



DEPARTMENT of PRIMARY  
INDUSTRIES, WATER and  
ENVIRONMENT

**ENVIRONMENTAL  
MANAGEMENT  
GOALS  
*for* TASMANIAN  
WATERS**

**DERWENT RIVER CATCHMENT**

**April, 2003**



## **Environmental Management Goals for Tasmanian Waters:**

During 2001/2002 Protected Environmental Values (PEVs) were set for the catchments in the Derwent River Catchment. The Derwent Estuary Catchment and Derwent Estuary were covered in separate discussion papers.. A discussion paper was prepared to facilitate public participation in setting the PEVs. This discussion paper was intended as a basis for community and stakeholder participation in the process of developing environmental management goals for the catchment area being all of the Derwent River catchment except the Derwent Estuary, the Derwent Estuary catchment and the area of the catchment that is within the Southern midlands municipal area which were the subject of separate papers.

This paper was prepared by the Environment Division in consultation with Central Highlands Council, Derwent Valley Council, Meander Valley Council, Brighton Council and the Tasmanian Parks and Wildlife Service. Words and expressions used in the 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 has been modified into its current form to reflect that the process for setting PEVs for the Derwent River Catchment is now complete. It was considered, however, that much of the information included in the discussion paper should remain as a record of the PEV setting process.

This paper is divided into six main sections:

- The first part discusses water reform in general.
- The second part gives a brief description of the waterways in the Derwent River Catchment.
- Part three discusses the State Policy on Water Quality Management.
- The fourth part discusses the Protected Environmental Values for catchments in the Derwent River Catchment.
- Water quantity values are discussed in part five.
- Part six discusses the community water values for the catchments.

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## 2 INTRODUCTION

### 2.1 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.

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. Our waterways are not immune from problems, however, and many of our river systems are showing signs of stress.

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.

### 2.2 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 which are considered worthy of protection.

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

#### (b) water quantity management

The introduction of the *Water Management Act 1999* to replace the *Water Act 1957* 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 development of water management plans.

The second purpose of this discussion paper was to canvas your views on what is valued in the water resources from a water quantity perspective.

### **2.3 What did we want the public to do?**

Local communities have a valuable understanding of their regional waterways. The following questions of the catchment stakeholders were asked. 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 recognised scenic attractions, such as rapids or waterfalls? Do you use water for livestock watering? Do you know of rare or endangered animals or plants in, or adjacent to, specific areas of your rivers or streams? Does your river supply the local town water supply?

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Do you draw water from it to irrigate your farm?

The catchment stakeholders/publics answers to these questions then helped to develop the community water values for regional wetlands and waterways. People had different views on these questions. What was needed to do was to try to think about the "big" picture, and how our own objectives may impact on the whole catchment and the wider community.

Planning to ensure sustainable use of these waters and protection of river health requires sound knowledge of local water quality and quantity issues. Therefore the public submissions providing local knowledge was important.

### **2.4 How was the public input be used?**

Information from the public on values particularly relating to water quality assisted the Board of Environmental Management and Pollution Control and the councils to finalise the range of Protected Environmental Values for the surface waters of the regional waterways. These values will be shown in management plans for the region.

Information from community stakeholders, catchment groups and the public on water quantity values will be utilised to better plan the water resources of the catchments. 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.

## 4 CATCHMENT OVERVIEW

### 4.1 Catchment boundaries

The Derwent River has its origins in the Cradle Mountain-Lake St. Clair National Park at Lake St. Clair. From there it flows 150-200 km in a south-easterly direction to New Norfolk. The southern boundary of the Derwent River, for the purposes of this paper is approximately 2 km north of the New Norfolk bridge. This paper also includes the part of the Jordan River catchment which lies within the Brighton Municipal Area (see attached Map).. The Derwent Estuary and the Derwent Estuary catchments are covered in a separate paper.

The catchment of the Derwent River above New Norfolk covers a large area of central Tasmania, approximately 7800 km<sup>2</sup>. When the Jordan River catchment and the areas immediately adjacent to the estuary below New Norfolk are included the total catchment area is 8900 km<sup>2</sup>, or approximately 1/5<sup>th</sup> of Tasmania. The major tributaries are Nive River, Florentine River, Broad River, River Dee, Ouse/Shannon River, Clyde River, Tyenna River, Styx River, Plenty River and Jordan River. The catchment areas and mean historical flows of the Derwent and its major tributaries are shown in Table 1. All of the Derwent River catchment above New Norfolk is covered in this paper with the exception of the Great Lake area and the part of the catchment that lies within the Southern Midlands Municipal Area. These areas are covered in separate papers.

**Table 1. Catchment Areas (km<sup>2</sup>) and Mean Historical Flows (m<sup>3</sup>/sec) for the Derwent River and its major tributaries\***

| River      | Area (km <sup>2</sup> ) | Flow (m <sup>3</sup> /s) |
|------------|-------------------------|--------------------------|
| Derwent    | 7764<br>@ New Norfolk   | 123                      |
| Nive       | 1277<br>above Wayatinah | 57                       |
| Florentine | 436<br>above Derwent    | 11.2                     |
| Broad      | 140<br>@ bridge         | 4.2                      |
| Dee        | 355<br>above Derwent    | 0.8                      |
| Ouse       | 1896<br>above Ouse      | 3.7                      |
| Clyde      | 1109<br>above Hamilton  | 2.2                      |
| Tyenna     | 284<br>@ Westerway      | 6.1                      |
| Styx       | 347<br>@ Glenora        | 8.4                      |
| Plenty     | 204<br>@ Salmon Ponds   | 2.1                      |
| Jordan     | 742<br>@ Mauriceton     | 0.8                      |

\*(from Coughanowr, C. 2001. Nutrients in the Derwent Estuary Catchment. Final Report to the Natural Heritage Trust)

### 4.2 Catchment description

The Derwent River drops from an elevation of 735m at Lake St. Clair on the plateau to sea level at New Norfolk. The catchment encompasses areas of high rainfall in the north-west and some of the driest areas in the State in the south-east. Examples of mean annual rainfalls in the catchment are 1511 mm at Lake St. Clair, 943 mm at Bronte Park, 545 mm at Bothwell and 579 mm at Bushy Park<sup>1</sup>. Major landforms include the Central Plateau, Mt. Olympus, Mt. Ida, Mt. Rufus, Mt. King William I, the Tiger Range, Mt. Field, and the Wellington Range. There are many lakes in the region, particularly on the plateau. Larger lakes include Lake Echo, Lake St. Clair, Lake King William, Lake Sorell and Lake Crescent. The geology of the catchment

<sup>1</sup> Australian Bureau of Meteorology

is dominated by Jurassic dolerite. Other major rock types are tertiary basalt, sediments in the Parmeneer Supergroups and pleistocene glacial deposits near Lake King William and Lake Augusta. The Junee-Florentine karst is one of the most important in Australia. This karst is the most extensive underground drainage system in Tasmania and contains the deepest caves known in Australia. The limestone of this region is part of the Gordon Group and it is possible that there is a karstic leakage between the Florentine River and the westward-flowing Gordon River<sup>2</sup>. The area of the Junee-Florentine karst is over 23, 500 ha. Approximately 7,500 ha is within the Mount Field National Park Junee Cave State Reserve, while the majority of the remaining area is within state forest<sup>3</sup>.

The Derwent River catchment includes 3 of Tasmania's biogeographic regions: Central Highlands, Southern Ranges and South East<sup>4</sup>. The native vegetation in these areas include peatlands, marshlands, buttongrass moorlands, and other alpine and sub-alpine communities at higher altitudes and eucalypt forests in the lower altitudes that contain many of Tasmania's endemic species. The wet forests in high rainfall areas are dominated by *Eucalyptus obliqua*, *E. delegatensis* and *E. regnans*. Forests in drier areas are dominated by *E. amygdalina*, *E. pulchella*, *E. tenuiramis*, *E. obliqua* and

*E. delegatensis*. Rainforest occurs on some mountain hillslopes and valley floors.

The Clarence River catchment, a tributary of the Nive River, is home of the endangered freshwater fish *Galaxias johnstoni* (Clarence galaxias). Other endangered animals in the Derwent catchment are *Galaxias tanycephalus* (Saddled galaxias – Woods Lake), the swift parrot, orange-bellied parrot, the grey goshawk and the wedge-tail eagle. Also in this catchment are the green and gold frog, the ptunarra brown butterfly, and *Paragalaxias dissimilis* (Shannon paragalaxias) which are listed as vulnerable and the great crested grebe and *Galaxias auratus* (golden galaxias) which are listed as rare in the Tasmanian Schedule of threatened species. There are 89 plant species in the Derwent catchment which are listed as either endangered(9), vulnerable(10) or rare(70) including *Barbarea australis*, the native watercress, which was rediscovered at Wadammana in 1986 and has since been recorded from the Ouse, Shannon and Clyde rivers. The mid-Derwent Catchment Landcare group is investigating a variety of *Acacia mucronata* which may be a new and rare variety (pers. comm., A. Lawson).

There are a number of wetlands in the central highlands region which have been identified as significant because of their notable flora and fauna. The Interlaken Lakeside Reserve is a wetland of international importance listed under the Convention on Wetlands (the "Ramsar Convention"). Wetlands at Allwrights Lagoons, Clarence Lagoon, Kemps Marsh, and Shadow Lake Sphagnum are of national significance and two other wetlands at Lake Sorell (Robinson Marsh, and an

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<sup>2</sup> Kiernan, K. 1995. An Atlas of Tasmanian Karst Areas Volume 2. Tasmanian Forest Research Council, Hobart.

<sup>3</sup> Eberhard, 1996. Inventory and Management of Karst in the Florentine Valley, Tasmania. Report of Forestry Tasmania funded through the District Conservation Fund.

<sup>4</sup> Peters, D. and Thackway, R. 1998. A New Biogeographic Regionalisation for Tasmania. Report prepared for the National Reserve Program Component of the National Heritage Trust.

unnamed wetland) are of state significance<sup>5</sup>.

The main reserved areas in the Derwent catchment are Mt Field National Park and parts of the Cradle Mt.–Lake St. Clair, Walls of Jerusalem, Franklin-Gordon Wild Rivers and Southwest National Parks, Central Plateau Conservation Area, the Great Western Tiers Conservation Area and Wellington Park. With the exception of Mt Field National Park, all the national parks and the Central Plateau Conservation Area in the catchment are within the Tasmanian Wilderness World Heritage Area.

### 4.3 Industries and Water Uses

The main industries in the catchment are hydro-electricity generation, agriculture, forestry, aquaculture and tourism. In the eastern part of the catchment the predominant land tenure is private property, and much of these lowlands have been cleared for agriculture. In the western part of the catchment the predominant land tenures are National Parks, Conservation Areas, and State Forest, and to a lesser extent private property and Hydro-Electric Corporation land.

Much of the water in the Derwent catchment is utilised for electricity generation. Flows in the Derwent, Nive, Dee and Ouse/Shannon rivers have been modified for this purpose. Waters in these rivers are dammed or diverted to several water reservoirs. There are 10 hydro-power stations in the catchment. Their average total output is 272 MW,

which is 25% of the electricity generated in Tasmania<sup>6</sup>.

Much of the privately held land in the catchment is utilised for agriculture. Water is taken from a number of rivers and streams for irrigation and stock watering. Agricultural activities in the catchment include grazing of sheep and cattle, crops and dairies. Crops include oil crops (pyrethrum, peppermint, dill, fennel), poppies, hops, currants and vegetables. Discharges from Lake Sorell and Lake Crescent into the Clyde River have been controlled for irrigation since the 1830's<sup>7</sup>.

A significant proportion of timber harvesting from native forests in the State occurs in the Derwent catchment. In 1996/97 approximately 90,000 m<sup>3</sup> of eucalypt sawlogs and veneer logs and approximately 300,000 m<sup>3</sup> of pulpwood were harvested from the Derwent River catchment. Plantation forestry is another activity in the Derwent River catchment. In 1998 there were 14,000 ha of plantations in the Derwent Forest District (n.b. this district includes some East Coast areas in addition to the Derwent River catchment) and forecasts that this will increase to 23,000 by 2008<sup>8</sup>.

Salmon hatcheries which produce juvenile salmon (smolts) for the State's Atlantic salmon industry are located in the catchment and take water from the Derwent, Florentine and Tyenna rivers for their operations. Water is taken from London Marsh Creek to provide private fishing waters. Fishing is a major

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<sup>6</sup> Hydro Tasmania website – <http://www.hydro.com.au>

<sup>7</sup> Hudspeth, A., Scipps, L. and Clark, J. 1991. Hamilton, The Way to the West: a History of the Hamilton District.

<sup>8</sup> Forestry Tasmania (1999). Derwent Forest District Forest Management Plan – June 1999. Forestry Tasmania.

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<sup>5</sup> ANCA (Australian Nature Conservation Agency), 1996, Directory of Important Wetlands in Australia Second Edition. ANCA, Canberra.

recreational activity in the catchment, and an important element of the tourism industry in this region.

The Derwent catchment is an important town water supply. In addition to supplying the small towns throughout the catchment, the Derwent River catchment is the largest source of water to Hobart Water, which supplies 8 councils in southern Tasmania. Water is sourced from the Derwent river and treated at the Bryn Estyn treatment plant above New Norfolk. Water is also collected from the Lake Fenton/Lady Barron Creek catchment. In 1999/2000 65% of the water supplied by Hobart Water was taken from the Derwent River, and 17% was from the Lake Fenton/Lady Barron Creek catchment<sup>9</sup>. Part of the Lake Fenton/Lady Barron Creek catchment is within the Mt Field National Park and the remainder is in State forest. Protected environmental values (PEVs) for the part of the Lake Fenton/Lady Barron Creek catchment within the Mt Field National Park have been proposed in the Draft Management Plan for the park<sup>10</sup>. The majority of the area within State forest has been classified by Forestry Tasmania as an informal reserve with no plans for harvesting operations, and the remaining area has been classified as a Special Management Zone for water values. A draft management plan for the Lake Fenton/Lady Barron catchment has been developed to protect the high quality of water in this catchment from potential impacts, particularly turbidity

arising from unnatural sources of erosion<sup>11</sup>.

#### 4.4 Water quality issues

While many activities in the Derwent catchment depend on good quality water, human activities and natural phenomena in the region have impacts on water quality. Water quality monitoring was undertaken on the Derwent and near the down stream end of 9 major tributaries between 1996 and 2000<sup>12</sup>. More detailed monitoring was undertaken of the Tyenna River and the Clyde River as these tributaries had relatively high levels of nutrients but quite different land uses in their catchments.

Overall the Derwent River had high water quality with low levels of nutrients, turbidity and total suspended solids (TSS) under a wide range of flow conditions. Temperature, pH and conductivity were typically low to moderate. The median dissolved oxygen was above 90% saturated in the Derwent River as it was in all the tributaries.

The water quality of the major tributaries was variable and reflected impacts from human activities as well as from natural phenomena. Water draining from Lake King William and the Nive catchment had high water quality characterised by low pH (between 6 and 7), low conductivity, low TSS and low concentrations of dissolved and total nutrients. The Nive catchment contributes over 60% of the Derwent's flow.

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<sup>9</sup> Hobart Water Annual Report 2000

<sup>10</sup> Mt Field National Park, Marriot Falls State Reserve & Junee Cave State Reserve Draft Management Plan, January 2000. Tasmanian Parks and Wildlife Service. Department of Primary Industries, Water and Environment.

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<sup>11</sup> Draft Lake Fenton/Lady Barron Creek Drinking Water Catchment Management Plan. January 2000. Hobart Water.

<sup>12</sup> Coughanowr, C. 2001. Nutrients in the Derwent Estuary Catchment. Final report to the Natural Heritage Trust.

The tributaries that flow from the East (Dee, Ouse, Clyde and Jordan) were mostly characterised by moderate temperatures, pH and conductivity, elevated TSS and turbidity, and relatively high concentrations of total nutrients. These rivers are impacted by agricultural activities. These impacts include stock access, willow infestation and the clearance of native vegetation along streams and rivers in addition to the extraction of water for irrigation. The pressure of these impacts on water quality has been greater in recent years due to the very low rainfall experienced in the region. The Jordan flows through a region of naturally high salinity and had substantially higher conductivities than any of the other tributaries with a median of 800  $\mu\text{S}$ , compared with a median of less than 50  $\mu\text{S}$  in the Nive system and Lake King William and a median of less than 250  $\mu\text{S}$  in the Clyde, Ouse and Dee Rivers. The Clyde is also impacted by high levels of organic nitrogen and phosphorous discharged from Lakes Sorell and Crescent. These lakes are naturally rich in organic matter as they were not cleared out in the last glaciation.

A detailed study of the Jordan River has been underway since February 1999 as part of the national "State of the Rivers" project<sup>13</sup>. The Jordan River is a river under stress because of the combined effects of irrigation and low precipitation. The flow is very low and in some areas the river has been reduced to a series of ponds. In these conditions the salinity of the river reflects that of the groundwater, with higher salinities occurring in its tributaries. The highest average conductivity of 3230  $\mu\text{S}$  occurred in Tea Tree Rivulet. In the main body of the river the highest average conductivity was 1888  $\mu\text{S}$  at a

site near Pontville. The dissolved oxygen levels at most sites were above that required to support a healthy system, except at the tidal limit in the months of January and February. A snapshot of *E. coli* levels in 2000, found 9 of 16 sites had levels above the guidelines for primary contact in summer, and 5 of 16 sites had levels of these bacteria above the primary contact level in winter.

There was some variation in the western tributaries of the Derwent River (Tyenna, Styx, Plenty and Florentine), but in general they had moderate pH (between 7 and 8) and moderate conductivities with median levels in the range 50 to 250  $\mu\text{S}$ . The lowest conductivities were recorded in the Plenty, and increasingly higher levels in the Styx, Tyenna and Florentine. Elevated levels of ammonia ( $\text{NH}_3$ ) and phosphate ( $\text{PO}_4$ ) were recorded downstream of fishfarms. Higher levels of nitrates ( $\text{NO}_3$ ) in some of these rivers were attributed to the limestone geology of the karst systems in the catchments<sup>12</sup>.

The hydro water storages in the catchment may affect the water quality of the rivers by acting as sinks for suspended solids but their role is poorly understood. Seven reservoirs on the Derwent River (St. Clair, King William, Wayatinah, Catagunya, Repulse, Cluny and Meadowbank), three reservoirs in the Nive system (Bradys, Pine Tier and Bronte) and seven in the south-east of the Central Plateau (Crescent, Dee, Echo, Little Pine, Lagoon of Islands, Penstock and Sorell) are monitored by the Inland Fisheries Commission on behalf of the HEC. Chlorophyll-a was low in all lakes with the exception of Lakes Crescent and to a lesser extent Lake Sorell. Total phosphorous, total nitrogen and turbidity were low in the reservoirs on the Derwent River and in the Nive system, but were elevated in

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<sup>13</sup> Berry, K. Water Quality in the Jordan catchment, Third Progress Report, (February 2001). DPIWE.

the lakes of the south-eastern Central Plateau, particularly in Lakes Crescent and Sorell<sup>12</sup>.

#### **4.5 Community water values**

A survey of uses and issues of waterways in the Derwent catchment has been undertaken by the Derwent Catchment Management Group. The most commonly cited uses were fishing, stock watering, swimming, homestead use, irrigation, aesthetic-recreational (camping/walking), drinking water and water-skiing at Meadowbank Lake. Swimming locations noted were Meadowbank Lake, the Tyenna River at Westerway, Wayatinah Lagoon, Broad River, Derwent River between Cluny Dam and Meadowbank, Derwent River at New Norfolk, Lake St. Clair, Molesworth, Bronte and the Nive River at Tungatinah. The major issues of concern in the catchment were rural tree

decline/dieback, availability of water for town water supplies, weeds, soil erosion, pollution from sewage/stormwater, planning for agricultural use, environmental flows in rivers and water availability for irrigation.

Issues and values were identified for the Clyde River in a workshop held in 1998 as part of water management planning for that river (see section 6, table 2), and also for the Jordan River in a workshop held in 1999 when Protected Environmental Values and Community Water Values were determined for surface waters in the Southern Midlands Municipal Area (see section 6, table 3).

Public meetings were also held at New Norfolk, Westerway, Ouse, Gagebrook and Bothwell in September and early October 2001 for the setting the Protected Environmental Values (see section 6, tables .

## 5 WATER QUALITY: PROTECTED ENVIRONMENTAL VALUES

### 5.1 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)** of the surface waters in your region. **PEVs are the values or uses of the water body for which it is determined that any given area of that water body 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 3.2.

The Board of Environmental Management and Pollution Control will then specify a range of pollutant limits called 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 values to be protected.

The Policy then 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.

### 5.2 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:

#### **A: Protection of Aquatic Ecosystems**

- (i) Pristine or near pristine ecosystems;
- (ii) Modified (not pristine) ecosystems:
  - (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).

#### **B: Recreational Water Quality & Aesthetics**

- (i) Primary contact
- (ii) Secondary contact
- (iii) Aesthetics

‘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**

- (ii) Subject to coarse screening and disinfection.

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.

### **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.

## **3.3 Community Input**

We asked the public to examine and provide comment on some water quality PEVs which the Board and regional planning authorities had, as a starting point, suggested may be suitable for surface waters in the Derwent River Catchment.

We wanted the community to tell us about specific areas of rivers that may need different or additional PEVs (traditional fishing areas, for example). Are there rare or endangered species in specific locations which need to be acknowledged? Are there specific locations or stretches of river which need different PEVs (traditional swimming holes, for example)? Other questions were whether existing values and uses are under threat from deteriorating water quality, or whether there is the potential for improving water quality to support new uses.

The Board and the regional planning authorities considered and took into account all submissions before coming to a decision on PEVs for these wetlands and waterways.

## **WATER QUALITY: PROTECTED ENVIRONMENTAL VALUES FOR THE DERWENT RIVER CATCHMENT**

In 2001-2002 the State Government through the Board of Environmental Management and Pollution Control in association with the Derwent Valley, Central Highlands, Brighton and Meander Valley Councils, the Director of National Parks and Wildlife, and the Wellington Park Management Trust set Protected Environmental Values (PEVs) for surface waters for the Derwent River catchment as required by the *State Policy on Water Quality Management 1997* (the Policy).

The Discussion Paper – *Proposed Environmental Management Goals for Tasmanian Surface Waters: Derwent River Catchment* – was developed by DPIWE in association with councils and the Derwent Catchment Management Group and approved for release to stakeholders and the public in August 2001. This paper explained the Policy and how the environmental values for water quality (PEVs) are identified and used.

The catchment area is all of the Derwent River catchment except the Derwent Estuary, the Derwent Estuary catchment and the area of the catchment that is within the Southern Midlands Municipal Area which are the subject of separate discussion papers.

The discussion paper was sent to 125 stakeholders who were invited to public meetings at New Norfolk, Westerway, Ouse, Gagebrook and Bothwell in September and early October 2001.

These meetings were advertised twice in the Public Notices section of The Mercury and in the Derwent Valley Gazette. The meetings were also advertised online in the local and rural diary sections on the ABC web site. At the meetings background information on Protected Environmental Values and the State Policy on Water Quality Management was provided and Community Water Values for the region were collected from the participants. Attendances at the meetings were as follows: New Norfolk – 12, Westerway – 6, Ouse – 6, Gagebrook – 2 and Bothwell - 12. No written submissions were received. An extensive list of Community Water Values was compiled from information collected at the meetings. The significant changes to the PEVs arising from the consultation was the identification of swimming locations on or adjacent to private land in the Derwent Valley and Central Highlands Municipal Areas. No sites suitable for primary contact recreational activities were identified in the Brighton Municipality. The amended PEVs and compiled Community Water Values were forwarded to all the stakeholders and others who attended the meetings to ensure that their values had been represented satisfactorily. No comments were received.

Community Water Values should be incorporated into the future development of water management and catchment management plans.

**Table 2: PEVs for the Derwent River Catchment\*** (see note on page 28)

| <b>Land Tenure</b>                       | <b>Proposed Protected Environmental Values</b>  |
|--|---|
| <b>Surface Waters in Wellington Park</b> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"><li>(i) Pristine or nearly pristine ecosystems</li></ul> <p>B: Recreational Water Quality &amp; Aesthetics</p> <ul style="list-style-type: none"><li>(i) Primary contact water quality (where permitted)</li><li>(ii) Secondary contact water quality</li><li>(iii) Aesthetic water quality</li></ul> <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 primary contact activities (e.g. swimming) and secondary contact recreation activities (e.g. paddling or fishing) in aesthetically pleasing waters, where those activities are permitted under the Wellington Park Management Plan.</p> |

**Table 2: PEVs for the Derwent River Catchment\*** (see note on page 28)

| Land Tenure  | Proposed Protected Environmental Values   |
|--|---|
| <p>Surface Waters on <b>Private Land</b> in the Central Highlands and Derwent Valley Municipal Areas</p> <p>(including forest on private property)</p> | <p>A: Protection of Aquatic Ecosystems</p> <p>(ii) Modified (not pristine) ecosystems</p> <p>(a) from which edible fish are harvested</p> <p>B: Recreational Water Quality &amp; Aesthetics</p> <p>(i) <b>Primary contact water quality</b> - Railway crossing at Hayes, near cliff at Magra, in Styx River upstream of bridge near Glenora school, Styx River in Bushy Park showground, 500m stretch of the Broad River above bridge, bridge at Bothwell, below bridge at Hamilton (n.b. sometimes signed as unsuitable for swimming), below bridge at Ouse, bottom end of Lake Meadowbank near the ski-club, Wayatinah Lagoon, Salmon Ponds at Plenty, in the Tyenna River at Tyenna, Lake Dobson, in the Tyenna River opposite the Westerway Primary School, in the Tyenna river at the Bridge near the camping grounds at the entrance to National Park.** (see note on page 28)</p> <p>(ii) Secondary contact water quality</p> <p>(iii) Aesthetic water quality</p> <p>C. Raw Water for Drinking Water Supply</p> <p>(ii) Subject to coarse screening plus disinfection (Town water intakes at Bothwell, New Norfolk-Illa Brook, Derwent River-Bryn Estyn, Gretna, Ouse, Ellendale, Hamilton)</p> <p>D: Agricultural Water Uses</p> <p>(i) Irrigation</p> <p>(ii) Stock watering</p> <p>E: Industrial Water Supply (Aquaculture, pulp and paper mill, hydro-electricity 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 suitable for raw water for drinking water supplies at offtakes for town water supplies, subject to coarse screening plus disinfection (Bothwell, New Norfolk-Illa Brook, Derwent River-Bryn Estyn, Gretna, Ouse, Ellendale, Hamilton); that is acceptable for irrigation and stock watering purposes; which will allow people to safely engage in primary contact recreation activities such as swimming (at specific sites) and secondary contact recreation activities such as paddling or fishing in aesthetically pleasing waters; and which is suitable for aquaculture, pulp and paper mill production and hydro-electricity generation.</p> |

**Table 2: PEVs for the Derwent River Catchment\*** (see note on page 28)

| <b>Land Tenure</b>  | <b>Proposed Protected Environmental Values</b>  |
|---|---|
| <p>Surface Waters on <b>Private Land</b> in the Brighton Municipal Area<br/><br/>(including forest on private property)</p> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> <li>(ii) Modified (not pristine) ecosystems               <ul style="list-style-type: none"> <li>(a) from which edible fish are harvested</li> </ul> </li> </ul> <p>B: Recreational Water Quality &amp; Aesthetics</p> <ul style="list-style-type: none"> <li>(i) Secondary contact water quality</li> <li>(ii) Aesthetic water quality</li> </ul> <p>D: Agricultural Water Uses</p> <ul style="list-style-type: none"> <li>(i) Irrigation</li> <li>(ii) Stock watering</li> </ul> <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 primary contact recreation activities such as swimming (at specific sites) and secondary contact recreation activities such as paddling or fishing in aesthetically pleasing waters.</p> |

**Table 2: PEVs for the Derwent River Catchment\*** (see note on page 28)

| <b>Land Tenure</b>  | <b>Proposed Protected Environmental Values</b>  |
|---|---|
| <p>Surface waters in <b>Forest Reserves</b> with their headwaters within Forest Reserves or National Parks adjacent to Forest Reserves.</p> | <p>A: Protection of Aquatic Ecosystems</p> <p>(i) Pristine or nearly pristine ecosystems</p> <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 &amp; Aesthetics</p> <p>(i) Primary contact water quality (where permitted)</p> <p>(ii) Secondary contact water quality</p> <p>(iii) Aesthetic water quality</p> <p>E: Industrial Water Supply (hydro-electricity 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, paddling or fishing in aesthetically pleasing waters; and which is suitable for hydro-electric power generation.</p> |

**Table 2: PEVs for the Derwent River Catchment\*** (see note on page 28)

| <b>Land Tenure</b>  | <b>Proposed Protected Environmental Values</b>   |
|---|--|
| <p>Surface waters flowing through <b>Forest Reserves</b> from Private Land, State Forest, Unallocated Crown Land or HEC Land.</p> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> <li>(ii) Protection of modified (not pristine) ecosystems               <ul style="list-style-type: none"> <li>(a) from which edible fish are harvested</li> </ul> </li> </ul> <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 &amp; Aesthetics</p> <ul style="list-style-type: none"> <li>(i) Primary contact water quality (where permitted)</li> <li>(ii) Secondary contact water quality</li> <li>(iii) Aesthetic water quality</li> </ul> <p>E: Industrial Water Supply (hydro-electricity 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, paddling or fishing in aesthetically pleasing waters; and which is suitable for hydro-electric power generation.</p> |

**Table 2: PEVs for the Derwent River Catchment\*** (see note on page 28)

| <b>Land Tenure</b>  | <b>Proposed Protected Environmental Values</b>  |
|---|---|
| <p>Surface Waters in <b>National Parks, State Reserves, Nature Reserves or Historic Sites</b> with their headwaters within those National Parks, State Reserves, Nature Reserves or Historic Sites.</p> | <p>A: Protection of Aquatic Ecosystems</p> <p>(i) Pristine or nearly pristine ecosystems</p> <p>having regard for the management objectives for National Parks, State Reserves, Nature Reserves &amp; Historic Sites outlined in Schedule 1 of the <i>National Parks and Reserves Management Act, 2002</i>.</p> <p>B: Recreational Water Quality &amp; Aesthetics</p> <p>(i) Primary contact water quality (where permitted)</p> <p>(ii) Secondary contact water quality</p> <p>(iii) Aesthetic water quality</p> <p>C: Raw Water for Drinking Water Supply</p> <p>(ii) Subject to coarse screening plus disinfection (Lake Fenton/Lady Barron Creek catchment)</p> <p>E: Industrial Water Supply (hydro-electricity 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 nearly pristine ecosystem; that is suitable for raw water for drinking water supply, subject to coarse screening plus disinfection (Lake Fenton/Lady Barron Creek catchment); which will allow people to safely engage in recreation activities such as swimming, paddling or fishing in aesthetically pleasing waters; and which is suitable for hydro-electric power generation.</p> |

**Table 2: PEVs for the Derwent River Catchment\*** (see note on page 28)

| <b>Land Tenure</b>   | <b>Proposed Protected Environmental Values</b>   |
|--|--|
| <p>Surface Waters flowing through <b>National Parks, State Reserves, Nature Reserves and Historic Sites</b> from Private Land, State Forest, Unallocated Crown Land or HEC Land.</p> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> <li>(ii) Modified (not pristine) ecosystem               <ul style="list-style-type: none"> <li>(a) from which edible fish are harvested</li> </ul> </li> </ul> <p>having regard for the management objectives for National Parks, State Reserves, Nature Reserves &amp; Historic Sites outlined in Schedule 1 of the <i>National Parks and Reserves Management Act, 2002</i>.</p> <p>B: Recreational Water Quality &amp; Aesthetics</p> <ul style="list-style-type: none"> <li>(i) Primary contact water quality (where permitted)</li> <li>(ii) Secondary contact water quality</li> <li>(iii) Aesthetic water quality</li> </ul> <p>E: Industrial Water Supply (hydro-electricity 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 modified ecosystem from which edible fish maybe harvested; which will allow people to safely engage in recreation activities such as swimming, paddling or fishing in aesthetically pleasing waters; and which is suitable for hydro-electric power generation.</p> |

**Table 2: PEVs for the Derwent River Catchment\*** (see note on page 28)

| Land Tenure  | Proposed Protected Environmental Values   |
|--|---|
| <p>Surface Waters in <b>Nature Recreation Areas, Conservation Areas and Game Reserves</b> with their headwaters within those Nature Recreation Areas, Conservation Areas and Game Reserves or adjacent National Parks.</p> | <p>A: Protection of Aquatic Ecosystems</p> <p>(i) Pristine or nearly pristine ecosystems</p> <p>having regard for the management objectives for Nature Recreation Areas, Conservation Areas and Game Reserves outlined in Schedule 1 of the <i>National Parks and Reserves Management Act, 2002</i>.</p> <p>B: Recreational Water Quality &amp; Aesthetics</p> <p>(i) Primary contact water quality (where permitted)</p> <p>(ii) Secondary contact water quality</p> <p>(iii) Aesthetic water quality</p> <p>E: Industrial Water Supply (hydro-electricity 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; and which will allow people to safely engage in recreation activities such as swimming, paddling or fishing in aesthetically pleasing waters; and which is suitable for hydro-electric power generation.</p> |

**Table 2: PEVs for the Derwent River Catchment\*** (see note on page 28)

| <b>Land Tenure</b>  | <b>Proposed Protected Environmental Values</b>  |
|---|---|
| <p>Surface Waters flowing through <b>Nature Recreation Areas, Conservation Areas and Game Reserves</b> from Private Land, State Forest, Unallocated Crown Land or HEC Land.</p> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> <li>(ii) Modified (not pristine) ecosystem               <ul style="list-style-type: none"> <li>(a) from which edible fish are harvested</li> </ul> </li> </ul> <p>having regard for the management objectives for Nature Recreation Areas, Conservation Areas and Game Reserves outlined in Schedule 1 of the <i>National Parks and Reserves Management Act, 2002</i>.</p> <p>B: Recreational Water Quality &amp; Aesthetics</p> <ul style="list-style-type: none"> <li>(i) Primary contact water quality (where permitted)</li> <li>(ii) Secondary contact water quality</li> <li>(iii) Aesthetic water quality</li> </ul> <p>E: Industrial Water Supply (hydro-electricity 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 modified ecosystem from which edible fish maybe harvested; which will allow people to safely engage in recreation activities such as swimming, paddling or fishing in aesthetically pleasing waters; and which is suitable for hydro-electric power generation.</p> |

**Table 2: PEVs for the Derwent River Catchment\*** (see note on page 28)

| Land Tenure  | Proposed Protected Environmental Values   |
|--|---|
| <p>Surface waters in <b>Public Reserves</b> that have their headwaters within those Public Reserves or their headwaters in Wellington Park, where the Public Reserve is adjacent to Wellington Park.</p> | <p>A: Protection of Aquatic Ecosystems</p> <p>(i) Pristine or nearly pristine ecosystems</p> <p>having regard for the management objectives for public reserves outlined in Schedule 4 of the of <i>the Regional Forest Agreement (Land Classification) Act, 1998</i>.</p> <p>B: Recreational Water Quality &amp; Aesthetics</p> <p>(i) Primary contact water quality (where permitted)</p> <p>(ii) Secondary contact water quality</p> <p>(iii) Aesthetic water quality</p> <p>E: Industrial Water Supply (hydro-electricity 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, paddling or fishing in aesthetically pleasing waters; and which is suitable for hydro-electric power generation.</p> |
| <p>Surface waters flowing through <b>Public Reserves</b> (under the <i>Crown Lands Act 1976</i>) from Private Land in the Brighton Municipal Area.</p>   | <p>A: Protection of Aquatic Ecosystems</p> <p>(ii) Modified (not pristine) ecosystems</p> <p>(a) from which edible fish are harvested</p> <p>having regard for the management objectives for public reserves outlined in Schedule 4 of the of <i>the Regional Forest Agreement (Land Classification) Act, 1998</i>.</p> <p>B: Recreational Water Quality &amp; Aesthetics</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 modified, but healthy aquatic ecosystem from which edible fish are harvested; and which will allow people to safely engage in recreation activities such as swimming, paddling or fishing in aesthetically pleasing waters.</p>  |

**Table 2: PEVs for the Derwent River Catchment\*** (see note on page 28)

| <b>Land Tenure</b>  | <b>Proposed Protected Environmental Values</b>  |
|---|---|
| <p>Surface waters flowing through <b>Public Reserves</b> (under the <i>Crown Lands Act 1976</i>) from Private Land, State Forest, Unallocated Crown Land or HEC Land in the Central Highlands and Derwent Valley Municipal Areas.</p> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> <li>(ii) Modified (not pristine) ecosystems</li> <li>(b) from which edible fish are harvested</li> </ul> <p>having regard for the management objectives for public reserves outlined in Schedule 4 of the of <i>the Regional Forest Agreement (Land Classification) Act, 1998</i>.</p> <p>B: Recreational Water Quality &amp; Aesthetics</p> <ul style="list-style-type: none"> <li>(i) Primary contact water quality (where permitted)</li> <li>(ii) Secondary contact water quality</li> <li>(iii) Aesthetic water quality</li> </ul> <p>E: Industrial Water Supply (hydro-electricity 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 modified, but healthy aquatic ecosystem from which edible fish are harvested; which will allow people to safely engage in recreation activities such as swimming, paddling or fishing in aesthetically pleasing waters; and which is suitable for hydro-electric power generation.</p> |

**Table 2: PEVs for the Derwent River Catchment\*** (see note on page 28)

| <b>Land Tenure</b>  | <b>Proposed Protected Environmental Values</b>   |
|---|--|
| <p>Surface waters on<br/><b>Unallocated<br/>Crown Land</b></p>              | <p>A: Protection of Aquatic Ecosystems</p> <p style="padding-left: 40px;">(ii) Modified not pristine ecosystem</p> <p style="padding-left: 80px;">(a) from which edible fish are harvested</p> <p>B: Recreational Water Quality &amp; 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) Aesthetic water quality</p> <p>E: Industrial Water Supply (hydro-electricity 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 modified (not pristine) ecosystem from which edible fish are harvested; which will allow people to safely engage in recreation activities such as swimming, paddling or fishing in aesthetically pleasing waters; and which is suitable for hydro-electric power generation.</p>     |
| <p>Surface Waters on<br/><b>Hydro Electric<br/>Corporation<br/>Land</b></p> | <p>A: Protection of Aquatic Ecosystems</p> <p style="padding-left: 40px;">(ii) Modified not pristine ecosystem</p> <p style="padding-left: 80px;">(a) from which edible fish are harvested</p> <p>B: Recreational Water Quality &amp; 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) Aesthetic water quality</p> <p>E. Industrial Water Supply (hydro-electricity 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 modified (not pristine) ecosystem from which edible fish are harvested; and which will allow people to safely engage in recreation activities such as swimming, paddling or fishing in aesthetically pleasing waters; and which is suitable for hydro-electric power generation.</p> |

**Table 2: PEVs for the Derwent River Catchment\*** (see note on page 28)

| <b>Land Tenure</b>  | <b>Proposed Protected Environmental Values</b>  |
|---|---|
| <p>Surface waters on<br/><b>Commonwealth<br/>Land</b></p> | <p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> <li>(ii) Modified not pristine ecosystem                             <ul style="list-style-type: none"> <li>(a) from which edible fish are harvested</li> </ul> </li> </ul> <p>B: Recreational Water Quality &amp; Aesthetics</p> <ul style="list-style-type: none"> <li>(ii) Secondary contact water quality</li> <li>(iii) Aesthetic water quality</li> </ul> <p>That is, as a minimum, water quality management strategies should seek to provide water of a physical and chemical nature to support modified (not pristine) ecosystem from which edible fish are harvested; and which will allow people to safely engage in recreation activities such as swimming, paddling or fishing in aesthetically pleasing waters, where those activities are permitted.</p> |

**Table 2: PEVs for the Derwent River Catchment\*** (see note on page 28)

| Land Tenure   | Proposed Protected Environmental Values  |
|---|--|
| <p>Surface waters within <b>State Forests</b></p> <p>(managed under the <i>Forestry Act</i> 1920)</p> | <p>A: Protection of Aquatic Ecosystems</p> <p>(ii) Modified (not pristine) ecosystems</p> <p>(a) from which edible fish are harvested</p> <p>having regard for Forestry Tasmania's Management Decision Classification System</p> <p>B: Recreational Water Quality &amp; Aesthetics</p> <p>(i) Primary contact water quality (where permitted)</p> <p>(ii) Secondary contact water quality</p> <p>(iii) Aesthetic water quality</p> <p>C: Raw Water for Drinking Water Supply</p> <p>(ii) Subject to coarse screening plus disinfection (Lake Fenton/Lady Barron Creek catchment)</p> <p>E: Industrial Water Supply (hydro-electricity 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 modified, but healthy aquatic ecosystems from which edible fish may be harvested; that is suitable for raw water for drinking water supply, subject to coarse screening plus disinfection (Lake Fenton/Lady Barron Creek catchment); which will allow people to safely engage in recreation activities such as swimming, paddling and fishing in aesthetically pleasing waters; and which is suitable for hydro-electric power generation.</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.

\*\* The following locations for primary contact activities are subject to monitoring by the Central Highlands Council and where necessary advisory signage will be displayed: Broad River above bridge, bridge at Bothwell, below bridge at Hamilton, below bridge at Ouse, Lake Meadowbank near the ski club, Wayatinah Lagoon and the Tyenna River opposite the school.

## 7 WATER QUANTITY VALUES

### 7.1 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 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 on legitimate community values and uses.

### 7.2 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;

The information from the public's input and gathering water management values from stakeholders, community groups and government agencies will be utilised when water management planning for the catchment is undertaken.

An appraisal of water quantity values will be undertaken in order to develop water management goals for the catchment. This will be undertaken during the water management planning process.

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 artificial erosion whilst maintaining where appropriate natural processes of erosion and deposition;
- 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 water body. 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.

The Community Water values identified through the PEVs process can therefore be considered when making management decisions for water quantity.

## 8 Community Water Values for the Derwent River Catchment

**Table 3: Water Values for the Clyde River (Workshop held on the 17/8/98- Bothwell Council Chambers)**

| <b>BROAD WATER VALUE CATEGORIES</b>           | <b>SPECIFIC WATER VALUES</b>   |
|---|--|
| <b>1. Ecosystem</b>                           | <ul style="list-style-type: none"> <li>• Improve water quality.</li> <li>• Maintain and improve habitat for aquatic fauna.</li> <li>• Stop sewage outflows into river.</li> <li>• Improve fish habitat.</li> <li>• Selectively eradicate willows.</li> <li>• Remove cumbungi.</li> <li>• Maintain and improve trout spawning areas.</li> <li>• Maintain and improve habitat for macroinvertebrates.</li> <li>• Improve natural seasonality of flows.</li> <li>• Improve status of endangered species.</li> <li>• Maintain carp free status of river.</li> <li>• Maintain eel habitat.</li> <li>• Maintain and improve fish habitat.</li> </ul> |
| <b>2. Consumptive and non-consumptive use</b> | <ul style="list-style-type: none"> <li>• Security of supply of town water supply.</li> <li>• High security of riparian water.</li> <li>• High security of water for irrigation.</li> <li>• Provision of water for power generation.</li> <li>• Allow for increased irrigation through various methods.</li> <li>• Improve efficient regulation of water flows.</li> <li>• Provision of water for fish farms.</li> </ul>  |
| <b>3. Recreational</b>                        | <ul style="list-style-type: none"> <li>• Maintain and improve spawning areas for trout.</li> <li>• Improve trout fishery.</li> <li>• Improve for swimming.</li> <li>• Maintain access to river for disabled fishermen.</li> </ul>  |
| <b>4. Physical Landscape</b>                  | <ul style="list-style-type: none"> <li>• Control or eradication of crack willow.</li> <li>• Improve the riparian zone.</li> <li>• Preservation of Bothwell Falls.</li> <li>• Maintenance of critical barriers to stop invasion of undesirable species.</li> <li>• Maintain stability of river.</li> <li>• Allow for flood mitigation.</li> </ul>   |
| <b>5. Aesthetic</b>                           | <ul style="list-style-type: none"> <li>• Improve visual quality and access to Bothwell Falls.</li> <li>• Improve visual access of Croakers Alley.</li> <li>• Maintain or improve Clyde River Walk at Hamilton and Showgrounds.</li> <li>• Reduce turbidity of river.</li> </ul>  |

**Table 4: Water Values for the Jordan River (Workshop held on the 15/6/99- Kempton Council Chambers)**

| <b>BROAD WATER VALUE CATEGORIES</b>           | <b>SPECIFIC WATER VALUES</b>   |
|---|--|
| <b>1. Ecosystem</b>                           | <ul style="list-style-type: none"> <li>• Control of exotic fauna.</li> <li>• Control of exotic weed infestations.</li> <li>• Maintain/improve trout populations.</li> <li>• Maintain/improve eel populations.</li> <li>• Protect native riparian vegetation.</li> <li>• Maintain/improve frog populations as indicators of health.</li> <li>• Protect, preserve and control native animal populations.</li> <li>• Control of Azolla weed.</li> <li>• Re-establish native riparian vegetation.</li> <li>• Maintain and improve the health of the ecosystem.</li> <li>• Maintain and improve biodiversity within the system.</li> <li>• Maintain important habitat zones.</li> <li>• Maintain variability of flow.</li> <li>• Address increasing salinity.</li> <li>• Control of pollution inputs to the river.</li> <li>• Maintain suitable water for the environment.</li> </ul> |
| <b>2. Consumptive and non-consumptive use</b> | <ul style="list-style-type: none"> <li>• More efficient use of water extraction.</li> <li>• Appropriate timing of water offtakes.</li> <li>• Maintain suitable water for irrigation.</li> <li>• Improve efficiency of water storage.</li> <li>• Reduce evaporation loss.</li> </ul>  |
| <b>3. Recreational</b>                        | <ul style="list-style-type: none"> <li>• Better management of the water resource.</li> <li>• Improve water quality and quantity for swimming, fishing and duck shooting.</li> <li>• Improvement of riparian zone.</li> <li>• Improve access to stream through removal of riparian weed species.</li> <li>• Improve conditions for canoeing and kayaking.</li> <li>• Stock management on riparian zone.</li> <li>• Improve flows in Bagdad Rivulet for irrigating the golf course.</li> <li>• Improve water quality in Jordan below Cove Hill.</li> </ul>   |
| <b>4. Physical Landscape</b>                  | <ul style="list-style-type: none"> <li>• Improvement of erosion zones.</li> <li>• Revegetation of native species after willow removal.</li> <li>• Identify source and location of silt build-up.</li> <li>• Improve riparian vegetation quality.</li> <li>• Stock management on river courses.</li> </ul>  |
| <b>5. Aesthetic</b>                           | <ul style="list-style-type: none"> <li>• Protect sandstone cliffs in upper catchment.</li> <li>• Improve access and facilities around Pontville bridge.</li> <li>• Enhancement and protection of landscape at Blackrush and Broadmarsh road junction.</li> <li>• Improve landscape around Bagdad Rivulet behind the school.</li> <li>• Improve bird habitat in the catchment.</li> </ul>   |

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|  | <ul style="list-style-type: none"> <li>• Improve landscape values for historical purposes around old residences.</li> <li>• Establishment of wildlife corridors into riparian zones.</li> <li>• Maintain and/or establish sequence of pools in river.</li> </ul> |
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**Table 5: Community Water Values for the Derwent River Catchment Collected at a Public Meeting Held in the New Norfolk Council Offices on 25/9/01.**

| <b>Water Value Categories</b>                    | <b>Specific Water Values</b>  |
|--|---|
| <b>1. Ecosystem values</b>                       | <ul style="list-style-type: none"> <li>• Platypus habitat</li> <li>• Diverse and healthy ecosystem</li> <li>• Habitat for fish and other fauna</li> <li>• Native riparian vegetation</li> <li>• Maintain weed-free areas</li> <li>• Stream and river banks not impacted by un-natural erosion</li> <li>• Intact natural ecosystems</li> <li>• Waterways support threatened species local to the Derwent River e.g. <i>Discardia pubescens</i>, <i>Acacia riceana</i>, <i>Spiridium</i> sp., <i>Epacrais</i> sp. and a possible new acacia species</li> <li>• Wetlands</li> <li>• Tannins</li> <li>• Waterways free of carp, redfin perch and tench</li> <li>• Swampy areas</li> <li>• Tall forests in the Styx Valley</li> <li>• Trident tree in the Florentine</li> <li>• Minor species</li> </ul> |
| <b>2. Physical Landscape Values</b>              | <ul style="list-style-type: none"> <li>• Diversity of habitats – riffles, pools, bends, riverbanks</li> <li>• Sound of running water at rapids and waterfalls</li> <li>• Views in general, but notably the large/long views of the Derwent Valley showing the complete system from the mountains</li> <li>• Importance of mountains as a backdrop</li> <li>• Junee Cave karst system</li> <li>• Glacial rock formations at Mt. Field National Park and Lake St. Clair</li> <li>• Contribution to the economic value through tourism</li> <li>• Rapids</li> <li>• Lakes</li> <li>• Steep mountains</li> <li>• Russell Falls</li> <li>• Bothwell Falls</li> <li>• Diversity of landscapes from rain forest to dry woodlands</li> </ul>  |
| <b>3. Consumptive and Non-Consumptive Values</b> | <ul style="list-style-type: none"> <li>• Bulk Drinking Water Supply</li> <li>• Domestic use</li> <li>• Waysiders use water from the Lake Fenton/Lady Barron line for domestic use and irrigation</li> <li>• Irrigation</li> <li>• Riparian – stock watering and household gardens</li> </ul>  |

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|                                      | <ul style="list-style-type: none"> <li>• Norske Skog ( water is treated to a drinking water standard except from a minor intake close to the mill)</li> <li>• Fish farming</li> <li>• Swimming pools</li> <li>• Power generation</li> <li>• Open-cut coal mine at Hamilton</li> <li>• Golf course</li> <li>• Maintenance of public reserves</li> <li>• Fire-fighting</li> <li>• Salmon Ponds near Plenty (also has cultural, heritage and tourism values and fish are bred for dams)</li> </ul>  |
| <b>4. Recreational Values</b>        | <ul style="list-style-type: none"> <li>• Swimming holes: Railway crossing at Hayes, near cliff at Magra, Styx River upstream of bridge near Glenora school, Styx River in Bushy Park showground (n.b. no swimming is allowed in the Derwent River 750 m upstream and downstream of the Bryn Estyn intake)</li> <li>• Rafting at the Plenty Bridge</li> <li>• Canoeing and kayaking</li> <li>• Fishing</li> <li>• Boating</li> <li>• Picnics</li> <li>• Watching flora and fauna</li> <li>• Blackberry collecting</li> <li>• Water-skiing e.g. Lake Meadowbank</li> <li>• Camping</li> <li>• Grubs from wattles used for fishing</li> <li>• 4 Wheel Driving and Car Rallies</li> <li>• Bushwalking</li> <li>• Open fires on riverbanks</li> </ul> |
| <b>5. Aesthetic Landscape Values</b> | <ul style="list-style-type: none"> <li>• Clear, clean looking water</li> <li>• Value willows in the Derwent Valley (seasonal colours)</li> <li>• Colours of natural landscape</li> <li>• Hopfields at Bushy Park</li> <li>• Dense forest in National parks</li> <li>• Power generation schemes/hydro villages</li> </ul>   |
| <b>Other values</b>                  | <ul style="list-style-type: none"> <li>• Supports economic activity</li> <li>• Historic/cultural values for settlers; preservation of cultural and heritage values rated highly in a community survey on the catchment</li> <li>• Bush tucker in the riparian zone</li> <li>• Spiritual connotations</li> <li>• Sounds of birds and animals</li> </ul>   |
| <b>Issues/concerns</b>               | <ul style="list-style-type: none"> <li>• The loss of a diverse and healthy ecosystem was the 2<sup>nd</sup> major concern in a community survey on the catchment</li> <li>• Weeds</li> <li>• Control of salinity</li> <li>• Nutrients (reduce and control)</li> <li>• Turbidity</li> <li>• <i>E. coli</i> levels are a serious concern</li> <li>• Stormwater, untreated sewage, and gross solids (e.g. litter, carcasses)</li> </ul>   |

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|  | <ul style="list-style-type: none"><li>• Riverbank erosion</li><li>• Excessive aquatic blooms (vegetation and algae) due to low flows and high nutrients</li><li>• Oxygen levels impacted by storages upstream/other activities</li><li>• Temperature fluctuation due to removal of vegetation shading</li><li>• Turbidity affecting fish hatcheries, fish life, and the treatment of water for drinking water</li><li>• Impact on ecosystems of rapid and dramatic changes in water quantity fluctuations</li><li>• Impacts of introduced species such as carp and salmon on natural ecosystems e.g. bank modification</li><li>• Use of potable water for showering</li><li>• Need more toilets at recreational spots</li><li>• Dumping of household rubbish</li><li>• Need more education re: use of waterways</li><li>• Open fires on riverbanks</li><li>• Tree dieback</li></ul> |
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**Table 6: Community Water Values for the Derwent River Catchment Collected at a Public Meeting Held in the Ouse Town Hall on 27/9/01.**

| <b>Water Value Categories</b>                    | <b>Specific Water Values</b>  |
|--|---|
| <b>1. Ecosystem Values</b>                       | <ul style="list-style-type: none"> <li>• Frogs</li> <li>• Riparian vegetation</li> <li>• Value environmental flows for a healthy river</li> <li>• Areas free of algal blooms</li> <li>• Water temperatures to support a healthy ecosystem</li> <li>• Huge diversity of plants</li> <li>• Remnant native vegetation on riverbanks (should be recorded)</li> <li>• Water birds</li> <li>• Freshwater crayfish</li> <li>• Platypus</li> <li>• Wetlands e.g. Lakes Crescent and Sorell, and the Father of Marshes in the Dee River catchment</li> </ul>     |
| <b>2. Physical Landscape Values</b>              | <ul style="list-style-type: none"> <li>• Some very deep holes and gorges</li> <li>• River is more than its water content, it is its whole surroundings</li> <li>• Two waterfalls on Kenmere Creek (a tributary of the Ouse River)</li> <li>• Waterfall on the Jones River (a tributary of the Derwent)</li> <li>• Cooma Falls on the Black Bobs Rivulet</li> <li>• Wetlands at Ouse</li> <li>• Lake Meadowbank</li> <li>• Russell Falls</li> <li>• Ouse River flows through a number of spectacular gorges which have associated rare plants</li> </ul> |
| <b>3. Consumptive and Non-Consumptive Values</b> | <ul style="list-style-type: none"> <li>• Irrigation</li> <li>• Drinking Water</li> <li>• Fish farms</li> <li>• Stock watering</li> <li>• HEC power generation</li> <li>• Household use (either via town water or by direct take)</li> </ul>   |
| <b>4. Recreational Values</b>                    | <ul style="list-style-type: none"> <li>• Swimming at the bridge on the Broad River</li> <li>• ‘Over the Back’ tourist accommodation</li> <li>• Water skiing on Meadowbank Lake</li> <li>• Fishing</li> <li>• Kayaking, canoeing and rowing</li> <li>• Birdwatching</li> <li>• Swimming</li> <li>• Camping</li> <li>• Environment for landscape painters</li> <li>• Photography</li> <li>• Seasonal wild fowl shooting</li> <li>• Rafting</li> </ul>   |
| <b>5. Aesthetic Landscape Values</b>             | <ul style="list-style-type: none"> <li>• Areas free of clear-felling</li> <li>• Autumn-time tones</li> </ul>  |
| <b>Other values</b>                              | <ul style="list-style-type: none"> <li>• Archaeological values – aboriginal stone flints found on the Jones River</li> </ul>  |

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| <b>Issues/concerns</b> | <ul style="list-style-type: none"> <li>• Managing recreational use of the environment</li> <li>• Need for tree-planting in gullies and around waterholes</li> <li>• Stock access</li> <li>• Excessive water extraction</li> <li>• Lack of water over the last 2 years</li> <li>• Odour from the River at Ouse can be bad due to stagnation – it needs flushing</li> <li>• Lack of environmental flow due to Hydro diversions</li> <li>• Introduced weeds e.g. cumbungi, willows, <i>Azolla</i>, pond weed</li> <li>• Pine plantation monoculture</li> <li>• Acidification of water by run-off from pine plantations</li> <li>• Loss of access to river for fishing due to use by too many people and anti-social behaviour in some areas</li> <li>• Storage of water and diversion impacting on the environment</li> <li>• Concern that Basslink will result in violent variation in water flows</li> <li>• Flow fluctuations during hydro maintenance periods – want to minimise induced fluctuations</li> <li>• Contamination by inappropriately located septic tanks/effluent treatment plants</li> <li>• Crops planted up to riverbanks</li> <li>• Introduction of exotic pests into waterways</li> <li>• Consumption of water by willows and pine plantations</li> <li>• Inappropriate access to streams by 4WDs</li> <li>• Growth of woody weeds such as hawthorns, elderberries, briars, blackberries and broom in areas where stock have been fenced out – creates a habitat for rabbits, vermin and wallabies</li> <li>• Erosion from clear-felling of forests</li> </ul> |
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**Table 7: Community Water Values for the Derwent River Catchment Collected at a Public Meeting Held in the Bothwell Town Hall on 4/10/01**

| <b>Water Value Categories</b>                    | <b>Specific Water Values</b>   |
|--|--|
| <b>1. Ecosystem Values</b>                       | <ul style="list-style-type: none"> <li>• Habitat</li> <li>• Frogs, birds and other species including endangered species</li> <li>• Endemic species</li> <li>• NW corner of Lake Crescent is a Ramsar site</li> <li>• Wetlands</li> <li>• Endemic communities e.g. Gondwanan communities in Central Plateau – made up of a number of animal and plant species including Pencil Pines and sphagnum moss</li> <li>• Riparian vegetation</li> <li>• Fish jumping &amp; platypus swimming</li> </ul>  |
| <b>2. Physical Landscape Values</b>              | <ul style="list-style-type: none"> <li>• Water in rivers</li> <li>• Flow of water through historic sites such as the flour mill at Bothwell and in some of the old irrigation channels such as the tunnel at Sherwood</li> <li>• Highland lakes</li> <li>• Waterfalls</li> <li>• Water available for the Shannon Rise</li> </ul>   |
| <b>3. Consumptive and Non-Consumptive Values</b> | <ul style="list-style-type: none"> <li>• Town water</li> <li>• Irrigation</li> <li>• Stock watering</li> <li>• Fish farming</li> <li>• Power generation</li> <li>• Norske Skog paper mill</li> <li>• Riparian extraction for watering gardens and domestic use</li> <li>• Bulk water supply (Hobart Water at Bryn Estyn)</li> <li>• Washing gravel and sand</li> <li>• Saw mills – keeping logs wet as part of the seasoning process</li> </ul>  |
| <b>4. Recreational Values</b>                    | <ul style="list-style-type: none"> <li>• Swimming locations: Under bridge at Bothwell; Below bridge at Hamilton (n.b. sometimes signed as unsuitable); a 500m stretch of the Broad River above the bridge; below bridge at Ouse, bottom end of Meadowbank near ski-club, Wayatinah Lagoon, Salmon Ponds at Plenty, in the Tyenna River at Tyenna, Lake Dobson</li> <li>• Water-skiing on Lake Meadowbank</li> <li>• Fishing, especially angling for trout throughout the catchment</li> <li>• Boating</li> <li>• Canoeing</li> <li>• Wind-surfing</li> <li>• Camping</li> <li>• Bushwalking</li> <li>• Duck shooting</li> <li>• Bird watching</li> <li>• Walking dogs</li> <li>• Horse riding</li> </ul> |

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| <b>5. Aesthetic Landscape Values</b> | <ul style="list-style-type: none"> <li>• Clear water</li> <li>• Riparian vegetation</li> <li>• Tourism values</li> </ul>  |
| <b>Other values</b>                  | <ul style="list-style-type: none"> <li>• Tourism values linked to water</li> <li>• Historic values linked to water systems e.g. early raceways associated with irrigation; HEC; Lake Sorell</li> </ul>  |
| <b>Issues/concerns</b>               | <ul style="list-style-type: none"> <li>• Consumption of water by willows is an environmental threat</li> <li>• Environmental flows for aesthetics and river health v.s. the cost of losing water for other uses</li> <li>• Decline of commercial values from the decline of Lakes Sorell and Crescent</li> <li>• Carp in Lakes Sorell and Crescent</li> <li>• There should be less forestry in the upper catchment, particularly around lakes</li> <li>• Access to value aesthetics</li> <li>• Concern that anglers have difficulty getting access on private land because of liability issues</li> </ul> |

**Table 8: Community Water Values for the Derwent River Catchment Collected at a Public Meeting Held at Westerway Hall on 26/9/01**

| Water Value Categories                           | Specific Water Values   |
|--|---|
| <b>1. Ecosystem values</b>                       | <ul style="list-style-type: none"> <li>• Biodiversity</li> <li>• Platypus</li> <li>• Native riparian vegetation</li> <li>• Rivers free of carp and many other introduced species such as blackfish and tench</li> <li>• Pristine water quality</li> <li>• Maintaining flows</li> </ul>  |
| <b>2. Physical Landscape Values</b>              | <ul style="list-style-type: none"> <li>• Waterfalls</li> <li>• Rapids near railway bridge</li> <li>• Doesn't flood too often</li> </ul>   |
| <b>3. Consumptive and Non-Consumptive Values</b> | <ul style="list-style-type: none"> <li>• 20% of the annual supply by Hobart Water to 8 southern municipalities comes from the Lady Barron – Lake Fenton catchments (this water is low cost as it requires only treatment by chlorination and there is low energy consumption due to 200m head pressure), waysiders taking water from this line may get lower quality water during periods of high rainfall; 60% of Hobart Water's supply is taken from the Derwent River at Bryn Estyn which requires treatment to remove sediments, followed by chlorination</li> <li>• Fish farms</li> <li>• Irrigation</li> <li>• Homestead use for gardening and domestic</li> <li>• Livestock watering</li> <li>• Hydro power generation</li> <li>• Fire-fighting</li> </ul>           |
| <b>4. Recreational Values</b>                    | <ul style="list-style-type: none"> <li>• Swimming in the river opposite Westerway Primary School, and at the Bridge across the Tyenna River near the picnic &amp; camping grounds at the entrance to National Park</li> <li>• Fishing at Westerway – “highest number of fish per 100 m in Tasmania”</li> <li>• Rafting</li> <li>• Canoeing; canoe training at old Plenty bridge</li> <li>• Watching animals</li> <li>• Parks and picnic areas on the river</li> <li>• Walkway access along river</li> <li>• Jet-boating at New Norfolk</li> <li>• Water skiing</li> <li>• Rowing</li> <li>• The river attracts tourists</li> <li>• Spring and autumn festivals at New Norfolk</li> <li>• Triathlon (includes a canoeing leg)</li> <li>• Tourism at National Park</li> </ul> |
| <b>5. Aesthetic Landscape Values</b>             | <ul style="list-style-type: none"> <li>• Scenic</li> </ul>  |
| <b>Other values</b>                              | <ul style="list-style-type: none"> <li>• Educational value</li> </ul>   |

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|                        | <ul style="list-style-type: none"><li>• Emotional/spiritual links</li><li>• Intrinsic value – knowing its there</li><li>• River defines the road network and community development</li></ul> |
| <b>Issues/concerns</b> | <ul style="list-style-type: none"><li>• Introduced plants and weeds</li></ul>  |

**Table 9: Community Water Values for the Derwent River Catchment Collected at a Public Meeting Held in the Brighton Council Chambers on 3/10/01**

| <b>Water Value Categories</b>                    | <b>Specific Water Values</b>  |
|--|---|
| <b>1. Ecosystem values</b>                       | <ul style="list-style-type: none"> <li>• Birdlife – swans and ducks</li> </ul>  |
| <b>2. Physical Landscape Values</b>              | <ul style="list-style-type: none"> <li>•</li> </ul>   |
| <b>3. Consumptive and Non-Consumptive Values</b> | <ul style="list-style-type: none"> <li>• Irrigation</li> </ul>  |
| <b>4. Recreational Values</b>                    | <ul style="list-style-type: none"> <li>• Fishing</li> <li>• Recreation areas at the Ford at Pontville and the Andrew St Bridge at Brighton</li> <li>• Secondary contact activities in the Jordan, but no swimming (council puts up signs)</li> <li>• Walking</li> </ul>                                       |
| <b>5. Aesthetic Landscape Values</b>             | <ul style="list-style-type: none"> <li>•</li> </ul>   |
| <b>Other values</b>                              | <ul style="list-style-type: none"> <li>• School does nature studies on the Jordan</li> </ul>  |
| <b>Issues/concerns</b>                           | <ul style="list-style-type: none"> <li>• Septic tanks around Brighton and Pontville are a problem</li> <li>• Lack of environmental flows are a concern, as water is caught in farm dams and there isn't much natural run-off into the river</li> <li>• 6 stormwater outflows into the lower Jordan</li> </ul> |