



DEPARTMENT *of* PRIMARY
INDUSTRIES, WATER *and*
ENVIRONMENT

**ENVIRONMENTAL
MANAGEMENT
GOALS
for TASMANIAN
SURFACE WATERS**

**MERSEY RIVER
CATCHMENT**

March 2001



Proposed Environmental Management Goals

For Tasmanian Surface Waters:

Mersey River Catchment

This discussion paper was used as a basis for community and stakeholder participation in the process of developing environmental management goals for the waterways that are located within the Mersey River Catchment and has been modified to reflect the outcomes of the community consultation process.

The paper was prepared by the Environment Division, in association with the Land and Water Management Branch, of the Department of Primary Industries, Water and Environment. The paper was initiated as an outcome of a workshop held with council officers from the Devonport City, Latrobe, Kentish, Central Highlands and Meander Valley Councils in late 1998.

Words and expressions used in this paper have, unless the contrary intention appears, the same meaning as defined in the State Policy on Water Quality Management 1997 and the *Environmental Management and Pollution Control Act 1994*. Ecosystem refers to physical, chemical and biological aspects of the aquatic environment.

This paper is divided into four main sections:

1. The first part discusses water reform in general, the State Policy on Water Quality Management and gives some general information relating to the area included in the discussion paper (Sections 1-3).
2. The second part discusses the proposed Protected Environmental Values for individual catchments. (Section 4).
3. The third part discusses water quantity and water quantity values (Section 5)
4. The fourth part shows the Community Water Values obtained at workshops held in July 1999 (Section 6).

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1 INTRODUCTION

1.1 Why do we need water reform?

A good supply of fresh, clean water is an essential requirement for human life, a healthy environment and a productive economy.

We need water for drinking, for recreational activities like fishing, swimming and boating, to provide the food we eat and export, to generate clean electricity, and to support mining and other industries.

We also expect our rivers and lakes to look healthy, and provide a healthy environment for a wide range of aquatic plants and animals.

We sometimes take for granted that our use of water resources is sustainable; that our hard-working water will still be there in a healthy state to provide the same benefits for future generations. Our waterways are not immune from problems, however, and many of our river systems are showing signs of stress.

Tasmanian rivers range from relatively short, swiftly flowing rivers fed from mountain sources to slowly flowing rivers which may be reduced to a series of pools during dry periods.

River health, and the health of the economies that depend upon them, is clearly linked to the way we use the waters; the degree of regulation we impose; the quantity of water we take out; and the quality of water we return.

In response to a general recognition across the community of the importance of having clean water and appropriate river flows, the Tasmanian Government is currently finalising a range of reforms

designed to ensure that these values are protected for the future of the State.

1.2 What are these reforms?

Two major aspects of the water reforms are water quality management and water quantity management.

(a) water quality management

The *State Policy on Water Quality Management 1997* is designed to **maintain or enhance** the quality of Tasmanian surface waters. Principal objectives of the Policy include:

- Move on from reliance on ‘end of pipe’ controls to take into consideration the number of discharges into a given water body, or the sensitivity or current condition of the water body.
- Ensure that diffuse source and point source pollution does not endanger the achievement of water quality objectives, and that pollutants discharged to waterways are reduced as much as possible by the use of best practice environmental management;
- Facilitate and promote integrated catchment management.
- Focusing on overall water quality management strategies by identifying those water quality values and uses that are considered worthy of protection.

The first purpose of this discussion paper is to explain how the water quality values will be identified and used. Local communities have a key role in identifying these values in their catchments.

(b) water quantity management

The Government has recently finalised new water management legislation to replace the *Water Act 1957*. The *Water Management Act, 1999* provides for:

- major changes to the institutional arrangements for water management;
- the ready transfer of water rights between different users;
- enhanced stakeholder and community input into water allocation and management; and
- a more transparent and equitable water allocation system, including formal allocation of flows to maintain a healthy river environment.

The second purpose of this discussion paper is to canvas your views on what you value in your water resources from a water quantity perspective. To this effect you will be asked what you value in relation to water quantity. Your comments will be of assistance to the Department in undertaking water quantity planning in your catchment.

1.3 What will this community input achieve?

The objective is to identify Water Management Goals for the catchments within your region. These Water Management Goals will include Protected Environmental Values (PEVs) as defined under the *State Policy on Water Quality Management*, and identified water quantity values.

1.4 What did we want the community to do?

Local communities have a valuable understanding of their regional waterways. What uses or values do you have for surface waters in this area that rely upon maintaining or enhancing water quality? Which of your activities rely

upon maintaining or enhancing the flow of water into catchment waterways? Are there certain places on your rivers that you traditionally use for swimming or other recreational activities? Do you fish in them? Are there specific features of your rivers and streams that are recognized scenic attractions, such as rapids or waterfalls? Do you know of rare or endangered animals or plants in, or adjacent to, specific areas of your rivers or streams? Do you use water for livestock watering? Does your river supply the local town water supply? Do you draw water from it to irrigate your farm? How often do you need to draw water from it, and when?

Answers to these questions were recorded as 'Community Water Values'. These values are summarised in part 6 of the document.

Planning to ensure sustainable use of these waters and protection of river health requires sound knowledge of local water quality and quantity issues. Community input to this process is important. Many of the community water values raised at the meeting would be best managed through integrated catchment management.

1.5 How will your input be used?

Information from the community on water values particularly relating to water quality assisted the Board of Environmental Management and Pollution Control and your council to finalise the range of Protected Environmental Values for the surface waters of your regional waterways. These values should be used in regional management planning. Further details of what this means is given in Section 4 below.

Information from you on water quantity values will be utilised along with advice from stakeholders, catchment groups

and the public to better plan the water resources of your catchment. Water management planning will be closely linked with overall catchment management planning to put water resource management on a sustainable footing for the State. Water

management planning will be undertaken on a priority basis, with stressed rivers in the State being targeted initially.

2

MERSEY RIVER CATCHMENT OVERVIEW

2.1 Catchment description

The Mersey catchment experiences a temperate maritime climate with an annual rainfall increasing from 900 mm on the coast to 2700 mm in the highlands¹.

Catchment geology is characterised by Pre-Cambrian age outcrops in the upper catchment; limestone in the middle catchment; and Tertiary basalt, Jurassic dolerite and Permian sedimentary sequences in the lower catchment. The dominant topographic features of the region are the Western Tiers and Mount Roland in the middle catchment.

There is a transition from wet to dry sclerophyll eucalypt forest from the upper catchment to the coast. Much of the natural vegetation has been cleared for agriculture. Pine plantations are also common in the middle catchment.

Over 27,000 people live in the Mersey Catchment with the majority living in Devonport (22,660), Latrobe (2,550) and Railton (1,000). The remainder live in smaller settlements and farms.

Land tenure is predominantly private freehold with substantial areas of State Forest between Parangana and Dynans Bridge. Alum Cliffs State Reserve is located in the middle catchment, along with several karst related reserves (limestone caves) near Mole Creek.

Major catchment developments include:

- Diversion of the upper Mersey River into the Forth Catchment by the construction of Parangana Dam.

- The Mersey River Catchment supports extensive agricultural activities – grazing, piggeries, dairying and commercial cropping. There are 137 licences currently allocated for water extraction for irrigation or commercial use. Peak use is just under 50 ML per day over the summer months. There is some demand, particularly from irrigators, to increase water allocations.
- Drinking water for major population centres in the region are supplied by the North-West Regional Water Authority. Water is piped from the Forth River catchment and there is no direct abstraction of town drinking water from the Mersey River. Mole Creek is the only major centre which draws drinking water from a Mersey River tributary.
- Sewage treatment facilities are located at Devonport (coastal discharge); Sheffield (discharge into Dodder Rvt. running to Dasher River); Railton (Redwater Ck.); and Latrobe (Mersey River). The Latrobe, Sheffield and Railton plants are currently being upgraded to ensure full compliance with environmental regulations.
- The Dulverton Regional Landfill, located in the Caroline Creek catchment utilises a range of runoff control measures to minimise off-site impacts. Old landfill sites at Spreyton, Sheffield and Railton are currently being rehabilitated.
- Goliath Cement Works is also located on Caroline Creek and has had Water Management Plan operating since 1990 to minimise impacts on water quality.

¹ Catchment description and environmental details from *Mersey River Flow and Catchment Assessment Report* produced by the Mersey River Working Group. December 1997.

- The catchment has a number of small quarries and gravel pits.
- There are eight industrial takes from the Mersey Catchment. By far the largest user is the Wesley Vale Pulp Mill (located outside the catchment) which uses about 30 ML per day. The remaining industrial off-takes total less than 3 ML per day.

The region's waterways are amongst the most popular in the state for recreational fishing.

2.2 World Heritage Values

The World Heritage listing of a large portion of the upper Mersey River catchment is recognition of the unique natural and cultural values of the region. These features and other special values – recreational, economic, scientific, educational and inspirational – are identified in the Tasmanian Wilderness World Heritage Area Management Plan². These values are briefly detailed below.

The region is characterised by outstanding landform features; a profusion of threatened, rare and endemic plants within a mosaic of plant communities; a unique assemblage of wildlife; and pristine catchments largely free of human impacts. There are also significant cultural sights both in terms of Aboriginal habitation and more recent activities since European settlement. The wide range of recreational opportunities within the region is also seen to have economic importance as a basis for sustainable nature-based tourism.

2.3 Characteristic water quantity and quality

The main impacts on water flow are diversion of the upper Mersey River waters at Parangana Dam for power generation and water abstraction for agriculture and other industries across the catchment.

Construction of the Parangana Dam is estimated to have reduced median and mean flow on the Mersey River at Liena by a ten-fold order of magnitude, with consequent reduction in summer base flows and annual flood flows. Agricultural demand also peaks at nearly 50 ML per day over the summer months. Industrial off-takes of over 30 ML per day place additional water quantity demands.

Water quality assessment of rivers in the Mersey Catchment³ indicate that while most water quality parameters show a gradual deterioration downstream they are diluted by main stream flows. Tributaries of the Mersey, in particular Coilers Ck. and Redwater Ck. in the middle catchment and Parramatta and Kings creeks in the lower catchment, appear to be much more degraded than the Mersey. Nitrogen and phosphorus levels sufficient to cause algal blooms are evident in Coilers Ck. and Redwater Ck. These high concentrations appear to be related to intensive animal industries and sewage treatment plant effluent. The origins of pollutant inputs into Parramatta and Kings creeks are, because of their proximity to Latrobe, more complex due to the greater variety of catchment activities.

Microbiological results were also worse in Mersey Catchment tributaries than in the main stream. Six out of eighteen

² *Tasmanian Wilderness WHA Management Plan 1999*. Tasmanian Parks & Wildlife Service.

³ *Mersey River Experimental Study Technical Reports – Incorporating Mersey State of River Report*. For the Mersey River Study Committee. December 1997. The report acknowledges that conclusions are often based upon limited data.

sites exceeded ANZECC guidelines for primary contact. Stock access to waterways may underline these results.

Turbidity results, particularly during flood events, show that the majority of suspended material in the Mersey originates from the catchment between Liena and Kimberley. This indicates relatively severe erosion and loss of soil in the contributing subcatchments – Mole Creek, Lobster Rivulet, Minnow River and the Dasher River.

While dissolved oxygen levels were generally healthy across the catchment, large variations were evident in Coilers Creek (possibly due to high nutrient loads) and in Parramatta Creek during low flow periods.

Macroinvertebrate communities in the region's waterways appear to be in reasonable health although subject to some impacts arising from degraded water quality, habitat degradation from both forestry and agricultural practices and water diversion. Changes in flow and habitat below the Parangana Dam has had some impact on stream invertebrates, and there is a detectable impact in the lower Mersey, possibly due to degraded water quality. Tributaries in the lower catchment – Kings, Parramatta and Bonneys creeks, the lower Dasher River and Coilers Creek - are of major concern, with reduced species richness probably due to degraded water quality and habitat alteration. Loss of habitat also appears to be a problem in some reaches of the upper Minnow River and the upper Lobster Rivulet.

A limited survey of native fish in the Mersey System found a range of common native fish typical of Tasmanian streams. Concerns regarding the trout fishery focussed on low abundance in the Mersey River at Latrobe, Kimberley and downstream of Lake Parangana. There also appears to

be poor recruitment of trout at Latrobe, Lovetts Flats, Liena, Croesus Cave Reserve and downstream of Lake Parangana. Low flows and lack of suitable habitat may underlie these problems.

2.4 Catchment environmental issues

As stream conditions are determined both by in-stream activities and surrounding land-use activities, waterways act as a touchstone of catchment health. Healthy waterways are indicative of sustainably managed catchments. There are a number of environmental issues relating to waterways in the Mersey River Catchment.

- Reductions in flow due to hydro developments.
- Nitrogen and phosphorus levels sufficient to cause algal blooms in some tributaries.
- High microbiological results in some tributaries.
- Relatively severe erosion and loss of soil in the some catchments.
- Some impacts on macroinvertebrate communities arising from degraded water quality, habitat degradation and water diversion.
- Willow infestation causing changes in runoff patterns, alteration of instream habitat, choking of waterways, and reductions in photosynthesis.
- Severe erosion due to destruction of streamside vegetation zones.
- Uncontrolled stock access to streams.

- Impacts on waterways of discharge from sewage treatment plants
- Pollutant inputs from surrounding land use activities such as farming and forestry.
- Low abundance and recruitment of trout in some areas.

3 WATER QUALITY : THE STATE POLICY ON WATER QUALITY MANAGEMENT

3.1 Setting Protected Environmental Values

The first step in the implementation of the *State Policy on Water Quality Management 1997* is the identification of **Protected Environmental Values (PEVs)** for the surface waters in your region. **PEVs are the current values and uses of a water body for which water quality should be protected.** These values and uses should be clearly in evidence at the time of the implementation of the Policy.

The Policy specifies a range of PEVs which may be applied to a given water body. More than one PEV may be applied to a water body. The PEVs are:

- A. Protection of Aquatic Ecosystems
- B. Recreational Water Quality and aesthetics
- C. Raw Water for Drinking Water Supply
- D. Agricultural Water Use
- E. Industrial Water Supply

These values are described in more detail in Section 5.2.

The Board of Environmental Management and Pollution Control will then specify a range of Water Quality Objectives. These will be designed to ensure the quality of water in that water body is maintained at a level which will allow the chosen PEVs to be protected.

The Policy also sets out a range of strategies which are aimed at ensuring that waste water discharges from point sources (such as industrial or sewage treatment plant discharges) and diffuse sources (such as runoff from highways, urban areas, farms, forest harvesting

etc.) will not endanger the achievement of the Water Quality Objectives.

The Board and local planning authorities will use these strategies in land use planning and approvals processes, and in ongoing regulation, to ensure that the PEVs for a given water body are maintained or enhanced over time.

3.2 Protected Environmental Values categories

The Policy lists a range of PEVs which are used to describe the identified values and uses of a given water body. These are:

| |
|--|
| <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none">(i) Pristine or nearly pristine ecosystems;(ii) Modified (not pristine) ecosystems:<ul style="list-style-type: none">(a) from which edible fish, crustacea and shellfish are harvested, or(b) from which edible fish, crustacea and shellfish are not harvested. |
|--|

What does pristine mean?

"Pristine" means waters not subject to human interference through discharges or other activities within the catchment (Australian Water Quality Guidelines 1992).

| |
|--|
| <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none">(i) Primary contact water quality(ii) Secondary contact water quality(iii) Aesthetics water quality |
|--|

‘Primary contact’ means recreation involving bodily immersion / submersion where there is direct contact with water, & includes swimming, diving, surfing, water skiing.

‘Secondary contact’ means activities where there is some direct water contact, but it is unlikely that water will be swallowed (e.g. paddling, boating, and fishing).

‘Aesthetics’ means visual appearance of the water, being free from oil, grease, floating debris, unnatural colour, algal blooms etc.

C: Raw Water for Drinking Supply

- (i) Subject to coarse screening only;
- (ii) Subject to coarse screening and disinfection.

Under the current *Policy* this PEV applies to water used as the intake source for **public use** (town water supply, in other words) and to registered private water supplies. It does not apply to the taking of water from surface waters by individuals for private use for the purposes of drinking etc.

The Director of Public Health recommends that raw water from any surface waterbody should be boiled before use.

Water used for domestic purposes such as washing and cleaning is known as ‘homestead use’ has been recognised as a community water value (Table 4). A ‘homestead use’ does not include water for drinking. There was a strong community desire to have a homestead use PEV category included in the *Policy*. This option is currently under consideration.

D: Agricultural Water Uses

- (i) Irrigation
- (ii) Stock watering

E: Industrial Water Supply

The actual industry type must be specified in order to identify appropriate guidelines.

have used them for, and whether you strongly believe that they should be improved to support those uses again.

For example, are there waters that you swam in as a child that you no longer are able to?

4 WATER QUALITY : PROTECTED ENVIRONMENTAL VALUES FOR THE MERSEY RIVER CATCHMENT

The Board of Environmental Management and Pollution Control, and local government (Kentish, Latrobe, Central Highlands, Meander and Devonport Councils) and the Tasmanian Parks and Wildlife Service suggested, as a starting point, water quality PEVs that may have been suitable for surface waters of the Mersey River catchments. These proposed PEVs were presented at a workshop with the Mersey Catchment Steering Committee in July 1999. The proposed PEVs were amended as a result of feedback following this workshop.

We divided the Mersey catchment into three broad zones – upper, middle and lower catchment (Figure 1).

Figures 2 - 4 illustrate principal land tenure or land use categories in the three zones, along with towns and villages. The PEVs for water quality are grouped under the land tenure categories. These proposed PEVs provided the basis for discussion with regional stakeholders and interested groups at workshops at public meetings to allow the opportunity for wider public input. These meetings were advertised in the Advocate newspaper. These meetings were held at Sheffield (13 December 1999) and Spreyton (14 December 1999). These meetings were followed by an extended period for comment until January 14th.

The PEVs detailed in this document have been endorsed but the Board of Environmental Management and Pollution Control, local government (Kentish, Latrobe, Central Highlands, Meander and Devonport Councils) and

the Tasmanian Parks and Wildlife Service.

The PEVs chosen from the Policy are those values and uses that are currently in evidence and apply only for surface waters within the Mersey Catchment.

The PEVs apply to all surface waters within each land tenure category, other than⁴:

- privately owned waters that are not accessible to the public and are not connected to, or flow directly into, waters that are accessible to the public; or
- waters in any tank, pipe or cistern.

“Privately owned waters” means any surface waters confined within the boundary of privately owned land and which do not flow into, or do not communicate with:

- (a) the sea or arm or creek of the sea;
- (b) a source of supply for a water district or irrigation water district;
- (c) any river, stream, watercourse, lake, pond or marsh.

Management of all surface waters within the catchment shall focus on the achievement of water quality objectives.

The water quality objectives will be determined by the Board of Environmental Management and

⁴ State Policy on Water Quality Management 1997

Pollution Control in accordance with the *State Policy on Water Quality Management 1997*.

Achievement of these water quality objectives will maintain or enhance the water quality of those surface waters to ensure the protection of all of the following values and uses applying to each land use category. These values and uses are derived from the formal PEVs listed in Clause 7 of the Policy.

In general, diffuse source pollution can be managed to protect the PEVs by compliance with approved codes of practice, or by development and implementation of best practice

environmental management guidelines where codes are not available.

In general, point source pollution should be managed to protect the PEVs by implementation of best practice environmental management, and by compliance with emission limits set by the regulatory authority. This may also require the setting of a mixing zone by the Board of Environmental Management and Pollution Control. For specific details refer to Part 4 of the *State Policy on Water Quality*.

Protected Environmental Values reflect current values and uses of a water body but do not necessarily imply that the existing water quality will support these values and uses.

PROTECTED ENVIRONMENTAL VALUES FOR THE MERSEY CATCHMENT

4.1 UPPER MERSEY RIVER CATCHMENT

| Table 1: Protected Environmental Values for the Upper Mersey River catchment | |
|---|---|
| Land Tenure | Protected Environmental Values <small>(*see note on page 20)</small> |
| Surface Waters on Private Land (including forest on private land) | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) Protection of modified (not pristine) ecosystems <ul style="list-style-type: none"> (a) from which edible fish are harvested <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (ii) Secondary contact water quality (iii) Aesthetic water quality <p>D: Agricultural Water Uses</p> <ul style="list-style-type: none"> (i) Irrigation (ii) Stock watering <p>E: Industrial Water Supply – Hydro-electricity power generation</p> <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a healthy, but modified aquatic ecosystem from which edible fish may be harvested; that is acceptable for irrigation and stock watering purposes; which will allow people to safely engage in secondary contact recreation activities such as paddling or fishing in aesthetically pleasing waters; and which is suitable for hydroelectricity power generation following impoundment</p> |

Table 1: Protected Environmental Values for the Upper Mersey River catchment

| Land Tenure | Protected Environmental Values <small>(*see note on page 20)</small> |
|--------------------------------|--|
| Surface Waters in State Forest | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) Protection of modified (not pristine) ecosystems <ul style="list-style-type: none"> (a) from which edible fish are harvested <p>having regard for Forestry Tasmanias' 'Management Decision Classification System'.</p> <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (ii) Secondary contact water quality (iii) Aesthetic water quality <p>E: Industrial Water Supply – Hydro-electricity power generation</p> <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a healthy, but modified aquatic ecosystem from which edible fish may be harvested; which will allow people to safely engage in recreation activities such as swimming, kayaking, paddling or fishing in aesthetically pleasing waters and which is suitable for hydroelectricity power generation following impoundment</p> |

Table 1: Protected Environmental Values for the Upper Mersey River catchment

| Land Tenure | Protected Environmental Values <small>(*see note on page 20)</small> |
|--|---|
| <p>Surface Waters flowing through Forest Reserves from State forest, private land or un-allocated crown land</p> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) Protection of modified (not pristine) ecosystems <ul style="list-style-type: none"> (a) from which edible fish are harvested <p>having regard for the management objectives for forest reserves outlined in Schedule 3 of the <i>Forestry Act, 1920</i>.</p> <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (ii) Secondary contact water quality (iii) Aesthetic water quality <p>E: Industrial Water Supply – Hydro-electricity power generation</p> <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a healthy, but modified aquatic ecosystem from which edible fish may be harvested; which will allow people to safely engage in recreation activities such as swimming, kayaking, paddling or fishing in aesthetically pleasing waters and which is also suitable for hydro-electric power generation following impoundment</p> |
| <p>Surface waters within Forest Reserves that have their headwaters within the reserve</p> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (i) Protection of pristine or nearly pristine ecosystems <p>having regard for the management objectives for forest reserves outlined in Schedule 3 of the <i>Forestry Act, 1920</i>.</p> <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (ii) Secondary contact water quality (iii) Aesthetic water quality <p>E: Industrial Water Supply – Hydro-electricity power generation</p> <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a pristine or near pristine aquatic ecosystem, which will allow people to safely engage in recreation activities such as swimming, kayaking, paddling or fishing in aesthetically pleasing waters and which is also suitable for hydro-electric power generation following impoundment</p> |

Table 1: Protected Environmental Values for the Upper Mersey River catchment

| Land Tenure | Protected Environmental Values <small>(*see note on page 20)</small> |
|--|---|
| <p>Surface Waters in National Parks</p> | <p>A: Protection of Aquatic Ecosystems</p> <p>(i) Protection of Pristine or nearly pristine ecosystems</p> <p>having regard for the management objectives for national parks outlined in Schedule 4 of the <i>National Parks and Wildlife Act, 1970</i> and the World Heritage Area Management Plan.</p> <p>B: Recreational Water Quality & Aesthetics</p> <p>(i) Primary contact water quality</p> <p>(ii) Secondary contact water quality</p> <p>(iii) Aesthetic water quality</p> <p>E: Industrial Water Supply – Hydro-electricity power generation</p> <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a pristine or near pristine aquatic ecosystem, which will allow people to safely engage in recreation activities such as swimming, kayaking, paddling or fishing in aesthetically pleasing waters and which is also suitable for hydro-electric power generation following impoundment</p> |
| <p>Surface Waters in Conservation Areas</p> | <p>A: Protection of Aquatic Ecosystems</p> <p>(i) Protection of Pristine or nearly pristine ecosystems</p> <p>having regard for the management objectives for conservation areas outlined in Schedule 4 of the <i>National Parks and Wildlife Act, 1970</i> and the World Heritage Area Management Plan.</p> <p>B: Recreational Water Quality & Aesthetics</p> <p>(i) Primary contact water quality</p> <p>(ii) Secondary contact water quality</p> <p>(iii) Aesthetic water quality</p> <p>E: Industrial Water Supply – Hydro-electricity power generation</p> <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a pristine or near pristine aquatic ecosystem, which will allow people to safely engage in recreation activities such as swimming, kayaking, paddling or fishing in aesthetically pleasing waters, and which is also suitable for hydro-electric power generation following impoundment</p> |

Table 1: Protected Environmental Values for the Upper Mersey River catchment

| Land Tenure | Protected Environmental Values <small>(*see note on page 20)</small> |
|---|---|
| Surface Waters on Hydro Electric Corporation Land | <p>A: Protection of Aquatic Ecosystems</p> <p style="padding-left: 40px;">(ii) Protection of modified (not pristine) ecosystems</p> <p style="padding-left: 80px;">(a) from which edible fish are harvested</p> <p>B: Recreational Water Quality & Aesthetics</p> <p style="padding-left: 40px;">(i) Primary contact water quality (where permitted)</p> <p style="padding-left: 40px;">(ii) Secondary contact water quality</p> <p style="padding-left: 40px;">(iii) Aesthetics water quality</p> <p>E: Industrial Water Supply – Hydro Electric Power Generation</p> <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a healthy, but modified aquatic ecosystem from which edible fish may be harvested; which will allow people to safely engage in recreation activities such as swimming, kayaking, paddling or fishing (where such activities are permitted) in aesthetically pleasing waters; and which is also suitable for hydro-electric power generation following impoundment.</p> |

* In general, diffuse source pollution can be managed to protect the PEVs by compliance with approved codes of practice, or by development and implementation of best practice environmental management guidelines where codes are not available.

In general, point source pollution should be managed to protect the PEVs by implementation of best practice environmental management, and by compliance with emission limits set by the regulatory authority. This may also require the setting of a mixing zone by the Board of Environmental Management and Pollution Control.

For specific details refer to Part 4 of the State Policy on Water Quality Management, 1997.

4.2 MIDDLE MERSEY RIVER CATCHMENT

| Table 2: Protected Environmental Values for the Middle Mersey River catchment | |
|--|--|
| Land Tenure | Protected Environmental Values ^(*see note on page 29) |
| Surface Waters in State Forest | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) Protection of modified (not pristine) ecosystems <ul style="list-style-type: none"> (a) from which edible fish are harvested <p>having regard for Forestry Tasmanias' 'Management Decision Classification System'.</p> <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (ii) Secondary contact water quality (iii) Aesthetic water quality <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a healthy, but modified aquatic ecosystem from which edible fish may be harvested; and which will allow people to safely engage in recreation activities such as swimming, paddling or fishing in aesthetically pleasing waters. For state forests within the Mole Creek karst system, water quality management should also have particular regard to the values associated with that system through implementation of Part D, section 6 of the Forest Practices Code, 1993.</p> |

Table 2: Protected Environmental Values for the Middle Mersey River catchment

| Land Tenure | Protected Environmental Values ^(*see note on page 29) |
|--|--|
| <p>Surface Waters flowing through Forest Reserves from State forests, un-allocated crown land or private land.</p> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) Protection of modified (not pristine) ecosystems <ul style="list-style-type: none"> (a) from which edible fish are harvested <p>having regard for the management objectives for forest reserves outlined in Schedule 3 of the <i>Forestry Act, 1920</i>.</p> <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (ii) Secondary contact water quality (iii) Aesthetic water quality <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a healthy, but modified aquatic ecosystem from which edible fish may be harvested; which will allow people to safely engage in recreation activities such as swimming, kayaking, paddling or fishing in aesthetically pleasing waters. For forest reserves within the Mole Creek karst system, water quality management should also have particular regard to the values associated with that system</p> |
| <p>Surface waters within Forest Reserves that have their headwaters within the reserve</p> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (i) Protection of pristine or nearly pristine ecosystems <p>having regard for the management objectives for forest reserves outlined in Schedule 3 of the <i>Forestry Act, 1920</i>.</p> <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (ii) Secondary contact water quality (iii) Aesthetics water quality <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a pristine or near pristine aquatic ecosystem and which will allow people to safely engage in recreation activities such as swimming, kayaking, paddling or fishing in aesthetically pleasing waters</p> |

Table 2: Protected Environmental Values for the Middle Mersey River catchment

| Land Tenure | Protected Environmental Values ^(*see note on page 29) |
|---|--|
| <p>Surface waters flowing through National Parks and State Reserves from state forest, un-allocated crown land or private land</p> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) Protection of modified (not pristine) ecosystems <ul style="list-style-type: none"> (a) from which edible fish are harvested <p>having regard for the management objectives for national parks and state reserves outlined in Schedule 4 of the <i>National Parks and Wildlife Act, 1970</i></p> <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (ii) Secondary contact water quality (iii) Aesthetic water quality <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a healthy, but modified aquatic ecosystem from which edible fish may be harvested; and which will allow people to safely engage in recreation activities such as swimming, paddling or fishing in aesthetically pleasing waters. For reserves within the Mole Creek karst system, water quality management should also have particular regard to the values associated with that system.</p> |
| <p>Surface waters within National Parks and State Reserves, that have their headwaters within the Parks or Reserves</p> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (i) Pristine or nearly pristine ecosystems <p>having regard for the management objectives for national parks and state reserves outlined in Schedule 4 of the <i>National Parks and Wildlife Act, 1970</i></p> <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (ii) Secondary contact quality (iii) Aesthetics quality <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a pristine or nearly pristine aquatic ecosystem and which will allow people to safely engage in recreation activities such as swimming, paddling or fishing in aesthetically pleasing waters. For reserves within the Mole Creek karst system, water quality management should also have particular regard to the values associated with that system.</p> |

Table 2: Protected Environmental Values for the Middle Mersey River catchment

| Land Tenure | Protected Environmental Values ^(*see note on page 29) |
|--|---|
| <p>Surface waters flowing through Regional Reserves and Conservation Areas from state forest, un-allocated crown land or private land</p> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) Protection of modified (not pristine) ecosystems <ul style="list-style-type: none"> (a) from which edible fish are harvested <p>having regard for the management objectives for regional reserves and conservation areas outlined in Schedule 4 of the <i>National Parks and Wildlife Act, 1970</i></p> <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (ii) Secondary contact water quality (iii) Aesthetic water quality <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a healthy, but modified aquatic ecosystem from which edible fish may be harvested; and which will allow people to safely engage in recreation activities such as swimming, paddling or fishing in aesthetically pleasing waters. For reserves within the Mole Creek karst system, water quality management should also have particular regard to the values associated with that system.</p> |
| <p>Surface waters within Regional Reserves and Conservation Areas, that have their headwaters within the reserves</p> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (i) Pristine or nearly pristine ecosystems <p>having regard for the management objectives for regional reserves and conservation areas outlined in Schedule 4 of the <i>National Parks and Wildlife Act, 1970</i></p> <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (ii) Secondary contact water quality (iii) Aesthetic water quality <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a pristine or nearly pristine aquatic ecosystem and which will allow people to safely engage in recreation activities such as swimming, paddling or fishing in aesthetically pleasing waters. For reserves within the Mole Creek karst system, water quality management should also have particular regard to the values associated with that system.</p> |

Table 2: Protected Environmental Values for the Middle Mersey River catchment

| Land Tenure | Protected Environmental Values ^(*see note on page 29) |
|---|---|
| Surface Waters on Un-allocated Crown Land | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) Protection of modified (not pristine) ecosystems <ul style="list-style-type: none"> (a) from which edible fish are harvested <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (ii) Secondary contact water quality (iii) Aesthetic water quality <p>E: Industrial Water Supply - water for mining and chemical works on the Mersey River (See location on Figure 3)</p> <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a healthy, but modified aquatic ecosystem from which edible fish may be harvested; which is suitable for mining and chemical works in specified location; and which will allow people to safely engage in recreation activities such as swimming, paddling or fishing in aesthetically pleasing waters. For un-allocated crown land within the Mole Creek karst system, water quality management should also have particular regard to the values associated with that system.</p> |

Table 2: Protected Environmental Values for the Middle Mersey River catchment

| Land Tenure | Protected Environmental Values ^(*see note on page 25) |
|---|--|
| <p>Surface waters flowing through Public Reserves from private land, state forest or un-allocated crown land.</p> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) Protection of modified (not pristine) ecosystems <ul style="list-style-type: none"> a. from which edible fish are harvested <p>having regard for the management objectives for public reserves outlined in Schedule 4 of the <i>Regional Forest Agreement (Land Classification) Act, 1998</i></p> <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (ii) Secondary contact water quality (iii) Aesthetic water quality <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a modified, but healthy aquatic ecosystem from which edible fish are harvested; which will allow people to safely engage in recreation activities such as swimming, kayaking, paddling or fishing in aesthetically pleasing waters. For public reserves within the Mole Creek karst system, water quality management should also have particular regard to the values associated with that system</p> |
| <p>Surface waters within Public Reserves that have their headwaters within the Reserves</p> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (i) Protection of pristine or nearly pristine ecosystems <p>having regard for the management objectives for public reserves outlined in Schedule 4 of the <i>Regional Forest Agreement (Land Classification) Act, 1998</i></p> <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (ii) Secondary contact water quality (iii) Aesthetic water quality <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a pristine or near pristine aquatic ecosystem and which will allow people to safely engage in recreation activities such as swimming, paddling or fishing in aesthetically pleasing waters. For reserves within the Mole Creek karst system, water quality management should also have particular regard to the values associated with that system.</p> |

Table 2: Protected Environmental Values for the Middle Mersey River catchment

| Land Tenure | Protected Environmental Values ^(*see note on page 25) |
|---|---|
| Surface Waters on Hydro Electric Corporation Land | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) Protection of modified (not pristine) ecosystems <ul style="list-style-type: none"> (a) from which edible fish are harvested <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (ii) Secondary contact water quality (iii) Aesthetic water quality <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a healthy, but modified aquatic ecosystem from which edible fish may be harvested; and which will allow people to safely engage in recreation activities such as swimming, paddling or fishing in aesthetically pleasing waters. For hydro-electric corporation land within the Mole Creek karst system, water quality management should also have particular regard to the values associated with that system.</p> |

Table 2: Protected Environmental Values for the Middle Mersey River catchment

| Land Tenure | Protected Environmental Values ^(*see note on page 25) |
|---|---|
| <p>Surface Waters on Private Land (including forest on private land)</p> <p>In addition: Water supply for Mole Creek town drinking water (see map for location)</p> <p>In addition: water supply for industry on Caroline Creek, Redwater Creek and the Mersey River (see locations on Figure 3)</p> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) Protection of modified (not pristine) ecosystems <ul style="list-style-type: none"> (a) from which edible fish are harvested <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (Mersey River - at Union Bridge; adjacent to Bridle Track Road Kimberley Bridge picnic area, at Olivers Road Bridge, at Liena Road Bridge, at Merseylea Bridge and from Lovetts Flats to Bells Pde) (ii) Secondary contact water quality for all other surface waters (iii) Aesthetic water quality <p>C: Raw Water for Drinking Water Supply (Unnamed creek with co-ordinates 448 500 E 5 394 800 N – Mole Creek town water supply)</p> <ul style="list-style-type: none"> (ii) Subject to coarse screening plus disinfection <p>D: Agricultural Water Uses</p> <ul style="list-style-type: none"> (i) Irrigation (ii) Stock watering <p>E: Industrial Water Supply - Wesley Vale Pulp Mill off-take at Big Bend, Mersey River; water for mining and chemical works on Redwater Creek and Mersey River and for brick production on Caroline Creek</p> <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a healthy, but modified aquatic ecosystem from which edible fish may be harvested; that is acceptable for irrigation and stock watering purposes; is suitable for industrial supply in specified areas (pulp and paper production, mining and chemical works and brick production); for town drinking water supply (subject to coarse screening and disinfection) in specified area; and which will allow people to safely engage in recreation activities such as swimming (in specified areas), paddling or fishing in aesthetically pleasing waters. For private land (including forest on private land) within the Mole Creek karst system, water quality management should also have particular regard to the values associated with that system.</p> |

| Table 2: Protected Environmental Values for the Middle Mersey River catchment | |
|---|--|
| Land Tenure | Protected Environmental Values^(*see note on page 25) |
| <p>Surface Waters in High Density Urban Areas - Latrobe.</p> <p>(consistent with the objectives of the closed residential zone as detailed in the Latrobe Section 46 – Planning Scheme Number 1 – 1994)</p> | <p>A: Protection of Aquatic Ecosystems</p> <p>(ii) Protection of modified (not pristine) ecosystems</p> <p>(a) from which edible fish are harvested</p> <p>B: Recreational Water Quality & Aesthetics</p> <p>(i) Primary contact water quality (Mersey River - Bells Pde)</p> <p>(ii) Secondary contact water quality</p> <p>(iii) Aesthetic water quality</p> <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a healthy, but modified aquatic ecosystem from which fish may be harvested and provides for recreational activities such as swimming (in specified locations), fishing and paddling in aesthetically pleasing waters.</p> |

* **In general, diffuse source pollution can be managed to protect the PEVs by compliance with approved codes of practice, or by development and implementation of best practice environmental management guidelines where codes are not available.**

In general, point source pollution should be managed to protect the PEVs by implementation of best practice environmental management, and by compliance with emission limits set by the regulatory authority. This may also require the setting of a mixing zone by the Board of Environmental Management and Pollution Control.

For specific details refer to Part 4 of the State Policy on Water Quality Management, 1997.

4.3 LOWER MERSEY RIVER CATCHMENT

| Table 3: Protected Environmental Values for the Lower Mersey River catchment | |
|---|---|
| Land Use | Protected Environmental Values ^(*see note on page 31) |
| Estuarine Waters | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) Protection of modified (not pristine) ecosystems <ul style="list-style-type: none"> (a) from which edible fish and crustacea, but not shellfish, are harvested <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (ii) Secondary contact water quality (iii) Aesthetic water quality <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a healthy, but modified aquatic ecosystem from which edible fish and crustaceans but not shell fish may be harvested (but not consumption of raw seafood); which allows people to safely engage in activities such as swimming, boating and fishing in aesthetically pleasing waters for up to one kilometre off-shore.</p> |

Table 3: Protected Environmental Values for the Lower Mersey River catchment

| Land Use | Protected Environmental Values ^(*see note on page 31) |
|--|---|
| <p>Surface Waters in High Density Urban Areas</p> <p>(consistent with the Devonport and Environs Planning Scheme – 1984.</p> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) Protection of modified (not pristine) ecosystems <ul style="list-style-type: none"> (a) from which edible fish are harvested <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (ii) Secondary contact water quality (iii) Aesthetic water quality <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a healthy, but modified aquatic ecosystem from which fish may be harvested and which will allow people to safely engage in secondary contact recreation activities such as paddling in aesthetically pleasing waters.</p> |
| <p>Surface Waters in Low Density Urban/Rural Residential Areas</p> <p>(consistent with the objectives of rural zones in the Devonport and Environs Planning Scheme – 1984, the Latrobe Section 46 – Planning Scheme Number 1 – 1994 or the the Municipality of Kentish S.46 Planning Scheme No.1 1993)</p> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) Protection of modified (not pristine) ecosystems <ul style="list-style-type: none"> (a) from which edible fish are harvested <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (ii) Secondary contact water quality (iii) Aesthetic water quality <p>D: Agricultural Water Uses (where permitted)</p> <ul style="list-style-type: none"> (i) Irrigation (ii) Stock watering <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support a healthy, but modified aquatic ecosystem from which edible fish may be harvested; that is acceptable for irrigation and stock watering purposes (where permitted); and which will allow people to safely engage in secondary contact recreation activities such as paddling in aesthetically pleasing waters.</p> |

* In general, diffuse source pollution can be managed to protect the PEVs by compliance with approved codes of practice, or by development and implementation of best practice environmental management guidelines where codes are not available.

In general, point source pollution should be managed to protect the PEVs by implementation of best practice environmental management, and by compliance with emission limits set by the regulatory authority. This may also require the setting of a mixing zone by the Board of Environmental Management and Pollution Control.

For specific details refer to Part 4 of the State Policy on Water Quality Management, 1997.

5 WATER QUANTITY VALUES FOR THE MERSEY RIVER CATCHMENT

5.1 Overview

While water quality is a very important part of any water management regime, the issue of how much water a river or stream carries, and how that flow is managed, is of equal importance. Water quality and quantity are closely linked.

The State Government proposes to re-organise the way water flow in our rivers and streams is managed, and one of the key understandings is that there needs to be a specific allocation of water for the river or stream itself. This is necessary not only to protect the aquatic life of the river, but also to maintain basic "river health". If there is insufficient flow at crucial times of the year, the overall quality of the remaining water may be badly affected. This will very likely have a negative effect on human uses of the water, as well as on the environment.

In some instances there may be competing uses for the available resource, and there may need to be trade-offs needed to ensure a balanced sharing arrangement between human uses and the needs of the river environment.

The allocation of water for the environment must be based on scientific information, and also on legitimate community values and uses.

The community water values presented in Table 4 take into consideration both water quantity and water quality values. **We want you to tell us if there are any other water quantity values and uses you want for your rivers and streams.**

5.2 Water quantity values

Five broad categories of water quantity values have been identified, and as with the water quality PEVs, it is likely that most rivers will attract more than one value/use category. The categories are:

- Ecosystem values;
- Physical landscape values.
- Consumptive and non-consumptive use values;
- Recreation values;
- Aesthetic landscape values;

From your input, specific water management objectives can be developed for your catchment, and incorporated into a regional or catchment-based water management plan.

In most cases, the government will weigh up the identified objectives with any available scientific data. Additional data may need to be obtained, and economic analyses done to determine what impact attempting to protect all the identified values may have. It is possible that, in some cases, there may simply not be enough water to go around, and a trade-off in values may then be necessary.

An explanation of the water quantity value categories and examples of specific values are given below:

Ecosystem values: The term is used to identify those values which are to be

protected and / or enhanced in the current state of aquatic and adjacent land ecosystems. Specific water values associated with the ecosystem value category may be:

- protection of an endangered species (plant or animal);
- protection or improvement in native fish populations;
- protection of riverine vegetation;
- provision of adequate water for stream habitat for flora and fauna;
- provision of water for wetland and/or estuary ecosystems.

Physical Landscape values: These values are closely related to the physical nature of the catchment. This includes the nature and constitution of channels, the frequency of floods and droughts, soil and rock types, and vegetation coverage. These values are also closely associated with ecosystem function, and may overlap with the protection of ecosystem values. Specific water values associated with physical landscape values may include:

- provision of variable flows;
- prevention of erosion;
- protection or improvement of riparian zone.

Consumptive and non-consumptive use values: These are related to the current and potential human uses of water bodies. Consumptive use refers to the extraction of water from the water body, with no return of it to the waterbody. Examples may include:

- provision of water for irrigation;
- provision of water for town supply;
- provision of water for industry.

Non-consumptive use refers to extraction or use of water, where the water is eventually returned to the river. Examples may include:

- use of water for hydro-electricity generation;
- use of water for fish farming.

Recreational values: These include the range of direct human uses of water bodies for purposes such as kayaking, canoeing, sailing, swimming, fishing etc. This type of value is difficult to quantify, but is an essential part of our way of life in Tasmania. Water quality issues are also important, especially where primary contact occurs (swimming for example), or where the recreational activity relies on a base of good quality water, such as a recreational fishery. Examples may include:

- maintenance or improvement of the quantity (and quality) of water for recreational fishery (trout, blackfish etc);
- provision of sufficient water for whitewater rafting;
- provision of sufficient water (of adequate quality) for swimming.

Aesthetic Landscape values: These values relate to human appreciation of water and adjacent environments. It is often extremely difficult to address these types of values, or work out the flow requirements to ensure their protection. They are, however, legitimate values which must be acknowledged in any good management process. Examples may include:

- maintenance or improvement of flow through gorges or over waterfalls;

- protection of scenic features in a river.

In 1996 the Mersey River Working Group called for public submissions regarding water flow, water quality and general catchment issues within the Mersey River Catchment. Twenty four submissions were received from local government, industry, community groups and individual members of the community⁵. The submissions identified two predominant areas of concern, namely low flows in the Mersey River and poor water quality and stream physical condition in the Mersey River and its tributaries. Since that time several technical studies have occurred and a report outlining recommendations and future directions for the Mersey River Catchment has been produced⁶

The Community Water Values workshop held in July 1999 once again raised the values and issues associated with water quality and quantity management that are important to the Mersey River Catchment (Table 4).

From your input, specific water management objectives can be developed for your catchment, and incorporated into a regional or catchment-based water management plan that will be developed in close consultation with the community. These plans will be developed on a priority basis, with the most stressed rivers in the State being targeted initially.

⁵ Mersey River Working Group – Interim Report (November 1996) Prepared for the Tasmanian Government by the Mersey River Working Group.

⁶ Mersey River Working Group (1998) Mersey River Flow and Catchment Assessment. Report and Recommendations on Catchment and Flow Management Issues in the Mersey River and its Tributaries.

6 COMMUNITY WATER VALUES FOR THE MERSEY RIVER CATCHMENT

During July 1999 a workshop was held with the Mersey Catchment Steering Committee to determine the Community Water Values for the catchment. These 'Values' are presented in Table 4. More Community Water Values were added to the list as a result of two public meetings held in December 1999.

| Table 4: Community Water Values – Mersey River Catchment | | | | |
|---|---|---|---|---|
| Aquatic Ecosystem / Basic River Health | Recreational | Aesthetic | Consumptive & Non Consumptive Use | Other |
| Giant Freshwater Crayfish: all streams under 400m | Fishing (entire length). Safe to eat at estuary? | Healthy waterways to allow bird-watching | Town water supply: Mole Creek and Latrobe (via Forth River). Still to determine if there are any registered Private Water Supplies. | Cultural aspects of Kimberley Hot Springs |
| Environmental flows | Rafting in upper catchment | Attractive waterways to allow painting, photography, sketching and for tourism (including scenic driving) | Drinking Water (individual users, unboiled). Although some workshop participants indicated that this is a current use, it can not be recognised as a PEV because the Director of Health advises that all untreated surface waters should be boiled before drinking. It was recognised at stakeholder workshops and public meetings that, without disinfection, the quality of the water for drinking could not be guaranteed microbiologically. Residents were more concerned, however, about having their domestic water supply protected from catchment activities that could result in pesticide and herbicide residue and excessive siltation of waterways. | Port of Devonport: shipping requirements for non-silted basins |
| Regionally representative complement of macro-invertebrates | Canoeing whole length (not upstream of Lake Rowallan) | Alum Cliffs area for tourism/viewing | Homestead Use - Domestic Water: non-drinking | Port of Devonport: ballast water for ships? |
| Low levels of nutrients in waterways | Scuba Diving estuary mouth | Healthy waterways to allow platypus viewing | Goliath Cement | Archaeological and Aboriginal sites of significance along river |

Table 4: Community Water Values – Mersey River Catchment

| Aquatic Ecosystem / Basic River Health | Recreational | Aesthetic | Consumptive & Non Consumptive Use | Other |
|---|---|--|---|---|
| Good quality water | Duck shooting (with dogs) | Maintain native riparian vegetation; widespread weed infestation (willows) destroying aesthetic appeal | Mitchell Lime-works | Waterway used to get rid of effluent from sewage treatment plants |
| Healthy, self-sustaining aquatic ecosystems | Camping/BBQ/Picknicking on waterways across catchment (Farrell Park & Myrtle Hole specified) | Series of parkland/reserve environments along river | Wesley Vale Mill Off-take (includes one irrigator) | Stormwater disposal from city, roads, factories and subdivisions |
| Values associated with karst (limestone caves) system around Mole Creek | Horse riding through river (e.g.: Horsehead Creek) | Hot Springs at Kimberley | Stock watering | |
| Unimpeded fish migration | Mountain biking through river | Karst system caves at Mole Creek (Croesus & others) | Ensure supply for emergency use (firefighting) – all catchments. Access required. | |
| Healthy wetlands (inc. marsh areas in upper catchment WHA) | Swimming across catchment (spec. Union Bridge Mole Creek (Private Land; Bridle Track, Kimberley (Private Land); White Rock ; Lower Bridge Mersey Lea; Lovetts Flats (State Forest); Myrtle Hole (State Forest); Lockwood Road; Dasher Rvt; Kellys Gauge Rd, Devenport triathlon), Mersey River at Olivers Road Bridge (private land and State reserve) and at Liena Road Bridge (private land and public reserve); Mersey Lea to Bells Parade (a mix of State forest, private land and reserves). No swimming sign at Bells Parade | Tree debris detracts from visual values of estuary at low tide | Horticultural use | |
| Maintain native riparian vegetation; widespread weed infestation (willows) limiting bird nesting, choking waterways, taints water and restricts caddis food supply – control infestation of weeds and willows | Rowing, yachting (e.g.: dinghy sailing by Naval Cadets, Mersey Yatch Club), wind surfing, jet skiing and water skiing, kayaking in estuary | | Supply for bottled water at Mole Creek Springs | |

Table 4: Community Water Values – Mersey River Catchment

| Aquatic Ecosystem / Basic River Health | Recreational | Aesthetic | Consumptive & Non Consumptive Use | Other |
|---|--|------------------|--|--------------|
| (also in tributaries) | | | | |
| Healthy environment for trout | Ship watching in estuary | | Realistic water allocation for new sub-division use | |
| Maintaining trout free areas for native species (Fisher System/Lake Adelaide & Lake Radle/Walls of Jerusalem) | Boating wherever possible across catchment (e.g.: Apex Regatta, Power Boat Club) | | Having existing water rights tied to land ownership | |
| Whitebait habitat: (e.g.: Bells Parade) | On-dam recreation – rowing, power boats | | Hydro-electric power generation (HEC) | |
| Whitebait habitat: Estuary Marsh Areas. Two species use logs and shingles, Galaxias use holes and creeks further upstream. Galaxias maculatus use marshes to lay eggs during spring tides | Surfing at estuary mouth | | Private generation of hydro-electricity | |
| Minimise silt load problems at Latrobe, minimise siltation from upper catchment | Photography, painting and sketching | | Eel farming | |
| Commercial eel fishing | Bird/Sea Eagle watching | | Possible use of lower reaches for oyster spat collection | |
| Water quality to sustain edible fish | Recreational eel fishing | | Dairying use | |
| Minimise bank erosion | Platypus watching | | Agricultural irrigation | |
| Maintain healthy habitat for birds (e.g.: sea eagles, albatros, pelican, oyster catcher, heron and swamp harrier in estuarine area) | Hot springs bathing at Kimberley – State Reserve | | Clements & Marshalls processing | |

Table 4: Community Water Values – Mersey River Catchment

| Aquatic Ecosystem / Basic River Health | Recreational | Aesthetic | Consumptive & Non Consumptive Use | Other |
|---|--|-----------|--|-------|
| Healthy habitat for crustacea in estuary (i.e. mud crabs) | Upper Mersey rainbow trout fishery (exclude brown trout) | | Agricultural water extraction for processing and washing | |
| Improve water quality in estuary so shell fish are suitable for consumption) | Children paddling (entire length) | | | |
| Maintain instream habitat including macrophytes and large woody debris | Dog exercising – especially in estuary area | | | |
| Maintain and protect habitat for <i>Hydrobiid</i> species (freshwater snails). They tend to live in sheltered, inaccessible habitats under rock slabs in streams. | Tourism | | | |
| Protect habitat for the Australian grayling (<i>Prototroctes maraena</i>) Preferred habitat for the adult is deep slow flowing pools. | Cycling/driving beside River | | | |