



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

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

**GLAMORGAN-SPRING BAY  
CATCHMENTS**

**October 2005**



GLAMORGAN • SPRING BAY  
Council



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

### **GLAMORGAN-SPRING BAY COAST CATCHMENTS**

Between 2002 and 2004 Protected Environmental Values (PEVS) were set for the Glamorgan-Spring Bay 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 Glamorgan-Spring Bay catchments.

The paper was prepared by the Department of Primary Industries, Water and Environment, the Tasmanian Parks and Wildlife Service and the Glamorgan-Spring Bay and Northern Midlands Councils.

The paper has been modified into its current form to reflect completion of the process for the Glamorgan-Spring Bay Catchments. It is considered, however, that much of the information included in the original paper should remain as a record of the PEV setting process.

Words and expressions used in this final 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 final paper is divided into six main sections:

- The first part describes water reforms in general.
- The second part provides a brief description of the Glamorgan-Spring Bay catchments.
- Part three discusses the *State Policy on Water Quality Management 1997*.
- The final Protected Environmental Values for the Glamorgan-Spring Bay catchments are shown in part four.
- Water quantity values are discussed in part five, and
- Part six lists the community water values for the 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 it 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 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 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 has introduced 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 using environmental best practice.
- Facilitate and promote integrated catchment management.
- Focusing on overall water quality management strategies by identifying those water quality values and uses that are considered worthy of protection.

The first purpose of this paper is to explain how water quality values were identified and will be used. Local communities played a key role in identifying values for their areas.

(b) water quantity management

The recent introduction of the *Water Management Act 1999*, which replaced 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 second purpose of this paper is to summarise stakeholder and public views on what is valued in 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 catchment stakeholders were asked.

- Which of your activities rely upon maintaining or enhancing the flow of water into catchment waterways?
- Are there certain places on your rivers that you traditionally use for swimming or other recreational activities?
- Do you fish in them?
- Are there specific features of your rivers and streams that are recognized scenic attractions, such as rapids or waterfalls?
- Do you know of rare or endangered animals or plants in, or adjacent to, specific areas of your rivers or streams?

- Do you use water for livestock watering?
- Does your river supply the local town water supply?
- Do you draw water from it to irrigate your farm?
- How often do you need to draw water from it, and when?

Answers to these questions from catchment stakeholders and the public helped to develop the community water values for regional wetlands and waterways (Tables 3-7). 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. As such, the public submissions providing local knowledge were critical to the process.

### **1.4 How was the input used?**

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

Information from community stakeholders, catchment groups and the public on community water values will be used 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 Catchment Description

### 2.1 Overview

This paper covers the surface freshwaters and estuarine waters of the Glamorgan-Spring Bay Municipal Area, and part of the Northern Midlands Municipal Area (refer to the map available from the DPIWE website).

The largest catchments in this region are the Apsley, Swan, Merideth, Stoney, Buxton, Lisdillon, Swanport, Ravensdale Rivulet, Spring and Prosser (see Table 1). In addition there are numerous smaller creeks and streams in the region which exit to the coast. Some streams and creeks in the region are intermittent or ephemeral, drying up in summer and periods of drought. Other surface freshwaters include small lakes or inland lagoons. This paper also covers estuaries and semi-enclosed water bodies such as Moulting Lagoon, Lisdillon Lagoon, Freshwater Lagoon, Hazards Lagoon and Little Swanport.

The Glamorgan-Spring Bay region includes areas of outstanding environmental, landscape, historic, social, commercial, and recreational values, many of which depend directly or indirectly on water.

The area of the Glamorgan-Spring Bay municipal area in the Glamorgan-Spring Bay region lies between the eastern Tiers and the Tasman sea and includes minor coastal streams and rivers flowing into Great Oyster Bay and Moulting lagoon, and on Maria Island and Schouten Island.

**Table 1. Major Catchments in the Glamorgan-Spring Bay<sup>1</sup>**

Catchment	Area (km <sup>2</sup> )
Apsley	231.0
Buxton	59.5
Lisdillon	47.9
Merideth	96.7
Prosser	686.9
Ravensdale Rivulet	71.8
Spring	90.2
Swan	659.4
Swanport	605.8*

**\* The upper part of the Swanport catchment is within the Southern Midlands Municipal Area, and is covered in a separate paper.**

While the size and flow of waterbodies in the Glamorgan-Spring Bay region is small compared with other regions of Tasmania, they are critically important in sustaining internationally significant wetlands, agriculture, marine farms and recreational activities.

### 2.2 Climate

The region has a maritime-influenced cool temperate climate. The average maximum temperature at Swansea and Orford ranges from from 22 C in January and February, to 13°C in July.<sup>2</sup> At Bicheno the average maximum temperature in January and February is 21°C, and 14°C in June and July.

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<sup>1</sup> Australian Coastal Atlas: [www.atlas.tas.gov.au](http://www.atlas.tas.gov.au)

<sup>2</sup> Bureau Of Meteorology website:  
[Http://www.bom.com.au/climate/averages/tables](http://www.bom.com.au/climate/averages/tables)

The Swan/Apsley catchment is centred at 42 degrees south in the rain-shadow of the State's prevailing westerly winds. It has a dry temperate climate with highly variable rainfall between years. The eastern coastal areas have low rainfall increasing to more consistent winter rainfalls in the higher elevation western areas.<sup>3</sup>

The prevailing winds are generally from the northwest from October to March, and from the northeast from April to September.<sup>4</sup>

Specific locations within the region will have lower and higher average annual rainfalls. For example the average annual rainfall at Bicheno is 685 mm, with the minimum occurring in September (44.4 mm) and the maximum in December (72.3 mm); the mean annual rainfall at Swansea is 599 mm with the minimum average rainfall occurring in September (40.7 mm) and the maximum in December (61.9 mm) and the mean annual rainfall at Orford is 681 mm with the minimum average rainfall occurring in February (46.2 mm) and the maximum in December (67 mm).<sup>5</sup>

### 2.3 Geology

The predominant geological classes throughout the Glamorgan-Spring Bay region are granite and dolerite.<sup>6</sup> In the

catchments of the eastern tiers Jurassic dolerite dominates. Sedimentary intrusions occur along the low lying areas especially around estuaries such as Little Swanport, Spring Bay, Prosser and Moulting Lagoon. Maria Island also has dolerite and sedimentary rocks.

The Freycinet peninsular to Bicheno is dominated by Granitic rock with some intrusions of sedimentary and dolerite rock. The Denison catchment north of Bicheno is dominated by Carbonaceous rock.

### 2.4 Flora

A major component of the land in the Glamorgan-Spring Bay municipal area is private property and much of this land has been cleared for agriculture, and townships but large areas have not been cleared.

The eastern tiers are predominantly covered by *E. Globulus*, *E. Pulchella* and *E. Viminalis* forest or *E. Pulchella* grassy woodland. There are also areas of *E. Delegatensus* and *Obliqua* forests on the western side of the tiers and in the forest south of Orford. North of Buckland also has areas of *E. amygdalina* forests.

The Freycinet Peninsular is covered with a mixture of *E. amygdalina* forest and woodland, coastal heath, and *E. obliqua*, *E. sieberi*, *E. tenuiramis*, *Allocasuarina verticillata* forests.

Maria Island mainly has *E. obliqua* forest with some areas of *E. globulus*, *E. viminalis*, *E. pulchella* and *E. deligatensus* forests and some alpine heath.<sup>7</sup>

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<sup>3</sup> 2002. Swan-Apsley Catchment Management Plan – Draft March 2002. Glamorgan Spring Bay Landcare Management Committee.

<sup>4</sup> 1995. Freycinet National Park Management Plan, Parks and Wildlife Service.

<sup>5</sup> Bureau Of Meteorology website:  
[Http://www.bom.com.au/climate/averages/tables](http://www.bom.com.au/climate/averages/tables)

<sup>6</sup> Edgar, G. J., Barrett, N. S. and D. J. Graddon. 1998. A Classification of Tasmanian Estuaries and Assessment of their Conservation Significance.

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Report to Environment Australia from Parks and Wildlife Service, Hobart.

<sup>7</sup> Tas veg 2000. [WWW.gisparks.tas.gov.au](http://www.gisparks.tas.gov.au)

## 2.5 Fauna

The region is home to numerous animal species including mammals, birds, reptiles, amphibians, fish and invertebrates. Mammals include antechinus, bandicoots, bats, bettongs, deer, dunnarts, echidnas, hares, kangaroos, native rats, pademelons, possums, potoroos, quolls, rabbits, seals, Tasmanian devils, wallabies and wombats. Reptiles include skinks, mountain dragons and snakes. Nearly all of the ten frog species occurring in Tasmania are found in the region.

The following freshwater fish are found within Glamorgan Spring Bay: *Anguilla australis* (short-finned eel), *Galaxias fontanus* (swan galaxias), *Galaxias truttaceus* (spotted galaxias), *Galaxias maculatus* (jollytail), *Prototroctes maraena* (australian grayling), *Pseudaphritis urvillii* (sandy, freshwater flathead), *Salmo trutta* (brown trout), and *Geotria australis* (pouched lamprey). Invertebrates include sea-stars, crustacea, echinoderms, native snails and insects.

Threatened fauna in the region which are listed as either endangered, vulnerable or rare are: the grey goshawk, wedge-tailed eagle, shy albatross, wandering albatross, black-browed albatross, swift parrot, fairy prion southern sub-species, fairy tern, New Holland mouse, swan galaxias, ptunarra brown butterfly, blue petrel, great crested grebe, little tern, Australian grayling, green and gold frog, broad-toothed stag beetle, hooded plover, eastern curlew, fairy tern, little tern, thylacine, and the Forty-spotted pardalote.<sup>8</sup>

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<sup>8</sup> GT SPOT

## 2.6 Wetlands

There are a number of estuaries and lagoons with accompanying mudflats and saltmarshes in the Glamorgan-Spring Bay region. Moulting Lagoon Game Reserve and Apsley Marshes are recognised as internationally significant under the Convention on Wetlands (Ramsar Convention).

Moulting Lagoon contains both shallow and deep water and is surrounded by periodically exposed mudflats and saltmarsh. The western shore has been largely cleared and is used for livestock grazing while the eastern shore is relatively undisturbed and is covered with native vegetation. A continuous belt of *Sarcocornia quinqueflora* backed by *Juncus kraussii* gives way to either Melaleuca, Acacia or small stands of Callitris in wet areas, with scattered Allocasuarina, Banksia and Acacia on the few rocky outcrops. The only human activities in the site are nature conservation, small-scale recreational fishing, and hunting (see below). Moulting Lagoon is an important breeding area for *Cygnus atratus* and an important staging area for other Tasmanian water birds, with particularly large summer concentrations of *Anas castanea*, *Calidris acuminata*, *Tadorna tadornoides* and *Tringa nebularia*. There are seasonal variations in bird numbers, depending on rainfall.

Apsley Marshes is an area of estuarine waters and coastal freshwater marsh and swamp at the mouth of the Apsley River, which drains a catchment of 155km<sup>2</sup>. The site is one of the more floristically rich areas in Tasmania, with Melaleuca dominating the surrounding woody vegetation. Human activities include grazing of livestock, birdwatching and duck hunting (between 30 and 50 hunters use the area

during the open season). Part of the area is important for up to 1,000 pairs of nesting *Cygnus atratus*. The marsh contains three plant species considered to be at risk in Tasmania.<sup>9</sup>

Wetlands of national significance include Freshwater Lagoon, Maria Island Marine Reserve, Hardings Falls Forest Reserve, Earlham Lagoon and an unnamed wetland 9km south of Bicheno.

Bryans Lagoon, Charlie Dilgers Hole, Hazards Lagoon, Little Punchbowl, Old Mines Lagoon, Turners Lagoon and Yorks Lagoon are listed as wetlands of state significance.<sup>10</sup>

Fourteen estuaries in the region (Denison, Saltwater Lagoon, Freshwater Lagoon, Bryans Lagoon, Moulting Lagoon, Merideth, Stoney, Buxton, Lisdillon, Little Swanport, Grindstone, Spring Bay, Prosser and Earlham Lagoon) were included in a study classifying and assessing the conservation significance of Tasmanian estuaries using ecological and physical attributes, population and land use.<sup>11</sup>

Eight estuaries in the Glamorgan-Spring Bay region were classified as barred, low salinity estuaries whilst the Prosser inlet was classified as a small open estuaries, two inlets were classified as marine inlets and bays being Little

Swanport and Spring Bay and two have been classified as hypersaline lagoons being Grindstone and Earlham Lagoon.

Bryans Lagoon was assigned critical conservation significance (Class A). Freshwater and Moulting Lagoon were assigned high conservation significance (Class B), Saltwater, Stoney, Buxton, Lisdillon, Little Swanport, Grindstone and Earlham Lagoons were assessed as moderate conservation significance (Class C), and Denison, Spring Bay and Prosser were assessed as low conservation significance (Class D).

These classes were primarily based on the population densities in the catchment areas (10 – 100 people per km<sup>2</sup>). This study did not include an assessment of the significance of the birdlife or flora inhabiting these estuaries. Therefore the conclusions regarding conservation significance primarily reflected the degree of human impact.

## 2.7 Water Uses

Reticulated water for towns in the Glamorgan-Spring Bay municipal area is supplied by Glamorgan-Spring Bay Council.

Bicheno's water supply is sourced from the Apsley River whilst Triabunna's is sourced from Bradys and McClaines Creek. Swansea's water supply is sourced from the Swan River, Coles Bay's is sourced from a dam that is supplied by a tributary of Saltwater Creek and also dams at the Old Tin Mines and Orford's water is sourced from a dam on the Prosser River.

Water is used for a variety of recreation activities such as being integral to many birdwatching and bushwalking activities. Water in the region is used directly for a number of primary contact recreational activities such as swimming

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<sup>9</sup> A Directory of Wetlands of International Importance (Ramsar, 1993), 4th ed. Volume II: Asia and Oceania Compiled by Tim Jones (WWW.Ramsar.org)

<sup>10</sup> A Wetlands Strategy for Tasmania: Draft Discussion Paper. DPIWE 2000.

<sup>11</sup> 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 attributes, population and land use. Report to Environment Australia from Parks and Wildlife Service. Hobart.

and windsurfing, and secondary contact recreational activities such as boating and fishing.

Water supports the agricultural activities of the region. Grazing has traditionally been the major agricultural activity in the region. A move toward intensive cropping has occurred. Irrigated crops include vineyards and walnuts.

The sheltered, shallow areas of the marine inlet at Little Swanport, Lisdillon Lagoon, Pelican Bay and the Swan River are used for the farming of shellfish. A Marine Farming Development Plan is in place for Great Oyster Bay and Mercury Passage. Marine farming of shellfish requires high quality water to prevent impacts from pathogenic bacteria, viruses, and phytoplankton blooms.

## **2.8 Water Quality Issues**

Water quality is impacted by a variety of human activities in the region. Specific issues include vegetation clearance, soil erosion, stock access to streams, fertiliser run-off, septic-tank leachate, and urban pollution from sewage discharge and stormwater run-off. The reduction and the modification of flows from agricultural activities also has the potential to impact on water quality.

Riparian vegetation (on and adjacent to the banks of waterways) is particularly important to water quality and riverhealth as it shades water, provides streamline habitat, stabilises river banks, reduces erosion, absorbs water-borne nutrients and traps silts. Large areas of riparian vegetation have been removed in agricultural and urban areas in the region.

Increased siltation also arises from general land-clearing for agriculture and

urban development, forestry and roading.

Stock access to streams contributes nutrients and microbial contaminants, as does leachates from septic systems in rural and rural-residential areas. Fertiliser run-off from rural land also contributes nutrients. The influx of nutrients from these sources has the greatest impact on streams with low flows. High levels of nutrients result in algal blooms, the growth of algae on rocks and a reduction in dissolved oxygen in waters. Contamination by microorganisms such as bacteria and viruses from faecal material can be hazardous to the health of humans and stock.

In urban areas nutrients enter waterways from the outflows of sewage treatment plants. Stormwater run-off channelled through urban drainage systems also contains high levels of nutrients from the faeces of domestic pets and garden fertilisers as well as contaminants such as oils, fuels, plastics, detergents, litter, pesticides and herbicides.

Community Water Values have been collected for both the Little Swanport and Swan River Catchments for determining environmental flows under the *Water Management Act 1999*. These values were also considered as part of the PEVs process.

### 3 Water Quality: Protected Environmental Values (PEVs)

#### 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 within a 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. The Protected Environmental Values 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 the followings section.

More than one Protected Environmental Value may be applied to a water body.

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 Protected Environmental Values 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**

- (i) 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 suggested as a starting point and may be suitable for surface waters of the Glamorgan-Spring Bay catchment areas.

The community was asked if they agreed with the suggested PEVs for water quality, and why, or if they wished to propose other PEVs and why?

The community was asked the following:

- To identify 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)?
- Are there existing values and uses under threat from deteriorating water quality.

The Board and the regional planning authorities considered and took account of all submissions before finalising the PEVs for these wetlands and waterways.

#### **4 Protected Environmental Values (PEV's) for Glamorgan-Spring Bay Catchments**

Between 2002 and 2004 the Board of Environmental Management and Pollution Control, in association with the Glamorgan-Spring Bay and Northern Midlands Councils set Protected Environmental Values (PEVs) for surface waters for the Glamorgan-Spring Bay catchments as required by the *State Policy on Water Quality Management 1997* (the Policy).

A Discussion Paper – *Proposed Environmental Management Goals for Tasmanian Surface Waters: Glamorgan-Spring Bay Catchments* – was developed by DPIWE in association with the council and approved for release to stakeholders and the public in late 2002. This paper explained the Policy and how the environmental values for water quality (PEVs) are identified and used.

The Discussion Paper was circulated amongst agencies and organisations having an interest in surface waters in the region. The identified stakeholders (128 people) and community were invited to participate in regional water values workshops at Buckland Community Hall (13/8/02), Council Chambers, Triabunna (15/8/02), Council Chambers, Swansea (19/8/02), Beach Front at Bicheno conference room (21/8/02), Coles Bay Community Hall (22/8/02). The meetings were advertised inviting the general public to have input into the PEV setting process. The meetings were advertised in the *Central Coast Courier* (30/7/02) and the *Mercury and Examiner* (3/8/02), a letter drop to all residents was also included in the rates notices for July. Sixty one people attended public meetings, whilst

twenty seven public submissions were received. Information collected from the meetings and public representations was compiled, amendments were made to the PEVs and discussion paper and they were sent back to all stakeholders and workshop attendees with comment invited on these changes.

The major changes made to the PEVs as a result of the community consultation were as follows:

- The following locations were designated as primary contact recreation areas (areas that are commonly recognised as primary contact sites) for the non estuarine waters occurring adjacent to or on private land: being Western side of the bridge at Brushy Plain Rivulet (Buckland) and Tee Tree Rivulet; Bluff River at “Littleworth”, Deep Hole, Little Swanport; in the Apsley River at “Fern Dale” and at “Glen Allsyr”; and at the Denison River mouth.
- A batching plant at Greenlawn has been included under Industrial Water Supply adjacent to or on private land.
- Raw Water for Drinking Water Supply Subject to coarse screening plus disinfection (Coles Bay) has been included under surface waters with their headwaters in National Parks, State Reserves, Nature Reserves or historic sites.
- The surface waters with their head waters in Nature Recreation Areas, Conservation Areas and Game Reserve has been expanded to include “or flowing through a Nature Recreation Area, or Conservation Area from National parks or State Reserves.”
- Crustacea and shellfish have been removed from modified ecosystems

for surface waters flowing through National parks, State Reserves, Nature Reserves or historic sites and Surface waters flowing through Public Reserves.

- Reference to Schedule 4 of the *National Parks and Wildlife Act, 1970* has been changed to Schedule 1 of the *National Parks and Reserves Management Act 2002*.
- The protected environmental values category for estuarine surface waters and semi-enclosed marine surface waters such as Moulting Lagoon in National Parks, State Reserves, Nature Reserves, Historic Sites, Nature Recreation Areas, Game Reserves, or Conservation Areas has been expanded to state Moulting Lagoon Game Reserve. An Industrial Water Supply (Aquaculture in Marine Farming Zones in Moulting Lagoon Game Reserve) Protected Environmental Value has been included under this category.
- The Protected Environmental Values category for estuarine surface waters and semi-enclosed marine surface waters such as Little Swanport, Lisdillon Lagoon and Pelican Bay for Industrial Water Supply (Aquaculture in Marine Farming Zones) has been expanded to include “and existing areas subject to licences issued pursuant to the Living Marine Resources Management Act 1995.” The reference to Pelican Bay has also been removed as this is within the Moulting Lagoon Game Reserve.

Other issues raised throughout the consultation process have been incorporated into the document.

Community Water Values should be incorporated into the future

development of water management and catchment management plans.

The PEVs for the surface waters of the Glamorgan-Spring Bay Catchments are described in Table 2 under land use categories (as shown on the map available from the DPIWE website).

The PEVs apply to all surface waters within each land tenure category, other than<sup>12</sup>:

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

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

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

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

The water quality objectives will be determined by the Board of Environmental Management and Pollution Control in accordance with the *State Policy on Water Quality Management 1997*.

Achievement of these water quality objectives will maintain or enhance the

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<sup>12</sup> State Policy on Water Quality Management 1997

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

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

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

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

**Table 2: PEVs for Glamorgan-Spring Bay Catchments**

Land Tenure	Protected Environmental Values*:(see note on page 25)
<p>Surface waters on <b>Private Land</b>  (including forest on private land)</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) Primary contact water quality (Western side of the bridge at Brushy Plain Rivulet (Buckland) and Tee Tree Rivulet; Bluff River at “Littleworth”, Deep Hole, Little Swanport; in the Apsley River at “Fern Dale” and at “Glen Allsyar”; and at the Denison River mouth)</p> <p>(ii) Secondary contact water quality</p> <p>(iii) Aesthetic water quality</p> <p>C. Raw Water for Drinking Water Supply</p> <p>(i) Subject to coarse screening plus disinfection (Triabunna, Orford, Swansea, Bicheno)</p> <p>D. Agricultural Water Uses</p> <p>(i) Irrigation</p> <p>(ii) Stock watering</p> <p>E. Industrial Water Supply (batching plant, at “Greenlawn” Bicheno)</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, crustacea and shellfish may be harvested; that is suitable as a raw water for drinking water supply subject to coarse screening plus disinfection at the offtake location for the Triabunna, Orford, Swansea, Bicheno town water supplies; 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 the western side of the bridge at Brushy Plain Rivulet (Buckland) and Tee Tree Rivulet; Bluff River at “Littleworth”, Deep Hole, Little Swanport; in the Apsley River at “Fern Dale” and at “Glen Allsyar”, and at the Denison River mouth; and secondary contact recreation activities such as paddling or fishing in aesthetically pleasing waters; and is suitable for use for a (batching plant, at “Greenlawn” Bicheno).</p>

**Table 2: PEVs for Glamorgan-Spring Bay Catchments**

<b>Land Tenure</b>	<b>Protected Environmental Values</b> *(see note on page 25)
<p>Surface waters with their headwaters in <b>Forest Reserves</b>.</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>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>
<p>Surface waters flowing through <b>Forest Reserves</b> from private land, state forest or unallocated crown land.</p>	<p>A: Protection of Aquatic Ecosystems</p> <p>(ii) Protection of modified (not pristine) ecosystems</p> <p>(a) from which edible fish are harvested</p> <p>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>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>

**Table 2: PEVs for Glamorgan-Spring Bay Catchments**

<b>Land Tenure</b>	<b>Protected Environmental Values</b> *(see note on page 25)
<p>Surface waters with their headwaters in <b>National Parks, State Reserves, Nature Reserves or historic sites.</b></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 and nature 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>C. Raw Water for Drinking Water Supply</p> <p>(i) Subject to coarse screening plus disinfection (Coles Bay)</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; which will allow people to safely engage in recreation activities such as swimming where permitted, paddling or fishing in aesthetically pleasing waters; and that is suitable as a raw water for drinking water supply subject to coarse screening plus disinfection at the offtake location for the Coles Bay township.</p>

**Table 2: PEVs for Glamorgan-Spring Bay Catchments**

<b>Land Tenure</b>	<b>Protected Environmental Values</b> *(see note on page 25)
<p>Surface waters flowing through <b>National Parks, State Reserves, Nature Reserves or historic sites</b> from private land, state forests or unallocated crown</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> <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> </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 modified 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>

<b>Table 2: PEVs for Glamorgan-Spring Bay Catchments</b>	
<b>Land Tenure</b>	<b>Protected Environmental Values</b> *(see note on page 25)
<p>Surface waters with their headwaters in <b>Nature Recreation Areas, Conservation Areas and Game Reserves</b>, or flowing through a Nature Recreation Area, or Conservation Area from National Parks or State 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 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>C: Raw Water for Drinking Water Supply</p> <p>(i) Subject to coarse screening plus disinfection (Coles Bay)</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 where permitted, paddling or fishing in aesthetically pleasing waters; and that is suitable as a raw water for drinking water supply subject to coarse screening plus disinfectant at the offtake location for the Coles Bay township.</p>

**Table 2: PEVs for Glamorgan-Spring Bay Catchments**

<b>Land Tenure</b>	<b>Protected Environmental Values</b> *(see note on page 25)
<p>Surface Waters flowing through <b>Nature Recreation Areas, Conservation Areas and Game Reserves</b> from private land, state forests or unallocated crown 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>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; 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 with their headwaters in <b>Public Reserves</b>.</p>	<p>A: Protection of Aquatic Ecosystems</p> <ul style="list-style-type: none"> <li>(i) Pristine or nearly pristine ecosystems</li> </ul> <p>having regard for the management objectives for public reserves outlined in Schedule 4 of the <i>Crown Lands Act 1976</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>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: PEVs for Glamorgan-Spring Bay Catchments**

<b>Land Tenure</b>	<b>Protected Environmental Values</b> *(see note on page 25)
<p>Surface waters flowing through <b>Public Reserves</b> (under the <i>Crown Lands Act 1976</i>) from private land, state forest or unallocated crown land.</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>having regard for the management objectives for public reserves outlined in Schedule 4 of the <i>Crown Lands Act 1976</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>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 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 on <b>Unallocated Crown 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>(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 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.</p>

**Table 2: PEVs for Glamorgan-Spring Bay Catchments**

<b>Land Tenure</b>	<b>Protected Environmental Values</b> *(see note on page 25)
<p>Surface waters on <b>Commonwealth Land</b></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>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 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>
<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> <ul style="list-style-type: none"> <li>(ii) Modified (not pristine) ecosystems</li> <li>(a) from which edible fish are harvested</li> </ul> <p>having regard for Forestry Tasmania’s Management Decision Classification System</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>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.</p>

**Table 2: PEVs for Glamorgan-Spring Bay Catchments**

<b>Land Tenure</b>	<b>Protected Environmental Values</b> *(see note on page 25)
<p><b>Estuarine</b> surface waters and semi-enclosed marine surface waters such as Moulting Lagoon Game Reserve in <b>National Parks, State Reserves, Nature Reserves, Historic Sites, Nature Recreation Areas, Game Reserves, or Conservation Areas</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, crustacea and shellfish are harvested (where permitted)</li> </ul> <p>having regard for the management objectives for national parks, state reserves, nature reserves, historic sites, nature recreation areas, conservation areas and game reserves outlined in Schedule 1 of the <i>National Parks and Reserves Management Act 2002</i>.</p> </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>C: Industrial Water Supply (aquaculture in Marine Farming Zones in Moulting Lagoon Game Reserve)</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 is suitable for use for aquaculture in marine farming zones.</p>

<b>Table 2: PEVs for Glamorgan-Spring Bay Catchments</b>	
<b>Land Tenure</b>	<b>Protected Environmental Values</b> *(see note on page 25)
<p><b>Estuarine surface waters and semi-enclosed marine surface waters such as Little Swanport, Lisdillon Lagoon (but excluding estuarine surface waters and semi-enclosed marine surface waters in National Parks, State Reserves, Nature Reserves, Historic Sites, Nature Recreation Areas, Game Reserves, or Conservation Areas)</b></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, shellfish and crustacea are harvested</li> </ul> </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>E: Industrial Water Supply (Aquaculture in Marine Farming Zones and existing areas subject to licenses issued pursuant to the <i>Living Marine Resources Management Act 1995</i>)</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 shellfish in marine farming zones, abalone farming and shellfish hatcheries.</p>

\* In general, diffuse source pollution can be managed to protect the PEVs by compliance with approved codes of practice, or by development and implementation of best practice environmental management guidelines where codes are not available. In general, point source pollution should be managed to protect the PEVs by implementation of best practice environmental management, and by compliance with emission limits set by the regulatory authority. This may also require the setting of a mixing zone by the Board of Environmental Management and Pollution Control. For specific details refer to Part 4 of the State Policy on Water Quality Management, 1997.

## 5 Water Quantity Values

### 5.1 Overview

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

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

In some instances there may be competing uses for the available resource, and there may need to be trade-offs 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 obtained by gathering water management values from stakeholders, community groups and government agencies will be used when water management planning is undertaken for the catchment.

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 waterbody. Examples may include:

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

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

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

Recreational Values: These include the range of direct human uses of water bodies for purposes such as kayaking, canoeing, sailing, swimming, fishing etc. This type of value is difficult to quantify, but is an essential part of our way of life in Tasmania. Water quality issues are also important, especially

where primary contact occurs (swimming for example), or where the recreational activity relies on a base of good quality water, such as a recreational fishery. Examples may include:

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

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

- maintenance or improvement of flow through gorges or over waterfalls;
- protection of scenic features in a river.

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

## 6 Community Water Values for Glamorgan-Spring Bay Catchments

Tables 3 through 7 summarise Community Water Values collected at a number of workshops in the Glamorgan-Spring Bay Municipal Area. These values relate to both water quality and water quantity.

**Table 3: Community Water Values for Glamorgan-Spring Bay Catchments collected at a public meeting held in the Buckland Community Hall on 13/8/02, and from written submissions**

Water Value Categories	Specific Water Values, Buckland
<b>1. Ecosystem values</b>	<ul style="list-style-type: none"> <li>• Maintain platypus in the Tee Tree rivulet (most rivers).</li> <li>• Maintain Swan Galaxia, yabby and all native aquatic species.</li> <li>• Maintain wetlands at Sand Spit Lagoon.</li> <li>• Protection of habitat such as large woody debris.</li> <li>• Protection of native riparian vegetation for, at a minimum, class 1 streams (as per forest practices code).</li> <li>• Protection of natural riffles, pools, aeration.</li> <li>• Prevent spread of weeds.</li> <li>• Minimise/rehabilitate water extraction sites (fire fighting) and other emergency impacts.</li> </ul>
<b>2. Physical Landscape Values</b>	<ul style="list-style-type: none"> <li>• Maintain environment at hidden falls.</li> </ul>
<b>3. Consumptive and Non-Consumptive Values</b>	<p><b>7 Industrial</b></p> <ul style="list-style-type: none"> <li>• Not applicable.</li> </ul> <p><b>8 Agricultural</b></p> <ul style="list-style-type: none"> <li>• Maintain water quality for intensive cropping such as poppies, potatoes, grain, lucerne, viticulture.</li> <li>• Maintain water for stock watering.</li> </ul> <p><b>9 Raw water for water supply</b></p> <ul style="list-style-type: none"> <li>• Maintain water quality for Orford town supply.</li> <li>• Maintain water quality for homestead use.</li> </ul>
<b>4. Recreational Values and Uses</b>	<ul style="list-style-type: none"> <li>• Maintain swimming at the western side of the bridge at Brushy Plains Rivulet (Buckland) and Tee Tree Rivulet, and Bluff River at (Littleworth).</li> <li>• Maintain fishing on Brushy Plains Rivulet from Runnymede to Orford and on the Prosser River.</li> </ul>
<b>5. Aesthetic Landscape Values</b>	<ul style="list-style-type: none"> <li>• Maintain aesthetic quality for bush walking at Bluff River Gorge, Griffiths Creek and generally through out the catchment.</li> </ul>
<b>6. Issues/concerns</b>	<ul style="list-style-type: none"> <li>• Unrestricted stock to waterways.</li> <li>• Unfettered use of agricultural chemicals.</li> </ul>

**Table 4: Community Water Values for Glamorgan-Spring Bay Catchments collected at a public meeting held in the Council Chambers at Triabunna on 15/8/02, and from written submissions**

Water Value Categories	Specific Water Values, Triabunna, Orford, Little Swanport
<p><b>1. Ecosystem values</b></p>	<ul style="list-style-type: none"> <li>• Maintain fish nursery areas.</li> <li>• Provision of water to maintain healthy ecosystems (quality and quantity) at low level of risk e.g Little Swanport (freshwater, estuaries, flood plains, riparian vegetation, wetlands, instream areas of rivers and creeks, springs, near coastal marine environments).</li> <li>• Maintain instream habitat (logs and snags).</li> <li>• Maintain water quality, quantity (including flood events) and fish passage for movement upriver to spawn for - fish and habitat species diversity for eg in Little Swanport River - whitebait (<i>Galaxias truttaceus</i>, <i>G. maculatus</i>, <i>G. brevipinnis</i> &amp; <i>G. cleaveri</i>), the threatened species of true whitebait <i>Lovettia sealii</i>, the Tasmanian smelt <i>Retropinna tasmanicus</i>, freshwater flathead <i>Pseudophritis urvillii</i>, eels <i>anguilla australis</i> and <i>A. reinhardtii</i>, bream and luderick – juveniles amongst sea/eel grasses in brackish areas of estuaries.</li> <li>• Maintain water quality and quantity for Tasmanian grayling for all coastal rivers.</li> <li>• Maintain water quality and quantity for Swan galaxiid – Swan River and upper areas of others.</li> <li>• Maintain bird species including wedge tail eagle.</li> <li>• Maintain water quality and quantity for breeding and feeding habitat for water birds.</li> <li>• Maintain existing trout free waters.</li> <li>• Maintain instream, riparian (including 87 species within Little Swanport), floodplain, wetland and salt marsh vegetation and diversity.</li> <li>• Maintain native algae (phytoplankton), algae beds, kelp beds and sea grasses.</li> <li>• Maintain existing food chains.</li> <li>• Maintain native mammals, frogs and invertebrates.</li> <li>• Maintain trout run, estuarine habitat in Little Swanport River, lower reaches and estuary.</li> <li>• Maintain lagoon wetlands e.g Sandspit River “Rheban.”</li> <li>• Maintain foreshore infra and supra literal zone (unstable sand dunes foreshores).</li> <li>• Maintain high conservation significance species and other fauna and flora within the Little Swan Port River catchment such as <ul style="list-style-type: none"> <li>• flora <i>Pomaderris phyllicifolia</i>,</li> <li>• fauna area for the swift parrot and priority communities for reservation including black peppermint (<i>Eucalyptus amygdalina</i>) forest on sandstone, grassy white gum (<i>E. viminalis</i>) forest and grassy blue gum (<i>E. globulus</i>).</li> <li>• Priority species including the Barbers mallee (<i>E. barberi</i>), Australian grayling, <i>Poa mollis</i>, <i>Pomaderris phyllicifolia</i> and</li> <li>• blue gum forests as potential habitat for the swift parrot (<i>Lathamus discolor</i>) which is listed as vulnerable under the Tasmanian Threatened Species Protection Act 1992</li> <li>• and <i>Isolepis stellata</i> (sedge grass), endemic algae, sea grasses/eel grass (5 species).</li> </ul> </li> <li>• Maintain protection of fauna and habitat within the Little Swanport catchment including sea eagles, wedge tail eagles, swamp harriers, masked owls etc, water birds and waders, swift parrots, Tasmanian beetongs, quolls, bats, frogs and invertebrates.</li> <li>• Ecosystem Infrastructure, Services and Functions should be included as a Protected Environmental Value.</li> </ul>
<p><b>2. Physical Landscape Values</b></p>	<ul style="list-style-type: none"> <li>• Hardings falls – Swan River.</li> <li>• Maintain natural geomorphology – riffles, pools, river channels, rapids, ravins, estuaries, sand bars, tidal marshes etc.</li> <li>• Maintain riparian vegetation, creek reserves, skyline reserves.</li> <li>• Maintain wetlands, flood plains.</li> <li>• Protection and maintenance of hydrological processes – energy, material, species flows (impact of water extraction should be assessed).</li> <li>• Protection and maintenance of natural ecological processes/function.</li> <li>• Protection and maintenance of bio-diversity and genetic diversity.</li> </ul>

Water Value Categories	Specific Water Values, Triabunna, Orford, Little Swanport
	<ul style="list-style-type: none"> <li>• Protection and maintenance of energy, material and species flows.</li> <li>• Protection, maintenance and/or improvement of riparian zone-denudation and tree decline, (lower Little Swanport catchment relatively healthy condition, upper catchment tree decline classified extreme).</li> <li>• Prevention of artificial erosion.</li> <li>• Protection of soils and water courses from salinity.</li> <li>• Landscape connectivity.</li> <li>• Sand dunes (e.g) Spring Beach etc.</li> <li>• Maintain remnant White Gum habitats e.g. Luther Point, Quarry Point.</li> <li>• Maintain coastal view fields all along the coast.</li> </ul>
<b>3. Consumptive and Non-Consumptive Values</b>	<p><b>10 Industrial</b></p> <ul style="list-style-type: none"> <li>• Maintain water quality for shellfish nursery (land based) and leases in the water.</li> <li>• Woodchip factory and fish processing factory (uses Orford water supply).</li> <li>• Maintain water quality and quantity for fire fighting.</li> <li>• Fish meal plant – (use salt water from the bay).</li> <li>• Shell fish processing (abalone, scallops, oysters, mussels) at Triabunna and Paddys Bay.</li> <li>• Crayfish holding facility – Freestone Point (salt water).</li> <li>• Slipways – use salt water.</li> <li>• Maintain water quality for packing sheds (shellfish depot).</li> <li>• Maintain water quality for shellfish holding facilities (linked to shellfish processing).</li> </ul> <p><b>11 Agricultural</b></p> <ul style="list-style-type: none"> <li>• Maintain water for stock watering – cattle, sheep, horses etc.</li> <li>• Maintain irrigation for vineyards, cherries, olives and walnuts.</li> </ul> <p><b>12 Raw water for water supply</b></p> <ul style="list-style-type: none"> <li>• Orford.</li> <li>• Triabunna.</li> <li>• Maintain for homestead use throughout.</li> <li>• Maintain bore water for use in Dolphin Sands and through out on farms and for rural residential.</li> <li>• Maintain water pools in Little Swanport River in the dry seasons.</li> </ul>
<b>4. Recreational Values and Uses</b>	<ul style="list-style-type: none"> <li>• Maintain water quantity to irrigate golf club.</li> <li>• Maintain river channel for boat access on the Prosser River.</li> <li>• Maintain fishing for both salt and fresh water for all rivers and streams – e.g. bream, luderick, cocky salmon etc.</li> <li>• Maintain trout fishing Little Swanport River</li> <li>• Maintain bait collection.</li> <li>• Maintain swimming at Orford for the estuary and mouth of the river.</li> <li>• Maintain swimming at Little Swanport bridge, Swan River bridge (Council have signs up).</li> <li>• Maintain swimming at Deep Hole – Little Swanport (no sign).</li> <li>• Maintain wading and paddling for all rivers and estuaries.</li> <li>• Maintain water upstream of and at Little Swanport, and mouth of Prosser River up to Orford Bridge for water skiing, canoeing, kayaking, sail boarding, diving and snorkelling.</li> <li>• Maintain water for exploring, bird watching, fish observation, bushwalking, rock collecting (gem collecting) and riverside rambling.</li> <li>• Maintain school group education, research and water watch.</li> <li>• Maintain shellfish gathering for all estuaries including oysters, clams, mussels and periwinkles.</li> <li>• Maintain duck shooting.</li> <li>• Maintain water for sailing, cruising and surfing.</li> <li>• Maintain water for photography and painting.</li> </ul>

<b>Water Value Categories</b>	<b>Specific Water Values, Triabunna, Orford, Little Swanport</b>
<b>5. Aesthetic Landscape Values</b>	
<b>6. Issues/concerns</b>	<ul style="list-style-type: none"> <li>• Remove fish barriers and/or use fish ladders.</li> <li>• Irrigation only based on off-peak storage.</li> <li>• Protection of catchments for salinity.</li> <li>• Seaweed problem at East &amp; West Shelley Beach including odour and visual impact.</li> <li>• Restrict development to existing towns.</li> <li>• Impact of brown trout on native species – Brown trout fishing should have a low priority</li> <li>• Need for better management of water in a transparent way for Little Swanport and need base line flows for maintenance of stream habitat</li> <li>• The Protected Environmental Values should cover the whole of the Little Swanport Catchment, not be split between Glamorgan-Spring Bay and Southern Midlands.</li> </ul>

**Table 5: Community Water Values for Glamorgan-Spring Bay Catchments collected at public meetings held at the Council Chambers, Swansea on 19/8/02 and 15/11/02, and from written submissions**

Water Value Categories	Specific Water Values, Swansea
<p><b>1. Ecosystem values</b></p>	<ul style="list-style-type: none"> <li>• Maintain feeding and breeding habitat for birds (including the swift parrot, wedge tail eagle, sea eagle), frogs (e.g. Green and Gold Frog - esp. along and above Hardings Falls, Lost Falls), fish (e.g. Swan Galaxia), platypus and rare/threatened species.</li> <li>• Maintain Swan River and all stream tributaries of suitable habitat of small shallow shaded pools free from Trout and Red Fin. Swan River catchment is a major nursery for most marine and fresh water fish and water bird wildlife.</li> <li>• Retain/maintain riparian vegetation and replacement of vegetation.</li> <li>• Maintain water quality and quantity for Moulting Lagoon, including freshwater and estuarine native fish populations.</li> <li>• Maintain natural vegetation.</li> <li>• Maintaining and improving water quality will maintain habitats.</li> <li>• Prevention from erosion and siltation.</li> <li>• Protection against chemicals.</li> <li>• Maintain above and at Hardings Falls Forest Reserve and other falls (Meetus Falls, etc).</li> <li>• Improvement in Galaxias fontanus populations.</li> <li>• Provision of fish ladder at weir.</li> <li>• Maintenance of known and unknown aquatic values (lack of information).</li> <li>• Maintenance of summer flows and periodic flushing flows.</li> <li>• Maintenance and protection of Snow Marshes.</li> <li>• Prevention of stock access to the main river and its tributaries.</li> <li>• Improvement in road network maintenance, in particular stream crossings.</li> <li>• Pages 96-112 Swan/Apsley Catchment Plan.</li> </ul>
<p><b>2. Physical Landscape Values</b></p>	<ul style="list-style-type: none"> <li>• Maintain dunes, shallows on river and beaches.</li> <li>• Maintain steep gorges and cuttings and river flats.</li> <li>• Maintain water falls, e.g. Meetus Falls and Lost Falls.</li> <li>• Maintain rugged cuttings and gorges of Hardings Falls.</li> <li>• Maintain hydraulic connection to Moulting Lagoon, Apsley Marsh and Apsley River.</li> <li>• Maintain hydraulic connection to Swan River upstream in fresh water zone.</li> <li>• Maintain sufficient flow to prevent siltation and hydraulic barriers.</li> <li>• Maintain diverse landscape value of river and Moulting Lagoon catchment.</li> <li>• Maintain variable flows regime.</li> <li>• Maintain riparian vegetation.</li> <li>• Maintain beauty of Snowy Marshes.</li> <li>• Maintain natural geomorphological form.</li> </ul>
<p><b>3. Consumptive and Non-Consumptive Values</b></p>	<p><i>Industrial</i></p> <ul style="list-style-type: none"> <li>• Protect aquaculture – oysters.</li> <li>• Maintain water for tourism.</li> <li>• Waste water reuse.</li> <li>• Stormwater storage.</li> <li>• Need water quantity available for storage in water point dams for fire fighting.</li> </ul> <p><i>Agricultural</i></p> <ul style="list-style-type: none"> <li>• Maintain water for broad acre agriculture – poppies, cereals, seed crops.</li> <li>• Maintain water for intensive agriculture – vegetable seeds, fresh vegetables, viticulture, walnuts, olives and berry farms.</li> <li>• Maintain water for livestock - sheep, cattle and emus.</li> <li>• Maintain riparian rights.</li> <li>• Maintain irrigation rights.</li> <li>• Improve stock watering methods.</li> </ul>

Water Value Categories	Specific Water Values, Swansea
	<ul style="list-style-type: none"> <li>• Improve methods of irrigation storage.</li> <li>• Maximum harvest of water during flood events into off stream storage.</li> </ul> <p><i>Raw water for water supply</i></p> <ul style="list-style-type: none"> <li>• Maintain and improve domestic town water supply (quality and quantity) e.g. improve water treatment.</li> <li>• Improve accountability of use – metering (support “clean, green image”).</li> <li>• Use planning schemes to prescribe use (quantity) e.g. through restricting development in towns.</li> <li>• Increased storage (particularly in summer) including off stream dams.</li> <li>• Ensure adequate water quality monitoring.</li> <li>• Need to protect water from run off and contaminants.</li> <li>• Maintain water quantity and quality of Dolphin Sands aquifer.</li> <li>• Encourage use of rainwater tanks.</li> <li>• Use drinking water for drinking. Not down the toilet.</li> <li>• Protect ground water and promote human consumption via bores.</li> <li>• Improve community awareness of the value of water through education.</li> </ul>
<p><b>4. Recreational Values and Uses</b></p>	<ul style="list-style-type: none"> <li>• Maintain and improve water quantity and quality for whole of Swan River and Apsley River (including estuary) for fishing, drinking water, boating and swimming.</li> <li>• Maintain swimming holes at ford at Cranbrook.</li> <li>• Maintain swimming/camping at Waters Meeting.</li> <li>• Hardings Falls (swimming and bush walking).</li> <li>• Maintain and improve bream fishing.</li> <li>• Maintain and improve water for Swan galaxia.</li> <li>• Maintain duck shooting.</li> <li>• Maintain water skiing in estuarine areas.</li> <li>• Maintain bird watching – estuary, Moulting Lagoon.</li> <li>• Maintain water quality, camping at Meetus Falls and Lost Falls (and aesthetics) in State Forests.</li> <li>• Maintain bushwalking.</li> <li>• Maintain fishing, boating (including estuarine waters), swimming and wild life observation for Swan River, Moulting Lagoon and Dolphin Sands.</li> <li>• Maintain recreational fishing for sport and tourism.</li> <li>• Education through signage on minimal impact use on swimming holes.</li> <li>• Maintain camping at Greasy Pole, Yellow Sandbanks, Bagot Point and River and Rocks (all estuarine).</li> </ul>
<p><b>5. Aesthetic Landscape Values</b></p>	<ul style="list-style-type: none"> <li>• Rugged dry and rocky areas such as Lost Falls, Hardings Falls and Meetus Falls.</li> <li>• Moulting lagoon, the lower reaches of the Swan, Apsley and Meredith Rivers and river near Buckland and water views from main roads.</li> <li>• Narrow deep river to broad river flats.</li> <li>• The diversity of waterways.</li> <li>• Hydraulic connection between all water bodies.</li> <li>• Make water clean so as it can look clean</li> <li>• Inclusion of human use as well as native fauna and flora e.g. jetties, fish farms etc i.e. not to completely exclude this sort of development but to integrate both for foreshore.</li> <li>• Maintain enough moisture to ensure the riparian vegetation along creeks is retained, eg sassafras remnants only along the moist gullies and streams.</li> <li>• Replace/regenerate native riparian vegetation.</li> <li>• Encourage the establishment and maintenance of riparian buffers.</li> <li>• Control gorse and willows.</li> <li>• Control bank erosion.</li> <li>• Maintain Hardings Falls.</li> </ul>

Water Value Categories	Specific Water Values, Swansea
<p><b>6. Issues/concerns</b></p>	<ul style="list-style-type: none"> <li>• Can't separate quality and quantity – strong message.</li> <li>• Need one authority to look after natural resources and to for example identify adequate flows such as on the Swan River.</li> <li>• Need to factor in cost of environmental damage, put a true charge on the use of all water such as water falls.</li> <li>• Dogs, camp fires and rubbish polluting water above town water supply</li> <li>• Concern of perception that not agricultural potential for further water use.</li> <li>• Protection of headwaters concern. (Views divided).</li> <li>• Need to maintain environmental flows.</li> <li>• Illegal dams, diversion of streams, dam regulations, water licences and continual approval of dams a concern.</li> <li>• Willows and gorse being left until they become a major hazard in all areas. Canal type clearing no better than clear felling.</li> <li>• Too many pivotels being used for the amount of water available in streams and rivers in summer.</li> <li>• Tasmania is going the same way as other countries with forestry, farming and cities polluting the environment. It can be stopped.</li> <li>• Need to reserve some catchments and headlands.</li> <li>• Saltwater Creek at Swansea should be deepened to allow canoeing, model yacht racing etc, and remove algae and rubbish which would retain natural tidal flows and attract more sea birds.</li> <li>• Water quality affected by <ul style="list-style-type: none"> <li>• unrestricted access of stock to waterways,</li> <li>• the unfettered use of agricultural chemicals,</li> <li>• building of roads and bridges without care for water and its flows,</li> <li>• and adequate provision for wildlife to move safely under main routes, esp little streams, creeks and rivulets which feed larger rivers like those feeding the Meredith, Apsley and the Swan.</li> </ul> </li> <li>• Need for a committee to oversee the system such as Tasmania Together to identify a list of aesthetic sites etc.</li> <li>• Water from inland aquaculture development needs treatment back to state that is being drawn from, especially at Little Swanport and Kulleroo.</li> </ul>

**Table 6: Community Water Values for Glamorgan-Spring Bay Catchments collected at a public meeting held at the Beach Front Hotel at Bicheno on 21/8/02, and from written submissions**

Water Value Categories	Specific Water Values Bicheno area
<b>1. Ecosystem values</b>	<ul style="list-style-type: none"> <li>• Maintain for native fish species e.g. galaxias, grayling, bream fishery and eels.</li> <li>• Reduce weeds in riparian vegetation.</li> <li>• Enhance native vegetation.</li> <li>• Maintain bird breeding grounds - Moulting Lagoon, Apsley Marshes and Denison River.</li> <li>• Maintain clean water for native flora and fauna to flourish.</li> </ul>
<b>2. Physical Landscape Values</b>	<ul style="list-style-type: none"> <li>• Maintain upper reaches of Apsley River, (Douglas/Apsley National Park).</li> <li>• Maintain pools, river structure and marshes of Apsley River.</li> <li>• Maintain Apsley Marshes, Moulting Lagoon.</li> <li>• Maintain Dolphin Sands/Swanwick (dune system).</li> </ul>
<b>3. Consumptive and Non-Consumptive Values</b>	<p><i>Industrial</i></p> <ul style="list-style-type: none"> <li>• Maintain water for current batching plant “Greenlawn.”</li> <li>• Maintain water for fish processing plants (town supply).</li> <li>• Maintain fish nursery (town supply).</li> <li>• Maintain plant nursery (town supply).</li> </ul> <p><i>Agricultural</i></p> <ul style="list-style-type: none"> <li>• Maintain irrigation - vineyard and olives.</li> <li>• Maintain stock water - sheep and cattle.</li> <li>• Maintain aquaculture – oysters.</li> </ul> <p><i>Raw water for water supply</i></p> <ul style="list-style-type: none"> <li>• Maintain Bicheno town water supply.</li> <li>• Maintain private water supplies e.g. “Llandaff,” “Glen Albyn” and “Greenlawn.”</li> <li>• Promote tank usage at no additional cost, to save depleting water resources.</li> </ul>
<b>4. Recreational Values and Uses</b>	<ul style="list-style-type: none"> <li>• Maintain swimming holes - Apsley – Ferndale and Glen Allsyar - Denison River (mouth).</li> <li>• Maintain fishing - estuary - Moulting Lagoon and Swan River. - fresh water-Lilla Villa Bridge, Coles Bay Bridge.</li> <li>• Maintain Apsley Marshes - duck shooting and fishing.</li> <li>• Maintain kayaking.</li> <li>• Maintain bushwalking – Apsley River (Douglas Apsley National Park).</li> <li>• Maintain bird watching (Moulting Lagoon).</li> <li>• Maintain mountain bike riding.</li> <li>• Maintain surfing in clean unpolluted water.</li> <li>• Maintain water for relaxing and playing with children on the beach.</li> </ul>
<b>5. Aesthetic Landscape Values</b>	<ul style="list-style-type: none"> <li>• Maintain water quality.</li> </ul>
<b>6. Issues/concerns</b>	<ul style="list-style-type: none"> <li>• Rubbish tips, legal and illegal.</li> <li>• Impact of future subdivisions on water quality.</li> <li>• Impact on the town water supply by upstream uses.</li> <li>• Impact of fire management on water quality (town supply).</li> <li>• Need for and to improve riparian strips/reserves.</li> <li>• Greater need for reuse of sewage.</li> <li>• Stop development on the edge of waterways as siltation effects water quality.</li> <li>• Need to instil correct values in children and residents with information and training.</li> </ul>

**Table 7: Community Water Values for Glamorgan-Spring Bay Catchments collected at a public meeting held in the Coles Bay Community Hall on 22/8/02, and from written submissions**

Water Value Categories	Specific Water Values, Coles Bay area
<p><b>1. Ecosystem values</b></p>	<p><i>Protection of wetlands (salt water and fresh water).</i></p> <ul style="list-style-type: none"> <li>• Behind Muirs beach – wetland of significant – 4 species of frogs (Jamie Douglas '95).</li> <li>• Shepherds Hut Lagoon (used to be airstrip), B/W Rd, Moulting Lagoon and Swanwick.</li> <li>• Point Meredith (end of River and Rocks Road), on map as Nature Recreation Area.</li> <li>• Flacks Road – Cherry Tree Lagoons and Big Punchbowl (diverse vegetation, Green and Gold frogs) also B/W Road, Pelican Bay and Wattle Grove.</li> <li>• Little Punchbowl (topsoil scraped and wetlands trashed).</li> <li>• Apsley Marshes - Great diversity of flora and fauna, migratory bird life (concern of impact of cattle in the Apsley Marshes).</li> <li>• Moulting Lagoon – a major wetland and breeding ground for water birds and a Ramsar site (Increased algae in Moulting Lagoon, with fertiliser being used along western edge of lagoon).</li> </ul> <p><u>Other ecosystem values</u></p> <ul style="list-style-type: none"> <li>• Threatened species – flora and fauna.</li> <li>• Maintain riparian vegetation (remove gorse).</li> <li>• Maintain and improve Galaxia sp. habitat, estuarine microplankton, juvenile and adult molluscs, bird life, fish habitat and nursery for the Swan River and Great Swanport.</li> </ul>
<p><b>2. Physical Landscape Values</b></p>	<ul style="list-style-type: none"> <li>• Mouth of Swan River (bank undercutting is a threat to houses &amp; affects access to mouth).</li> <li>• Tin mining and forestry – water related features, cultural heritage value, changing of the creek.</li> <li>• Swan River Cut - (Cranbrook to Swan River for bream fishing 40's to 50's) possible for flood mitigation.</li> <li>• Moulting Lagoon – old drainage attempt by the first settler, Amos, “Apslawn” farm.</li> <li>• Protection of riparian reserve (removal of gorse), sand dunes and native vegetation (need aesthetic building development. Prevent ribbon development on sand dunes along coastal dunes e.g foreshore dune system and wetlands behind Muirs Beach.</li> <li>• Protect river bed and lagoon for Great Swanport (reduce sedimentation and eutrophication).</li> </ul>
<p><b>3. Consumptive and Non-Consumptive Values</b></p>	<p><i>Industrial</i></p> <ul style="list-style-type: none"> <li>• Oyster farming – Maintenance of good quality estuarine waters, oyster culture to Tas Shellfish Quality Assurance Program (TSQAP) – approval of water flows at historical frequency.</li> <li>• Tourism (biggest) Kayak hire etc. Good quality important not just tourist themselves also washing etc.</li> <li>• Abalone, squid and crayfish – (from coast waters)</li> </ul> <p><i>Agricultural</i></p> <ul style="list-style-type: none"> <li>• Irrigation - (need to adhere to Codes of Practice), increased water quantity issues, changing crops to intensive from grazing eg walnuts – impacts on water quality (fertiliser etc) especially Swan catchment as only minimal stock watering in Coles Bay area.</li> <li>• Impact of Forestry activities further up Apsley.</li> <li>• Re Oyster farming – harvesting + “grown” therefore need to maintain ecosystem.</li> </ul> <p><i>Raw water for water supply</i></p> <ul style="list-style-type: none"> <li>• Potential demand for water greater than supply. Supplemented by tin mine ponds if there is a shortage, however supply not always guaranteed.</li> <li>• Salt Water Creek in park is not pristine due to mining.</li> </ul>

<b>Water Value Categories</b>	<b>Specific Water Values, Coles Bay area</b>
	<ul style="list-style-type: none"> <li>• Need to improve education to conserve water.</li> <li>• Swanwick dam on left hand side is on private land, golf course /subdivision.</li> <li>• Douglas Apsley is alternative water supply as better catchment and better quality.</li> <li>• Effluent reuse an option.</li> <li>• Washing boats uses too much water (meter + pay).</li> <li>• Tanks to supplement water supply (need rate relief).</li> <li>• Bore tried at Iluka – not enough quantity.</li> <li>• Resort usage – big demand as well</li> <li>• Park usage.</li> </ul>
<b>4. Recreational Values and Uses</b>	<ul style="list-style-type: none"> <li>• Maintain bird watching.</li> <li>• Maintain swimming (avoid improper sewage disposal).</li> <li>• Richardson Beach- improve water quality for Mosquito Creek (tidal), and impact on Coles Bay, Great Oyster Bay.</li> <li>• Maintain water for photography.</li> <li>• Maintain wetlands free of Ross River virus.</li> <li>• Maintain kayaking – sea &amp; estuary.</li> <li>• Both summer population pressure and winter may be a problem.</li> <li>• Maintain dolphin and whale watching.</li> <li>• Maintain fishing at Swan River, Great Oyster Bay, Great Swanport including Pelican Bay/ and Moulting Lagoon below the Swan River.</li> <li>• Maintain intensive canoeing, boating, water skiing, bream fishing (generally everywhere not bream).</li> <li>• Maintain wind surfing.</li> <li>• Maintain duck shooting.</li> <li>• Maintain navigable waters status in the lower section of the estuary eg “The Cut” and “The Bend” to Swanwick.</li> </ul>
<b>5. Aesthetic Landscape Values</b>	<ul style="list-style-type: none"> <li>• Clean water, sand etc - Supports tourism.</li> <li>• Public access – jetties etc to be maintained.</li> </ul>
<b>6. Issues/concerns</b>	<ul style="list-style-type: none"> <li>• Prevent inappropriate marina development e.g. in estuaries, outlet of wetlands. Concern that if a proposed marina does eventuate the possible impact of sewage disposal.</li> <li>• Great Oyster Bay and Schouten Passage to be for recreational fishing only with all nets banned in this area.</li> <li>• Visual aesthetic of Moulting Lagoon would be much better without shooters hides.</li> <li>• Impact of subdivision along Flacks Road on water quality of Moulting Lagoon especially to adjacent oyster nurseries. Need for stringent regulation of building development.</li> <li>• Concern that impact of major hotel development on Muirs Beach, adjacent marsh and water supply and water quality of adjacent water bodies.</li> <li>• Need for control on farming activities to reduce impact on water quality of rivers.</li> </ul>