

**Traveston Crossing Dam Project: Stage 1
Mary River Queensland
Queensland Government. The Coordinator General
Draft Terms of Reference for an Environmental Impact Statement**

The Mary River Catchment Coordination Association Inc. is writing this submission in accordance with the procedure for public comment as outlined by the Queensland Government and Queensland Water Infrastructure Pty Ltd, the proponent of the proposed Traveston Dam. We ask that our comments receive careful consideration by the Coordinator General.

The MRCCA

The Mary River Catchment Coordination Association is a community association formed in 1993 as a representative body of community, industry and government interests involved in natural resource management in the Mary River Catchment. The MRCCA is composed of 21 interest sectors from across the Mary Catchment.

The MRCCA prepared a Catchment Strategy, which was endorsed by the State Government in 1997, which provides strategic direction to improve the sustainability of the Mary Catchment. It is estimated that over \$10 million worth of natural resource management activities has been implemented as a consequence of the Mary River Catchment Strategy.

In 1999 the MRCCA won the Queensland Rivercare Award, and again in 2003. In 2003 the Catchment – Landcare Award was also won by the MRCCA. In 2000 the MRCCA prepared Australia’s first Catchment Rehabilitation Plan, called the “Mary River & Tributaries Rehabilitation Plan”, and in 2004 won the National Rivercare Award for the implementation of this plan.

The MRCCA expects to maintain an ongoing role throughout the preparation of the EIS. The group seeks to be recognised as a stakeholder throughout the process.

Given the level of work performed by the MRCCA, we expect to be requested to provide information and services to the proponent and its consultants.

General Comments

After reviewing the draft Terms of Reference (ToR) the MRCCA has some concerns about the comprehensiveness of the ToR. The MRCCA believes a comprehensive and accurate EIS will only be produced if every single section and point within the draft ToR is addressed to its fullest. However the MRCCA believes that some key considerations need to be addressed in the ToR to ensure a full assessment of the impact of the proposal. Below are some key recommendations for the final ToR:

1. The EIS does not include Stage 2 of the proposed Traveston Crossing Dam. Only Stage 1 of the proposed dam has been referred to the Federal Environment Minister (*as described in Section 1 – Introduction*) yet the State Government is currently purchasing Stage 1 and Stage 2 land, and intends to build the dam wall to the full height. This is not acceptable. It is essential that the ToR project area be extended to also include Stage 2.

2. A comprehensive cost-benefit analysis should be prepared, and the ToR should specifically detail the aspects that will be investigated. At present section 1.3.2 *Costs and Benefits of the Project* on page 17, is extremely limited in detail, and only contains 2 dot-points of minimal description. At the very least the economic multipliers lost to the local and regional economies and the viability of enterprises assessed with loss of throughput should be investigated, The loss of economic benefit derived from ecosystem functions and ecosystem services currently provided needs to be investigated through techniques such as Contingency Valuation Analysis. Included in this analysis should be the full cost assessment and like comparison of all water resource options available to supply 70,000Ml per year (as stage 2 is unlikely to be constructed until 2035 [if at all] according to QWIPL factsheet – Project Overview).
3. Climate change scenarios should be included in the analysis for hydrology, floods, rainfall and temperature and evaporation rates which will impinge upon the reliability of the yield generated by the dam and on downstream flows. This most relates to section 1.3.1 *Need for the Project*, 2.2.5 *Proposed Water Storage Operation*, 3.5.1 *Water Resources – Hydrology*
4. Section “3.5.1 Water Resources – Hydrology” of the draft TOR asks the EIS to describe the environmental values of the existing water resources that may be affected by the Project in the context of environmental values defined in such documents as the EP Act, Environmental Protection (Water) Policy and ANZECC 2000. Section 3.5.1 then asks the EIS to describe the potential impacts and mitigation measures of the project. Within in this section the TOR only requires reference be made to the Mary River Basin Water Resource Plan (also page 46, dot point 9 refers to the Mary WRP). The contradictions between the Mary WRP and the Environmental Protection (Water) Policy and ANZECC 2000 must be noted.

The EP (Water) Policy 1997 states that when developing plans the Chief Executive must consider the ecological values of the waters, the environmental water requirements, and the protection of the environment in future water allocation decisions. The Mary WRP’s ecological outcomes state the water resource allocation and operation in the Mary River Catchment needs only to “minimise changes” to the existing flow regime and “minimise changes” to the hydraulic habitat requirements of the plan areas existing ecological assets. There is a stark difference between “protecting the environment” and “minimising changes”.

The Queensland Water Plan 2005 to 2010 under Strategy 1, Action 1.1 goes further and states that a “secure allocation should be provided to the environment, and that this allocation must be sufficient to maintain the ecological health of aquatic ecosystems and the plants and animals that depend on them, through taking into account river flow regimes-such as volume, timing, seasonality and duration”. The “Mary WRP Environmental Flow Assessment Framework and Scenario Implications”, June 2005, investigates the possible effects several different scenarios of flow regimes may have on the ecology of the Mary River basin. This report was prepared before the final

Mary WRP was released. The scenario best describing the final version of the Mary WRP is scenario R2 – a single large dam on the Mary River Upstream of Gympie (however Traveston Crossing Dam is a much larger proposal than scenario R2). To summarise the findings of this report it was concluded that of the four scenarios for the Mary River Catchment, the R2 scenario would cause the most change from reference condition, and thus overall condition degradation to the Mary River Catchment. With this in mind it is highly debateable whether the Mary WRP meets the requirements of the Queensland Water Plan or EP Water Policy.

The ANZECC 2000 Guidelines (Chapter 8.2.1.8) states the importance of the establishment of appropriate flow regimes to sustain the ecological values of river. ANZECC 2000 Guidelines recommends six types of methods for obtaining environmental flow regimes for Australian waterways: -

- the Range of variability method,
- Habitat assessment methods,
- Expert panel methods,
- Building block methodology,
- Ecological/holistic approaches and
- Decision support systems.

It is apparent that only the expert panel process was used to assess the environmental flow conditions for the Mary WRP. But the advice provided by the expert panel to DNRM was that a large single dam on the main Mary River above Gympie would be disastrous for endangered aquatic species and their ecosystem functioning and the catchment itself (reference R2 scenario of the Mary WRP). It is also worth noting that the R2 scenario provided to the expert panel (TAP) was of considerably less scale than that proposed for Traveston Crossing Dam.

Considering these points it is apparent that the Mary WRP does not comply with many sections of the above mentioned documents. The Mary WRP is also not endorsed by the community, as there was an immense change in the contents of the WRP between the draft for community comment and final version for legislation. This rewrite allowed much greater adverse impacts on the river in terms of environmental flow schedules following the political announcement of the Traveston Crossing dam.

The above points are just some of the major flaws of the Mary WRP, and in view of these we would like to request that all reference to the Mary WRP be removed from the final TOR.

5. The WRP, in its current form, cannot provide adequate protection of aquatic ecosystems protected by the EPBC Act or irrigation water allocations). There is currently no requirement for compliance of environmental flow schedules (contained in the WRP) for the freshwater sections downstream of the proposed dam wall. Therefore the EIS should specify locations in the catchment where the proposal will have the greatest effect on EPBC Matters of National Significance. These areas need to be a focus of thorough investigation. At present the nodes of the river most at risk of degradation are:

- From the dam wall to Six Mile Creek
- Mary River barrage
- Mary River estuary

The hydrological impact on these nodes needs to be properly assessed to determine the effects to the aquatic ecosystems and very strict environmental flow objectives developed which are set in legislation.

- Hydrology modelling which will be used in *Section 3.5.1 Hydrology*, should be performed using only the previous 10 years (1996 – 2006) of flow data which provides a better indication of the current effect of climate change. Using an average of the flows from a 110 year period (from 1890 – 1999) is flawed given that the current climatic conditions experienced are very different to previous decades, and that future predictions are for reduced rainfall. As a consequence we request that the IQQM hydrology modelling used in the Final Mary Basin WRP be re-modelled using only the previous 10 years hydrology data for the EIS.
- The ToR refers to the “Project footprint” or “Project area” throughout the text. The “project area” must be defined as:
 - the flooded zone of the dam,
 - the upstream sections of the Mary River and tributaries (likely to be affected by reduced water entitlements and land-use conditions),
 - the downstream freshwater section of the Mary River(also likely to be affected by reduced water entitlements and land-use conditions),
 - the Great Sandy Strait and estuarine areas within the Ramsar wetland effected and
 - the land that will be effected by the proposed pipeline to appropriate water from the Mary River Catchment to Brisbane.
- The social and economic impact of the Traveston Crossing Dam proposal requires a great deal more emphasis and should be strengthened in the ToR. The biophysical impacts to the catchment will only occur if Traveston Crossing Dam is constructed. However the announcement of the Traveston Crossing Dam has had a major impact on the motivation of the community. At present there is a major loss of momentum by the catchment community to implement sustainable NRM outcomes, which will have a long-term flow-on effects for the condition of the catchment. Therefore it is recommended that a serious assessment of the loss of momentum for NRM activities, and the loss of NRM ‘champions’, as a consequence of the dam announcement be performed. Secondly, an analysis of the long-term flow-on effect of achieving sustainable NRM outcomes in the Mary Catchment should be performed, and recommendations provided to re-gain this loss of community momentum
- Further investigation is required for Section 1.4 ‘Alternatives to the project’. At present this section is very limited in scope. Recently the Mary Council of Mayors commissioned Cardno and UTS to investigate alternative water supply sources for South-east Queensland. The outcome of this investigation was that the Traveston Crossing Dam is not required. The study found existing water supply options, combined with non-climate influenced water sources, negate

the need for Traveston Crossing Dam. Therefore it is recommended the final ToR includes the outcomes of this study in the alternatives section (Section 1.4) and the cost / benefit analysis (1.3.2) section. The MRCCA also requests the Coordinator General carefully considers the findings of the Mary Council of Mayors report.

10. The timeframe for the preparation of the EIS is 6 months according to the Qld Government, which is fundamentally flawed. The draft TOR gives no indication of timeframes for the preparation of the EIS. A 6-month timeframe does not encompass one complete seasonal cycle. This is not an appropriate amount of time to identify and quantify potential habitat loss, and the consequential risk of extinction to the EVR fauna. This timeframe cannot measure seasonality as it relates to biodiversity assessment. The proposed timeframe is also inadequate to conduct detailed studies required to quantify the interactions between surface waters and the groundwaters, which is not covered in the WRP. The length of time for EIS preparation (as advertised by the Queensland Government) should be extended to at least 24 months (to obtain 2 seasons data) as a matter of urgency. In particular, this current season is a particularly bad season for determining the presence of frog populations due the dry conditions. As a consequence many frogs species are not calling, making their detection very difficult. This issue most relates to Section 3.3 Nature Conservation in the draft ToR.
11. The ToR should specify costs associated with the project. Clear articulation of cost breakdown between projects needs to be undertaken for:
 - a. Dam construction.
 - b. Infrastructure, i.e. pipelines, water treatment plants, pumping stations etc.
 - c. Compensation for effected upstream and downstream users.
 - d. Road, electricity, communication, railway relocation.
 - e. Property purchase.
 - f. Plan redrafting costs (LG Planning Schemes, Regional NRM Plans, etc).
 - g. Ongoing maintenance costs of all options including aquatic weed management, blue-green algae and vector control.
 - h. Water treatment costs of water extracted from the dam in light of a catchment with high sediment loads and many known contaminated sites.
 - i. Water treatment cost impacts for downstream users (Councils) due to the likelihood of higher pollutant loads in the water.
 - j. Ecosystem service costs for loss of significant areas of remnant vegetation.
 - k. Remnant vegetation offset costs for reestablishment.
 - l. Industry costs including economic evaluation of the loss of good quality agricultural land, losses to the fisheries industry and associated tourism impacts down stream.
 - m. Engineering works for necessary infrastructure (eg bridges) downstream that are affected by future bank instability associated with reduction in water flows.
 - n. Bank stabilisation costs for downstream areas.

- o. Costs of managing sediment load within dam and costs for managing/reducing sediment entry into dam.
 - p. Cost of land use change within the controlled catchment area above dam.
 - q. Costs of offsetting the significant greenhouse gas emissions caused by the construction and operation of the dam.
12. The TOR should require assessment of the potential for hyper salinity levels to occur in the marine ecosystems of Hervey Bay due to reduced river flow. An assessment of the effect of hyper salinity on coastline coral ecosystems should be included in the TOR.
 13. The Paradise Dam fish-lift design has been suggested as the design to allow fish passage (in particular Lungfish) across the Traveston Crossing Dam. However MRCCA requests that a comprehensive investigation into the effective operation of the Paradise Dam fish-lift, and its ability to transfer fish (in particular Lungfish) safely upstream and downstream be carried out. A full investigation into the effect of the fish lift on turtle mortality is necessary given that the dam wall will be constructed in known endangered Mary River Turtle habitat.
 14. The EIS should contain a demonstrated program of implementation of mitigation measures with consequences for non-implementation and fully documented performance criteria. It is evident that such a program was not put in place for the Paradise Dam and many of the proposed mitigation measures either do not work or have not been implemented.
 15. Within section 3.2.1 Land Use and Infrastructure (p.29 & p.30) there contains references to land-use restrictions with respect to maintaining the water quality of Traveston Crossing Dam. Contained within the Water Act 2000 the State Government has the option of creating a 'declared catchment' whereby land-use restrictions are placed upon the property owners upstream of a water supply. The references to land-use restrictions contained on p.29 & p.30 would indicate that the intention is to declare the Traveston Crossing Dam catchment. Therefore if this is the case, the ToR should provide comprehensive details of extent of the catchment above the proposed dam that will be declared, and the timing of the declaration (i.e. during construction, or on completion of Stage 1 etc). It would also be prudent for the ToR to detail the level of restriction that will be placed upon the catchment above the proposed dam, given that the Water Act 2000 clearly states riparian protection buffer widths for declared catchments. The MRCCA promotes voluntary uptake of sustainable riparian zone management, and water quality improvement.

Specific Comments related to the ToR:

1.4 ALTERNATIVES TO THE PROJECT

(Page 17)

“The alternatives considered should include:

- *Demand reduction techniques;*
- *Other water supply methods, including:*
 - *Recycling;*
 - *New pipelines forming a water grid between existing storages;*
 - *Desalination; and*
 - *Groundwater.”*

Recommendation:

- Rainwater collection tanks should also be included as an alternative (as retrofitment to existing dwellings and installation to new dwellings). Their potential to contribute to the proposed annual yield required for SEQ must be investigated.
- The impact of water saving devices also needs to be evaluated with special emphasis on their contribution to reducing the annual yield required for SEQ.
- Stormwater harvesting in urban areas of SEQ be investigated for their potential to contribute to the proposed annual yield required for SEQ.

4. STAKEHOLDER CONSULTATION

(Page 12)

and

1.6 PUBLIC CONSULTATION PROCESS

(Page 18 & 19)

Recommendation:

- A list of the interest groups / stakeholders which have been consulted with during the EIS preparation needs to be provided. For each of the interest groups / stakeholders an outline of the amount of consultation should be included (for example, the number of meetings held with the group).
- The MRCCC finds that the draft TOR sufficiently highlights the paramount need for public consultation during the preparation of the EIS. However the TOR needs to set out a clear pathway that the community can participate if they believe the public consultation has not been adequate.
- The final EIS needs ratification by each of the identified “interest groups”. The recent example with the Mary Basin WRP and the disenchantment by the Community Reference Panel of the process is a prime example that needs to be avoided with the Traveston Crossing Dam EIS community consultation process.
- The MRCCA requests an ‘open’ process by the Coordinator General for the development of the Environmental Impact Statement, whereby the community is involved in each step of the process and provides comment at each step.

2.2 DESCRIPTION OF THE WATER STORAGE CONSTRUCTION AND OPERATION

(Page 21)

2.2.1 Barrier/Embankment Structures

- It is recommended that an estimated total economic cost to construct the barrier/embankment (materials and labour) be provided.

2.2.3 Pre-Construction Activities

- It is recommended that an estimated total economic cost to of all of the pre-construction activities be provided.

2.2.5 Proposed Water Storage Operation

- It is recommended that an estimated total economic cost of the operation of the water storage be provided.

2.2.6 Rehabilitation

- It is recommended that an estimated total economic cost of the rehabilitation be provided.

2.2.7 Decommissioning

- It is recommended that an estimated total economic cost of decommissioning be provided.

3.2.2 TOPOGRAPHY AND GEOMORPHOLOGY

(Page 31)

Potential changes to geomorphology downstream of the project are severely understated in this section.

”Description of Environmental Values”

Recommendation:

- It is recommended that the fluvial geomorphology of the river (from the upper section of the impounded area to the river mouth) should be described and mapped with commentary on significant features that will be affected.

”Potential Impacts and Mitigation Measures”

Recommendation:

- It is recommended that all fluvial and landscape geomorphic features that will be inundated be investigated, recorded and catalogued..
- The potential changes to the fluvial geomorphology both upstream and downstream of the proposed dam must be investigated (including the reduction in downstream flow potentially leading to loss of riffles and pools, channel contraction, decrease in large woody debris, tributary channel incision, sedimentation during construction).

3.2.3 GEOLOGY AND SOILS

(Page 32)

“Any highly erodible soils, saline sites and sites which are particularly susceptible to becoming saline(including downstream of the Project, where applicable) should be especially identified.”

Recommendations:

- Potential for salinity impacts (both up and downstream of the proposed dam site) on surface water and groundwaters that may be caused by the dam and dam wall should be analysed.
- Potential threat from seismic activity, geological faults and associate geological hazards (including threats to townships from development failure).
- Salinity Hazard Mapping for the Mary River Catchment shows that the dam-site and immediately downstream is in the high to moderately high risk categories – therefore it is recommended that a specific section in the EIS investigates salinity impacts to surface waters and groundwaters as a consequence of reduced flows for surface waters, and potential blockage of groundwater flows as a consequence of the dam wall (and sub-surface infrastructure) construction.

3.3.3 TERRESTRIAL FAUNA

(Page 39)

“Description of Environmental Values”

Recommendations

- A description of terrestrial fauna must include the impacts of habitat loss, degradation and fragmentation on the populations of a species outside of the dam footprint as well as within the footprint. Distribution within the dam footprint must be in context with overall distribution of the species.
- The time period of the EIS is inadequate for some terrestrial species particularly the amphibians. The current breeding season is very poor due to the dry conditions and frogs have been hard to find. A full 12 months is essential to capture the more active breeding period for frogs in Spring and early Summer.
- Fauna data must be obtained from sources other than fauna studies commissioned by QWI. It must search beyond the realms of Government agencies as community groups and individuals hold a great deal of information.
- While emphasis may be placed on threatened species the EIS must recognise the importance of Common species and their role in food webs and symbiosis relationships e.g the reliance of the vulnerable Richmond birdwing butterfly on the Brush turkey through seed spread of the host vine.

“Potential Impacts and Mitigation Measures”

Recommendations

- Cumulative effects of threats must be addressed by the EIS. The effects of vegetation loss and degradation (historical and current), weed and feral animal invasion, climate change, industry and agricultural outputs, soil degradation and erosion, disease etc from all activities within the catchment need to be included in any assessment of the effects of the Traveston dam on fauna species.
- Where disturbance or destruction of fauna habitat is to occur, offset activities must be realistic and equate to the loss. It must be recognised by the EIS that in certain circumstances replica habitats will not be able to be created and that a net decrease in population levels will occur.
- The EIS must discuss the impact of infrastructure on riparian dependant species e.g. Giant barred frog, that will not easily negotiate barriers that protrude beyond the riparian zone.
- The effect of the spillway on the survival of transient terrestrial species particularly during floods must be assessed. Many species rely on flood waters to transfer genetic material throughout the catchment, particularly between sub-catchments. Turbulence and high impact flows over the spillway are likely to reduce the success of downstream migration and thereby reduce the genetic vigour of downstream populations.
- The EIS must recognise that even though species are represented and possibly projected in areas outside the dam footprint, decreases in overall populations levels will occur as a result of the dam. It must recognise that populations outside of protected areas are important for mixing of genetic material and as recruitment sources following local catastrophic events e.g. fire, flooding, disease outbreaks.
- Future status changes to a species as a result of the dam must be considered and reported on by the EIS. It is not acceptable to consider the current status of a species but also its potential status post-dam construction. Therefore a species that is currently listed as common may be downgraded to vulnerable as a consequence of the Traveston dam.

3.3.4 AQUATIC FLORA

(Page 40)

“The aquatic vegetation in the area affected by the Project should be described noting:

(dot-point 4) – the presence of any declared pest plants” AND

(Page 41)

“The location of significant local and regional weed species in the vicinity of the project site should be shown”.

Recommendations:

- That declared pest plants (aquatic) be identified within the project area, upstream of the project area, and within trailerable distance for boating craft of the project area to determine the level of potential infestation. An assessment of the risk of infestation to the project area, and downstream, by these exotic species should be included.
- The risk of a Cabomba infestation should be investigated. While not recorded within the project area, Cabomba has infested an impoundment (Lake

MacDonald) within 15 minutes of the project area and can be easily transported to the project area by boating craft (particularly boat trailers) and water birds. Control measures for Cabomba should also be detailed.

- Need to model for the projected extent of Cabomba, Salvinia, Hyacinth outbreaks within and downstream of the project area, using the Burnett River impoundments as a reference for the potential extent of likely infestations.
- Need to identify and clearly define who will be responsible for control of aquatic weeds in the project area and downstream as a consequence of Traveston Dam construction.
- Need to fully identify feasible control strategies and cost the control measures of a likely aquatic weed outbreak within the project area and downstream reaches.
- Need to note the infestations of the highly invasive Dense water weed (*Ageria densa*) currently located within the proposed impoundment area and the very high potential for this weed to rapidly invade the proposed flooded area.

Overall Comments on 3.3.4 Aquatic Flora:

Need a specific section on ‘Aquatic Weeds’ given the high level of concern within the Mary River Catchment on this subject due to the presence of Australia’s largest Cabomba infestation (at Lake Macdonald) only 15 minutes from the proposed dam, and the current level of community concern regarding Salvinia and Hyacinth problems (which will be exacerbated by Traveston Dam) in the lower Mary River Catchment.

3.3.5 AQUATIC FAUNA

(Page 42)

”Description of Environmental Values”

Recommendations

- A description of aquatic fauna must include the impacts of habitat loss, degradation and fragmentation on the populations of a species outside of the dam footprint as well as within the footprint. Distribution of a species within the dam footprint must be in context with overall distribution of the species.
- Recognition of the uniqueness of the Mary River system as habitat and breeding grounds for 3 locally endemic and threatened aquatic species (Mary River cod, Mary River turtle and Australian lungfish) must be emphasized.
- The Mary River cod and Mary River turtle are **only** naturally found in this river system. The EIS must convey the importance of this fact and recognise that there are no alternatives for these species.
- The Australian lungfish is only found naturally and only breeds in the Mary and Burnett Rivers. The habitat of the Burnett River has been severely compromised so that the Mary River now provides the only extensive habitat and breeding areas. The EIS must emphasise the importance of the Mary River to this species.
- The time period of the EIS is inadequate for determining the numbers and distribution of some aquatic species. Some species are only obvious during breeding periods. A full 12 month period is essential to sample aquatic fauna species.

- Fauna data must be obtained from sources other than fauna studies commissioned by QWI. It must search beyond the realms of Government agencies as community groups and individuals hold a great deal of information.

“Potential Impacts and Mitigation Measures”

Recommendations

- The effects of changing water levels on aquatic species must be discussed in the EIS. A shallow impoundment such as the Traveston Dam will necessarily create wide ‘dead’ zones around the perimeter when the water level drops. This represents a dramatic reduction in habitat area and will cause the populations levels of aquatic species to undergo huge fluctuations.
- Cumulative effects of threats must be addressed by the EIS. The effects of in-stream habitat and vegetation loss and degradation (historical and current), weed and feral animal invasion, climate change, industry and agricultural outputs, soil erosion, water quality degradation, disease etc from all activities within the catchment need to be included in any assessment of the effects of the Traveston dam on aquatic fauna species.
- Where disturbance or destruction of fauna habitat is to occur, offset activities must be realistic and equate to the loss. It must be recognised by the EIS that in certain circumstances replica habitats will not be able to be created and that a net decrease in population levels will occur.
- The EIS must recognise that even though species are represented and possibly projected in areas outside the dam footprint, decreases in overall populations levels will occur as a result of the dam. It must recognise that populations outside of protected areas are important for mixing of genetic material and as recruitment sources following local catastrophic events e.g. pollution events, flooding, low dissolved oxygen events resulting in mass fish kill, disease outbreaks.
- Future status changes to a species as a result of the dam must be considered and reported on by the EIS. It is not acceptable to consider the current status of a species but also its potential status post-dam construction. Therefore a species that is currently listed as common may be downgraded to vulnerable as a consequence of the Traveston dam.
- While emphasis may be placed on threatened species the EIS must recognise the importance of Common species and their role in food webs and symbiosis relationships e.g. the reliance of the Mary River cod on invertebrates and small fish for food and as waste recyclers.

3.5.1 WATER RESOURCES – HYDROLOGY

“Potential Impacts and Mitigation Measures” – paragraph 1; sentence 1.
(Page 47)

Recommendation:

- An analysis should be prepared of the impact of water extraction upstream, within and downstream of the project area.

“Potential Impacts and Mitigation Measures” – paragraph 3; dot-point 2.
(Page 47)

Recommendation:

- An analysis of optimal environmental flows is required to support special ecological values in the freshwater / estuarine / marine environments, and then determine if the environmental flows and water allocation security objectives in the WRP are adequate.

Dot-point 8: *“changes in the reliability of supply to current water entitlement holders downstream and the operation of existing water extraction”.*
(Page 48)

Recommendation:

- Need to also include “upstream users” in the above statement, because their water entitlements are likely to be effected.

3.5.2 WATER RESOURCES – HYDROGEOLOGY

(Page 50)

Dot-points 5 & 6 *“identification of groundwater resources proposed to be used by the project”*

Clarification:

- The investigation of groundwater reserves is supported, but clarification is required why groundwater is being investigated within the project area, and for what purpose this proposed use is intended?

Recommendation:

- Need to analyse how the dam wall, the impoundment and water extraction will affect groundwater flows laterally and downstream of the dam wall.
- Need to investigate the flow-on affects to the surrounding (and linked) aquifers of using the target aquifers.

3.5.3 WATER QUALITY

(Page 50)

Description of Environmental Values

Recommendation:

- It is recommended that the QLD EPA Environmental Values and Water Quality Objectives for the Mary River (2005) be included as a reference.
- A reduction of flushing flows at the Mary River barrage could contribute to increased concentrations of heavy metals (such as manganese, arsenic, mercury), which were released during previous gold-mining activities upstream. A thorough investigation is required regarding the decreased flushing flows and the potential for accumulation of heavy metals in the Mary River barrage pondage.
- In times of low flow the Mary River already fails to comply with the water quality guidelines (in particular Electrical Conductivity). EC levels recorded

by MRCCC in October 2006, indicates that the Miva – Gundiah area of the Mary River will be most affected by reduced flows. Therefore it is recommended that a thorough analysis of the effect of low flow regimes on the level of non-compliance for EC levels below the dam-wall be carried out. Further analysis must be conducted on the suitability of this EC level for irrigated agriculture and aquatic ecosystems.

4. ENVIRONMENTAL MANAGEMENT PLANS

(Page 65)

Recommendation:

- The ToR state specifically where EMP's will be needed (i.e. what sections of EIS will have an attached EMP)
- The EMP's be to ISO14001 Quality Assurance standard. The outline for the structure of the EMP in the TOR is severely understated.
- Operating EMP's should be used as case studies to compare against the proposed EMP's of this EIS.