

## **SUBMISSION to the TAMAR ESTUARY MANAGEMENT TASKFORCE**

### **PERSONAL PROFILE:**

Following many years of sailing on the River Tamar in 1992 my wife Linda and I sailed out of the River in our 10 metre steel ketch at the beginning of what turned out to be a 10 year voyage around the world returning in 2002 absolutely horrified to discover that the River Tamar we had sailed out of was not the same River we returned to.

The Tamar's upper reaches appeared to have rapidly silted up and at low tide appeared, and still do, absolutely disgusting.

Though this was the most obvious and visual problem beguiling the Tamar's upper reaches it was not long before we became aware that lurking in and below the muddy waters was a toxic contamination problem of enormous proportions, confirmed by numerous scientific reports over the years!

There was, and is, no doubt the Tamar was seriously environmentally degraded and we have been campaigning ever since to have the situation properly addressed.

### **RIVER DEGRADATION CAUSES:-**

Reduced river flows.

High speed vessels causing river bank erosion.

Inadequate, archaic combined sewage and stormwater infrastructure.

Lack of clearly defined areas of management and responsibility for the Tamar estuary.

### **RIVER FLOWS:**

In 1955 Trevallyn Dam and its associated power station were commissioned.

Prior to this, under natural conditions, South Esk River flows through the Cataract Gorge in to the Tamar's upper reaches were between 20 and 100 cubic metres per second (cumecs) for the majority of the time and had a flow of at least 5 cumecs for 95% of the time. (1)

Pre-dam flows exceeded 20% of the time were 80 cumecs. (1)

The '**average low summer**' water flow through the Cataract Gorge into the Tamar Basin was **20** cumecs. (2)

Flood peaks can be anywhere between a few hundred cumecs to over 1,000 cumecs.

On the power station commissioning South Esk River flows were reduced to **0.43** cumecs and remained at this level for 48 years until 2003 when it was tripled to **1.5!**

In 2011 flows were increased to the current 2.5 cumecs.

(1) Hydro Tasmania Environmental Review South Esk - Great Lake Hydro catchment, November 1999

(2) Andrew Livingston - Hydro Tasmania General Manager for Generation, The Examiner 6 Feb 2004



Gorge flow of approximately 1.5cumeecs which was increased in 2011 to 2.5cumeecs. For **48** years following commissioning of Trevallyn Dam it had been just 0.43cumeecs

Imagine what 0.43cumeecs looked like  
and the environmental damage such a low flow must have caused over **48** years;

..is it any wonder the Tamar is in the mess it currently is?



Gorge Flow of approximately 50cumecs  
Photo taken in 2003 when Hydro Tasmania allowed the full flow to pass through the  
Cataract Gorge in to the Tamar's upper reaches to facilitate upgrading of the power  
station.

**FOOTNOTE:**

*"In an agreement with the Launceston City Council the Hydro-Electric Commission has guaranteed that, except in an emergency, it will allow sufficient water through the dam to retain the beauty of the Gorges' tumbling waters," (The Examiner, 14 May, 1955)*

This more than significant reduction has eliminated any natural scouring and flushing effect with disastrous consequences for the Tamar Basin, not only in siltation but in water quality as confirmed in numerous scientific reports.

It is accepted, and understood, Trevallyn power station is not the only contributor to the reduced flow as other influences play a role in this such as forestry, agriculture and domestic users all of which place a significant demand on a limited supply.

### **NEGATIVE EFFECTS OF REDUCED SOUTH ESK FLOWS:**

It is very obvious from the above that the significantly reduced South Esk River flows 'have' had a serious and detrimental effect on the water quality immediately downstream of Trevallyn Dam.

Simply put you cannot significantly reduce or shut off natural river flows without creating an environmental disaster immediately downstream of the barrage which is restricting that natural water flow.

The environmental degradation currently existing in the Tamar's upper reaches is also experienced in the Snowy and Murray-Darling river systems, the Nile in Egypt, the Mekong River in Laos and the Mississippi in the USA, to name but a few:

*... "the reduction of flows to the Snowy River and other man-induced changes has impacted on the health of the river. There has been a build up of sediment in the bed of the river, weed infestation and loss of habitat for native plants and animals."*

Returning environmental flows to the Snowy River - NSW Office of Water February 2010

Typical **scientific evidence**, seen below, is only a very small portion of the total amount on record graphically highlighting that the River's upper reaches are very, very sick:

Scientific evidence was presented to Launceston City Council in June 2007:

*"... alerting it to E. Coli counts more than 110 times the accepted limit for primary contact and 17 time the secondary contact limit at the Launceston Church Grammar School's rowing sheds."*

The Examiner 14 April 2008

*'Water quality contamination by pathogens (determined by the faecal indicator bacteria streptococci and by faecal coliforms) exceeded recreational primary contact guidelines on a significant number of occasions (20-45%) in the middle and upper estuary).'*

State of the Tamar Estuary report 2008

*Highly degraded ecosystem health. Poor water quality due to elevated nutrient levels. Copper and lead are also above guideline levels. Poor recreational water quality, with most EHAP observations exceeding guideline levels. System is **poorly flushed** and impacted by the proximity to the major urban centre of Launceston, tributary inflows and nearby wastewater treatment facilities."*

NRM North: Tamar Estuary Report Card 2011

### **Cataract Gorge Ecosystem:**

Since Trevallyn Dam was commissioned the entire Gorge aquatic ecosystem has been affected for example: downstream of the Dam the nature of the River bed has completely changed and **Macro Invertebrates**, (which ...*presently represents the most powerful tool in biological monitoring of waterway health.*) {1} have reduced in the Cataract Gorge by an incredible **58 per cent!** {2}

{1} Hydro Tasmania 1999 Environmental Review

{2} Hydro Tasmania Scientific Report on Cataract Gorge August 2003 & Hydro Tasmania's Cataract Gorge Workshop 2009 (Dr. Peter Davies, Freshwater Systems)

### **DEAD EELS**

Responding to media questions on a significant number of dead eels floating around the Tamar's Upper Reaches in 2010 Professor Nigel Fortheath commented that the cause of death was:

*'...likely due to a combination of very poor water quality, a lack of oxygen and also noxious gasses being released from the mud.'*

*he also said:*

*"If there was more water running through the Cataract Gorge there would be more oxygen in the water."*

The Examiner/ABC Radio

### **SALINITY:**

*"...lower fresh water discharge through the gorge which has increased salinity in Home Reach therefore leading to an overall increase in sedimentation rates."*

Assoc Professor Brian Jones, University of Wollongong, (ABC Local Radio)

### **FLUSHING:**

The Tamar's upper reaches are no longer naturally flushed of all the toxic contaminants introduced since early settlement.

**TO MAINTAIN THEIR NATURAL HEALTH ALL RIVERS SHOULD RUN FREE!**

### **POSITIVE EFFECTS OF INCREASED SOUTH ESK FLOWS:**

Whenever calls are made for Hydro Tasmania to increase Gorge flows their immediate response is that it will significantly affect them financially, that the business case does not stack up thus increased Gorge flows therefore simply can not be afforded.

This attitude is natural and understood however there are other factors which could, and should, be considered which Hydro Tasmania consistently fail to do; for example:

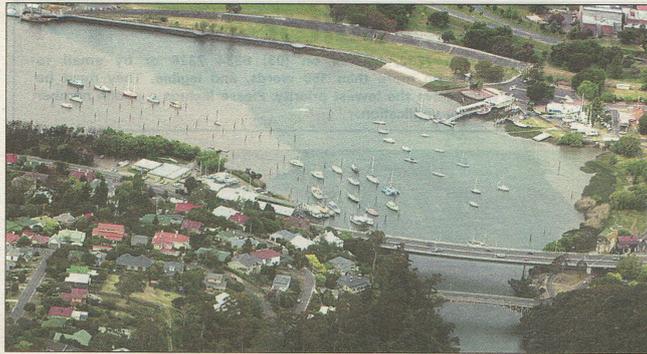
- There are three flow valves located at the base of Trevallyn Dam and there would not be the slightest difficulty in installing a mini-hydro scheme which would facilitate increasing South Esk River flows through the Cataract Gorge while still generating power with a financial return to Hydro Tasmania in addition to financial gains to the State.

- Refurbishment of the historic Duck Reach Power Station could provide similar benefits.
- Increased South Esk River flows would generate increased financial returns to Tasmania in general, especially Launceston and Northern Tasmania, through an anticipated significant expansion in tourism to view the clean white water once again tumbling through the Gorge (as witnessed by the huge amount of spectators flocking to the site during times of flood).
- Launceston Chamber of Commerce executive officer Jan Davis said in a newspaper article (The Examiner, 23rd Aug 2017) referring to Hydro Tasmania's short term release of extra water to enable white water kayaking and rafting events to take occur ***“it will enhance our cultural and social landscape. It will generate significant economic activity, and flushing the gorge will also assist with water pollution issues in the Tamar basin.”***
- In the same issue Hydro Tasmania's director of wholesale energy services Gerard Flack said *“...the new initiative will improve tourist numbers to the region, ...”!*
- In addition to the above other aquatic recreational activities such white water rafting, canoeing and small boat sailing competitions (suspended by the Tamar Yacht Club for many years due to toxic contamination of the Tamar's upper reaches) would once again be regularly seen on the now aesthetically pleasing water and not just occasionally.
- Increased water flows will flush out all the toxic contaminants currently existing in the Tamar's upper reaches.
- Increased water flows will facilitate the proven Launceston Flood Authority's silt raking programme for which good South Esk River flows are essential to ensure its continued success.
- Referring to the success of such raking Professor Jenny Davis and Dr. Ian Kidd say in their paper '200 years of mud and misunderstanding':- *“Permanent extra flow would maintain this state by preventing return of the displaced silt.”*

In late 2003 Trevallyn Power Station was shut down for 2 months for maintenance and upgrading permitting an increased flow of water through the Cataract Gorge and into the Tamar's upper reaches.

The transformation in water quality was incredible, as can be seen from these photos:

Proving beyond any shadow of doubt how beneficial increasing Cataract Gorge flows on a permanent basis will be for the water quality and environmental health of the Tamar's upper reaches and the people who live, work and play close to it.



**AERIAL VIEW:** The unsilted water emerging from the Gorge contrasts with the silted water in the Tamar yacht basin.  
Picture: PAUL SCAMBLER

## Flowing waters help keep the silt at bay

By IAN PATTIE

The South Esk squeezes through the narrow gap that is the opening of the Gorge, under the historic Kings Bridge.

It immediately spreads out into the wider Tamar yacht basin, but the effect of the undammed water can be seen clearly.

The sheer volume of water is holding the silt at bay, as can be seen in Paul Scambler's terrific aerial picture of the yacht basin with Kings Bridge in the foreground.

Although the water level is quite low, as can be seen by the amount of exposed rock wall and concrete pad for launching and retrieving rowing shells, many small ships are sitting in clear water.

Those Launcestonians who use

Royal Park for recreation will also have noted how clean the water is, how the level of flotsam has changed and how full the yacht basin is at high tide.

Those Launcestonians who don't use Royal Park for recreation ought to take a stroll around the boardwalk soon, before the Hydro completes works on the Trevallyn tunnel and stops the full flow of water under the dam.

Last week, Hydro Tasmania confirmed that the flow of water through the dam, after works were completed, would be 1.5 cubic metres a second.

When the dam was first constructed, the flow, or trickle, allowed down the Gorge was 15 cubic feet per second.

The new flow, aimed at a better

environmental result, is nearly four times the original volume.

To see the Gorge in really good flows, not flood flows, check it out from the three bridges — Kings Bridge, Alexandra Bridge and the suspension bridge at the Duck Reach power station.

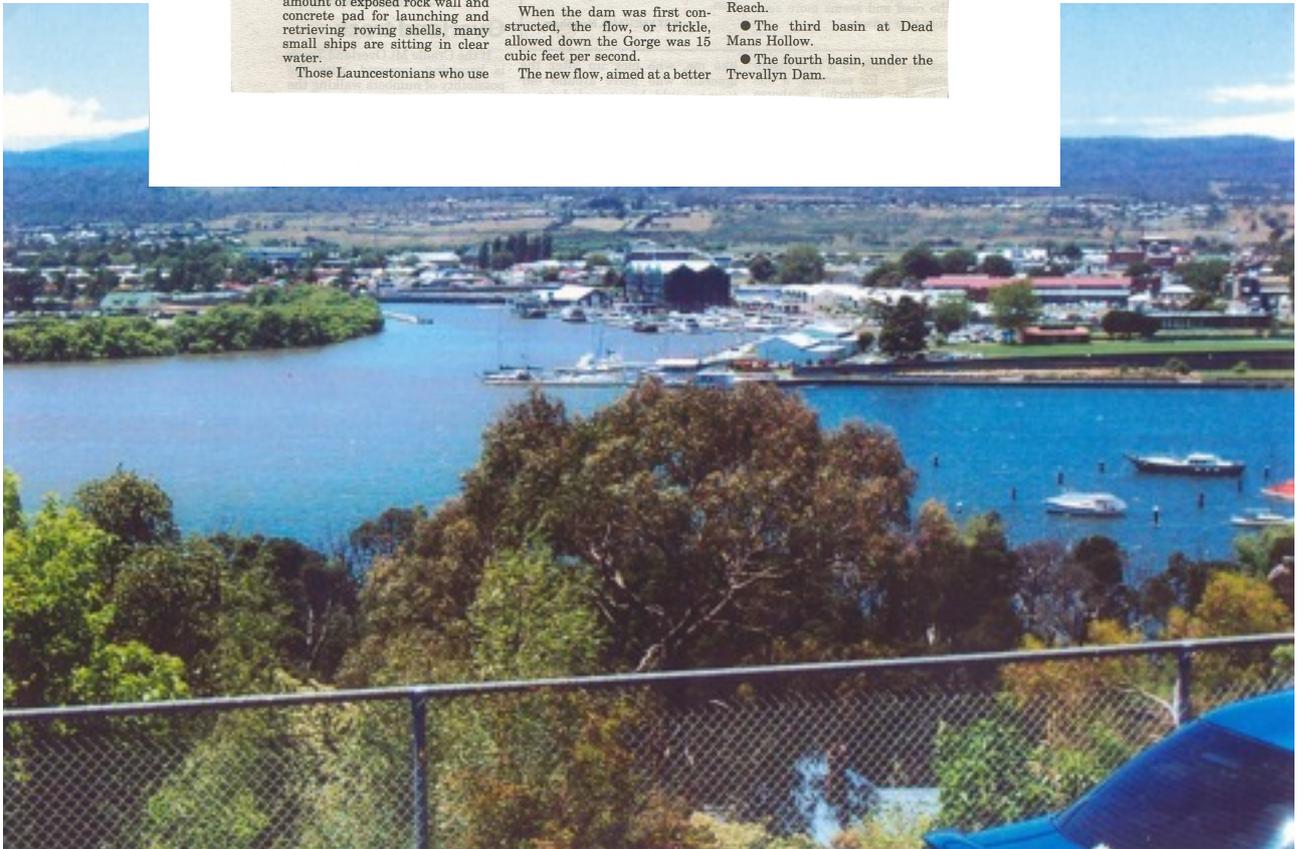
While on the walk, attempt to find the four basins, as described by retired geology teacher Doug Ewington:

- The First Basin, the best known, because of the sweeping lawns and art deco period swimming pool.

- The second basin, at Duck Reach.

- The third basin at Dead Mans Hollow.

- The fourth basin, under the Trevallyn Dam.



## **RIVER BANK EROSION and HIGH SPEED VESSELS:**

The Gordon River:

*“These soft sediment shoals and banks are susceptible to erosion by boat wake. The Lower Gordon River, along with other sheltered waters of some other inlets, estuaries, river, lagoons and lakes are suffering unnatural and largely unnecessary erosion as a result of boating activities.”* (Tasmania Parks & Wildlife, 6 May 2014)

*“It became apparent that the wake from cruise boats was responsible for erosion and that speed limits were required to minimise the impact.”*

*“Reductions in speed can have a dramatic effect on the erosive power of a boat’s wake. For example, a decrease in speed from nine knots to six knots can result in a 60% reduction in the erosive power of the vessel’s wake.”*

*In 1994 a speed limit of 6 knots was introduced for all commercial vessels and monitoring since has shown ‘erosion rates has slowed dramatically’.*

*“...stake holders agreed in 2011 to a speed limit of 5 knots for all vessels longer than 4.2m.”* (Lower Gordon River erosion dpiipwe)

The Tamar River:

The River Tamar is experiencing similar problems to the Lower Gordon with vessels operating at high speed in the narrow areas of the River’s upper reaches creating exactly the same problems which occurred historically in the Lower Gordon River; ...significant bank erosion due to excessive wake from such vessels.

This is particularly noticeable in the Freshwater Point area where the current owner of the historic Freshwater Point homestead, Dr. Peter Wallis,:

*...estimates that in the period since he has owned the property the river bank at Freshwater point has reduced by approximately 1 metre.*

*Dr. Wallis attributes the reason for this to wake erosion of high speed vessels transiting the area.”*

He has also observed:

*“...that the waves created by such vessels cause most damage at half tide where they undermine the bank causing big chunks of bank to fall away.*

*At low tide the waves stir up the silt muddying the water often sounding like waves on a surf beach.*

*The waves at high tide tend to be absorbed by the rice grass although exposed areas suffer erosion.”*

Dr. Wallis has observed this erosion since buying the property in 2003.

The solution to this, oft ignored, aspect of Tamar degradation is exactly the same as that applied to the Lower Gordon River; ...mandatory speed limits of all vessels to 5 knots.

## SEWAGE INFRASTRUCTURE

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

Calls have been made since for over **100 years** for the cessation of the practice of dumping of sewage in to the River Tamar, see attachment, that it still continues to this day is unforgivable and to Tasmania's deep and eternal shame!

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 dregging out such sewage and other matter and also provide for the comfort and health of the citizens of Launceston."

Yours faithfully,

  
Secretary.

Launceston's archaic combined sewage and storm water infrastructure has frequently been compared to that of London's Victorian built combined system but Thames Water, fully cognisant of the problems this causes and looking to the future, is currently constructing a 'Super Sewer' which will take the city's sewage disposal requirements into the 21st century but no sign of such positive action occurring in Launceston!

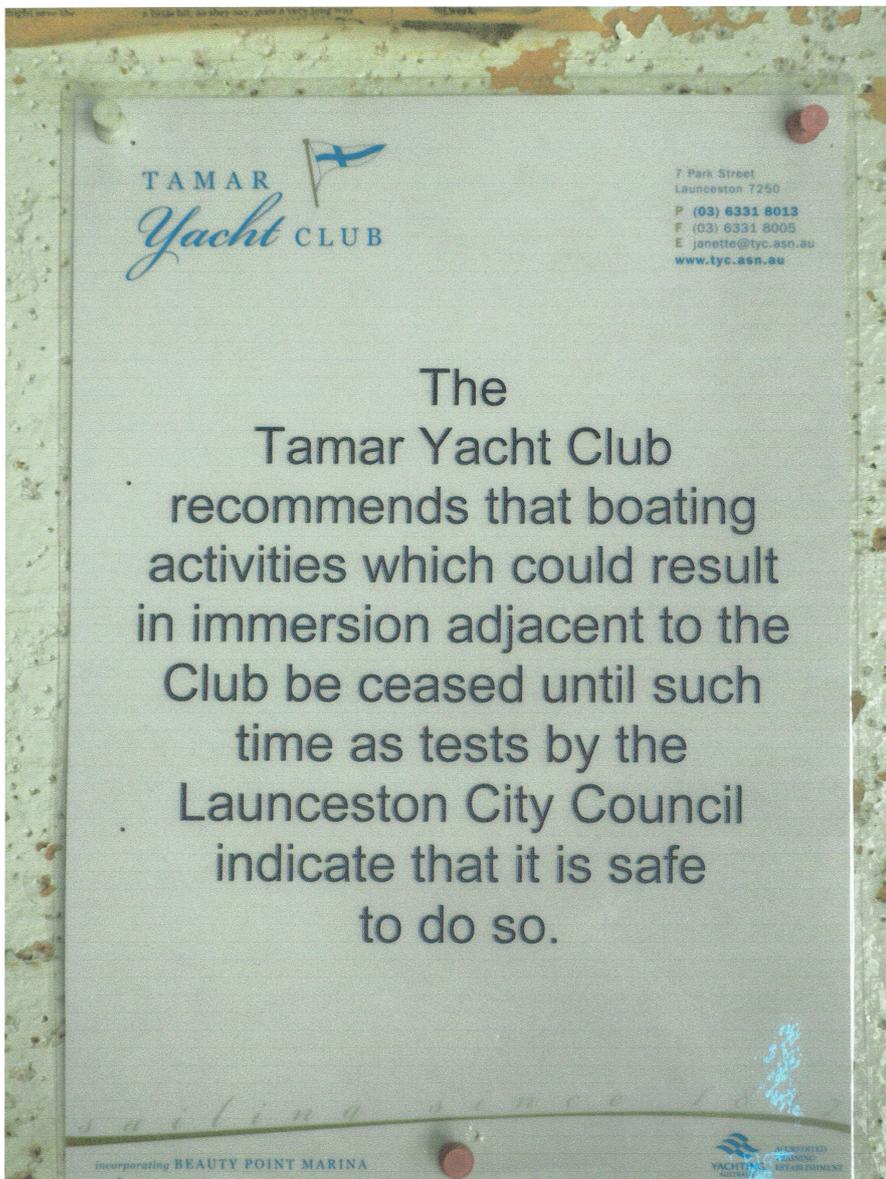
There is no doubt to solve Launceston and surrounding municipalities sewage disposal problems will, no matter what, be very, very expensive however there is no need to go ripping up the Launceston's streets to replace the old combined infrastructure but to 'bite the bullet', as Thames Water has done, and build a modern state of the art tertiary treatment facility capable of servicing the needs of the entire Tamar Valley and surrounding districts such as Melbourne Water's Eastern Treatment Plant in Victoria (see below).

Such a utility would have the desirable feature of the output providing recycled water capable irrigation water for agriculture, or even additional power generation.



**COMMUNITY EXPECTATIONS** for the use of the Tamar that are relevant to public or environmental health:

are that the Community does **NOT** expect to see, or welcome, warning signs such as those below displayed around the Tamar's upper reaches or in nearby aquatic recreational facilities.





Numerous scientific reports, studies and comments expressed by scientists and academics, see above, have confirmed the waters of the Cataract Gorge and the

Tamar's upper reaches are very, very sick and as such constitute a significant threat to public health.

Indeed Launceston is most fortunate that it hasn't suffered a significant outbreak of gastro related illnesses already as a direct result of river contamination!

The signs are embarrassing, shameful; an affront to tourists and residents alike. The reasons for such warning signs should be addressed at the earliest opportunity resulting in good clean toxic free waters in the Tamar's upper reaches in order that ALL can, once again, take pride and joy in a pristine and magnificent natural waterway flowing right through the heart of Launceston and the Tamar Valley.

In response to "**Tamar Facts**", **Page 8**:

It is simply not possible to separate the question of whether public health is more important than the ecological health of the Tamar River; they are of equal importance and one can so easily influence the other!

### **CONCLUSIONS:**

The **scientific evidence**, as presented above, and plain common sense, determines that construction of Trevallyn Dam with the consequent reduction in South Esk River flows, exacerbated by Launceston's archaic and inadequate sewage infrastructure and river bank erosion, have been major and significant contributors to the environmental devastation currently existing in the waters of the Cataract Gorge and the upper reaches of the River Tamar.

In response to the query raised in 'The Report Card' section (page 8) of "Tamar Facts" whether the Tamar's upper reaches *should be the greatest area of focus* ; ...I believe this should be so.

### **SOLUTIONS:**

1. The Tasmanian Government must exercise its authority and instruct Hydro Tasmania to permanently and significantly increase South Esk River flows.
2. Construction of a mini-hydro scheme at the foot of Trevallyn Dam.
3. Refurbishment of the historic Duck Reach Power Station to full working order capable of providing a water flow output to the maximum possible.
4. Continuation of the Tamar's upper reaches successful silt raking programme.
5. Upgrading of Launceston's sewage infrastructure to a modern state of the art tertiary treatment facility similar to Melbourne's Eastern Treatment Plant.
6. Establishment of a Statutory Authority to manage the Tamar Estuary and Esk Rivers and their catchments as per the recommendation of the 2009 Legislative Council Select Committee.
7. Imposition of a mandatory Speed Limit of **5 knots** for ALL vessels operating on the Tamar River between the Tamar yacht basin and the western end of Humbug Reach (Dilston) to reduce river bank erosion.

NOTE: Unless indicated otherwise all photo's included with this submission were taken by Jim Collier.

Submitted by

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