



DEPARTMENT of PRIMARY
INDUSTRIES, WATER and
ENVIRONMENT

**ENVIRONMENTAL
MANAGEMENT
GOALS
for TASMANIAN
SURFACE WATERS**

HUON VALLEY CATCHMENTS

February 2003



Environmental Management Goals For Tasmanian Surface Waters: Huon Valley Catchments

During 2001/2002 Protected Environmental Values (PEVs) were set for the Huon Valley catchments. 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 waterways that are located within the Huon Valley Municipal Area, and areas of the Huon River Catchment in the Derwent Valley, Kingborough and Glenorchy Municipal Areas. The paper also covers the part of the Davey River catchment which lies within the Huon Valley Municipal Area and the Derwent Valley Municipal Area. The area of the D'Entrecasteaux Channel within the Huon Valley Municipal Area is covered in a separate discussion paper.

The discussion paper was prepared by the Environment Division and the Huon Valley Council in consultation with the Tasmanian Parks and Wildlife Service, the Marine Farming Branch, the Derwent Valley Council, the Kingborough Council, the Glenorchy City Council and the Wellington Park Management Trust. Words and expressions used in the discussion 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 Huon Valley Catchments 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 discussion paper is divided into six main sections:

- The first part discusses water reform in general.
- The second part gives some general information relating to the area covered in the discussion paper.
- The third part discusses the *State Policy on Water Quality Management*.
- The fourth part discusses the Protected Environmental Values for the catchment.
- The fifth section discusses water quality and water quantity values.
- The sixth part discusses the community water values for the Huon Valley Catchments.

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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.

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.

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 which are considered worthy of protection.

The first purpose of this discussion 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.

1.3 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?

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.

1.4 How will 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.

2 HUON VALLEY CATCHMENTS: OVERVIEW

2.1 Catchment Description

2.1.1 General Description

The major river catchments located within the Huon Valley Municipal Area are outlined below (tracking from east to west).

Table 1: Catchment Areas of Major Huon Valley Rivers (estimates from Australian Coastal Atlas¹)

CATCHMENT	AREA (Sq. kms.)
Mountain River	187
Crooks Rivulet	133
Esperance River	173
Lune River	132
Picton River	485
Huon River	1362
Weld	420
New River	223
Old River	429
North River	138
Spring River	150
Crossing River	239
Davey River	486

In addition, there are many smaller waterways running directly into coastal waters.

The Huon Valley Municipal Area is predominantly rural with a total population of 14,000. Major population centres are Huonville (about 2000), Cygnet (about 1000), Franklin (about 400), Geeveston (about 1000) and Dover (about 800). There are many other small villages and settlements, some of which increase markedly in population during summer. Huonville is the major commercial centre and is located near the limit of tidal influence on the Huon River.

¹ www.atlas.tas.gov.au

The major industries of the Huon region are tourism, agriculture, aquaculture and forestry. Historically, apple orchards and forestry have been the most important industries for the Huon Valley. In recent years however, the economy has become more dependent upon tourism, salmon farming and a wider range of agricultural activities. With improved accessibility to Hobart, there has also been increased residential development within the older northern rural areas. Many people commute to work in the Hobart area.

2.1.2 Climate, Geology and Hydrology

The climate is best described as cool and changeable temperate maritime with average rainfall dropping from over 2000 mm in the west to less than 1000 mm in the east. January, February and March are the driest months. Maximum rainfall is experienced in winter. Rainfall on the coast is up to half of that experienced at higher altitudes. Next to tropical north Queensland, the south-west is the highest rainfall region in Australia. Temperatures are more extreme in the high altitude western zone. Further east the summer temperatures range between 9°C and 21°C while winter temperatures are between 2°C and 13°C.

In general terms, the regional geology is split between a western zone of ancient Precambrian formations and an eastern zone of younger Permian Supergroup sequences with Jurassic dolerite intrusives. The western drainage divide of the Picton River marks this change in geological type. The topography in the west is mature with extensive erosion by the main river systems. As well as this, there is lake formation from glaciation, peri-glacial processes and karst formation. To the east, extensive

areas of Permo-Triassic sediments have been intruded by dolerite sheets, dykes and sills to produce such high altitude dolerite areas as the Hartz Mts and the Snowy Range. Otherwise, this region is characterised by hills and broad valleys, with rising sea levels producing the Huon Estuary and other bays.

The large area of the Huon Municipal Area supports a wide diversity of vegetation types. Button-grass moorlands are the dominant vegetation type in south-west Tasmania, while wet eucalypt forests are dominant in the east. Other vegetation types are alpine communities, mixed forest and rainforest, scrub communities, coastal forest and wetland vegetation. Twenty plant species identified as rare or threatened in the *Threatened Species Protection Act 1995* are found in the Huon region². A number of threatened, vulnerable or rare animals are also located in the region including the Australian grayling (*Prototroctes maraena*) and 2 caddisfly species (*Tasimia drepana*, *Oxyethira mienica*)³.

The Huon River rises below Scotts Peak Dam and falls nearly 1100 metres over a distance of 100 km before reaching the tidal zone near Ranelagh. Monthly average flows range from a low of 30-40 cumecs between January and March to peak flows of 125-130 cumecs in July and August. The average yearly flow is 87 cumecs. Other gauged rivers in the region exhibit a similar pattern of seasonal flow variation. Scotts Peak Dam is estimated to have caused a 15% reduction in median flows and an 8% reduction in low flows.

² Forestry Tasmania (2000). Huon Forest District Forest Management Plan – March 2000. Forestry Tasmania.

³ Bryant, S. and J. Jackson. 1999. Tasmania's Threatened Fauna Handbook. Parks and Wildlife Service, Tasmania.

The Huon estuary is a typical “drowned river valley estuary” with the estuarine zone being some 38 km from Ranelagh to Huon Island at its mouth. The precise tidal limit cannot be easily defined due to tidal and river flow variations.

The Huon has experienced twelve major floods (in excess of 1300 cumecs) since 1920. These, and earlier floods, caused extensive stock losses and property damage. The most recent major flood was in February 1996.

Approximately 3250 sq km of aquifer between 2 and 10 metres deep lies within the Huon catchment, however adequate rainfall generally ensures little demand for borewater.

2.1.3 Catchment Water Uses

Natural water sources are used for numerous purposes within the Huon region. Many centres rely upon the extraction of water from local waterways for town water supply. These towns or localities are Mountain River, Judbury, Cygnet, Nicholls Rivulet, Huonville, Ranelagh, Franklin, Castle Forbes Bay, Geeveston, Port Huon and Dover. All of these supplies are treated except for Mountain River and Judbury.

Farm irrigation is carried out in the Huon from both river supplies and farm dams. There are no major irrigation schemes due to the lack of prime agricultural land and a relatively good rainfall regime.

There are sewage treatment plants at Ranelagh, Cygnet, Geeveston, Dover and Southport. Each of these discharge into local waterways – Ranelagh into the Huon River, Geeveston into the Kermadie River, Cygnet into Port Cygnet, Dover into Port Esperance and Southport into Southport Bay. Cygnet, Geeveston and Southport comply with

their licensed emission standards. Ranelagh and Dover are lagoon treatment systems and they almost always exceed such standards, particularly in regard to faecal coliforms.

All the other small towns and rural areas are not sewered and are on septic systems. It is known that there are some cumulative problems due to failed or inadequately constructed septic systems. This is particularly an issue for water quality in some of the more densely settled rural areas.

Some tourism and recreational activities in the area are based on the use of water. Recreational fishing is very popular and there are a number of tourist cruising/boating operations.

2.1.4 Catchment Land Uses

Historically Aboriginal people used the coast extensively, as shown by widespread evidence of middens and the presence of tools and stone assemblages.

European settlement initially occurred over 160 years ago. Since then the region has always been sparsely settled with the main commercial activity centred on forestry and agriculture (mainly horticulture, grazing and dairying). These activities spawned associated industries, such as sawmilling, shipbuilding and fruit processing along the shorelines. Transport for the region was mostly provided by the waterway, so historically shipping was also an important activity.

The “largest sawmill in Australasia” was at Whale Point, Port Huon early this century. This was closed in 1929 though there were many other smaller sawmills scattered across the region. A

neutral sulfite semi-chemical pulp mill operated on the same Whale Point site from 1962 to 1991. The legacy of wood processing at Port Huon has left some environmental degradation, with sawdust deposits changing the western foreshore markedly.

Forestry is a major activity in the Huon region. Of the land tenure outside of reserves under the *National Parks and Wildlife Act 1970*, approximately half is State Forest. In the Huon Forest District which encompasses the Kingborough Municipal Area in addition to the Huon Valley Municipal area, 123,000 ha of land is State Forest, of which it is planned to harvest 1,300 ha each year over the next 10 years⁴.

For much of the last decade, the Huon Valley has not had any significant secondary industry and new enterprises such as aquaculture and tourism have emerged to complement the established, but still evolving, horticulture and forestry industries. These changes have also seen a much greater realisation that the economic future of the region will be dependent on a healthy environment.

2.1.5 Areas of Conservation Significance

More than half of the land area of the Huon Valley Municipal Area lies in the Southwest National Park which is part of Tasmania’s Wilderness World Heritage Area. The Southwest National Park is also a Biosphere Reserve. Biosphere Reserves have been established by the UNESCO Man and the Biosphere Program to act as benchmarks to monitor human impacts

⁴ Huon Forest District forest Management Plan, March 2000. Huon District forest Planning Team, and Simon Orr, Planning Branch. Forestry Tasmania.

on the environment⁵. A study of water at Melaleuca found it to be of high quality suitable for primary and secondary contact⁶. Water quality in the Southwest National Park is however not necessarily safe for drinking due to bacterial contamination from native animals and the presence of the water-borne pathogen, *Giardia*⁷. Consequently the Director of Public Health recommends that raw water from any surface water body should be boiled before use.

The Port Davey-Bathurst Harbour area is included in the World Heritage Area and it is also a proposed marine reserve. The water in this area has low levels of nutrients and is vulnerable to discharges from visiting vessels in addition to potential damage due to physical disturbance of the halocline.

Macquarie Island, a subantarctic island with profuse wildlife is within the Huon Valley Municipal Area and is also a World Heritage Area. Other areas in the region reserved under the *National Parks and Wildlife Act 1970* include the Southwest Conservation Area, the Southport Lagoon Conservation Area, Port Cygnet Conservation Area, the Judbury Conservation Area, the Recherche Bay Nature Recreation Area, the Hastings Caves State Reserve and the Ida Bay State Reserve. The water quality management objective for reserves under the *National Parks and*

Wildlife Act 1970 is to preserve the quality of water and protect catchments.

The Ida Bay karst system includes notable features such as Hastings Caves and Exit Cave. Land management practices in this area need to be carefully managed to avoid impacts on water quality in the karst system.

The upper reaches of Mountain River lie within Wellington Park, which is managed by the Wellington Park Management Trust. Wellington Park which covers most of the area of Wellington Range was reserved to protect the values of the area, including the protection of water catchment values.

Lake Sydney, 30 km west of Ramea, 7 km west of Picton River beneath Mt Bobs is a wetland of national importance and state significance⁸.

Eighteen moderate or large sized estuaries are located in the Huon Valley Municipal Area. Tasmanian estuaries have been classified into 9 geomorphological types⁹. A representative from each of these types of estuary, which have the least disturbance by human activities, and which have the highest conservation significance have been identified. Four of these "Class A" estuaries are located in the Huon Valley Municipal Area: Louisa River (small open estuary), Payne Bay (marine inlet), Bathurst Harbour (drowned river valley), and New River Lagoon (large open

⁵ Tasmanian Wilderness World Heritage Area Management Plan 1999. Parks and Wildlife Service Hobart.

⁶ Davies, P. E. and Driessen, M. M. 1997. Surface water quality at three key locations in the Tasmanian world heritage area: report on a pilot monitoring program. Department of Environment and Land Management.

⁷ Tasmanian wilderness world heritage area: management plan 1999. Parks and Wildlife Service, Hobart.

⁸ Directory of Important Wetlands in Australia. 1996. Australian Nature Conservation Agency (ANCA), Canberra.

⁹ Edgar, G. J., Barrett, N. S., and D. J. Graddon. 1998. A Classification of Tasmanian Estuaries and Assessment of their conservation Significance: an Analysis using Ecological and Physical Attributes, Population and Land Use. Report to Environment Australia from Parks and Wildlife Service, Hobart.

mesotidal river). In addition Southport Lagoon was assigned Class A conservation status because it possessed high species diversity, and included species not contained in other Class A estuaries.

“Class B” estuaries in the Municipal Area were Freney River, Louisa Creek, South Cape Rivulet, Catamaran River and D’Entrecasteaux River. These have high conservation significance. “Class C” estuaries with moderate conservation significance were Huon River, Esperance River, Cockle Creek and Lune River.

2.1.6 The Huon River Estuary

During 1998-99 extensive studies were undertaken within the estuary by CSIRO and the results were published in the “Huon Estuary Study” by CSIRO Division of Marine Research, 2000. The general conclusions of this report were that:

- the Huon estuary itself is in good condition and has not changed dramatically from its historic baseline – it is however vulnerable to increases in nutrient loads
- various contaminants (trace metals and pesticides) occur within the Port Huon estuarine sediments – a historical legacy from adjoining industrial activities
- algal blooms occur fairly regular within the estuary and have adversely impacted upon aquaculture operations.

The report also listed the major threatening processes for estuarine health around the State which need to be managed to ensure the sustainability of any estuarine system. These are:

- Exploitation of biological resources with unknown consequences for ecosystem structure and function.

- Increased sedimentation resulting from land clearance and urban and rural runoff.
- Increased nutrient loads resulting from sewage effluent and agricultural use of fertilisers.
- Urban runoff.
- Foreshore development and dredging.
- Marine farms.
- Modification to water flow through dams and weirs.
- Acidification of rivers and heavy metal pollution from mines.
- Spread of introduced pest species.
- Long-term climate change.

2.2 Catchment water quality issues

A number of reports have been prepared on the water quality of waterways in the Huon region. The three main sources are:

- “Huon Catchment Healthy Rivers Project – Water Quality Assessment Report” by Steve Gallagher, January 1996
- “Water Quality of Rivers in the Huon Catchment” by Chris Bobbi (DPIF), January 1998
- “Huon Valley Water Quality Report 1996-2000: an aid to catchment management decisions” by Helen Otley, Huon Healthy Rivers Project, March 2001.

The general conclusions from these reports were that:

- water quality is generally excellent in the upper catchments due to the relatively undisturbed nature of these areas (World Heritage Area and State Forest),

- the Huon waterways are characterised by very dilute freshwaters with low concentrations of dissolved solids, low alkalinity and hardness,
- land-based activities in the lower catchments have degraded the water quality in some streams, though the impacts are essentially localised,
- with increased human settlement, the quality of the water in local creeks declined with increases in turbidity, conductivity, ortho-phosphate and *E. coli* levels the most apparent,
- a number of specific subcatchments had particularly poor water quality, such that the water was not entirely suitable for domestic, recreational or agricultural uses.
- the main impacts on water quality are leaking septic systems, unrestricted stock access, vegetation clearance, gravel roads, farm dams (or water extraction), stormwater from urban areas and either the absence of riparian vegetation or the presence of foreign species (eg crack willow).
- low population pressures and limited pollutant discharges mean that, for the overall catchment, there are no serious regional water quality problems.

The more specific conclusions about individual waterways were that:

- the Agnes Rivulet (and more particularly its tributaries) at Cygnet is probably the most degraded waterway in the region with lower parts having high levels of turbidity, conductivity, nutrients and faecal bacteria – more work is required in regard to stock control, septic management and vegetation protection/management (a number of related on-ground rehabilitation projects are currently under way),
- at Verona Sands, Lasts Creek is found to have high turbidity, faecal bacteria and ortho-phosphate levels and the lagoon is severely impacted upon (mainly due to septics and changes to beach morphology) by the surrounding village.
- other watercourses in the Cygnet area (eg Nicholls Rivulet, Garden Island Creek, Kellaways Creek and Gardners Creek) generally have good water quality, though only fair conductivity and *E. coli* results.
- the upper reaches of Mountain River are in excellent condition but water quality steadily decreases closer to the Huon – low conductivity and high *E. coli* results, with the main issues being stock control, septics and riparian vegetation.
- water quality is generally excellent for the Huon River in its lower reaches (ie at Judbury and Glen Huon) – the same applies for the other larger tributaries further upstream (ie the Arve, Picton, Little Denison and Russell Rivers).
- smaller tributaries of the Huon that flow through settled areas (ie Watsons and Dickensons Creeks) generally have high conductivity, ortho-phosphate and *E.coli* results, with particular concerns regarding stock control and septics.
- in the Franklin and Castle Forbes Bay area there are a number of shorter streams passing through forestry and agricultural/residential areas – water quality is generally good, though there are concerns with some *E. coli* and conductivity

results – stock access, riparian vegetation and septics are again the main issues.

- near Geeveston, the Kermantie River and its main tributaries (Rileys Creek and Scotts Rivulet), have high *E. coli* results and Scotts Rivulet has markedly higher conductivity, turbidity and ortho-phosphate levels – the main problems being septics, stock control, gravel roads and the need to revegetate riparian zones.
- Dover Rivulet has only fair to good water quality and, at its mouth, is poorly flushed.
- the Esperance River has excellent water quality that is not significantly effected by existing land uses – similar results have been also obtained for the Lune River.

As stream conditions are determined both by in-stream activities and surrounding land-use activities, waterways act as a good indicator of catchment health. Healthy waterways are indicative of sustainably managed catchments. There are a number of environmental issues relating to the health of waterways in the Huon Valley Municipal Area and these include:

- Erosion and soil loss from streams within agricultural areas and deposition lower in the catchment.
- Effects of discharge from sewage treatment plants and other point source discharges on stream and marine water quality.
- Effects of seepage from the extensive septic tank network in areas of the catchment.
- Effluent problems from small unsewered villages or other smaller groupings of shack sites in the area.
- Minimising effects of intensive agricultural activities and outdated farming practices on stream water quality.
- Protection of groundwater quality.
- Maintenance and enhancement of habitat quality and diversity for aquatic flora and fauna.
- Maintaining viable populations of endangered animal and plant species.
- Maintaining and preserving instream aquatic habitat (large woody debris, native macrophyte beds, river bed substrates etc).
- Maintaining free fish passage for both upstream and downstream migrations.
- Impacts of land clearance and forestry operations on water yield.
- Investigation into the effects of leachate from old tip sites on water quality.
- Erosion through forestry activities (road construction, harvesting etc.) and associated loss of, or stress to, aquatic and riparian habitats.
- Environmental flow requirements and excessive water extraction.
- Willow infestations along many waterways clog existing channels; divert water to new channels with subsequent erosion; replace native riparian flora; and have impacts on water quality.
- Discharges from urban stormwater outlets across the catchment.
- Effects of stock watering on stream bank erosion and faecal contamination of waterways.
- Inputs of fertilisers from agricultural land runoff.

WATER QUALITY: PROTECTED ENVIRONMENTAL VALUES

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)** of the surface waters in each 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 5.2.

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.

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:

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, Huon Valley Council, Derwent Valley Council, the Kingborough Council, the Glenorchy City Council, the Director of Parks and Wildlife, the Wellington Park Trust and the planning authority under the *Marine Farming Planning Act 1995*, had, as a starting point, suggested may be suitable for surface waters of the Huon Valley catchments.

These PEVs were developed into the final PEVs as shown in Section 4 and relate to the attached land tenure map for the region.

We wanted the community to tell us about specific areas of the 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 account of all submissions before coming to a decision on PEVs for these wetlands and waterways.

4 WATER QUALITY : PROTECTED ENVIRONMENTAL VALUES FOR THE HUON VALLEY CATCHMENTS

In 2001-2002 the Board of Environmental Management and Pollution Control in association with the Huon Valley, Kingborough, Glenorchy City and Derwent Valley Councils, the Director of National Parks and Wildlife, the planning authority for marine farming zones under the *Marine Farming Planning Act 1995*, and the Wellington Park Management Trust set Protected Environmental Values (PEVs) for surface waters for catchments in the Huon Valley Municipal Area, the areas of the Huon River catchment within the Kingborough, Glenorchy City and Derwent Valley Municipal Areas and the part of the Davey River catchment that is within the Derwent Valley Municipal Area, as required by the *State Policy on Water Quality Management 1997*.

The public discussion Paper – *Proposed Environmental Management Goals for Tasmanian Surface Waters: Huon Valley Catchments*– was developed by the Huon Valley Council and DPIWE and approved for release to stakeholders and the public in July 2001. This paper explained the Policy and how the environmental values for water quality (PEVs) are identified and used. The discussion paper was sent to 158 stakeholders who were invited to public meetings at Huonville, Cygnet and Geeveston in August 2001. These meetings were advertised in the Public Notices section of The Mercury on Saturday 11/8/01 and Saturday 18/8/01, the Huon Valley News on 8/8/01 and in the Cygnet and Channel Classifieds. The meetings were also advertised as community notices on ABC Radio and Huon FM Radio. 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. The Huonville meeting was attended by 15 people, the Cygnet meeting by 9 people and the Geeveston meeting by 4 people. Three written submissions were received at the meetings and a further 3 were received by mail in the weeks following the meetings.

An extensive list of Community Water Values (CWVs) was compiled from information collected at the meetings and from the written submissions. The only significant change to the PEVs arising from the consultation was the identification of swimming locations on or adjacent to private land. At the public meetings it was considered that the number of swimming spots in this region were too numerous to identify them all, and that it was a more practical approach to identify the areas which were unsuitable for swimming and other primary contact activities. This approach is reflected in changes to the PEVs, where locations not suitable for primary contact activities on or adjacent to private land are listed separately, and a primary contact PEV applied to all other areas with specific locations noted where this information was supplied. The amended PEVs and compiled CWVs were forwarded to all the stakeholders and others who attended the meetings to ensure that their values had been represented satisfactorily. Comment was received from the southern district planner of the Parks and Wildlife Service who noted the use of water by the mining operation at Melaleuca. This use was then added to the PEVs. Community Water Values should be incorporated into the future development of water management and catchment management plans.

PROTECTED ENVIRONMENTAL VALUES FOR THE HUON VALLEY CATCHMENTS

The Board of Environmental Management and Pollution Control in association with the Huon Valley Council, the Derwent Valley Council, the Kingborough Council, the Glenorchy City Council, the Director National Parks and Wildlife, the Wellington Park Trust and the planning authority under the *Marine Farming Planning Act 1995* has finalised the water quality Protected Environmental Values (drawn from the *State Policy on Water Quality Management 1997*) that are suitable for surface waters of the Huon Valley catchments. The Protected Environmental Values for surface waters are shown according to land tenure categories (see attached map).

Remember - the Protected Environmental Values are those values and uses which are currently in evidence.

Table 2: Protected Environmental Values (PEVs) for the Huon Valley Catchments	
Land Tenure	Protected Environmental Values
Surface Waters in Wellington Park	<p>A: Protection of Aquatic Ecosystems</p> <p>(i) Pristine or nearly pristine ecosystems</p> <p>B: Recreational Water Quality & 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>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) in aesthetically pleasing waters, where those activities are permitted under the Wellington Park Management Plan.</p>

Table 2: Protected Environmental Values (PEVs) for the Huon Valley Catchments

Land Tenure	Protected Environmental Values
<p>Surface Waters on Private Land (including forest on private land)</p>	<p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) 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 (Numerous locations (where permitted) including: Oates Bridge at Mountain River; Judds Creek; Weld Eddy; Kellaways Creek at Pelverata; in the Russell River upstream of the junction of the River and Jollystone Creek at the river reserve and also adjacent to the nearby bridge crossing; in the Russell River near (downstream) the bridge crossing on Lorkins Road; in the Russell River at the small islands located downstream of the junction of Toms Creek and the River and upstream of the junction of Peartree Creek and the River (5242825N, 486775E); and the Huon River.) (ii) Secondary contact water quality (iii) Aesthetic water quality <p>C. Raw Water for Drinking Water Supply</p> <ul style="list-style-type: none"> (ii) Subject to coarse screening plus disinfection (Huonville, Franklin, Geeveston, Dover, Cygnet, Mountain River, Judbury, Nicholls Rivulet, Ranelagh, Castle Forbes Bay, Port Huon) <p>D: Agricultural Water Uses</p> <ul style="list-style-type: none"> (i) Irrigation (ii) Stock watering <p>E: Industrial Water Supply – Aquaculture, Commercial Bottling of Spring Water, On-Farm Produce Processing, Produce processing</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 as raw water for drinking water supply subject to coarse screening plus disinfection at the offtake locations for town water supplies at Huonville, Franklin, Geeveston, Dover, Cygnet, Mountain River, Judbury, Nicholls Rivulet, Ranelagh, Castle Forbes Bay and Port Huon; 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 numerous locations (where permitted) including Oates Bridge at Mountain River, Judds Creek, Weld Eddy, Kellaways Creek at Pelverata, in the Russell River upstream of the junction of the River and Jollystone Creek at the river reserve and also adjacent to the nearby bridge crossing, in the Russell River near (downstream) the bridge crossing on Lorkins Road, in the Russell River at the small islands located downstream of the junction of Toms Creek and the River and upstream of the junction of Peartree Creek and the River (5242825N, 486775E), and the Huon River; 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 aquaculture, commercial bottling of spring water, on-farm produce processing, and produce processing. For private land within the Ida Bay karst system, water quality management should also have particular regard to the values associated with that system.</p>

Table 2: Protected Environmental Values (PEVs) for the Huon Valley Catchments

Land Tenure	Protected Environmental Values
<p>Supplices Creek, Kermandie River (below Geeveston), Bakers Creek, Lasts Creek, Sediment Creek, Prices Creek, Dover Rivulet, Agnes Rivulet and the lower part of Garden Island Creek</p>	<p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) 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>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; and which will allow people to safely engage in recreation activities such as paddling or fishing in aesthetically pleasing waters.</p>
<p>Surface waters in Forest Reserves with their headwaters within the Forest Reserve.</p>	<p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (i) Pristine or nearly pristine ecosystems <ul style="list-style-type: none"> having regard for the management objectives for forest reserves outlined in Schedule 3 of the <i>Forestry Act, 1920</i>. <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (where permitted) (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 (where permitted), paddling or fishing in aesthetically pleasing waters.</p>

Table 2: Protected Environmental Values (PEVs) for the Huon Valley Catchments

Land Tenure	Protected Environmental Values
<p>Surface Waters flowing through Forest Reserves from State Forest, private land or unallocated crown land.</p>	<p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) 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 (where permitted) (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 (where permitted), paddling or fishing in aesthetically pleasing waters.</p>
<p>Surface Waters in National Parks, State Reserves, Nature Reserves or Historic Sites with their headwaters within those National Parks, State Reserves, Nature Reserves or Historic Sites</p>	<p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (i) Pristine or nearly pristine ecosystems <p>having regard for (i) the management objectives for national parks, state reserves, nature reserves and historic sites outlined in Schedule 1 of the <i>National Parks and Reserves Management Act, 2002</i>, and (ii) the management objectives of the World Heritage Area Management Plan for surface waters within Tasmania’s Wilderness World Heritage Area.</p> <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (where permitted) (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 ecosystem; and which will allow people to safely engage in recreation activities such as swimming (where permitted), paddling or fishing where permitted, in aesthetically pleasing waters.</p>

Table 2: Protected Environmental Values (PEVs) for the Huon Valley Catchments

Land Tenure	Protected Environmental Values
<p>Surface Waters in Private Land vested in the Aboriginal Land Council of Tasmania and surrounded by the South-West National Park</p>	<p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (i) Pristine or nearly pristine ecosystems <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (where permitted) (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 ecosystem; and which will allow people to safely engage in recreation activities such as swimming (where permitted), paddling or fishing, in aesthetically pleasing waters.</p>
<p>Waters in Bathurst Harbour, Bathurst Channel and Port Davey (Southwest National Park)</p>	<p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (i) Pristine or nearly pristine ecosystems <p>having regard for (i) the management objectives for national parks, state reserves, nature reserves and historic sites outlined Schedule 1 of the <i>National Parks and Reserves Management Act, 2002</i>, and (ii) the management objectives of the World Heritage Area Management Plan for surface waters within Tasmania’s Wilderness World Heritage Area</p> <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (where permitted) (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 ecosystem; and which will allow people to safely engage in recreation activities such as swimming and diving (where permitted), sea-kayaking, paddling or fishing in aesthetically pleasing waters.</p>

Table 2: Protected Environmental Values (PEVs) for the Huon Valley Catchments

Land Tenure	Protected Environmental Values
<p>Surface Waters flowing through National Parks, State Reserves, Nature Reserves and Historic Sites from private land, state forests or un-allocated crown land.</p>	<p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) Modified (not pristine) ecosystem <ul style="list-style-type: none"> (a) from which edible fish, crustacea and shellfish are harvested <p>having regard for the management objectives for national parks, state reserves, nature reserves and historic sites outlined in Schedule 1 of the <i>National Parks and Reserves Management Act, 2002</i>.</p> <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (where permitted) (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 ecosystem from which edible fish, crustacea and shellfish may be harvested; and which will allow people to safely engage in recreation activities such as swimming (where permitted), paddling or fishing where permitted, in aesthetically pleasing waters. For national parks, state reserves and nature reserves within the Ida Bay karst system, water quality management should also have particular regard to the values associated with that system.</p>
<p>Surface Waters in Nature Recreation Areas, Conservation Areas, Game Reserves, or Regional Reserves with their headwaters in the Nature Recreation Areas, Conservation Areas, Game Reserves or Regional Reserves, or flowing from a directly adjacent National Park.</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 nature recreation areas, conservation areas, game reserves and regional reserves outlined in Schedule 1 of the <i>National Parks and Reserves Management Act, 2002</i>.</p> <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (where permitted) (ii) Secondary contact water quality (iii) Aesthetic water quality <p>E: Industrial Water Supply (Rallinga Mine at Melaleuca)</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 (where permitted), paddling or fishing in aesthetically pleasing waters; and which is suitable for mining operations at Melaleuca.</p>

Table 2: Protected Environmental Values (PEVs) for the Huon Valley Catchments

Land Tenure	Protected Environmental Values
<p>Surface Waters flowing through Nature Recreation Areas, Conservation Areas, Game Reserves or Regional Reserves from private land, state forests or un-allocated crown</p>	<p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) Modified (not pristine) ecosystems <ul style="list-style-type: none"> (a) from which edible fish, crustacea and shellfish are harvested <p>having regard for the management objectives for nature recreation areas, conservation areas, game reserves and regional reserves outlined in Schedule 1 of the <i>National Parks and Reserves Management Act, 2002</i>.</p> <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (where permitted) (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 ecosystem from which edible fish, crustacea and shellfish may be harvested; and which will allow people to safely engage in recreation activities such as swimming (where permitted), paddling or fishing in aesthetically pleasing waters. For nature recreation areas, conservation areas, game reserves or regional reserves within the Ida Bay karst system, water quality management should also have particular regard to the values associated with that system</p>
<p>Surface Waters on Hydro Electric Corporation Land</p>	<p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) 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 (where permitted) (ii) Secondary contact water quality (iii) Aesthetic water quality <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 modified ecosystem from which edible fish may be harvested; which will allow people to safely engage in recreation activities such as swimming (where permitted), paddling or fishing in aesthetically pleasing waters; and which is also suitable for hydro-electric power generation.</p>

Table 2: Protected Environmental Values (PEVs) for the Huon Valley Catchments

Land Tenure	Protected Environmental Values
<p>Surface waters flowing through Public Reserves (under the <i>Crown Lands Act 1976</i>) 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) 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 (where permitted) (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; and which will allow people to safely engage in recreation activities such as swimming (where permitted), paddling or fishing in aesthetically pleasing waters. For public reserves within the Ida Bay 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 in the Reserves, or that have their headwaters in the directly adjacent Wellington Park.</p>	<p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (i) Pristine or nearly pristine ecosystems <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (where permitted) (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 (where permitted), paddling or fishing in aesthetically pleasing waters.</p>

Table 2: Protected Environmental Values (PEVs) for the Huon Valley Catchments

Land Tenure	Protected Environmental Values
<p>Surface waters on Unallocated Crown Land</p>	<p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) 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 (where permitted) (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 modified (not pristine) ecosystem from which edible fish are harvested; and which will allow people to safely engage in recreation activities such as swimming (where permitted), paddling or fishing in aesthetically pleasing waters. For unallocated crown land within the Ida Bay karst system, water quality management should also have particular regard to the values associated with that system</p>
<p>Surface Waters within State Forests (managed under the <i>Forestry Act 1920</i>)</p>	<p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) Modified (not pristine) ecosystems <ul style="list-style-type: none"> (a) from which edible fish are harvested <p style="padding-left: 40px;">having regard for Forestry Tasmania’s Management Decision Classification System</p> <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (where permitted) (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 modified, but healthy aquatic ecosystems from which edible fish may be harvested; and which will allow people to safely engage in recreation activities such as swimming (where permitted), paddling and fishing in aesthetically pleasing waters. For state forest within the Ida Bay karst system, water quality management should also have particular regard to the values associated with that system</p>

Table 2: Protected Environmental Values (PEVs) for the Huon Valley Catchments

Land Tenure	Protected Environmental Values
<p>Estuarine Surface Waters outside of the South-West National Park and Southport Lagoon Conservation Area.</p>	<p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> (ii) Modified (not pristine) ecosystems <ul style="list-style-type: none"> (a) from which edible fish, shellfish and crustacea are harvested <p>B: Recreational Water Quality & Aesthetics</p> <ul style="list-style-type: none"> (i) Primary contact water quality (where permitted) (ii) Secondary contact water quality (iii) Aesthetic water quality <p>E: Industrial Water Supply (Aquaculture in Marine Farming Zones)</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 (not pristine) ecosystem from which edible fish, shellfish and crustacea are harvested; which will allow people to safely engage in recreation activities such as swimming (where permitted), paddling or fishing in aesthetically pleasing waters; and which is suitable for the farming of fish and shellfish in marine farming zones. For estuarine waters within the Ida Bay karst system, water quality management should also have particular regard to the values associated with that system</p>

5 WATER QUANTITY VALUES

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 that 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.

5.2 Water quantity values

Five broad categories of water quantity values have been identified, and as with the water quality Protected Environmental Values, 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 unnatural 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 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.

6 Community Water Values for the Huon Valley Catchments

Table 1: Community Water Values for Huon Valley Catchments Collected at a Public Meeting Held in the Huonville Council Chambers on 20/8/01, and from Written Submissions

Water Value Categories	Specific Water Values
1. Ecosystem values	<ul style="list-style-type: none"> • Platypus in most waterways including Judds Creek • Intrinsic value of waterways • Endangered species such as the Australian grayling and the spotted handfish • Riparian vegetation as habitat for wildlife • Waterways are habitat for wildlife and the source of water for all wildlife • Biodiversity including invertebrates and bacteria • Healthy ecosystems support community values and uses • Amphibians • Swans • Value ecosystems free of pollutants • Waterways are a source of nutrients for the sea • Value to animals that visit rivers and streams e.g. birds, snakes and mammals • Intrinsic value of the natural flow regime • Maintain a resilient ecosystem that can buffer changes • Aquatic plants • Streams that are free of trout • Streams free of any introduced pest – both fauna and flora (crack willow, cumbungi, alligator weed) • Streams free of pathogens and toxins • Spring systems and underground waterflows • Natural levels of suspended solids and dissolved chemicals • Ionised oxygen released from waterfalls • Water of sufficient quality and quantity to maintain the travel and spawning of native fish up the river.
2. Physical Landscape Values	<ul style="list-style-type: none"> • Accessibility of rivers in the region • Foreshore stability • Absence of weeds • Presence of riparian vegetation • Presence of ripraps and pools • Quantity of flow • Waterfalls and rapids • Fluvial geomorphology, low v.s. high energy rivers • Presence of beaches • Springwaters • Caves • Deposition on wetlands, sandspits and alluvial plains • Wetlands • Erosion – physical experience of the landscape • Soil sponge effect, recharge areas e.g. button grass plains • Old growth forests • Habitat • Large woody debris in small and large waterways

<p>3. Consumptive and Non-Consumptive Values</p>	<ul style="list-style-type: none"> • Diversion of water for HEC power generation • Small private hydro-power generators including one on the Russell River located near the bridge downstream of Pimple Creek • Rainbow trout fish farm on the Russell River located near the bridge downstream of Pimple Creek • Uptake by forest plantations • Irrigation • Proposed Southwood Chipmill • Aquaculture • Bathing of commercially-grown salmon in freshwater to remove parasites • Freshwater aquaculture on the Denison Rivers (also Tourism – people pay to fish) • On-farm processing of mushrooms and other produce • Stock-watering • Town water supplies • Private water supplies • Homestead use • Non-human water users • Aircraft landings • Fire-fighting • Dust suppression at quarries • Machinery cleaning • Dairying • Food processors • Sand (& other raw materials) washing and grading • Alluvial mining • Engine cooling – boating
<p>4. Recreational Values</p>	<ul style="list-style-type: none"> • Maintain trout fishery in some streams • Swimming at numerous locations including: Oates Bridge at Mountain River; Juds Creek; Weld Eddy; Kellaways Creek at Pelterata; in the Russell River upstream of the junction of the River and Jollystone Creek at the river reserve and also adjacent to the nearby bridge crossing; in the Russell River near (downstream) the bridge crossing on Lorkins Road; in the Russell River at the small islands located downstream of the junction of Toms Creek and the River and upstream of the junction of Peartree Creek and the River (5242825N, 486775E); and the Huon River. Locations listed as being <u>unsuitable</u> for swimming were: Supplices Creek, Kermandie (below Geeveston), Nicholls Rivulet, Bakers Creek, Lasts Creek, Sediment Creek, Prices Creek, Dover Rivulet, Agnes Rivulet, and the lower part of Garden Island Creek • Lilo-floating • Tractor tubing • Fishing • Rowing • Rafting • Sailing • Canoeing • Kayaking • Scuba-diving • Water-skiing • Jet-boating • Cruising • Relaxation – Recreational health in a healthy environment • Caving

	<ul style="list-style-type: none"> • Wind-surfing • Swinging-off ropes into water • Photography • Picnics • Walks • Experiencing a quality/healthy river • Pedal boating • Bird watching • Shell fish gathering • Studying river • Camping • Tourism e.g. Hastings
5. Aesthetic Landscape Values	<ul style="list-style-type: none"> • River landscape is an important part of the identity of the Huon region • Views • Expanses
6.1 Other values	<ul style="list-style-type: none"> • Historical and Aboriginal cultural values e.g. jetties and middens • Educational values • Transport route • Tourism • Health
6.2 Issues/concerns	<ul style="list-style-type: none"> • Effect of flow regulation on natural systems • Need to anticipate changes as a result of long term climate change • Forest plantations reducing water table and affecting micro-precipitation • Proposed Southwood Chipmill will use 5 million litres per day • Cumulative effect of water consumptive uses • Discharges from industries including food processors • Leachate from settling ponds • Stock access and leaky septic are a problem • Encroachment of algae in the Russell River • Erosion on a property at the junction of the Russell and Huon Rivers; however funding has been obtained through the NHT to prepare a management plan for this area.

Table 2: Community Water Values for Huon Valley Catchments Collected at a Public Meeting Held in the Cygnet Town Hall Supper Room on 21/8/01, and from Written Submissions

Water Value Categories	7 Specific Water Values
1. Ecosystem Values	<ul style="list-style-type: none"> • Protection of ecological communities • Water quality and water flow • Wetlands, including Woodstock (swans) • Protection of threatened species • Habitat conservation for all species e.g. platypus and frog species (not just threatened species) • Protection and rehabilitation of riparian vegetation • Sea-bird breeding sites e.g. Arch Island • Burtons Reserve (near Cygnet) • Maintain natural flow regimes • Biodiversity of native aquatic fauna and flora
2. Physical Landscape Values	<ul style="list-style-type: none"> • Natural flow • Natural and cultural landscape • Wetlands • Small creeks free of weeds
3. Consumptive and Non-Consumptive Values	<ul style="list-style-type: none"> • Aquaculture • Irrigation e.g. Fruit industries • Town water supply • Homestead • Dover Fish Processor (Stringers Creek) • Plantation forestry • Water to maintain state forest and private forests • Dairying • Tourism - Snowy Range Fish Farm, Visitor Centres (e.g. Tahune), Boating, Hastings Caves
4. Recreational Values	<ul style="list-style-type: none"> • Swimming in the big bend of Kellaways Creek at Pilverata • Swimming in Nicholls Rivulet downstream of the Deepings • Swimming at beaches on the estuary – Seven Inch Beach on Wattle Grove Road, and Kayes Beach at Petchey’s • Sailing • Fishing • Scuba diving • Snorkelling • Boating • Kayaking • Water-Skiing • Wind surfing • Walking along foreshore • Timber-scavenging from waterways • Wading • White-water rafting • Photography • Gill-netting • Bird-watching and naturalists pursuits • Collecting shellfish • Camping and bushwalking

	<ul style="list-style-type: none"> • Geology/fossicking/fossil hunting
5. Aesthetic Landscape Values	<ul style="list-style-type: none"> • Litter-free areas • Scenic values • Appropriate development along waterways • Clean water – visible water quality • Shoals in the middle and lower reaches of the Huon River • Underwater scenery • Vegetation along waterways – riparian and coastal • Boat ramps and jetties • Fish farms • Tourism
Other values	<ul style="list-style-type: none"> • Tourism
Issues/concerns	<ul style="list-style-type: none"> • Concern about pollution from agriculture, marine farming, urban areas, dairying, septic tanks, leachate from municipal tips and slipways • Concern that there is the choice of parameters to protect ecosystems is insufficient and should include biological surveys of indicator species of aquatic plants and animals, ‘problem’ species and persistent chemicals such as organochlorines. • Aspiration that <u>all</u> waterways in the catchment be suitable for swimming and other primary contact recreational activities • Degredation of streams by cattle • Concern about the use of culverts that restrict fish migration • Pests e.g. Pfisteria • Weeds e.g. crack willow, blackberries, fuschias, cumbungi • Restriction of flows by dams, weirs etc • Extraction of 5 ML/day by proposed Southwood development • Gill-netting • Concern about aesthetics of fish farms • Erosion at Verona Sand, Drip Beach (coastal process) • Degredation of sea-grass beds • Un-natural erosion upstream increasing turbidity • Siltation • Little creeks clogged up by inappropriate practices and exotic species • Reporting by local and State governments, and government agencies on the achievement of objectives of the State Policy on Water Quality Management 1997. • Protection of riparian vegetation to Forest Practices Code standards on private land riparian zones as well as state forest. • Improve riparian zones on rivers and streams in rural, semi-rural and urban areas e.g. replacement of exotic species (where these don’t have identified cultural values) with native species; increase width of riparian vegetation in previously degraded areas (at least to Forest Practices Code standard). • Replacement of willows with native vegetation in riparian zones. • Concern about the continuation of water quality management problems in the Huon Valley during the last 10 years despite several community consultative processes at the commonwealth, state and local government level • Construction of farm dams so that they do not interrupt environmental flows during dry seasons. • The matter of the Cygnet water supply being inadequate during dry summers can be addressed by approaching the problem at the ‘usage’ end, rather than increasing the capacity of water storages or diverting more environmental flows. • Consider that all waterways and wetlands (including those on private land and state forest) in the Huon Valley should have the objective of “pristine” or “near pristine” water quality.

	<ul style="list-style-type: none">• Parameters in the Forest Practices Code for water quality are insufficient to monitor ecological health.• Impact of plantation forestry on hydrology should be incorporated into water quantity management.• Mechanisms to control wetland reclamation should be implemented at the municipal level.
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Table 3: Community Water Values for Huon Valley Catchments Collected at a Public Meeting Held in the meeting room of the Forest and Heritage Centre at Geeveston on 22/8/01, and from Written Submissions

Water Value Categories	Specific Water Values
1. Ecosystem Values	<ul style="list-style-type: none"> • Reed/Tidal mudflats and wetlands at Lune River (at the ‘Duckhole’), the northern tip of Hastings Bay and Ida Bay are a refuge and feeding/breeding area for waterbirds including herons, cormorants, ducks and swans. • Biodiversity of fish species • Value native species • Oysters and mussels that can be harvested • Value the low impact of the small population at Lune river • Right of the ecosystem to exist in its own right – intrinsic value • Vegetation to provide shade and habitat for fishes • Enjoy ecosystem the way it is • Freshwater rock lobsters • Platypus
2. Physical Landscape Values	<ul style="list-style-type: none"> • Diversity of river course including mudflats, small waterfalls, views of wildlife reserves and mountains • Lune River traverses nearly all Tasmanian vegetation types including montane, rain forest, wet sclerophyll, mixed forest, moorland, coastal vegetation and heathland. • Either side of the Lune valley is bound by soluble rocks, dolomite on the northside (Hastings Caves) and limestone on the southside (Exit Cave) • Warm and cold springs in the Lune River valley.
3. Consumptive and Non-Consumptive Values	<ul style="list-style-type: none"> • Aquaculture • Irrigation • Domestic use/riparian use on hobby farms e.g. vegetable gardens • Stock-watering • Commercial bottling of spring water
4. Recreational Values	<ul style="list-style-type: none"> • Harvesting of oysters and other shellfish • Fishing (e.g. trout, bream and flathead) • Kayaking • Canoeing • Swimming • Sailing • Water skiing • Picnicking, family activities (& singles!) • Informal annual regatta at Pebbly Beach • Walking • Sitting on riverside • Boating, including jet-boating • Rubber rafting • White-water rafting • Bird-watching • Driftwood scavenging for sculpture • Prospecting • River travel as a peaceful way of exploring the Lune River area.
5. Aesthetic Landscape Values	<ul style="list-style-type: none"> • River flats and river foreshore free of houses as much as possible • Rivers and bays feature in the aesthetic appeal of Lune river to residents

	<ul style="list-style-type: none"> • Tranquil setting • Mountain views
Other values	<ul style="list-style-type: none"> • Value the low population and the way things are • Lune River is a safe area because of low population • Learning about what is in the water systems • Quietness of tidal river system
Issues/concerns	<ul style="list-style-type: none"> • Concern about the reduction in flow due to riparian/domestic use of water by hobby farms in areas such as Mountain River • Concern about the impact of introduced species such as seastar, trout and salmon • Concern about impact of sewerage waste from the Hastings Visitor Centre and tourist accommodation in regard to public health and aquatic health • Non-functioning septic systems • Risk from Ross River virus associated with stagnant waters • Better planning for foreshores • Provision of fish ladders – access for water life • Increased sediment into Lune River arising from clear-felling of forests • Minimum stream-side buffer widths (Forest Practices Code 2000) should be significantly increased to reduce stream turbidity arising from run-off from cleared slopes • Private landowners should be actively encouraged to preserve riparian vegetation and stream habitat • Need a comprehensive study of the plant/animal communities in the Lune River ecosystem • Use of 1080 and herbicides – animals seeking water while dying from 1080 poison may increase the levels of bacteria in waterways. • Impact of fish escapes, hormones, antibiotics and nutrient concentrations from fish farms. • Recreational values may be impacted by expansion of commercial shell-fish farming • Increased motorised water traffic would impinge on peacefulness of Lune River for residents and wildlife • Concern about use of fertilisers and pesticides for agriculture

