



Tamar Lake Inc.
Incorporation Number IA 10501

Tamar Lake Feasibility Report Overview

Key Finding:

The Tamar Lake project provides the community with the opportunity of realising most of the desired improvement in the Upper Tamar's health and amenity benefits in the short term while also starting to reap the huge economic benefits that the project offers for current and future generations.



Tamar Lake Yacht Basin – 24/7

Founding Members

Ross Ambrose	Scott Anthony	Charles Booth	Errol Stewart	Kevin French
Peter Thyne	Ralph Norton	Ted Pedley	Mike Steele	David Vautin
David Youngman	Jack Bain	Tim Dowling	Tony Gray	Andrew Lovitt
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Introduction

After 7 years of intensive research, the private investment of over \$500K into consultant studies, and hundreds of man-days of in-kind contributions by members, the not-for-profit, member funded Tamar Lake Inc. is very pleased to deliver to the community the attached Report into the Feasibility of the Tamar Lake project.

The northern Tasmania Community, through the State and Local Governments and key stakeholders, are considering a number of projects all aimed at improving the health and amenity of the upper Reaches of the Tamar River.

These projects are:

- The TasWater Launceston Sewerage Improvement Project (LSIP), with the aim of an economic rationalisation of the 7 distributed STPs around Launceston into two large plants at Ti Tree Bend, and effecting the reduction and relocation of the discharge of pollutants entering the Tamar.
This is currently a 10-year program.
- The TasWater and Launceston Council Combined System Overflow (CSO) project aimed at reducing the frequency and duration of overflows from the STPs with heavy water flows through the stormwater system. According to an independent Beca Report, cost estimates range from \$31m for simple solids screening to \$560m for full separation.
- The NRM North Water Quality Improvement Plan (WQIP) aimed at reducing 80 % of all pollutants entering the Tamar sourced from the greater South and North Esk River catchments.
This is currently a 30-year program.

The Tamar Lake Project

While there is no dispute that all the above projects must be carried out over the medium to long term, with the release of the attached final Feasibility Study into the viability of the Tamar Lake project, the community is now offered the opportunity of investing in the planning, approval and business case stages for a fourth project that has the potential to not only offer a significant improvement in water quality in the Upper Reaches of the Tamar, and the removal of any significant new silt deposition in the whole of the Tamar Valley, but also provide a major boost to the economy through the formation of a large freshwater, constant level, lake that will greatly improve the lifestyle, tourism and agriculture opportunities for the whole of Northern Tasmania.

This Tamar Lake project could be implemented in a much shorter time frame than the above three projects; would have most of the desired river health benefits realised within 12 months of the implementation of the barrage; and offer increased financial incentives and capacity to implement the other 3 projects.

Key Findings from the Feasibility Report

With a barrage installed at the south end of Long Reach, a very large, constant level, freshwater reservoir 80 % the size of Sydney Harbour is formed behind the barrage, and the tidal prism of the 20-km long estuary section from the barrage to Low Head is halved. The formation of this large reservoir removes the asymmetrical tidal action in the Upper Reaches and moves the flocculation zone to downstream the barrage, greatly enhancing the quality of water upstream of the barrage and generally improving the use and amenity of the upper Tamar.

Environmental Impact

The results from expert assessments and reviews are summarised below. Reference is made to the significant findings from these reports, demonstrating the benefits that would result from the project.

- **Ecology**
The environmental impact studies showed that while there will be some displacement of natural ecological values, no listed species will be threatened and the freshwater habitats (including the Tamar Island Wetlands) will be greatly expanded.
- **Sediment Management**
The report shows that this strategy ensures that there will be no new silt accumulation in either the resultant reservoir or downstream of the barrage, with all new silt from the catchments flowing in suspension out to Bass Strait and the residual silt bed eroding with each major flood event.
Through sound operating principles, excess freshwater will be released on an ebb tide, limiting the mixing of fresh and salt water and hence reducing flocculation.
- **Water Turbidity**
The current muddy water appearance in the area from the St Leonards weir on the North Esk to Freshwater Point, including the Yacht Basin and Home Reach, will transition within 12 months into the same clear water clarity as the Trevallyn Lake.
- **Water Quality – catchment sourced and normal STP discharges**
The water quality in the Yacht Basin/Home Reach area will, within 12 months, be greatly improved with pollutants flowing one way downstream from the Tailrace instead of being “pumped” upstream into the Home Reach/Yacht basin area.
With the removal of the asymmetrical tidal action from the Upper Reaches, 80% of all new pollutants entering the Tamar down the Tailrace, or from the sewage treatment plants at Ti Tree bend and Riverside flow one way downstream from the Tailrace.
- **Water Quality – Launceston’s Combined System Overflows**
With the removal of the asymmetric tidal action, any Combined System Overflow (CSO) events from the current Launceston treatment plants will flush rapidly with the stormwater one way downstream instead of being locked into the Home Reach section.
If the flows down the Cataract Gorge are increased to 25 cumecs from the current 2.5 cumecs as proposed by a number of stakeholders, this one-way flushing action of pollutants will be greatly enhanced.
- **Water Quality – upstream the barrage**
As with any large body of constrained freshwater fed from a large rural and urban catchment area, Tamar Lake will have the potential for algal blooms to form on the surface of the lake during the warmer days of mid to late summer. Standard operating procedures will be implemented to ensure the system is managed appropriately.

Lake Burley Griffin in Canberra is a prominent example of this situation.

The 3D very extensive water quality modelling carried out for Tamar Lake Inc. by BMT WBM,¹ confirmed that the 20 km stretch of the lake just upstream of the barrage would be highly susceptible to the formation of anoxic (low dissolved oxygen levels) conditions at depth, and to the formation of late summer algal blooms on the lake surface, reducing the amenity value of this area.

With constraints on the Tamar Lake budget at this feasibility stage, coupled with the very high cost of using the Tamar Estuary 3D model over multi-year simulation periods, the modelling carried out for this report, provided only a worst-case snapshot of the environmental conditions for a single year (2010/2011) and was based on **theoretical** nutrient sediment flux rates sourced from a distributed sediment bed at an undefined future point in time.

To provide the certainty necessary for a decision to proceed to construction, Tamar Lake Inc. recommends that modelling carried out in the planning phase should be based on **measured** nutrient sediment flux rates in the period immediately following the formation of the lake; for an extended period of time after construction; and on a wide range of simulated weather conditions over a 50 to 100-year window.

- **Sea Level Rise**

The barrage will be designed to provide protection against a sea level rise of up to 0.8m for the whole valley upstream of the barrage, thus future proofing the low-lying areas of Launceston up to at least the year 2100.

- **Rice Grass Eradication**

The pest rice grass, introduced in 1947, has spread in the area between Freshwater Point and the Batman bridge to cover 415 ha of terraces and marsh islands that has reduced the utility value and aesthetic appeal of the shoreline. In a Tamar Lake environment, the rice grass will die off and decay, allowing the re-colonisation of native species, direct access to the water from the shoreline, and restoring the aesthetic presentation of the full width of the waterway with a permanent high-water level.

Technical

- **Flood Mitigation**

The barrage gates have been designed to ensure that there is no detrimental effect on flood levels in Launceston for all flood events up to the 200-year ARI event for both current sea level conditions and assuming a sea level rise of up to 0.8m.

- **Freshwater Supply**

With a freshwater storage volume of 450 GL, and an annual input flow of between 1500 and 4000 GL from a catchment of approximately 20% of the area of Tasmania, the Tamar Lake opens up huge opportunities for commercial development in the industrial, agricultural, residential, and tourism sectors of the economy.

- **Marine Navigation – transition from Low Head to Launceston**

With a ship lock in the barrage, and a permanent 24/7 high water level, a minimum navigation depth of 5m will enable private and commercial vessels, including large tour boats, to transition the Tamar from Low Head to the Launceston Seaport at any time of the day or night.

¹ Tamar Lake sedimentation and water quality modelling - B20921.008.Scenarios_Update.

- **Marine Navigation – large cruise ships mooring at Port Dalrymple**

The major reduction in the tidal prism of the Tamar estuary providing a reduction in peak tidal currents from 6 km/hour to 1 km/hour will enable a mooring facility to be constructed at Port Dalrymple to accommodate large cruise ships visiting the Tamar.

Economic

- **Tamar Valley Irrigation**

Our studies estimated that there is a potential area available for irrigation in the Tamar valley of between 15 and 22 thousand hectares, providing the opportunity for the Valley to become a very major centre for additional wine, fruit and horticulture agricultural production with near water frontage properties irrigating directly from the lake, and the potential for Tas Irrigation to construct elevated water storage facilities with gravity feed to properties on the inside and outside slopes of both the West and East Tamar banks.

- **Tourism**

With clean, green, low pollution freshwater and a permanent high tide in the Upper Reaches, the potential exists for Launceston and the whole Tamar Valley to become a mecca for all forms of aquatic sports, and new tourism property developments on the banks of the reservoir.

The greatly improved aesthetic presentation of Home Reach, the Yacht Basin and the North Esk can only greatly enhance the returns on the investments being made in the relocation of UTas to Inveresk, and any other new developments planned for the Launceston CBD.

- **Recreational Fishing**

With the installation of the barrage, flathead and snapper fishing will be limited to the estuarine section of the Tamar, but the very large reservoir opens up opportunities for both freshwater recreational fishing and aquaculture developments.

- **Economic Growth**

Very conservative economic studies carried out for Tamar Lake forecast an additional growth in Gross Regional Product of 10% in the 15 years post barrage construction due to the formation of Tamar Lake. This looked at only the growth in the tourism and agriculture sectors, but it is expected that the industrial and commercial sectors, particularly in the Bell Bay/George Town area, will also gain a large benefit.

Funding

- **Value capture funding methods**

Acknowledging the significant level of funding required to implement the project, Tamar Lake Inc. commissioned AECOM in February 2017 to estimate the potential for value capture funding methods to contribute to the funding of the Tamar Lake project.

Value capture funding methods are a relatively new concept in Australia. Traditional approaches to funding methods for new or improved infrastructure have used funds entirely sourced out of general taxation revenue, meaning all taxpayers share the burden of paying for the infrastructure despite the fact that many of them will not use or directly benefit from it.

By identifying and quantifying the value created from the development of the new infrastructure, and connecting it with the costs of the infrastructure, value capture mechanisms can help deliver projects through a fairer business model.

- **AECOM conclusions**

The report prepared for Tamar Lake Inc. by AECOM concluded:

Given the current indicated construction cost of \$320 million, the benefits to property values alone from the project greatly exceed its costs:

- *The uplift in median residential property values in Launceston, within 1km of the Tamar Lake shoreline, following construction of the Project and stabilisation of values is conservatively estimated to be \$1 billion.*
- *The uplift in median unimproved commercial land values in the Launceston CBD within 500m of the riverfront following construction of the Project and stabilisation of values is estimated to be \$434m.*

AECOM identified the following potential value capture funding methodologies to be applied to the Tamar Lake project:

- Selling development rights and / or density above existing zoning controls.
- Sale of government-owned land that is enhanced or made developable by the project.
- Captured through public taxation system such as land tax, council rates and stamp duty, and possibly captured through sharing value uplift with surrounding landowners.

The encouraging outputs from this AECOM study support further work being undertaken into the application of value capture funding to the Tamar Lake project. Tamar Lake Inc. would recommend this work be included in the broader socio-economic study that would be initiated as part of preparation of formal business case for the development of the Tamar Lake.

The Choices

The decision by the community to implement the Tamar Lake proposal will probably be the toughest decision the State has ever had to make, but the choices are clear:

- Over the next 30 years spend up to \$1 billion of taxpayer revenue, without any substantial direct boost to the economy, to slowly improve the water quality in the Upper Reaches by implementing TasWater's Launceston Sewerage Improvement Plan (LSIP) and NRM North's Water Quality Improvement Plan (WQIP) and substantially reduce the CSO overflows (assuming the separation of the old combined system is impractical), but with continued infilling of Zone 1 with new sediment deposits and a poor aesthetic presentation of the river with muddy turbid tidal water to present to the next generation.

or

- Implement the Tamar Lake plan in the short term for an investment of up to \$500 million (of which 30 to 50 % could be privately funded), and provide the foundation for a huge short and long term boost to the economy in the tourism, agriculture, industrial and commercial sectors, with the formation of a large, freshwater, low pollution, low turbidity lake, with little or no new silt deposition and the gradual erosion of residual silt and rice grass meadows over time.

The implementation of Tamar Lake would then provide both the incentive and financial resources to implement the LSIP, WQIP, and CSO plans over the same 30 year time frame.

Conclusion

In producing this report, the executive and members of Tamar Lake Inc. have invested their time and cash over 7 years, with no expectation of any return, in pursuit of a solution to what has been acknowledged by almost all residents of Launceston as a totally unacceptable situation.

This situation has been brought about by the initial siting of Launceston at the confluence of the Tamar and South and North Esk rivers; poor land management since European settlement by farmers and loggers in the catchments; watercourse width and depth reductions both by natural sediment infilling and the community's infilling and bank modification of areas around Home Point and Royal Park; and to an antiquated sewage treatment and stormwater system that has not kept up to modern standards for effluent discharge and urban runoff.

With the release of this report, the altruistic investment by the members of Tamar Lake Inc. has been completed. This report will be made available to the Tamar Estuary Management Task Force, and to the Northern Tasmania Development Corporation, for consideration in determining whether the investment should be made in the next stage of the planning and approvals process. If a State Authority is nominated or formed to manage all aspects of the Tamar Valley health and amenity, and funding is provided to that Authority to carry out the planning and approvals process, all the reports commissioned by Tamar Lake Inc. will be made available to the Authority at no cost to that body.

With the environmental, lifestyle and economic benefits that would accrue to the Northern Tasmania community with the implementation of the Tamar Lake plan, there is no reason why all three major parties in the State Parliament would not support a proposal to fund the planning and approvals stage.

What is Tamar Lake's Position going forward?

Having completed these feasibility studies, the members of Tamar Lake Inc., while convinced that this is the right solution for Northern Tasmania, would not expect unqualified support from the community until the full business case and Environmental Impact Statement (EIS) have been prepared and presented to stakeholders and the community.

With the release of this report, Tamar Lake Inc. asks the State Government, through the Tamar Estuary Management Task Force, to provide the funding, through a responsible Authority, to carry out the planning and approvals process.

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Endnote:

It should be noted that Tamar Lake Inc. has concluded that the construction of the Trevallyn Dam and Power Station in 1956 did not materially affect the sedimentation deposits or water quality in the Upper Reaches of the Tamar, except marginally in the Yacht Basin area where the Cataract Gorge empties into the Tamar and erosion carried the silt bed a short way further downstream. It could be argued that sediment deposits entering the Tamar were reduced with the construction of the dam with only the fine particle silts passing through to the Tailrace, and the heavier sand and gravels being trapped behind the dam.