The Noosa River Catchment Management Strategy

Noosa Integrated Catchment Association Inc.

Supported by the Natural Heritage Trust

"Encouraging an environmentally, socially and economically sustainable catchment. "

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Chairman's foreword

It is a pleasure to say that the fashion in which the members of the NICA have worked at this task has been professional, methodical, sensible and an altogether satisfying experience of which to be a part. The respect that each and every one of the NICA's members have shown for each other's opinions, and the affable nature of the meetings and workshops, has allowed the Committee to deal productively with a range of complex and potentially difficult issues. In consideration of the nature of the matters that we have been dealing with, whereby many, if not all, have consequences upon people's livelihoods, the harmony the Committee has exhibited has been unprecedented.

Two people that have made especially excellent contributions to the production of the Strategy have been our "former Coordinator" Gordon Agnew and "Office manager" Pauline Lewis. Gordon's willingness to meet the needs of the Committee was never the slightest bit hesitant, often beyond the call of duty. A special mention of thanks must go to Pauline Lewis, whose remarkable voluntary contribution of administrative support began about this time last year. Since then Pauline has put in countless hours providing much needed support to Gordon and the Committee, and her wonderfully organised nature has made its mark on the Catchment Centre, turning it into a truly efficient work place.

The past few year's activities for the NICA have focused upon gathering the information necessary to ensure that the Catchment Strategy is a quality document. An important part of the process has involved consultation with the communities of the Noosa River catchment to determine their wishes and concerns for the future management of the area. This was achieved through a series of public meetings. The issues raised at those meetings form the basis of the Strategy. Indeed the Strategy will not be complete until it receives the endorsement of those communities.

Other activities have been aimed at adding to the knowledge of the NICA's members in regards to natural resource management issues. These activities have included a number of field trips, and presentations by a range of guest speakers. The field trips have included a bus trip to view sites relevant to natural resource management in both the Noosa and Mary River catchments, a boat trip and a riparian issues workshop at the Ussher's property. The guest speakers have been utilised to clarify certain matters in which expertise was not contained within the NICA's membership. Thanks to all the speakers.

The combination of all of the above activities has placed the NICA in a strong position to produce the Catchment Management Strategy that has been put together through a series of workshops. The ongoing enthusiastic involvement of the members in this rather lengthy task is a credit to all.

The development of a working relationship with Noosa Shire Council (NSC) has been a highlight of the process. NSC is a major stakeholder in the Noosa River catchment, and therefore its involvement is fundamental to make the NICA's work a success. Council's increased interest in the NICA's activities, and its continued support through funding assistance, is most welcome. This healthy and productive partnership will reap benefits for all concerned.

The past year has also seen the development of a wider role for NICA as a forum to discuss and propose solutions for issues of community concern that are related to natural resources. The wide range of expertise makes the NICA an excellent vehicle for this, and hopefully this role will continue into the future.

On behalf of the NICA, we believe that the strategy will assist to facilitate a healthy and productive future for everything and everyone within the Noosa River Catchment and we look forward to playing a role in that future.

***Special Note**: In late 2000, the former Noosa River Catchment Coordinating Committee changed its name to Noosa Integrated Catchment Association Inc.*

Mr. Ron Williams
Chairman
Noosa Integrated Catchment Association Inc.

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NAME	SECTOR	PROXY
COMMUNITY		
Mike Norman	Urban Industries	Craig Vella
Tony Green	Rural Residential	
Stephanie Haslam	Community and Ratepayers	
Leisa Riggs	Education	Lyndal Chase
Shirley Williamson	Environment Groups	Richard Erhardt
Eve Fesl	Indigenous People	Evie Pickler
Ian Johnson	Landcare	
	Recreational Fishing	Vince Collis
Allen Kirby	Recreational River Users	
INDUSTRY		
	Tourism	
Ron Williams	Cane Growers	Steve Dwyer
Don McBryde	Commercial River Uses	Bob Sly
Will Van Zetten	Development	
Julie Lindsay	Commercial Fishing	Errol Lindsay
Angela Blomfield	Grazing & Dairy	Len Ferris
Dennis Tomkinson	Horticulture	
Ross Litchfield	Rural Industries	Mostyn Fletcher
GOVERNMENT		
Russell Green	Noosa Shire Council	Ben McMullen
Ken Murray	Department of Natural Resources	Mike Hoare
Bob Fredman	Cooloola Shire Council	
Bill French	Environmental Protection Agency	Tony Monroe
Cheryl Sisson	Department of Primary Industries	Samantha Miller
SPECIAL MEMBERS		
Arland Ussher	Dairy/Grazing Industry	
Trevor Clarey	Commercial Fishing	
Graham Colley	Cane Growers	
Steve Ollerenshaw	Forestry	
	Waterwatch	
Project Support Officer		
Pauline Lewis		
Implementation Officer		
Greg Hardwick		

Strategy Overview

This Noosa River Catchment Management Strategy, produced by the Noosa Integrated Catchment Association Inc. (NICA) is a visionary guide for action. It is a non-binding, non-statutory, action oriented document, which proposes solutions to the identified issues, based on the best available information. It identifies areas of natural resource management that can be improved to help reduce the cumulative impacts of human activity and the resultant decline in environmental values within the Noosa River Catchment. This strategy will empower people to take responsibility for improved natural resource management for the benefit of the entire Noosa Catchment community.

In summary, this strategy provides: -

- a description of natural resource issues identified by the community, industry groups and government agencies
- strategies for addressing major natural resource issues
- actions for problem issues if required
- the most appropriate organisation / method to deal with these problem issues
- a priority importance rating of high, medium or low and a timeframe for addressing each issue (short, medium or long term)
- an opportunity for all stakeholders to assist in securing the health and well being of the catchment for present and future generations

The strategy has been developed by a cooperative partnership between the community, industry groups and government agencies. It attempts to provide, through community-based decision making, a balance between the economic, social and conservation needs of the community.

The strategy is not set in concrete and is meant to be flexible and responsive to the changing conditions of society and the environment. The strategy will provide the context for the prioritisation, coordination, allocation and monitoring of funding directed toward natural resource management in the Noosa River Catchment.

The document is intended as a guide for future natural resource management activities by community groups, industry groups and government agencies and elements of the strategy will be suitable for direct incorporation into future strategic and operational plans.

An approach utilising the skills and knowledge of all stakeholders is required to realise the vision of “a socially, economically and environmentally sustainable catchment”. A pre-requisite for achieving this sustainability within the catchment is ensuring all stakeholders have a common purpose, built on shared visions.

Six major catchment aims have been identified. These aims are:

- Optimise the biodiversity and habitat values of the catchment
- Encourage best land management practice for sustainability and productivity
- Encourage best management of water resources in the catchment
- Encourage increased research, understanding and sharing of information between stakeholders
- Encourage best practice in river and stream management
- Encourage best practice in fisheries management

Part one of the strategy provides background information about the ICM process and the Noosa River Catchment. It also provides a brief historical description and the Noosa Integrated Catchment Association's vision, mission, role and principles.

Part two of the strategy identifies strategies arising out of each major issue and provides a framework for action. Strategies are not meant to be all encompassing solutions to the identified issues. They may need to be adjusted in the future as community expectations alter or knowledge/research dictates. The strategies provide a preliminary step to achieving improved community-based natural resource management in the Noosa River Catchment.

Part three of the strategy, "Implementation and monitoring", will be carried out by the broader community, industry groups, community groups and government agencies.

Part four provides supporting references, a glossary of terms, appendices and key points of contact in the Noosa region.

Links to Other Strategies

This Strategy should not be viewed as a "stand alone" document. As well as being dynamic and therefore possessing the ability to be constantly updated, this document is related to other strategies which have local, regional and national contexts. It is important that these related strategies are acknowledged and taken into account when planning or performing on-ground works. Below are some of the most relevant strategies. The regional strategies have been based upon the South East Queensland region (Figure 1). This region contains 15 major river catchments.

National Strategies

National Water Quality Management Strategy

The Strategy's policy objective is: "to achieve sustainable use of the nation's water resources by protecting and enhancing their quality while maintaining economic and social development." The Strategy provides the information and tools to help communities manage their water resources to meet current and future needs. It provides policies, a process and a series of national guidelines for water quality management.

More Info http://www.affa.gov.au/docs/nrm/water/water_reform/nwqms/nwqms_toc.html

Regional Strategies

Strategic Guide to Natural Resource Management in South East Queensland

Complements the catchment strategies by allowing a regional approach for project planning.

Also - identified as a priority action in complementing the **Regional Framework for Growth Management**

SEQ 2001 Project and the South East Queensland Regional Framework for Growth Management

SEQ2001Project – commenced 1990 – resulted in **Regional Framework for Growth Management –** aim **-** coordinated approach to regional growth management and the development of a growth management strategy for South East Queensland. "Since the release of the Regional Framework for Growth Management and the signing of a Memorandum of Agreement (MoA) between Governments in December 1995, the focus of the **SEQ 2001** Project has been on implementation of policies and priority actions. One of these priority actions is the protection of water quality via the **SEQ Regional Water Quality Management Strategy**. (more info http://projects.dcilgp.qld.gov.au/seq2001/htmlPages/home.htm)

The **SEQ Regional Water Quality Management Strategy** contains one component known as the Maroochy-Mooloolah-Noosa Water Quality Management Strategy which is a combination of local councils, state agencies and catchment/Landcare/waterwatch groups including the NICA. The project is based upon the National Water Quality Management Strategy and aims to consider water quality at the regional scale utilising catchments as the common link. Completion date of the **SEQ Regional Water Quality Management Strategy** is planned for June 2001.

Local Strategies

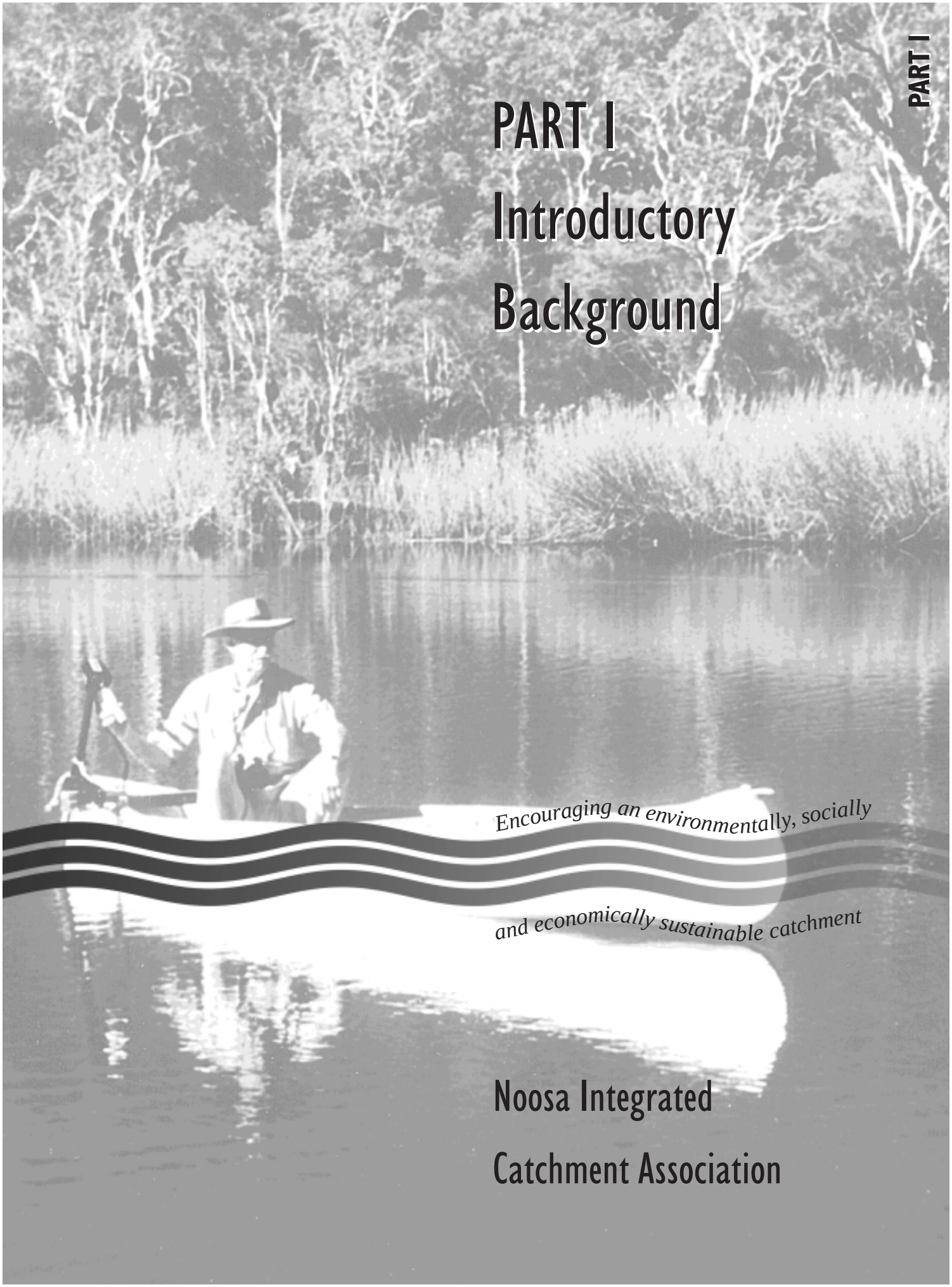
Noosa Shire Strategic Plan and all local laws (eg vegetation local law), and policies. Contact Noosa Council for more details.

Note: there are many related strategies and plans – the above listing serves as a guide to the major strategies impacting South East Queensland and therefore the Noosa River Catchment.

1. Noosa River
2. Maroochy Mooloolah
3. Pumicestone region
4. Eastern Moreton Bay
5. Pine Rivers
6. Bramble Bay
7. Wivenhoe Upper Brisbane River
8. Somerset Stanley River
9. Lockyer Valley
10. Bremer River
11. Mid-Brisbane River
12. Brisbane River Estuary
12. Oxley Creek
13. Redland
14. Logan and Albert Rivers
15. Gold Coast

Figure 1: The 15 catchments within the South East Queensland region including Noosa River in the north. (Source: Healthy Waterways - http://www.healthywaterways.env.qld.gov.au/)

PART I
Introductory Background



Encouraging an environmentally, socially and economically sustainable catchment

Noosa Integrated Catchment Association

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Part 1: Introductory background

Introductory background

Introduction

The Noosa River and its 784 square kilometer catchment area is a diverse system which is increasingly being recognised as a unique resource worthy of preservation. The catchment is situated on Australia's east coast approximately 150 km north of the city of Brisbane. Noosa Shire has a population of approximately 42 000 people, with approximately 30 000 of those living within the catchment. However, as a result of visiting tourists, the catchment population doubles during the peak tourist season.

The catchment possesses an abundance of environmental values and over half its area is contained within the bounds of the Great Sandy Region (GSR), an area listed on the register of the National Estate. The lakes and waterways, beaches and unique rural setting of the catchment provide an important focus for the broader community and visiting tourists (DEH, 1994).

Contained within or directly influencing the catchment are the towns of Noosa Heads, Noosaville, Tewantin, Boreen Point, Cooroibah, Teewah, Kin Kin, and the coastal beach suburbs of Sunshine Beach, Sunrise Beach, Castaways Beach, Marcus Beach and Peregian Beach. The major population centers lie within the Noosa local government jurisdiction, except Doonan in the south-west and Weyba sub-catchment which lies within the Maroochy Shire jurisdiction (Noosa Council 1997).

In contrast to its original natural state, the Noosa River Catchment now supports an array of river and land-uses including:

- land and water based tourism
- agricultural production
- forestry and timber
- transport, communication and light industry
- recreation
- nature conservation
- mineral extraction
- human settlements
- commercial and recreational fishing

The result of these changes is land and water degradation. Although any catchment will continuously change in response to natural forces, human activity has accelerated the rate of change. Realistically, the catchment can never be returned to its natural state prior to European settlement. However, the users, managers, and those residing within the catchment have a "land stewardship" responsibility to sustainably manage this accelerated change. This should be done in a way that limits any adverse effects on the natural environment while still providing an income and level of enjoyment equal to, or greater than that of the past.

To ensure the long-term health of the catchment, an agreed balance among economic activity, development and conservation needs to be found among all stakeholders. An ingredient for achieving this balance is the fostering of honesty and trust between all stakeholder groups and setting realistic, achievable goals.

The concept of ICM

In 1991, the Queensland Government released an Integrated Catchment Management (ICM) Strategy aimed at integrating the efforts of industry, government and the wider community to find agreed long-term solutions to natural resource management problems (DPI, 1991b).

The ICM concept is based on a cooperative and coordinated approach to sustainable natural resource management. Many problems affecting our land and water resources are inter-related and cannot be solved in isolation. ICM provides a framework for fostering cooperation, coordination and negotiation among a large cross section of people from industry groups, government agencies and the broader community involved in the use and management of natural resources. ICM aims to use, conserve and enhance land, water and biological resources so that ecological processes are maintained and the quality of life can be improved (DPI, 1991b).

Principles on which the Integrated Catchment Strategy is based

- Land and water resources are basic components of natural ecosystems
- Management of land and water resources should be based on geographic catchment units, which account for interactions between these resources
- River catchments are continuously changing in response to natural processes
- Management of land, water and biological resources must be coordinated
- Land, water and biological resource management decisions must be based on the best available information
- In a democratic society sound land and water management is best achieved through the informed action of individual users and managers of these resources
- A balance between economic activity, development and the conservation of land and water resources must be maintained (DPI, 1991a).

Background to the Noosa Integrated Catchment Association (NICA)

Integrated Catchment Management began in the Noosa River Catchment in 1996 when a community-based steering committee was established to form the then NRCCC. This committee is still active today although it bears a new name. The major role of the NICA is to identify priority natural resource issues and provide a forum for discussion of these issues between community, industry and government stakeholders with the aim of producing a catchment strategy. In 1997 a coordinator was appointed who, in combination with the 22 stakeholder members of the NICA, was charged with developing a catchment management strategy.

What is a catchment?

A catchment can be described as an area of land surrounded by higher ground like hills and mountains, where water drains to the lowest point (eg. creek, lake or river). A large catchment area is often made up of a number of smaller catchments called sub-catchments. A catchment can be as small as one or two residential properties or it could cover an area greater than 250,000 sq. km. However, whatever the size of the catchment, water is always the linking factor. Because water flows down-hill, activities involving the use or management of natural resources in the upper catchment can affect the lower part of the catchment. Consequently, there is a need to adopt a whole catchment approach to ensure that detrimental activities such as pollution do not impact on others within the catchment.

The best management practice concept

The "best management practice (BMP)" concept envisages the development of practical resource management guidelines for the sustainable management of natural resources. In developing local BMPs the full range of economic, social and environmental concerns associated with resource use and development should be considered at community consultation stage. Fundamental to the successful implementation of local BMPs is the need for all stakeholders to accept and be committed to the agreed direction of resource use and to the agreed BMPs. (AWRC,1992).

NICA vision, mission, role, and principles

Our vision

"An environmentally, economically and socially sustainable catchment."

Our mission

"To work toward an environmentally, economically and socially sustainable catchment which will provide the values required by present and future generations."

Our role

- To provide a forum for community input and discussion
- To identify and prioritise catchment issues
- To develop and promote the adoption of catchment management strategies and actions by industry groups, community groups and government agencies
- To obtain funding to implement, monitor and evaluate such strategies and actions

Our principles

- To increase awareness of the inter-relationship of land, water and biological resources on a catchment scale
- To encourage research to establish baseline data
- To base decisions on the best available information and advice
- To encourage community ownership and understanding of Integrated Catchment Management (ICM), by raising awareness of ICM principles
- To manage the resources of the catchment for present and future generations
- To adopt a positive attitude toward the principles of ICM
- To respect the views and opinions of other stakeholders
- To encourage adoption of economic and biological diversity as sound natural resource management principles
- To encourage the community to be pro-active and work toward a sustainable future
- To concentrate on causes of natural resource decline and not symptoms

Historical description of Noosa River and its catchment

Without doubt Noosa and its catchment are places of beauty. The name Noosa is believed to mean "Shady Place" and is a corruption of the Aboriginal term *noothera* or *gnuthuru* ('shade' or 'shadow').

The Noosa River begins in the Como Escarpment, passing through the western basin to meet Teewah Creek before flowing south across the Noosa Plain. It then flows between Lakes Como and Cooloola before entering Lake Fig Tree and Lake Cootharaba, continuing to Lake Cooroibah and Lake Weyba and finally ending its journey at Laguna Bay in the South Pacific Ocean. Major creeks and tributaries include Teewah Creek, Kin Kin Creek, Cooloothin Creek, Ringtail Creek and Cooroibah Creek, Wooroi Creek, Eenie Creek, Keyser Creek, Cranks Creek, Murdering Creek, Horseman Creek and Weyba Creek (See table 5).

Vegetation in the Noosa River Catchment before European settlement ranged from the Eucalyptus dominated forests of the upper reaches and vast expanses of dense rainforest around Kin Kin and Cooloola, to wetland species of Melaleuca forest occurring on the low lying swampy coastal plains. Stands of mangroves were generally restricted to a narrow band fringing the Noosa River and lakes.

The first people of the Noosa River catchment were the local aboriginal tribes of the Waki-Kabric language group. While historical literature is blurred and often conflicting as to provision of a uniform identification of original inhabitants, it is most likely that the Noosa River Catchment encompasses areas formerly inhabited by subgroups of the Undambi, Gubbi Gubbi and Dalla tribes. However, this is still to be determined. These semi nomadic coastal and semi-coastal tribes were linked together by an extensive system of kinship, (evidenced most notably in the triennial Bunya feasts of the Blackall, D'aguilar and Conondale Ranges), that facilitated interchange among a wide range of people. Sites of physical and spiritual significance still exist throughout the catchment area to the present day (Cato,1979).

The first known white people to have contact with the local aborigines were escaped convicts from the Moreton Bay settlement. John Graham, Jim Davis and David Bracefell are three convicts documented in early historical records as having lived with aboriginal tribes in the 1830s and 1840s. Graham and Bracefell are names connected with the rescue of Eliza Fraser at what is now called Lake Cootharaba after the brig *Stirling Castle* was wrecked off Fraser Island in 1836 (Brown, 2000).

In May 1842, Andrew Petrie, Henry Stuart Russel, Joliffe and Wrottesly together with a crew of convicts and two Aborigines set off from Brisbane to explore the Mary River. At Noosa they met up with Bracefell who led them to the top of Noosa Heads. Here Petrie was able to view the surrounding land as far afield as Wide Bay and learned of great timber stands beyond Lake Cootharaba and Kin Kin.

Speculation about the large timber resources of the area continued for years after Petrie's expedition. By 1860 a man by the name of Lt. Bligh took up 16,000 acres of land fronting Lake Cootharaba before it was surveyed. Timber getters followed with the first settlements situated around the best river and lakefront land at lakes Cootharaba, Doonella and at Cooloothin Creek. The rush for timber was in full swing by 1865; this valuable resource laid the foundation for the early economy of European settlement in the Noosa region.

In 1869-70, a sawmill was established at Elanda Point, on Lake Cootharaba. Milled timber was loaded onto rafts and towed down the river to the north bank of the Noosa River opposite Munna Point. Here the timber was reloaded onto the *S.S Culgoa* for shipment to Brisbane. By 1892, a large village had been established at Elanda Point containing workmen's houses, goods stores, butcher's, blacksmith's and carpenter's shops.

The village, which rivalled Tewantin in size, consisted of about 60 families. By 1893, the importance of the mill at Elanda began to wane and the village lost its economic importance. Smaller mills began to open in the district with a main mill built on the north shore of the river opposite the growing township of Tewantin.

On the Tewantin side of the river, the building of a wharf and goods shed created a focus for the storage of goods and arrival/departure points for transport of goods and people into and out of the region (Page, 1970).

In 1904, a group known as the "Richmond Settlers" from the Northern Rivers area of New South Wales began the first large scale, systematic felling of forest timber in the area. This consisted mainly of Beech, Cedar, Kauri and Hoop Pine. The Kin Kin area was rapidly cleared using new felling techniques. This dramatically increased the rate of conversion of land in the Noosa River Catchment to dairying and other uses. Banana growing and cane farming also became major industries, attracting a large population of immigrants to the area (McArthur, 1974).

Catchment physical profile

The Noosa River Catchment (NRC) has an area of approximately 784 sq. km. Apart from the large freehold property "Tarangau" and areas of state forest, all of the upper reaches are protected within the bounds of The Great Sandy National Park (GSNP), Cooloola section. The Noosa River flows predominantly north to south and is the major drainage element contained within the Noosa River Catchment and the GSNP. It has a length of approximately 60 km and empties into the South Pacific Ocean at Laguna Bay, Noosa Heads (Environment Science and Services, 1996). The river is dominated by the Noosa Lakes system, which comprises Lakes Como and Cooloola in the north, Lakes Cootharaba and Cooroibah in the central regions and Lake Weyba and Lake Doonella in the south.

The Noosa River Catchment occupies the eastern and northern part of Noosa Shire and is largely bounded to the east by the Pacific Ocean in its southern extremities. The western section of Noosa Shire is occupied by the Mary River Catchment and is separated from the Noosa River catchment by the Como escarpment and Wahpunga Range. In terms of administrative boundaries, the remainder of the catchment is bounded by Cooloola Shire to the north and west and Maroochy Shire to the south (see figure 2).

Sub-catchments

The Noosa River Catchment consists of six major sub-catchments. The largest and most significant contributor to the river's water quality is the Upper Noosa River Catchment, which occupies approximately 37% of the total catchment area (refer to table 2). This region is protected by National Park and contains significant areas of healthy native ecosystems.

These sub-catchments provide a useful platform for developing programs to implement this strategy's actions. Different issues are more important for each sub-catchment depending on how it is developed. For example, the main issue affecting catchments of Teewah Creek and Upper Catchment is seen as water extraction, while rural land development issues predominate in the Kin Kin and Cooroibah catchments. Whilst in the Lower Noosa and Weyba catchment urban issues are more important.

Table 2: Sub-Catchments of the Noosa River Catchment

	SUB-CATCHMENT	AREA (Km²)	Relative contribution to total area (%)
1	Teewah Creek Catchment	68.7	9
2	Lake Cootharaba – Kin Kin Creek Catchment	267.7	34
3	Upper Noosa River Catchment	291.9	37
4	Lake Cooroibah Catchment	68.8	9
5	Lower Noosa River Catchment	38.3	5
6	Lake Weyba Catchment	48.9	6
	TOTAL AREA	784.3	

(Source: - Dept. of Natural Resources, Gympie)

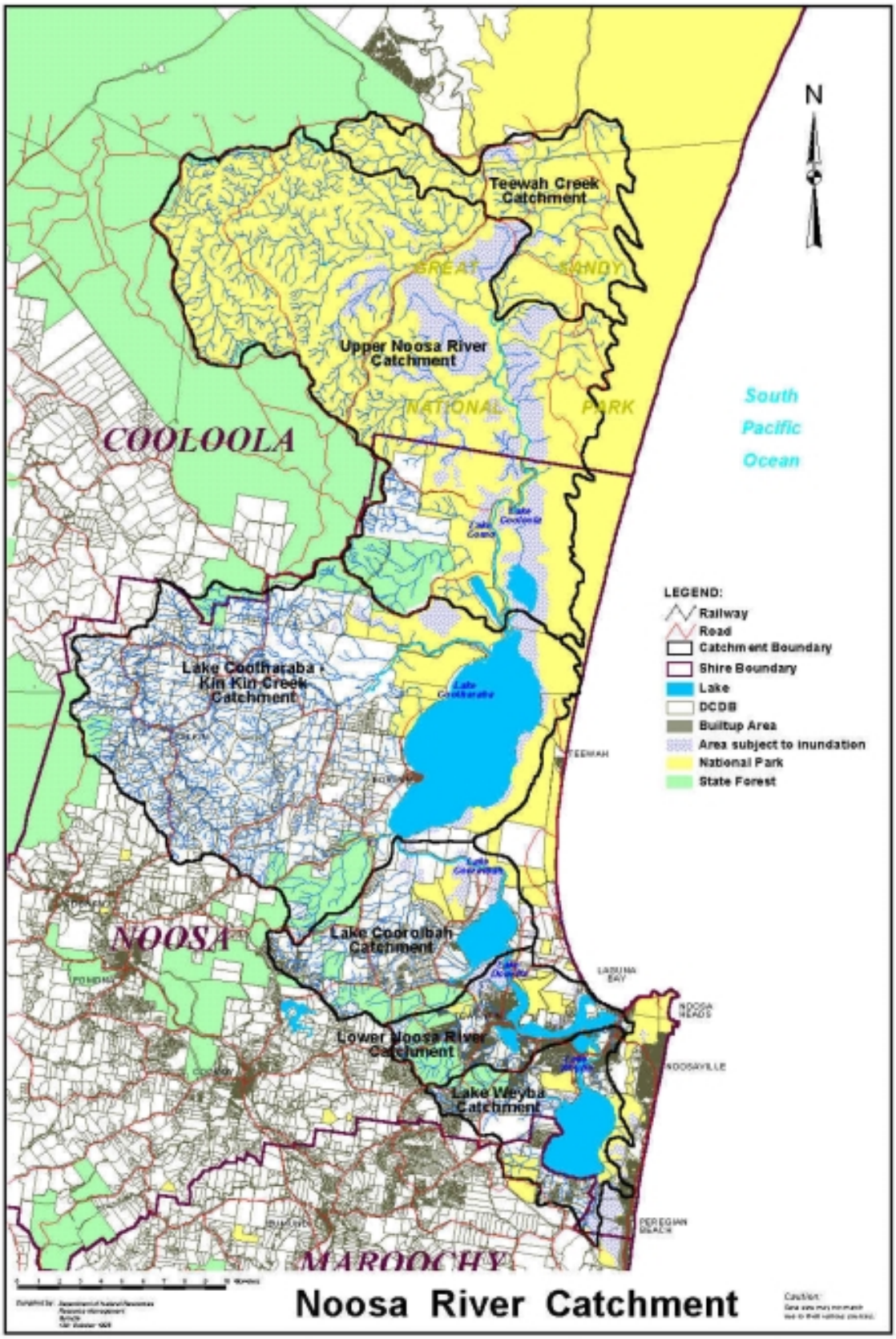


Figure 2: Noosa River Catchment and its 6 major sub-catchments.

Source – DNR, Gympie, QLD

Land tenure

Approximately 60% of the Noosa Shire is within the Noosa River Catchment. The dominant land tenure within the Noosa Shire is Private Freehold, comprising 62 % of the total percentage of the Noosa Shire (refer to table 4). The data contained within table 4 is specific for the Noosa Shire only, and as such does not include the area of catchment contained within the Great Sandy National Park. The National Park contains almost half of the total catchment area.

Table 3. Land Tenure within Noosa Shire

	Tenure	Area in Shire (ha.)	Percent of Shire (%)
1.	Private Freehold	48 081.48	62.2
2.	Crown Private Lease	398.34	0.5
3.	National Park	13 997.99	18.1
4.	Conservation Park	248.04	0.3
5.	State Forest	11 051.27	14.3
6.	Reserve	1 360.36	1.8
7.	Council Freehold	1 185.54	1.5
8.	Vacant Crown Land	814.88	1.1
9.	Committed Crown	68.45	0.1
10.	Crown Tenure Pending	46.93	0.1
	TOTAL	77 253.29 (m^2)	100.0

(Source: - Noosa Council 1998)

Catchment Weather Characteristics

The Noosa River Catchment, like most of the Sunshine Coast receives relatively high average annual rainfall. The wettest and most wide spread periods of rain occur during February, and to a lesser extent, January (refer to table 4). The driest months see monthly averages fall to 50-75 mm, compared to the February average figures of 275mm (CSIRO, 2000).

Table 4. Weather Characteristics

Climate	Sub-tropical
Average daily maximum temperature (Summer)	25.4
Average daily minimum temperature (Winter)	16.3
Average annual rainfall	1693mm
Wettest months	January - March
Driest months	August -September
Predominant winds	South-east

(BOM 1998)

Streams within the catchment

Of the 104 km of streams contained within the catchment, approximately 15% of these pass through areas of conservation whilst the remaining 85% are impacted by an array of land uses from agriculture to urban industry (refer to table 5).

Table 5. Major streams within the catchment, their length, their sub-catchment and dominant land-use.

Name	Sub-catchment	Stream Length	Dominant Land use in sub-catchment
Teewah Creek	Upper Noosa River	13.0 km	Conservation
Kin Kin Creek	Lake Cootharaba	33.5 km	Agriculture/ Rural Residential
Cooloothin Creek	Lake Cootharaba	6.0 km	State Forest / Agriculture / Residential
Ringtail Creek	Lake Cootharaba	10.0 km	Rural Res. / Agriculture / State Forest
Cooroibah Creek	Lake Cooroibah	6.0 km	Rural Residential / Agriculture
Wooroi Creek	Lake Cooroibah	8.5 km	Residential / State Forest
Eenie Creek	Lake Weyba	6.0 km	Industrial / Residential
Keyser Creek	Lake Weyba	3.0 km	Rural Residential
Cranks Creek	Lake Doonella	2.5 km	Urban Development / Residential
Murdering Creek	Lake Weyba	3.0 km	Conservation / Rural Residential
Horseman Creek	Lake Weyba	2.5 km	Rural Residential
Weyba Creek	Lake Weyba	10.0 km	Rural Residential
TOTAL STREAM LENGTH		104 km	

Soils and landscape units of the Noosa River Catchment

Soils

Soil is the natural medium in which plants grow. The soils of the Noosa River Catchment are generally determined by the underlying geologic strata and their position in the landscape. The type of soil determines its capability and suitability to varying land-uses. Within the catchment there are three major landscape units. These are the Coastal, the Kin Kin / Black Mountain and the Cootharaba/ Como landscape units.

Coastal landscape unit

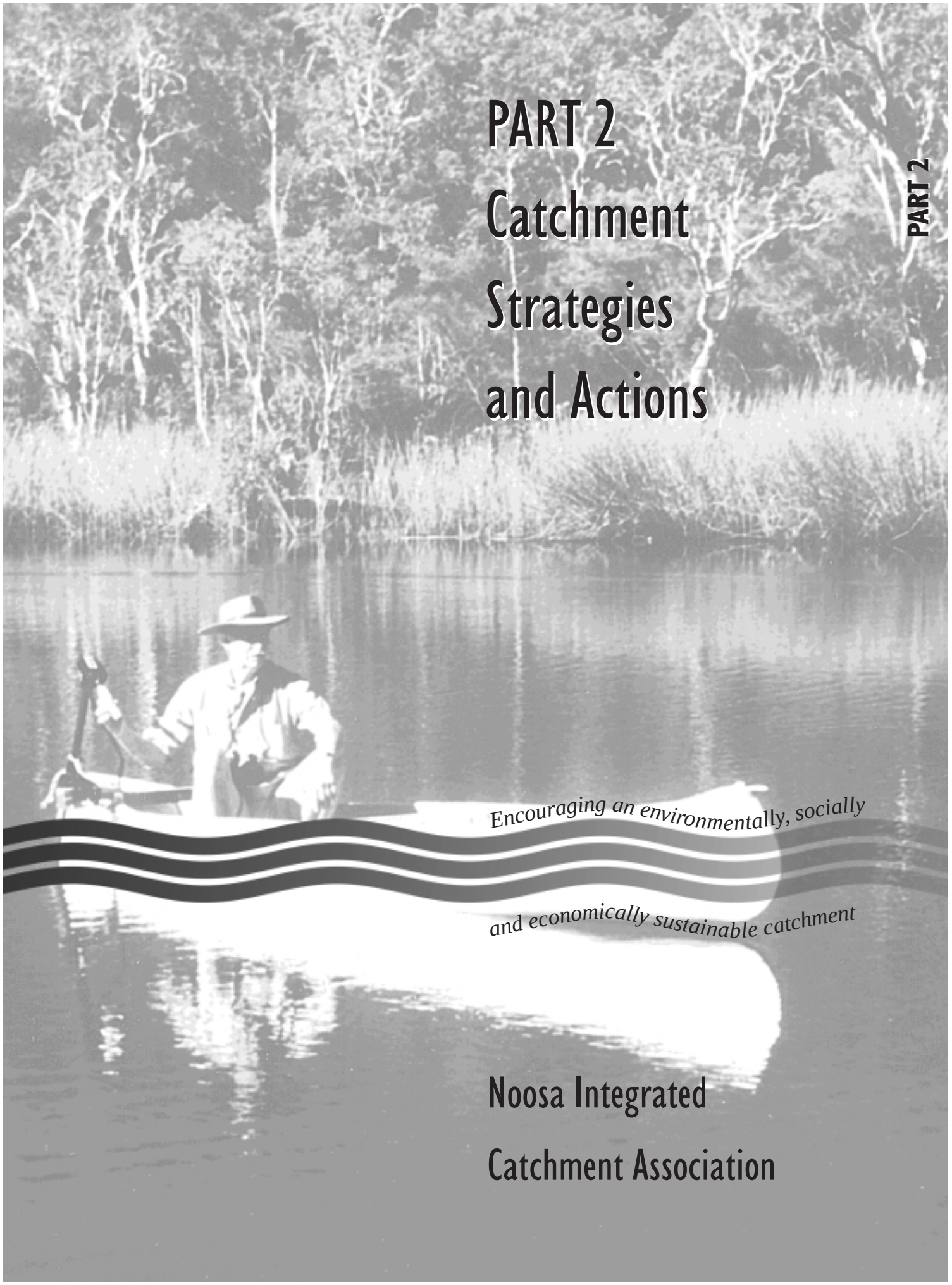
Soils here have formed in relatively recent geological time from alluvia of marine, freshwater and windblown origin. To the west and south of Lake Cootharaba there are soils of freshwater origin. These are generally poorly drained and nutrient deficient. The soils of marine origin are situated to the west of the Noosa River. These form a coastal plain less than 15m above sea-level, which is largely contained within existing National Parks. Windblown soil development has been minimal on the unstabilised sand dunes that form the eastern boundary of the coastal plain (Shields, 1995).

Kin Kin-Black Mountain landscape unit

The Kin Kin / Black Mountain landscape unit is found around the Kin Kin and Pinbarren area in the Cootharaba / Kin Kin sub-catchment. Major landscape features include steep hilly country, alluvial fan development and narrow creek flats. In general, soils are heavily leached, infertile and are relatively shallow in depth (Shields 1995).

Como-Cootharaba landscape unit

This covers the area north and northwest of Lake Cootharaba. Soils are generally highly erodible, infertile and poorly drained. The western boundary is formed by steep hilly sandstone country. This has very steep slopes and rocky outcrops with limited soil development. Major soil types generally have low fertility, low water holding capacity, poor drainage and are prone to erosion. (Shields, 1995)



PART 2
Catchment Strategies and Actions

PART 2

Encouraging an environmentally, socially and economically sustainable catchment

Noosa Integrated Catchment Association

Draft
Community Priorities for action within the Noosa River Catchment

It has been necessary to provide a draft of this section to meet printing deadlines.

As a result, some late comments received from various stakeholders have not yet been incorporated.

It is planned to provide a review with amendments and additions in the near future, which may subsequently replace or add to this section.

Comment on collaborating and responsible organisations

Organisations listed in these columns are the result of a series of community workshops. Organisations listed may not necessarily be responsible for that action. Further comments are required to amend this issue.

Both columns are not ranked. Therefore some organisations may need to act before others for an action to be implemented.

Comments on actions

In general there are two types of action:

- those which can be completed
- those which are ongoing

Some actions may have already been implemented or completed. These, along with the organisation(s), will be identified in future amendments. The actions listed reflect NICA and community views at the time of a series of workshops.

Some actions are linked across sections and therefore may fall under a common theme that is not apparent in the current document. Future amendments may contain an index, which lists actions, their linked actions, page numbers and theme topics – eg Acid Suphate Soil, Riparian Zones.

Actions may require further refinement to accommodate the above points and to allow for clear prioritisation.

Your comments are welcome and will assist the local community develop a sound and concise document to outline appropriate action to rehabilitate, maintain and care for our catchment.

Interpretation of rankings found within the strategies and actions section

1. **(*)**The time frame refers to the doing of the activity or project and not necessarily the deadline for the achievement of results.

2. All time frames are to be reviewed midway.

3. Any action may continue beyond the existing timeframe.

HIGH IMPORTANCE (H)

- Highly essential for the health and well being of the catchment or for the well being of the activity under discussion
- Damage or failure will occur if not implemented
- Often an essential first step for following steps
- Associated risks of not implementing are unacceptable

MEDIUM IMPORTANCE (M)

- Essential for the health and well being of the catchment or for the well being of the activity under discussion
- Some damage or failure may occur if not implemented
- May be an essential first step for following steps
- Associated risks of not implementing are moderately acceptable

LOW IMPORTANCE (L)

- Desirable for the health and well being of the catchment or for the well being of the activity under discussion
- Limited chance of damage or failure if not implemented
- Little or no risk to catchment health if not implemented

SHORT TERM (S)

0 - 2 years (*)

MEDIUM TERM (M)

2 - 6 years (*)

LONG TERM (L)

6 + years (*)

Optimising the biodiversity and habitat values of the catchment - OBH

Biodiversity & Habitat

Encouraging an environmentally, socially and economically sustainable catchment

Noosa Integrated Catchment Association

Contents

Optimising the biodiversity and habitat values of the catchment – (OBH)

GOAL – OPTIMISE THE CATCHMENT'S BIODIVERSITY AND HABITAT VALUES

Optimising the biodiversity and habitat values of the catchment

Background

Habitat management within the Noosa River Catchment is essential to ensure the long-term survival of our fauna and flora and the continued functioning of ecological processes. The catchment has a vast array of habitat types ranging from sandy beaches to coastal dune systems, mangroves and estuaries, to floodplains, heathlands, wetlands and forests. This array of habitat types supports a significant amount of biological diversity. A holistic approach to managing these habitat types and the plants and animals they contain requires managing both the terrestrial (land) and aquatic (water) environments.

Sustainable habitat management and nature conservation can be accomplished by protecting and enhancing in-stream habitats and riparian and remnant vegetation, vegetation corridors and areas of native vegetation wherever practical on all land tenures. Local governments can also play a major role by incorporating sustainability principles into strategic and statutory planning. Local government should also be encouraged to provide incentives for those individuals or organisations demonstrating sound environmental responsibility. Increasing community awareness and understanding of the values of living in a well managed catchment is also important in encouraging sustainable habitat management.

Biological diversity

Biological diversity can be described as the broad variety of plant and animal life, which encompasses species richness, ecosystem complexity and genetic variation. Biological diversity is important because we obtain all of our natural food and a large percentage of our medicines and industrial products from both the domesticated and wild components of biological diversity. Some of the catchment benefits arising from conserving various components of biological diversity are considered in three groups: ecosystem services, social benefits and biological resources.

Vegetated natural ecosystems such as those found in the upper catchment provide services to society by helping to maintain hydrological cycles, regulate rainfall runoff and underground water, prevent soil salinity, provide a buffer against flood and drought and act as water purifying systems. Biological diversity assists farm productivity in the formation and maintenance of soil structure, the retention of moisture, and the recycling of nutrients. Also, plants and animals play an important role in the breakdown and absorption of many pollutants created by humans.

Many of the plants, animals and forests that make up biological diversity are valued within the catchment for tourism and recreation purposes. The aesthetic qualities of the catchment such as the Noosa River and its surrounding forests and heathlands contribute to the emotional health and spiritual well being of urban and rural communities.

Research and investigation carried out in unaltered habitats often identifies potential commercial products such as native wildflowers, bush tucker and pharmaceutical chemicals.

Plant communities are the major source of the world's biological resources and provide the gene pool, which is important for the continuation of research to find potential new crops, food sources, wood products, medicines and ornamental plants. The diversity of biological resources found within these plant communities acts as genetic libraries for the world's variety of life (Department of Environment Sport and Territories, 1993).

Faunal and floral diversity

From the known list of recorded fauna and flora species found on land within Noosa Shire, 6 fauna species and 13 flora species are listed as endangered. 17 fauna and 16 flora species are listed as vulnerable, and 20 fauna and 34 flora species are listed as rare under existing Queensland legislation. (Queensland Biodiversity Network, 1998).

Within Noosa Shire's aquatic environment, there are 3 endangered species, 4 vulnerable and 1 rare fauna species (Queensland Biodiversity Network, 1998).

Introduced plant and animal pests

Introduced plants and animals have the potential to seriously degrade the sustainable use of the catchment's natural resources. Noosa Council's Pest Management Plan identifies 67 recorded plant and animal pests within Noosa Shire; of these, 23 are noxious or declared. Appendix 6 lists the most significant threats to the native vegetation within the catchment (Noosa Council, 1999).

Environmental weeds such as Camphor Laurel *Cinnamomum camphora* are plants that successfully invade native plant communities. Once established, environmental weeds threaten the survival of our native flora and fauna and pose a serious threat to areas managed for biodiversity or conservation (Agnew, 1998). Although there is no legal obligation to remove environmental weeds, their removal is recommended as they often out-compete native species and degrade the quality of our natural resource asset. A change in thinking supported by adequate funding is required to place greater emphasis on managing environmental weeds and their long-term environmental, social and economic impacts. In contrast to "environmental weeds", there are statutory requirements for the control of weed species labeled 'declared'. Declaration of a plant or animal imposes legal responsibilities for control under the *Rural Lands Protection Act 1985*. Appendix 7 lists the 37 environmental weeds, whilst Appendix 6 lists the 16 declared plants currently found in Noosa Shire (Noosa Council, 1999).

Although exotic animal pests such as foxes and cane toads are common within the catchment, arguably no pest animals so far pose a serious threat to the sustainable use of the natural resources of the entire catchment, though they can have significant localised effects. Feral cats however, do pose an immediate threat to the catchment's native animal population. A possible future concern may be the impact of feral dogs on the native animal population as urbanisation spreads into rural areas. Of the eleven animal pests identified in Noosa Shire, seven are declared (See Appendix 6).

Integrated weed and pest management programs should be promoted to limit the impacts of introduced plants and feral animals on the catchment's native biodiversity.

Aquatic plants (weeds)

Aquatic plants can either be native or exotic. More often than not aquatic weeds are exotic plants that grow profusely within our waterways and dams. Aquatic weeds replace native plants, prevent oxygenation of water bodies, limit recreational use, and often slow or alter the flow of water. Aquatic weeds have the serious potential to decrease the commercial, domestic, recreational, agricultural and aesthetic uses of the creeks, rivers and impoundments within the Noosa River catchment.

Cabomba weed in the Lake Macdonald water supply dam is a major problem in the adjacent Mary River Catchment. Adequate management must be implemented to ensure Cabomba weed does not spread to the adjacent Noosa River catchment. Appendix 6 also lists the aquatic weeds found within the catchment.

Introduced exotic fish

Gambusia holbrooki is the only known introduced fish species within the Noosa River Catchment. However, *Tilapia spp.* may be of concern in the lower reaches in the future (Wager, 1999). They are known to reduce native fish populations by out-competing them for food and shelter.

GOAL – OPTIMISE THE CATCHMENT'S BIODIVERSITY AND HABITAT VALUES

Current situation and activities

To ensure informed management decisions are made in regard to development within the catchment, further biodiversity information needs to be collected and stored in an accessible database.

Noosa Council has recently (1999) completed a Pest Management Plan to address feral animal and exotic weed issues. The Department of Natural Resources is conducting a number of research projects including investigating biodiversity in farm forestry plots and the value of introducing bat boxes to farm forestry plots for reducing insect damage.

The Natural Heritage Trust (NHT) funded Land for Wildlife Program which aims to encourage landholders to provide land for wildlife purposes is also operating within the catchment.

Several community groups such as Noosa and District Landcare, Greening Noosa under the auspices of Noosa Parks Association (NPA), and Queensland Biodiversity Network (QBN) regularly promote biodiversity conservation principles and/or carry out on-ground revegetation projects that encourage biodiversity.

Noosa Council has recently completed a literature review of all fauna found within the shire. Council is also contributing funds for revegetation projects and promoting the Property Management Planning concept to all landholders throughout the catchment.

Objectives

- Ensure protection of remnant vegetation, critical habitats and riparian zones
- Ensure protection of endangered, vulnerable and rare fauna and flora
- Ensure the community considers the environmental, aesthetic and cultural values flowing from biodiversity
- Ensure the catchment's hydrology is not altered to the detriment of biodiversity and habitat
- Minimise ongoing and potential threats to biodiversity by introduced plant and animal pests on land and in water

STRATEGY (OBH 1) - Identify endangered, vulnerable and rare flora and fauna, their habitat and associated ecological systems

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
1.1	Determine the distribution and abundance of endangered, vulnerable and rare fauna and flora within the catchment Local Govt	EPA DPI (Tidal Areas) DNR	QBN ICM Group	H - S
1.2	Identify significant habitats, degraded habitats and critical habitats	EPA DPI (Tidal Areas)	Local Govt. Community Groups Industry groups ICM Group	H - M
1.3	Identify significant riparian ecosystems	DPI DNR (Freshwater) EPA	Local Govt. Community Groups ICM Group	H - S
1.4	Identify the hydrological needs (environmental flows) of the aquatic fauna and flora of the Catchment, to ensure their continued survival	DPI DNR Academic Instit.	Local Govt. ICM Group	H - M
1.5	Identify threats to (aquatic and terrestrial) biodiversity, such as introduced animals plants and environmental weeds	Local Govt. DPI DNR EPA	Landcare ICM Group Landholders Industry Groups	M - M
1.6	Identify the ecological fire management requirements of the 8 major vegetation communities to ensure faunal diversity	EPA Emergency Services	SES Rural Fire Brigade	M - M
1.7	Identify current and future potential vegetation corridors to assist faunal movement.	EPA Local Govt.	Academic Instit. Community Groups	H - M
1.8	Investigate the possible formation of Camphor Laurel Management Co-op	Landholders ICM Group Landcare	DNR Local Govt. Industry Groups Community Groups	H - L

STRATEGY (OBH 2) - Make use of identified information in future planning

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
2.1	Develop and implement mechanisms to ensure the maintenance of diverse aquatic ecosystems (fresh water and estuarine)	DPI QFMA EPA	Local Govt. Community Groups	H - M
2.2	Develop and implement mechanisms to ensure the maintenance of diverse tidal ecosystems	Local Govt. EPA DNR DPI	Community Groups Industry Groups Landholders	H - M
2.3	Develop vegetation and revegetation management plans using sub-catchments as land units	Local Govt. DNR (Freshwater) EPA	Local Govt. Community Groups ICM Group	H - S
2.4	Develop remnant vegetation management plans and mechanisms for its protection through the statutory planning process	Local Govt. Landholders	Community Groups Industry Groups	H - S
2.5	Develop a code of practice and guidelines for riparian zone management	EPA DPI DNR Local Govt. Landholders	Industry Groups Community Groups	H - S
2.6	Develop fire management plans for the required vegetation communities based on ecological principles	EPA Emergency Services DNR	SES Fire Brigades Landholders Academic Instit.	M - M
2.7	Develop species recovery plans where necessary	EPA DNR DPI Academic Instit.	Community Groups Industry Groups Landholders Local Govt.	H - M
2.8	Develop a range of incentive schemes to assist in the protection of biodiversity, including economic incentives	Local Govt. State Govt. Federal Govt.	Education Qld. Academic Instit. Industry Groups Community Groups	H - S

STRATEGY (OBH 3) - Implement those aspects of various relevant plans that are ready for action

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
3.1	Acquire critical habitats (including wetlands) and key areas of conservation interest	Local Govt. DPI EPA DNR	Community Groups Industry Groups Conservation Orgs.	H - S
3.2	Rehabilitate identified significant degraded habitats	DPI EPA Local Govt.	Landcare Developers Community Groups Industry Groups Landholders Greening Noosa	H - S
3.3	Protect identified significant riparian ecosystems	DNR DPI EPA Local Govt.	Community Groups Industry Groups Developers Landholders	H - M
3.4	Assist with the implementation of local government pest management plans	Local Govt. Landholders	Community Groups Industry Groups	H - S
3.5	Make hydrological information available to all stakeholders to ensure the maintenance of biodiversity and habitats	BPA DPI DNR EPA Local Govt.	Community Groups Industry Groups	M - M
3.6	Establish riparian vegetation demonstration sites in a range of situations	Local Govt. Community Groups DPI EPA Landholders	Industry Groups Community Groups Landholders Qld Transport Landcare	M - S

STRATEGY (OBH 4) - Raise awareness within the community of the biodiversity and habitat values within the catchment

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
4.1	Increase community awareness and understanding of habitat and biodiversity issues including endangered, vulnerable and rare species	EPA Local Govt. Education Qld DPI DNR	QBN Landcare Noosa Parks Assoc. Industry Groups	M - M
4.2	Involve the community in programs that encourage and promote the optimisation of biodiversity within the catchment	EPA Local Govt. Education Qld DPI DNR	QBN Landcare Noosa Parks Assn. Industry Groups Landholders	M - L
4.3	Raise awareness within the community about the impacts of pest plant and animal species on the catchment's natural resources	Local Govt. EPA DNR DPI	Industry Groups Community Groups Landholders	M - M
4.4	Encourage the adoption of Integrated Pest Management principles by day to day managers in urban and rural communities	Local Govt. DNR EPA DPI	Industry Groups Community Groups Landholders	M - M
4.5	Encourage the implementation and further research and development of non-chemical mosquito control methods	Local Govt. Health Dept. DPI EPA Landholders	Community Groups Industry Groups Developers	M - S
4.6	Promote the ecological importance of the riparian zone for catchment health	Local Govt. EPA DNR DPI	Industry Groups Community Groups Landholders	M - S
4.7	Encourage the implementation of off-stream stock watering points to minimise damage to stream banks and riparian vegetation	Landholders DNR DPI Local Govt.	Landcare Industry Groups	M - M
4.8	Raise awareness of fire management issues	Local Govt. EPA DNR	Community Groups SES Fire Brigades Landholders	H - M

Encouraging best land management practices for sustainability and productivity - BLM

Land Management

Encouraging an environmentally, socially and economically sustainable catchment

Noosa Integrated Catchment Association

Contents

Encouraging best land management practices for sustainability and productivity - (BLM)

GOAL - ENCOURAGING BEST LAND MANAGEMENT PRACTICES FOR OPTIMAL SUSTAINABLE PRODUCTION

Encouraging best land management practices for sustainability and productivity

Background

Rivers, creeks and streams directly portray the health of a catchment. Due to the inter-relationship between land and water, healthy rivers and creeks generally reflect good catchment management practices. Undoubtedly, the methods used to manage the land are a key issue in the Noosa River Catchment. With community expectations regarding sound environmental management becoming increasingly greater, the managers and users of natural resources have a responsibility to further minimise any adverse impacts on the natural environment, particularly water quality.

Urban /residential landuse

Urban residential landuse is confined to the lower southern parts of the catchment. Although urban precincts play an important economic and social role in the functioning of urban communities, numerous natural resource management issues often result from urbanisation. These include:

- loss of visual amenity resulting from the development of infrastructure
- modification and loss of native vegetation and faunal habitat
- increased storm-water runoff and changes in hydrology due to an increase in impervious surfaces
- the introduction of exotic plants and non-native animals
- noise and water pollution
- increased sediment transport from development sites

Although urban populations and tourism greatly assist local government in maintaining economic sustainability, the challenge facing local governments is to develop voluntary or regulatory mechanisms to ensure that economic gain is not at the expense of the catchment's natural environment.

Most agricultural industries are now encouraged to adhere to "codes of practice" or "guidelines" to minimise their impacts on the natural environment. Local governments should lead by example and develop environmental guidelines and management practices to ensure that their daily activities are conducted in such a way as to minimise their impacts. For example councils could review their operations with respect to impacts on catchment management issues.

Industrial landuse

The major industrial area within the Noosa River Catchment is the Noosaville Industrial Estate. This estate is partly situated in the Eenie Creek sub-catchment and drains to Lake Weyba and Lake Doonella via Eenie Creek.

Natural resource management issues associated with industrial areas are water, noise and air pollution.

Since the introduction of the *Environment Protection Act (1994)* the volume of pollutants entering our waterways from industrial areas has been reduced. However, much more needs to be done before we can claim a satisfactory outcome as these areas present a considerable threat of point source pollution.

Agricultural landuse

Agriculture can be defined as cultivating the land to produce food crops and in its broadest sense includes all types of husbandry of the land to produce crops, livestock and forest products. Agricultural production is an important industry as it is the basis for human survival and wealth creation. All urban populations throughout the world rely partially on farmers and the products they produce for their survival. However, in their pursuit to produce, agriculturists simplify and modify natural ecosystems in order to grow the maximum amount of food or timber. History shows that this often leads to human induced natural resource management problems.

Agriculture contributes significantly to the local economy and occurs mainly in the Kin Kin / Cootharaba sub-catchment. Major rural industries include sugarcane, macadamia nuts (Queensland nut), ginger, dairying, horticultural small crops, beef cattle, timber production, sunrise agricultural industries such as cut flowers, herbal teas, hydroponic productions, aquaculture and medicinal oil extraction.

Major natural resource management issues associated with rural land-use in the Noosa River Catchment include the further clearing of native vegetation and associated loss of faunal habitat, increased risk of erosion, increased sediment runoff and nutrient transport resulting from the clearing of native vegetation and the loss of stream-bank vegetation. With adequate planning and education and using the best available information, the severity of impacts on the natural environment can be reduced with no net loss of income or productivity. Ideally, if successive generations of farmers are going to survive, each generation of farmers must hand the land to the next generation in the same state they received it or in an improved state. Adherence to agricultural ‘codes of practice’ and ‘industry guidelines’ is a positive step in achieving this outcome.

Property management planning

Realistically, the nature of agriculture is such that some adverse impacts on catchment values such as water quality and biodiversity are unavoidable. However, an integrated Property Management Planning (PMP) approach will ensure that these impacts are drastically reduced. This “whole property” approach is in the long-term interest of the primary producer and the community. The inherent management advantages provided by PMP can be regarded as “Best Management Practice” in its own right and provide a useful vehicle for the establishment of other best management practices.

Property management plans can be seen as agreed farm management strategies that can be used to integrate the community’s environmental management concerns into on-farm decision making. Property management plans should not be seen as restrictions placed on primary producers by the community, rather as an important management tool to be employed in the attainment of reduced land degradation, improved economic returns and agricultural sustainability (AWRC, 1992).

Economic instruments for meeting environmental objectives

Incentives can be defined as mechanisms adopted by government agencies to influence the behaviour of those who value the natural environment, make use of it or cause adverse impacts as a side-effect of their activities (James, 1997).

Examples include:

- Environment levies
- Rate rebates for biodiversity conservation
- Catchment levy to fund environmental works and land management practices
- Deposit funds (eg. bottles, aluminium cans and litter)
- User pays / polluter pays principle
- Environmental performance bonds
- In-kind contributions
- Co-funding arrangements between government, community and industry groups
- Cash grants
- Best practice environmental design bonuses
- Stormwater cleansing fee (decreased charges for best practice management).

Concerns relating to the expansion of urban land-use into rural areas include:

- alienation of agricultural land, and the conflict that often follows the arrival of rural residential land-use in agricultural areas
- increased use of rural infrastructure
- introduction of unrestrained domestic animals.

Vegetation management

Land resources and in particular vegetation and its long term management is arguably the most important issue to be addressed in this catchment strategy.

A direct result of development and population growth is the clearing of native vegetation, which can result in a simplification and major modification of the ecosystem. Inappropriate vegetation management is a major contributing factor to many of the issues being addressed in this strategy. Vegetation is important for various reasons including biodiversity, recreation, limiting erosion, purifying water, filtering of nutrients, aesthetic appeal and for other social reasons.

The retention of remnant bushland, vegetation corridors, riparian vegetation and wetlands is vitally important for a healthy catchment. Preventing vegetation loss on steep slopes, along waterways and at the headwaters of creeks and rivers will minimise soil erosion and help maintain healthy waterways and biodiversity.

Represented within the catchment are 8 major vegetation communities. These include Rainforest, Ecotonal Forests, Eucalypt Forests, Melaleuca Communities, Heathlands and Sedgelands, Mangroves and Saline Communities, Frontal Dunes and Foreshores. Each vegetation community represents a distinctive habitat type and contains distinctive flora and fauna. Important modified areas include timber plantations and agricultural pasturelands. (Olsen et. al, 1995)

Conservation landuse

The Noosa River Catchment is fortunate because a large percentage of its land area is contained within the Protected Reserve System. This system consists of National Parks, State Forests, Conservation Parks, Environmental Parks and Reserves. The *Nature Conservation Act* 1992 provides the basis for the planning and management of protected areas within the catchment. The two major conservation areas include The Great Sandy National Park (Cooloola) and Noosa National Park.

The primary aim of having protected areas is to protect significant ecosystems found on a local, regional or national scale. Conservation as a form of land-use has been, and continues to be, a contentious issue based on the argument that the land is wasted because it is not producing. However, there is a need for the broader community to recognise conservation as a viable form of land-use and the associated social, economic and environmental benefits that flow on from these protected areas. Further still, the community, industry and government need to develop a system that rewards land stewardship and advances conservation values.

Acid sulfate soils management

Acid Sulfate Soils (ASS) are generally found at or below 2m Australian Height Datum (AHD), in waterlogged soils that contain iron sulfides, particularly pyrite. They are also found at levels of up to 5m AHD, which is a benchmark height for potential risk. When these soils are exposed to the air (oxygen), the pyrite is oxidised and forms sulphuric acid. Potential ASS areas have been identified throughout the Noosa River Catchment.

Areas of particular concern are in the lower and middle sub-catchments where urban development and modified agricultural practices are still occurring. ASS have the potential to cause fish kills, habitat degradation and overall ecological degradation. ASS are now being recognised Australia wide as a major environmental threat needing appropriate management (Smith et al., 1995).

Thorough investigations should take place prior to the disturbance of any low-lying coastal soils below the 5m AHD level. Where ASS are identified by such investigations then alternative means of achieving the intended works should be examined thoroughly. In some situations, prescriptive management measures may be needed to negate or limit impacts on the natural environment. Avoiding any excavation is by far the most suitable approach.

Wetland management

There is no universally accepted definition of the term “wetland” (Streever, 1998). Two examples are: Definition as adopted by the Ramsar Convention – *“areas of marsh, fen, peatland or water, either natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres”.* (Department of Natural Resources and Environment, 1996).

EPA (QLD) definition – "*Wetlands are areas of permanent or periodic inundation, whether natural or artificial; fresh, brackish or saline; still or flowing. A wetland generally has plants and animals that have adapted to living in wet conditions".* (EPA, 2000).

Types of wetlands

Wetlands vary greatly in their type, extent and influence. Queensland has the greatest variety of wetlands in Australia.Wetlands include: Mangrove and saltmarsh areas, freshwater and saltwater lakes, land such as heathland and floodplains that is flooded periodically, swamps, creeks and rivers, overflows from creeks and rivers such as billabongs and lagoons that fill after rain, built water storages, shallow coastal inshore waters including coral reefs, seagrass beds, tidal flats, underground marshes and streams.

Unlike perennial wetlands on other continents, many Australian wetlands are ephemeral – existing only for a short time after good rain (EPA, 2000). Wetlands provide a diverse habitat for a variety of plants and animals such as waterbirds, fish and aquatic plants and are the border between terrestrial and aquatic environments. They serve as refuge areas in times of drought for many plants and animals and are important breeding grounds. Wetlands generally assist in improving water quality, have aesthetic appeal and are important for flood mitigation. The Noosa River Catchment has two wetlands designated as being of "National Importance". These significant wetlands include the Noosa River Wetland covering an area of 9945 ha and the Lake Weyba Wetlands, which cover an area of 2860 ha. Both these wetland areas are dominated by Mangrove, intertidal flats and saltmarsh communities (ANCA, 1996).

Streambank vegetation management

Stream bank or riparian vegetation is the zone of fringing vegetation along creeks, streams and rivers or surrounding lakes and wetlands. Fringing vegetation has numerous functions including bank stability, nutrient and sediment filtration, habitat, water shading, reducing runoff velocity, conservation corridor linkages and maintaining biodiversity. It is vitally important in maintaining in-stream habitat. To ensure these benefits are not lost, developments within the catchment should leave an adequate buffer strip of vegetation between the riverbank and any development.

Sound riparian management can benefit landholders by reducing the amount of erosion, improving water quality for stock, increasing property values, decreasing pest damage to crops and pastures, providing windbreak areas for crops and stock, reducing salinity problems and increasing farm diversity through agroforestry plantations. In most instances the problems and costs incurred as a result of the removal of riparian vegetation far outweigh any penalties due to reduced productive land area.

Currently there is no prescribed width for the riparian zone. Realistically, different widths are needed in different situations. Riparian zone issues often create much discussion between the various stakeholders. Where inconsistencies occur relating to the width of the riparian zone, factors such as slope, soil type, existing vegetation, rainfall, land use and economic factors should be taken into account so that an informed decision is reached. To support the ICM ethic of cooperation and coordination, a decision should always be reached in consultation with the stakeholder whether they are an industry group, government agency or individual landholder.

Extractive industry management

Extractive industry plays an important role in supplying materials for roads and construction. Areas of extraction are a major point source for pollutants and must be managed correctly at all times. Accelerated runoff carrying chemicals and pollutants, the contamination and alteration of groundwater supplies, dust, noise and visual pollution are some of the management issues (Patey, 1995).

The extractive resource with the most potential to affect the Noosa River is the large estuarine sand resource located to the north of Lake Cooroibah. Patey (1995) rates the site as possessing outstanding biophysical values, which will be significantly degraded by over exploitation of the resource. This is constrained by a shallow water table, poor drainage, periodic river flooding, potential for acid sulphate soils, vegetation values and the risk of pollution to the Noosa River.

Erosion and sediment control

Soil erosion and sediment transport are naturally occurring processes. Erosion, which occurs to varying degrees depending on a number of different factors, is the process whereby soil is moved from one location to another by wind, water or gravity. In some cases human settlement has accelerated these processes to the detriment of the natural environment

The building of houses, infrastructure such as roads and general construction activities are the major sources of erosion and sedimentation in urban/residential areas. Adherence to, and enforcement of, erosion and sediment control plans by those involved in the construction industry are essential to maintaining the health of the creeks, rivers and estuaries within the catchment.

In the rural areas of the catchment soil erosion results in loss of productive land, a decline in water quality for stock and the broader community and the shallowing of creeks and rivers due to sedimentation. Simple steps such as not farming on steep slopes, minimising vegetation clearing, maintaining stream-bank vegetation and a vegetative cover over the soil, using contours on hillsides and sediment traps in gullies are all proactive measures that limit the impacts of soil erosion on the natural environment.

Adhering to the various Agricultural Codes of Practice and underlying industry guidelines is a positive step toward achieving ecologically sustainable development.

Forestry

“Forest Industry” refers to activities relating to the growing, processing, management and selling of timber and timber based products. The Noosa River Catchment contains both sustainably managed native forests (4690 ha.) and renewable plantation forests (2268 ha.). State forests and timber reserves are managed for multiple use, and provide the community with a range of products and services. These include employment and economic benefits, visual amenity and areas for community enjoyment. Furthermore, forests provide habitat for fauna and often form corridor linkages with other vegetation communities.

Without doubt timber harvesting practices impact on the environment. It is imperative that forest values are conserved and protected while still providing for the needs of the timber industry. Adhering to the "Native forest timber production" and the "Plantations for wood production" Codes of Practice is a positive step toward achieving ecologically sustainable management.

While State Forests complement national parks by providing increased habitat, they may also be key areas for harboring feral animals and pest plants (weeds). Toolara State Forest 1004, exists north west of the Cootharaba/Kin Kin sub-catchment. Adjacent land-uses such as forestry need important consideration of management as they could potentially impact significantly on the natural values of the Noosa River catchment.

Farm forestry

Farm forestry or agro-forestry is the commercial production of hardwood, softwood or cabinet timbers on private and public land. Farm forestry operations can often be integrated into farming systems to increase productivity, diversify income and increase farm sustainability. Some benefits include increased habitat diversity, reduced erosion, improved water quality, reduced salinity and lowered water table.

A recommended booklet outlining the benefits and opportunities is *Guidelines for Farm Forestry, South-east Queensland – Establishment, Management and Harvesting*.

GOAL – ENCOURAGING BEST LAND MANAGEMENT PRACTICES FOR OPTIMAL SUSTAINABLE PRODUCTION

Current situation and activities

A number of initiatives are currently being undertaken within the Noosa River Catchment. The development of the Noosa River Catchment Management Strategy is a direct attempt to sustainably manage the catchment's land and water resources using information supplied by community groups, industry groups and government agencies. Community groups such as Noosa and District Landcare Group, Queensland Biodiversity Network and Noosa Parks Association promote sustainable land management practices and conduct on ground restoration programs.

The Cooperative Research Centre for Catchment Hydrology has recently released an advisory report called "Guidelines for stabilizing streambanks with riparian vegetation".

Noosa Council is currently drawing up a Draft Vegetation Management Local Law in consultation with the community. Its aim is to sustainably manage the Shire's vegetation resources and is currently undergoing community consultation.

The Queensland Government has released a Native Vegetation Management Policy. This policy also aims at the ecological sustainable development of land, protection of biodiversity together with planning certainty for landholders, community and industry.

A large number of the primary producers within the catchment are being encouraged to adopt and implement the recommendations outlined in industry codes of practice. Government agencies regularly supply educational material to community groups in the form of brochures, pamphlets and fact sheets regarding best land management practices.

The *Natural Resource Management and Conservation Strategy for South-east Queensland* is currently being developed to address regional issues on a priority basis: land management is one of these issues. Noosa Council has completed numerous studies on aspects of land management which are addressed by the Noosa Strategic Plan.

Objectives

- Best management practices appropriate to all landuses adopted throughout the catchment
- Integrated Catchment Management principles implemented by all industry groups throughout the catchment
- The principle of land stewardship adopted by land holders
- Land suitability and capability principles adopted when considering alternative or new land uses

STRATEGY (BLM 1) - Identify all available information and its sources

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
1.1	Identify information sources where catchment advice can be obtained	ICM Group Local Govt.	Industry Groups Community Groups Landholders	M - S
1.2	Identify and document the catchment's cultural values (European and Indigenous)	EPA Local Govt. Indigenous groups	Community Groups	M - M
1.3	Identify and collate today's best management practices for urban and agricultural uses	Local Govt. DPI	Landcare Groups Community Groups Industry Groups	M - S
1.4	Identify and collate contaminated land site information	Local Govt. EPA DNR	Landholders	M - S
1.5	Assist local government in the identification and mapping of catchment floodplains at a scale appropriate for management	Local Govt. DNR	Landholders	M - M
1.6	Identify catchment "hotspots" which have significant potential to adversely impact on the catchment's environmental values	Local Govt DNR EPA DPI ICM	Community Groups Industry Groups	H - S
1.7	Assist Noosa Council to further identify good quality agricultural land and protect from other land uses	Local Govt. DNR DPI Landholders	Industry Groups	M - S
1.8	Identify areas where soil salinity, acidity and acid sulphate soils may occur	DPI DNR	Local Govt. Industry Groups	H - M
1.9	Identify a range of suitable incentives for improved environmental protection	EPA Local Govt.	Community Groups Industry Groups DPI DNR	H - M
1.10	Identify significant open space within the catchment	Local Govt.	LGAQ (SEQ 2001 project)	M - M
1.11	Identify and collate information relating to sustainable urban household practices	Local Govt. Community Groups	Development Ind. Comm. Enterprise	M - L

STRATEGY (BLM 2) - Investigate information gaps in rural and urban land management strategies

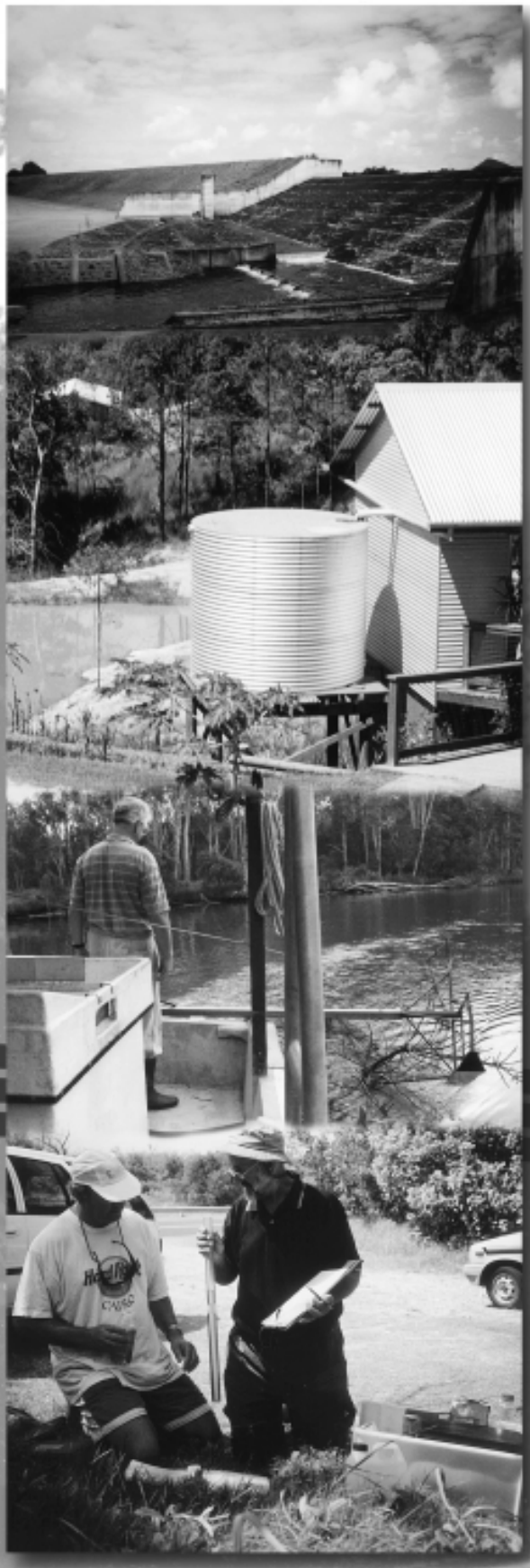
	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
2.1	Investigate land suitability and capability principles through the property management planning process	DNR Local Govt. DPI	EPA Ag. Extension Serv. Comm. Enterprise Landcare Groups	H - S
2.2	Investigate and review the appropriateness of different tree clearing guidelines in urban and rural areas	Local Govt. Landholders	Rural Industries DNR DPI Community Groups SEQEB Telstra	M - S
2.3	Investigate and collate information on the management of soil acidity, salinity and acid sulphate soils	DPI DNR	Local Govt. Industry Groups	H - M

STRATEGY (BLM 3) - Use available information in the sustainable management of land

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
3.1	Encourage incorporation of the following into local government planning schemes: • Farm forestry, guaranteeing the right to harvest • Sustainable household practices and urban design principles • Cultural values (European and Indigenous) • Introduced animals and environmental weeds • Vegetation buffers between the different uses of land • Contaminated lands • Recognition of ecological, biodiversity, amenity and economic values • Land suitability and capability principles • Riparian and floodplain management • Best management of acid sulfate soils	Local Govt. DNR EPA DPI	Industry Groups Community Groups Development Ind. Indigenous Groups	H - M
3.2	Local Govt. to review their operations with respect to their impact on catchment management issues (Environmental audit of council operations)	Local Govt. ICM Group	Community Groups	H - M
3.3	Conduct a series of Property Management Planning workshops on an annual basis to assist in achieving sustainable development	DNR DPI ICM Group Local Govt.	Community Groups Industry Groups	H - S
3.4	Noosa Council to complete a State of the Environment Report (Land and Water Audit)	Local Govt.	Govt. Agencies Community Groups Industry Groups Landholders	H - S
3.5	Protect significant open space	Local Govt. DNR	LGAQ Community Groups	M - M

STRATEGY (BLM 4) - Raise awareness and promote best land management practices for optimal sustainability within the community

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
4.1	Encourage landholders to adopt industry codes of practice and carry out management in accordance with ICM principles	ICM Group Local Govt. Industry Groups	Community Groups EPA DPI	H - S
4.2	Promote acceptance of industry codes of practice as a starting point for addressing natural resource management	Local Govt. Industry Groups EPA DPI DNR ICM Group	Community Groups Landholders	H - L
4.3	Promote use of best practices for all land-related catchment issues	Local Govt. DPI DNR ICM Group	Community Groups Industry Groups	H - M
4.4	Promote and support the expansion of farm forestry as a desirable land use	Local Govt. DPI Landcare Groups Landholders	Community Groups Industry Groups	M - M
4.5	Actively promote and encourage the adoption of environmentally conscious urban design and household practices	Local Govt. Development Ind. ICM Group	DNR EPA Academic Instit. Research Instit. Community Groups	M - M
4.6	Identify catchment “hotspots” which have significant potential to adversely impact on the catchment’s environmental values	Local Govt DNR EPA DPI ICM	Community Groups Industry Groups	H - S
4.7	Promote to rural landholders the benefits of developing and implemeting property management plans	Local Govt. DNR Industry Groups	Community Groups Landholders	H - S
4.8	Promote the use of vegetation as a buffering and rehabilitative tool	Local Govt. DNR DPI EPA	Community Groups Industry Groups	M - S
4.9	Encourage the protection, rehabilitation and sustainable management of all remnant vegetation	Local Govt. DNR Landholders Community Groups	Industry Groups	H - M
4.10	Disseminate Best Land Management Practice information to community, industry and government	ICM Group Local Govt.	Community Groups Govt. Agencies	H - S
4.11	With land zoned rural pursuits, encourage already cleared or degraded land to be used before clearing native vegetation	Local Govt. Community Groups Industry Groups	Landholders Govt. Agencies	H - S
4.12	Encourage local govt. to seal all roads on an environmental impact priority basis to minimise impacts on water quality	ICM Group Rural Landholders	Community Groups	M - M
4.13	Encourage the co-ordination of any sub-catchment groups within the NICA	ICM Groups Community Groups	Local Govt.	M - S



Encouraging best management of our water resources - SWQ & MWQ

Water Resources Management

Encouraging an environmentally, socially and economically sustainable catchment

Noosa Integrated Catchment Association

Contents

Sustaining water quantity (SWQ)

Sustaining water quantity

Background

Water is our most valued and precious resource. More often than not, the availability of clean water is a major factor in settlement and town planning. Animals, plants, fish and humans all depend on adequate supplies of good clean water for their survival. Also, a large majority of those residing along our coastal fringes rely on both fresh and saltwater for non-consumptive uses such as recreation and sport.

The current population within the catchment relies on adequate quantities of clean water for agriculture, domestic and urban supplies, recreation, industry and manufacturing. There is a need to act responsibly to ensure that this resource is not passed on to future generations in a degraded condition. Further more, there must be sustainable environmental flows of good quality water to ensure long-term survival of the dependent freshwater and estuarine aquatic life. (Also refer back to Table 5)

Water quantity, allocation and harvesting

Concern about sustainable management of our water resources is increasingly discussed. This directly results from changes in land-use practices and consumption by an increasing population.

At present no gauging stations exist on the Noosa River, nor any regulation or monitoring of ground-water usage. However, there is a gauging station on Teewah Creek. The mean annual flow at the Coops Corner gauging station in Teewah Creek in the upper Noosa River is 29,630 megalitres. Cooloola Shire Council currently extracts 400 megalitres annually for the township of Tin Can Bay. The license allows 2000 megalitres annually. There is concern about long term degradation of wetland systems, the impacts of such extraction being unknown. Noosa Council currently obtains its domestic water from the Mary River System.

Comprehensive management arrangements are needed for water allocation and harvesting based on ecologically sound principles. A direct result of such arrangements would be the fair and equitable allocation of water to all users, including environmental flow requirements. Objectives are to ensure resource allocation equity, limit the over-allocation of surface and groundwater resources and include mechanisms to address potential conflicts that may arise in the future.

Flood management

The implementation of sustainable land management practices and limiting any significant land alterations in the upper catchment are probably the best method of alleviating flooding impacts on downstream settlements.

Development in the lower catchment has significantly altered the landscape and increased the amount of runoff due to impervious surfaces (eg. bitumen, concrete, paving and house roofs). In many places, areas that were once natural creeks and watercourses have been turned into channels to remove storm-water at a faster rate to reduce flooding of urban areas (Joy 1995).

GOAL – TO ENCOURAGE THE BEST MANAGMENT OF OUR WATER RESOURCES

Sustaining water quantity

Current situation and activities

The major freshwater source within the Noosa River Catchment is the Noosa River. At present, limited information exists on environmental flow requirements and the present and future impacts of water extraction by Cooloola Shire Council on groundwater levels.

Research needs to address these issues. It should identify the location, number of private bores and pumps, and the volume of freshwater being extracted from creeks and tributaries. Such research should prevent over-commitment of surface and groundwater resources. This is particularly important with likely future increases in agricultural landuse, particularly sugarcane within the Kin Kin/ Cootharaba sub-catchment, and the general expansion of rural-residential landuse. These often rely on surface and groundwater resources.

At present Noosa Council obtains its water from the Lake MacDonald water supply dam and Borumba Dam for consumptive use. There is little activity aimed at raising community awareness of water conservation methods within the catchment. The development and implementation of a water conservation extension program is seen as a valuable tool in reducing the shire's water consumption.

Objectives

- Maintain required environmental flows and groundwater levels in the catchment
- Utilise technologies and methods to conserve the catchment's water quantity
- Maximise safe reuse of water

STRATEGY (SWQ1) - Identify available information and its sources

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
1.1	Lobby research institutions to conduct studies to identify required environmental flows (ecological effects)	DNR EPA DPI Academic Instit.	DPI Research Orgs. Community Groups Local Govt. Industry Groups	H - S
1.2	Identify alternative and future freshwater supply sources	Local Govt. DNR	Academic Instit. Community Groups Consultancies	M - M
1.3	Lobby research institutions to conduct studies to identify availability of sustainable water yields for irrigation purposes and domestic use	DNR Local Govt.	Research Orgs. Industry Groups	H - S
1.4	Identify location, number of private bores and pumps and volume of water being extracted from freshwater sources	Local Govt. DNR	Landholders Community Groups Industry Groups	H - S
1.5	Conduct research to identify required groundwater levels and recharge rates	DNR EPA DPI Academic Instit.	Local Govt. Community Groups Industry Groups Research Orgs.	L - M

STRATEGY (SWQ2) - Carry out investigations into future freshwater supply sources and uses

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
2.1	Investigate reuse of stormwater, wastewater and sewage as future water quantity sources	Local Govt. Academic Instit. Research Orgs.	DNR Industry Groups Community Groups Consultancies	H - S
2.2	Investigate future alternative freshwater supply sources including use of desalination plants	DNR Academic Instit. Local Govt.	Research Orgs.	M - M
2.3	Investigate viability of a Water Allocation Management Plan (WAMP) in the catchment	DNR Local Govt.	Landholders Industry Groups	M - M
2.4	Investigate use of landlocked water supply facilities for seasonally dry periods (eg rain filled farm dams)	Local Govt. DNR	Landholders Industry Groups	L - M
2.5	Investigate the need for the development of Groundwater Management Plans using the ARMCANZ Guidelines	DNR DPI	Industry Groups Community Groups	M - M

STRATEGY (SWQ3) - Raise awareness and promote best practice leading to improved water management

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
3.1	Promote use of rainwater tanks in urban and rural areas	Local Govt. EPA DNR	Community Groups Industry Groups Landholders	H - S
3.2	Raise awareness with rural landholders about best practice irrigation conservation methods and encourage their implementation	Local Govt. EPA DNR Property Mgt. Planning	Community Groups Industry Groups Landholders	H - S
3.3	Promote and encourage the use of improved technology to conserve the catchment's freshwater resources	DNR Local Govt. EPA	Community Groups Industry Groups Landholders Research Orgs.	H - S
3.4	Implement ongoing water conservation/ reuse education and extension program	DNR Local Govt.	Community Groups Industry Groups	H - S
3.5	Promote need for sustainable environ-mental flows and groundwater levels	DNR EPA DPI Local Govt.	Industry Groups Community Groups	H - S
3.6	Encourage Noosa Council to take proactive action to reduce the shire's water consumption	Local Govt.	Community Groups Industry Groups	H - S

Contents

Maintaining Water Quality (MWQ)

Maintaining Water Quality

Background

Many issues in this document relate either directly or indirectly to the improvement of water quality within the catchment. Consequently this section may reiterate some points previously mentioned.

Since European settlement there have been significant adverse changes in the quality of our water resources. These changes include increased nutrient levels, sediment and contaminants from diffuse and point sources. Pollutants are largely a result of human activity and can affect the long-term viability of the resource for future generations.

The major areas of concern include a decline in the health of aquatic ecosystems, potential contamination of groundwater supplies, the increasing water demands for domestic and recreational use, and the disposal of wastewater and stormwater.

With a strong relationship existing between land-use and water quality, the broader community, government agencies and industry have a responsibility to limit their impacts on the natural environment in the course of carrying out their daily functions.

GOAL - TO ENCOURAGE THE BEST MANAGEMENT OF OUR WATER RESOURCES

Current situation and activities

Water quality monitoring within the catchment is currently conducted by the Environment Protection Agency and by the community based Waterwatch Program. Measured parameters include temperature, dissolved oxygen, turbidity, pH, Chlorophyll A and Pheo-pigments. A total of 25 years of data representing more than 2300 water quality samples was identified by Noosa Council in a Planning Scheme Review.

As identified by both the NICA and Noosa Council, a coordinated integrated approach to water sampling is required. This will save both time and money and provide quality information on which sound management decisions can be based. Ad hoc water quality monitoring occurs when an Environmental Impact Assessment is required for development approval.

Further research and investigation is needed to identify baseline data and ensure that diffuse and point source pollutants are not adversely affecting water quality.

The NICA recently became part of the South-east Queensland Regional Water Quality Management Strategy. Funding from this program will assist in implementing the high priority water quality actions identified by this Catchment Management Strategy.

The NICA has regular guest speakers to raise awareness of issues such as acid sulfate soil runoff, stormwater management, erosion and sediment management, and types of gross pollutants that affect water quality.

Objectives

- Reduce the ongoing degradation of water quality
- Promote adoption of best management practices by land users
- Promote adoption of best management practices by water users
- Maximise use of storm-water and wastewater
- Provide state of the art sewage and septic treatment in the catchment
- Apply ANZECC water quality guidelines

STRATEGY (MWQ1) - Identify and collate available information concerning water quality

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
1.1	Identify available information concerning water pollution, stormwater, wastewater and sewage technology in order to manage water quality	AWA AWRC Local Govt. DNR EPA	Research Instit. Consultancies	H - S
1.2	Identify point source pollution discharges	Local Govt. Waterwatch	Community Groups Industry Groups	M - M
1.3	Identify location of all sewage tanks	Local Govt. Landholders	Community Groups Industry Groups	M - M
1.4	Identify appropriate catchment health indicators to manage water quality	AWA AWRC EPA Local Govt.	DNR DPI	H - M
1.5	Identify appropriate water quality guidelines for the catchment and link them to the SOE report and the SEQRWQMS	AWA AWRC EPA Local Govt.	Waterwatch	M - S
1.6	Identify occurrence of potential and actual acid sulphate soils targeting high priority subcatchments	Local Govt. DNR	Landholders Industry Groups Devt. Industry	H - M
1.7	Identify signifcant diffuse pollutant sources using sub-catchments as land unit	Local Govt. EPA DNR DPI	Community Groups Industry Groups Devt. Industry	M - M

STRATEGY (MWQ2) - Use information gained for on-ground projects

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
2.1	Assess and conduct an annual quality assurance check on all septic tanks	Local Govt. Landholders	Waste Mgt. Services	M - L
2.2	Lobby for the implementation of today's best available wastewater treatment technology	Local Govt. Private Industry Waste Mgt. Services	AWA AWRC	H - M
2.3	Assist local government in the development and implementation of storm-water management plans for urban and agricultural areas using best available technology and information	Local Govt. Industry Groups	DNR EPA Community Groups	H - S
2.4	Co-ordinate the monitoring of point-source pollution discharges by appropriate organisations	Local Govt. EPA Waterwatch	Community Groups Industry Groups	M - L
2.5	Assist in the development of catchment health indicators to identify water quality changes and trends	EPA AWRC	Local Govt. Community Groups	H - M
2.6	Apply erosion and sediment control guidelines to new development	Local Govt UDIA EPA	Community Groups Industry Groups	H - S
2.7	Map catchment's acid sulphate soils at a scale appropriate for management and develop and implement strategies to limit impacts of acid sulphate soil runoff	Local Govt. DNR	Landholders Community Groups Industry Groups	H - S
2.8	Use ANZECC water quality guidelines to monitor water quality	Local Govt. EPA Waterwatch	Community Groups Industry Groups Consultants	M - M
2.9	Implement the Environmental (Water) Protection Policy	EPA Local Govt.		M - L
2.10	Complete and implement a Water Quality Management Strategy consistent with the SEQ Regional Framework for Growth Strategy	Local Govt. SEQRWQMG	Community Groups Industry Groups	M - L

STRATEGY (MWQ3) - Promote best practce leading to optimum water quality

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
3.1	Encourage community to implement best land use practices including those applying to acid sulphate soils and the control of nitrates and phosphates to ensure optimum water quality	Local Govt. ICM Group EPA DNR DPI	Community Groups Industry Groups Devt. Industry	H - M
3.2	Promote best practices to improve water quality among river users	Local Govt QBF Patrol Tourism Offices	Community Groups EPA	M - M
3.3	Promote use of modern technology in areas of sewage and wastewater management	Local Govt. EPA	Community Groups	H - M
3.4	Encourage local government to provide sewerage infrastructure to all towns within the catchment	Local Govt.	Community Groups Industry Groups	M - L

Increased research, understanding and sharing of information between stakeholders - RUS

Education & Research

Encouraging an environmentally, socially and economically sustainable catchment

Noosa Integrated Catchment Association

Contents

Increased research, understanding and sharing of information between stakeholders (RUS)

Increased research, understanding and sharing of information between stakeholders

Background

Regular networking and sharing of information within and between the various catchment stakeholder groups will assist in understanding the vast array of catchment issues and help prevent further natural resource decline. Sharing of information and resources where possible will minimise duplication and provide substantial time and cost saving benefits. Further research within the catchment will fill information gaps to allow for more informed management decisions to be made.

Community education and awareness programs play a vital role in raising awareness of natural resource issues such as water pollution. In turn, awareness raising programs lead to changes in community attitudes and behaviour.

GOAL - TO INCREASE RESEARCH, UNDERSTANDING AND SHARING OF INFORMATION BETWEEN STAKEHOLDERS

Current situation and activities

The NICA conducts tours identifying catchment issues and possible solutions. It also arranges public issue identification meetings, workshops and forums to discuss relevant issues in detail. Members regularly attend conferences, field days and seminars to discuss and obtain up to date information, while guest speakers address general meetings to inform members about catchment issues. Radio interviews, media releases and magazine articles are also used to advise the community of important catchment issues and committee activities.

NICA cooperates with Noosa Library to ensure that information about catchment management issues is freely available. Educational packages are being developed by members of NICA for local schools and the general public.

The Noosa Parks Association's Friday morning Nature Discovery talks are an opportunity for local people to inform the community about environmental issues. These talks are also written up in the local newspaper for even wider dissemination.

Noosa and District Landcare Group formerly employed an Education Officer who conducted school talks, organised a regular newsletter, liaised with the community, and wrote media releases on topical natural resource issues. The Education Officer also organised the successful "Pomona Timberfest".

Objectives

- To achieve wider community understanding of Integrated Catchment Management concepts
- To identify all existing information and make it available to the catchment community
- To facilitate increased cooperation, accessibility and sharing of information between key stakeholder groups
- To incorporate all relevant collected information into local government planning

STRATEGY (RUS1) - Identify available information and its sources

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
1.1	Contact EPA for list of contaminated land sites within Noosa River Catchment	EPA Local Govt. DNR	Landholders	M - S
1.2	Identify relevant natural resource information gaps as a basis for future funding requests while acknowledging the community as a valuable resource	DNR EPA DPI Local Govt.	Community Groups Industry Groups	M - L
1.3	Ensure that information is stored and disseminated in user friendly formats	DNR EPA DPI Local Govt.	Community Groups Industry Groups	M - L
1.4	Investigate existing software packages for improved natural resource management	ICM Group Local Govt.	Community Groups Industry Groups Landholders	L - L

STRATEGY (RUS2) - Conduct all necessary investigations

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
2.1	Noosa Council to complete a State of the Environment report by September 2000 then undertake every three years	Local Govt.	Community Groups Industry Groups	H - S

STRATEGY (RUS3) - Disseminate available information for use in planning

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
3.1	Elevate status of natural resource management in political portfolios	Lobby Groups	Govt. Agencies	M - L
3.2	Increase co-operation accessibility and sharing of information between key stakeholder groups	ICM Group	Community Groups Industry Groups Govt. Agencies	M - M
3.3	Improve library resource related to Integrated Catchment Management issues	ICM Group Local Govt.	Community Groups Industry Groups Govt. Agencies	L - S

STRATEGY (RUS4) - Promote the concept of Integrated Catchment Management to the catchment community

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
4.1	Conduct on-going education and awareness raising programs regarding catchment management issues	Local Govt. DPI DNR EPA	Community Groups Industry Groups Landholders	H - S
4.2	Conduct annual discussion forums on cross-boundary natural resource issues between local governments	ICM Group Local Govt.	Community Groups. Industry Groups EPA DPI DNR	L - L
4.3	Actively encourage and promote further relevant research within the Noosa River Catchment	ICM Group Local Govt.	Academic Instit. Research Instit. Community Groups Industry Groups	H - S
4.4	Ensure future natural resource management plans complement existing plans	All organisations	All organisations	L - L

Encouraging best practice in river and stream management - RSM

Encouraging an environmentally, socially and economically sustainable catchment

River & Stream Management

Noosa Integrated Catchment Association

Contents

Encouraging best practice in river and stream management - (RSM)

Encouraging best practice in river and stream management

Background

In its present state, the Noosa River has strong environmental and scenic values and contributes significantly to the local economy. It supports a diversity of uses including outdoor recreation, sport, commercial and recreational fishing, tourism and spiritual enjoyment.

Current concerns include:

- Declining water quality due to agricultural and urban runoff
- Wastewater pollution
- Potential sediment and chemical threats from agricultural sources
- Habitat destruction and vegetation clearing
- Human intervention to, or alteration of, the river mouth
- Over-fishing
- Riverbank erosion from boatwash
- Bureaucratic processes that impede and constrain on-ground restoration works involving the river

A very important issue that must be addressed is maintenance of the riparian zone: intrinsic values it provides for responsible river management must be recognised. This is vitally important to the success of the Noosa Catchment Strategy due to the all-encompassing benefits that the riparian zone provides for catchment health. Stormwater and acid sulfate soil runoff threatens the health of river, estuary and stream habitats within the catchment.

The impact of boatwash erosion on the banks of the Noosa River is a major problem that needs immediate attention.

Fundamental to the long-term sustainability of the river are coordinated and complementary policies, strategies and practices between all six agencies responsible for river management. This will only be achieved with increased cooperation, coordination and negotiation. To ensure that the river is maintained in a healthy state, a balance must be found between the variety of competing uses and the long-term protection of the environment.

GOAL – ENCOURAGING BEST PRACTICE IN RIVER AND STREAM MANAGEMENT

Current situation and activities

The Noosa River and its associated creeks and tributaries are in relatively good condition compared with creeks and rivers in adjacent catchments. However, a lot of work still has to be done to improve the river system and prevent any further decline.

The Noosa River Plan is the most recent study that attempts to balance nature conservation with recreation and tourism objectives. However, the plan is limited because it only addresses the area from Boreen Point to the river mouth and excludes Lake Doonella, Lake Weyba and other important areas associated with the Noosa River system.

A major issue identified by several community meetings was the need for one organisation to be responsible for management of the river. This would hopefully get some on-ground action occurring on the river and refine the current bureaucratic processes.

Effluent discharge from houseboats moored on the lower reaches of the Noosa River is a major problem with potential for serious impacts on water quality in this high use recreation area.

Another problem is riverbank erosion between Lake Cootharaba and Lake Cooroibah. Noosa and District Landcare Group are carrying out a riparian pilot project, in conjunction with Noosa Council at the John's Landing site, which has been identified as needing substantial restoration. The project aims to revegetate the riparian zone and provide further information on suitable revegetation techniques. An interesting component of this project being the replanting of mangroves to stabilise the riverbank.

Objectives

- Implement best practice regarding river and stream management
- Maintain River and stream health above the standards set by ANZECC
- Limit riverbank erosion to natural background levels
- Restore badly eroded streambank sections

STRATEGY (RSM1) - Identify sources of information relating to river and stream management

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
1.1	Identify and collate relevant information required for sound management of the catchment's freshwater and tidal water bodies	Local Govt. EPA (water Quality) DPI DNR (Water Resources)	Community Groups Waterwatch	H - S

STRATEGY (RSM2) - Investigate riverbank erosion

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
2.1	Investigate possible causes of accelerated riverbank erosion	Local Govt. DNR Academic Instit.	Community Groups Industry Groups Riverside Residents	H - S
2.2	Investigate appropriate controls for limiting boatwash erosion	QLD Transport QBFPatrol	River Users Community Groups EPA DPI DNR	H - M
2.3	Investigate most appropriate boat hull designs to limit the impacts of boatwash	Academic Instit. QLD Transport	River Users Boat Manufacturers	H - M
2.4	Install scientifically accepted erosion monitoring techniques on Noosa River and ensure regular monitoring is reported to the appropriate organisations	Local Govt. Academic Institutions Landcare DNR	River Users River Residents	M - S

STRATEGY (RSM3) - Use available information for sustainable management of the catchment's rivers and streams

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
3.1	Incorporate conservation of both freshwater and tidal wetlands in state and local government plans	Local Govt. DPI DNR EPA	Community Groups Landholders Industry Groups	H - L
3.2	Encourage the installation of stormwater control devices at all stormwater outlets	Local Govt. Waterwatch	Community Groups Industry Groups	H - L
3.3	Encourage the local authority to adopt the coordinating role for gaining approvals for projects and works relating to the Noosa River system	Noosa Council	All organisations and individuals supporting the Noosa River Plan	M - M
3.4	Support the provision of sewerage pumpout facilities for all habitable boats and houseboats	Noosa Council QLD Transport	Houseboat and commercial boat owners Waste disposal industries	H - S
3.5	Encourage commercial tourist operators to develop and adhere to a code of practice that ensures the long term health of the river	Commercial river users EPA Qld Transport	DPI Local Govt. Community Groups Industry Groups	H - S
3.6	Ensure public access to beaches and waterways through local government planning	Local Govt. DNR	Shire Residents Community Groups DPI	M - S

STRATEGY (RSM4) - Raise community awareness of best practice river and stream management

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
4.1	Lobby state government to introduce reduced speed limits to limit impacts of boatwash	Qld Transport	Boat Users Local Govt. EPA QBFPatrol Residents	H - S
4.2	Raise community awareness of the values of freshwater and tidal wetlands	DPI Local Govt. Education Qld EPA	Community Groups Industry Groups Tourist Info. Offices	H - S
4.3	Encourage the community to be proactive in the reduction of gross pollutants entering catchment waterways	Local Govt. EPA	Community Groups Schools DPI	H - S
4.4	Encourage limiting of noise pollution on the Noosa River	Local Govt. EPA	River Users River Residents Community Groups	L - S

Encouraging best practice in fisheries management - BPF

Encouraging an environmentally, socially and economically sustainable catchment

Fisheries

Noosa Integrated Catchment Association

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Encouraging best practice in fisheries management - (BPF)

Encouraging best practice in fisheries management

Background

The Noosa River Catchment has a rich diversity of fish species. It supports a commercial prawn trawl fishery and a large recreational fishery. There are presently nineteen commercial fishing licenses. All species of recreational or commercial importance depend on either freshwater or estuarine habitats for their survival.

The protection and management of fisheries habitats in Queensland is provided for under the legislative framework of the *Fisheries Act 1994* and the *Fisheries Regulation 1995* (Sheppard and McKinnon, 1997). Numerous regulations are imposed on both the recreational and commercial fishing sectors to ensure sustainable use and enjoyment of the region's fisheries resource.

Approximately 2300 ha. of declared fish habitat areas exist within the Noosa River system which has the largest riverine seagrass beds (*Zostera* and *Halophila*) in South-east Queensland. The Noosa River Catchment has two Management A - Fish Habitat Areas (Weyba 015-019A and Noosa River 015-018A) and one Management B area (Doonella lake – 033-010A)

Other estuarine habitats include saltmarshes and mangroves. *Avicennia* and *Rhizophora* are the dominant mangrove species. The quality of the Australian Bass fishery in the freshwaters of the upper Noosa River and Lake Como is recognised throughout Australia. The coastal lowlands of the Cooloola Section provide habitat for the vulnerable Honey blue eye and Oxleyan pygmy perch.

Habitat is important to fisheries. It provides the basis of the food chain as well as shelter, spawning and nursery areas. The importance of riparian vegetation in maintaining healthy fisheries and in-stream habitats is well documented. It is vitally important to protect riparian vegetation, freshwater pools, riffles, seagrass beds, freshwater and tidal wetland areas and mangroves for long term sustainability.

Presently considerable pressure is placed on the aquatic environment and its resources. This is a direct result of population increases and land use practices. Urban development, urban and agricultural storm water runoff, river and fore-shore erosion, land reclamation, water extraction, over-fishing, acid soil runoff and the subsequent loss of aquatic habitat are just a few of the processes threat-ening the long term viability of the catchment's fisheries.

The continued sustainable functioning of the recreational and commercial fishing industries will require a sound understanding of the resource, together with long term visionary management plans acceptable to all stakeholders involved in fisheries management.

GOAL – TO ENCOURAGE BEST PRACTICE IN FISHERIES MANAGEMENT

Current situation and activities

The Queensland Boating and Fisheries Patrol is responsible for enforcement of fisheries regulations while the management of fisheries resources in Queensland is the responsibility of the Queensland Fish Management Authority.

Almost all of the Noosa River System is a declared Fish Habitat Area. Major fish and crustacean species include whiting, bream, mullet, flathead, trevally, prawns, mud crabs and sand crabs. Australian Bass are found in the upper freshwater reaches of the catchment.

The NICA is developing and seeking funding for a "River Ranger" program. The aim of this program is to encourage sustainable management of the catchment's fisheries, rivers and streams which community consultation shows would have enormous support.

A number of commercial fishermen have installed "By-catch Reduction Devices" and "Turtle Reduction Devices" on their boats. This is a positive step in the sustainable management of our fisheries resources.

Nineteen commercial fishing licensees operate within the Noosa River System. Controls on the commercial sector include limits on the number and size of vessels and fishing apparatus used, permanent and seasonal closures, and restrictions on fish size and gender. A licence is required to fish on a commercial basis. Commercial catch records are maintained on a database called CFISH (QFMA 1998, *Fishfacts*, Series 1 no. 4)

Recent surveys show recreational fishing is one of Queensland's most popular pastimes: one-third of the population list fishing as a recreational activity. Recreational fishing restrictions include minimum and maximum sizes, bag limits, restrictions on fishing apparatus used, closure of specific areas and seasonal closures. No known traditional fishing now occurs within the catchment.

Objectives

- Protect fish breeding habitats throughout the catchment
- Adopt management plans for sustainability of recreational and commercial fisheries
- Implement best practice fisheries management techniques
- Ensure people and the fishery live in harmony

STRATEGY (BPF1) - Identify available information, including sources about fish and crustacean species in the rivers, lakes and creeks of the catchment

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
1.1	Identify stocks of fish, crustaceans and other invertebrate species	DPI (Inland Marine) QFMA	Academic Instit. EPA QFMA QCFO Sunfish	H - S
1.2	Identify current and future threats to sustainability of Noosa's recreational fishery	DPI Qld Transport EPA QFMA	QBFPatrol Sunfish ZACs Local Govt.	H - S
1.3	Identify current and future threats to the sustainability of Noosa commercial fishery	DPI Qld Transport EPA QFMA	QBFPatrol QCFO ZACs Local Govt.	H - S
1.4	Identify research required to ensure sustainability of the fishing industry	DPI QFMA	Qld Transport EPA Aquaculture Indust. Fishing Indust. Sunfish ZACs Local Govt.	H - S
1.5	Identify ecological fisheries research required to maintain aquatic diversity and adequate resource stocks	EPA DPI (Marine/ Inland habitats)	QFMA Fishing Indust. Aquaculture Indust. Community Groups Local Govt. (Bio-diversity Planning Initiatives	H - S

STRATEGY (BPF2) - Investigate emerging information gaps that become apparent

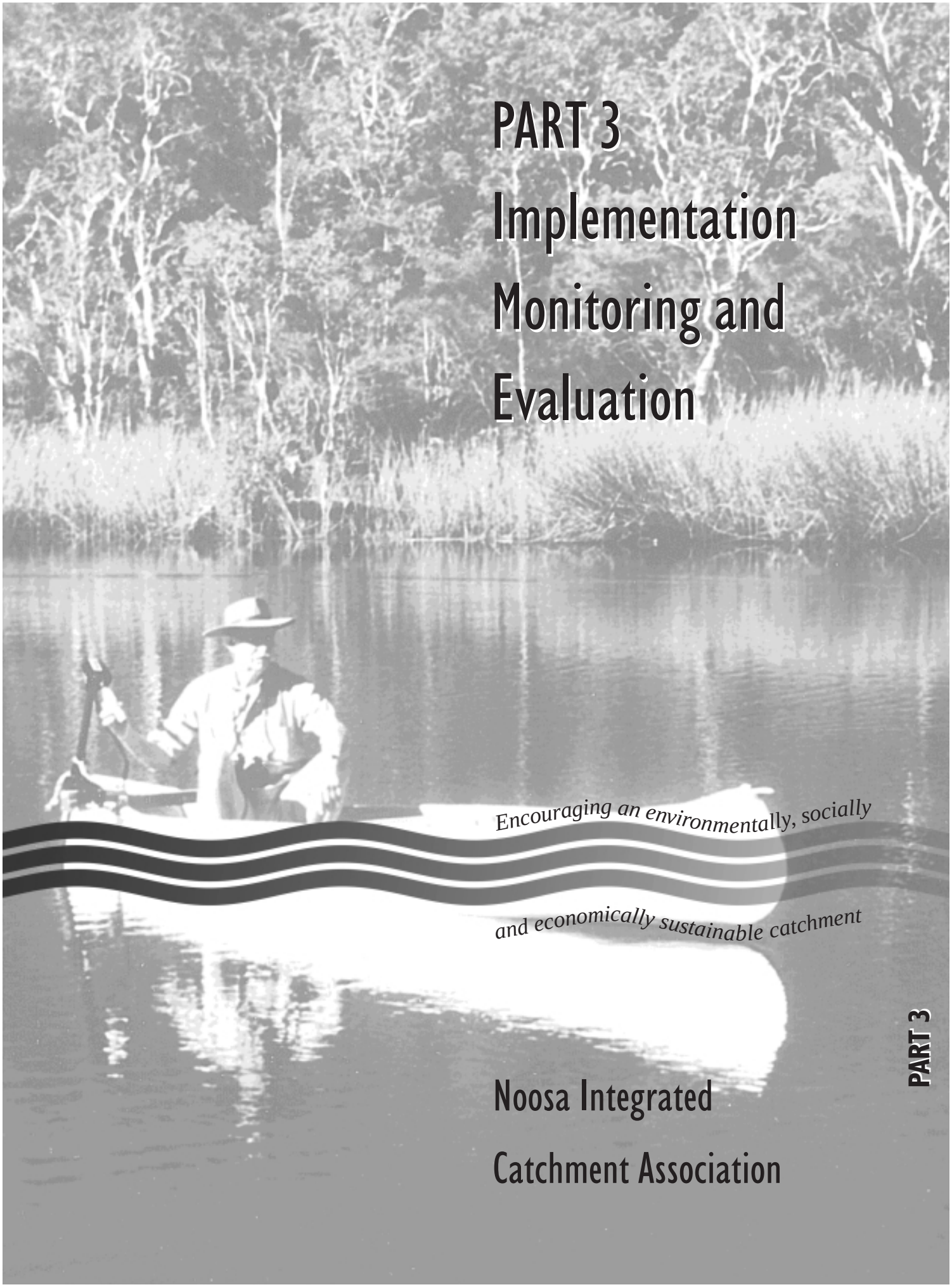
	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
2.1	Investigate gaps and conduct research into diversity and abundance of fish, crustaceans and other invertebrates	DPI Academic Instit. EPA (Endangered Species)	Community Groups Industry Groups ZACs Coastcare	H - S
2.2	Assist with research to identify how to limit impacts of identified threats to the recreational fishery	DPI Local Govt. Qld Transport EPA QFMA	QBFPatrol ZACs Sunfish	L - M
2.3	Assist with research to identify how to limit impacts of identified threats to commercial fishery	DPI Local Govt. Qld Transport EPA QFMA	QBFPatrol ZACs QCFO	L - M
2.4	Investigate appropriate aquaculture opportunities for Noosa River catchment	Local Govt. DPI QFMA	Aquaculture Ind. NFF	L - M
2.5	Investigate feasibility of management plans for Noosa fishery	DPI Local Govt. DNR EPA	QFMA Community Groups ZACs	L - S
2.6	Investigate fish restocking opportunities	DPI (Inland/Marine) QFMA (Permits) Local Govt.	EPA Fishing Ind. Aquaculture Ind. Hatcheries Community Groups	L - M
2.7	Investigate opportunities for introduction of a closed recreational fishing season in addition to existing closures on commercial sector	DPI QFMA	QCFO ZACs Industry Groups Community Groups Sunfish	H - S
2.8	Investigate options to initiate a voluntary River Ranger Program	Local Govt. Qld Transport DPI DNR EPA	Community Groups Industry Groups Developers	H - S
2.9	Further investigate sustainable catch rates for commercial and recreational sector	DPI QFMA	Industry Groups ZACs Fishing Clubs Academic instit.	H - S
2.10	Conduct on-going fisheries habitat monitoring and inventory program (Mangroves/Seagrass)	DPI	Industry Groups ZACs Fishing Clubs Academic Instit.	H - S

STRATEGY (BPF3) - Promote awareness and knowledge within the community and visitors about all matters affecting the sustainability of the Noosa fishery

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
3.1	Promote the catch and release ethic within the Noosa River system	DPI QFMA QBFPatrol	Community Groups Industry Groups ZACs Sunfish Fishing Clubs Boast Hire Tackle Shops Tourism Office Local Govt.	H - S
3.2	Promote the use of less polluting engine types	Qld Transport QBFPatrol EPA	Boat Manufacturers Jetski Hire Charter and hire businesses River User Groups Local Govt.	M - S
3.3	Encourage and promote the use of sound effluent and litter disposal methods for river craft and fishermen	QBFPatrol EPA Qld Transport	Boat Manufacturers Jetski Hire Charter and hire businesses River User Groups Local Govt.	M - S
3.4	Lobby for the protection of all tidal and freshwater fish breeding habitats	EPA DPI	Community Groups Industry Groups Tourist Operators Sunfish ZACs Local Govt.	H - S
3.5	Encourage use of best available technology by commercial sector to limit impacts of bycatch on fisheries resources	DPI QFMA Local Industry	Industry Groups ZACs QBFPatrol	H - S
3.6	Lobby for increased funding for enforcement of fisheries regulations including alternative technologies	Community Groups Industry Groups	All organisations who support the idea	H - S
3.7	Encourage endorsement and implementation of the Noosa River Plan	Local Govt. DNR	All organisations supporting the Noosa River Plan	H - S
3.8	Encourage development and implementation of a coastal management plan	Local Govt. EPA	Community Groups Industry Groups DNR DPI	M - M
3.9	Lobby the appropriate extension and support units to attend natural resource events within the catchment	Community Groups	Industry Groups Local Govt. State Govt.	H - S

STRATEGY (BPF4) - Implement appropriate strategies to manage fish stocks and habitats

	ACTIONS	RESPONSIBLE ORGANISATIONS	COLLABORATING ORGANISATIONS	IMPORTANCE AND TIMEFRAME
4.1	Encourage the implementation of the Community Fisheries Habitat Monitoring Program	DPI EPA Landcare Academic Instit.	Community Groups Industry Groups Local Govt.	H - M
4.2	Support the implementation of fisheries resource monitoring program to detect changes in stocks	DPI QFMA	Industry Groups Sunfish Academic Instit.	H - M
4.3	Implement an ongoing fisheries public education program	DPI QFMA QBFPatrol Local Govt.	Community Groups Industry Groups ZACs Sunfish Fishing Clubs Boat Hire Tackle Shops Tourism Office	H - S



PART 3
Implementation Monitoring and Evaluation

Encouraging an environmentally, socially and economically sustainable catchment

Noosa Integrated Catchment Association

PART 3

Contents

Part 3. IMPLEMENTATION, MONITORING AND EVALUATION

Note: This section will be significantly expanded at the first review to explain precisely how the strategy will be monitored and evaluated, and how on-ground outcomes and environmental indicators compare to the implementation of the Strategy.

Implementation monitoring and evaluation

Implementation

Implementation, monitoring and evaluation of strategies and actions contained within the catchment management strategy rests with the various community, industry and government organisations represented on the catchment committee. Section two of this strategy is a future vision of how the Noosa River Catchment community sees the natural resources in the long term. The community has identified key priority issues and outlined a course of action of how to best manage the process of change to meet the individual goals and vision of this strategy.

While NICA has overall responsibility for developing the catchment strategy, successful implementation will rely heavily on other organisations such as local and state government departments, urban and rural industry, and community groups using the strategy to obtain funding to further develop and implement the strategies and action plans. The formation of sub-catchment action planning groups will play a vital role in implementing the strategy and coordinating activities on a more manageable sub-catchment basis.

To achieve meaningful change, cooperation, continued funding and resource commitment between the consenting stakeholders is required. Clearly one organisation cannot bring about the desired change in isolation. The strategy has not provided an immediate time frame for implementation due to unknowns such as resource and administrative variables that may arise from year to year. However, the strategy does indicate priorities of high, medium or low and whether the particular strategy or action is of importance in the short, medium or long term. These priorities will provide direction for community, industry and government organisations to incorporate these strategies and actions into their daily activities, planning and management programs, and property plans. This process ensures that the greatest benefit is obtained in terms of environmental change.

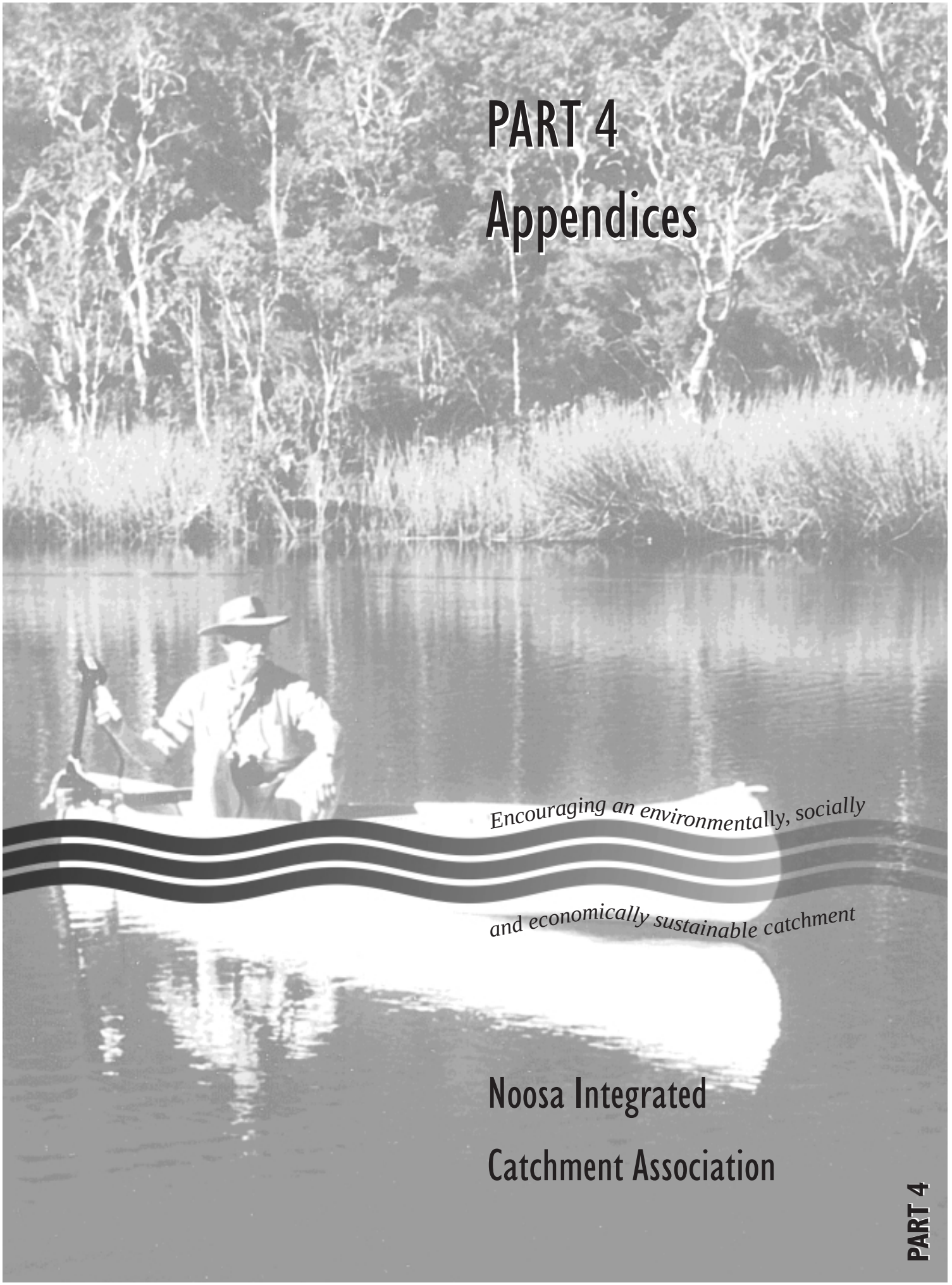
Industry groups, community groups and in particular government departments need to initiate organisational arrangements to ensure successful implementation of the catchment strategies. Without such arrangements, existing staff could be overburdened. The document could be shelved. Further still, adequate funding has to be made available by funding bodies to implement strategy recommendations.

Monitoring

Monitoring provides the information needed for periodic review and alteration of the strategy if required. This ensures that strategy objectives are met to achieve sound environmental outcomes and that the necessary actions are carried out in the most effective manner or within the designated time frame. As part of an on-going assessment process, all timeframes will be reviewed midway. This will provide an understanding of how the strategy is progressing and form part of the evaluation process.

Evaluation

To ensure this strategy is outcome-orientated and achieves its desired objectives, regular evaluation of the strategies and actions is required. Although generic information exists on natural resource monitoring and evaluation, standardised methodologies relating directly to the Integrated Catchment Management process need to be developed and progressively refined through experience.



PART 4
Appendices

Encouraging an environmentally, socially and economically sustainable catchment

Noosa Integrated Catchment Association

Appendix 1

Glossary

Acid sulphate soils — These are soils containing iron pyrite which when exposed to oxygen react to form sulfuric acid.

Baseline data — Information that relates to a specific time or defined area of land or water from which changes or trends can be detected.

Best practice — Best practice is the management of an activity to achieve ongoing minimisation of its environmental harm using cost effective measures.

Biodiversity — The broad variety of plant and animal life which encompasses species richness, ecosystem complexity and genetic variation.

Bush regeneration — The rehabilitation of degraded plant communities to healthy communities composed of native plants.

Catchment area — The area of land surrounded by hills and mountains where water flows to the lowest point or drains to a specific water body.

Community based decision making — The cooperative efforts of the community, industry decision-making groups and government departments reaching common agreement on natural resource issues.

Critical conservation land — Parcels of land which contain fauna, flora or landform features of very high conservation value.

Declared animal — An animal considered a serious enough pest to warrant its control being enforced under legislation.

Declared plant — A plant considered a serious enough pest to warrant its control being enforced under legislation.

Degradation — Any decline in the quality of natural resources resulting from both natural and human activities.

Ecologically sustainable development — Development that maintains or improves, the total quality of life both now and in the future, and allows for the continuation of life supporting ecological processes.

Ecosystem — A community consisting of all living life forms which together with the physical environment function as a holistic unit.

Effluent — The water discharged following a wastewater treatment process.

Endangered species — Plant and animal species in danger of extinction and whose survival is unlikely if the causal factors continue.

Environmental flows — The minimum amount of flow required to protect and maintain the ecological values associated with river systems.

Environmental weed — Environmental weeds are plants that invade and thrive in environments in which they don't naturally occur and often out-compete local native species.

Fish habitat area - Management 'A' — Those declared Fish Habitat Areas managed under the previous Fish Habitat Reserve management strategies. Management A Areas have the highest level of protection and are declared over lands that contain critical fish habitats. These areas do not impact on the normal day to day use of the habitats by the community, but severely restricts development related disturbances.

Fish habitat area - Management 'B' — Declared Fish Habitat Areas managed under the previous Wetland Reserve management strategies Management B Areas are declared over lands that contain important fish habitats. These areas do not impact on the normal day to day uses of the habitats by the community and allow permits to be granted for construction of certain private and public facilities subject to minimal impacts on the habitats.

Geographic information system	A computer system which stores, analyses and displays spatial and geographic mapping information.
Groundwater	Groundwater refers to all water which occurs within the hydrological cycle below the land surface.
Habitat	The place where an organism lives or grows within a community.
High importance	• Highly essential for the health and well being of the catchment or for the well being of the activity under discussion, • Damage or failure will occur if not implemented, • Often an essential first step for following steps, • Associated risks of not implementing are unacceptable.
Land tenure	The legally recognised right to use a given piece of land.
Landuse	Landuse refers to the type of activity occurring at a particular location and is determined by historical factors, landform, planning restrictions, land quality and location.
Long term	6 + years (*)
Low importance	• Desirable for the health and well being of the catchment or for the well being of the activity under discussion, • Limited chance of damage or failure if not implemented, • Little or no risk to catchment health if not implemented.
Medium importance	• Essential for the health and well being of the catchment or for the well being of the activity under discussion. • Some damage or failure may occur if not implemented. • May be an essential first step for following steps. • Associated risks of not implementing are moderately acceptable
Medium term	2 – 6 years (*)
Rare species	Species that are uncommon but are not currently considered endangered or vulnerable. Such species may be represented by a relatively large population in a very restricted area or by smaller populations thinly spread over a wider range, or some intermediate combination.
Remnant bushland	Intact bushland which has incurred minimal human disturbance.
Natural resource	A component of the natural world which has a function in natural systems.
Revegetation	The replacement of weed species with local native species in degraded areas.
Short term	0-2 years (*)
Stormwater	Rainwater which runs from urban and agricultural areas often carrying pollutants such as hydrocarbons, heavy metals and chemicals, which are transported to creeks and rivers.
Vulnerable species	Plant and animal species believed likely to move into the “endangered” category in the near future if causal factors continue operating.
Wetland	EPA (QLD) definition – Wetlands are areas of permanent or periodic inundation, whether natural or artificial; fresh, brackish or saline; still or flowing. A wetland generally has plants and animals that have adapted to living in wet conditions.
Wildlife corridor	A migration route along which wildlife can travel from one location to another.

(*)

- The time frame refers to the doing of the activity or project and not necessarily from the achievement of results.
- All time frames are to be reviewed half way through the original estimate.
- Any action may have on-going aspects.

Appendix 2

Abbreviations

AHD	Australian Height Datum
ANCA	Australian Nature Conservation Agency
ANZECC	Australian and New Zealand Environment and Conservation Council
ASS	Acid Sulfate Soils
AWWA	Australian Water and Wastewater Association
AWRC	Australian Water Resources Council
BMP	Best Management Practice
BOM	Bureau of Meteorology
BPA	Beach Protection Authority
CSC	Cooloola Shire Council
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DEH	Department of Environment and Heritage (QLD) *now EPA*
DNR	Department of Natural Resources (QLD)
DPI	Department of Primary Industries (QLD)
EPA	Environmental Protection Agency (QLD)
GSR	Great Sandy Region
GSNP	Great Sandy National Park
ICM	Integrated Catchment Management
LGAQ	Local Government Association of Queensland
NFF	National Farmers Federation
NICA	Noosa Integrated Catchment Association Inc. *(formally NRCCC – Noosa River Catchment Coordinating Committee Inc. [1997-2000])*
NPA	Noosa Parks Association
NRC	Noosa River Catchment
NSC	Noosa Shire Council
PMP	Property Management Planning

QBN	Queensland Biodiversity Network
QBFP	Queensland Boating and Fisheries Patrol
QCFO	Queensland Commercial Fisherman's Organisation *(now QSIA – Queensland Seafood Industry Association)*
QFMA	Queensland Fish Management Authority *(now QFS – QLD Fisheries Service)*
SES	State Emergency Service
SEQRWQMG	South-east Queensland Regional Water Quality Management Group
UDIA	Urban Development Institute of Australia
ZAC	Zonal Advisory Committee

Appendix 3

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Useful web sites

Note: Websites listed current at Jan 2001

Brisbane Region Environment Council - http://brec.ozecol.org

Noosa and District Landcare – http://www.noosalandcare.org.au

Noosa Parks Association - http://www.noosaparks.org.au

Noosa Council – http://www.noosa.qld.gov.au/

Environmental Protection Agency (QLD) - http://www.env.qld.gov.au

Department Of Natural Resources (QLD) - http://www.dnr.qld.gov.au/

Natural Heritage Trust - www.nht.gov.au

Department of Primary Industry - http://www.dpi.qld.gov.au/home/default.html

Cane Growers - http://www.canegrowers.com.au/Contact/Offices/southern.htm

Education - http://ee.environment.gov.au/nap.html

Fishers - http://www.seafoodsite.com.au/stats/econ.htm

Appendix 4

Other environment and natural resource management organisations within the Noosa District

Noosa and District Landcare Group
Resource Centre
PO Box 278
Pomona Q. 4568.
Ph. (07) 5485 2468
Fax (07) 5485 0413
Email – ndlcare@ozemail.com.au

Noosa Parks Association
PO Box 836
Noosa Heads 4567
Ph. (07) 5474 2486
Email – noosan@noosaparks.org.au
Website: www.noosaparks.org.au.

Noosa Council
PO Box 141
Tewantin Q. 4565
Ph. (07) 5449 5200
Fax. (07) 5447 1062
Email – mailbox@noosa.qld.gov.au

Queensland Biodiversity Network
Contact: Michael Petter
414 Bennetts Rd Norman Park Q 4170
Phone/Msg 39015577
Fax 38991053
E-Mail info@brec.ozecol.org
Home Page http://brec.ozecol.org

Save Today Our Parkland (STOP)
8 Lenske Lane
Cooran Q. 4569
Ph. (07) 5449-1260
Email: salad@spiderweb.com.au

Australian Seabird Rescue Group Noosa Inc.
PO Box 604
Tewantin QLD 4565
Ph: 07 5485 3543
Mobile: 0418758822
Email: agathis@gympie.big.net.au

Appendix 5

State and Commonwealth legislation pertaining to natural resource management in the Noosa River Catchment

McLennan (1996) defines environmental legislation as any legislation controlling activities or conduct likely to impact on the environment. The following list is not exhaustive and is meant to be an educational point of reference for some of the more commonly used Acts within Queensland. Examples of some relevant Commonwealth legislation impacting the local catchment are also shown. For further information, refer to the relevant government web sites.

Queensland Environmental Planning Legislation

Contaminated Land Act 1991; Fauna Conservation Act 1974; Queensland Integrated Planning Act 1997; Native Title (Queensland) Act 1993; Nature Conservation Act 1992; Recreation Areas Management Act 1988; Rural Lands Protection Act 1985; State Environment Act 1988.

Queensland Air Pollution Legislation

Agricultural Chemicals Distribution Control Act 1966; Clean Air Act 1963; Environment Protection Act 1994.

Queensland Solid Waste Legislation

Environment Protection Act 1994; Queensland Integrated Planning Act 1998; Sewerage and Water Supply Act 1949; State Environment Act 1989.

Queensland Pollution of Internal Waters Legislation

Clean Waters Act 1971; Environment Protection Act 1994; Nature Conservation Act 1992; Pollution of Waters by Oil Act 1973; Queensland Building Services Authority Act 1991; Water Resources Act 1989.

Queensland Pollution of Marine Waters Legislation

Beach Protection Act 1968; Environment Protection Act 1994; Harbours Act 1955; Pollution of Waters by Oil Act 1973; Sewerage and Water Supply Act 1949.

Queensland Nature Conservation – Terrestrial Legislation

Beach Protection Act 1968; Contaminated Land Act 1991; Queensland Integrated Planning Act 1998; Nature Conservation Act 1992; Native Title Act 1993; Soil Conservation and Landcare Act 1989.

Queensland Nature Conservation –Marine Legislation

Beach Protection Act 1968; Fisheries Act 1994; Nature Conservation Act 1992; Pollution of Waters by Oil Act 1973.

Queensland Environmental Development Legislation

Canals Act 1958; Contaminated Land Act 1991; Queensland Integrated Planning Act; Native Title (Queensland) Act 1993; Nature Conservation Act 1992.

Legislation by Department - EPA

The Environmental Protection Agency administers the key Queensland legislation of the Environmental Protection Act 1994, including subordinate legislation such as the :
Environmental Protection Regulation 1998; Environmental Protection (Water) Policy 1997; Environmental Protection (Air) Policy 1997; Environmental Protection (Noise) Policy 1997.

Including: the Nature Conservation Act 1992, the Marine Parks Act 1982, the Coastal Protection and Management Act 1995 and the Queensland Heritage Act 1992.
Refer to: http://www.env.qld.gov.au/environment/legislation/ for more details (Please note the above legislation is by no means an exhaustive list).

Commonwealth – some relevant pieces of legislation

- The Environment Protection and Biodiversity Conservation Act 1999
- Australian Heritage Commission Act 1975
- Burra Charter (Australia ICOMOS – International Council on Monuments and Sites)
- Commonwealth Environment Protection (Impact of Proposals) Act 1975

Footnote: The Environmental Protection Act 1994 changed 1 January 2001 with the enactment of the Environmental Protection and Other Legislation Amendment Act 2000.
"This Amendment Act:

- transfers the environmental regulation of mining from the Department of Mines and Energy to the EPA;
- implements provisions of the *National Environmental Protection Measure for the Movement of Controlled Waste between States and Territories 2000;*
- improves administrative processes" (EPA, 2001)

Appendix 6

Declared plants and animals within Noosa Shire - priority and level of control

SIGNIFICANT *DECLARED* PLANTS WITHIN NOOSA SHIRE			
Declared Plant	**Declared Status**	**Priority**	**Level of Control***
Annual Ragweed	P2	High	B
Bitou Bush	P2	High	A
Cabomba	P3	High	C,D,K
Crofton Weed	P3	Low	B
Fireweed	P2	High	A,J
Giant Rats Tail Grass	P3	Medium	C,E,G
Green Cestrum	Not declared in Noosa	Low	A
Groundsel Bush	P3/P4	High	C,G
Mistflower	P3	Low	C
Noogoora Burr	P3	Low	H
Salvinia	P3	Medium	C,H,K
Water Hyacinth	P3	Medium	C,H,K
Water Lettuce	P3	Medium	C,H,K

J (Public awareness program) given for each species

Source:- *Noosa Council Pest Management Plan 1999 – 2002*

OTHER *DECLARED* PLANTS WITHIN NOOSA SHIRE			
Declared Plant	**Declared Status**	**Priority**	**Level of Control***
Prickly Pear	P3	Low	F,H
Thornapples	P3	Low	J
Bathurst Burr	P3	Low	J

J (Public awareness program) given for each species

Source:- *Noosa Council Pest Management Plan 1999 – 2002*

DECLARED ANIMALS OF NOOSA SHIRE			
Declared Animal	**Declared Status**	**Priority**	**Level of Control***
Dingo/Dingo			
Hybrid/Feral Dog	A1, A3, A5	High	C,K
Fox	A1, A2, A3	High	C
Wild Rabbit	A1, A2, A3	Low	H
Hare	A1, A2, A3	Medium	C
Feral Pig	A1, A2, A6	Medium	C
Illegal Pets	A1, A2, A3	Medium	J,K

J (Public awareness program) given for each species

Source:- *Noosa Council Pest Management Plan 1999 – 2002*

UNDECLARED ANIMALS OF NOOSA SHIRE			
Declared Plant	**Declared Status**	**Priority**	**Level of Control***
Cats (uncontrolled)	–	High	F,J
Toads	–	Medium	J
Crows	–	Low	J
Pandanus Leaf Hopper	–	High	H,D,J

J (Public awareness program) given for each species

Source:- *Noosa Council Pest Management Plan 1999 – 2002*

*Level of control

A - Total eradication
B - Eradication of isolated populations
C - Reduction in numbers and distribution
D - Containment
E - Control in buffer zones
F - Control on roadsides and reserves
G - Integrated management
H - Biological control
I - Control in designated riverine/catchment
J - Public awareness program
K - Confiscation and destruction

Appendix 7

Environmental weeds of Noosa Shire

ENVIRONMENTAL WEEDS OF NOOSA SHIRE			
Environmental Weed	**Declared Status**	**Priority**	**Level of Control***
Camphor Laurel		High	I
Lantana		High	G,F
Singapore Daisy		High	F,C
Umbrella Tree		High	F,C
Molasses Grass		Low	J
Gloriosa Lily		Low	J,G
Verbena		Low	J,G
Mother of Millions		Medium	F,J,G
Bamboo (Running)		Medium	J,F
Cats Claw Creeper		Medium	J,I
Broad Leaf Pepper Tree		High	C,F
Morning Glory		Medium	J
Mile-a-minute		Medium +	C,F
Blue Heliotrope		Low	C,F
Small Leaf Privet		High	C,F
Broad Leaf Privet		High	C,F
Madeira Vine		High	B,C,F
Siratro		Low	J
Red-headed Cotton Bush		Medium	H,G,F,D
White-headed Cotton Bush		Low	J
Feral Pines		Low	J
Setaria Grass		Low	J
Giant Parramatta Grass		Medium	J,G,F,D,C
Cadaghi		Low	J
Para Grass		Medium	F
Pampas Grass		Low	J
Wild Tobacco		Medium	F
Devil's Apple		Low	J
Nodding Thistle		Low	J
Water Primrose		Low	J
Ludwidgia		Low	J
Celtis		Medium	J
Asparagus Fern		Low +	C,F
Climbing Asparagus Fern		Low	J
Castor Oil		Low	J
Dutchman's Pipe		Low	J
Agave spp.		Medium / High	F,J

(Noosa Council – Pest Management Plan 1999-2002)

+ High priority in coastal strip * J (Public Awareness Program) given for each species

*Level of control

A - Total eradication
B - Eradication of isolated populations
C - Reduction in numbers and distribution
D - Containment
E - Control in buffer zones
F - Control on roadsides and reserves
G - Integrated management
H - Biological control
I - Control in designated riverine/catchment
J - Public awareness program
K - Confiscation and destruction