



TEER Partnership Report



Tamar Estuary
and Esk Rivers

Natural Resource Management
in Northern Tasmania

2010

Our Vision 2030

The Tamar Estuary & Esk Rivers Systems:

Healthy, Productive, Valued and Enjoyed

- Our Rivers of Life



Contents

3	Introduction
4	Chairman's Report
5	Program Manager's Report
6	Project Showcase
16	Finance Statements
18	Partners
21	Future Directions

Introduction



The TEER Program aims to provide a coordinated management approach and guide for solutions and investment to protect, maintain and enhance the Tamar Estuary and Esk Rivers systems from 'catchment to coast'

ABOUT THE TEER PROGRAM

The Tamar Estuary and Esk Rivers (TEER) Program was formally established in January 2008. The program is a regional partnership between the statutory agencies responsible for waterway management within the Tamar catchment area. Key partners represented on the TEER Steering Committee include the Tasmanian Government, Launceston City Council, West Tamar Council, George Town Council, Meander Valley Council, Hydro Tasmania, Ben Lomond Water and NRM North.

The TEER Program aims to provide a coordinated management approach and guide for solutions and investment to protect, maintain and enhance the Tamar Estuary and Esk Rivers systems from 'catchment to coast'.

The program is focusing on improving our scientific understanding of the issues impacting upon the health of the TEER waterways so that we can better identify and target priority areas requiring investment in on-ground works.

The TEER Program fosters collaborative partnerships and works closely with a range of industry, community, government, research and business partners to monitor and report on waterway health as well as coordinating activities to reduce pollutants entering waterways.

REGIONAL SIGNIFICANCE

The TEER Program is important because it brings together a wide range of partners and key stakeholders and provides a common vision, direction and way forward for managing the Tamar Estuary and Esk Rivers systems.

The program is able to leverage additional investment into the area to fund identified priorities and will ensure that informed management decisions are based on science and knowledge of the issues.

The TEER Program area covers approximately 15 per cent of the total land mass of Tasmania. The South Esk catchment is one of the largest agricultural catchments in Tasmania making it a significant economic resource for the region. The Tamar estuary is an important environmental, recreational and scenic resource, particularly for the city of Launceston, as well as for numerous smaller communities along the eastern and western shores.

The surface water within the North and South Esk Rivers is an important natural resource for many industries within the region such as Hydro Tasmania and the region's farmers. These rivers also supply drinking water to the majority of the area's urban population.

Historically, management of the Tamar estuary has been highly fragmented and uncoordinated. The TEER Program was established to overcome this problem, and represents a voluntary regional partnership approach with TEER partners working together to provide integrated governance, planning and a common direction for management of priority issues and investment. The TEER partners recognise that in order to manage the Tamar estuary effectively, management of the waterways in the upper catchments is important. This is reflected in the 'catchment to coast' approach to waterway management adopted by the TEER Program.



Chairman's Report

It has been a rewarding 12 months for the TEER Program which continues to strengthen existing and foster new partnerships and community engagement on issues facing the Tamar Estuary and Esk Rivers.

Support for the TEER Program continues to grow as more people become aware of our role and the projects being undertaken to help improve the health of the waterways.

Perhaps the most significant reflection of support was from the 2010/11 State Budget, with the Tasmanian Government committing 1.4 million dollars to the TEER Program over the next four years. This will enable the program to build on the work of the last three years and look to the future with greater confidence.

The partnership approach continues to be the foundation and strength of the TEER Program. I thank all of the steering committee partners for their continued support: the Tasmanian Government Launceston City Council, West Tamar Council, George Town Council, Meander Valley Council, Hydro Tasmania, Ben Lomond Water and NRM North.

Without doubt, the release of the first report card into the health of the Tamar estuary was a major highlight for the program. The information collated in the report card is crucial to ensure effective management of the estuary and we now look forward to working with the community to put this knowledge to good use.

The program has also focused on ensuring the community is kept informed on the issues surrounding the health of our waterways. One highlight has been the launch of the new TEER website where the public can access up to date information on our projects and other initiatives. www.nrmnorth.org.au/teer

A priority for the TEER over the coming year will include focusing on a range of education and communication related activities. This will ensure that we are communicating the results of the scientific investigations that we undertake to the community and management authorities so that the community are more informed about the condition and health of our waterways as well what we are doing to address priority issues.

Finally, special thanks go to TEER staff Amanda Locatelli and Michael Attard and TEER Scientific and Technical Committee Chair, Dr Troy Gaston, for their passion and dedication. They should be proud of the significant outcomes that have been achieved to date.

I would also like to recognise the TEER committee and working group members for the commitment they bring to the TEER Program and I look forward to working with them to achieve another productive year for the TEER Program in 2010/11.

KIM EVANS
Chair, Tamar Estuary and Esk Rivers Program Steering Committee

Program Manager's Report

2009-2010 has been a significant year for the TEER Program. Now in our third year of operation, the program has started to gain some real runs on the board. The launch of the first Tamar estuary report card in 2010 represents a significant milestone for the TEER Program. This report card will form the basis for future monitoring and reporting on the health of the Tamar estuary and is a step towards fulfilling our commitment to the community as well as our ability to identify and act upon issues affecting the health of the Tamar.

A second major milestone for the TEER Program was the release of the Tamar Catchment Sediment Modelling project final report in 2010. This 18 month project investigated the source and contribution of sediments to the Tamar estuary from the upper catchment areas and was developed in parallel with the Launceston City Council's report into management options for the upper Tamar estuary sedimentation issue.

Significant community and political interest continues to drive the debate on management of sedimentation, however, with the release of these two reports, the community and decision makers are now much better informed about the science and processes driving sedimentation to base informed decisions upon.

Two of the major activities the TEER Program will focus on over the next several years include investigating seafood safety in the Tamar estuary and implementing riverbank erosion demonstration projects. The seafood safety project will analyse the levels of metals found in the flesh of finfish and oysters to determine if they are

safe for human consumption. The riverbank erosion project will see landholders trialing innovative ways to stabilize riverbanks and reduce sediment input into waterways.

The partnerships and commitment of the people represented on the TEER committees and working groups are the foundation of the TEER Program. Many of the projects and activities undertaken are made possible through the support, resources and funding committed by our partners. I would like to thank the members of the TEER Scientific and Technical Committee and working groups for their dedication and support for the TEER Program.

Special thanks goes TEER Scientific and Technical Officer Michael Attard, who does a superb job coordinating the TEER monitoring programs, data management and keeping our network of partners in touch. Special thanks also to Dr Troy Gaston, Chair of the TEER Scientific and Technical Committee who provides invaluable expertise, advice and a huge investment of his time to help guide the TEER Program forward. Thanks also to Rick Chippindall, Chair of the Lake Trevallyn Algal Bloom Working Group and David Maynard, Chair of the Tamar NRM Gambusia Working Group.

I hope the achievements showcased in this year's Partnership Report demonstrate the strength of the partnerships the TEER has fostered over the last three years and provides encouragement to our partners and stakeholders to continue their efforts 'working together for healthy waterways'.

AMANDA LOCATELLI
Manager, Tamar Estuary and Esk Rivers Program



Project Showcase

Ecosystem Health Assessment Program

INTRODUCTION

Estuaries are among the most diverse and productive ecosystems in the world and are often the location of major urban and/or industrial regions. The Tamar estuary is an example of this and is important to northern Tasmania. The Tamar estuary is listed as having high conservation value, due to its high biodiversity, including species which are not found in other areas of Tasmania.

THE BIG PICTURE

The Tamar Estuary and Esk Rivers (TEER) Ecosystem Health Assessment Program (EHAP) coordinates and implements an ongoing monitoring and reporting program for the Tamar Estuary and Esk Rivers. The EHAP builds upon current monitoring programs being implemented by industry groups and the State Government and local governments, aims to identify and fill critical gaps in monitoring, and coordinates the monitoring partners to assess and report on the health and condition of the waterways within the TEER region.

Monitoring of the Tamar estuary commenced in October, 2009 and extends 70 kilometres from the Tamar yacht basin, at the confluence of the North and South Esk Rivers, to the mouth of the Tamar at Low Head. The Tamar estuary EHAP is a joint partnership between 14 monitoring partners, including NRM North; the Tasmanian Government (EPA Division and the Department of Health and Human Services); the Launceston City Council; the West Tamar Council; the George Town Council; the Meander Valley Council; Hydro Tasmania; the University of Tasmania; the Australian Maritime College; Ben Lomond Water; BCD Resources, Van Diemen Aquaculture; BHP Billiton TEMCO.

WHY THIS ACTIVITY IS IMPORTANT

It is important to monitor and report on the health of the Tamar estuary, so that natural resource managers have an understanding of the condition of our waterways and are able to target investment and on-ground works in areas where improved waterway health is needed.

The EHAP will also enable managers to better evaluate the effectiveness of future activities undertaken to improve waterway health, such as sewage treatment plant upgrades, stormwater controls and wastewater treatment.

The EHAP data will be used to produce an annual report card and technical report for each year of the intensive ambient water quality monitoring program, which runs on a four year cycle of two years on and two years off. During the two years off, the TEER program will focus on analysing the data and conducting discrete projects to investigate issues such as seafood safety.



WHAT HAS BEEN SOLVED

For the first time, data will be statistically analysed from a number of different sites and parameters along the length of the Tamar estuary, to provide a single ecosystem health rating for five zones. This is a major step forward in reporting and assessing ecosystem health in Tasmania and it is the first time that a report card of this nature has been developed in the state.

The report card has rated the upper Tamar estuary at zone one with a “D”, indicating a highly degraded ecosystem. This zone extends from Launceston to Legana and is impacted by poor water quality, with high levels of turbidity and total nitrogen. Recreational water quality is poor and fails to meet the acceptable guidelines most of the time. The poor rating was not unexpected for this zone, because it is the point at which pollutants, delivered from the surrounding urban areas and from the upper catchment areas, are concentrated.

The report card has rated the lower Tamar estuary at zone five with an “A”, indicating excellent ecosystem health, with good water quality and excellent recreational water quality. This area, extending from George Town to the mouth of the Tamar, supports an extremely high and diverse underwater biodiversity of cold water coral reefs, sponge gardens and seagrass.

WHAT WE HAVE ACHIEVED

Some of the achievements so far include:

- A new data management system has been developed by the EPA Division of the State Government, and adopted by the TEER Program, to collate all monitoring data provided by the EHAP partners into a centralised database;
- A report card process has been developed and the first Tamar estuary report card has been released, using historic data from 1999 to 2009, to provide a historic ‘snapshot’ of the health of the estuary;
- The Tamar estuary EHAP monitoring agreement was signed by 14 monitoring partners, including the State Government and local governments, research and industry groups and community partners.

LESSONS LEARNT

The development of the EHAP has demonstrated the existence of a very high level of commitment and support for a coordinated approach to monitoring and reporting amongst the EHAP partners. It is through goodwill that the partners involved in the EHAP provide their expertise, resources, funding and equipment to support the operation of the program. The monitoring data and information released to the public as a result of the EHAP will continue to be of interest to the community and to natural resource managers. This type of data and science is of critical importance in underpinning management decisions to protect the health of the waterways.





South Esk Sediment Source Fingerprinting Study

INTRODUCTION

This project is assessing the feasibility of applying chemical fingerprints to determine the provenance of suspended sediments delivered to the Tamar estuary from the Esk catchment and is supporting the PhD research of Ms Deborah Hunter.

It is proposed that potential sources of sediment (e.g. surface soils, channel banks, river beds) within the Esk catchment be identified and that a sampling plan be developed for collection of potential sediment source samples. Samples will then be collected from within the Esk catchment and characterised by chemical and physical means to enable establishment of sediment fingerprints. Suspended sediment samples will also be collected from major rivers within the catchment with the aim of determining the provenance of the suspended sediment using the established source sediment fingerprints.

THE BIG PICTURE

The project will focus on surface geology and land systems as the prime determinants of sample site selection in an effort to best discriminate between potential sediment sources throughout the catchment. By considering land systems as well as geology the sampling will consider a broader, more distinctive range of potential sources, with land systems also incorporating rainfall, altitude and topography, as well as geology, into sample site selection.

Land use will not be considered in the selection of sample sites, but can be overlaid on the GIS system to see if land uses fall into particular geologies or land systems.

Initially sampling will focus on the upper South Esk with the sampling plan including seven sites on five different surface geology identities or three different land systems, with the soil of each source geology sampled in the vicinity of stream reaches. Potential source material will be characterised using a range of physical and chemical techniques (e.g. sieving, XRD, digestion and elemental analysis), including chemical analysis of the size fraction most relevant to transport. Chemical fingerprints from the soils of these source geologies will be compared and contrasted between and among land systems. Chemical fingerprints of the streams' suspended sediments will be compared for characteristics that may differentiate source geologies and any consistencies within land systems. The alluvium source/soil samples will be examined for characteristics of mixed origins.

WHY THIS ACTIVITY IS IMPORTANT

Sedimentation in the Tamar estuary has been an ongoing issue for many decades, and is of particular concern due to its potential to increase flooding risk and its impact on the recreational and aesthetics values of the Tamar estuary. A potential outcome of the project will be an improved understanding of the source(s) of sediments to the Tamar and the ability to better manage sediment inputs.

WHAT HAS BEEN SOLVED

Initial plans to focus sampling on suspended sediments in rivers proved to be problematic for a number of reasons, with a major issue being that the low suspended sediment loads during times other than peak flow events made it difficult to acquire sufficient sediment for chemical analysis. Whilst this method would have provided a more effective means of sampling source sediments, e.g. by including natural size fractionation and weathering processes into the sampling process, the potential variation in sediment source contributions during flow events and across seasons would have also provided additional complications in differentiating sediment sources, hence the decision to sample surface geologies.

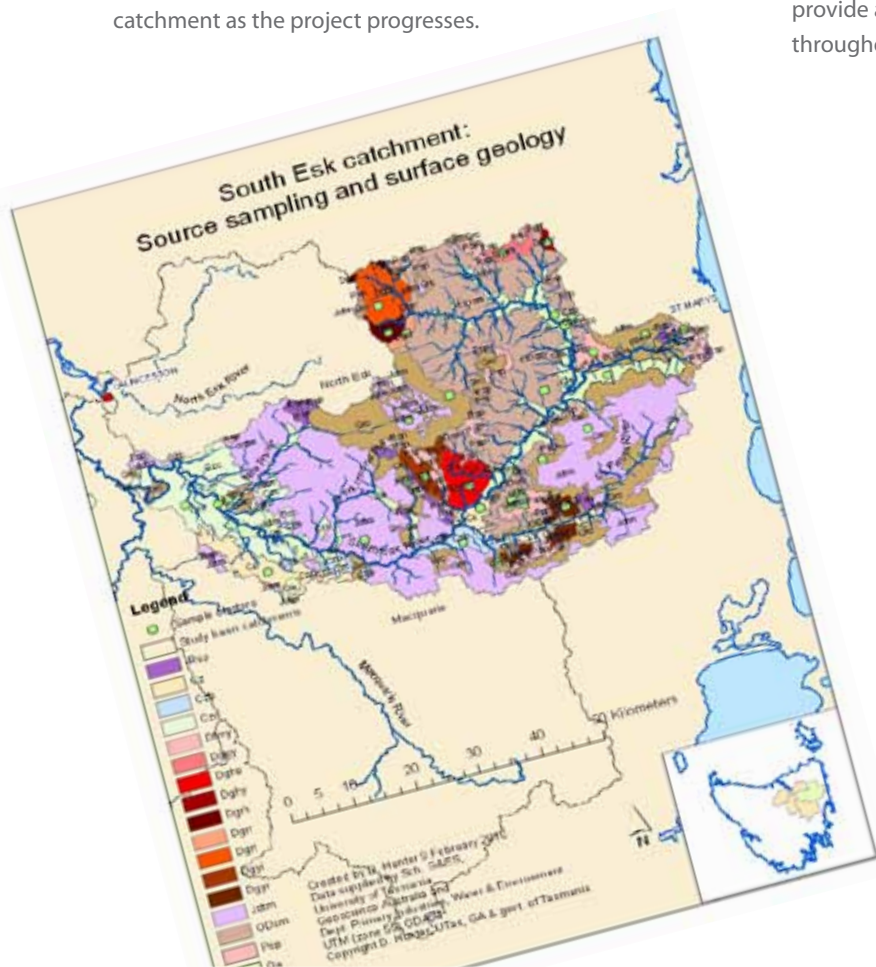
WHAT WE HAVE ACHIEVED

GIS maps have been constructed for the five sub-catchments of the Esk catchment (Meander, Macquarie, Brumbys Lake, South Esk and North Esk) for the catchment geologies and landuses to enable sample site selection. Taking into account the size of the Esk catchment (ca. 10,000 km²) and the distribution of geologies, the number and aerial extent of catchment sampling has been determined. As previously mentioned, initial sampling will focus on the upper South Esk (including seven sites on five different surface geologies) and extend across the South Esk catchment as the project progresses.

LESSONS LEARNT

There are a total of 29 geological identities in the study basin, six are common across all five catchments (-Rsp, Czc, Jdtm, Psp, Qa, Qrc) and one geology (Czb) is found in all catchments except Brumbys, whilst another (Cz) is found only in the Brumbys, Macquarie and South Esk catchments. There are a number of geologies found only in one or two catchments (Qs in Macquarie and North Esk; Nsg in Brumbys; -COsd, -Csr, Mst, Nsoo, Qsg in Meander; ODsm in South Esk and North Esk; Dfmy, Qdc in South Esk), including the granites which are found only in the South Esk and/or North Esk. Three granites of the study basin are common to both the South Esk and North Esk catchments (Dgrh, Dgrr, Dgrt), whilst 6 are specific to the South Esk (Dfmy, Dggy, Dghe, Dghy, Dgyi, Dgyr) and three are specific to the North Esk (Dgru, Dgud, Dgup).

In general, the distribution of surface geologies is also consistent with an altitudinal distribution. Since altitude correlates positively with precipitation, the two major erosion predispositions (geology and climate) are accounted for through consideration of the geologies alone. The main exception is Jurassic dolerite (Jdtm), also known for its mineral variability, which has a Midlands plains distribution as well as montane distributions, but consideration of land systems will take into account these different altitudinal distributions, thus use of surface geology and land systems as the prime determinants of sample site selection should provide a discriminate between potential sediment sources throughout the catchment.



Tamar Estuary and Esk Rivers Catchment Modelling



INTRODUCTION

Sedimentation of the Tamar estuary has been an issue of longstanding contention within the community, for both public amenity and environmental reasons. Tidal movement of sediment within the estuary, as well as sediment transported to the estuary from the upstream river systems, are contributing factors to the supply of sediment in the upper Tamar estuary.

The Tamar Estuary and Esk Rivers Catchment WaterCAST Model was completed in May, 2010 and estimates the amount of sediment generated in the Tamar catchment. This investigation was required to understand how much sediment is being generated and where in the catchment this is originating from.

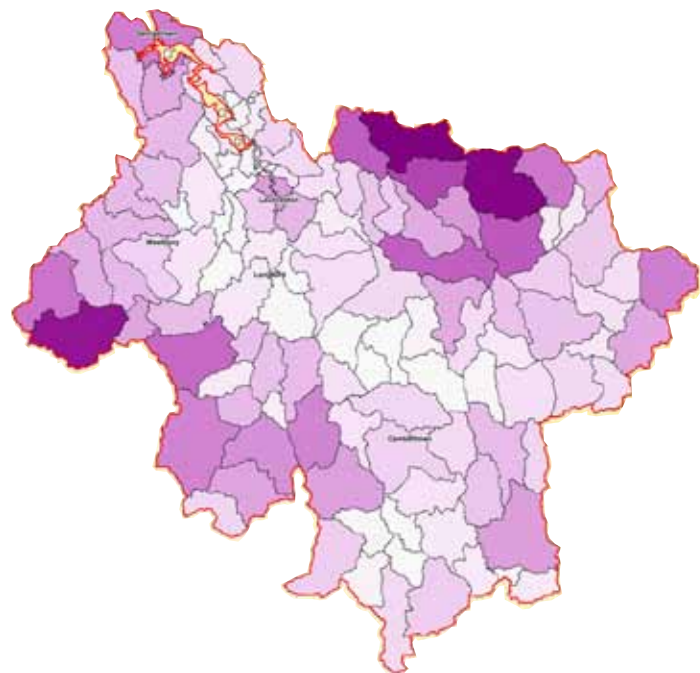
THE BIG PICTURE

The surface water within the North and South Esk river systems is an important natural resource for many industries within the region, such as Hydro Tasmania and the region's farmers. These rivers also supply drinking water to the majority of the area's urban population.

Sediment input into the river systems has contributed to the sedimentation of the Tamar estuary. The overall health of the river system and the Tamar estuary are also affected by nutrient inputs into the estuary, along with heavy metals; a legacy of historic mining activities in the upper catchment. Consequently, improving the water quality within the TEER Program area will assist in the long-term sustainable management of this resource.

WHY THIS ACTIVITY IS IMPORTANT

A long-term approach is required to manage sedimentation of the Tamar estuary. Before effective management can occur, there needs to be a scientific understanding of the issue, upon which to base decisions. This activity will fill a crucial information gap, related to understanding the hydrological processes within the greater Tamar catchment, and the interaction with the landscape which leads to sediment and nutrients being transported to the receiving waters of the Tamar estuary. This will enable greater ability and certainty for relevant organisations to identify priority areas for management of sedimentation and waterway health.



WHAT HAS BEEN SOLVED

Through the partners of the TEER Program, a strategy has been formulated for informing management of the upper Tamar estuary sedimentation problem. This has included undertaking various scientific studies and data collation, to understand the science behind the issue; investigating the cost and technical feasibility of proposed technical solutions to remove sediment from the upper Tamar estuary; community consultation to impart an understanding of the issue and to seek input into suggested mitigation measures; and modelling to form a basis for long-term management strategies.

Modelling in the Tamar catchment has revealed that:

- 58,000-80,000 tonnes of sediment is estimated to be generated in the Tamar catchment each year.
- It is estimated that sediment delivery pre-European settlement (eg. in a natural or undeveloped state) was 40 percent lower than current levels.
- The Tamar catchment is approximately 15 percent of Tasmania's land mass. Compared to other modelled catchments in Australia the amount of sediment generated in the Tamar catchment is considered moderate.
- The high slope and high rainfall areas of the upper North Esk and upper South Esk catchments generate the highest sediment loads; and
- Tidal sediment movement is predicted to be the main driver of sedimentation in the upper Tamar estuary, particularly during low-flow years when there is less sediment delivered from the catchment areas.

WHAT WE HAVE ACHIEVED

- Coordination of activities and partnerships between the State Government, local governments, NRM North and other key stakeholders, to inform management of the issue;
- A final report on the Tamar Catchment Sediment Model, which shows the area in the Tamar catchment with the potential to deliver high sediment and nutrient loads to waterways. This report is available to download from the NRM North website; and
- A final report, commissioned by the Launceston City Council, which investigates the feasibility of options to address sedimentation in the upper Tamar estuary, and a second report which models the hydrodynamics of the Tamar estuary.

LESSONS LEARNT

The Tamar estuary is a focal point for the city of Launceston and many residents are concerned about its management and, particularly, how the issue of sedimentation of the Tamar estuary will be managed. It is important to clearly communicate the integrated approach to management of this issue and also the science of sedimentation, so that the community can make informed decisions about what they expect from management authorities, and what their vision is for the long-term future of the Tamar estuary.





Gambusia Control Program

INTRODUCTION

This project aims to control or eradicate the pest fish *Gambusia* in Tasmania. The methods employed to date include research into trap development, direct control actions and raising awareness. Trapping and hand netting in open/interconnected waterways is the major component of the control actions, with temporary drying of drainage lines and if necessary poisoning being used in isolated water bodies. Raising awareness promotes community involvement and minimises the risk of people spreading *Gambusia* beyond the Tamar Valley. Maintaining or building volunteer participation in the trapping program is a core focus of the project. Community groups and many local schools have been engaged and volunteers from several groups are involved in the ongoing trapping program.

THE BIG PICTURE

Tasmania is in the fortunate position of having only one catchment infested by *Gambusia*. As such, Tasmania is the only state in Australia where *Gambusia* eradication or control is currently feasible. This makes preventing *Gambusia* spread to other catchments (i.e. preventing movement of *Gambusia* by people) and tackling this issue while it is still at a relatively small and therefore manageable scale, very important here. The two keys to preventing movement of *Gambusia* by people are, minimising *Gambusia* availability at publicly accessible sites (via control actions) and raising public awareness of this issue.

WHY IS THIS ACTIVITY IMPORTANT

Left unchecked, the impacts of *Gambusia* in Tasmania would be magnified, particularly in the absence of substantial community awareness. *Gambusia* prey on the eggs and young of native frogs and fish in the Tamar River and compete for food and shelter with native species. As a single female *Gambusia* and her offspring can potentially produce nearly a million offspring in one season, the impact is significant. The listed vulnerable Green and gold frog (*Litoria reniformis*) is particularly affected, as *Gambusia* continue to attack and 'fin nip' larger tadpoles. This drives tadpoles away from the best sources of food and shelter and forces them to spend time hiding rather than feeding. Preventing these local impacts from becoming state wide issues is of critical importance.

WHAT HAS BEEN SOLVED

Effective control methods suitable for use in sensitive environments such as Tamar Island Wetlands have been developed. The research and development of *Gambusia* traps has enabled practical, easy to use, portable traps to be made available to *Gambusia* managers and community groups. Several trap types have been tried, with three different designs (collapsible bait traps, round traps with mesh wings and fyke nets) currently being used to suit different environments.

WHAT HAVE WE ACHIEVED

Involvement of volunteers and community groups Tamar Island Wetland Wildcare Group and Tamar NRM in control activities has been a key achievement. In conjunction with the project manager this has resulted in the removal of over 20,000 *Gambusia* from sensitive environments over the past year. *Gambusia* were also eradicated from a key breeding site at Legana which was connected to the estuary. This area previously served as a source population with *Gambusia* spreading from the site during flood events.

LESSONS LEARNT

Several key lessons were learnt this year. Fyke nets were tried for the first time and found to be effective in shallow lagoons. Much was learnt while attempting to eradicate *Gambusia* from the Landfall site via pumping dry. For example, stopping tidal ingress requires more than earthworks. This is unlikely to be attempted again at the same site or another similar east Tamar site due to the logistics involved.



Pest: *Gambusia holbrooki*, female.
Photo: Neil Armstrong



Threatened: the Green and Gold
Frog, *Litoria raniformis*.



Lake Trevallyn Algal Bloom Monitoring



INTRODUCTION

The cyanobacterium *Anabaena circinalis* was first discovered in Lake Trevallyn in bloom proportions in January 2007. This bloom was the catalyst for the establishment of the Lake Trevallyn Algal Bloom Monitoring Program and Working Group. The aim of the working group, which comprises members of NRM North, Hydro Tasmania, West Tamar Council, Meander Valley Council, the University of Tasmania, the Department of Health and Human Services and Ben Lomond Water, is to monitor the occurrence of algal blooms in Lake Trevallyn during the peak summer recreational period and to try to understand the key drivers influencing the outbreaks and propose various management strategies to adopt.

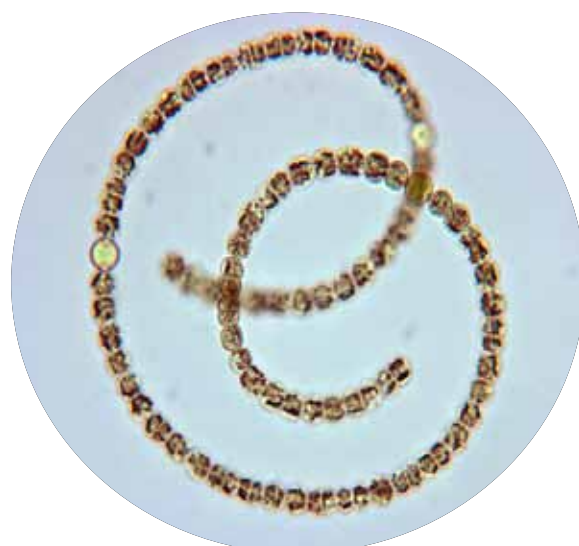
Monitoring has occurred yearly since 2007 over the peak recreational months from December through until April to capture conditions that can contribute to blue green algal blooms.

Significant algal blooms occurred in the summers of 2006/2007 and 2007/2008, these blooms lasted approximately two to three months. Appropriate action was taken at the time including erecting, public warning signs, notification of key user groups of the Lake, daily notification in the Examiner newspaper under the services section on the weather page and the treatment of drinking water with activated carbon to remove unfavourable odours and tastes.

A short lived bloom occurred in 2008/2009 for the duration of two weeks however no blooms were detected in Lake Trevallyn in 2009/2010. Early analysis indicates that higher flows through Lake Trevallyn in 2009/2010 may have limited the establishment of a blue green algal bloom.

THE BIG PICTURE

At low numbers algae causes no problems and is in fact a natural part of a water body. Occasionally however, algae can grow very fast or 'bloom' and accumulate into dense visible patches at the surface of the water due to low water flows and high levels of available nutrients such as phosphorous and nitrogen needed for growth. Algal blooms can become a serious public health and environmental problem in many waterways. Contact with an algal bloom can cause a number of human health problems including; skin rashes, eye irritation, ear aches, itchiness, swollen lips and other symptoms. Algal blooms can also cause unpleasant taste and odour compounds in drinking water.



Anabaena circinalis cells from Lake Trevallyn
Photo: Dr C Bolch, AMC, University of Tasmania.

WHY THIS ACTIVITY IS IMPORTANT

This activity is important because it coordinates monitoring efforts for Lake Trevallyn. It also provides a centralised data collection point for all stakeholders, it can provide earlier warning of blooms occurring and will increase our understanding of the bloom processes in Lake Trevallyn to aid in informing management options to address this issue for the long term.

The monitoring program will also allow management agencies to better inform and communicate with the public and users of the lake about when it is safe for use, why the blooms are occurring and what is being done to manage them.

WHAT HAS BEEN SOLVED

Through a coordinated partnership approach the members of the Lake Trevallyn monitoring group have been able to share information, resources and costs, jointly analyse the results and develop a collaborative approach to management.

Key findings from the monitoring program are;

- Water flows are a major controlling factor of blue green algal blooms in Lake Trevallyn. Low residency times (high water flows) during summer may prevent the blooms from becoming established, as seen in the 2009/2010 summer
- Significant sources of bio-available nutrients are found in Lake Trevallyn and appear to be sourced from the South Esk River in-flows (or associated with natural in-flows) and possibly sediments.
- Algal blooms persist due to stratification of the water under the influence of high summer temperatures which promotes cell growth and surface concentration of cells.
- *Anabaena circinalis* cells detected in the monitoring program to date have all been found to be at non-toxic levels.

WHAT WE HAVE ACHIEVED

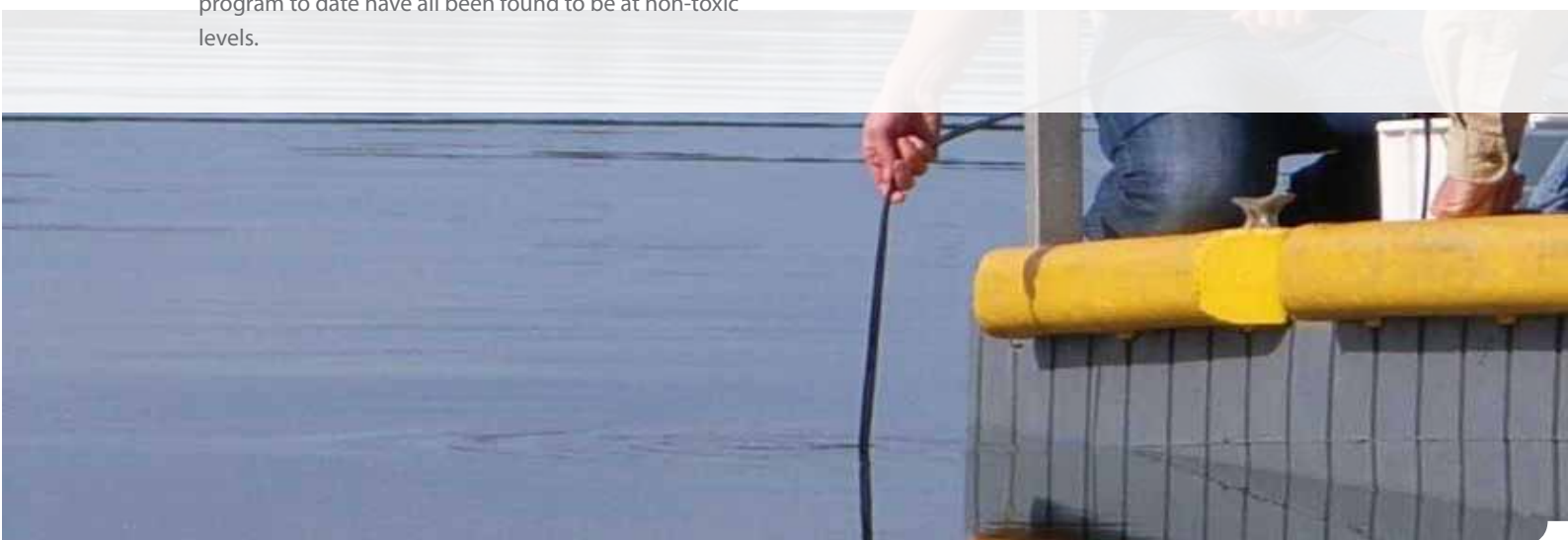
A coordinated partnership approach to monitoring Lake Trevallyn which has included;

- A signed partnership agreement and human and financial resources committed by NRM North, Ben Lomond Water, West Tamar Council, Meander Valley Council and Hydro Tasmania.
- Additional input and involvement in the Program from the Department of Health and Human Services, and Analytical Services Tasmania.
- Weekly monitoring of Lake Trevallyn from December 2009- to April 2010.
- A centralised database for monitoring results and sharing of human and financial resources.
- A significant increase in our understanding of blooms and the physical and chemical dynamics of Lake Trevallyn.
- Establishing a daily status update to appear in the Examiner newspaper during summer months to notify users of the lake.
- Better engagement and communication with key user groups of the Lake.

LESSONS LEARNT

A coordinated partnership approach to monitoring algal blooms in Lake Trevallyn benefited all of the partners involved by being able to share resources and information and discuss various management options together.

The Lake Trevallyn Working Group will commence monitoring again for 2010/2011 summer period.



Finance Statements

Consolidated TEER Finance Statement

Consolidated TEER Financial Statement		
as at 30th June, 2010		
INCOME	2010	TOTAL
Carried Forward From Previous Years		\$199,237
Income – TEER Partnership Agreement		
Launceston City Council 09/10	\$30,000	
West Tamar Council 09/10	\$10,000	
George Town Council 09/10	\$8,000	
Meander Valley Council 09/10	\$10,000	\$58,000
Income – TEER Lake Trevallyn Monitoring Program		
West Tamar Council 09/10	\$2,000	
Meander Valley Council 09/10	\$2,000	
Hydro Tasmania	\$7,000	
Ben Lomond Water 09/10	\$7,000	\$18,000
Income - Ecosystem Health Assessment Program		
Van Diemen Aquaculture	\$1,041	\$1,041
TOTAL INCOME RECEIVED		\$276,278
Less Expenses		
Consultancy Fees – TEER PA	\$2,000	
Consultancy Fees – TEER LT	\$12,951	
Contract Services – TEER PA	\$3,689	
Contract Services – TEER LT	\$8,739	
Printing	\$880	
Stationery	\$120	
Wages & Salaries	\$96,579	
Superannuation	\$9,401	
Project Materials	\$444	
TOTAL EXPENSES		\$134,803
NET SURPLUS		\$141,475

Notes to the Accounts:

NRM North has committed funding to the value of \$397 662 including;

- \$312,662 funding from the Australian Government for priority activities to improve waterway health.
- \$85,000 towards hosting and employment of TEER staff and provision of support from the NRM North Knowledge Coordinator and NRM North Manager- Community Engagement and Communications.

TEER Activities Awarded and Implemented

Project Activity	Service Provider	Project Total
Gambusia Trapping Program 2009	Tamar NRM	\$36,306
Tamar Catchment Sediment & Nutrient Model	Hydro Tasmania Consulting / WBM BMT	\$98,725
Tamar Estuary and Esk River Catchment Modelling	WBM BMT	\$61,682
Tamar Catchment Sediment Source Fingerprinting Study	University of Tasmania	\$40,000.
Lake Trevallyn Algal Bloom Data Analysis	Hydro Tasmania Consulting	\$8,000
EHAP Framework	Australian Maritime College	\$29,949.
EHAP Report Card	Australian Maritime College	\$20,000
EHAP Operating Costs	Environment Protection Authority, DPIPWE	\$15,000
EHAP Laboratory Costs	TasLabs	\$11,000

Notes to the Accounts:

TEER projects and activities for 2009-2010 have been funded through the Australian Government with the exception of the Lake Trevallyn Algal Bloom Data Analysis activity which was funded by the TEER Lake Trevallyn Algal Bloom Monitoring Working Group partners.

Partners

Steering Committee

Current members at 30 June 2010

Kim Evans

SECRETARY

Department of Primary Industries, Parks, Water and the Environment (Chair)

Greg Preece

GENERAL MANAGER

Meander Valley Council

Ian Pearce

GENERAL MANAGER

West Tamar Council

Robert Drobrzynski

GENERAL MANAGER

Launceston City Council

Stephen Brown

GENERAL MANAGER

George Town Council

James McKee

CHIEF EXECUTIVE OFFICER

NRM North

Andrew Catchpole

GENERAL MANAGER COMMUNICATIONS AND EXTERNAL RELATIONS

Hydro Tasmania

Stuart Heggie

STATE MANAGER ENVIRONMENTAL HEALTH

Department of Health and Human Services

Barry Cash

CHIEF EXECUTIVE OFFICER

Ben Lomond Water

Past members

Scott Gadd

SECRETARY

Department of Environment, Parks, Heritage and the Arts

Frank Dixon

GENERAL MANAGER

Launceston City Council

Joe Conti

REGIONAL ENVIRONMENTAL HEALTH OFFICER-NORTH

Department of Health and Human Services



Scientific and Technical Committee

Current members at 30 June 2010

CORE COMMITTEE MEMBERS

Dr Troy Gaston

National Centre for Marine Conservation and Resource Sustainability, Australian Maritime College (Chair)

Dr Andrew Seen

University of Tasmania

Greg Dowson

EPA Division

Department of Primary Industries, Parks, Water and the Environment

Dr Raquel Esteban

Department of Health and Human Services

Andrew Baldwin

NRM North

Alison Howman

Hydro Tasmania

Scott McCallum Smith

BHP Billiton TEMCO

Celia Milne

Van Diemen Aquaculture

Samantha King

BCD Resources

Glen Rowlands

Ben Lomond Water

Steve Ratcliffe

Launceston City Council

Rick Chippindall

West Tamar Council

Linda Sznytka

Launceston City Council

Samantha Rayner

Tamar NRM

ROLLING COMMITTEE MEMBERS

Duane Richardson

EPA Division

Department of Primary Industries, Parks, Water and the Environment

Jos Phillips

Department of Primary Industries, Parks, Water and the Environment

Past members

Kate Wilson

Department of Primary Industries and Water

Debbie Searle

NRM North

Gail Martin

Van Diemen Aquaculture

Peter Hills

Beaconsfield Gold

James Doherty

Launceston City Council



Partners

Lake Trevallyn Algal Bloom Working Group

Current members at 30 June 2010

Rick Chippindall

West Tamar Council (Chair)

Andrew Baldwin

NRM North

Alison Howman

Hydro Tasmania

Katie Proctor

Meander Valley Council

Joe Conti

Department of Health and Human Services

Glen Rowlands

Ben Lomond Water

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Dr Chris Bolch

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Parks and Wildlife Service

Dr Caroline Whalley

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Past members

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Stephanie Fulton

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Dr Raquel Esteban

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Sediment and Modelling Working Group

Past members

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Dr Andrew Seen

University of Tasmania

Greg Dowson

EPA Division

Department of Primary Industries, Parks, Water and the Environment

Andrew Baldwin

NRM North

Alison Howman

Hydro Tasmania

Steve Ratcliffe

Launceston City Council

Alex Spink

Department of Primary Industries, Parks, Water and the Environment

Dr Shane Broad

Tasmanian Institute of Agricultural Research

Dr Owen Ingles

Geotechnical Engineering and Soils Consultant

THIS WORKING GROUP WAS DISSOLVED IN MAY 2010 FOLLOWING THE COMPLETION OF THE TAMAR CATCHMENT SEDIMENT MODELLING PROJECT

Future Directions

In August 2008 key stakeholders and community leaders from government, industry, business and the community came together to develop a vision and strategic framework for the Tamar Estuary and Esk Rivers Systems. The Strategic Framework is the future blueprint that will guide the operation of the TEER Program and will enable our partners and stakeholders to work together towards a common set of goals.

The TEER Strategic Framework lists five key Future Directions which the TEER is committed to working towards in partnership with the community.

1. Protect, maintain and enhance natural values - healthy river systems help build healthy communities.
2. Build sustainable futures - water is a precious resource. Good water is a key element in our ability to sustain life now and into the future.
3. Working together to provide integrated governance, planning and management - working together is the way to achieve outcomes for the Tamar Estuary & Esk River Systems.
4. Build community knowledge and awareness of the Tamar Estuary & Esk River Systems - it is important the entire community understands the Tamar Estuary & Esk Rivers, the role they play in our lives, the need for them and what we can do to help maintain their health.
5. Improve the amenity of the Tamar Estuary and Esk River Systems - how the rivers look and how they are used is important to our community.

These future directions provide the blueprint for the TEER Program to work towards however it is not possible for the TEER Program to achieve this in isolation. This will require the commitment and support from a 'whole of community approach' to truly make a difference. The TEER Program has been established as the vehicle to coordinate and rally people to work towards achieving the community's vision for healthy waterways. As a partnership program the TEER will continue to foster and develop new partnerships and initiatives with the community, government, business and industry to work towards waterways that are healthy, productive, valued and enjoyed.

Our Vision 2030

*The Tamar Estuary & Esk Rivers Systems:
Healthy, Productive, Valued and Enjoyed*

- Our Rivers of Life

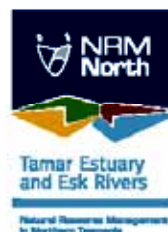




TEER Steering Committee Partners:



“Working together for healthy waterways”



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