

PORT CURTIS NATURAL RESOURCE MANAGEMENT STRATEGY



November 2000 DRAFT

This draft strategy has been prepared by the Port Curtis Natural Resource Management Strategy Task Group in collaboration with the Centre for Social Science Research and the Centre for Land and Water Resource Management, Central Queensland University, under the auspices of the Calliope Landcare Group.



Central Queensland
UNIVERSITY



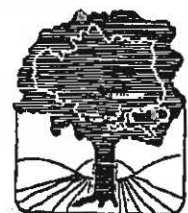
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Calliope Soil Conservation Association (Calliope Landcare) gratefully acknowledges the funding it has received through the Natural Heritage Trust.



This Draft was prepared using the *Guidelines for developing regional strategies on natural resources management and biodiversity conservation* (1999) prepared by the Department of Natural Resources, Queensland. Our thanks to those communities who contributed to earlier Catchment Management Strategies for the use of their Plans including: Lake Eyre Basin Coordinating Group; Baffle Creek Catchment Management and the Fitzroy Basin Association.

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TASK GROUP / STAKEHOLDER MEMBERSHIP

Calliope Soil Conservation Association Inc. (Calliope Landcare)
Gladstone Port Authority (GPA)
Gladstone Area Water Board (GAWB)
Gladstone Area Promotion and Development
Gladstone City Council (GCC)
Calliope Shire Council (CSC)
Department Natural Resources (DNR)
Yarwun / Targinnie Fruit Growers Association (YTFGA)
Agforce
Environment Protection Agency (EPA)
Gladstone Traditional Owners Cultural Heritage Consultants
Roseberry Youth Services
Gladstone Area Industry Network (GAIN)
Chamber of Commerce
Port Curtis Catchment Working Group (PCCWG)
Central Queensland University (CQU)

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FORWARD

Calliope Landcare is an incorporated association (Calliope Soil Conservation Association Inc.), which was formed in 1988 by a group of individuals united by a common interest in caring for the land and its sustainable use. The planning for this draft management strategy for the Port Curtis Catchment was initiated in 1998 with an application to the Natural Heritage Trust. At that time, the purpose was:

... the identification of priorities for the two catchments (Boyne and Calliope) to enable future investment (both public and private) to be well directed and cost effective, within a basis of partnership to achieve sound management of our river catchments and adjacent coastlines.

The development of this draft Strategy was undertaken in consultation with a Task Group, consisting of members representing the diverse interests and communities within the Catchment. The Task Group members and the Calliope Landcare membership are all residents in the Catchment. The Catchment provides our livelihoods while at the same time it offers us all a unique quality of life. We are all increasingly aware of the fragility of the environment in which we live, yet many of us do not understand how our individual effort can be brought to bear on its protection and management.

This document is a Draft Working Strategy. We have identified Vision, Mission and Key Issues – but we need your help now to refine them. Do you agree with them? Do they need a bit more fine-tuning? What is missing? Your thoughts, comments and insights will help make this document truly a community based effort.

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WHAT IS THIS STRATEGY?

This Strategy is a living document. It provides a framework for agreed actions to address issues that the community identifies as important for the natural resource management of our catchment.

We live in a time of rapid change. Our catchment encompasses dynamic, fast growing communities. New issues will surface, and new actions will be needed. At the same time, actions will be completed and projects finalised. Revision and monitoring of this Strategy will be an important aspect of its success.

The Strategy has been designed to provide all people living in our catchment with the framework to achieve their goals. It is designed to incorporate disparate views and issues. It is also designed to think about future issues today. This is your Strategy. We would like your comments and suggestions.

WHY A CATCHMENT STRATEGY?

Over the past few years, Australians become more familiar with the idea that everything in our environment is interconnected. This means that while there may be some issues that don't affect us personally, they do affect the environment in which we live – whether that is a town, a farm or a district. A good example in our catchment is the impact of industry. Such issues can be handled one at a time, or they can be planned for and managed in a holistic way – that is on a catchment basis. This enables us to develop planned strategies, to think about the future and to keep the 'big picture' in mind. The Port Curtis catchment is a unique environment. It follows the Calliope Shire boundary and includes Gladstone City council lands. This area encompasses the full catchments of Calliope and Boyne Rivers, eastern Mt Larcom and Raglan Creek (flowing into the Fitzroy River). Managing it will enable all individuals and groups who live within it to achieve their desired outcomes, and benefit the overall catchment community.

The Port Curtis catchment supports an amazing diversity of inhabitants – animals, birds, plants, and, of course, human beings. Such a diversity offers up many contrasts as well as similarities. How can we achieve a balance to the many demands that we (human beings) place on our environment? How can we ensure that we leave the catchment in a healthy condition to enable the generations (of all inhabitants) of the future to ensure a sustainable lifestyle?

The 'big picture' requires visionary thinking – beyond 'the square' and into a sometimes unknown future. Managing a catchment such as ours can be seen as a big jigsaw puzzle – the vision is the big picture and the objectives and actions are the pieces. We need to work together to get the big picture for our catchment.

The vision incorporates principles of ecologically sustainable development, that is development which meets the needs of the current generation, taking into account environmental, economic and social considerations without compromising the ability of future generations to meet their own needs.

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HOW IS THIS STRATEGIC PLANNING IMPORTANT TO YOU?

This Strategic Plan has an overarching planning approach of Integrated Catchment and Community Management. It is divided into nine main sections addressing the major issues of industry and port development, air shed/emissions and pollution, water management (freshwater and marine environments), land management (weeds, plant communities, and degradation & soil erosion), natural environment, education and information (education and learning opportunities and information management), community development and regional futures. Under each Major Issue – are identified key issues, with objectives and action statements associated with each one. This Plan should empower you or your group or organisation to achieve desirable outcomes in relation to the identified issues.

WHAT HAPPENS NOW?

This Draft Strategy will be available for public comment between July – September 2000. Public meetings, forums, seminars, informal consultations information days will be held throughout the period. The amended Strategy was presented to the Port Curtis Natural Resource Study Task Group in October 2000. After further revision it was presented by Central Queensland University to Calliope Landcare in November 2000. Calliope Landcare will then preceded to seek formal endorsement from the community before forwarding it to the Department of Natural Resources for final endorsement. It will remain a 'live' document – the Vision and Mission should have at least a decade or more of life.

Some Background

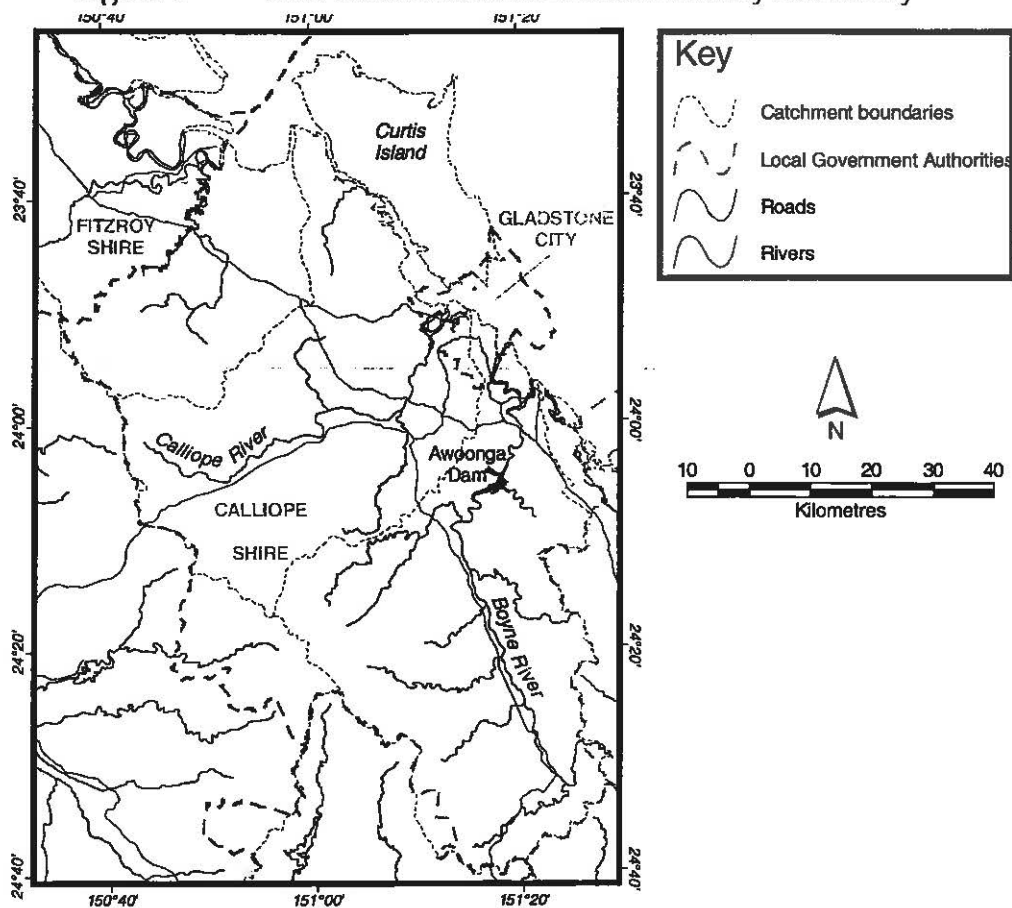
OUR CATCHMENT

The Port Curtis region encompasses one of Queensland's three major industrial regions and ports and is a world recognised location for internationally competitive processing industries.

The Port Curtis catchment and associated study areas are the bounds of the Calliope Shire Local Council boundary, (which include all of Gladstone City Council boundary) (see Figure 1). It includes the coastal area from the mouth of Raglan Creek, Curtis Island and "The Narrows", south to and including Hummock Hill Island. The area is bordering on the Fitzroy River catchment in the north and the Baffle Creek catchment in the south. In the west it is bounded by the Dawson and Callide River systems. The two major river systems in the Catchment – the Boyne and the Calliope – cover about 2,475km² and 2,200 km² respectively. Major tributaries of the Boyne and Calliope Rivers include: Larcom Creek, Futter Creek, Inveragh Creek and the Eastern Boyne River and Clyde Creek, Double Creek, Harper Creek and Oaky Creek.

The population of the Catchment is approximately 36,000 with Gladstone City and the townships of Tannum Sands, Boyne Island and Calliope the main residential areas. In the eastern and coastal areas of the catchment, there is extensive industry, mining and port activity. In the western areas of the catchment grazing and agriculture are important.

Figure 1 Port Curtis Natural Resource Study boundary



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SETTING UP THE CATCHMENT PROCESS

Preliminary discussions to initiate and co-ordinate the development of a Catchment Management Strategy for the Port Curtis catchment began in early 1998 following the release of the draft Central Queensland Strategy for Sustainability by the Fitzroy Basin Association. Planning for catchment begins at the federal (National Strategy for Ecologically Sustainable Development), state (Queensland's Integrated Catchment Management Strategy), regional (Central Queensland Strategy for Sustainability) and then sub-regional/catchment (Port Curtis Natural Resource Management Strategy) levels. Much of the financial support for the development of this integrated and co-ordinated process has been made available through the Natural Heritage Trust.

The Natural Heritage Trust (NHT) has been established to plan and develop sustainable agriculture and natural resource management as well as to protect Australia's unique biodiversity through improved management and delivery of resources. It takes a long term, co-ordinated and participative approach to tackling the major environmental challenges facing communities. It focuses on five key environmental themes: land, vegetation, rivers, coasts and marine, and biodiversity.

Calliope Soil Conservation Association (Calliope Landcare) as the auspicing body funded by the NHT invited Central Queensland University to assist in the development and consultation process leading to the establishment of the Catchment Strategy. The Centre for Land and Water Resource Management and the Centre for Social Science Research are working together with Calliope Landcare to undertake this community consultation process.

In July 1999 a Task Group was established to guide and support this process. (Members of the Task Group are listed after contents page). The Task Group has worked since then to prepare this Draft Strategy for public comment. The timetable for comment is as follows:

2000

June – August	Public comment and community consultation
September	Comments incorporated into Draft document
October	Task Group meets to endorse second Draft
November/December	Calliope Landcare finalises Draft
2001	
January/February	Strategy released
	Establishment of a Port Curtis catchment co-ordinating committee

ROLES AND FUNCTIONS

Calliope Landcare is a not-for-profit and apolitical association established in 1988. Landcare is a national partnership between the community, industry and government to promote sustainable management of land, water and living natural resources for the benefit of the whole community.

Calliope Landcare are responsible to the Natural Heritage Trust for the initiative and coordination of the development of a Catchment Management Strategy for the Port Curtis

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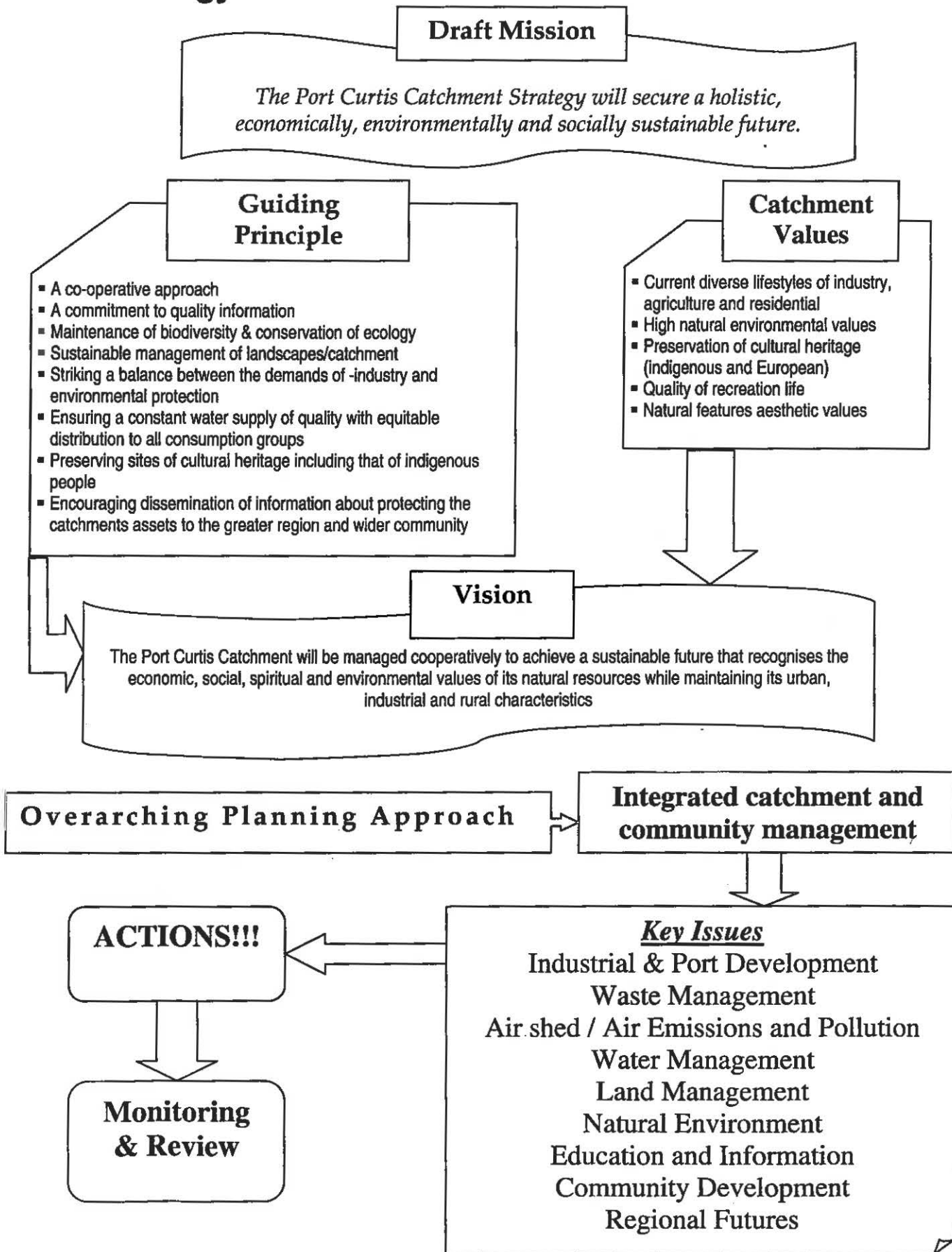
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catchment. The objective of this project is the 'publication of a strategic document that is specifically related to the Port Curtis catchment, which will form the basis for all sections of the community, private and government sectors to work in partnership to achieve sound management of our river catchments and adjacent coastline' (NHT Application: 1998/99).

The Centre for Environmental Management and the Centre for Social Science Research at Central Queensland University have contracted with Calliope Landcare to assist in the consultation process associated with the Strategic Plan.

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Strategy Flowchart



The Strategy

PLANNING APPROACH

INTEGRATED CATCHMENT AND COMMUNITY MANAGEMENT

Integrated catchment management is a philosophy of combining community based coordinated involvement in management with the environmental planning processes. It is joint management among environmental components, geological catchments, adjoining regions as well as among community, industry, and government. It brings together different time periods and joins information and knowledge from social, economic and scientific aspects. It is a development of strategies with on-ground actions related to social and economic aspects, land, water, air, flora and fauna and ecosystem processes.

Goal ~ Develop integrated management of natural and community resources in the Port Curtis Catchment for a sustainable future.

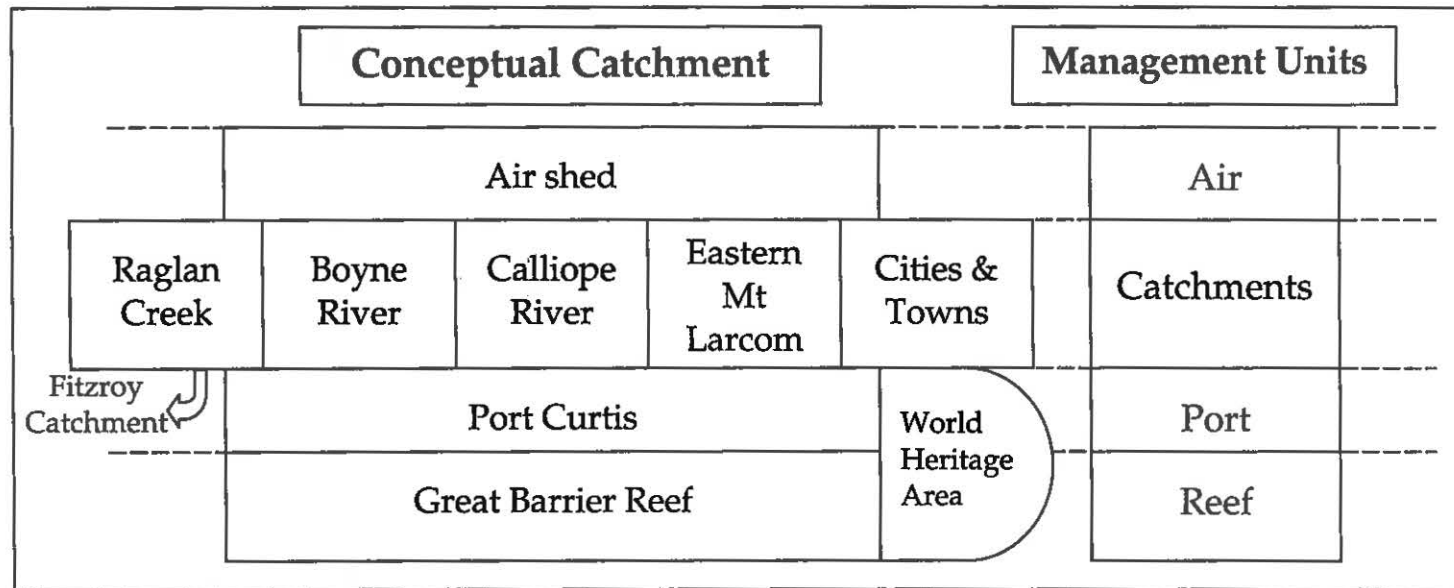
Perspective

Port Curtis catchment can be visualised as a set of interconnected management units (see Figure 2). These are:

- a common air shed servicing all management units. Smoke from fires, vehicle emissions, industrial emissions, dust, and odours as well as agricultural, urban and industrial greenhouse gas emissions from all parts of the catchment affect the quality of this air shed;
- five sub-catchments (Raglan Creek, Boyne River, Calliope River, Eastern Mount Larcom and cities and towns). Each of these represents a distinct drainage system, landuse pattern and community assemblage;
- Port Curtis that acts as a common sink to four of the sub-catchments. Raglan Creek, the fifth sub-catchment, drains to the Fitzroy River mouth; and
- the Great Barrier Reef which is the receiving environment for Port Curtis and the Fitzroy catchments.

(The latter two management units both fall within a World Heritage Area and, in terms of international obligations, can be considered a single management unit).

Figure 2 Interconnected management units of Port Curtis



Principles of integrated management

To take account of this complex assemblage of management units in Port Curtis, planning and management must be undertaken in an integrated way and should follow the principles of integrated management. These are:

- an integrated approach to consideration of environmental, social and economic factors related to management of natural resources;
- partnership of responsibility between land holders, urban users, the community, industry and government;
- a co-operative voluntary community based approach;
- devolving of authority and empowerment at regional level;
- to provide input on prioritised strategy actions to government and its institutional support structures;
- linking of individual sub-catchment issues by universal guiding principles;

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- to encourage information dissemination of strategy actions that lead to on-ground projects;
- to provide a catchment perspective in regional development initiatives and regional planning; and
- integrate experiences of people living in catchments with scientific data to foster community ownership of catchments and environments and develop a holistic framework for implementing change.

Integrated management will be achieved

To integrate the management of the catchment units in Port Curtis the following must be achieved:

- co-ordination and review through a catchment co-ordinating committee;
- regional stakeholder acceptance of the principles of integrated management;
- applying integrated management principles to key regional issues and within a sub-catchment context;
- developing separate but related integrated sub-catchment strategies;
- implementing outputs in planning and policy; and
- consultation with and informing the community.

Actions

Actions to be taken in order to achieve integrated catchment management are:

- establish community identified key issues;
- address these key issues individually to achieve the success of the strategic vision;
- reporting outcomes and achievements to stakeholders, community and regulatory government agencies; and
- reporting through a 'health of the catchment' report card on a five yearly cycle.

Recommendations

In order to achieve the integrated catchment management through the previous actions the following recommendations are made:

- development of sub catchment strategies interwoven with the management units;
- formation of a stakeholder group to implement the actions within this Port Curtis Strategy;
- development of a feedback cycle and performance indicator framework to monitor/measure the success of the strategy implementation; and
- review the success of integrated management on a 5 yearly cycle.

Measure of success

Successful integration of the Port Curtis catchment and community will be measured by:

- a 12 month review; and
- five yearly review of integrated catchment management system and re-assessment of key issues, priorities and direction.

Operationally:

- a fully coordinated and cooperative monitoring of all Port Curtis environmental parameters;
- demonstrated integration of planning and management;
- input and participation in planning and decision making processes by community; and
- strategic frameworks for achievement.

Community Acceptance:

- an overall acceptance of the outcomes by the broader community; and
- constant incorporation of community feedback.

Key issues for the Port Curtis catchment have been identified through a community consultation process and through advice from specialists. These issues are addressed in subsequent sections. Actions associated with these issues will be addressed within the principles outlined here.

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KEY ISSUE 1

INDUSTRY AND PORT DEVELOPMENT

Preamble

The eastern sector of the Port Curtis region is a major industrial centre in Queensland. Future industrial and port expansion is planned. These industrial facilities are not isolated entities but are integrated elements in the environmental, social and economic processes within the Port Curtis Catchment. Sustainable industrial development depends on the environmental, social and economic sustainability of each facility. Achieving sustainability requires recognition of integrated catchment processes and their management, acceptance of the principles of *industrial ecology*, best practice environmental management and community acceptance. Community acceptance includes not only acceptance of economic benefits but also acceptance of changes in community structure, landuse and landscape changes as well as environmental influences on human and natural environments. This acceptance is reliant on community awareness of the ramifications of development.

Goal ~ To engage those principles of integrated catchment management that facilitate industrial development in harmony with the environment with an emphasise on community consultation.

Priority areas

The priority areas of industrial and port development are:

- linkages between industry and community in decision making;
- state, national and international obligations;
- social and economic sustainability;
- new industry; and
- industry related noise.

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Objective	Action	Time Frame	Responsible
1. Establish the principle of and develop a programme for sustainable industrial development	<i>a) establish criteria for ecological, community and economic sustainability within the region</i>	2002	PCCCC
	<i>b) review existing port and industrial activities and identify actions to achieve sustainability where appropriate</i>	2002	PCCCC
	<i>c) ensure all future port and industrial proposals meet requirements for sustainability</i>	2002 - Ongoing	Proponents of development
	<i>d) foster the acceptance of industrial ecological principles within regional industry</i>	2003 - Ongoing	Proponents of development, PCCCC
2. To incorporate integrated catchment management principles in the establishment of new industrial development	<i>a) incorporate integrated catchment management principles into EIS recommendations and industrial management</i>	Ongoing	Proponents of development, EPA
	<i>b) proactive management of industrial lands</i>	Ongoing	Proponents of development, EPA, local councils, GEIDB
3. To increase information and understanding of impact of current and future industrial development on eco-systems in the catchment	<i>a) examine the current databases, processes and action plans and encourage the development of a central database system</i>	2001	Coastal CRC
	<i>b) identify any gap in the current knowledge and work to fill these gaps with research and monitoring</i>	2003	Coastal CRC, proponents of development
	<i>c) undertake integrated monitoring of the regional catchment</i>	2003	Coastal CRC, CEM, EPA, DNR, GAWB
	<i>d) develop locally applicable criteria for the assessment of environmental, economic and social performance</i>	2002	Coastal CRC, CEM, EPA, GTOC, GRSG
	<i>e) develop accurate models for all environmental parameters to better assess the impacts of new developments</i>	2003	Coastal CRC, EPA, GRSG, GAPDL
4. The promotion of new sustainable industry, both heavy and light	<i>a) encourage low impact, sustainable industries such as eco-tourism</i>	Ongoing	State Development, GADPL, EPA
	<i>b) encourage industries that use current industrial by-products as raw materials</i>	Ongoing	State Development, GADPL

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	<i>c) plan industrial development with consideration for the flow on development of support industry and urban expansion</i>	Ongoing	State development, local government
5. Increase public awareness of the processes involved in selecting, assessing and approving new industrial developments	<i>a) assessment of current communications (industrial, government & community) and develop a recommended approach</i>	2001	EPA, CEM/CQU, Coastal CRC, Development Proponents
	<i>b) to develop programmes for more understanding of EIS processes throughout the community</i>	2002	EPA, Education Queensland
	<i>c) encourage and then maintain linkages between government agencies, private sector and community</i>	Ongoing	EPA, CEM/CQU, Coastal CRC, Development Proponents, GEIDB
	<i>d) cross-cultural awareness programmes of local indigenous and European cultural heritage</i>	2001 - Ongoing	TO, GLC
6. To acknowledge cultural heritage values and protection of sites	<i>a) to adhere to the principles of native title and protection of both indigenous and European cultural heritage sites</i>	Current - Ongoing	TO, GLC, EPA
	<i>b) to allocate resources for salvaging archaeological artefacts</i>	Current (Boyne to 62m) - Ongoing	TO (GAWB), EPA
	<i>c) to develop mitigation processes such as actively develop work/training programmes for indigenous persons to work on industrial sites</i>	Current - Ongoing	TO, proponents of development

Measure of success

The measures of success of these actions are:

Operational:

- integrated monitoring programmes;
- increased understanding of industrial ecology; and
- community awareness of industry, port and sustainability issues.

Community Acceptance:

- increased knowledge and acceptance of EIS processes; and
- implementation of sustainability plans.

Review

Undertake a 3 year review of social, economic and environmental management performance indicators and review trends. In light of this review produce a *State of the Catchment* report and revise sustainability strategies.

KEY ISSUE 2

WASTE MANAGEMENT

Preamble

There is a hierarchy of waste options documented by the Waste Management Strategy for Queensland (WMSQ), produced by the Department of Environment and Heritage. This strategy documents the options for waste management as avoid, reduce, reuse, reprocess, reclaim and treat, with the least preferred option being to dispose. The higher in the hierarchy that action occurs the greater the community benefits. Waste may be discharged to the air, water, or land and can be gaseous, liquid, solid or energy. It is the surplus or unwanted product of industrial, commercial, rural or domestic activity, whether or not of value. In the Port Curtis catchments industrial waste and/or by-products are of significant volume. These make the reuse and reprocess actions of significant benefit to the community and environment. Wastes from support industries and urban sources are also significant and the "avoid, reduce and reprocess" actions are just as applicable as for industry and very achievable.

Goal ~ To minimise industrial and domestic wastage through recycling and low impact disposal.

Priority Areas

The priority areas for waste management are:

- industrial waste;
- generation of waste;
- value adding opportunities;
- recycling;
- minimal impact disposal;
- reduced volume and toxicity;
- impacts on ecosystems;
- links with health issues;

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- monitoring;
- information and education; and
- develop a 'make waste valuable' strategy.

Objective	Action	Time Frame	Responsible
1. Catchment framework which ensures an integrated catchment approach, involving communities in evaluation of co-operative and strategic waste management practices and systems	<i>a) audit current industrial, urban and rural waste products within Port Curtis and incorporate findings into an integrated framework</i>	Current - 2001	GRSG, Local government, current & future industries, EPA
	<i>b) review extent and scale of existing waste management practices where available and assess the effectiveness</i>	2002	Local government, EPA, current & future industries
	<i>c) development of an integrated waste management system for localised industries following the principal of the Waste Management Strategy for Queensland (WMSQ)</i>	2005	Local government, current & future industries, EPA
	<i>d) design programs for waste management/disposal, incorporating alternative, prevention, recycling and treatment options</i>	Ongoing	Local government, current & future industries, EPA
	<i>e) establish integrated, best practice, standard based, monitoring programs for waste and contaminants</i>	2002	Coastal CRC, CEM/CQU, current & future industries, GRSG
	<i>f) formulate links between health issues and waste management practices</i>	2003	Queensland Health, local government

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2. To understand the influence of industrial waste on ecosystems and industrial ecology	<i>a) undertake an audit of local industrial processes to determine the inputs and outputs from industry</i>		GRSG, proponents of development
	<i>b) combine industrial process information with, urban and rural processes to determine the industrial ecology of the catchment</i>	2005 - Ongoing	GRSG, CEM/CQU, Landcare, YTFG
	<i>c) assess the hazard potential and contaminant pathways of industrial (and other) by-products and the effects on environmental values</i>	2002	Proponents of development, Queensland Health, local government
	<i>d) investigate and recommend by-product reuse or recycling options for current and future industry</i>	2003	GRSG
	<i>e) adopt ongoing monitoring programmes focused on contaminants, wastes and by-product disposal</i>	2005 - Ongoing	Local government, local industry, GRSG, CEM/CQU, Landcare, YTFG
	<i>f) review/increase current understanding of the influences of waste on the natural environment and community health</i>	2001 - Ongoing	Queensland Health, proponents of development, Coastal CRC
	<i>g) develop a community awareness of the environmental and quality of life values of industrial and other altered environments</i>	2001 - Ongoing	GRSG, CEM/CQU, Landcare, YTFG, Education Queensland
3. Minimise domestic waste	<i>a) investigate uses for local industrial and domestic waste</i>	2002	Local industry, local government, GRSG

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	<i>b) encourage recycling of all possible materials through local government policies</i>	Commenced 2001	Local council
	<i>c) encourage water reuse / uses for grey water</i>	Ongoing	Local government, Waterwatch, PCCWG
4. Inform communities and industries about wastes and disposal issues	<i>a) promote the concept of industrial ecology and the potential value of by-products</i>	2003	GRSG, EPA, local government
	<i>b) consult with the community about health concerns and provide current up-to-date scientific and medical knowledge about hazardous waste</i>	2003	Queensland Health, EPA, local government
	<i>c) enable rapid and ongoing dissemination of information about waste and encourage community feedback</i>	Ongoing	Education Queensland, local government
	<i>d) develop education programmes which encourage community recycling</i>	Ongoing	Local government, Waterwatch, Education Queensland
	<i>e) encourage domestic and industrial waste minimisation through awareness programmes</i> <i>eg. composting, reuse of materials, consumer packaging, limit disposable items</i>	Ongoing	Local government, Waterwatch, Education Queensland

Measure of success

A five-yearly waste audit and management review process would be undertaken to assess:

Operational:

- reduction in waste volumes;
- increase in alternative co-disposal and reuse options for waste management;

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- extension of appropriate quality and quantity of monitoring programmes; and
- environmentally sound waste disposal.

Community Acceptance:

- broad community awareness of issues (economic, social, health and environmental).

Review

Five yearly waste audit and management review.

KEY ISSUE 3

AIR SHED / AIR EMISSIONS AND POLLUTION

Preamble

Although the Port Curtis air shed is dynamic it has a finite volume at any point in time. Consequently there are limits to the rate of emission or discharge to the atmosphere beyond which health and environmental effects become apparent. These limits, in turn, limit the nature and extent of development within the catchment. Consequently, sustainable utilisation of the Port Curtis environment requires an understanding of the nature and dynamics of air shed contaminants as well as the likely environmental and community impacts. In general terms air shed emissions and contaminants are derived from smoke, from fires, vehicle emissions, industrial emissions, dust, and odours as well as agricultural, urban and industrial greenhouse gas emissions. An understanding of these forms the basis for planning and management of current and future inputs to the air shed.

Goal ~ To minimise air emission and monitor potential effects on the ecological integrity of the catchment and community health.

Priority Areas

The priority areas of air shed, air emissions and pollution are:

- alternative energy;
- monitoring;
- education and Information;
- public health information dissemination;
- state, national and international obligations; and
- coordinated regional assessment.

Objective	Action	Time Frame	Responsible
1. Reduce reliance on fossil fuels	<i>a) investigate and encourage green energy to supplement traditional non-renewable resources</i>	Ongoing	EPA, GRSG, proponents of development

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2. Reduce the discharge of potentially harmful air shed emissions	a) <i>audit of air emissions and contaminants</i>	Current - 2000	GRSG, EPA
	b) <i>model air shed behaviour in relation to diurnal, seasonal and topographical influences on a catchment and sub-catchment basis and develop planning tools for decision making</i>	Current - 2001	EPA, Coastal CRC
	c) <i>integrate current sentinel and reference monitoring of air shed on a whole of catchment scale</i>	Current - 2001	EPA, Coastal CRC
	d) <i>investigate the effects of known and potential toxins (cumulative and synergistic effects) to assess potential and/or actual impacts on human and ecosystem health</i>	2003	EPA, SRSG
	e) <i>coordinate short-term emission events (burn-off) to occur at optimum weather conditions to minimise residence time and maximise mixing</i>	2000 - Ongoing	Land owners, local government
	f) <i>introduce alternative technologies where possible to diminish pollution and emissions</i>	2003 - Ongoing	Proponents of development
	g) <i>employ best practice to reduce harmful emissions by:</i> <ul style="list-style-type: none"> ▪ <i>encouraging a switch to renewable power in existing developments where possible;</i> ▪ <i>incorporate new technology in pollution reduction in existing facilities; and</i> ▪ <i>developing site by site plans to reduce fugitive emissions</i> 	2001 - Ongoing	Proponents of development
	h) <i>prioritise the planting of trees for carbon sequestration</i>	2005	GRSP, proponents of development, land owners
3. Reduce any impact of air pollution emissions on flora, fauna and human populations	a) <i>identify the source and type of pollution including any synergistic relationships between pollutants</i>	2005	GESG, GHRES
	b) <i>compile up to date data on current impact of emissions and pollutants</i>	2002	GHPES, GESG
	c) <i>collection and analysis of health records (esp. for health issues traditionally related to pollutants) to establish an indices of human health</i>	2005	Queensland Health, hospitals, schools, CQU

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	<i>d) identify any economic ,aesthetic and environmental impacts on flora, fauna and human populations</i>	2005	YTFG, Queensland Health
	<i>e) assess the applicability of national and international standards in relation to the local Port Curtis environment</i>	2005	GHPES, Coastal CRC, EPA
	<i>f) review any identified impacts of air shed contaminants on a five yearly review cycle</i>	2005	PCCCC
	<i>g) develop strategies on alternative carbon absorption</i>	2005	Proponents of development
	<i>h) assess the value of native and plantation woodlands in providing carbon sinks</i>	2005	Proponents of development, YTFG, GRSP
4. Promote community awareness of air emissions and pollution impacts	<i>a) promote alternative energy uses</i>	2000 - Ongoing	Local government
	<i>b) promoting community awareness of Greenhouse gases and air shed quality</i>	2000 - Ongoing	GRSG
	<i>c) reward community participation in education programmes for energy efficiency</i>	2002	GRSG
	<i>d) develop community feedback framework in regard to health implications and air shed quality</i>	2005	Queensland Health

Measure of success

The measures of success for these actions are:

Operational:

- development of comprehensive Port Curtis air shed model;
- establishment of integrated monitoring programme;
- adoption and implementation of planning tools;
- no detectable decline in ecosystem health within an array of sentinel sites;
- no, or a reduction in, human health symptoms associated with air shed condition; and
- atmospheric concentrations below known critical levels.

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Community Acceptance:

- changes in corporate and community behaviour in regards to air pollution and emissions.

Review

Annual monitoring with five yearly data analysis, review and reporting

KEY ISSUE 4

WATER MANAGEMENT

Goal ~ A co-operative and integrated approach to maintaining the aquatic environment associated with the river systems and coastal marine waters.

Key Issue 4.1 Water quality and quantity of freshwater environments

Preamble

Freshwater is probably the principal factor limiting development in Port Curtis – quantity and quality affecting urban, rural and industrial activities in the region. Equally the exploitation of water resources and the changes to the water cycle, especially overland flows and stream flows are potentially the most significant anthropogenic influence on regional remnant biodiversity values. The development of water resource infrastructure and the consequences of resource allocation have the potential to stress relations between the various sub-regional communities, especially as competing water demands increase. Managing the needs of the natural environment as well as industrial, domestic, rural and recreational needs requires careful integrated decision making, needs-prioritisation, research and monitoring. This process must be taken at a sub-catchment and regional scale as the upstream activities directly determine conditions in the estuaries, port and offshore environment.

Goal ~ Achieve / maintain water quality and quantity for urban, industrial and rural requirements, while ensuring the provision of adequate water to maintain dependant ecosystems, through the management of catchment health.

Priority Areas

The priority areas for water quantity and quality of freshwater environments are:

- water supply / recycling and storage;
- environmental flows;

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- efficiency of use;
- sustainable fishing and maintenance of fish habitat;
- groundwater;
- salinity;
- sewerage and waste water management;
- rural, urban and industrial water requirements;
- eutrophication and pesticide run-off;
- erosion and siltation;
- maintenance of riparian zones;
- aquatic flora and fauna (esp. of conservation significance);
- state, national and international obligations; and
- wetlands.

Objective	Action	Time Frame	Responsible
1. Understand the natural values of freshwater and aquatic environments	<i>a) compile available information about aquatic systems looking at all natural parameters (inc. natural and man made as well as groundwater)</i>	2001	GAWB, EPA, Coastal CRC, PCCCC, PCCWG, local government
	<i>b) identify gaps in information</i>	2000	PCNRS
	<i>c) work to 'fill in' missing information</i>	2002	GAWB, EPA, PCCCC
2. Use local water management plans (WMP's) to manage water systems for all end users	<i>a) implement the WMP (completed by GAWB&DNR) for the Boyne River and associated streams and dams</i>	Completed	GAWB, DNR
	<i>b) develop WMP for Calliope River</i>	2001	GAWB, DNR
	<i>c) develop WMP for Raglan Creek (associated with the FBA)</i>	2003	PCCCC, FBA
	<i>d) develop plans for managing coastal streams</i>	2003	Coastal CRC, local government, PCCWG
	<i>e) develop plans for managing water resources in towns and cities</i>	2003	local government, PCCCC, Coastal CRC, PCCWG

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	<i>f) integrate WMP's into a regional plan for consideration of other adjoining catchments</i>	2004	Local & state government, GAWB, Coastal CRC
	<i>g) review and amend WMP's as recommended (e.g. Boyne River WMP review at 7 years)</i>	2007	GAWB, DNR
3. Manage the catchments freshwater systems efficiently	<i>a) develop a water use efficiency / utilisation strategy for urban, industrial and agricultural interests within the catchment</i>	2005	EPA, DNR, CCRCG, Coastal CRC, GAWB, local government
	<i>b) encourage new urban and industrial developments to utilise rainfall and be self sufficient for water needs</i>	2002 - Ongoing	EPA, local government
	<i>c) investigate and promote water re-use options for both agriculture and industry (grey water use, desalination plants, etc.)</i>	2002 - Ongoing	EPA, PCCWG, Landcare, Coastcare, Waterwatch
4. To maintain quality of water resources and aesthetic values of streams and water bodies	<i>a) establish integrated monitoring of all natural water resources (including groundwater) within the sub-catchments</i>	2002	GAWB, Coastal CRC, DNR, Coastcare, Waterwatch
	<i>b) develop an integrated programme of monitoring the state of the water cycle, ecosystem health and water use efficiency within the sub-catchments (coordinated with estuarine and port monitoring)</i>	2002 (assessed annually)	GAWB, Coastal CRC, DNR, Coastcare, Waterwatch
	<i>c) develop a regional model of hydrology which includes the hydrology of the rivers, streams, groundwater and estuarine/harbour water</i>	2003	GAWB, DNR, Coastcare, Waterwatch
	<i>d) identify threatening processes to water quality and apply information to water and land management plans (e.g. pathways of contaminants, etc.) - links to land management section</i>	2003	GAWB, EPA, DNR, Coastal CRC

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	<i>e) minimise stream bank erosion and re-establish / repair riparian zones (see section Sustainable, ecological management of plant communities)</i>	2005	GAWB, EPA, DNR, local government, Landcare
	<i>f) negotiate an integrated approach to manage impacts on a farm by farm basis</i>	2005	GAWB, EPA, DNR, Landcare, PCCCC
5. Manage salinity and salinity hazard areas to maintain water quality	<i>a) undertake a salinity hazard assessment of each sub-catchment</i>	2001	Landcare, PCCCC, YTFG
	<i>b) in salinity hazard areas develop locally applicable plans (such as the maintenance of water cycles) to prevent salt scalding from developing</i>	2003	Landcare, PCCCC, YTFG
	<i>c) negotiate an integrated approach between land holders to reduce management practices which increase salinity</i>	2001	Land holders, PCCCC, Landcare, YTFG
	<i>d) in areas effected by salinity:</i> <ul style="list-style-type: none"> ▪ develop short term strategy to separate the root zone and salt horizon; and ▪ develop long term strategies to reverse the occurrence and/or severity of salinity 	2001	PCCCC, Landcare, YTFG
	<i>e) in naturally saline areas investigate methods of rural production which utilise these lands</i>	2003	YTFG, Landcare, PCCCC
6. Maintain and restore wetlands ✓	<i>a) identify and map local, natural and man made wetlands (including lakes and dams as well as swales and swamps)</i>	2001	Coastal CRC, GAWB, Landcare, Coastcare, Waterwatch, PCCWG
	✓ <i>b) promote research into the biological value of ephemeral pools and man made wet environments</i>	2001 - Ongoing	EPA, Coastal CRC, GAWB, GHPES, Coastcare, Waterwatch, GBRMPA

*hasnt distinguished
freshwater, intertidal.*

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7. Include communities in water related issues	✓ c) <i>preserve natural areas of wetlands and coastal swales</i>	2001 - Ongoing	EPA, Coastal CRC, GHPES, Coastcare, Waterwatch, GBRMPA
	✓ d) <i>implement processes for restoration and rehabilitation of wetlands</i>	2001 - Ongoing	EPA, Coastal CRC, GHPES, Coastcare, Waterwatch, GBRMPA
	✓ e) <i>encourage the development of artificial wetlands as part of industrial and reclamation processes</i>	2000 - Ongoing	EPA, GPA, GAWB, Waterwatch
	f) <i>encourage the development of public access facilities to wetlands areas (e.g. bird-watching)</i>	2002 - Ongoing	GADPL, GPA, GAWB
	✓ a) <i>provide an integrated catchment approach involving community consultation for the management of water resources for in-stream and riparian environments</i>	2001 - Ongoing	CCRCG, GAWB, PCCWG, Waterwatch, Coastcare, Landcare
	b) <i>promote community awareness of and involvement in efficient use of water and water shed management</i>	2001 - Ongoing	CCRCG, , PCCWG, Waterwatch, Coastcare, Landcare
	c) <i>promote community participation in education programmes and water quality monitoring</i>	2000 - Ongoing	CCRCG, , PCCWG, Waterwatch, Coastcare, Landcare
	d) <i>support linkages between key stakeholders by appointing and prioritising demands on water resources (WMP's)</i>	2001 - Ongoing	CCRCG, GAWB, PCCWG

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<i>e) provide resources for structured cultural mapping of indigenous and European cultural heritage sites to develop cultural heritage management plans (priority for coastal zones)</i>	2000 - Ongoing	EPA, GTOC, local government
<i>f) promote the ecologically sensitive use of recreational use on waterways with the interests of the community and the environment</i>	2000 - Ongoing	EPA, GAWB

Measure of success

The measures of success for these actions are:

Operational:

- reduced water use in all sectors;
- improved water quality;
- improved knowledge of ecosystem processes and indications of ecosystem health; and
- strategies in place to prevent problems from developing and remediation of existing ones.

Community Acceptance:

- community awareness of water issues; and
- acceptance and application of outputs.

Review

The water programme should be monitored annually but be subject to 5 year review and reappraisal of programme objectives and priorities.

Key Issue 4.2 Water quality of harbour and marine environments

Preamble

The marine waters of Port Curtis and beyond to the Great Barrier Reef support internationally significant biodiversity, landscape and seascape values. These form the basis for tourism as well as recreational and commercial fishing industries. The state of the port waters and associated ecosystems probably provide a barrier to the establishment of marine pests and consequently avoiding financial imposts on vessels using the port. These waters, however, are part of the Port Curtis catchment and receive water and sediments from most sub-catchments. The quality of the port waters is influenced by the quality of flows from the sub-catchments. Activities within the port and on adjacent waters also affect local water quality and may influence associated ecosystems. Sustaining marine ecosystems requires sustainable harvesting of marine resources, sensitive tourism activities, considered use of marine chemicals as well as controlled discharge of wastes and ballast water.

Goal ~ Maintain and protect marine water resources both in harbour and off shore environments.

Priority Areas

Priority areas for water quality of harbour and marine environments are:

- sustainable fishing (recreational and commercial);
- maintenance of fish habitat;
- environmental freshwater flows;
- sewage and waste water management;
- nutrient and pesticide run-off;
- mangroves, seagrass and salt-flat habitats;
- marine mammals and turtles;
- marine flora and fauna (esp. of conservation significance);
- state, national and international obligations; and
- tourism and recreation.

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Objectives	Actions	Time Frame	Responsible
1. Maintain harbour and marine water quality	<i>a) integrate monitoring for a whole of Port indication of industrial, urban and agricultural impacts</i>	2001	Coastal CRC
	<i>b) investigate urban (sewage and stormwater run-off) effects on harbour water quality</i>	2002	GPA, EPA, Coastal CRC, GHPES
	<i>c) address boating requirements for sewage pump out facility</i>	2003	GPA, local government
	<i>d) monitor and identify introduced marine species - maintain a 'clean port' status</i>	2000 - Ongoing	GPA, Coastal CRC
2. Sustainable management of aquatic and marine environment for biodiversity and fisheries	<i>a) identify and map marine and estuarine habitats within the Port Curtis region</i>	2001	GHPES
	<i>b) develop integrated management plans to protect significant habitat types</i>	2003	GHPES & Coastal CRC
	<i>c) compensate for lost or impacted significant habitats with a "no net loss" approach (including key fishery areas)</i>	2010	GPA, Coastcare
	<i>d) research the ecology and biology of the local marine mammals in the Port Curtis region</i>	2000 - Ongoing	CQU, EPA
3. Increase public awareness of marine environmental issues to allow more informed community contributions to decision making as well as a sensitive use of the marine environment	<i>a) promote community awareness of the Rodd's Bay Dugong Sanctuary (The Narrows to Rodd's Bay)</i>	2000 - Ongoing	EPA
	<i>b) promote community awareness of the GBRMPA World Heritage Areas of the Port Curtis Coast (high water level to outer reef) acknowledging the significant contribution to Queensland's tourist industry</i>	2000 - Ongoing	GBRMPA
	<i>c) increase awareness and publish results of the GBR monitoring at Broomfield Reef, Wreck Island, One Tree Island, Fitzroy Reef, Llewellyn Reef and Lady Musgrave Island</i>	2001 - Ongoing	GBRMPA, EPA
	<i>d) generate community newsletters / 'report cards' about marine environmental issues (with distribution to include recreational fisherman and tourists)</i>	2002	Coastal CRC, etc
	<i>e) promote public knowledge and consultation in GBRMPA and DPI Fisheries legislation</i>	2000 - Ongoing	DPI & GBRMPA

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<i>f) promote coexistence of industry, agriculture and urban development within the marine environment</i>	2000 - Ongoing	GPA, EPA
<i>g) identify sites for reference as educational tools in cross cultural awareness programmes e.g. shell middens, stone artefacts, scatters, scared trees, transport and quarry sites and physical structure remnants</i>	2003 - Ongoing	GCC, GTOC, EPA
<i>h) provide resources for conservation of cultural heritage sites in accordance with native title and cultural heritage management plans</i>	2003 - Ongoing	TO (GAWB), GLC
<i>i) promote awareness of 'Sea Forum' recommendations with regard to integral economics and spiritual values of indigenous peoples in terms of their relationship to marine environment</i>	2000 - Ongoing	Sea Forum

Measure of success

The measures of success for these actions are:

Operational:

- development of an integrated monitoring system;
- harbour water quality improved;
- improved fisheries resources/habitats; and
- completed habitat mapping.

Community Acceptance:

- greater public and institutional awareness of marine biodiversity;
- improved knowledge of the justification and existence of the GBRMPA and the marine sanctuaries;
- increased educational resources; and
- recognition of indigenous and cultural heritage sites.

Review

Annual monitoring with coordinated effort reporting to the five yearly 'health of the catchment' report card

KEY ISSUE 5

LAND MANAGEMENT

Goal ~ To protect and manage current land-based natural resources to ensure future sustainability.

Key Issue 5.1 Weeds

Preamble

Weeds in Port Curtis are native and exotic plants that impose an economic cost on landowners and managers or degrade the natural environment. Generally weed problems are the result of the introduction of an exotic plant to an environment where it can dominate or where land management practice releases a species from the competitive pressures of its former associates. Statutory regulations apply to some declared species. Declaration, however, frequently occurs once a problem has developed and may be withdrawn once a weed has reached some theoretical limits to its distribution in Australia. At this point the species is considered 'naturalised' and traditional control measures are unlikely to be effective. This strategy recognises the needs to address legal obligations but also seeks to pre-empt the establishment of potential weeds, manage undeclared problem species and control distribution of environmental weeds through balanced land management, biological control and a considered use of pesticides.

Goal ~ Reduce the environmental and economic impact of weeds.

Priority Areas

The priority areas for weeds are:

- collation of existing knowledge on infesting species;
- increased local knowledge of fire management; and
- development of integrated property "weed control plans".

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Objectives	Actions	Time Frame	Responsible
1. Fulfil obligations under the Rural Lands Protection Act & Develop a coordinated sub-catchment / catchment based programme for management of weeds	a) <i>identify declared and environmental weeds within Port Curtis catchment</i>	Current - Ongoing	Local government, land holders
	b) <i>map current extent of all declared and environmental weed infestations</i>	2002	Local government, Landcare
	c) <i>identify potential sources for the introduction of new weed species</i>	2002	Local government, Landcare
	d) <i>streamline procedures for the addition of newly introduced pest species into the local council weed management strategies</i>	2001	Local government
	e) <i>develop a strategic work plan for the integrated management of current local government weed strategies</i>	2001	Local government
2. Employ management practices and programmes that halt the decline of catchment health	a) <i>develop fire plans for weed control where appropriate</i>	2005	DNR, EPA, Landcare
	b) <i>investigate biological and ecological means for controlling weeds where ever possible</i>	2001 - Ongoing	EPA, DNR, Landcare
	c) <i>achieve ecological means of controlling weeds through land management practice (see section 6.3 Objective 2)</i>	2010	Land owners
	d) <i>Investigate funding opportunities for weed management</i>	2001 - Ongoing	Landcare
	e) <i>restrict the sale of environmentally destructive weeds in urban and rural areas and encourage their removal from domestic gardens</i>	2000 - Ongoing	Local government
3. Increase community awareness of weeds and their impact	a) <i>campaign local community in weed recognition and control</i>	2001 - Ongoing	Landcare
	b) <i>create a community participatory framework which includes local community information workshops</i>	2002	Education Queensland
	c) <i>support long term eradication and control plans</i>	2003	Land owners
	d) <i>collate and distribute information which will:</i>	2003	PCCCC
	▪ <i>increase linkages between key stakeholders; and</i> ▪ <i>assist land managers to identify and control weeds</i>		

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Measure of success

The measures of success for these actions are:

Operational:

- reduction of weeds in agricultural lands;
- reduction of weeds in riparian areas; and
- reduction of weeds in ecosystems of conservation significance - esp. ones threatened by weed species.

Community Acceptance:

- demonstrated improved farm management; and
- increased community knowledge of weeds species and impact of weeds.

Review

Yearly review of strategies and work plans for weed control - reporting to 'health of the catchment' report cards.

Key Issue 5.2 Sustainable, ecological management of plant communities

Preamble

Plant communities within the region exist as a mosaic of patches and ribbons across the catchment. None of these remnants are in pristine condition. Various, weeds, logging, grazing, clearing or unsuitable fire regimes influence community composition and structure. These communities, however, provide important environmental services to the region – providing timber, intercepting nutrients and sediments, providing aesthetically pleasing landscapes and maintaining appropriate water regimes in sub-catchments. They also support a diverse array of plant and animal species and ecosystems of conservation and scientific significance. The persistence of these plant communities in the region requires the maintenance of natural processes of water and nutrient flows, reproduction and decay. This in turn requires knowledge of these processes and the factors limiting them. Ultimately plant community preservation is dependant on community awareness of the significance of remnant plant communities and acceptance of the need to conserve them.

Goal ~ To identify and protect native vegetation within a framework that protects ecosystems of conservation significance and catchment health.

Priority Areas

The priority areas for sustainable, ecological management of plant communities are:

- timber management appropriate to land use and type;
- catchment management framework;
- urban and industrial development;
- nationally and internationally significant flora, fauna and ecosystems;
- biodiversity;
- riparian vegetation; and
- wildlife corridors.

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Objectives	Actions	Time Frame	Responsible
1. Sustainable and ecological vegetation management practice	a) establish a database of species of conservation significance and related ecosystems within each sub-catchment	2001	PCCCC
	b) reference occurrence of significant species and ecosystems to current and future landuse	2002	PCCCC, local government
	c) investigate eco-friendly models of land management that maintain ecosystem processes and biodiversity values (remnant, natural and agricultural lands)	2003	PCCCC, land owners
	d) consider future plans for development in relation to land cover and biodiversity priorities as well as the 'environmental services' provided by vegetated landscapes	2003	Proponents of development, local government
	e) identify economic incentives for tree retention on farms and low impact land management. For example: <ul style="list-style-type: none"> ▪ manage timber resources and farm forestry sustainably with continuous reforestation; and ▪ practice the concept of minimum viable habitat for fauna and flora 	2005	Land owners
	f) develop property and sub-catchment management programmes which manage tree clearing and promote on farm forest regeneration	2005	DNR - Forestry
	g) identify erosion prone and salinity hazard landscapes and develop land management practices that prevent degeneration to occur	2002	DNR, EPA, Landcare
	h) develop guidelines for clearing, burning and grazing of lands that take account of land capability, erosion salt hazards, environmental services as well as ecosystem function and biodiversity values	2005	DNR, EPA, Landcare
2. To develop urban expansion in balance with eco-system demands	a) research relationships between future development and threatened / declining vegetation	2002	DNR, EPA, Landcare
	b) research models of best practice in other local government areas in planning urban development to accommodate vegetation management priorities	2002	DNR, EPA, local government
	c) examine current develop plans and break into sub-basin plans looking at local issues	2003	Local government

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3. To preserve and re-establish riparian vegetation (relates to section 2 - Water Management) & To preserve and re-establish wildlife corridors (relates to section – natural environment)	a) <i>eliminate clearing of vegetation in riparian zones</i>	2001	Land managers
	b) <i>minimise grazing in riparian zones</i>	2002	Land managers
	c) <i>map existing vegetation suitable as 'wildlife corridors'</i>	2002	EPA, DNR
	d) <i>plan corridors to connect any fragmented vegetation</i>	2003	EPA, DNR, land managers
	e) <i>introduce revegetation programmes for riparian zones and appropriate wildlife corridor areas</i>	2005	EPA, DNR, Landcare
4. Increase community awareness of native vegetation values and tree clearing issues	a) <i>encourage a general community understanding and appreciation of intrinsic values of the natural environment and demonstrate through tourism</i>	2001 - ongoing	EPA, DNR, Landcare, EEC
	b) <i>increase community participation in decision making process for natural resource management</i>	2002	Local government
	c) <i>develop awareness program for landholders responsible for catchment vegetation management</i>	2003	land owners, DNR, EPA
	d) <i>develop projects which promotes proactive management and protection of flora, fauna and ecosystems (relates to section 4 objective 4)</i>	2005	Land owners
	e) <i>using 'model' land management systems undertake field days to demonstrate practices</i>	2003	Landcare
	f) <i>provide regular reports as to the 'state of the catchment'</i>	2005	PCCCC

Measure of success

The measures of success for these actions are:

Operational:

- increase (or not net loss) of vegetation cover in catchment;
- undivided nature corridors;
- application of vegetation conservation and management recommendations;
- reduced damage to riparian areas - improved water quality;
- retention of ecosystems of conservation significance;
- economic gains for successful implementation of recommendations; and
- planning and policies reflecting recommendations.

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Community Acceptance:

- community acceptance of principles; and
- increased appreciation of the natural environment and issues.

Review

Review 5 yearly satellite cover analysis and audit of on-ground trials annually.

Key Issue 5.3 Land degradation and soil erosion

Preamble

The old, weathered and frequently shallow Australian soils are commonly nutrient deficient, fragile and prone to salting. So, not unexpectedly, over 100 years of European settlement, forestry, farming and mining have 'run down' landscapes and soil condition in many parts of Port Curtis. Degraded landscapes reduce farm productivity, underground and surface water quality, biodiversity and aesthetic values and the quality of life generally. Recovering landscape and soil condition in conjunction with appropriate land management are essential parts of sustainable life styles in Port Curtis. Because land management on one property can influence landscapes and soil condition on adjacent properties problem solutions require co-operative integrated sub-catchment and catchment planning and action.

Goal ~ To encourage sustainable soil management through integrated strategic best management practice.

Priority Areas

Priority areas for land degradation and soil erosion are:

- reduce soil erosion to an acceptable level (natural background erosion level);
- best management practice for stocking rates which reduce soil erosion levels;
- monitoring;
- salinity;
- management of watershed and overland flows; and
- catchment soil fertility.

Objectives	Actions	Time Frame	Responsible
1. Identify areas of current and potential salinity and erosion in each of the sub-catchments	<i>a) identify potential salinity hazard and erosion prone lands in the catchment</i>	2001	DNR
	<i>b) map current and potential salinity and erosion in catchment (see section 6)</i>	2001	DNR
	<i>c) design and implement restoration of effected areas on both a property and sub-catchment scale</i>	2003	Land managers

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	<i>d) implement revegetation programs and appropriate management practices in salt effected areas.</i>	2005	Land managers, Landcare
2. Investigate and demonstrate best land management practice	<i>a) document evidence of local best practice management practices of individuals in the catchment</i>	2001	Landcare
	<i>b) Investigate methods for rural production from saline lands</i>	2002	YTFG, Landcare
	<i>c) compile land capability studies</i>	2002	DNR
	<i>d) match land capabilities with current landuse e.g. farming, industry and rural development</i>	2003	DNR, land managers
	<i>e) develop locally applicable farming guidelines which promote sustainable farming in relation to soil impacts</i>	2005	Land managers, Landcare
3. Promote ongoing monitoring of soil issues within the catchment (salinity, erosion and fertility)	<i>a) integration of current monitoring on soils</i>	2003	DNR
	<i>b) dissemination and use of information derived from past and current projects</i>	2000 - Ongoing	DNR, EPA, Landcare
	<i>c) establish baseline indicator sites for future monitoring and management</i>	2002	DNR

Measure of success

The measures of success for these actions are:

Operational:

- reduced erosion and salinity
- on ground revegetation programmes
- property management plant cooperatively formed with neighbouring properties and catchments

Community Acceptance:

- increased understanding of erosion and salinity processes
- community participation in revegetation programmes

Review

Yearly review of strategies and work plans for degradation control - reporting to 'health of the catchment' report cards.

KEY ISSUE 6

NATURAL ENVIRONMENT

Preamble

Port Curtis encompasses a diverse assemblage of marine, freshwater, coastal and terrestrial ecosystems with many of conservation, scientific, aesthetic and cultural significance. These values are reflected in the area of special reserves, national parks, world heritage areas and designated nationally significant landscapes within the region. All provide largely unrecognised ecosystem services to the region. Maintaining the ecosystem and biodiversity values of the region requires careful planning. Already 31% of the Boyne and Calliope Valley's are cleared, remnant ecosystems are degraded by stock and weeds. Ecosystems currently safe from clearing due to topography are particularly at risk from air borne contaminants. Coastal systems are vulnerable to development. Port waters and the Great Barrier Reef are at risk of degeneration from nutrients, sediments, resource extraction and tourism. Careful, integrated planning and strategic research linked to industrial, communities and individual actions are required to preserve the biodiversity values of Port Curtis.

Goal ~ To ensure conservation of Port Curtis flora and fauna species, habitats and ecosystems.

Priority Areas

The priority areas for the natural environment are:

- Conservation values in public and private works;
- Rare and threatened flora, fauna and ecosystems;
- Habitat conservation and maintenance;
- Reverse trends in species decline and loss;
- Increased community understandings of ecology;
- National Parks / conservation reserves; and
- State, national and international obligations.

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Objective	Action	Time Frame	Responsible
1. To increase understanding and community awareness of ecological principles and catchment biodiversity in terrestrial, freshwater and marine ecosystems	<i>a) collation of current environmental information and knowledge with identification of gaps</i>	December 2000	PCNRS
	<i>b) integrate current catchment mapping for flora, fauna and ecosystems at an appropriate scale</i>	Flora - Dec 2000	Local government
	<i>c) incorporate any future mapping within the region</i>	Remaining - 2002 Ongoing	Local government, GAWB PCCCC (with EPA, DNR, DPI, CQU, Landcare, Waterwatch, GAPDL)
	<i>d) compile current educational programmes occurring in Port Curtis by government, agencies or community groups to:</i>	2001	
	<i>▪ increase awareness of current education initiatives;</i>	2001	
	<i>▪ promote adoption further education actions (see "Education & Information Key Issue Section 7")</i>	2002	
2. Conserve flora, fauna and ecosystems of conservation significance	<i>a) build on current knowledge of flora, fauna and ecosystems (particularly those of conservation significance) by filling in researching gaps between completed studies</i>	Ongoing	CQU, Landcare, EPA
	<i>b) identify and map sites, landscapes, seascapes and ecosystems of conservation, environmental, cultural, aesthetic and tourism significance</i>	2005	EPA, GTOC, GAPDL
	<i>c) identify threatening processes for species of conservation and local significance and work to rectify these</i>	2005	EPA, PCCCC
3. Attain and then maintain a high-quality of regional ecosystem health	<i>a) identify and develop locally appropriate indicators of ecosystem health</i>	2005	EPA, DNR
	<i>b) identify terrestrial, aquatic and marine flora and fauna of significance in Port Curtis</i>	December 2000	PCNRS
	<i>c) investigate human impacts on regional ecosystems and identify means of reducing or repairing those impacts</i>	2001	EPA, DNR
	<i>d) identify other threatening processes to significant sites and report on their state</i>	2002	DNR, Landcare

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	<i>e) where threatening processes are not understood and management and planning tools are not available develop research programmes or field trials to fill knowledge gaps</i>	2003	Landcare, DNR
	<i>f) develop an integrated approach to ecosystem health monitoring by combining current monitoring and identifying and filling gaps</i>	2002	DNR, GAWB, proponents of development
4. The adoption and implementation of conservation principles in private and public works	<i>a) encourage community, industry and government to commitment to the conservation of species and habitats</i>	2010	Community members
	<i>b) develop local conservation plans on a property and sub-catchment scale</i>	2005	Land owners
	<i>c) lobby government to have more representative areas protected by national parks or reserves</i>	2000 - Ongoing	Community members
5. Regenerate areas of degradation	<i>a) prioritise actions and identify programmes for restoration or rehabilitation of degraded habitats</i>	2003	EPA, DNR, Landcare
	<i>b) implement identified programmes for habitat reconstruction in degraded areas</i>	2005	EPA, DNR, Landcare
6. Balance interests of industry, primary producers and native environment	<i>a) investigate and promote:</i> <ul style="list-style-type: none"> ▪ <i>farm practice that protects biodiversity values;</i> ▪ <i>industrial land management that maintains biodiversity values</i> 	2001 - Ongoing	Landcare, DNR, EPA
	<i>b) undertake property management to maintain farm flora, fauna and ecosystems (particularly those of conservation significance)</i>	2010	Calliope Landcare, Land holders (inc. private, government and industry)
	<i>c) consider flora, fauna and ecosystems when planning industrial development</i>	Ongoing	Proponents of development

Measure of success

The measures of the success of these actions are:

Operational:

- no net loss of flora, fauna and ecosystems;

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- increase in number and areas of national parks and reserves;
- improvement in the management practice of land owners; and
- improvement in the quality of maintenance of national parks.

Community Acceptance:

- community and institutional awareness of issues, acceptance and implementation of actions;
- higher level and understanding of conservation; and
- increased use of forests and parks.

Review

Audit ecosystems annually and report as part of the "health of the catchment" five yearly.

KEY ISSUE 7

EDUCATION AND INFORMATION

Goals ~ To make information readily available through new and existing education strategies to enhance community development.

Key Issue 7.1 Education and Learning Opportunities

Preamble

The key to integrated catchment management is communication. This integral component of the understanding and applying of ecologically sustainable development in the management of natural resources occurs at many levels, from individual landholder to major industrial developer. Best practice relies on principles of effective scientific investigation and research, ongoing monitoring, data collation and storage for clear transfer of this information to the whole community while simultaneously receiving community input. Clearly scientific knowledge is gathered at a sub-catchment level and fed into a whole of catchment picture. Likewise localised knowledge and awareness of the delicate relationships between land, water, air, flora and fauna and human impacts enhances scientific understanding and applications at sub-catchment and regional levels. Values of lifestyle as well as economic advantage require a co-operative, coordinated approach between the community, government and stakeholder groups within all the management units of catchments, settlements, the Port and the Reef.

Open and varied channels of communicating needs, priorities, scientific evidence and localised expertise form an integrated feedback loop. This provides improved community-inclusive decision-making for the region that respects both the past, reflected in values promoting cultural heritage and aspires to a healthy, well managed catchment in the future.

Goal ~ To promote existing, and develop new learning opportunities, enhancing the catchment management process, utilising and strengthening existing networks and resources.

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Priorities

The priority areas for education and learning opportunities are:

- partnerships in education;
- networking and community extension;
- whole of community models;
- opportunities made accessible;
- existing institutions supported; and
- gaps in opportunities.

Objective	Action	Time Frame	Responsible
1. Utilise the existing educational institutions (primary, secondary and tertiary) in the region to transfer information	<i>a) promote the Catchment Management Strategy in local schools and clubs</i>	2001 - Ongoing	Education Queensland, PCCCC
	<i>b) introducing opportunities for education focussing on bio-diversity issues</i>	2001 - Ongoing	Landcare, Waterwatch, Coast Watch Schools, EEC, community
	<i>c) support existing projects of the Gladstone Sustainability Group (such as Education Queensland/Gladstone State High School 'Sustainability in Schools' and Eco-efficiency of School, projects initiated by the EEC)</i>	2001	
	<i>d) provide educational opportunities to further knowledge of indigenous sites of cultural significance and their protection under Cultural Records Act 1997</i>	2000 - Ongoing	EPA
2. Provide community education programmes on natural resource management	<i>a) disseminate knowledge about the EIS processes</i>	2000 - Ongoing	EPA, proponents of development
	<i>b) maintain flexible timeframes for community consultation</i>	2001 - Ongoing	EPA, proponents of development
	<i>c) promote integrated catchment management as a means to address and monitor common issues of catchment community</i>	2000 - Ongoing	PCCCC, EEC

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	<i>d) provide community awareness programmes about cultural heritage (indigenous and European)</i>	2000 - Ongoing	GTOC, GLC
3. To establish links with the research and development providers to the community	<i>a) hold workshops to examine the educational needs and opportunities for the community and tourism</i>	2000	Education Queensland, PCCCC
	<i>b) develop partnerships with existing education providers</i>	2003	Education Queensland, local schools, CQU
	<i>c) encourage links between existing and future education programmes undertaken by government agencies</i>	2001 - Ongoing	Local government, EPA, DNR, DNR, EPA
	<i>d) produce learning packages to inform land managers of the necessary requirements to implement the actions within the Catchment Management Strategy</i>	2005	
	<i>e) encourage the dissemination or publication of local knowledge and personal experiences in resources management processes</i>	2001 - Ongoing	Land owners

Measure of success

The measurers of success for these actions are:

Operational:

- on the ground projects established by schools and community groups as they employ the strategies actions;
- resourcing of information campaigns about integrated catchment management and its process by government and industry;
- greater involvement in the EIS public consultation processes by all groups; and
- ongoing protection and management of recognised indigenous cultural heritage sites.

Community Acceptance:

- whole of community recognition of integrated catchment management;
- regular media features and newsletters reports of 'good news' stories of action implementation;

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- whole of community adoption of catchment management; and
- greater community awareness of indigenous culture within the catchment.

Review

Monitored annually and reviewed at five years.

Key Issue 7.2 Information management

Preamble

The accountability and credibility of the strategy as an effective natural resource management plan for Port Curtis will be measured by adherence to consistent and detailed record-keeping allowing for whole community access to extend the knowledge base on the health of natural resources in this catchment, from both the past, present and future.

Goal ~ Have a coherent and effective sourcing, storage and retrieval of information.

Priority areas

The priority areas for information management are:

- central databases;
- input of new information;
- data retrieval, availability and accessibility; and
- quality and accuracy of data.

Objectives	Actions	Time Frame	Responsible
1. The establishment of central databases and data warehouse	<i>a) collate all existing studies showing type and location of study</i>	2000	PCNRS, GHPES
	<i>b) identification of data management needs within Port Curtis</i>	2000	GHPES
	<i>c) develop GIS compatible, user friendly databases with national, state and local requirements</i>	2002	Coastal CRC, GHPES
	<i>d) create integrated database and data warehouse for collation, storage and manipulation of regional data</i>	2002	Coastal CRC, GHPES, CQRIS
	<i>e) establishment of and maintenance of resource library</i>	Current - 2000	CEM, GEIDB, GHPES

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Measure of success

The measurers of success for these actions are:

Operational:

- current database of regional data in centralised, accessible positions; and
- regular updates of data.

Community Acceptance:

- able to access database and regular use by schools, community groups and industry.

Review

Monitored annually with a review at five years.

KEY ISSUE 8

COMMUNITY DEVELOPMENT

Preamble

Participatory involvement by the community in an integrated catchment management framework does not happen by accident. Proactive approaches to create open and user-friendly access and awareness of scientific and local knowledge are needed as well as a regular and concerted effort to invite and accommodate community opinion. This requires establishment of community consultation structures as an integral part of the feedback network at both information collection, monitoring and revision stages of any strategy, for example, public meetings, public forums, task groups of representative stakeholders and public workshops. Community development strategies are particularly crucial to this Port Curtis Natural Resource Strategy which is itself built on the partnership strengths and responsibilities of land holders, urban users, the community, industry and government to enact specific principles of integrated catchment management of:

- A cooperative voluntary community based approach
- Devolving of authority and empowerment at regional level

The measure of success of this approach is not only in operationalisation of objectives and actions of the key issues but also in community acceptance and ownership of the strategy at regional level. A measure of this is in turn gauged by the degree to which community lobbying at sub-catchment and catchment level can provide resources itself and secure resourcing from existing organisational structures – government agencies, industry and stakeholder groups towards on-the-ground projects such as the 'Sustainable Gladstone' website by the Gladstone Region Sustainability Group.

Goal ~ To promote participatory involvement in community development.
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Priority Areas

The priority areas for community development are:

- cooperative and voluntary approach;
- increase access to information; and
- linkages between government and community.

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Objectives	Actions	Time Frame	Responsible
1. To encourage an understanding of connections between geographically separated catchment communities as a basis toward regional development	<i>a) linkages between existing organisations and strategies to be maintained (eg. FBA)</i>	Ongoing	PCCCC, local government
	<i>b) needs analyses and current community data to be collated and made available to planners</i>	2001	Local government
2. To support the development of new and the strengthening of existing enterprises and skills	<i>a) develop a broad range of appropriate project initiators to take responsibility for specific issue actions</i>	2002	PCCCC
	<i>b) acknowledges current living project of website creation titled 'Sustainable Gladstone' by Gladstone Region Sustainability Group - seek to add links to other natural resource studies (eg. By-products survey)</i>	2001	GRSG
	<i>c) existing experiences of those living in Catchment to be integrated with scientific data to develop a holistic framework</i>	Ongoing	All stakeholders and community members
3. To enable a balance between development and conservation to be undertaken within a partnership framework	<i>a) form a steering group with specific community education duties to regularly report on conservation and development relations within the catchment (eg. Newsletter)</i>	2001	EEC, PCCCC
	<i>b) at development sites advocate habitat rehabilitation and species rescue and relocation strategies where no other alternatives exist (see Key Issue 5 Objective 6)</i>	2001 - Ongoing	Proponents of development
	<i>c) provide awareness and protection of indigenous cultural heritage items</i>	2000 - Ongoing	EPA

Measure of success

The measurers of success for these actions are:

Operational:

- increased involvement of community in natural resource management;

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- acceptance of and encouragement for communities prior to decision making by proponents of development, local and state government; and
- ability of community to secure industry, government and stakeholder support to resource specific actions on the strategy.

Community Acceptance:

- community awareness of natural resource issues;
- community acceptance of its shared responsibility with government to actively become involved in natural resource management;
- community adherence to protection of indigenous cultural heritage sites once formally assessed and mapped by indigenous groups and archaeological expertise; and
- greater incorporation generally of community knowledge in natural resource management issues.

Review

Annual monitoring with a five year review.

KEY ISSUE 9

REGIONAL FUTURES

Preamble

In recent years Government has taken the initiative to move away from traditional 'top-down' approaches in management of natural resources towards a partnership between government and community in stewardship of natural resources. The aim is to devolve authority to the community and provide empowerment at regional level. Natural boundaries and features of the Port Curtis catchment and the management units within (the air, catchments, the port and the reef) are viewed as logical parameters to natural resource management rather than arbitrary political boundaries based on human settlement.

Natural resources are connected beyond catchment and sub-catchment levels but to build effective management based on community involvement and ownership, it must start at the local sub-catchment level and 'trickle-out' to catchment and regional levels. The integrated management philosophy applies well to implementing this partnership approach and allows for natural linkages between catchments, for their strategies to overlap and not halt at either the individual landholder's 'back fence' or at a Shire council's back boundary. An integrated catchment management approach unites strategy actions 'across the fence' by linking strategies within catchments. An example of this is the Port Curtis Natural Resource Management Strategy linked with the Gladstone Harbour Protection and Enhancement Strategy. Integration also links adjoining catchments and their strategies such as the Fitzroy Basin Association's Catchment Strategy with the Port Curtis Natural Resource Management Strategy. A sharing the scientific expertise to jointly inform catchment communities and linking them with government and industry resources will also be required to implement the strategies.

Integrated Catchment Management means the future health of a community's natural resources rests in its own hands.

Goals ~ To maintain the whole community in a way that is sustainable for existing and future human and natural resources.

Priorities

The priority areas for regional futures are:

- links this catchment strategy with others; and
- regionally based management.

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Objective	Action	Time Frame	Responsible
1. Implement the actions of this strategy to achieve the goals and vision for Port Curtis	<i>a) invite interest groups to form an implementation committee</i>	At strategy sign off	All stakeholders
	<i>b) the steering group to develop selection criteria for membership / organise interest sectors to nominate representatives who meet criteria</i>	2001	PCCCC
	<i>c) prioritise actions with due consideration of economic and social aspect balanced with environmental concerns</i>	2001	PCCCC
	<i>d) formulate a business plan to compliment the strategy providing a series of implementation plans framed around key issues</i>	2001	PCCCC
	<i>e) establish Memorandums of Understandings which set out mutually agreed actions to be undertaken over given time frames to progress implementation of this strategy with local governments, state agencies, industry and community groups</i>	2003	All stakeholders
2. Interest groups to be representative of urban, rural and indigenous community sectors	Urban	2003	Local government
	<i>a) create awareness of how urban activities impact on the whole catchment</i>	2003	Local government, proponents of development
	<i>b) create safeguards against urban requirements monopolising catchment resources</i>		
	Rural		
	<i>a) promote an understanding how rural activities are interconnected to all other sectors (eg. air, catchment, port and reef)</i>	2002	Landcare, YTFGA, Agforce
	<i>b) adequate provisions for the continued operations of the rural lifestyle & livelihood</i>	Ongoing	Local government
	Indigenous		
	<i>a) acknowledge the rights of original inhabitants of Port Curtis as represented by native title</i>	2002	GTOC, GLC
	<i>b) ensure the indigenous community has a recognised input in the integrated catchment management</i>	2001 - Ongoing	GTOC, GLC

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3. Decision makers to base regional planning initiatives within sub-catchment and catchment boundaries	<i>a) lobby local, state and federal government to adopt a catchment perspective approach in regional planning</i>	Ongoing	DNR, DPI Landcare
	<i>b) run annual forum with shire councils to incorporate strategic links to local landuse, planning and development eg. strategic planning clauses for managing catchment actions</i>	2001 - Annually	PCCCC
4. Educate Stakeholder groups and community organisations in the philosophy of integrated management	<i>a) hold regular forums and public special interest days on natural resource issues - particularly the links between this and other strategies (eg. GHPES)</i>	2000 to Ongoing	Landcare, Central Queensland University, Coastcare, Waterwatch, PPCWG Industry
	<i>b) encourage industry to promote environmental issues through up-to-date web information, informative open days and participation in special interest days run by community groups (eg. Eco-fest)</i>	Current & Ongoing	
	<i>c) conduct community workshops on links from local to regional focus with links to neighbouring catchment strategies</i>	2001 - Onward	PCCCC

Measure of success

The measures of success for these actions are:

Operational:

- that the formation of a catchment coordinating committee occur;
- a committed group forming the steering party to develop a business plan to compliment the strategy;
- that membership of the PCCCC be inclusive community interest groups (urban, rural and indigenous) industry and government representatives; and
- implementation plans are framed around issues to be prioritised so mutually agreed actions are undertaken within given timeframes.

Community Acceptance:

- that the PCCCC achieve credibility with community and government as inclusive management group with a catchment focus; and
- that a catchment focus be understood and accepted by community as a partnership of self directed stewardship of natural resources with government.

Review

Monitored annually subject to five year review with outcomes reported in 'health of the catchment' report cards.

Glossary of Terms

Air Shed	The body of air bounded by topography and meteorology in which a contaminant once emitted is contained.
Baseline	A point of reference or standard against which to assess the impacts of processes and activities.
Biodiversity	A variety of life-forms: the different plants, animals and micro-organisms, the genes they contain and the ecosystems they form. It is a concept that emphasises the inter-relatedness of the biological world.
Carbon credits	Allocation of credit for offsetting/sequestering carbon emission with carbon replacement strategies; credit can be sold off to other companies that have gone over their carbon emission quota.
Catchment	A region or drainage basis which collects all the rainwater that falls on it, apart from that removed by evaporation, directing it into a river; stream or watercourse.
Conservation	The protection and maintenance of nature while allowing for its ecologically sustainable use.
Communities	Identified primarily as geographic collections of individuals living together (such as townships, villages etc). Can also mean 'communities of interests' for example, farmers, graziers, miners etc.
Degradation	A loss of capacity to provide for desired uses and values, either now or in the future.
Diurnal	occurring every day with a cycle of 24 hours.
Ecosystems	A dynamic community of plants, animals and other organisms (including human beings) together with the non-living components of their environment.
Environmental services	Services provided by the natural world, such as manufacturing the air we breath, creating and maintaining the fertility of the soils, breaking down waste and cleaning water.
Eutrophication	process by which a body of water becomes excessively rich in dissolved nutrients (naturally or by pollutants) resulting in seasonal deficiencies of oxygen.
Exotic species	A species occurring in an area outside its historically known natural range as a result of intentional or accidental dispersal by human activities.
GIS	Geographical Information Systems whereby land regions can be accurately mapped via satellite technology.
Habitat	The place or type of site in which an organism naturally occurs.
Integrated	A combination of components into a single appropriate whole.

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Issues	The opportunities and problems that affect a community or catchment. They can relate to natural resources, economic development, population health or culture and society.
Native vegetation	Any local indigenous plant community containing throughout its growth the complement of native species and habitats normally associated with that vegetation type.
Monitoring	Repeated observation and recording of conditions over time.
Remnant vegetation	An area of vegetation, which remains from a previously larger coverage of vegetation.
Riparian	Generally relating to vegetation communities, which exist on or in proximity to stream and riverbanks.
Species	A species is a single kind of plant or animal.
Stakeholders	Members of the community (groups and individuals) who have a stake in the management of that community's natural resources and environment.
Sustainable	Able to be maintained on an ongoing basis.
Sustainability	The ability to meet the needs of the present without compromising the ability of future generations to meet their own needs.
Swale	A drainage device across a slope that directs water running off a slope towards a catch basin, or to a hollow where stormwater can pool.
Synergistic	Acting together - often to produce an effect greater than the sum of the two agents acting separately.
Waste water	Used water containing dissolved and suspended matter.
Weed	A plant growing where it is not wanted or not naturally occurring.

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Glossary of Acronyms

AMC	Australian Metals Corporation
ANZECC	Australia & New Zealand Environmental & Conservation Council
BSL	Boyne Smelter Limited
CCRCG	Curtis Coast Regional Consultative Group
CEM	Centre for Environmental Management
CHMP	Cultural Heritage Mapping Plan
Coastal CRC	Cooperative Research Centre for Coastal Zone, Estuary & Waterway Management
CQRIS	Central Queensland Regional Information Services
CQ ZAC	Central Queensland Zonal Advisory Committee
CQU	Central Queensland University
CRC	Cooperative Research Centre
CSC	Calliope Shire Council
DNR	Department of Natural Resources
DPI	Department of Primary Industry
EEC	Environmental Educational Centre
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FBA	Fitzroy Basin Association
GAIN	Gladstone Area Industry Network
GAPDL	Gladstone Area Promotion and Development Limited
GAWB	Gladstone Area Water Board
GBRMPA	Great Barrier Reef Marine Park Authority
GCC	Gladstone City Council
GEIDB	Gladstone Economic and Industry Development Board
GHPES	Gladstone Harbour Protection & Enhancement Strategy
GIS	Geographical Information System
GLC	Gurang Land Council
GPA	Gladstone Port Authority
GRMAC	Gladstone Region Marine Advisory Committee
GRSG	Gladstone Region Sustainability Group
GTOC	Gladstone Traditional Owners Consultants
IAS	Impact Assessment Study
MFRI	Marine and Freshwater Resources Institute
NHT	National Heritage Trust
PCCCC	Port Curtis Catchment Coordinating Committee
PCCWG	Port Curtis Catchment Working Group
PCNRS	Port Curtis Natural Resource Study
QAL	Queensland Alumina Limited
QCL	Queensland Cement Limited
QFMA	Queensland Fisheries Management Authority
QH	Queensland Health

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SKM	Sinclair Knight Merz
SPPD	Southern Pacific Petroleum Development
TO	Traditional Owners
WAMP	Water Allocation Management Plan
WMP	Water Management Plan
WMSQ	Waste Management Strategy of Queensland
YTFG	Yarwun / Targinnie Fruit Growers

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Other strategic plans and references relevant to Port Curtis

Freshwater Resources

<i>National</i>	National Water Quality Management
<i>Local</i>	Water Management Plan - Boyne River
	Water Management Plan - Calliope River (in progress)

Marine Resources

<i>State</i>	Queensland's Coast: Managing its Future - A position paper on coastal management in Queensland
	Queensland Fisheries Management Authority - Strategic Plan 1995-2000
	Marine Fish Habitat Research Strategic Plan 2000-2002

Land Resources

<i>National</i>	Managing Natural Resources in Rural Australia for a Sustainable Future - A Discussion Paper for Developing a National Policy (AFFA 1999)
	Environmental Indicators for National State of the Environment Reporting - CRC Soil and Land Management
	National Forest Inventory Strategic Plan 1997-2001
<i>State</i>	Queensland's Weeds and Pest Animal Strategy DRAFT
<i>Regional / Local</i>	Gladstone City Council Draft Pest Management Plan 1999-2000
	Calliope Shire Draft Pest Management Plan

Governmental Acts/Strategies

<i>State</i>	Cultural Record Act
	Integrated Planning Act
	Native Title Act
	Nature Conservation Act
	Queensland Energy Policy - A Cleaner Energy
	Queensland Heritage Act
	Rural Lands Protection Act
	Vegetation Management Act
	Water Resources Act
<i>Regional / Local</i>	Gladstone Industrial Development Management Strategy
	Gladstone Region Integrated Transport Plan
	Open Space Development Plan (Boyne, Tannum & Gladstone City)
	Planning Scheme for the City of Gladstone 1991
	Gladstone City Council Corporate Plan
	Town Planning Scheme for the Whole of the Shire of Calliope
	Calliope Shire Council Corporate and Operational Plan

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Other References:

Blain Bremmer and Williams Pty Ltd (1980) Calliope Shire - Report of an investigation into probable water levels in the Gladstone area resulting from the interaction of cyclonic storm surges and astronomical tides.

Katestone Scientific Pty Ltd (1994) Final report - Gladstone dust monitoring study - The Gladstone air shed - What's left for us?

Kinhill Cameron McNamara (1991) Project of landuse management and catchment control scheme, Awoonga Dam, Boyne River catchment.

McWilliam Consulting Engineers (1998) A strategy for the management of future industrial development in the Gladstone region.

Rodger Brameld Consulting Pty Ltd, Adam Pekol Consulting and Buckley Vann Town Planning Consultants, (1998) Gladstone Area (Road) Freight Study – 1998.

Sattler & Williams (1999) The conservation status of Queensland's bioregional ecosystems. Environmental Protection Agency

Sinclair Knight Merz (1998) Calliope Shire Council Tannum Sands treatment plant - Environmental impact statement planning report.

Wachenfeld, D.R., Oliver, J.K & Morrissey, J.I. (1998) State of the Great Barrier Reef World Heritage Area 1998. Great Barrier Reef Marine Park Authority.

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Response Form

The following questions relate to the attached draft catchment management strategy for the Port Curtis Catchment.

Name of Respondee _____

Name of Organisation _____

1. Do you support the Vision for the Port Curtis Catchment?

() YES

() NO

If 'NO' what would your vision be?

2. Does the study adequately identify key management issues for the Port Curtis Catchment?

() YES

() NO

If 'NO' what other issues should be included?

(If you need more space please attach a separate sheet)

3. Are there other key issue headings that you would like added? (in addition to Industry, Air Shed, Water Management, Land Management, Education & Information, Regional Futures)

4. Does the strategic plan adequately provide actions/strategies for addressing key issues?

() YES

() NO

If 'NO' what issue(s) is/are not adequately addressed?

(If you need more space please attach a separate sheet)

Can you suggest some actions/strategies for addressing this issue(s)?

5. Overall, do you think this draft strategy is a workable management plan for the Port Curtis catchment?

() YES

() NO

IF 'NO' what does it need to include to make it workable?

(If you need more space please attach a separate sheet)

6. Do you have any other comments/ suggestions with regards to this draft strategy?

(If you need more space please attach a separate sheet)

PLEASE COMPLETE AND RETURN TO CALLIOPE LANDCARE