Traveston Dam EIS. The proposed dam has the potential to be one of the most severe environmental disasters in the history of Queensland, and it would be tragic for such a project to proceed purely because the Environmental Impact Study failed to fully address the likely impacts. The rigor (or lack thereof) of the Terms of Reference for the Study will determine the legacy which is left for future generations.

I also ask that following consideration of public comment on the draft ToR, that the final draft be circulated for critical review prior to the ToR being sent to QWI. The environmental sustainability of the Mary River and the many vulnerable species and habitats which depend upon it are too important an issue to get the EIS wrong, and another level of review will help to ensure this does not occur.

Regards,

Darren Edward