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To:- **Tamar Estuary Management Taskforce**

Regarding: **Public Submission**

Introduction

I must apologise for the late submission and have kept it brief.

I write in general support for the submission to the Committee by Dr Ian Kidd and in partial support of that by Alan Birchmore which inter alia support the idea of returning the major flow of water from the South Esk river to the Yacht Basin.

The purpose of this flow restoration is to create a 'virtual lake' of clean fresh water established and maintained by the dominance of that flow over the tidal inflow delivering turbid ('silty') water back upstream from the estuary's flocculation zone.

This 'virtual lake' was the historical norm prior to the diversion of the bulk of the flow from the Gorge to the Trevallyn Power Station Tailrace. The clean water and clean, silt free banks were a feature of the Yacht Basin, clearly evident in historical photographs and expressly commented on by seafarers such as Joshua Slocum. The photograph below, taken by Geoff Smedley during the 2003 power station shut down, clearly evidences the creation of the 'virtual lake' and its effect in keeping the turbid tidal inflow at bay and confined to the main channel leading to the North Esk.

The Yacht Basin, being at the entrance to Cataract Gorge, is visually attractive in itself and part of the spectacular scene that it, the Gorge and the adjacent steep escarpment present. It might not have the scale and larger spectacle of Circular Quay with its adjacent landmarks but, due to its scale, it does have an intimacy about it and its own sense of spectacle due in part to its relative compactness. It is the unique composition of the place that is very much part of its essence.

That it has been allowed to be degraded by destroying the 'virtual lake' mechanism and thus permitting the turbid tidal inflow to dominate and thereby degrade its amenity is an historical wrong that needs to be put right. That the City's accumulated toxic sewage heritage also compounds that degradation only amplifies the case to put this matter right.

By profession I am a Naval Architect which is a branch of engineering very much to do with fluid flow among other things and I am familiar with computational fluid dynamics software having used it commercially. This thesis regarding the 'virtual lake' is not just some thought bubble from someone without any technical expertise.

The Numbers

The numbers are easily done as to why the 'virtual lake' existed.

The Yacht Basin has a tidal prism' (the volume of water between low and high tide levels) of about 300,000 cubic metres. The South Esk had an average historic flow in the order of 30 cubic metres per second so it would only take about 2.78 hours (i.e. 10,000 seconds) to fill that volume which is less than half the period of the incoming tide. In other words there would always be a significant surplus flow of clean, fresh water coming into the Yacht Basin from the South Esk over that of turbid water arriving via the tide.

At the beginning of the rising tide, when tidal flow is minimal, that surplus would be at a maximum as it would also be nearer the top of the tide. The surplus clean water inflow would naturally be pushed up into the North Esk and tend to the City side of that waterway. There is plenty of independent evidence that this was the case historically.

Due to about 20 cumecs diverted from the Derwent via Great lake, the present flow through the Trevallyn Power Station is more like 50 cumecs with about 80 cumecs possible when water supplies permit. Accordingly a 'virtual lake' of some 500,000 cubic metres capacity could be sustained in the same timeframe as was historically the case and as much as 720,000 cubic metres in a 4 hour period with about the same surplus flow as historically occurred, going to the North Esk by the same mechanism.

Prima facie, restoration of the 'virtual lake' seems both feasible and highly beneficial.

The Implications

The term 'value adding' is one often applied to the effect of new roads, railways and such infrastructure. It refers to the potential economic and social dividends that come from investment in such strategic assets. A corollary of that notion is 'value subtraction' which I would apply to what happens when such an asset is allowed to deteriorate in functionality or is removed wholly or in part.

A highway full of tight bends, potholes and blind corners would be one example of 'value subtraction'. A river silting up, being polluted with sewage and or industrial waste and its banks and beached made unsafe or unhealthy is clearly another and that is precisely what Launceston is saddled with at present.

'Value adding' is the primary rationale for the Tamar Canal proposal. It will deliver a suite of beneficial outcomes that will create a positive sense about the Yacht Basin, attract people back to the area for a range of recreational activities, add to the appeal of adjacent businesses (which largely address the recreational and tourist sectors) and create development appeal to the Trevallyn escarpment overlooking the Yacht Basin and the canal itself.

Project Outline

The proposal is to create a canal cut through the existing reclaimed tidal flats and protect its banks with sheet piling or equivalent pile supported panelling.

The canal will then deliver the Trevallyn PS outflow back to the Yacht Basin and re-establish the virtual lake as well as creating an additional clean, sheltered waterway with its own potential for recreational activities and associated commercial and club infrastructure such as a new marina and slipway area as well as for rowing, canoeing etc. and a tidal prism of similar size to the Yacht Basin itself. Upstream tidal prism is a determinant of channel size at the point of interest.

It should be possible to create a spillway at the upstream end that would provide a white water kayaking course approaching olympic specifications that worked with the tide. Low tide would provide the longest run.

Ongoing restoration of nature trails along the waterway would extend existing uses.

Being close to this suite of new, amenable waterfront features would create incentives for say medium density housing nearby and within walking distance of the City or making local public transport use more attractive.

One possibility is that the new waterway could be the source for pumped hydro such as canvassed by the federal Government recently. It could equally be a source for irrigation water similarly pumped down valley or to adjacent irrigation developments.

All of the above indicate the facilitation of new activities, recreational and commercial, with attendant infrastructure and jobs in servicing, operating and maintenance, the majority of which must be done by locals.

Broader Strategy

The City is faced with a series of legacy problems which the Committee has been asked to examine.

This proposal is not a cure all by any means but it is a standalone first step that takes the City in the right direction and by its nature gives some protection from the sewage and the silt issues in the target area. In doing so it provides tangible and irreversible benefits upon completion and immediately sets the City on a forward path.

The value adding that is implicit and an essential element of the case for it also helps to underpin the rational and the economic case for the ongoing restorative works that are otherwise under consideration.

I think it goes without saying that we all want to take the City to a better place and to arrive at that outcome. What is really at issue here and now is the path we take in order to achieve that successful journey. I think that this project is strategically the best path to set out on. It will nourishes our efforts with immediate benefits and should help sustain us through the tougher, longer term tasks which do not deliver such immediate and obvious dividends.

Thank you for your efforts

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