

Submission re TEMT Report Environment, flooding and aesthetics; sediment in the Kanamaluka/Tamar estuary

Part 1: INITIAL REACTION:

JIM COLLIER

THE EXAMINER Tuesday August 17, 2021

Learn to love Tamar River mud - no way

ANGER, frustration and deep disappointment is what I feel after wading my way through the recently released long-delayed and eagerly anticipated Tamar Estuary Management Taskforce Report into the degradation of the Kanamaluka/Tamar estuary.

The taskforce, through its contributing authors, chose to focus on the very obvious build-up of sediment which they try to assure us is natural, however, they are wrong as the 2010 BMT WBM Report clearly indicated 38 per cent of estuary sediment is sourced from forestry-related activities and 26 per cent from agriculture; hardly natural. The chosen focus was virtually to the

exclusion of all other ailments the very ill estuary suffers from, such as reduced South Esk River flows and sewage contamination, despite the fact that "in 2015 raw sewage spilt into the Tamar more than 900 times over the course of the year" (*The Examiner*, July 23, 2017). While the report significantly emphasised it is an estuary being investigated only token research was conducted into one of the estuary's major tributaries, the South Esk River, and how it has been affected for over 65 years by reduced river flows since Trevallyn Dam was commissioned.

The authors, ignoring the advice of eminent scientists such as Professor Doug Foster (1986) and Associate Professor Brian

Jones (2006) who both recommended dredging should continue, go to extreme lengths to discredit the practice, apparently unaware successful dredging operations are conducted throughout Australia, even in the proximity of such sensitive areas as the Great Barrier Reef World Heritage Area and Marine Park. TasPorts conducted a successful dredging exercise in Devonport Harbour as recently as 2015; the New South Wales government has a dredging strategy believing "a well managed statewide dredging approach can economically provide navigational and other benefits such as flood mitigation, sand for beach nourishment and help conserve water quality within our

estuaries". If dredging operations were to cease throughout Australia the nation would soon grind to an economic halt.

The TEMT report's authors also appear very willing to allow august institutions such as the Tamar Rowing Club and Tamar Yacht Club to sink into oblivion with very limited, if any, access to the water through the lack of dredging; this is totally unacceptable.

In the short term, and until such times as erosion problems in the catchments can be properly solved, we appear to have no choice but to, expensive as it is, continue dredging for the foreseeable future. Learn to love the mud, no way.

Jim Collier, Legana.

This Tamar Estuary Management Taskforce (TEMT) Report is extremely disappointing; ...I understood when it was originally proposed that there was to be a study into the overall health and degradation of the Kanamaluka/Tamar Estuary, ...now, after waiting so long for it, although it does, to various degrees, address other issues I find it is mainly confined to the sedimentation aspect of the Estuary's upper reaches which is most restrictive and will not portray the true picture of the degradation and the solutions required to significantly improve the overall health of the Estuary.

WHY was water quality, including toxicity, not addressed as a matter of serious concern, ...was it because of the influence of Hydro Tasmania and TasWater, who I note have been strongly represented in the compilation of this Report, either as Authors or as Contributors to the technical and scientific expert assessment.

In 2017 The Examiner newspaper reported:

“In 2015 raw sewage spilled into the Tamar more than 900 times over the course of the year.” (The Examiner, 23 July 2017)

Sewage dispersal in to the Kanamaluka/Tamar estuary, and sewage contamination of the Estuary overall, has been a matter of serious concern for over 100 years!

WHY was sewage dispersal in to the Estuary not more thoroughly researched?

WHY was the environmental impact from the significant reduction in river flows of a major tributary of the Estuary, namely the South Esk River, for over 65 years, not investigated more thoroughly than just the token gesture included in the Report?

WHY was the impact of the introduced and invasive Rice Grass not thoroughly investigated?

The Tamar Estuary 2018 Report Card Summary states:

“The 2018 report card shows an overall decline to grades compared to the 2016 report card.

Grades have declined across all zones except from zone 1 (from Launceston to Legana), which remains unchanged with a D grade, ‘poor ecosystem health’.”

Despite many years of similar Report Cards, and numerous other warnings, the health of the upper reaches of the Kanamaluka/Tamar Estuary is NOT significantly improving.

As confirmed in the Report due to many ‘human induced alterations’ since earliest settlement there is very little of the natural Kanamaluka/Tamar Estuary remaining today therefore we have to accept the consequences of these actions.

More often than not, some desired responses will be impossible and others, while possible, will be costly but we simply have to accept that as part of the price to pay for the mistakes of the past, mistakes often made in good faith.

7.6 Impacts of recreation and navigation (Page 71):

The significant modifications of the past mean that the upper estuary will never return to its natural pre-European state.’: ...I AGREE!

IT IS IMPOSSIBLE FOR THIS ESTUARY TO EVER RETURN TO ITS NATURAL PRE SETTLEMENT CONDITION!

Part 2: CONSIDERED RESPONSE

Global trends (Page IV)

INTERNATIONAL ESTUARY & WATERWAY MAINTENANCE PRACTICES

Some years ago I was fortunate enough to be able to travel extensively by boat along the many waterways of the northern hemisphere commencing with the Suez Canal culminating in transiting the Panama Canal and in-between cruising along the waterways, rivers and canals of Europe, the United States and Southern Canada .

All were, and still are, in use by Fishers and recreational boaters or commercial craft such as the colossal heavily laden barges, known as 'Tow boats,' transiting the mighty Mississippi River and the coal barges operating on the waterways of Northern France.

The British Inland Waterways network, consisting of rivers and many former industrial canals were abandoned, neglected and left to 'return to nature' for many years and consequently fell in to serious disrepair.

However the once forsaken and derelict canals were eventually recognised as being a valuable asset and are now being progressively restored for aquatic and community recreational purposes.

As a result of my travels I have gained considerable experience and knowledge in regard to the management, operation and maintenance of waterways.

ALL the above mentioned waterways are maintained, in a 'hard engineered' manner by those responsible for them; ...if they weren't there would be a huge community and commercial outcry and yet here we are, if the suggestions in this Report are adopted, about to let the upper reaches of one of Australia's longest navigable waterways fall in to neglect and 'return to nature'; ...a move we would ultimately regret for generations to come and shame on us if we allow that to happen!

It is acknowledged in the Executive Summary of this Report that the Kanamaluka/Tamar Estuary has since early settlement been subject to considerable modification which has had significant influence in turning the Estuary in to what it is today.

I arrived in Launceston in 1972 and have been actively sailing, apart from a 10 year break, on the Kanamaluka/Tamar Estuary ever since.

At the time of my arrival what was known as the 'Yacht Basin' was full of recreational vessels of all descriptions from small sailing dinghy's and rowing sculls to larger vessels either on swinging moorings or mooring piles.

This was an image of Launceston that was regularly portrayed on postcards and calendars.

That image is no longer available with recreational aquatic activities having faded away due to the toxic waters and the increased sediment effectively rendering the Yacht Basin unusable for the purposes that the community had grown used to, sailing, rowing, canoeing etc; ...it is not socially acceptable to have it in the condition it is now in.

There would be very few, if any, in the community who, in respect of the mud flats: *perceive them positively in terms of the environmental values they support, particularly the presence of wading birds.* (Introduction, Page 22)

SEDIMENTATION

1 Introduction (Page 22):

It states here "*Sedimentation is a natural process in the upper Kanamaluka/Tamar estuary ...*"

This is NOT correct:

While it is accepted that "Sedimentation is a natural process ..." this 'natural process' has been significantly exacerbated by 'human activities' in the Catchments as shown in the:-

Tamar Estuary and Esk Rivers Catchment WaterCAST Model: Final Report where it says:-

"From the above, it can be seen that Forestry related land uses dominate the likely sediment loads being generated within the basin and this is to be expected, given the extent of this form of land use and occurrence in the areas of both high slope and high rainfall.

While the contributions are indicative of the land use contributions, it should also be noted that other factors may be prevalent, such as particular soil types corresponding to land use types (e.g. some agricultural or forestry activities may be

in areas of erodible soils, so the higher lands loads may not reflect the land management practices being used, but may be a result of their location within the catchment).

The agricultural and green area contributions are similar and this is again likely due to the extent of the green areas within the Catchment.

Green area land use classes tend to be in areas of higher rainfall and therefore generate more runoff and associated pollution loads.

It is also interesting note the urban contributions to the catchments loads, given that it only represents 2% of the total catchment area.”

The BMT WBM 'Tamar Estuary and Esk Rivers Catchment WaterCAST Model: Final Report', March 2010, see below, clearly indicates at least 64% of the likely sediment loads in the Yacht Basin are sourced from Agriculture and Forestry Related Activities in the catchments; **...hardly a natural process!**

March 2010

MODEL RESULTS

4-7

Relative Land Use Contributions - TSS

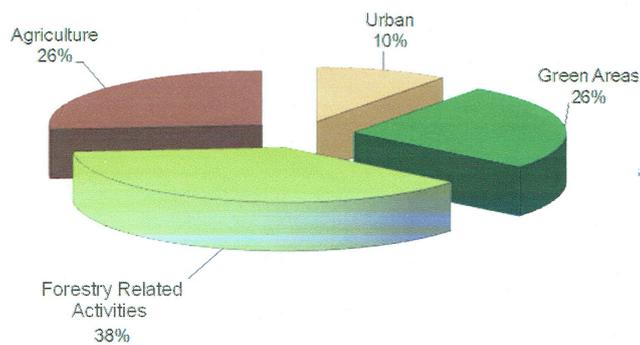


Figure 4-8 Predicated Land Use TSS Load Contributions for the TEER Catchment area

From the above, it can be seen that Forestry related land uses dominate the likely sediment loads being generated within the basin and this is to be expected, given the extent of this form of land use and occurrence in the areas of both high slope and high rainfall. While the contributions are indicative of the land use contributions, it should also be noted that other factors may be prevalent, such as particular soil types corresponding to land use types (e.g. some agricultural or forestry activities may be in areas of erodible soils, so the higher land use loads may not reflect the land management practices being used, but may be a result of their location within the catchment).

The agricultural and green area contributions are similar and this is again likely due to the extent of the green areas within the catchment. Green area land use classes tend to be in areas of higher rainfall and therefore generate more runoff and associated pollutant loads. It is also interesting to note the urban contributions to the catchment loads, given that it only represents 2% of the total catchment area.

4.3 Predevelopment Scenario

In this scenario, PEST estimated hydrologic and water quality parameters for green areas were applied across the entire model domain. The newly estimated flows were then linearly scaled to match those for the current condition and the same scaling factors were applied to the loads. This technique was necessary to account for the potential overestimation of runoff associated with translating hydrologic parameters for steep, elevated and high rainfall areas (as are associated with the green areas) to the undulating low rainfall areas of the model. The estimated TSS, TN and TP loads are provided for indicative purposes only to indicate the likely extent of change from a fully vegetated catchment.

Further to this an article recently published in The Examiner reported 'Western Creek' was infested with a considerable amount of willow trees which trapped significant amounts of mud which eventually, following rain events, was transported elsewhere.

Ultimately this 'mud' would end up in the Kanamaluka/Tamar Estuary but what is really concerning is that the mud is contaminated with acid sulfate soils and heavy metal from a poorly regulated dairy industry even further up stream; ...once again highlighting that all the sediment in the Estuary's upper reaches is certainly not 'natural'! (The Examiner, 14 Sep.)

3 Processes of the Kanamaluka/Tamar Estuary that influence sedimentation and bathymetry

3.2.2 Inflows, scour and upstream migration of sediments) Page 38 - 40

12 Management option - increased flows down the South Esk and/or removal of Trevallyn Dam

SEDIMENT - FLOCCULATION - WATER QUALITY - TREVALLYN DAM:

SOUTH ESK RIVER FLOWS

1 Introduction (Page 20)

The significance of the diversion of South Esk River flows in 1955 has been glossed over here when it states:

Construction of Trevallyn Dam and Power Station in 1955 saw a diversion of some South Esk flows from Cataract Gorge to the Tailrace and an increase in freshwater input by the addition of flows from Poatina Power Station.

Again this is quite correct however this appears to be a deliberate attempt to downplay the importance of the diversion by the use of the word 'some' in relation to the amount of water diverted as in actual practice it was a more than significant amount of water and certainly not an amount which can be described as merely ...'some'!

It is also understood the South Esk River bed through the Cataract Gorge has changed substantially due to the reduction in South Esk River flow yet this also does not rate a mention in this report!

Independent Scientists Professor Jenny Davis and Dr Ian Kidd believe;
"Environmental beneficial South Esk River flows are possible."
 and

“Sustainable, flow based solution are possible through changes in the operations of the Trevallyn Dam and power station.” (The Examiner, 17 July 2021 {see attached})
 This serious environmental issue of reduced South Esk River and Cataract Gorge flows appears to have been totally ignored and one has to question: ...**WHY?**

As far as I am aware there has never been any serious suggestion of decommissioning Trevallyn Dam and its associated power station.

Also, again as far as I am aware, there has never been any serious suggestion that ‘sedimentation in the upper Kanamaluka/Tamar estuary has been caused by the construction of Trevallyn Dam in 1955.

I am aware though that there has been suggestions that the lack of South Esk River flows through the Cataract Gorge have exacerbated sedimentation of the estuary’s upper reaches and I agree with this for the following reasons.

3 Processes of the Kanamalula/Tamar estuary that influence sedimentation and bathymetry (Page 34)

FLOCCULATION OF SILT:

3.1 Tide dominated estuaries

While mudflats and sediment accumulation primarily occur in the freshwater sections of the estuary, the interaction of salt and freshwater is also important to sedimentation process.

Fine silts carried in freshwater flocculate and settle when they hit saline water, and then are carried upstream on the tide. this process contributes to the retention of sediments in the upper estuary.

This process contributes to the retention of sediments in the upper estuary. (Page 36).

This confirms sedimentation is exacerbated in the upper reaches due to the lack of South Esk River freshwater inflow through the Cataract Gorge brought about by the construction of Trevallyn Dam in 1955.

The significant reduction in freshwater flows has resulted in an increase in saline water in the upper reaches resulting in earlier flocculation with a consequential increase in sedimentation in the Estuary’s upper reaches.

Anecdotally a Dredge Master told me many years ago that, in his opinion, this was the specific reason the upper reaches of the estuary were silting up so rapidly ... because Trevallyn Dam was restricting the amount of freshwater flowing in to the Yacht Basin resulting in increased salinity.

This is confirmed in another scientific Report (identified below) which states:

“The presence of the Trevallyn Dam on the South Esk should reduce the inflow of bed and suspended load material to the estuary by settling in the reservoir (unless a basal flushing mechanism has been incorporated into the dam for use during high flow periods).

*The Home Reach area is thus subject subject to two controls: reduced sediment supply from the South Esk River **should** reduce sedimentation rates in the area, however this has been counter-acted by lower fresh water discharge through the gorge which has increased salinity in the Home Reach therefore leading to an overall increase in sedimentation rates.)*

Understanding the causes of excessive siltation in the Tamar Estuary, Tasmania: an integrated geochemical and sedimentological study (AINSE Project No. 05084P; Assoc Prof Brian Jones (University of Wollongong), Dr Gareth Coper (University of Tasmania) & Mr David Maynard (Australian Maritime College)

Mention is made in this TEMT Report 3.2.1 (Page 36)

“ ...moderate export of sediment to the ocean generally occurs in tidal dominated estuaries.

However, in the Kanamluka/Tamar estuary this export has been reduced because major human-induced alterations to the upper reaches of the estuary have altered tidal water volumes and flow, and hence the natural equilibrium of sediment transport.

*In particular, infilling of wetlands around Launceston for urban expansion, building of tidal levees, draining of tidal wetlands, particularly in the North Esk for urban and agricultural development, and extraction and **redirection of water for hydro electricity generation** and town water supplies have modified the volume of water flowing into and from the upper estuary and the sediment load that it carries.”*

(My emphasis)

A virtual admission that the lack of South Esk fresh water flows through the Cataract Gorge in to the Estuary's upper reaches does have an effect on sedimentation and plain common sense would indicate that of course it does.

And again (Page 36):

“Before extensive modifications to the upper estuary occurred, a much larger volume of tidal water was able to flow up the North Esk and expand out on the wetlands (see figure 7).

However this volume of tidal water flowing to the upper reaches was significantly restricted following infilling and levee installation.

This has resulted in significantly reduced flushing of the upper estuary and consequently increased sedimentation.”

This emphasises how vitally important good river flows (flushing) are to the waterways yet, other than as a token gesture, Trevallyn Dam and its affect on the estuarine environment of the estuary is given little consideration;WHY?

The TEMT Report correctly states:

The legally required level of environmental flows down the Cataract Gorge is 0.47 cumecs.

And that:

In 2003, environmental flow releases were voluntarily increased above this requirement to 1.5 cumecs to provide habitat for important species and to better cater for recreational use.

And that:

In 2011 this environmental flow was voluntarily increased again to 2.5 cumecs.

The above, **to the detriment of this Reports credibility**, glosses over the fact that in actuality these statistics mean South Esk River and Cataract Gorge flows have been more than significantly diminished **for 66 years** since Trevallyn Dam was commissioned (1955); ...particularly so for the first 48 years when they were reduced to a **mere trickle** of 0.43 cumecs.

Despite the above this Report, focussing on sedimentation, does not include any scientific analysis of the environmental impact of this on the upper South Esk River, a major tributary in the estuary, or indeed of the impact of reduced flows on the Cataract Gorge itself.

However there ‘has’ been a significant environmental impact indicated by the significant reduction of **58%** in macro invertebrates within the Cataract Gorge; ... as shown in a Report by Dr Peter Davies contained in Hydro Tasmania’s Environmental Review ‘*South Esk - Great Lake Hydro Catchment*’ November 1999.

SOUTH ESK FLOW RATES:

According to Hydro Tasmania's November 1999 'Environmental Review South Esk - Great Lake Hydro Catchment':

"...flows have reduced post-dam in the South Esk River immediately downstream of Trevallyn Dam (in the Cataract Gorge).

Under natural conditions, the river flowed between 20 and 100 cumecs for the majority of the time and had a flow of at least 5 cumecs for 95% of the time.

Post dam, however, median flows have decreased from 50 cumecs to approximately 2 cumecs and 6 cumec flows are exceeded for only 20% of the time.

In comparison, pre-dam flows exceeded 20% of the time were 80 cumecs.

The occurrence of high magnitude flows, of more than 400 cumecs has remained similar, being exceeded less than 2% of the time and peaking at 1200 pre-dam, compared with approximately 1100 cumecs post-dam.'

Further to these statistics it should be noted that former Hydro Tasmania Executive Andrew Livingston was quoted in The Examiner newspaper on 6th February 2004 as saying that the average low summer flow through the Cataract Gorge was 20 cubic metres per second

It is acknowledged in the TEMT Report that:

'Average flows entering the estuary through the Cataract Gorge are almost half this of natural flow conditions.' (3.2.1 Page 40)

These statistics reflect a more than considerable reduction in South Esk River flows through the Cataract Gorge in to the upper reaches of the Kanamaluka/Tamar estuary and there is no doubt, despite claims to the contrary, such a significant reduction 'has' had a detrimental environmental effect on the estuary as well as reductions in any natural scouring of sediment.

I find it very difficult to accept, while Figure 8 may show otherwise, that significant changes in flows would not result in any major changes in scouring; ...especially when read in conjunction with:

3.2.2 Inflows, scour and upstream migration of sediments (Page 38)

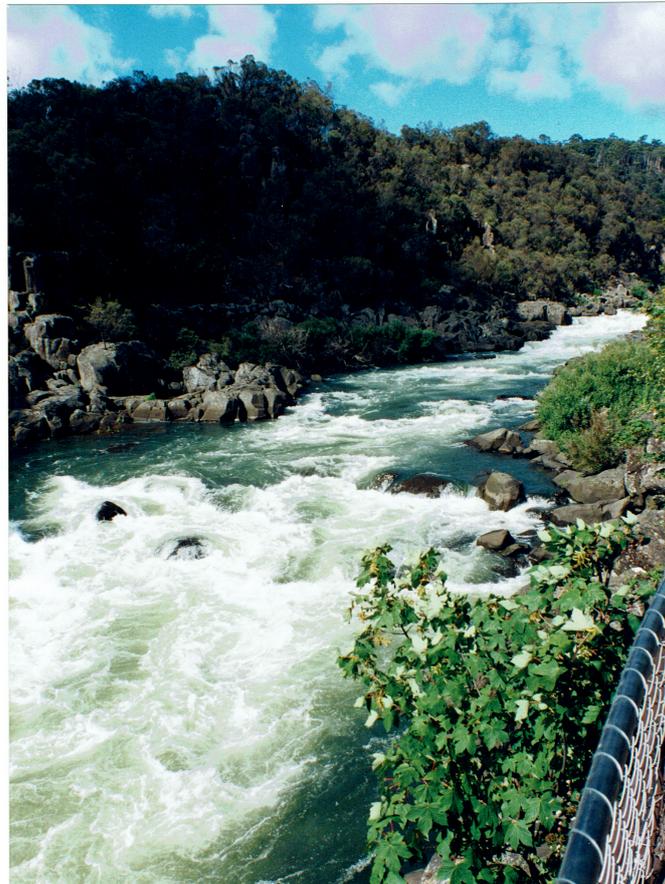
'The second process that affects the level of sediment in the upper estuary is scour from flow events.'

As the saying goes 'There are statistics, statistics and then there are dammed lies' and especially in regard to flows through the Cataract Gorge.

I personally treat any statistics which have been provided since the 1999 Hydro Tasmania Environmental Review with a great deal of scepticism, cynicism and suspicion as such figures can always be so easily manipulated to suit whatever outcome is desired!

Please note my earlier comment in respect of reduced freshwater flows exiting the Cataract Gorge facilitating increased salinity of the estuary's upper reaches resulting in earlier flocculation of suspended sediment in that part of the estuary.





Top Photo 1.5 cumec flow (imagine what 0.43.cumecs looked like?)
and Bottom Photo approximately 50 cumec flow.
Jim Collier photo's

What the upper reaches of the Estuary can look like with a good flow rate.

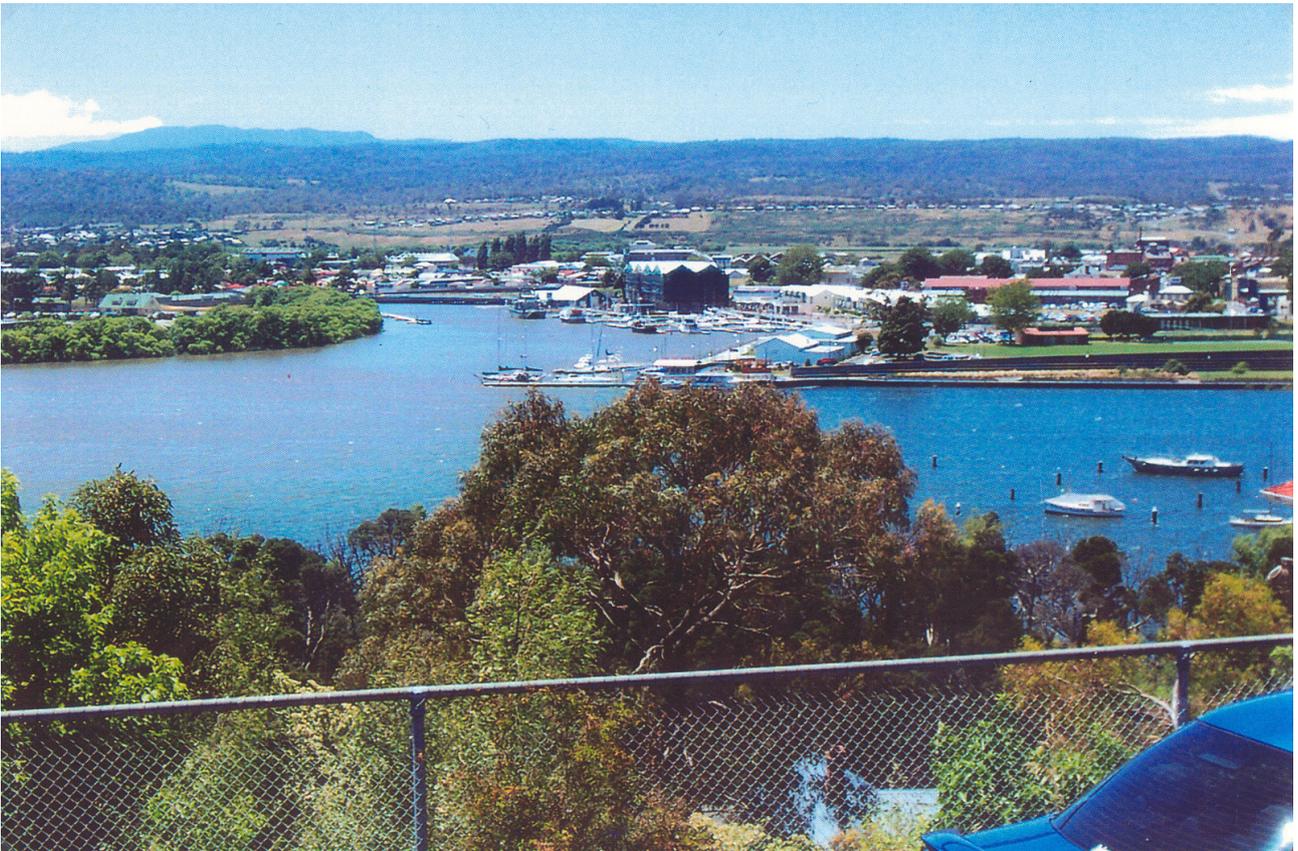


Photo taken by Geoff Smedley of Trevallyn in 2003 when Trevallyn power station was shut down for upgrading and approximately 50 cumecs of water flowed through the Cataract Gorge in to the Yacht Basin.
The remarkable transformation occurred within 36 hours!

In a story aired on ABC TV on 8th September Water Ecologist Chris Bobbi, formerly with the Department of Primary Industries, Parks, Water and the Environment (DPIPWE), studying the health and management of Tasmania's rivers referred to a report which he had authored entitled *'Temporal and Spatial Patterns in River Health across Tasmania and the influence of Environmental Factors:*

The heavily redacted, and much delayed, independently reviewed report linked agricultural land use (particularly stock grazing), salinity and water use, such as extraction, with poor river condition.

All of the above are significant contributors to the poor environmental health of all Tasmania's rivers but especially the Kanamaluka/Tamar estuary.

This serious environmental issue of South Esk River and Cataract Gorge flows, other than as a token gesture, appears to have been totally ignored in this Report and, again, one has to question: ...**WHY?**

WATER QUALITY? Page 71-72 81, 82

SEWAGE

It is incorrectly assumed in the Report that the only reason increased South Esk River flows are called for is that it is believed that increased flows will reduce sedimentation; ...this is incorrect as the prime purpose in calling for increased flows is that they will significantly improve water quality in the estuaries upper reaches.

Launceston's combined sewage infrastructure is frequently compared to that of London and they both are certainly of the Victorian era however the difference being that Thames Water has recognised they have problems and are currently constructing a 'SUPER SEWER' costing millions of pounds to help alleviate the problem while here we are still talking about it, ...this is deplorable.

As mentioned previously; in 2017 The Examiner newspaper reported:

"In 2015 raw sewage spilled into the Tamar more than 900 times over the course of the year." (The Examiner, 23 July 2017)

Sewage dispersal in to the Kanamaluka/Tamar Estuary, and sewage contamination of the estuary overall, has been a matter of serious concern for over 100 years; ... see attached letter below.

COPY 22.

...cont'd. **"Port of Launceston Authority asks Council to proceed with sewerage works"**

Town Clerk,
Town Hall,
LAUNCESTON.



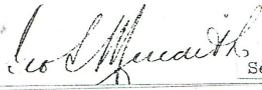
MARINE BOARD,
Launceston.
March 16th, 1916.

Dear Sir,

I beg to advise that at the recent meeting of this Board the following resolution was adopted, and I have therefore to ask that you will kindly place same before your Council for its consideration and reply:

"That the Launceston Municipal Council be asked to give an assurance that they will at the earliest possible date proceed to carry out with all expedition a scheme of sewerage works which will avoid the discharging of all sewage and other matter into the North Esk River and other portions of the Harbour, and thus relieve the Launceston Marine Board from the large annual expenditure that they are incurring in dredging out such sewage and other matter and also provide for the comfort and health of the citizens of Launceston."

Yours faithfully,


Secretary.

Note the date on the above letter!

WHY wasn't sewage included in the TEMT review into environmental degradation of the waterway?

(1.3.1): Are mudflats and sedimentation an environmental problem?:- Yes they most certainly are!

SEDIMENT SOURCE:

While accepting '*...early European explorers documenting extensive areas of mudflats and wetland in and around Launceston.*' (Page 23) the BMT WBM 'Tamar Estuary and Esk Rivers Catchment WaterCAST Model: Final Report', March 2010, clearly shows that at that time (2010) **38%** of sediment was sourced from *Forestry Related Activities* and **26%** came from *Agriculture*; in other words since European settlement human intervention has exacerbated and contributed to those '*... extensive areas of mudflats ...*' making it plainly obvious the current mudflats are NOT a purely natural phenomenon. (see attached Relative Land Use Contributions - TSS).

This Report says that the mudflats and sedimentation are NOT an environmental problem HOWEVER, given the content of the above BMT WBM Model, they obviously are, and not only are they an environmental problem but they are one brought about, as on many other occasions, by human interference and activity!

1.3.2 Does sedimentation increase flood risks in and around Launceston?

I find it difficult to comprehend, or accept, that an increase in the mud flats will not have an impact on flooding:

7.4 Page 69...*sediment accumulation would have very little impact on flood levels during large flood event (13 cm at the Charles St bridge for 1:200 year and 1:500 year events).*

This opinion appears contrary to the 2019 modelling compiled by Launceston City Council, ...see below.

9.1.2.1 Ceasing current practices:

incremental infilling reduces floodplain storage volume, increasing the frequency of spring tide/minor flood events impacting local infrastructure (e.g., approaches to the bridge on Henry Street).

This statement appears to contradict that made in 7.4 (Page 69) shown above.

An article in The Examiner recently stated, in respect to a proposed new retail development in flood prone Invermay,:

“The area avoided serious inundation during the 2016 floods due to the levees, but increased intensity of flooding events in Launceston is a likely impact of climate change, as per modelling completed by council in 2019.

It showed the big box area would suffer inundation - as would most of Invermay - in flooding events considered likely every 100 to 200 years.” (The Examiner, 13 Aug. 2021)

Further to this it has been made quite clear from the recently released report from the Intergovernmental Panel on Climate Change (IPCC) that, due to climate change, Australia must expect more extreme weather such as heatwaves, more intense and frequent bushfires, more drought and **more flooding rains** and the scientists make these forecast with a high level of confidence!

Sea levels are also expected to rise, with the melting of the polar ice caps; this too will have an effect on flooding.

As shown above Launceston City Council and the community, doubt Launceston’s flood levees will be able to cope in the event of a serious flooding event and the amount of sediment in the estuary’s upper reaches will be a significant contributor to this; ...despite this Report trying to say differently it is ludicrous to suggest otherwise.

10 Management option - dredging of the upper estuary (Page 111 - 127)

10.1 Legislation and feasibility challenges

10.1 .1 Legislation and permit requirements

10.6 Impacts on recreational users and navigation

To its detriment this Report goes to extreme lengths to justify why dredging of the upper reaches of the Tamar estuary should not happen.

Until such times as Catchment Management issues have been resolved I believe there is no choice but to continue dredging, when these management issues have been resolved then would be an opportune time to review whether dredging should continue.

Despite all the ‘legal and administrative issues’ described in the TEMT Report (licensing, environmental assessments, EPA approval, MAST supervision, Sea Dumping Permits {if applicable}, possible federal and state permits etc., etc.)

associated with it dredging is NOT the complicated disaster it is made out to be and, as will be shown, is routinely practiced through out Australia.

WHY UPPER ESTUARY DREDGING SHOULD OCCUR:

The lack of access to the Tamar Yacht Club and Tamar Rowing Club is totally unacceptable, both are long standing aquatic recreational institutions and it is 'beyond the pail' to even think they could no longer function in the roles for which they were established.

As acknowledged in this Report the Tamar Yacht Club is the oldest Yacht Club in Australia.

It is embarrassing for Launceston, as a Tasmanian city, to have what appears to be a toxic mud bowl right in the heart of the city; ...it is equally embarrassing that tourist boats have limited operating ability as it is for vessels to have restricted access to the Seaport Marina.

I have sailed in the Estuary's upper reaches for many years; often while dredging operations were in progress, and have '**never**' found them to be a major obstacle to safe navigation.

In 2006 Associate Professor Brian Jones and Dr Gareth Cooper said in a Report: *"The high sedimentation rates within Home Reach in the upper estuary near Launceston are of particular concern to the local community since an important recreational area is rapidly silting up.*

If sedimentation was left unchecked and unmanaged in this area, there would be difficulties in navigation and recreational use of the upper estuary.

Dredging of the Home Reach area in particular should continue in order to contain this problem."

Progress report for AINGRA05084P (2006): Assoc. Prof Brian Jones (University of Wollongong), Dr Gareth Cooper(Australian Maritime College)

Locally dredging operations were conducted by TasPorts in Devonport Harbour in 2015 with the spoil being deposited offshore in Bass Strait approximately 3 nautical miles north of Devonport Harbour.

Dredging operations are currently conducted on various scales, and for a variety of reasons, throughout Australia in locations such as Port Phillip Bay in Victoria, Fremantle and Port Hedland in WA and at various ports along the New South Wales and Queensland coasts with Queensland being a particularly sensitive area

given the close proximity of the Great Barrier Reef World Heritage Area and the Great Barrier Reef Marine Park.

In fact without ongoing dredging in many of Australia's ports and harbours, from an economic perspective, the nation would grind to a halt.

The NSW Coastal Dredging Strategy says:

“While dredging is not a legislative responsibility, the NSW Government is committed to improve and sustain accessibility to key coastal locations, river entrances and local waterways to support economic growth opportunities through improved navigation for commercial and recreational vessels..

Dredging is an important management activity necessary to maintain navigation channels and provide access to maritime infrastructure that are otherwise restricted by natural sand shoaling.

A well-managed statewide dredging approach can economically provide navigational and other benefits such as flood mitigation, sand for beach nourishment and help conserve water quality within our estuaries.” (NSW Coastal Dredging Strategy 2019-2024)

Notwithstanding all the obstacles against dredging raised in the TEMT Report **ALL** of the above dredging operations are conducted with appropriate permits and comply with strict federal and state environmental policies and guidelines.

The TEMT Report says:

Large scale dredging of the upper estuary is very expensive, with ongoing annual costs in the order of tens of millions of dollars largely due to costs of treatment and disposal of dredge spoil that is potential acid sulphate and Level 2 contaminated waste.

Technical constraints on the scale of dewatering ponds for dredge spoil that would be required in close proximity to the upper estuary would likely make large scale dredging infeasible.

It would not impact on the extent of visible mudflats.” (Evaluation summary, Page V)

While accepting dredging costs will be significant, I do query whether they are actually as large as the tens of millions of dollars ‘annually’ quoted, ...with all due respect these costs seem wildly exorbitant.

Having said that it is noted that in comparison ‘restoration’ costs show
9.2.3 (Page 95) *Wetland restoration*

*...the cost of the small-scale restoration project would be in the order of **\$10 million**, while the large scale restoration project would likely cost closer to **\$250 million**.*

It is abundantly clear solving the environmental problems associated with Kanamaluka/Tamar Estuary degradation are going to be very, very expensive however they **must** be addressed.

FLOODING

10.4 Impacts on flood risk

According to a very recently released report from the UN Intergovernmental Panel on Climate Change (IPCC)

'Global temperatures could breach the critical 1.5 degree threshold in the early 2030, the world's top climate scientists have warned in a landmark new report.'

leading to:

*"Longer heatwaves, more frequent droughts and other extreme weather events, as well as **rising sea levels**, would be among the consequences of failing to suppress average temperature rises to below the Paris targets." (The Examiner, 10th August 2021)*

It defies belief that:

"...it is unlikely that dredging will have any significant impact on peak flood levels."

(Page 121) or that

dredging would:

"...not impact on the extent of visible mudflats." (Page V)

In respect of flooding it seems very obvious that for every additional millimetre of mud/silt in the estuary's upper reaches the amount of water in that area will be lifted by a similar amount and in the event of a serious and significant flooding event, as can be expected with climate change and global warming, this could have serious consequences for the city of Launceston and its low-lying suburbs and infrastructure.

It is also ludicrous to suggest, as it does in (7.4 page 70) that:

"Launceston is protected by a series of flood levees that offer protection to the city for floods approximately 1 percent AEP flood events.

This means that increases in flood levels for small floods don't generally increase flood risk inside levied protected areas of Launceston."

There is no suggestion that Launceston is at risk from 'small floods' but it certainly is from a major flooding event, such as those suggested through the effects of Climate Change.

It is equally ludicrous to suggest (7.4 Page 70):

"The best available evidence suggests the 'no intervention' is likely to lead to at most small increases in flood levels and that these changes are unlikely to pose a significant flood risk to Launceston given the flood levee system that is already in place."

Plain common sense indicates, as does the aforementioned 2019 modelling undertaken by Launceston City Council, that it is not sensible to rely on fickle nature to provide the scouring necessary to reduce the level of sedimentation as '*Substantial scour is induced by major flood events ...*' because by the time such an event occurs it will be too late to be of any real benefit for Launceston; ...yes with Climate Change major flooding events can and will occur but at the same time so will droughts and, in this particular case, human intervention will be necessary (dredging?) to prevent Launceston suffering another 1929 catastrophic flooding event.

Indicative of this are serious flooding events recently experienced in countries throughout the world such as Europe, India and South America.

Given the information contained in the March 2010 WBM BMT Model, I am of the opinion that until catchment management practices are 'significantly' improved we will have no choice but to implement long term dredging programmes to maintain the aesthetics, safe navigation and reduce the flooding risk to Launceston's infrastructure and the low lying areas of the Estuary's upper reaches.

Given this will be a long term programme I strongly recommend the Tasmanian Government purchases and operates it own dredge; ...a multi purpose dredge which will be capable of operating at all Tasmania's Ports, Harbours and waterways throughout the State.

An alternative to dredging could be the resumption of cheaper Raking at more frequent intervals supplemented by an extensive dredging programme every few years

HYDRO TASMANIA

Hydro Tasmania is a Government Business Enterprise (GBE) and as such is charged to generate electricity for sale the profits of which are to be returned to state government coffers.

Given this it is highly unlikely the organisation will ever support any proposal which is likely to reduce its profits, ...even it were proven the proposal would be of direct benefit to the natural environment such as the Kanamaluka/Tamar Estuary.

However as a GBE they are directly responsible to the Tasmanian people, through the state government who have the authority to instruct Hydro Tasmania to undertake certain specific actions, ...such as increasing South Esk River flows!

ACKNOWLEDGEMENT

I would like to acknowledge the comprehensiveness of this Report, it is one of the most thorough I have ever read in respect of the Kanamaluka/Tamar estuary; all those who participated in its compilation are to be sincerely congratulated.

Having said that I do have some concerns about its credibility, in addition to that previously stated, particularly in respect of the lack of research in to the long term effects created by the more than significant reduction in South Esk River flows on the upper reaches of the estuary since 1955.

CONCLUSION

This Report has proven to be a waste of public funding as it would have been so easy to open up the study to include ALL aspects of estuary degradation consequently its credibility is in question and, to a certain extent, its integrity.

Further to this, and with all due respect to those concerned, I feel must raise my concerns in relation to the 'independence' of members of the Tamar Estuary Management Taskforce.

Non scientific numerous members have vested interests through being members of local councils, associations with other bodies such as NRM North who are in 'Partnerships' with various groups and businesses, such as Hydro Tasmania, TasWater, Infrastructure Tasmania all of whom could, and I believe have, exerted undue influence on the final outcome of the Report.

I have refrained from making comment on other proposed solutions to the dilemma of Estuary degradation, such as the proposed Freshwater Lake, the Return Canal, or indeed anything else that I feel I do not have the knowledge or expertise to make sensible comment about or to pass judgement on.

THANK YOU for providing me with the opportunity to express my views and opinions on such an important matter.

Submitted by:

Jim Collier,

Date: 19 September 2021

OPINION

THE EXAMINER

12-7-21

JENNY DAVIS AND IAN KIDD

Science supports natural solution for Tamar

IN RESPONSE to the report produced for the Tamar Estuary and Esk Rivers Program in June.

Thumbs up

As independent scientists who have undertaken research related to the sedimentation of the upper region of the kanamaluka/Tamar estuary since 2012, we are heartened by the Tamar Estuary Management Taskforce report's structured approach to evaluating the sediment management options.

Based on the report findings, we strongly urge that action be taken as soon as possible to restore the tidal prism in the North Esk. Restoring the tidal prism and thereby creating a major increase in tidal flushing, is a solution that involves working with natural processes, rather than against them.

This represents by far the most sustainable and cost-effective long-term option. Working against natural processes will ultimately cost much more, both economically and environmentally.

The first project should be to remove or breach informal levees and let nature take its course. Further wetland restoration and creation can then build upon recorded positive effects.

We caution against excavation below present elevation in the North Esk inter-tidal zone because it is unlikely to be sustainable, ie. sediments will accrete (build up).

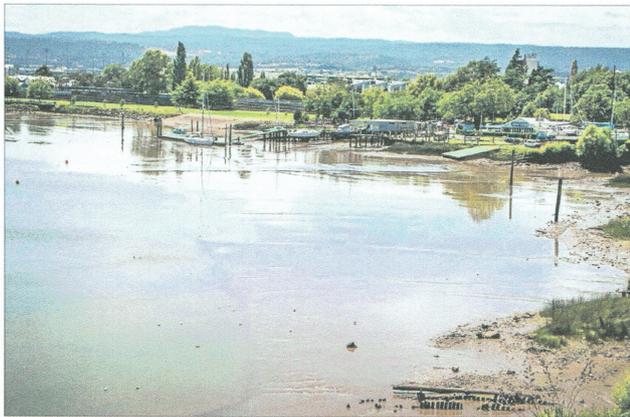
The report provides strong evidence of the folly of pursuing non-sustainable and highly environmentally disruptive options such as dredging or creating freshwater lakes and barrages. To do nothing, opt for the lowest cost solutions, or adopt solutions that will not result in a visible reduction in excessive sedimentation, will further erode public confidence in the ability of management authorities.

Thumbs down

We cannot agree with the statement: "Mudflats and sedimentation of the upper kanamaluka/Tamar estuary are not an environmental problem and mudflats contribute substantially to the environmental values and health of the estuary".

Although sedimentation in estuaries is a natural process, the sheer volume and nature of the accumulated silt is clearly an environmental problem.

In excess of 10,000,000 cubic metres has accumulated since 1806 (all due to human causes), with most of it being of very poor quality, ie. highly polluted.



UNHEALTHY. We should not learn to live with the mud of the Tamar as it is highly polluted by urban, industrial and agricultural activity. Rather we should look to re-establish sustainable, environmental flows. **Picture: Paul Scambler**

66
... the concept of 'learning to love the mud' is unacceptable ...

The urban, industrial and agricultural areas that all feed pollutants into the upper estuary represent a problem that did not exist prior to European settlement.

Pollutants, such as heavy metals, plastics, sewage effluent, industrial and agricultural chemicals all have a negative impact on biodiversity and aquatic processes.

In 2013 we raised the alarm when the raked sediments of the Yacht Basin were found to be riddled with tampon strings. A member of the public relayed her tragic tale of interaction with the silt; her leg became so badly infected when an abrasion came

into contact with the silt, she was given the option of losing her leg or her unborn baby.

This is overwhelming proof that we are not dealing with anything which can "contribute substantially to the environmental values and health of the estuary".

Put simply, the concept of 'learning to love the mud' is unacceptable when it is polluted mud.

We also note that the importance of threatened species and key biodiversity values are more associated with downstream estuarine habitats, rather than the region immediately adjacent to Launceston. It is not helpful to confuse such messages.

We disagree with the conclusion that there is little value in increasing flows from Trevallyn Dam through the Cataract Gorge.

Comparison of the channel sizes of the lower Yacht Basin with the lower Tailrace provides a visualisation of the positive effect of a full Gorge flow.

Environmentally beneficial South Esk River flows are possible. For example, a simple

calculation (based on the assumption that the tidal prism of the Yacht Basin is 300,000 cubic metres filling over six hours) indicates that the minimum flow required to keep turbid water at bay is 13.9 cumecs (cubic metres per second).

We can provide more detailed calculations and an analysis of the report's erroneous modelling assumptions on request.

Sustainable, flow-based solutions are possible through changes in the operation of the Trevallyn Dam and power station.

We urge Hydro Tasmania and Entura to contribute their considerable expertise and knowledge to delivering beneficial environmental flows to the Yacht Basin.

Professor Jenny Davis, Research Institute for Environment & Livelihoods, Charles Darwin University and Dr Ian Kidd, Launceston-based independent estuarine scientist are independent scientists who have no commercial interest or receive funding from any organisation related to the management of the Tamar estuary.

