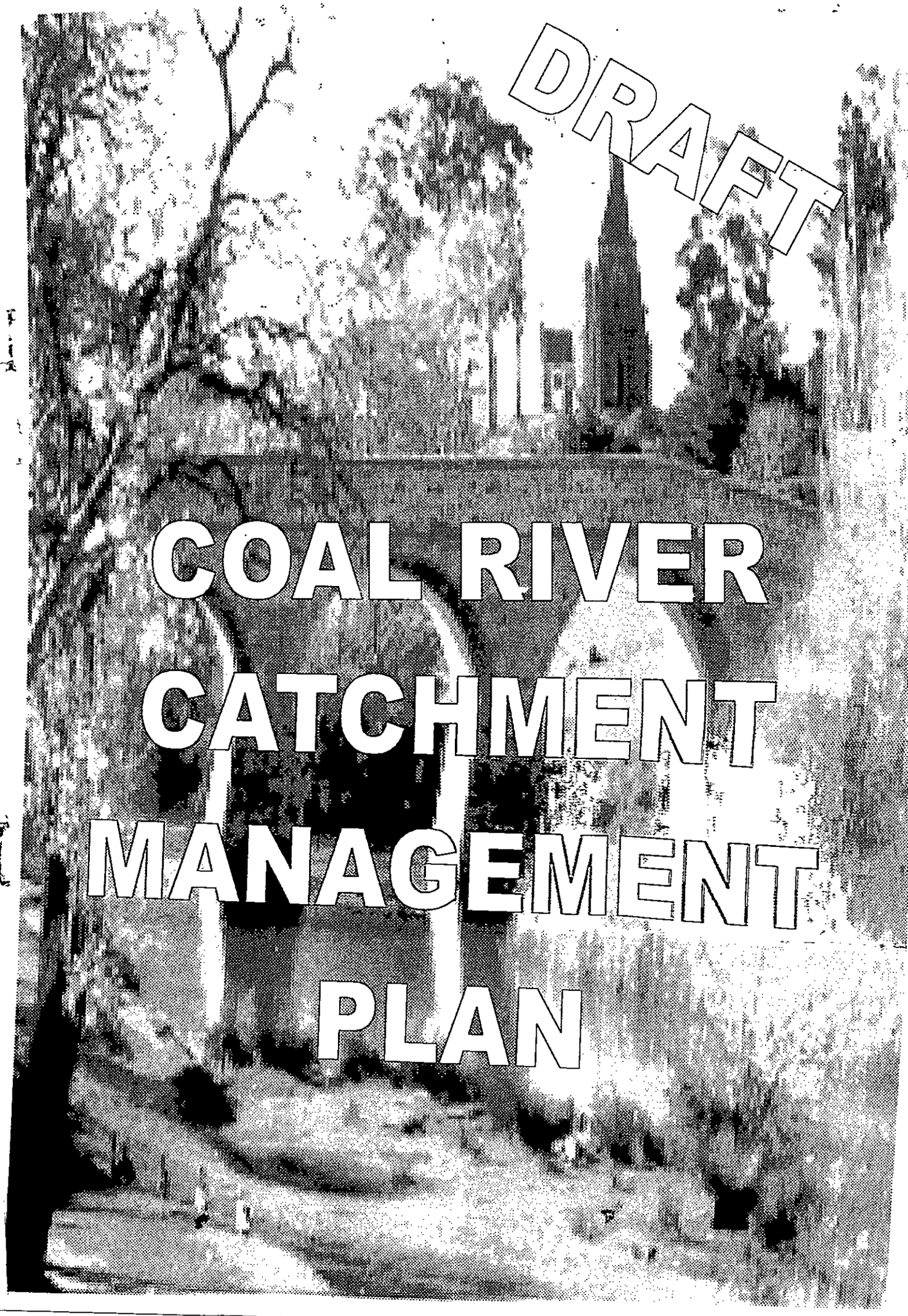
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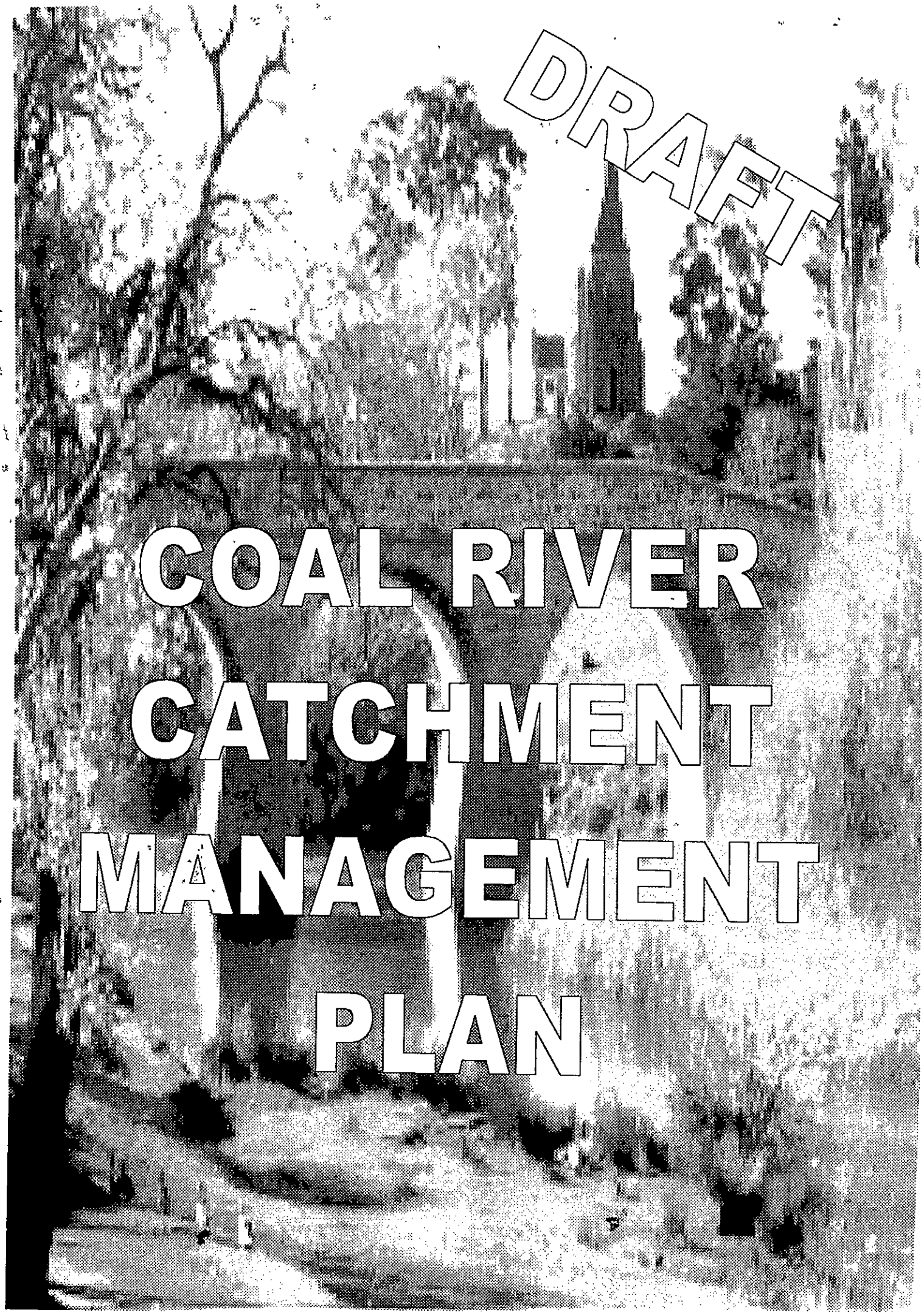
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Coal River

Catchment Management Strategy

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Community & Agency Abbreviations

Ab. Lands Council: Aboriginal Lands Council

Aquaculture: Pitt Water oyster growers

Birds Tas.: Birds Tasmania

Chamber of Commerce: Richmond Chamber of Commerce

Community: Coal Catchment residents & visitors

CMC: Coal Catchment Management Committee

CRPA: Coal River Products Association

DELM: Dept of Environment & Land Management

Distributors: Farm chemical distributors

DOT: Dept. of Transport

DPIF: Dept. of Primary Industry & Fisheries

Farmers: Local farmers

Fire Serv.: Tasmanian Fire Service

GA: Greening Australia

Irrigators: Users of South East Irrigation Scheme

LC: Landcare

LG: Local Government

Project: Consultancy Project

Priv. For.: Private Forests

R&WSC: Rivers & Water Supply Commission

TFGA: Tasmanian Farmers & Graziers Association

TIAR: Tasmanian Institute of Agricultural Research

Uni.: University of Tasmania

OUR VISION

Native Vegetation: Native vegetation is retained, protected, and enhanced. Widespread perennial native vegetation is seen as an integral part of the ecosystem of the Valley (including those areas used for agriculture and forestry) protecting the soil, water quality and bio-diversity.

Weeds: A catchment free of the serious impacts of agricultural and environmental weeds.

Reserve & Habitat Management: The development of native vegetation on private land and the dedication by some landholders of areas of land specifically for the support of native flora and fauna will, when combined with public reserves, provide an extensive network of natural areas capable of sustaining the range of ecosystems characteristic of the catchment. The principal aim of the existing limited network of State reserves in the Valley is for ecological preservation. Their use for education and tourism is managed in a way that ensures a minimum impact on their integrity.

Water: The reliable supply of good quality water available in the catchment is maintained or increased. Ensuring water is used in a way that promotes productive agriculture while not degrading the land and water quality and provides environmental flows.

Riparian Areas: Waterways are in their near natural state with riparian areas managed to protect the dominant values in each area.

Soil: A healthy landscape in which soil quality is maintained or improved.

Aboriginal Heritage: The Aboriginal culture and heritage of the Valley is respected and protected.

Development/Planning: The development of intensive agricultural and related activities and maximising of the potential economic benefits for the South East Irrigation Scheme while maintaining the rural character of the area with 'village' type residential areas. Any subdivision and development should not detract from the natural and cultural heritage values of the area and not result in pollution of land, air, surface water or ground water.

Services: Services of a level consistent with a rural area but designed and operated in a way to ensure that the environment is protected.

OUR CATCHMENT

The Coal River Catchment covers over 600 square kilometres on the eastern fringes of Hobart and contains a diversity of land uses including pasture, forest, conservation, recreation, irrigated cropland and rural residential development. Pitt Water Estuary, at the bottom of the catchment, is a Ramsar wetland site of international significance, and sustains a successful aquaculture industry. While a brief description of the catchment is given below (Table 1), more extensive information is available in the companion document *Coal River Catchment – Natural Resource Assessment.*

Table 1: Catchment Characteristics

Area	630 sq. kms.
Altitude Range	900 m to sea level.
Temperature	Mean maximum daily temperatures range from 22 °C in January and February to 12 °C in June and July.
Rainfall	Average annual rainfall increases from 520 mm at Pitt Water to 630 mm further inland at Colebrook.
Geology	Dolerite ridges and rounded hills fringe the extensive quartz sandstone deposits (with some shale and mudstone) of the upper valley floor. Sedimentary deposits of basalt silts and fine sand are found around Pitt Water with basalt extending between Campania and Richmond on the Coal River plain. Alluvial deposits are restricted to stream valleys.
Forest Cover	An estimated 235 square kilometres or 38% of the catchment has forest cover.
Major River Impoundments	The Craigbourne Dam impounds the Coal River south-east of Colebrook to supply the South East Irrigation Scheme. This represents an upstream catchment area of 247 square kilometres or nearly half of the Coal River catchment.
Population	An estimate for the regional population (less Midway Point) is 3000 people. Major population centres are Richmond (755), Campania (231), Cambridge (179) and Colebrook (265). The Penna and Midway Point areas are estimated to have 2500 residents.
Local Government Areas	Clarence City Council, Southern Midlands Council & Sorell Council.

The Coal River Catchment Management Plan aims to balance the diversity of interests existing across the whole catchment and provide a co-ordinated approach to land and water management. Community involvement is central to this process. It provides local information and different points of view, raises outcomes that provide a balance of benefits to all and establishes ownership of actions arising from the plan.

A public survey undertaken by the Catchment Committee identified **native vegetation** management as the highest priority issue in the Coal River Catchment. While it is far easier to retain and protect existing remnant vegetation than to replant cleared or degraded areas, clearance of native vegetation is still taking place at an unknown rate in the Valley. The economic, social and ecological values of native bushland can best be sustained by actions to minimise further loss and degradation of existing bushlands and the development by landowners and managers of specific area vegetation management plans.

The spread of **weeds** is affecting both agricultural production and the general amenity of the Coal River Catchment. While weed management is, and will remain, the responsibility of individual landowners and managers, joint planning and coordinated

action are considered a key part of any strategy to reduce and control weeds in the Coal Valley. As it is unrealistic to tackle all weeds at once, determination of priority weeds in the area is important. It is also critical to assess and select the best control methods for each weed and ensure this information is widely disseminated to the community. Roadside management practices appear to be a significant factor in weed dispersal in the Valley. Wider adoption of farm hygiene practices should be pursued given that prevention of weed entry is far more cost effective than attempting to eradicate a weed once established.

To preserve the Valley's animals and plants, **native habitat** must be maintained on both public and private land through a network of formal reserves and private land managed for nature conservation. As reserves are limited in the Coal Catchment, private land provides continuity of habitat and ecosystem processes across regional landscapes. Where reserves are created, there should be a clear purpose for their establishment. Further, the reserve should have a management plan with clearly defined responsibilities and identified sources of funding. Resumption of land for streamside reserves does not appear to have improved the management of these areas.

The relative scarcity of good quality **water** within the Coal River catchment and the need for further augmentation of supply is a critical issue for the Valley. The construction of Craigbourne Dam in 1986 marked an important change for agriculture in the Valley. The South East Irrigation Scheme allowed a move away from dryland cropping and grazing production to higher value irrigated crops. Maintaining and enhancing the productivity of the local agriculture sector requires a strategic approach to several important management issues. There is concern by some that the use of water may be promoted beyond the ensurable, sustainable supply of quality water. Expansion of irrigation may impact on groundwater, causing a rise in water tables and increasing soil and groundwater salinity. This may ultimately limit the total volume of water applied within salt prone areas of the catchment. Provision of 'environmental flows' which sustain the ecological values of waterways should also be a necessary component of any water allocation plan. Reforms initiated by the Council of Australian Governments (COAG) will increasingly transfer the costs for the provision of water to users. While most available results indicate that water conditions are generally good, salinity levels and algal blooms are of some concern. For aquaculture operations in Pitt Water Estuary, maintenance of estuarine water quality and equitable sharing of monitoring costs appear to be the major concerns.

Management of **riparian areas** is a problem within the Valley, with badly managed areas contributing to stream pollution, flooding, stream bank erosion, and the spread of weeds. Clearly defined management responsibilities and objectives need to be established for all riparian areas.

Virtually all forms of **land degradation** are evident in the Valley. The dissemination of information on soil and land issues is thus seen to be a critical component of a successful catchment management strategy. Salinity is one issue already being addressed. Although 14% of the South East Irrigation Area is affected to some degree by salinity, this is primarily in the form of sub-surface storage. Recommended actions focus on this link between soil salinity and watertable level.

When dealing with issues of **Aboriginal heritage** in the Coal Valley, the Aboriginal community has a central role in interpretation, assessment and management of sites.

Intensive agriculture and rural residential living are increasingly found close to each other. Despite this, there is generally a desire among residents to retain the rural

character of the area and to protect agricultural land from non-agricultural development. **Land use planning** is seen to be the best tool to maintain and enhance the natural and man-made surroundings in the Valley and avoid conflicts arising from change.

When the rural residential population grows to a certain level, it can lead to lobbying for additional **infrastructure and service provision** - ie. paved roads, water and sewer lines - for the area. This can lead to increases in rates and affect the viability of adjacent agricultural areas. By concentrating services on higher density population areas only, the pattern of village development, viable agricultural land and native vegetation on the hillsides can better be maintained and reinforced. Road maintenance and upkeep is an issue in the Valley, with the Mud Walls Road clearly serving as a significant alternative to the Midland Highway from Oatlands to the airport for a substantial volume of heavy traffic.


COAL RIVER
CATCHMENT
COLEBROOK
CAMBANA
RICHMOND
CAMBRIDGE
N
0 1 2 3 4 5
Kilometres

1.0 Coal River Catchment Management Strategy

The Coal River Catchment is located on the eastern fringes of Hobart and contains a diversity of land uses including pasture, forest, conservation, recreation, irrigated cropland and rural residential development. Pitt Water Estuary, at the bottom of the catchment, is a Ramsar wetland site, of international significance, and sustains a successful aquaculture industry.

Such a diversity of interests in a catchment of over 600 square kilometres means that effective management of its natural and cultural resources is no easy task. Additional complexity arises from the fact that the catchment is presently subject to the requirements of three separate Local Government planning schemes.

1.1 Origin of the Process

The development of integrated catchment management plans is increasingly supported and promoted by both State and Commonwealth Governments as a way of improving resource management. Issues such as irrigation water and river management, tree clearing, weeds and wildlife are seen as interconnected and therefore requiring broader consideration before action is taken on one issue in one location. Local Government and State agencies dealing with roads, forestry, water and waste treatment have impacts that affect each other and require some coordination if their efforts are to be effective. Even private land owners tackling weeds, erosion or salinity often cannot be effective unless their actions are coordinated with those of others.

Recognising the need for a catchment management plan for the Coal River Catchment, Clarence City Council, with support from the Southern Midlands Council, sought and received funding from the National Landcare Program in 1995 to develop an integrated management strategy for the whole catchment.

State policies provide some official recognition and status for Catchment Management Plans that have been developed from a wide consultation with the community. Where these plans have been established, Government agencies and Local Government have an obligation to take into account the objectives and actions proposed by these plans. However the emphasis is primarily on building consensus, providing information and developing a cooperative approach to dealing with issues rather than on a strongly regulatory or punitive approach to enforcing a set of fixed rules.

The process seeks to achieve this by building a consensus on a vision for an area that is broadly shared and includes a wide range of perspectives. It seeks to reconcile different points of view and to find outcomes that provide a balance of benefits to all. At the same time it must be realistic enough to recognise that there are differences in priorities and values, some of which are not easily reconciled, and that economic and other constraints often limit practical action. For these reasons strategies which have been proposed are considered to be achievable solutions.

1.2 Forming the Coal River Catchment Committee

A preliminary meeting of government agencies and some community representatives in January 1996 identified the need for a community based committee to lead the process of developing a catchment management plan.

The formation of the committee was widely advertised in the Valley in early 1996. A meeting of those expressing interest was held on 1 May at which the composition of the committee was determined by those present. It was agreed that:

- The committee should consist of about 12 representatives.
- The sectors that should be represented were listed.
- The representatives of the sector would be chosen from those who had expressed interest.
- The committee chosen would consider the need to identify additional representatives to ensure coverage of such issues and interests as fire, sport/recreation, education, conservation or others.
- The committee should operate on an open basis with observers encouraged.
- Interest groups be encouraged to develop subcommittees for exchange of information and as a channel for education of members of that sector.
- Sub-committees are likely to be used extensively to extend participation and should involve the required technical experts.

The sectors and the representatives selected are:

Main Sector	Representative	Secondary Interests
Agriculture	Richie Nichols	Irrigation
	Rob Morey	Coal Valley Landcare
	Neville Mendham	University farm, Coal Valley Landcare
	Knowles Kerry	Conservation
	Frank Casimaty	Intensive crops
Landcare	Andrew Smith	Education, Penna area
	David Traynor	Urban land care
Chamber of Commerce, Tourism	Jan Geursen	
Forestry	Wayne Carnes	Water, Sewage, Agriculture, 'top of catchment' interests
Aquaculture	David Forrest	Recreational fishermen
Commuters/hobby farm	Lindsay Richley	Tourism, Soils

The process in the Coal Valley is seen to be driven and owned by the Coal River Valley community, hosted by Local Government and to have the co-operation of State and Commonwealth agencies.

The central objective of the process was defined as being to provide a balance between economic development and the conservation of natural resources. This balance, commonly referred to as 'sustainable development', places soil, water and other resource management issues within a framework of community values and priorities. This requires community input on problems facing the catchment and a community vision of what the catchment should be like in the future.

In January of 1997, the process expanded through the formation of a committee for the Sorell and Iron Creek area. These waterways also drain into Pitt Water Estuary, and the

longer term goal is to coordinate the catchment plans for all areas draining into Pitt Water. However, to date the Coal Valley Plan has developed as a separate process.

1.3 Reaching an Understanding of the Issues

An integrated approach to land and water resource management must recognise the 'web' of inter-relationships that exist between land, water and biological resources at a catchment and sub-catchment level. Land based activities will affect water flow and quality, while water can impact upon land capability in terms of salinity, erosion and drinking and irrigation water. Activities in one area of the catchment may have a range of flow-on effects elsewhere in the catchment. Vegetation clearance may degrade downstream water quality or weed infestation may cross property boundaries and reduce habitat for animals. Resource management activities of individuals may impact upon the community, just as community decisions may impact upon the individual.

As catchments are dynamic systems undergoing continual change due to natural cycles and human activity, the management process needs to be flexible and on-going. Responsiveness to change requires a co-ordinated strategy based upon the best available information.

The report *Coal River Catchment – Natural Resource Assessment* has been prepared as part of the plan and provides a summary description of the natural resources of the Coal River Catchment based on the available information. It summarises existing resource data for the Valley and provides a guide to other publications and databases where more extensive information may be available. Its aim is to capture the detail of those natural resources which combine to characterise the Valley and present them in a concise and easily accessible manner. This information has been reviewed by the Catchment Committee in the development of this management plan.

1.4 Developing The Plan

Over a period of 20 months, the Catchment Committee has drawn together the information and considered issues to formulate this management plan for the Valley. In this process, with the support of the project officer, it has:

- produced a natural resources summary document for the Coal River Catchment
- reviewed regional resource and planning information
- established a GIS (Geographical Information System) containing regional natural resource information
- provided a monthly newsletter/information sheet to update a growing mailing list in the community on progress and disseminated technical information on natural resource management
- developed further publicity for the project via radio, newspaper and direct mail
- hosted an Integrated Catchment Management field day for State & Local Government decision-makers
- organised catchment tours to look at and familiarise Committee members and others with natural resource issues in the Valley
- undertaken a community survey of catchment issues to establish priorities

- organised visits by technical and planning authorities to provide input into the strategy, including salinity & groundwater management, weeds, wildlife, aquaculture and vegetation management
- assessed issues and strategies to deal with regional environmental concerns
- provided a display at Coal Valley Harvest Festival to promote strategy development
- assisted the Dept. of Primary Industry and Fisheries to establish a watertable-monitoring program and a Salt Pack hire scheme to allow farmers in the Valley to monitor soil salinity and groundwater levels
- made a poster presentation outlining progress in Coal River Catchment at national conference on Integrated Catchment Management
- assisted in development of proposal for an amalgamated Pitt Water catchment management strategy
- prepared the Catchment Management Plan

1.5 Implementing the Plan

The Catchment Committee is strongly of the view that education, cooperation, coordination and demonstration are preferred to legislation and coercion in catchment management issues. However, if evaluation after a reasonable period—say, five years—demonstrates that critical management objectives cannot be achieved by this alone, then more regulatory approaches may have to be considered.

A few key measures to assess implementation of recommended actions have been proposed at the end of each section. These will be developed in greater detail when the plan has been finalised.

2.0 Vegetation Management

2.1 Background

Humans have long influenced the type and extent of vegetation found in the Coal Valley whether through firing of vegetation by aborigines or the more familiar patterns of clearance and use following European settlement. Changes in the distribution of open grassy woodlands and forest cover since European settlement are not well documented, nor are the changes in extent or species diversity of native grasslands and shrubs and other understorey species. However, an early colonial functionary, Commissioner John Bigge, noted in 1820 that in the lower Coal Valley and Pitt Water area "timber hardly exceeds the proportion that would be requisite for ornament, and at present is insufficient for the construction of buildings and fences" (DOT 1996).

One third of the catchment (275 square kilometres) currently has forest cover, with over 175 square kilometres of this on private land. Ridgelines fringing the Coal Catchment and areas east of the Craigbourne Dam are the main large areas of remnant tree cover (refer Landsat satellite image in *Coal River Catchment - Natural Resource Assessment*). A large portion of the lower catchment is clear, particularly on lower slopes and river flats, as are areas in the north of the catchment around Baden and Tunnack. Some of the steeper, north-facing slopes are also lacking tree cover.

Clearance of native vegetation is still taking place in the Valley. The rate of ongoing loss of remnant vegetation is unknown. Clearance for agriculture still occurs and forestry and firewood requirements will place continuing demands on native vegetation. Forested areas with the potential for commercial forestry include Eastern Hills north of Black Charlies, Flat Top Tier, Quoin Mountain, Gunners Quoin and Grass Tree Hill. More recently, the spread of population from adjacent urban areas and increasing rural residential development is a factor in clearance. While rural residential developments do not necessarily result in wholesale clearance of vegetation, other impacts - the introduction of garden plants, thinning of bush, discontinuity in vegetation arising from roads, clearance around houses, changes in runoff, changes in species or controlled burns to reduce fire risk - all serve to undermine the integrity of the bush in rural residential areas.

Vegetation management has been identified as the highest priority issue in the catchment from the public survey. Nearby areas of severe tree decline in the Midlands may have contributed to this community concern. Over 80% of native vegetation has been cleared in the Midlands after 175 years of agricultural use, and remaining tree cover is subject to continuing decline and loss even after clearing has stopped. The north-west fringes of the Coal River catchment have been categorised as areas of severe tree decline with trees suffering between 40% and 80% canopy branch death (Grice 1995). The causes of this decline appear to lie in the long-term effects of drought, possum and insect damage, livestock damage and soil compaction.

Public concerns about the effects of loss of bushland and tree cover are well founded. The "bush" is a key contributor to catchment health. Changes in the extent and diversity of native vegetation cover will modify soil and water quality and affect the survival of local plant and animal species. It is generally accepted that vegetation loss can increase rainfall runoff, add to erosion, and contribute to runoff peaks with high nutrient and sediment loadings. While there are no regional data directly linking vegetation clearance

to degraded water quality or increased siltation in the Coal River Estuary, negative impacts are seen in local areas experiencing landslips and erosion as a result of clearing.

Maintenance of plant and animal diversity is the central goal of the ecologically sustainable management of native vegetation. Loss of this biodiversity can lead to land degradation and declining productivity. Plant diversity is not simply about native trees; it also requires preservation of shrubs and grasses. Smaller native species often remain only as small, isolated patches in the landscape – ie. road and rail verges, stream-bank, cemeteries, vacant and private land. These vegetation communities may be representative of more extensive areas that existed prior to widespread clearance for agriculture, forestry, and town and coastal development. The distribution of native bush also determines the character of the catchment landscape, providing a very obvious sign of each catchment's uniqueness.

It is far easier to retain and protect existing remnant vegetation than to replant cleared or degraded areas. However, conserving biodiversity is not just about creating more reserves. As much of the diversity of vegetation ecosystems, habitats and individual species is on private land, conservation will require sound alternatives to locking it away. The economic, ecological and cultural values of native vegetation (Table 2) need to be retained within an actively managed program of economic, sustainable land use.

Table 2: Importance of native vegetation (DEST 1995)

Ecological value	Economic value
Protects water resources	Deep-rooted vegetation helps maintain water table levels and prevents salinity
Forms and protects soil	Shade and shelter for stock
Storage and cycling nutrients	Windbreaks for crops improve productivity
Maintaining biodiversity	Reduces peak run-off & helps control soil erosion
Provides carbon sinks that absorb greenhouse gases	Habitat for bird and insect predators of crop pests
Helps maintain regional rainfall patterns	Maintain micro-climates which assist water retention and water quality
Oxygen production	Provide sites for tourism and recreation
Cultural and social benefits	Conserves genetic resources for future development of pharmaceutical or agricultural products
Provides a sense of identity and place	Provides timber and other commercial products such as flowers and honey
Provides places for recreation.	
Aesthetic value	

Like many other aspects of catchment management, effective vegetation management often requires responses too big for the individual property. Small-scale protection and restoration is important, but there must also be a whole of landscape approach for native vegetation to be self-sustaining.

Community involvement requires agreement on area objectives, information on management methods and options, expert technical advice, co-ordination of actions and funding support. Local Landcare groups are already engaged in a range of revegetation programs targeting remnant regeneration, provision of shelter for stock and habitat for native wildlife, minimisation of some pest species, control of groundwater recharge and keeping the water table lower. Further local information and support in areas such as

species choice, planting methods and shelter belt design is required to ensure the success of these projects. As an example, research in the region suggests controlled access for stock may promote greater plant diversity (including natives) than in a situation of total stock exclusion (Duncan, 1996).

Vegetation: Refer Natural Resource Assessment report: page 11-12; Appendix Two.

Vision

Native vegetation is retained, protected, and enhanced. Widespread perennial native vegetation is seen as an integral part of the ecosystem of the Valley (including those areas used for agriculture and forestry) protecting the soil, water quality and bio-diversity.

2.2 Objectives

To minimise further loss and degradation of existing bushlands by retaining the existing diversity of vegetation types; avoiding vegetation loss in areas where it will lead to degradation of the land; highlighting links between vegetation clearance and economic costs such as soil erosion and soil and water salinity; providing accessible advice and information on vegetation management practices; and minimising the impact of rural residential development on remnant bush.

To develop specific area vegetation management plans involving landowners and managers that take into account land capability assessment, appropriate fire regimes, management at the key line and above, surface water flow and sub-surface hydrology and the effect on streams and coastal water quality. Restoration of vegetation to protect natural, cultural and economic values needs to be encouraged by making it financially attractive to retain or restore remnant bush on private land.

2.3 Vegetation Management Actions

The following actions recognise that:

- retention of existing native vegetation is relatively cheap and that restoring vegetation once lost is difficult and expensive;
- information rather than regulation is the preferred tool to encouraging retention of vegetation;
- in some instances protecting critical areas warrants the imposition of controls;
- to gain the full value of native vegetation some restoration is required and that should take place after detailed local planning on properties and areas
- most on ground actions, once identified and coordinated as through planning, will primarily be the responsibility of individual landholders with assistance and support from the general community (e.g. Landcare).

Priority actions are identified in **bold type.**

Information and Awareness	Actors
• Collect, exchange and disseminate information on the effects of vegetation loss and effective vegetation management practices (ecology, fire, stock access, relationship to land productivity, etc.).	*LG; DPIF; TFGA; DELM (Bushcare); CMC*
• Identify causes of ongoing vegetation loss through increased research.	*DELM; DPIF; TIAR*
• **Initiate a "Think before you clear campaign" emphasising the potential harm from clearing and providing resources to help evaluate whether clearing is desirable or profitable for a particular site.**	*DELM; CMC*
• **Develop and distribute an information kit on vegetation management for rural residential landholders that promotes the value of native vegetation and gives effective strategies to minimise impacts.**	*CMC; LG; DELM*
• **Develop and publicise best practice vegetation management approaches to the range of conditions and land uses encountered in the Valley.**	*DPIF; CMC; TIAR; DELM (Bushcare)*
• **Establish and publicise easily accessible sources of information on vegetation management.**	*DELM; LG; DPIF; CMC*
• Promote RFA, *Land for Wildlife* and *Bushcare* projects.	*DELM*
• Fund a local Remnant Bush Co-ordinator through local government as a liaison person between the *Bushcare Tasmania* Program and the community.	*LG; DELM*
• Present an award for native vegetation 'best management'.	*CMC*
Planning	
• **Promote and support Property Planning in conjunction with local Landcare and Producers groups.**	*CMC; DPIF; CRPA*
• **Encourage groups of landowners to develop area plans for bush retention and management.**	*CMC; DPIF; CRPA*
• Identify opportunities for an economic approach to revegetation through Private Forestry.	*Priv. For.; CMC*
• Identify opportunities for an ecological approach to revegetation.	*DELM; Landcare*
• Identify areas requiring special controls due to environmental or other constraints.	*DELM; LG*
• Control stock access to critical bush areas by encouraging fencing of bush remnants.	*LC; LG*
• Manage roadsides for native species retention	*LG; DOT; CMC*
• Develop fire management strategies that incorporate appropriate fire regimes for different vegetation communities	*Fire Serv.; LG; DELM (Bushcare)*
Controls	
• **Lobby to ensure vegetation management is included in the State Model Planning Scheme.**	*CMC*

• **Provide Local Government with a vegetation strategy for inclusion in local planning provisions which includes/recognises best practice vegetation management approaches.**	*CMC; LG; LC*
• **Use planning instruments as one control of the impact of rural residential on remnant bush.**	*LG*
• Implement other controls as may be required for critical areas of native vegetation.	*LG; DELM*
Activities/Projects	
• Develop a local provenance seed bank where there are no commercial suppliers.	*LC; GA*
• Control stock access to critical bush areas by fencing of bush remnants.	*Farmers*
• Strategic planting or seeding of local plant species on farms.	*Farmers*
Incentives and Support	
• **Encourage lending institutions, funding agencies, Local Government & water management agencies to recognise the value of property management plans.**	*CMC; LG*
• **Investigate financial incentives for implementing Property Management Plans.**	*CMC*
• Seek NHT or other funding for protection of identified critical areas with fencing or other measures as required.	*Project*
• Review the impact of rating practices on the incentive to improve or preserve and protect land.	*Project*
• Review available mechanisms to compensate or recognise ecological management of properties (*Land for Wildlife*, covenants, stewardship payments, Regional Forest Agreement compensation, etc.).	*Project*

Measures of Progress

Information source in place and used.

Area of mature bush sustained.

Area of remnants fenced.

Percentage of properties with vegetation management plans.

Vegetation management measures in the Local Government Planning Scheme and Model Planning Scheme.

Quality of mature bush sustained (as measured by number of native species, weeds).

Corridors connecting remnant bush.

Number of properties registered with *Land for Wildlife*.

3.0 Weeds

3.1 Background

Weeds are pest plants – plants growing in the wrong place. Weeds affect everybody by degrading backyards, agricultural land, bush, waterways, conservation areas, roadsides, public amenities and recreational areas. Weeds are good at extending their range and take no notice of property boundaries. They are spread by wind, water, birds, stock, animals, and quite often by humans as they travel. As such, they are an issue for everyone.

The spread of weeds is affecting both agricultural production and the general amenity of the Coal River Catchment. The importance of grazing and cropping activities in the Coal Valley means that control of weeds is critical in maintaining a healthy and productive catchment in the years to come. The costs of weed control on farms and loss to primary production in Tasmania are estimated at $33 million every year. This figure doesn't include the hidden cost of weeds arising from increased fire hazards; human and animal health impacts; the impact of aquatic weeds such as willows on stream water quality, flow rates and stream access; sheltering animal pests and disease; negative impacts on tourism; and reduction in conservation and recreational values.

Control of weeds is most effective when all landholders in an area coordinate their efforts to control a particular weed. In this way, the efforts of one landholder are not negated by re-infestation from neighbouring properties where that weed has not been controlled. **Joint planning and coordinated action are thus a key part of any effective weed strategy.** This is consistent with the recommendations of the State Weed Plan. For effective coordination to occur, detailed weed control planning within sub-areas of the catchment will be required.

Agricultural producers have a direct economic interest in weed control with the cost of control generally rewarded through maintained or enhanced productivity of their land. Other landholders - urban and rural residential property owners and public land managers - may not have this economic incentive to control weeds or recognise the cost to adjacent areas of uncontrolled weeds on their properties. As **roadside management practices are a significant factor in weed dispersal**, the cooperation of agencies involved in roadside management (Councils, Department of Main Roads, HEC, and Telstra) is critical for effective weed management [1]. Residents of the villages and rural residential properties also need to be included in any weed management strategy with clearly defined roles and responsibilities for weed control and access to information on effective control methods.

As it is unrealistic to tackle all weeds at once, determination of priority weeds in the area is important. An assessment of the seriousness and extent of pest plants and environmental weeds across the catchment by the Committee (including the findings of the Coal River Products Association) has identified priority weeds. These are listed in Table 3. The Coal Valley Landcare Group has obtained Natural Heritage Trust funding to assist in the development of a control program for African Boxthorn and Horehound in the Valley, and applied for additional funding for willow control on the Coal River.

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[1] At the same time, broader issues such as management of remnant native vegetation on roadsides should also be addressed.

Table 3: Weeds requiring attention in the Coal Catchment

AGRICULTURAL WEEDS	ENVIRONMENTAL WEEDS
Identified Problems	**Identified Problems**
Horehound *Marrubium vulgarum*	African Boxthorn *Lycium ferocissimum*
White Weed *Cardaria draba*	Crack Willow *Salix fragilis*
Amaranthus *Amaranthus powellii*	Gorse *Ulex europaeus*
Cleavers *Galium aparine*	Blackberries *Rubus fruticosus*
Serrated Tussock *Nassella trichotoma*	Pampas *Cortaderia spp.*
Californian Thistle *Circium arvense*	Cumbungi *Typha spp.*
Nodding Thistle *Carduus nutans*	Boneseed *Chrysanthemoides monilifera*
Stop Introduction to Valley from Neighbouring Areas	Broom species
Wild Poppies *Papaver spp.*	
Ragwort *Senecio jacobaea*	

Prevention of weed entry is far more cost effective than attempting to eradicate a weed once established. Past efforts at control included large signs at all entrances to the Valley stating that the Valley was a farm hygiene area and similar, smaller signs were placed on some farm gates. Some of these signs are still in place. Examples of farm hygiene practices include vehicle wash-down facilities on farms, restricting vehicle movement corridors around farms, avoiding contaminated crop or stock feed, quarantining newly arrived stock, crop and pasture rotation and remnant bush protection (Lisson *et al.* 1997).

Widespread and active community involvement is necessary both to enhance the success of control programs and to provide an incentive and focus for action by government agencies. **It is critical to assess and select the best control methods for each weed and ensure this information is widely disseminated to the community.** Control methods will vary with weed type, season, rainfall or other conditions. Some 'traditional' control methods can actually be counter productive, further entrenching the weed (e.g. fire used to 'control' gorse).

Evaluation of control efforts is required to determine whether the approach adopted is effective, where continued follow-up is required and when to move to the next weed on the priority list. This feed-back can also provide a useful stimulus to the community as they see the problems of different weeds being brought under control.

Weed management is, and will remain, the responsibility of individual landowners and managers. Government funding is in general restricted to planning, coordination, education and demonstration of the best approaches to weed management.

Vision/Goal

A catchment free of the serious impacts of agricultural and environmental weeds.

3.2 Objectives

To reduce and control weeds in the Coal Valley as a result of a catchment-wide weed strategy based on local commitment, involvement and coordinated action of all landholders and land managers. This will be supported by ensuring that the community has a good level of practical awareness of problem weeds and their impacts and is responsible for an adequately funded, ongoing control program that is effective and has minimal impacts on non-target plants and animals.

3.3 Weed Management Actions

The following actions recognise that:

- Weeds don't stop at fencelines, nor should weed control. Co-ordinated planning and action is the most effective approach.
- The resources required for weed control (cash, labour & equipment) are limited. Priority setting is a necessary step.
- Exclusion is cheaper than eradication and control.
- Detection of new or unfamiliar plants in the catchment requires prompt action in terms of treatment and creating public awareness.
- Assessment of effective methods and education is required to enable the whole community to be involved in effective weed control.

Information Gathering	Actors
• Confirm/update priority weeds.	*LC; CRPA; CMC.*
• Map dispersion of priority weeds (agricultural and environmental). Analyse spread/movement, weeds 'hot-spots', dispersal mechanisms.	*CMC; TIAR*
• Assess and select methods of control (including alternatives to herbicide).	*DPIF*
• Farm hygiene – investigate 'weed free' certification system of seed, hay, soil & equipment.	*CRPA*
Information Distribution	
• Provide good information on identification and selected control strategies for local weeds through a locally based 'weed co-ordinator'.	*DPIF; LG; LC*

• Education on pesticide handling & use. Ensure appropriate use of herbicides, when used, to avoid contamination of water and damage to non-target native species.	*DPIF; Distributors*
• Education on the impact of garden plants and other weeds from smaller blocks.	*DPIF; LG; LC*
Co-ordination	
• Set up co-ordinating group for weed control within catchment to support a network of Landcare and farmer groups for co-ordinated approach to weed management.	*CMC; LC; CRPA*
• Coordinate councils and state agencies that have responsibilities for road-side management and other public lands with adjacent land-owners through weed network. Development of specified management requirements for roadside maintenance contractors (include aspects such movement of fill).	*LG; DOT; DELM*
• Re-invigorate farm hygiene program.	*LC, CRPA*
On-ground works	
• Undertake trial treatments.	*TIAR; DPIF; LC*
• Coordinate on-ground works through network.	*LC*
Funding	
• Seek funding to assist in weed management from Council, Natural Heritage Trust and private sponsors.	*CMC.*

Measures of Progress

Number of weeds mapped

Number of weeds with management plans

Number of weeds considered to be 'brought under control'.

4.0 Reserve & Habitat Management

4.1 Background

A key principle of sustainable development is that it be *ecologically sustainable*. The Industry Commission (1997) refers to this as the 'natural capital' passed on to future generations - clean air, clean water and a diversity of native flora and fauna. Because changes in vegetation and land use patterns will result in changes in drainage characteristics and in the numbers and distribution of native species, **protection of ecological processes and biological diversity is best ensured by protection of habitat.**

In past decades reserves were seen as the principal means of protecting habitat. In the Coal Catchment existing reserves are limited and the vast majority of both forested and non-forested land is privately owned. Not all of these reserves are appropriate or effective for maintaining viable native vegetation with some used for recreation and others not effectively managed. Using the reserve system as the principal method of achieving regional ecological sustainability will not be enough. **Habitat protection is required for public and private land, both through formal reserves and through management of private land for nature conservation.**

4.2 Reserves in the Valley

The existing Tasmanian reserve classification system for Crown land comprises eleven main classifications under three different Acts - the *Forestry Act* 1920; the *National Parks and Wildlife Act* 1970; and the *Crown Lands Act* 1976. Reserves are generally valued for one or more of the following attributes:

- environmental protection (flora and fauna conservation, maintaining biodiversity, preservation of wilderness, landscape protection, preserving geological and geomorphological values, and protection of coast and wetlands);
- cultural significance (Aboriginal and non-aboriginal heritage);
- social values (recreational, inspirational and educational); and
- economic importance (mining, tourism, water catchment and pastoral).

Unfortunately these attributes are not always clearly identified in the reserve classification system (TPLUC 1995). Most reserves may serve several purposes. State Reserves are directed more toward habitat preservation. Local government reserves tend to emphasise recreational aspects.

State Reserves in the catchment include:

- Coal River Gorge (declared 1980) - a 209 ha reserve which protects an area of remnant and relatively undisturbed native flora surrounded by land which has been used for agriculture and forestry purposes. A draft management plan was drawn up in 1997.
- Coal River Estuary and Upper Pitt Water - a 3000 ha wetland "Ramsar Site" which includes State nature reserves at Orielton Lagoon, Barilla Bay and Coal River Estuary (management plan under preparation).

- Forestry Reserve - Mt. Ponsonby (465 ha), Brown Mt.(653 ha), Gravelly Ridge (419 ha) and Spinning Gum including Hungry Flats (50 ha).
- Forestry Reserves to be declared under the Regional Forest Agreement – Yarlington Tier (66 ha); Mt. Bains 1, 2 & 3 (2322 ha); Gordons Ridge 1 & 2 (178 ha).
- Conservation Areas - Little Quoin (278 ha) and Alpha Pinnacle (267 ha).
- Nature Recreation Area - Meehan Range, Redgate Section (482 ha).
- Coastal and discontinuous riparian reserves.

Local Government "reserves" are incorporated within a classification system of "public open space" which relates to a range of environmental, scientific and recreational functions. These functions include natural areas providing opportunities for informal recreation or appreciation of significant natural features; semi-developed and developed urban parks often incorporating exotic vegetation; ancillary land which buffers public utilities and infrastructure; linear reserves providing linkages and access; and coastal and riparian reserves (Parsonson 1992). When land is subdivided, a portion (5%) is usually required to be made available as public open space which then becomes the responsibility of the Council to manage. As a consequence, Local Government reserves are widely dispersed and come in many different shapes and sizes.

A failure to provide a clear definition for these classifications, to prescribe their purpose and to outline specific management objectives (TPLUC 1997) has resulted in confusion within the community regarding the status of reserves within their local area and their management obligations. **The creation of any reserve, whether stream side or in other locations should only occur where there is a clear purpose for the reserve. Further, the reserve should have a management plan with clearly defined responsibilities and identified sources of funding.** While a primary aim should be made clear for any reserve area, other uses may be accommodated provided they do not diminish the primary aim. Monitoring of 'habitat' may also be necessary as part of any review into management recommendations.

The resumption of land for streamside reserves has rarely improved the management of these areas. The adjacent landowner may no longer feel responsible for some of the difficult or expensive management problems on this land such as willow or other weed control. Landowners may even feel uncertain as to their right to undertake works on this land. Where further streamside reserves are to be established, there should be a clearly stated rationale for the reserve. The rationale may vary for different parts of the river; that is, in some areas the primary aim may be habitat preservation, in others, protection of water quality and in others, recreation.

For access to the river, particularly close to the town of Richmond and in some areas where road access is good, additional reserves for tourism and recreation are desirable. Controlled access to the Pitt Water Ramsar site for tourism and education should also be assessed.

4.3 Nature Conservation on Private Land

Habitat on private land is typically present as areas of native vegetation and forest on non-agriculturally productive land, riparian strips, and as wind breaks and shelter belts, sometimes planted in conjunction with Landcare projects. Plant and animal

communities typically found on land likely to be agriculturally productive (e.g. native grasslands) are seldom represented in reserves and are also uncommon on private land.

More recently, nature conservation is being encouraged on private land particularly to provide continuity of habitat and ecosystem processes across regional landscapes. This can be particularly important in extending the value of reserves that provide native vegetation and habitat. The Parks & Wildlife Service is promoting programs to encourage and support the use of private land for nature conservation through funding for remnant vegetation protection, private wildlife sanctuaries, conservation covenants on property titles and management agreements such as *Land for Wildlife* and the Regional Forest Agreement.

Increased areas of natural vegetation will probably increase the numbers of native species in and around farms. Populations of the larger fauna - Tasmanian pademelon, brushtail possum, wombat, Tasmanian devil and eastern quoll - appear to have increased in abundance in the Valley since 1975. This is attributed to favourable patterns of land clearance and plantation development and, for possums, a decline in hunting pressure (Driessen & Hocking 1992).

We need to be clear about the benefits of additional vegetation and why we are doing it (see Table 2 in Vegetation Management) while at the same time acknowledging the potential negative impacts of additional wildlife on the farm.

More promotion and education about the range of wildlife management options is required. Poison and shooting may not limit numbers in the long term and in some cases may make the problem worse by removing dominant individuals and increasing breeding. Exclusion from the food source is most effective where practical, but for some crops and pests this is not cost effective. Some farming enterprises and pests are incompatible - e.g. free range chickens and devils - and it may be better not to try. In many cases a combination of measures may be required.

4.4 Exotic Vegetation

Encouraging native species is seen as desirable to provide habitat for native fauna, and because it is best adapted to the local conditions. However, it is recognised that some exotic vegetation and modified landforms are also valued parts of the Coal Valley landscape. Rows of elms, hedges and the patchwork of agricultural land contribute to the charm and character of the area and should also be protected. The use and retention of exotics is supported as long as they do not undermine the viability of native ecosystems. Exotics that are invasive or create other disruptions to natural ecosystems should be discouraged.

Reserves: Refer Natural Resource Assessment report: pages 11-13; 41.

Vision/Goal

The development of vegetation on private land and the dedication by some landholders of areas of land specifically for the support of native flora and fauna will, when combined with public reserves, provide an extensive network of natural areas capable of sustaining the range of ecosystems characteristic of the catchment.

The principal aim of the existing limited network of State reserves in the Valley is for ecological preservation. Their use for education and tourism is managed in a way that ensures a minimum impact on their integrity.

4.5 Objectives

To manage native flora and fauna of the Coal Catchment on a sustainable basis on both public and private land. This will be supported by clearly defined responsibility for all reserves (including streamside), the development of management plans outlining the role of reserves (habitat protection, recreation, tourism etc.) and solid funding arrangements for their management. There should be an integrated approach to native vegetation areas on public and private land to ensure that all natural vegetation communities are represented.

4.6 Reserve & Habitat Management Actions

The following actions recognise that:

- Each public reserve requires a clearly defined purpose, a management plan and ongoing funding support.
- Private land plays an important role in ensuring the sustainable management of native habitat by providing links between significant areas in the catchment and additional diversity of habitat.

Planning, Reserves and Public Land	Actors
• Agencies which control reserves should develop a management plan for each area under their control and place these within a catchment-wide context to tie in with regional plans (ie. vegetation management). They should identify any additional areas of significance that may require management plans or encouragement for protection.	*DELM; LG; Forestry*
• Periodically review the performance of management of reserved and protected sites against the management plans for those areas through development of performance criteria/environmental health indicators (ie. regular surveys of birds and vegetation to track changes in population, vegetation cover and specific habitat types).	*DELM; LG*

• Review status of riparian reserves to determine best management arrangements which may involve returning land to private holding or management agreements with adjacent landowners.	*DELM*
• Obtain feed-back on recreational requirements (active and passive) of residents & tourists.	*LG; Chamber of Commerce*
Information, Education and Promotion of Reserves	
• Collate base line data on significant flora and fauna to provide educational and promotional resource	*LG; Birds Tas; Project*
• Where appropriate, tie reserves to tourism to attract and gain continued funding, increase awareness of natural values. Identify, support, and promote eco-tourism potential.	*LG; Chamber of Commerce*
• Encourage cooperation between agencies and the community in the continuing management of key sites for conservation, tourism and education, in particular, the Ramsar site and the Gorge reserve.	*LG; DELM (P&WS)*
Reserves, Projects	
• Pursue funding for the opening of access up and down the river from Richmond with landholders to allow access to existing reserved areas and connection of the town to both the Ramsar site and upstream recreational area via the river front.	*Chamber of Commerce; LC*
Nature Conservation on Private Land	
• Provide continued education of landholders and others through schools, field days, Council newsletters, the Harvest Festival, *Land for Wildlife*, Landcare, Bushcare etc.	*CMC; LC; DELM*
• Publish articles and photographs of the Valley in which people highlight features and areas they value	*CMC; LG*
• Encourage involvement of landholders and community groups in programs such as Landcare, *Land for Wildlife*, Wildcare etc.	*LG; DELM; LC*
• Look for links to develop an interconnected series of reserves, shelterbelts and other areas of native vegetation that provide continuity and mobility for wildlife.	*DELM; CMC; LG; LC*
• Management agreements (incl. Regional Forest Agreement) & funding for private landholders	*LG; DELM; Priv. For.*
• Develop mechanisms of funding support for management of non-reserved areas of 'natural significance' on private land	*DELM*

Measures of Progress

Plans for all reserves

Links between reserves, natural areas,

Number and/or activity of Landcare and 'friends of' groups

Surveys in place showing positive trends (attitudes, use)

Increase in community awareness, use.

5.0 Water Resources

5.1 Background

The Coal River catchment is a relatively dry area of Tasmania with an annual rainfall averaging around 500–600 mm. Mountains to the west of the catchment place much of the Valley within a rainshadow. While East Coast low-pressure systems tend to produce more rain from October to December, average monthly rainfall statistics are relatively uniform in the 40–60 mm range. Despite this apparent uniformity, rainfall tends to be highly variable from year to year and month to month. Water resources within the Valley are heavily dependent upon rainfall with few perennial streams and springs in the region. Ponds in streambeds or farm dams have traditionally provided the major supply over dry summers. While there is a considerable volume of groundwater (estimated reserves of 8,200,000 ML), some shallow groundwater and some surface waters show high to severe levels of salinity. Security of supply must cope with the natural variability of available water resources and in particular the large inter-year variations that can occur from such events as el Niño.

The relative scarcity of good quality water within the Coal River catchment is a critical management issue for the Valley. The transition from dryland cropping and grazing to higher value irrigated crops that has taken place in the lower catchment over the last decade is expected to continue. An economically and ecologically sustainable future requires a strategic approach to issues dealing with water supply (reliability, quality and cost) and agricultural impacts on waterways (nutrient enrichment, rising salinity, chemical contamination, bacterial and viral contamination, algal blooms and altered flow regime).

5.2 Water Quantity

The upper reaches of the Coal River and other major waterways in the catchment - White Kangaroo Rivulet, Native Hut Rivulet, Duckhole Rivulet and Barilla Rivulet - tend towards low flow (or no flow) over summer and peak flow events in wetter months. These waterways are subject to water extraction by landowners with river frontage who have 'riparian rights' to draw limited amounts of water for domestic or stock use or 'commissional water rights' for irrigation purposes. The Rivers & Water Supply Commission has the responsibility for allocating these rights.

The construction of Craigbourne Dam on the Coal River in 1986 and the initiation of the South East Irrigation Scheme (SEIS) provided a substantial resource for the development of intensive agriculture in the Valley. While the dam has a capacity of 12,500 ML, maintenance of storage reserves and losses during transfer leaves only 3500 ML per annum available for irrigation. **This was fully utilised in the 1995 irrigation season.** Capacity could be increased by improving the efficiency of the SEIS delivery, by drawing water from other sources such as the Derwent River or by reusing sewage effluent for irrigation.

Council of Australian Governments (COAG) reforms will increasingly transfer the burden of costs for the provision of water to users. One feature will be the trade in water entitlements as a means of reallocating finite resources to the most efficient water users. With greater emphasis on a 'user pays' system for the costs of supply and maintenance, any increase in water costs will force a change in the mix of uses for

irrigation water to higher value uses. Competing uses for water including watering lawns and gardens in rural residential areas will also put pressure on availability and price.

There is concern by some that the use of water may be promoted beyond the ensurable, sustainable supply of quality water. The risks of over commitment or water supply degradation in consecutive low rainfall years is not being fully assessed or made known to current and potential users who may have invested large amounts of money in irrigation equipment and crops.

The Coal River is a major means of delivery of irrigation water to downstream users. During the irrigation season the Coal River below the dam is deemed to be an irrigation channel rather than a natural watercourse (*Coal River Irrigation Water District By-laws 1986*). This is a major source of inefficiency in delivery of water with water lost to evaporation, uptake by willows and other stream vegetation and overflow down the stream.

As a consequence of impoundment and irrigation demands, the present pattern of river flow (more water in summer and less in winter) is more or less the reverse of what occurred prior to dam construction. Dam water regulation changes both the seasonal volumes and also temperatures and dissolved oxygen levels from their natural cycles.

Any modification of flow regime, whether due to river regulation or water extraction, will affect the natural ecological processes and biodiversity of the waterways. Plants and animals that are adapted to a particular environmental condition or 'niche' will be affected by any permanent change to these conditions. New plants and animals may adapt more successfully to the new conditions. An example of this is the much stronger growth of willows in the Coal River due to consistently higher summer flows (as opposed to the low or no-flow summer regime experienced pre-dam). Hence **provision of 'environmental flows' which sustain the ecological values of waterways should be a necessary component of any water allocation plan.**

5.3 Water Quality

The condition of local waterways is an effective touch-stone of catchment health. The impact of land use and management practices in one area of the catchment is often easily detectable in water quality results downstream of these areas.

The 1997 State Policy on Water Quality Management now specifies policies and programs to achieve and maintain water quality objectives on a catchment wide basis. Key components include:

- Managing point source pollution by avoiding or limiting discharges, assessing toxicity of emissions, establishment of mixing zones and use of modern technology.
- Managing diffuse sources of pollution by controlling erosion and stormwater runoff from land disturbance; establishing codes of practice to control agricultural runoff; adherence to Forest Practices Code for forestry operation; guidelines for road construction and maintenance; encouraging land application of wastewater and treated effluent; promotion of guidelines for stream and waterway management.
- Establishment of a framework for community involvement in setting water quality objectives. Environmental values relating to particular activities which require protection (recreation, ecosystem, aquaculture, irrigation etc.) shall be determined

through a catchment-based consultative process and be identified in local planning schemes.

- Defining approaches to, and responsibility for, water quality monitoring in terms of coordination and quality control; public access to data and use of data.

Traditionally, there has been limited community input into water quality issues. Water management issues usually involve one or more government agencies with the Dept. of Environment & Land Management having responsibility for activities polluting waterways (generally point source) while the Dept. of Primary Industry & Fisheries assesses ambient freshwater quality. Local Government is also involved in water monitoring for smaller point sources of pollution. Current monitoring is mostly at the end of the Coal River and includes only a limited number of variables. It can tell when conditions are deteriorating but is not sufficient to identify the cause/source of the deterioration.

The limited water quality information available makes it hard to be certain about long term water quality trends. **While most available results indicate that water conditions are generally good, salinity levels and algal blooms are of some concern.**

- Salinity appears to be the major water quality problem. Highly saline waters are more prevalent in the southern part of the catchment with the salinity of the Coal River increasing as the water flows down stream. Minor stream inflows fed from saline groundwater may contribute to this increasing salinity. High salinity levels also substantially affect many farm dams. Salinity restricts the use of these waters for irrigation and other uses. Irrigation also has the potential to exacerbate naturally high salinity concentrations in ground and surface waters.

- June 1997 marked the occurrence of the first recorded blue-green algae bloom in Craigbourne Dam. *Anabaena circinalis* was detected both throughout the water column and also in significant concentrations up to four kilometres downstream of the dam. The significance of this bloom lies not only in showing that conditions can be conducive for bloom development in the Craigbourne impoundment, but also that algal spores dropping to the sediment may provide the 'seed-bank' for an increased frequency of algal blooms in the future (Bobbi, 1997). A further bloom in early 1998 appears to confirm this view.

- Nutrient levels in the Coal River are typically low although occasional high nitrate and phosphate concentrations may indicate pollution by animal or human waste, or fertiliser run-off.

- Although microbiological data from Craigbourne Rd show high levels of faecal coliforms prior to dam construction, no subsequent data are available.

- While occasional peaks in turbidity and suspended solids coincide with rainfall events, the settling of solids within Craigbourne Dam appears to reduce sediment load downstream.

- Other parameters of aquatic ecosystem health - dissolved oxygen, pH, biochemical oxygen demand, cations, colour and metals - are generally within acceptable guidelines.

- Willow infestation appears to have degraded some waterways causing a reduction in the diversity and abundance of fish and aquatic invertebrates. Dissolved oxygen levels are also reduced in areas of heavy willow infestation.

At the present time there are no formal water quality requirements that must be met by the irrigation scheme. The water quality deteriorates (increased salinity) as water flows down the Coal River, delivering poorer water quality from the irrigation scheme to those lower in the catchment.

While groundwater provides a substantial water resource to the Valley, high salinity generally prevents its use for domestic purposes and places some restrictions regarding irrigation use. Most bore water is suitable for stock watering.

Expansion of irrigation may have an impact on groundwater, causing a rise in water tables and increasing soil and groundwater salinity. This may ultimately limit the total volume of water which may be applied within salt prone areas of the catchment. Research on water table movement is presently being undertaken by DPIF and local farmers.

The estuarine waters of Pitt Water are important as a fish nursery, for aquaculture production and as an internationally significant wetland site. Runoff from the catchment can have a significant impact on the estuary. Estuarine water quality is measured regularly and the dynamics of the bay modelled under the Tasmanian Shellfish Quality Assurance Program (TSQAP). **The principal water quality issue for aquaculture is the avoidance of high bacteria levels accompanying heavy rainfalls from land runoff and sewage overflows and their potential to close local shellfish operations.** The cost of monitoring water quality in the estuary is borne by the oyster growers, even though many of the water quality changes may arise from terrestrial uses upstream in the Valley. **Equitable sharing of the cost of monitoring is seen as an issue to be addressed.**

Water Resources: Refer Natural Resource Assessment report: page 14 - 34, page 38-40

Vision/Goal

The reliable supply of good quality water available in the catchment is maintained or increased. Ensuring water is used in a way that promotes productive agriculture while not degrading the land and water quality and provides environmental flows.

5.4 Objectives

Promote economic development by ensuring sufficient availability of good quality water for irrigated cropping and other water reliant enterprises. Disseminate a clear understanding of available water resources to guide water reliant developments in the Valley and ensure an efficient, equitable, reliable and sustainable supply of water for all users in the catchment. The quality of water available is to be maintained with respect to all significant measures including salinity, nutrients, and biological factors (*E. coli.*, blue-green algae) at the quantities committed to users. Development of an informative surface and ground water quality monitoring system with costs shared equitably by those contributing to pollutant loads.

Engender a good understanding of the environmental requirements of groundwater, wetlands and waterways of the Coal Catchment and ensure that excess or inappropriate use of water does not have damaging effects on land in the Valley.

5.5 Water Resource Management Actions

The following actions recognise that:

- A productive and sustainable agriculture sector in the Coal Valley requires certainty of supply in terms of water quality and quantity.
- Environmental water requirements are a legitimate and important component of any water resource strategy.
- On-going water quality monitoring is necessary to detect both short-term impacts and long-term changes to catchment health.

Information, Water Quality Monitoring	Actors
• Provide sufficient additional monitoring (and collation of existing data monitoring efforts) to ensure knowledge of trends in water quality and to allow identification of both point and diffuse sources adversely affecting water quality. Where adverse sources are identified, develop control strategies.	*DPIF; DELM; LG; Users; Polluters.*
• Landowners to continue to monitor the water table in the Valley.	*Farmers*
• Waterwatch Groups to participate in regional water monitoring.	*LC; Community; Schools*
• Organise Waterwatch co-ordinator to support group collection of regional data and undertake community education programme on local water quality/quantity issues using these data.	*CMC; LG; DPIF (Waterwatch)*
Ensure or Increase Supply of Irrigation Water	
• Thorough investigation of additional/alternative water supply options. Possible mechanisms include encouraging on-farm storage for excess dam release with lower rates for unregulated flows and for capturing water from side streams; supplying water from the more reliable Derwent catchment; or using treated urban effluent for irrigation.	*R&WSC; LG; Irrigators*
• Gather information on relative cost, value/benefit, impacts on current use of water/wastewater; likely distribution/availability.	*R&WSC; LG; Irrigators*
• Investigate options to increase the efficiency of delivery of the irrigation stream such as construction of a new weir at Richmond or the transfer of water in Stage 1 by pipeline rather than by the Coal River. Potential benefits of the latter include restoration of seasonally appropriate environmental flows and improved river health; increased delivery efficiency and increased water quantity available; consistent water quality delivered over the entire system; and reduced pumping costs.	*R&WSC; LG; Irrigators*
Maximise Value of Irrigation Scheme Water Used	
• Ensure equitable supply costs arising from "COAG" initiated changes through comprehensive consultative process.	*R&WSC; Irrigators*
• Promote diversification of agriculture into higher value crops by providing information on new crops and local trials of these crops.	*DPIF; CRPA; TFGA; TIAR*

Establish Supply Standards and Agreements

• Collection of water quality information for irrigation water to allow establishment of water quality criteria for water delivered from the irrigation system.	*R&WSC*
• Setting of standards for supply and information on quality supplied.	*R&WSC; Irrigators*
• Drawing up of supply agreements including agreed actions in the event that water quality/quantity cannot be maintained.	*R&WSC; Irrigators*

Implement "Best Management Practice" for Irrigators

• Develop code of conduct/standards for irrigation with emphasis on salinity remediation methods. This should cover issues such as on-farm impacts, off-farm impacts, effect of limits on production, alternative low volume regimes, and water table monitoring requirements.	*Irrigators, DPIF Salinity Officer*
• Encourage the establishment of riparian buffers to reduce entry of pollutants to streams (nutrients, bacteria, and agricultural chemicals).	*LC; Farmers; DPIF*

Maintain Appropriate Environmental Flows

• Analysis of past records and biological field work of the Coal River, Pitt Water Estuary, other 'intact' streams of similar catchments.	*DPIF; Uni.*
• Consultation and agreement on environmental allocation with user and managers.	*R&WSC; DPIF; Irrigators; Aquaculture*
• Implementation of riparian recommendations (see below).	*LC; Farmers; DPIF*

Measures of Progress

Total available water each year (farm gate)

Track salinity of irrigation water

Change in area that is salinity affected

Establishment of standards & sanction system

Track stream water quality statistics.

6.0 Riparian Areas

6.1 Background

Management of riparian (stream-side) vegetation has a key role in determining catchment health. **Badly managed riparian areas may contribute to stream pollution, flooding, stream bank erosion, and the spread of weeds.** These effects on flow and water quality may extend as far as the Pitt Water Estuary, with negative impacts on environmental health and aquaculture.

There has only been a limited survey of riparian vegetation along the Coal River (Askey-Doran 1993) with at least two of the identified vegetation communities assemblages on the upper reaches considered to be representative of poorly reserved conservation status. Cropping of alluvial plains, exclusion of native vegetation by crack willow (*Salix fragilis*), cumbungi infestations, unrestricted stock access to waterways and changed river flows have produced changes in the riverbank vegetation throughout the Coal Catchment. The Coal Valley Landcare Group is just one of several groups within the catchment working on projects directed at waterway rehabilitation (Lisson *et al.* 1997).

Good management of riparian areas has many potential benefits for both public and private land:

- Retaining riparian vegetation acts as a filter, reducing the inflow of nutrients, agricultural chemicals and animal wastes after rainfall.
- Riparian vegetation may reduce water inflow to streams in times of heavy rainfall and so reduce flood peaks.
- Riparian areas are key recreational areas for fishing, walking and passive recreation.
- Shading of watercourses can improve water quality by reducing water temperature and algal growth.
- Riparian vegetation may provide shelter belts for adjacent agricultural land.
- Riparian areas may be important wildlife corridors and habitat for native species, particularly those requiring water or damp soils.
- Riparian areas may provide a reserve grazing resource for stock in periods of drought.
- Streams provide an important resource for watering stock and providing shade. Access by stock should in general be controlled. Managed stock access can provide an effective and economical control of willow and some other weed growth, although it can also introduce new weeds.

While some of these uses can co-exist, others may at times be in conflict. **In addition to defining the principal management objective for each riparian area, where necessary, secondary objectives should also be established.** Priorities may be different for different parts of different streams.

6.2 Riparian Reserves

Prior to 1993, all sub-divisions with river/coast frontage required 30 metre riparian or littoral reserves which became Crown Land (*Local Government Act 1962*). However, as noted in the previous section on reserves, this may not achieve the management objectives sought, nor in many cases are the management objectives even clear for a particular portion of a stream. These reserves are generally discontinuous, not fenced or otherwise demarcated and mostly not accessible to the public. While resumption of riparian areas as reserves may aid in some management objectives, it has been seen to lead to a reduction in the effective control of willow and other weed species.

As a result of legislative changes, however, the Council now has some discretion during sub-division of these areas. The key point appears to be whether riparian land is to be public open space or a reserve.

- If the Council sees value in it as public open space, then it becomes the management responsibility of the Council. This situation usually arises if the land has some recreational value.

- If the Council doesn't want the land, then it offers it to the Crown (Dept. of Environment and Land Management - Property Services) as a reserve. While the Crown doesn't often accept, there doesn't appear to be a clear policy on acceptance/rejection. If the Crown accepts, it becomes Crown Land. The Crown has the subsequent right to sell or lease the reserve, although this is uncommon for river reserves.

- If neither Council nor Crown acquire the land, then it remains with the landowner.

6.3 Management Zones

Management objectives and operational guidelines for riparian areas are limited within the catchment. While the Coal River Gorge and forestry areas have specified guidelines and codes of conduct, it is desirable that other land managers are fully aware of, and practice, a range of generic 'best management practices' to lessen land use impacts on water.

- **Coal River Gorge Nature Reserve**: Management objectives as set by the Parks and Wildlife Service (1997) nominate the primacy of habitat conservation; with secondary objectives of low key recreation provision, protection from animal and plant pests and disease, protect cultural heritage, increased knowledge regarding area, and maintaining the cooperation of adjoining landowners and users.

- **Forestry Areas**: Protecting water quality is the primary stream side management objective in native and plantation forests (Forestry Commission 1993). Retention of riparian vegetation and operational 'no-go' zones in stream-side reserves act to reduce soil disturbance and loss to waterways. These reserved areas also retain local animal and plant species.

- **Along grazing areas**: While provision of water for stock is the primary management objective for most graziers, this should not be inconsistent with a secondary goal of providing continuity of native vegetation for habitat. Although there is extensive information available on protecting waterways from stock - ie. control of stock access by fencing; offering piped water off stream for stock; utilising a vegetated

buffer zone to minimise runoff of nutrients - there is no formal 'code of practice' for grazing activities similar to that for forestry.

- **Along cropped areas**: Often the primary management objective is about maximising cropping area on fertile riparian land rather than retaining stream-side vegetation. This will have negative impacts on the riparian zone through loss of habitat and biodiversity, increased stream bank erosion, and reduction in the capacity to filter out soil, fertiliser and pesticides from overland flows. In general, riparian areas subject to flooding should not be cropped. Acceptance of secondary objectives for the protection of native vegetation and aquatic habitat by land owners is a critical component of riparian management in cropping zones. This may require modified patterns of land use at some financial cost to farmers.

- **Around Richmond and the major road crossings**: Riparian areas which allow public access can be managed to provide a valuable tourist and recreation resource. While some allowance is made for 'traditional' exotic vegetation (ie. willows on the Coal River at Richmond), preservation of native habitat is generally consistent with expectations of users.

- **Foreshore (river & estuarine) of Pitt Water**: A management plan for upper Pitt Water is at present being developed by the Dept. of Environment & Land Management. In theory, this could follow the lower Pitt Water zoning strategy outlined in the draft Seven Mile Beach Protected Area Management Plan (DELM 1996) where different management prescriptions exist for different zones according to whether it is valued for coastal conservation or coastal recreation.

Riparian Areas: Refer Natural Resource Assessment report: Appendix Two, page 52

Vision/Goal

Waterways are in their near natural state with riparian areas managed to protect the dominant values in each area.

6.4 Objectives

To maintain and extend riparian vegetation (native vegetation rather than weeds) which buffers waterways from the negative impacts of adjoining land use. To ensure environmental flow allocations which sustain healthy and diverse stream ecosystems. This is to be supported by establishing clearly defined management responsibilities and well-informed management objectives for all riparian areas.

6.5 Riparian Management Actions

The following actions recognise that:

- Stream water quality and land use practices are inextricably linked.

- The linear nature, and extent of, riparian areas require responsibility to be accepted by the whole community for their management.

Management Plans	Actors
• Development of specific management plans (e.g. RiverCare Plan) for different sections of the river according to their character, use and problems.	*LG, DELM, landowners.*
• Workshop on the in-stream and estuarine impacts of variable river flow. User agreement on stream flow allocations (including environmental allocations).	*Upstream & Downstream users; State & LG*
• Buffer restrictions on streambank development in planning scheme.	*LG*
Promote 'Best Management Practices'	
• Education amongst river managers and users of effects of different streamside treatment on stream water quality.	*DPIF; TFGA; LC*
• Promote Waterwatch activities amongst community.	*DPIF; LG; LC*
• Encourage control of stock access to stream by fencing.	*DPIF; TFGA; LC*
• Investigate alternative forms of stock exclusion from waterways (eg. off-stream water).	*DPIF; TFGA; LC*
On-ground Works	
• Preparation of RiverCare plan where river-works are to be undertaken.	*LC; CMC.; farmers*
• Provision of technical advice for willow and cumbungi control.	*DPIF; LC*
• Revegetation and ongoing site management.	*Farmers; LC; DELM (Bushcare)*
Funding Support	
• Seek funding from tourism and related funding sources for river improvement where there is tourism potential that is compatible with stream health.	*CMC.; LC; Chamber of Commerce*
• Seek funding from NHT for river environmental improvements.	*CMC.; LC*

Measures of Progress

Plans in place for length of stream

Willow removal with appropriate replanting

Control of stock access to stream.

Instream & streambank bio-diversity measures

Water quality measures

7.0 Land Management, Soils

7.1 Background

As agriculture is the major industry in the catchment (sheep grazing, dryland cropping, and intensive irrigated cropping), appropriate land management practices are essential to maintain its long-term sustainability. While management practices generally have been improved with the introduction of crop and pasture rotations, minimum tillage, better machinery etc., **virtually all forms of land degradation can be found within the Valley.** These are well documented in the Coal Valley Landcare Manual (Lisson *et al.* 1997). These include soil structural decline; tunnel and gully erosion; high levels of soil (and water) salinity particularly for farmers within the South East Irrigation Scheme; soil erosion and land-slumping caused by over-grazing and excessive vegetation clearance; stream-bank erosion due to crack willow infestations and erosion of alluvial soils due to streams breaking over their banks. Various reports produced by the Dept. of Primary Industry also indicate areas susceptible to soil degradation (see *Natural Resource Assessment Report*).

Although 14% of the South East Irrigation Area is affected to some degree by salinity, this is primarily in the form of sub-surface storage (Finnigan 1995). There are no clear data on the build up, if any, in the salinity of soils over time, although this is known to be a significant risk. Water table monitoring is now in place which should build up a clearer picture between now and 2002. Wind erosion can also be a problem due to the combination of strong prevailing north-westerly winds and lack of sheltering vegetation. Relatively few farmers regularly monitor soil quality and can identify changes in their soil quality over time.

Land Management, Soils: Refer Natural Resource Assessment report: Pages 5-9, 16-18, Appendix Two - Salinity management

Vision/Goal

A healthy landscape in which soil quality is maintained or improved.

7.2 Objectives

Removal of seriously degraded areas from production followed by stabilisation and rehabilitation of these areas. Implement sound management practices on crop and pasture land by ensuring widespread knowledge of best practices in soil management.

7.3 Soil Management Actions:

The following actions recognise that:

- Soil loss is permanent.
- Soil salinity is best addressed by prevention
- Adoption of soil 'best management practices' by landowners is the key to minimising soil degradation and loss in the Valley.

Information Gathering	Actors
• Establish regional soil conditions: Identify eroding areas, susceptible areas	*LC; Farmers*
• Measure, record and publicise trends in soil health. This includes the salinity monitoring network and encouraging individual landowners to measure and record soil health.	*DPIF; Farmers; LC*
• Develop codes of best practice in soil management relevant to local conditions. This includes both agricultural and non-agricultural land. Information should include the economic aspects of soil management.	*DPIF; CRPA; TFGA; LC*
Information Dissemination	
• Communication of soil management advice to properties with erosion problems and the wider community.	*DPIF; TFGA; CRPA*
• Promotion of whole farm planning and effective soil management techniques	*DPIF; TFGA; CRPA*
• Provide information on salt and water table trends, dynamics, preventative action	*DPIF; TFGA; CRPA*
• Diversify the agricultural uses of the soil. Reduce reliance on annual crops. This is likely to be constrained by the water available. Encourage use of equipment that allows minimum tillage, etc.	*DPIF; TFGA; CRPA, Farmers*
Implementation of On-Ground Works	
• Co-ordination involving continuing Landcare projects and for widespread areas of erosion crossing property boundaries, identify joint action required and coordinate efforts	*LC; CMC.; Farmers*
• Control of willows particularly where they may contribute to stream blockages and flooding	*LC; Farmers*
Incentives	
• Identify sources of funding support	*CMC.; LC*
• Identify any sources of economic or other pressure that induce poor land management practices and seek ways to overcome these	*Project*

Measures of Progress

NHT funding for soil management projects

Whole farm planning course participation

Length of streams subject to willow removal and vegetation replaced.

More detailed map on soil degradation problems in the Valley.

Publications on local best management practices.

8.0 Development/ Land use/ Planning issues

8.1 Background

The character of the Coal Catchment is, to a large extent, determined by planning decisions regarding acceptable forms of land use and development. Changes in population, farming practices and resource use are also reflected in the changing face of the Valley. Agricultural land use has become more intensive with the introduction of the South East Irrigation Scheme in 1986. At the same time, there has been a growth in rural residential development. **As a consequence, intensive agriculture and rural residential living are increasingly found close to each other.** Tourism and recreation are also increasingly important parts of the activity and economy of the region which require more consideration in planning scheme development.

At present, the Coal Catchment is subject to three different planning schemes operating in the different Municipal Council areas. This may change. Realignment of Council boundaries to conform to catchment boundaries and the new Model Planning Scheme may result in one planning scheme covering the entire catchment.

Local planning guidelines endeavour to minimise the negative impacts of changes, balancing a range of strategic objectives - social/cultural, land use, infrastructure, economic and environmental. Key planning steps involve identifying and understanding existing conditions, establishing objectives for a preferred future environment, and taking actions to achieve these objectives. The present integrated catchment management process can contribute much to this process.

8.2 Quality of life/ preserving aesthetic, heritage values

People enjoy living in the Coal Catchment for many different reasons. They may like very specific areas or objects such as a tree or row of trees, which borders their home or stretch of river. Alternatively there may be less tangible or broader scale reasons such as enjoying the agricultural landscape, quieter lifestyle, lack of pollution, sense of community, or the sense of history which permeates the townships. The quality of life is inextricably linked with maintaining or enhancing these facets for all of the community.

Aspects that have been identified as important values in the Valley include the need to maintain and reinstate river bank access and the need to retain the mix of fields, tree rows, buildings and more open areas along with the mix of native and exotic vegetation. Threats to Richmond's heritage and historical values are also perceived as threats to the tourism and amenity value of the Valley.

With the change from a rural/pastoral character to more intensive agriculture pursuits and greater urbanisation, there has been an increase in population associated with rural sub-divisions and a move towards an increasingly urban population profile. This is often accompanied by much higher expectations regarding service provision and infrastructure. Areas with a primarily agricultural or bush character over the last two decades have increasingly showed the characteristics of strip development or rural residential suburbs.

An approach to managing increasing residential development in the Valley is to concentrate residential development in those areas already designated for rural

residential development and in or adjacent to the existing village areas. The ultimate growth of the village areas should also be constrained by a designated green belt.

8.3 Protection of Agricultural Land

There is generally a desire among residents to retain the rural character of the area and to protect agricultural land from non-agricultural development. Proximity of rural residential subdivisions and residents to intensive agricultural production can, however, lead to conflicts over issues such as noise, smell, pet ownership etc. Conflicts should be minimised through consultation and integration and by clearly defining areas or zones for each activity while recognising the need for some flexibility through periodic reviews. Increasing development can also increase land values and rates for farmers. When values and rates are based on residential amenity rather than agricultural potential, farm viability is threatened.

A State Policy on the Protection of Agricultural Land is under development by a joint DELM/ DPIF working group. An important component of this is the integration of land use capability into land use decision making. It is in the final stages of review before adoption and, if adopted, will then become a State Policy overriding any Local Government planning regulations in conflict with it. Members of the Catchment Committee have concerns that **the provisions of this Policy will not be sufficient to counter some of the economic pressures which make land near urban areas not viable for agriculture.**

Land use practices are often not sustainable in relation to local land capability factors such as erosion, soils, wetness and climate. Poor land management by some land holders has led to erosion, total removal of remnant vegetation, fire hazard, spread of weeds, loss of soil fertility and even the stripping of all top soil for sale. The role of 'non-productive' land in maintaining farm productivity is also not widely recognised. Some of these issues are not effectively addressed by planning approaches but may require other instruments working in conjunction with planning controls.

Land Use & Planning Issues: Refer Natural Resource Assessment report: Pages 36, 42-44, 46.

Vision/Goal

The development of intensive agricultural and related activities and maximising of the potential economic benefits for the South East Irrigation Scheme while maintaining the rural character of the area with 'village' type residential areas.

Any subdivision and development should not detract from the natural and cultural heritage values of the area and not result in pollution of land, air, surface water or ground water.

8.4 Objectives

To maintain and enhance the natural and man-made surroundings of the Valley. Agricultural, environmental and cultural values are to be protected by relating land use to land capability and the values of 'hinterland' in protecting the ecological sustainability of 'productive' land are recognised. Rural residential development does

not hinder agricultural production or agricultural potential and does not generate unrealistic expectations of service provision. Industry is to remain concentrated in the Cambridge industrial estate.

A vegetation mix will be maintained in the Valley which provides both historical character and native habitat. By necessity this entails control of agricultural and environmental weed species.

Heritage buildings in Richmond and the other villages will be retained and protected, and local villages are to be protected against negative impacts such as excessive traffic. Public open space will be extended to areas of value and interest (such as additional walkways up and down stream from Richmond).

8.5 Planning/Management Actions

The following actions recognise that:

- There is a potential conflict between intensive agriculture and rural residential living when close to each other.
- There is generally a desire among residents to retain the rural character of the area and to protect agricultural land from non-agricultural development. Land use in rural areas should be primarily determined by land capability.
- The rural character of the Valley is best maintained by concentrating residential developments rather than allowing them to spread widely along major roads and through bush areas.

Information and Awareness	Actors
• **Define and document the values of the villages including their history.**	*Community; LG*
• Promote the difference between native and exotic vegetation and encourage use of local provenance plants.	*LC; LG*
• Restrict public plantings of exotics to defined areas.	*LG; Community*
• Provide information on impacts of some plant types, particularly problem weeds.	*DPIF; LC*
• **Promote awareness amongst rural residential and urban residents of potential threats to farming activities (dogs, weeds etc.).**	*LG; DPIF*
• Encourage greater participation in whole farm planning courses with greater emphasis on the role of 'hinterland' or 'non-productive' land on farms.	*DPIF; DELM; LC*
• More information and support on the importance of biodiversity on farms.	*DELM; TFGA; DPIF; TIAR*

Planning

• Undertake land capability study in Coal Catchment to help determine landuse.	*DPIF*
• Incorporate land capability information into the planning scheme.	*LG*
• Identify land of agricultural and ecological value beyond the land capability classification system.	*DPIF*
• Support passage of State Agriculture Policy.	*CMC.; LG*
• Development should only be permitted on agriculturally non-viable land and areas which are not ecologically sensitive.	*LG*
• Limit uneconomic subdivision of agricultural land to ensure continued agricultural use - 40 hectares as of right. For 20 – 40 hectares, a farm plan must be provided and approved.	*LG; DPIF*
• Workshop to assess potential conflicts between agricultural producers and rural residential developments and build appropriate buffers into planning scheme.	*CRPA; farmers; LG*
• 'Village-style' development should be encouraged. Restrict residential development outside of existing villages and rural residential zoned areas.	*LG*
• Planning scheme review on heritage and landscape aspects of Valley.	*LG; Community*
• Planning should ensure protection of the character of existing villages.	*LG*
• Highlight the difference in service provision between rural and urban areas.	*LG*
• Consider bushland management issues in establishing planning zones/uses.	*LG, DELM*
• List those areas requiring landscape protection and incorporate them in the planning scheme.	*CMC.; Community; LG*
• Establish a green-belt around Richmond and vegetation corridors across the Valley and detail them in the planning scheme.	*LG; LC*
• Ensure that restrictions in planning scheme on appropriate integrated tourist-agriculture developments are removed.	*LG*
• **Maintain and enforce planning scheme objectives to concentrate industry in Cambridge zone.**	*LG*

Activities/Projects

• Seek funding or other assistance to establish and maintain the Richmond river-walk which may be available from programs such as tourism development, employment and training programs, river rehabilitation for willow control. Extension of trail from Ramsar site to Campania.	*Chamber of Commerce*
• Lower costs of farmer participation in whole farm planning courses through identification of sponsors.	*DPIF*
• **Lobby politicians and Dept. of Transport for road bypass at Richmond.**	*Chamber of Commerce; Community; LG*
• Explore possibilities for restoring the productive capacity of alienated land – eg. backzoning and reconsolidating sub-divided land.	*CMC*

- Research into innovative developments for integrating tourism and agriculture. *LG; Chamber of Commerce*

Measures of Progress

Construction of Richmond river-walk

Land capability study for the Coal Catchment

Relevant changes in planning scheme.

Workshop on conflicts conducted.

Participation in whole farm planning course

Sponsorship of whole farm planning course

Green-belt around Richmond

Landscape protection list for the Valley.

Documents produced on local history

Construction of Richmond by-pass

Integrated agricultural/tourism developments

Changes in planning scheme

9.0 Aboriginal sites

9.1 Background

It is estimated that Aboriginal habitation of southern Tasmania may stretch back over 20,000 years. There have only been limited surveys of Aboriginal heritage in the catchment restricted to that area flooded by the Craigbourne Dam. It is a reasonable assumption that the floodplains and footslopes of the Coal River and Wallaby Rivulet were extensively used by Aborigines of the regional Oyster Bay Tribe.

The Aboriginal community, as owner of this heritage, has a central role in interpretation, assessment and management of sites. Sites are generally not publicised. The *Aboriginal Relics Act 1975* prohibits destruction of any Aboriginal artefacts. This is apparently not known by many land owners.

Aboriginal Sites: Refer Natural Resource Assessment report: Page 35.

Vision/Goal

That the Aboriginal culture and heritage of the Valley is respected and protected

9.2 Objectives

To increase awareness of Aboriginal cultural issues.

9.3 Actions

Information and Awareness	Actors
More comprehensive regional surveys to provide information on significant sites for planning scheme	*LG; DELM (P&WS); Ab. Lands Council*
Aboriginal community input into Council strategic plan	*Ab. Lands Council*
Promote awareness of the *Aboriginal Relics Act 1975* to the Council and landowners	*LG; DELM (P&WS); Ab. Lands Council*
Increased research into pre-European cultural heritage	*LG; DELM (P&WS); Ab. Lands Council*

Measures of Progress

Additions to Council strategic plan and planning scheme.

Reports/publications on pre-European cultural heritage of Valley

10.0 Maintaining Infrastructure and Services

10.1 Background

Local Government delivers the majority of services and facilities to local communities (sewerage, water, local roads, community halls etc.) with revenue for service delivery raised from rates on its population. Country areas do not have the full range of services and physical infrastructure found in more densely populated urban areas.

In recent years many residents have moved to the area from urban areas for lifestyle reasons. While seeking the countryside outlook and setting, some of these residents miss the level of services that are normal in urban areas. **When the rural residential population grows to a certain level, it can lead to lobbying for the provision of paved roads, water and sewer lines, etc. for the area. This can lead to increases in rates and affect the viability of adjacent agricultural areas.** The introduction of paved roads, controlled drainage, etc. in hillside rural residential areas can also affect patterns of runoff and change the character of the area. In the long term the provision of some of these additional services can change a rural area into a semi-urban one, undermining the very values originally sought by many residents.

Most of the communities with populations over 200 have sewage and water service and paved roads. Other residents depend on septic tanks and rainwater/bore water or trucked in water and many roads are unpaved. **By concentrating services on higher density population areas only, the pattern of village development, viable agricultural land and native vegetation (particularly on the hillsides) can better be maintained and reinforced.**

An alternative to dependence on rate based funding for all local infrastructure is community participation and partnership with Local Government. This can occur through community identification of local initiatives and through contributions to fund raising, maintenance or other contributions to establishing projects which the local community strongly supports. It also provides a means of strengthening the personal ties within the area.

State policy is to achieve land based disposal of sewage effluent where feasible rather than disposal to inland streams. However there are only limited examples of land based disposal operating at present in Tasmania. Potentially, this effluent could provide an additional source of water for agriculture in the Valley.

Roads within the Valley are generally considered to be local and therefore the responsibility of Local Government to maintain. However, **the main Mud Walls Road clearly serves as a significant alternative to the Midland Highway from Oatlands to the airport for a substantial volume of heavy traffic.** Forestry users also have a major impact on roads in the Valley. In order for these roads to be maintained at an acceptable level, contributions need to be received from the major users, not all of whom are based in the Valley or Local Government area.

At the present time, the Brown Mountain tip provides the means of waste disposal for most residents. The tip does not provide suitable provision for some wastes such as used pesticide containers. This tip is expected to close as part of a regional rationalisation of waste management for Greater Hobart. New arrangements will be required to serve the Valley.

Other infrastructure within the Valley should be viewed in terms of its potential to contribute to local tourism. Exploiting the scenic aspect of the railway line which runs through the northern half of the Valley from Campania is one such example.

Service Infrastructure: Refer Natural Resource Assessment report: Page 37.

Vision/Goal

Services of a level consistent with a rural area but designed and operated in a way to ensure that the environment is protected.

10.2 Objectives

Maintenance of efficient service delivery set at appropriate levels for each area. Ensuring an equitable basis for road management costs. Development of a long term waste management strategy for the catchment.

10.3 Actions

Waste Management	Actors
• Co-operation of councils to develop a regional approach to waste management	*LG*
• Promote waste minimisation and recycling as a preferred option	*LG*
• Community education programmes on litter, dumping in bush areas	*LG*
Road Maintenance	
• Clarify issues surrounding use and maintenance of regional roads with a Workshop on maintenance costs, responsibilities and user impacts	*Forestry; Users; Dept. of Trans.; LG*
Service Delivery	
• More community involvement in local service provision – sportsgrounds, fire, water & waste (eg Dulcot)	*Community*
• Continuous improvement programs for services	*LG*

Measures of Progress

Road use workshop

Development of a regional waste management document

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