Tamar Lake Inc.

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Tamar Lake Environmental Impact

Studies carried out, threatened species and potential ecosystem impacts identified, and mitigation and environmental approval plans mapped out and costed.

Introduction

The Tamar Lake project, with the installation of a barrage in the Tamar at Long Reach, not only provides a permanent solution to the silt accumulation in the upper reaches of the Tamar River around Launceston, but also provides a transformative boost to the economy of the whole Tamar valley.

As an essential component in Tamar Lake Inc's investigation into the feasibility of the Tamar Lake project, a range of environmental studies have been carried out to identify potential threatened species and ecosystem impacts.

Environmental Studies

1. **Natural Values Assessment report**
   Produced in June 2012, BMT WBM scientist Dr. Andrew Costen prepared a 176 page report that identifies and characterises the biological and geo-diversity values of the Tamar Valley, and determines the existence of conservation or otherwise noteworthy species or communities.

2. **Further ecological assessment of threatened species and potential ecosystem impacts. - CDM Smith**
   Following the receipt of the Costen report, environmental scientist at CDM Smith, Dr. Mark Breitfuss, carried out a peer review of that report for the specific purpose of segmenting the threatened species identified in the Costen report into three categories – likely to be impacted: potentially impacted: and unlikely to be impacted – and provide a closer look at the species in the first two categories to understand the potential threats and/or benefits to the species and possible methods of mitigating the impact of the changed Tamar Lake.

3. **Peer review by Tasmanian Irrigation scientists**
   The CEO of Tasmanian Irrigation, Chris Oldfield, offered to make available the services of ecologists Kathryn Pugh and Catherine Murdoch for a review of the two previous reports.

   Tasmanian Irrigation provided guidance on the level and quality of information that would be required to conduct a robust impact assessment of the project and detailed what state and federal permits would be required for the project to proceed.

4. **Peer review by NRM North – November 2014 – 27 pages.**
   To better inform the project partners of the TEER program, NRM North commissioned a peer review of all the previous environmental studies into the impact of Tamar Lake, and inform them on potential impacts, costs and benefits of the project.

   This study was carried out by Dr. David Rissik of the National Climate Change Adaptation Research facility at Griffith University, and highlighted specific issues in water quality, hydrology, sedimentation and ecology that will require attention in the detailed planning phase for Tamar Lake.

Effect of Tamar Lake on flooding and sea level rise.

The Tamar Lake flood studies have shown that with a maximum of 24 hours warning of a flood event, the lake level may be lowered to provide enough buffer storage upstream to mitigate all flood events up to a 200 year event for both current and sea level rise scenarios.

The removal of any tidal effects upstream also contributes to the effectiveness of this system, and also allows for the effect of low to moderate flood events (5 to 50 year) to be managed to not top the banks at the Boardwalk, Royal Park flats, and Glebe flats etc.

The Tamar Barrage will be constructed to provide protection for the whole of the Tamar Valley upstream of the barrage for a predicted sea level rise of 0.8m.

3 D Modelling and Tamar Lake Scenarios

In conjunction with the Launceston Flood Authority, NRM North, and TasWater, and with state and federal funding of $140,000, a project has been commissioned for the development of a 3 D hydrodynamic model of the Tamar, with Tamar Lake intending to apply this model to 7 Tamar Lake scenarios to verify and understand environmental and technical aspects of the project that could not be carried out with the existing 2 D model.

When the model is completed we will be applying the model to determine the following:

- Sedimentation impacts upstream and downstream of the barrage over both the initial 12 months following flushing of the salt from the lake, and over a 50 year period.
- Possible barrage operating strategies to minimise silt accumulation upstream and downstream of the barrage
- Impact of the barrage on tidal heights below the barrage, both under normal tidal and storm surge tidal conditions
- Water quality assuming the planned Launceston Sewage Improvement Plan is carried out
- Time estimate for transition of lake waters to fresh after closing of the barrage gates.
- There will be some leakage of the salt water through the lock operations and wall seepage. Estimate of size of salt wedge and whether provision should be made to pump the salt wedge downstream.

These results are expected at the end of June 2015.

Specific Programs and Environmental Issues

With the shared goal of working towards a clean/green silt free waterway, protected against a 200 year flood event and sea level rise due to global warming, over the last 4 years, Tamar Lake Inc and the responsible management Authorities (Launceston Flood Authority, NRM North and TasWater) have made giant strides in understanding what we need to do to achieve this goal, and have identified the probable costs and economic benefits that could be realised from this achievement.

- **Launceston Flood Protection**
  The Launceston Flood Authority has just completed the development of the flood levee system around the low lying areas of Launceston to protect against a 200 year ARI flood event under current tidal and future sea level rise scenarios.
- **Launceston Sewage discharge into the Tamar**
  TasWater has developed a strategy for the Launceston Sewage Improvement Project with

the tertiary treatment of all discharges into the Tamar, and are developing a plan for implementation in the 5 to 10 year time frame.

- **Catchment Management**
  NRM North through their TEER Water Quality Improvement Plan are developing an understanding of the locations of the diffuse and point sources of sediment, nutrients and bacteria from the Tamar catchment areas, and have initiated a program with farmers and landholders to improve their land management practices with a view to reducing the pollution effects flowing into the Upper Reaches of the Tamar. This is at least a 10 year program.

- **Tamar Lake Project**
  With an estimated seven years for planning and construction, and a targeted completion in 2022, provided the above three programs continue to be funded over this period, it is expected the community goal of a clean/green Tamar will be achieved.

Specific Environmental Issues to be addressed

From the environmental impact reports completed to date, the following specific threatened species will need mitigation management plans included in submissions to government for approval.

- Australian Grayling fish
- Dwarf Galaxias fish
- Green and Golden Frog
- Australian Bittern bird
- Eastern Curlew bird
- Fairy Tern bird
- A wide range of migratory waders
- White bellied sea eagle
- Coastal saltmarsh (there is currently no listed stands of coastal saltmarsh in the future Tamar Lake environment).

In addition to the threats above, the formation of Tamar Lake will have the following consequential effects that will need to be addressed:

- The pest fish, Gambusia, currently limited to the Tamar Island Wetlands area and adjacent farm dams will benefit from an expanded freshwater habitat in Tamar Lake.
  It is Tamar Lake's position that attempts to eradicate this pest continue to be made with the aim of complete eradication before completion of the barrage.

- Endangered ocean dwelling species such as sharks, rays and whales, while currently mostly confined to the lower estuary, will have their refuge areas truncated at the barrage with no threats to the species.

- Upstream of the barrage as far as Rosevears is currently a popular recreational fishing area for flathead and snapper. The fishing grounds for these saltwater species will be displaced to

below the barrage. However, upstream of the barrage is expected to become a Mecca for freshwater recreational fishermen.

- Tamar Island Wetlands, while being freshwater wetlands, rely on some tidal flow through the wetlands to flush the lagoons. A management strategy will need to be prepared to ensure no detrimental effects on the species resident in the wetlands.

Socio-Economic Impact

Dr Rissik correctly identifies that while Tamar Lake Inc has carried out detailed environmental and economic studies, no attempt has been made at this stage to understand the socio-economic effects of the proposal.

Socio-economic refers to the social, economic and environmental impact of the barrage. We agree that there has been insufficient work done on the broad social benefits and losses from the barrage and that this will become a focus for Tamar Lake Inc. However, considerable effort has gone into the economic and environmental work to date for what amounts to a pre-feasibility stage for the project.
From a Tamar Lake perspective, the socio-economic impact assessment will be carried out with the EIS and legislative approvals process only after a decision is made to proceed to the detailed planning phase after the identified 3D modelling has been carried out.

Conclusion

While the Tamar Lake project involves a major transformation of the ecology of the river upstream of the barrage, from the studies carried out to date, and discussions with environmental scientists, it is believed that the impact on threatened or displaced species in the lake may be minimised through good management.

Unlike typical dam projects (Meander, Franklin) that drown the ecology in the flooded valleys, the changes that will occur are principally ones of water salinity over approximately 50% of the current estuary, and water levels upstream of the barrage.

It is expected that the Environmental Impact Statement that will be submitted to government in the legislative planning process will include an effective management mitigation plan.

It is Tamar Lake's opinion that the environmental benefits in being able to present a clean/green silt free waterway to the residents and tourists, with protection of the built environment from sea level rise, will more than offset the cost of managing the environmental impact.

It is also Tamar Lake's opinion that unless measures are taken to permanently eradicate the silt build up in the upper reaches of the Tamar, and improve the visual and commercial amenity of the Tamar, the aquatic (and hence economic) future of Launceston and the Tamar Valley will be severely limited.

Current Members

Ross Ambrose	Scott Anthony	Charles Booth	Errol Stewart	Kevin French
Phil Leersen	Ralph Norton	Ted Pedley	Mike Steele	David Vautin
David Youngman	Jack Bain	Tim Dowling	Tony Gray	Andrew Lovitt
Bob Ruddick	Alec Purves	Stu Cottrell	Denis Tucker	Bill Woolcock
Phil Frith	Robin Yates	Richard Matson	Marcos Ambrose	Ross Peck
Robin Frith	Barry Larter	Martin Rees	Tim Lack	Robert Dutton