

# 7. Research Activities

This text has been compiled from the proposal document submitted to UNESCO prior to Biosphere status being awarded. Therefore, please excuse any references made to the 'nominated area' and any out-dated terms (including reference to the former council) which might now appear confusing.

In order to limit the size of the document and make it easier for users to download, we have edited the original submission into sections.

This is one of eight (8) PDFs available to download from [www.noosabiosphere.org.au](http://www.noosabiosphere.org.au) :

1. Describe & Define Noosa Biosphere
2. Cultural Heritage & Settlement
3. Sustainable Development
4. Conservation
5. Flora Species List
6. Fauna Species List
7. Research Activities
8. Supporting document – Acronyms, Bibliography, Glossary

The content of all these documents is fairly scientific and designed to appeal to a more academic audience.

**Disclaimer:** Noosa Biosphere Ltd makes no warranty, implied or otherwise, regarding the completeness or accuracy of the content of this document.

## Table of Content

<b>1. SUPPORT FOR CONSERVATION &amp; SUSTAINABLE DEVELOPMENT PROJECTS.....</b>	<b>3</b>
Biodiversity .....	3
Climate Protection and Cleaner Production .....	5
Waterways and Integrated Catchment Management .....	5
Ecologically Sustainable Development.....	6
<b>2. RESEARCH AND MONITORING.....</b>	<b>8</b>
Past research and/or monitoring activities .....	10
Abiotic research and monitoring [climatology, hydrology, geomorphology, etc.].....	10
Biotic research and monitoring [flora, fauna] .....	10
Socio-economic research [demography, economics and traditional knowledge].....	12
On-going research and/or monitoring activities .....	13
Abiotic research and monitoring [climatology, hydrology, geomorphology, etc.].....	13
Biotic research and monitoring [flora, fauna] .....	14
Socio-economic research [demography, economics and traditional knowledge].....	15
Case Study - Noosa Social Plan (2006-2016).....	15
Planned research and/or monitoring activities .....	16
Abiotic research and monitoring [climatology, hydrology, geomorphology, etc.].....	16
Biotic research and monitoring [flora, fauna] .....	17
Planned biotic research and monitoring activities for the nominated area include the following: .....	17
Noosa Reef Check Case Study.....	19
Socio-economic research [demography, economics and traditional knowledge].....	20
Internet connectivity .....	27
<b>3. ENVIRONMENTAL EDUCATION &amp; PUBLIC AWARENESS.....</b>	<b>27</b>
Facilities.....	29
<b>4. SPECIALIST TRAINING.....</b>	<b>31</b>
<b>5. BIOSPHERE COMMUNITY.....</b>	<b>33</b>
Potential contribution to the world network of Biosphere Reserves .....	33
Collaboration with existing Biosphere Reserves at a national level .....	33
Collaboration with existing Biosphere Reserves at the regional or subregional levels .....	34
Collaboration with existing Biosphere Reserves in thematic networks at regional or international levels .....	34
Collaboration with existing Biosphere Reserves at the international level .....	34

# 1. SUPPORT FOR CONSERVATION & SUSTAINABLE DEVELOPMENT PROJECTS

Over the past 30 years, there has been a growing focus within various sectors of the Noosa community on environmental protection/conservation and sustainability. Correspondingly, there has been a great deal of research, monitoring and education on matters of conservation and sustainability.

The conservation movement in Noosa has for a long time been championed by high profile members of the local community who have had well recognised scientific credentials. During the 1970-90 period many of the major conservation battles fought in Noosa were won on the basis of the detailed scientific information produced by local conservation organisations like the Noosa Parks Association and the Sunshine Coast Environment Council.

The mid 1990's saw a consolidation of available scientific information and further research for Noosa Shire in the form of the 34 planning scheme studies referred to in 3.2 above. Many of these are subject to ongoing review and additional research and monitoring programs have been undertaken to further develop the knowledge basis that supports the conservation and sustainable development of Noosa.

The following list provides a brief summary of some of the notable research, monitoring, education and training projects that have been undertaken in the nominated area since 2000 to address local, regional, national and global issues of conservation and sustainable development:

## Biodiversity

### Research Projects

- ⇒ Noosa Shire Fauna Study;
- ⇒ Vegetation of Noosa Shire Edition 2;
- ⇒ Fauna and its associated biodiversity values in Noosa Shire;
- ⇒ The Biological Control Research Program for *Cabomba caroliniana* (weed of National Significance) is based in Noosa;
- ⇒ Noosa Bushfire Management Strategy;
- ⇒ Flora, fauna and recreational opportunities studies for the Girraween Estate Master Planning Process;
- ⇒ Flora, fauna and recreational opportunities Studies for the Noosa North Shore Master Planning Process;
- ⇒ Noosa North Shore Impacts of Vehicles on Beaches;
- ⇒ Noosa North Shore Environmental Impacts of Recreational Usage;
- ⇒ More than 200 vegetation surveys on Freehold and Publicly managed lands;

- ⇒ Field based research into Koala habitat, distribution and population for the Noosa Koala Conservation Plan;
- ⇒ Noosa North Shore, Shore Birds and Wader Birds Study; and
- ⇒ Translocation Vectors for *Cabomba caroliniana*.

### **Monitoring Programs**

- ⇒ Wildlife Careers Association Wildlife Release Monitoring Program;
- ⇒ Threatened Frogs Monitoring Program;
- ⇒ Fauna Monitoring Program on Noosa Council Conservation Reserves;
- ⇒ Noosa Council Pest Plant and Animal Monitoring Programs;
- ⇒ Noosa Council Revegetation and Rehabilitation Photo Monitoring Program; and
- ⇒ Glossy Black Cockatoo Conservancy field research and monitoring program.

### **Education Programs**

- ⇒ Wildlife Carers Education and Training Program;
- ⇒ Land for Wildlife Community Extension Program;
- ⇒ Noosa Nature Network Community Events and Publications;
- ⇒ Living with threatened species landholder extension program.
- ⇒ Noosa Parks Association Botany Group events and publications;
- ⇒ Noosa's Native Plants – a field guide;
- ⇒ Noosa & District Landcare - environmental education workshops;
- ⇒ Noosa's Native Plants – website; and

Various information brochures and booklets dealing with pest plant and animal management, vegetation management, living with threatened species and fire management.

### **Demonstration Programs**

- ⇒ The Endangered Mary River Cod Recovery Breeding Program is based in Noosa;
- ⇒ Noosa Birds Trail;
- ⇒ Camphor Laurel Control Program (Environmental weed species);

- ⇒ Small Leaf Privet Control Program (Environmental weed species);
- ⇒ Hygrophila Control Program (Declared weed species); and
- ⇒ Private Property Vegetation Management Planning Project.

## Climate Protection and Cleaner Production

### Research Projects

International Council for Local Environmental Initiatives Cities for Climate Protection Program milestones 1-5;

Noosa Council Vehicle Fleet Biodiesel Substitution research project;

Noosa Shire Council Cleaner Production Study; and

Sunshine Coast Biosolids and Energy Study.

### Monitoring Programs

Noosa Council Sustainability of operations Key Performance Indicators Monitoring Program.

### Education Program

Living Smart Noosa - Sustainable Living and Building Program.

### Demonstration Projects

Noosa Council Building Energy Efficiency Upgrade Program; and

Stocklands Lake Doonella Sustainable Display Home.

## Waterways and Integrated Catchment Management

### Research Projects

- ⇒ Noosa River Catchment Management Strategy (NICA 2002);
- ⇒ Noosa River Loads and Impacts Study (2001);
- ⇒ Lake Weyba Receiving Water Quality Study;
- ⇒ Phase 1&2 Noosa Nuisance Algal Blooms Study;
- ⇒ Noosa Nuisance Algal Blooms Mitigation Study (Griffith University);
- ⇒ Burgess Creek Receiving Water Quality Study; and

- ⇒ Noosa Wastewater Recycling Study.

### **Monitoring Programs**

- ⇒ Noosa River Waterwatch Program (NICA and Noosa Council);
- ⇒ Noosa River Ecosystem Health Monitoring Program (Moreton Bay Waterways and Catchment Waterways Partnership);
- ⇒ Noosa River Seagrass Watch Monitoring Program (NICA);
- ⇒ Noosa River Plan Implementation Monitoring Program;
- ⇒ Stormwater Quality Monitoring Program for the Lower Noosa River and Six Mile Creek;
- ⇒ BoM Hydrological Monitoring: Noosa River; and
- ⇒ Noosa River Ranger Waterways Monitoring Program.

### **Education Programs**

- ⇒ Noosa Litter Reduction Program (NICA);
- ⇒ Noosa Stormwater Quality Improvement Education Program (NICA); and
- ⇒ Noosa Fishing Litter Recovery Program (NICA).

### **Demonstration Programs**

- ⇒ Noosa River Mangrove Rehabilitation Program;
- ⇒ Sunshine Beach/Noosa Heads and Noosaville Stormwater Quality Improvement programs;
- ⇒ Corridors of Green – rehabilitation of riparian corridors in the upper Mary River Catchment;
- ⇒ Black Mountain Range Catchments project;
- ⇒ Kin Kin Creek Riparian Rehabilitation Program; and
- ⇒ Sister Tree Creek Riparian Rehabilitation Program (NICA).

## **Ecologically Sustainable Development**

### **Research Projects**

- ⇒ Noosa Community Environment Sector Plan;
- ⇒ Noosa Community Economic Sector Plan;

- ⇒ Noosa Social Plan;
- ⇒ Noosa Economic Development Strategy; and
- ⇒ Noosa Shire Open Space Study.

### **Education**

- ⇒ EcoBiz Ecoefficiency Business Development Program.

### **Demonstration Projects**

- ⇒ Noosa and District Landcare Group Farm Forestry Program.

## 2. RESEARCH AND MONITORING

The proposed Noosa Biosphere Reserve is seen by the Noosa community as the next step in a concerted effort over a number of decades to establish a core conservation area around the central location of Noosa Heads to Tewantin localities. This core conservation area preserves, at a landscape level, the ecosystem assemblages and characteristic of the coastal sand planes and low coastal mountain ranges of South East Queensland.

From the 1960s onwards a diversity of research and monitoring programs have been established to develop a sufficient knowledge base from which to successfully implement a campaign for nature conservation within the area now nominated as the Noosa Biosphere Reserve. Significant earlier works on the mechanical assemblages of the coastal heathlands from south of Noosa Shire to the northern end of the Great Sandy Region Park and Fraser Island were initiated by long term Noosa residents and high profile members of the conservation movement in Queensland. These seminal works provided the basis from which the current core area of the proposed Biosphere submission has been established.

In more recent times further research into distribution values and loss rates of the area's various ecosystems together with a more detailed understanding of local fauna and its associated biodiversity values with vegetation communities, have provided the platform for Noosa to develop a range of far reaching conservation plans and strategies which protect the conservation values of this outstanding landscape. In this way, research and monitoring activities within Noosa have played a key role in the development of the core conservation area within the Shire, as well as the protection and recognition of the environmental values of both the buffer and transitional areas within the proposed Noosa Biosphere Reserve.

In the 1990s Noosa Council in consultation with the Noosa community undertook a landmark work consisting of twenty seven independent studies to inform the development of a strategic land use plan and land zoning scheme. This land use plan has provided the cornerstone for the development of a vision for a Biosphere Reserve in Noosa. The outcomes of the planning scheme studies undertaken in 1995/97 were incorporated into a complex geographical information system, which was interrogated in association with a diverse and robust system of objectives and desired community outcomes. This system was used to develop policies and strategies, which would protect Noosa's environmental values whilst providing for ongoing development of the community's aspirations and security of Noosa's economy.

The twenty seven planning scheme studies addressed matters as diverse as protection of vegetation, the desirable minimum lot size of various areas within the Shire, characteristics of the Shire's soils for agriculture, land slip hazard, on-site effluent disposal, flooding, bushfire hazard, traffic generation from various land uses and the visual amenity of building heights. In addition to these fairly specific matters, the planning scheme studies also addressed wider issues, which would have long term implications for sustainability of Noosa's community. This included issues such as the quality of water within the Noosa River system, commerce and economic activity within the Shire, traffic and transport for the coastal area network, water availability within Noosa to provide potable water for domestic supply and the capacity of Noosa's sewerage treatment infrastructure to accommodate efficient and effective treatment of wastewater generated by the Shire's urban population.

All of these studies were considered against the back drop of the economic characteristics of the Noosa Council local government authority and its capacity to provide, at reasonable cost, the services demanded by the Noosa

community. The combination of land use controls, community infrastructure, provision for community development and limits to growth in the Noosa population evident in Noosa's Planning scheme have been arrived at through a process of integration between all of these separate but interrelated factors. The outcomes of past research and monitoring programs have therefore been the development of a knowledge base which allows the Noosa community to identify a sustainable level of land development and population growth within which to develop a community capable of integrating environmental protection and conservation with social and economic development.

Research currently planned for the Shire continues to develop this knowledge base in areas that allow for further improvement in social, economic and environmental performance of the Noosa community and its local government.

Major research and monitoring programs currently underway and/or planned for implementation in Noosa include:

monitoring the ecosystem health of Noosa's waterways;

undertaking further research into the significance of Noosa as a habitat for rare and threatened plant and animal species and communities;

development of further knowledge base on the impacts of human activities on the environmental values and the mechanisms available to minimise those impacts; and

mechanisms to improve the uptake and demonstration of sustainable development practices associated with land management, food production, transportation, manufacturing, government service provision, energy consumption/generation, waste management, recreation and tourism.

Interest in the Noosa area as a research subject is continuing to grow. This interest is fueled by the fact that the Noosa area provides an interesting and diverse range subject matter for study, and because there is a growing capacity of human and technical resources to support research programs in the local area.

The Noosa community is increasingly being chosen by researchers from a variety of socio economic disciplines to undertake leading edge action learning programs and case studies. The Australian Institute for Research on Education for Sustainability recently chosen Noosa as the subject of a case study dealing with sustainable human development practices.

At the same time, closer examination of the ecological and biophysical attributes of the Noosa area continues to revealing higher levels of uniqueness, complexity and novelty. This in tern has created increased interest in research in Noosa.

The strong focus on research in the Noosa area on both human and environmental subject matters is also now starting to generate special interests from those research programs that aim to examine the relationship between humans and the environment (eg Proposed new University of the Sunshine Coast Climate Change Adaptation Research Project). The establishment of the Noosa Biosphere reserve will provide an ideal environment for these research interests to flourish.

## Past research and/or monitoring activities

### Abiotic research and monitoring [climatology, hydrology, geomorphology, etc.]

The majority of research work into climatology, hydrology and geology within the nominated area has taken place over the past several decades. Comprehensive documentation for Noosa Shire Council into the geomorphology of the Noosa Biosphere area took place in 1995 in a landmark study by Peter Shields. (NSC, March 1995)

Climatological monitoring has been undertaken within the Shire via a monitoring station located at Tewantin township. The monitoring station was established in 1896 and has been maintained since that time. The collection of data from the monitoring station went to automatic data collection in 1995.

Major works on climatology, hydrology and geomorphology were all undertaken in 1995 as part of the development of the 1997 Noosa Planning Scheme. Further research work into hydrology in Noosa Shire has been undertaken in association with ongoing land development approval processes, particularly in the coastal area. Some aspects of hydrology have also been studied as a result of the work of the Moreton Bay Waterways and Catchment Partnership from 2000 onwards.

The Noosa River Loads and Impacts study undertaken by the Healthy Waterways Partnership in 2001 provided the first comprehensive assessment of water quality and ecosystem health within Noosa Shire (Jones et al 2001).

It also provided for the first time, information for the system related to key concepts such as erosion characteristics, sediment and nutrient transport mechanisms and implications of the Noosa River system of unique climatic, hydrological and geomorphological circumstances in selecting for a range of ecosystem and species assemblages. Research work in particular, into the water quality and ecosystem health of the Noosa River system has been of regional importance from the perspective of identifying Noosa's status as a pristine waterway of South East Queensland.

Other major past research and monitoring activities have been discussed under Research and Monitoring above, and relate to the completion of the planning scheme studies to support the 1997 Strategic Plan and other subsequent studies that have assisted with the ongoing refinement and implementation of that plan and the more recent Noosa Plan 2006.

### Biotic research and monitoring [flora, fauna]

Significant early studies into the flora and fauna of Noosa Shire were undertaken by Dr Arthur Harrold in particular, from the early 1960's onwards. During a period of over 30 years, Dr Harrold undertook a range of research work in relation to the floral assemblages found in Noosa Shire. Dr Harrold published numerous texts dealing with various aspects of the flora associations within Noosa. This research work was later continued by expert botanists from the South East Queensland region including the likes of Dr Olsen, who in 1995, together with Whitehead and Drain undertook the Vegetation of Noosa Shire Planning Scheme study to support the development of the 1995 Noosa Strategic Plan (NSC, Sept 1995). This planning scheme study proved to be a landmark document in relation to the understanding and management of vegetation within the Shire.

Following from this study, the local government embarked upon a process to develop a local law dealing with the protection of all vegetation within the Shire (including native amenity trees). The local laws were supported by later work undertaken by Burrows, who completed a reclassification of all of the native vegetation communities evident in Noosa Shire into the regional ecosystems classification mentioned in Section 13 of this nomination.

Vegetation management criteria have now been incorporated into the more recent Noosa Plan, which identifies all areas of remnant and regrowth native vegetation within the Shire and provides an indication as to the conservation values of those remnants.

Various scientists and research fellows have undertaken fauna monitoring activities within the nominated area over the past 20+ years. Over this period of time, the nominated area has revealed a wealth of fauna biodiversity. In particular, fauna research and monitoring activities have been undertaken in areas of State Government controlled National Park across the Shire for many decades. Fauna records for Noosa are held by the State Environmental Protection Agency and in 2000 the local government undertook a major review of all information held by the State in relation to fauna. This study produced the Fauna of Noosa Shire 2002 (NSC, Aug 2002), which for the first time, provided documentation of the range of species previously recorded from the Shire, together with an indication as to the reliability of fauna records and key relationships between ecosystem and fauna.

From this work further analysis was undertaken in 2003, of the likely associations between fauna species and native vegetation communities within the Shire to determine the likelihood of associations and threats to fauna biodiversity conservation value from land development. Again this information has been used to further develop and refine Noosa's land use planning scheme and policies and has informed the implementation of various local laws and conservation programs in the Shire. (NSC, Nov 2003)

More recent fauna and flora research projects have been undertaken in association with the planning phases of major infrastructure development projects, such as key components of the Biosphere Reserves major traffic and transport network. These studies have revealed much additional important information about distribution, occurrence and habitat associations for rare and threatened flora and fauna species together with information about the likely impacts on flora and fauna conservation resulting from infrastructure development and change in land use.

The following biophysical studies were undertaken to inform the development of the Strategic Plan:

- ⇒ Acid Sulphate Soils in the Noosa River Catchment (1995 – updated in 2002);
- ⇒ Background Data on Water Quality in the Noosa River System (1995);
- ⇒ Noosa River Loads and Impacts Study (2002)
- ⇒ Bushfire Hazard Planning in the Noosa Shire ;
- ⇒ Fauna & its Associated Biodiversity Values in Noosa Shire 2003;
- ⇒ Fauna Study Edition 2 – (2002);

- ⇒ Flooding in the Noosa River Catchment;
- ⇒ Geology & Soils of Noosa Shire (1995);
- ⇒ Landslip Hazard in Noosa Shire (1995);
- ⇒ Landslip Map (1995);
- ⇒ Noosa Shire State of the Environment 2000; and
- ⇒ Planning for Greenhouse Gas Emission Reduction in Noosa Shire.

## Socio-economic research [demography, economics and traditional knowledge]

A large component of the historical studies undertaken as part of the development of the 1997 Strategic Plan involved socio-economic research to give consideration to demographics, economics and cultural heritage issues in the development of the land use planning framework for the Biosphere Reserve area.

In following planning scheme studies have been undertaken to inform the development of the nominated areas' strategic plans:

### Economics

- ⇒ Agriculture & Agricultural Land Use in Noosa Shire (1995);
- ⇒ Economics, Employment & Industry in Noosa Shire;
- ⇒ Extractive & Clay Mineral Resources of Noosa Shire (1995 – updated 2002);
- ⇒ Land Tenure in Noosa Shire (1995)
- ⇒ Provision of Miscellaneous Infrastructure in Noosa Shire (1995)
- ⇒ Shire Business Centre Masterplan: Stage 1;
- ⇒ Shire Business Centre Masterplan: Stage 2; and
- ⇒ Retail Development in Noosa Shire.

### Cultural

- ⇒ Historical, Cultural & Heritage of Noosa Shire 2002; and
- ⇒ Indigenous Cultural Heritage Study of Noosa Shire (2004).

### Social

Budget Visitor Accommodation in Noosa Shire 2004;

- ⇒ Demographic Influences in Noosa Shire to 2016 – Extracts;
- ⇒ Dwelling Houses in Noosa Shire;
- ⇒ Population Carrying Capacity in Noosa Shire;
- ⇒ Social Infrastructure Needs Analysis 2002-2016; and
- ⇒ Residential Aged Care.

Since that time a number of additional research projects of local importance that have been completed in the area, these include:

- ⇒ Cooroy Fine Furniture Design Centre Business Planning and Feasibility (August 2003);
- ⇒ Noosa Economic Prosperity Strategy (March 2004);
- ⇒ Noosa Employment projections by Industry and IPA Planning Region (June 2006);
- ⇒ Rural Sustainable Industries - Situation Analysis (July 2005);
- ⇒ Economic Impact Assessment - Gene technology focussed forestry and forest products joint research – Cooroy – Ensis & University of the Sunshine Coast (current); and
- ⇒ Economic activity prospects in the peri-urban area (DPI – Current).

## On-going research and/or monitoring activities

### Abiotic research and monitoring [climatology, hydrology, geomorphology, etc.]

Ongoing research and monitoring activities are currently being undertaken in relation to climate, hydrology and geomorphology. In particular, the climate monitoring station at Tewantin Township carries out electronic monitoring of climatic parameters within the Biosphere area.

- ⇒ Hydrological monitoring of flows within the Noosa River system are monitored at:
- ⇒ Teewah Creek at Coops Corner;
- ⇒ Lake Cootharaba at Boreen Point;
- ⇒ Lake Cooroibah;
- ⇒ Noosa River at Tewantin;
- ⇒ Noosa River at Noosa Bar;
- ⇒ Six Mile Creek at Lake MacDonald Drive; and

⇒ Six Mile Creek at Cooran.

The major geomorphological monitoring undertaken with Noosa Shire relates to the monitoring of accretion and deposition of sand at Noosa's main swimming beach.

Associated with this monitoring is a program of beach sand replenishment which is carried out at key times to maintain the beach profile for tourists/recreational users of Noosa's Main Beach. There is also selected monitoring of erosion and deposition of sediments in the lower Noosa River system.

There is ongoing research into hydrological dynamics of various creek systems within the Shire as the result of changes to potential flood levels that may arise from land development activities.

An additional major ongoing monitoring activities within the nominated area is ecosystem health monitoring of the Noosa River system which is undertaken by the Moreton Bay Waterways and Catchment Partnership and provides an annual report card for the Noosa River system in comparison with other waterways in South East Queensland. This monitoring is of relevance to both abiotic and biotic factors.

## Biotic research and monitoring [flora, fauna]

At the present time, one of the major ongoing research and monitoring programs related to biotic research and monitoring involves periodic reviews of vegetation loss/gain analysis in Noosa Shire. Noosa Council as undertakes this work, as and when new aerial photography becomes available. Loss and gain of vegetation is analysed by monitoring the extent of the increase or decline of vegetation communities across the sixty regional ecosystem classifications in the Shire.

There is also a monitoring program for fauna in the conservation estate managed by the local government. This monitoring is supported by opportunistic monitoring in the National Park Estate contained within the Biosphere area, which is undertaken by the National Parks & Wildlife Service and community based, not for profit, conservation organisations, such as the Noosa Parks Association.

Field monitoring of frog species associated with the Six Mile Creek catchment area by the Mary Catchment Coordinating Committee is ongoing. There is also an ongoing monitoring program to assess the utilisation of the lower Noosa River system by resident and migratory wading and shore birds for feeding, roosting and breeding. The research project is also focusing on the potential adverse impacts of human activity on birds species in this area. A consortium incorporating national research scientists under the direction of the University of the Sunshine Coast is conducting this research.

Research and monitoring is also ongoing into a wide variety of pest plant management strategies in the proposed Biosphere area. There are a number of invasive plant species that have potential to have serious impacts on the environmental values of the proposed Biosphere area and various research projects, field trials and monitoring programs are underway to assist with the development of effective control mechanisms for a number of these invasive species.

These projects include:

⇒ Use of directed fire management for control of *Hygrophila costata* at Lake Macdonald;

- ⇒ Research and investigation into the development of an effective biological control agent as well as mechanical harvesting of *Cabomba caroliniana*, Lake Macdonald;
- ⇒ Field trials and ongoing monitoring for the efficacy of various herbicides in the control of invasive weeds in sensitive foredune communities.

## Socio-economic research [demography, economics and traditional knowledge]

Ongoing research and/or monitoring of socio-economic research includes a quarterly economic update for Noosa and the wider Sunshine Coast region including key economic indicators and trends and key industry feature articles.

The Noosa Integrated Catchment Association undertakes a range of monitoring programs focused on water quality and ecosystem health matters at the grass roots level. NICA is current undertaking monitoring of bushland remnants with high conservation values that interface closely with significant development sites. The monitoring provides information back to the land managers about adverse impacts on the vegetation communities and possible mitigation measures. NICA has also established a community-based seagrass monitoring program to monitor the extent and health of seagrass meadows in the Noosa River system.

In 2006 the Local Government established a major local socio economic research project to develop a plan to respond to the communities projected and future social service needs. The plan was developed with extensive community involvement and provides an example of how local community based research projects are informing the development of policy to address the issue in vogue in the local area.

---

## Case Study - Noosa Social Plan (2006-2016)

The Noosa Social Plan (2006-2016) enables Noosa's Local Government to plan for the social and service needs of its communities and citizens. The plan identifies existing social and community infrastructure, highlight gaps and duplications in services, explores the impact of population growth in border communities on Noosa Shire infrastructure and services, and identifies major social issues for the Shire.

In order to plan for the Shire, Council needs to understand the experiences of residents in different locations. To assist this process, information was collected and analysed at Shire level, and also at the local area level. This includes, Noosa Hinterland, Tewantin, Noosa-Noosaville and Sunshine-Peregian.

Council established a Steering Group to guide the development of the Noosa Social Plan. This group was made up of service providers and community members, who contributed specialised skills and knowledge assisting Council interpret the collected information. Steering Committee Membership.

### How will the Noosa Social Plan be used?

Recommendations from the Noosa Social Plan will assist Council to prioritise social needs and allocate resources. It will enable Council to clearly identify and prioritise the social issues that can be addressed by partnerships with other levels of government and/or the community.

Information contained in the Noosa Social Plan is also of benefit to other levels of government involved in strategic planning. Non-government services and agencies may also utilise the plan to assist in determining their priorities, and use data in their own funding submissions.

From 2006 to 2016, the Noosa Social Plan provides the overarching direction for all existing and future Council social and community plans.

### **How will the Noosa Social Plan continue to be relevant over a ten-year period?**

Council will review its progress on implementing the priorities contained in the Noosa Social Plan on an annual basis.

Council will update demographic information in the Social Plan as it becomes available. Similarly Council will revisit its social priorities every four years in the context of reviewing its Corporate Plan.

### **How to obtain a copy of the Noosa Social Plan 2006-2016?**

Copies of the Noosa Social Plan are available in either full-colour bound copy or CD format. Purchases of the Plan can be made by forwarding a completed Order Form.

### **Noosa's Social Charter**

The Noosa Shire Social Charter is a short statement that articulates the feelings of Noosa residents with regard to their community and fellow citizens. It will be distributed to new residents in Council Welcome Kits and sent to resorts, business and other venues for display.

### **Demographic Data Collected for the Noosa Social Plan:**

- ⇒ Population Demographics
- ⇒ Education & Employment Demographics
- ⇒ Household Composition Demographics
- ⇒ Accommodation Demographics

---

## **Planned research and/or monitoring activities**

### **Abiotic research and monitoring [climatology, hydrology, geomorphology, etc.]**

At this point in time, there are no specific research and monitoring activities planned for the Biosphere Reserve area related to climatology, hydrology and geomorphology, other than the continuation of field based research and monitoring as the opportunity arises through the activities of government, industry and community organisations.

Major mechanisms for undertaking of research and monitoring activities in relation to abiotic factors comes from ongoing monitoring of climate variables at the Tewanin computerised climate station. Data is being collected on an intermittent basis on the hydrological characteristics of the major waterways, particularly in relation to flows and flood heights. There is also ongoing further development of geomorphological information resulting from various onground studies undertaken as a result of land development processes. These include a range of studies undertaken for investigations of road alignments and other infrastructure related development programs.

As the Nominated Area is located in a region of climatic transition between the tropical and temperate regions of Australia, Noosa provides good opportunities for observation and study of predicted climate changes resulting from global warming. The presence of extensive biodiversity in the area (with many species at a geographical limit of their distribution), provides an opportunity for climate change research to be coupled with research about ecological impacts and the consequences for adaptation of species and communities. The formation of the Biosphere Reserve will assist with the establishment of partnerships for increased research in this field. The University of the Sunshine Coast is currently establishing a research program to investigate climate change adaptation and has approached the Noosa Local Government to become involved in the research program. The research is likely to involve several national level researchers.

## Biotic research and monitoring [flora, fauna]

It is intended that the research and monitoring of flora, fauna and ecosystem processes within the Biosphere Reserve area will continue and expand over the coming five to ten year period. It is recognised that the more research that is undertaken in the Noosa area in relation to biotic factors, the more significance the areas is demonstrated to be.

## Planned biotic research and monitoring activities for the nominated area include the following:

- ⇒ Ongoing research and monitoring into the population and behavioral characteristics of resident and migratory shore birds and waders in the lower Noosa River system;
- ⇒ Fauna monitoring across various areas the core and buffer areas of the Biosphere, with particular reference to determining the ongoing presence of rare and threatened species;
- ⇒ Field research into the new Lepidoptera species found in Noosa in 2004. Based on the discovery of this species and the potential implications in relation to the reconsideration of the evolutionary processes which are demonstrated in the nominated area, it is likely that following from this research additional research will be undertaken in relation to ecosystem dynamics which are exhibited within this area;
- ⇒ Survival and recruitment of Mary River Cod fingerlings released as part of the Mary River Cod Recovery Program;
- ⇒ Ecological response of native vegetation to fire;
- ⇒ Presence and recovery of populations of the Coxen's Fig Parrot;

⇒ Ecosystem Health in the Noosa River system;

⇒ Environmental Impacts of the tourism and recreational activities in natural areas.

A research centre has been proposed as an integrated component of a private ecotourism centre, which is currently under construction on Noosa's North Shore (Noosa Ecotourism Portal). The ecotourism centre will comprise a series of galleries and a theatre from which the stories of Noosa's North Shore and potentially the whole of the Biosphere area, will be told in a public space for the interpretation of local, national and international visitors. The centre will also include a tenancy of the Queensland Parks & Wildlife Service and the local community based conservation organisation, Noosa Parks Association.

The research centre will be privately funded and will seek to provide guidance on monitoring programs and research into the Noosa North Shore area and other sensitive systems in the Cooloola region. It is envisaged that this centre will provide an opportunity for the development of more coordinated research and monitoring programs across the whole of the Biosphere Reserve area in time. It is planned that over time the ecocentre components and the research centre will become known as a centre of excellence where research, education and protection of the outstanding environmental values of the Biosphere Reserve area will coalesce.

The North Shore ecocentre and research center aims to develop working relationships with other local, state, national and international research and educational organizations. The facility is planned to allow for local research and education about the Noosa area and its environs involving a broad spectrum of participants from tourist/visitors, schools students tertiary level students, post doctoral level researchers and high level research organizations. The research center will also have a focus on dissemination of research findings across this range of groups through the co-located visitor and conference facilities.

A partnership has also been formed between a diverse range of government, educational research, business and community groups to commence a Reef Check research/monitoring program for the inshore reefs of the Nominated Area. The program will undertake research and monitoring and use the information gathered to raise local, national and international awareness, of the ecological and economic importance of Noosa's coral reefs.

---

## Noosa Reef Check Case Study

Reef Check is the United Nations' official community coral reef monitoring program/network. This program will endeavour to raise local, national and international awareness, of the ecological and economic importance of Noosa's coral reefs.

Reef monitoring in Noosa was first discussed with state environmental managers (EPA/QPWS, NRM and GBRMPA) and Local Ecologists more than 2 years ago. A need to collect coral reef information off our coastline became apparent, linking the terrestrial biodiversity with the marine ecology. All this information is correlated to value add to the global coral reef crisis and Noosa's Bio-sphere application.

Reef Check has been collecting data in >80 countries and territories world-wide. This information can act as an "early warning system" to changes in reef health on both a local and global scale.

Reef Check will be used in the Noosa region to build community capacity by providing a genuine opportunity to participate in coral reef monitoring. This will create partnerships with governmental environmental managers, community interest groups & businesses to promote conservation and ecologically sustainable development of the Noosa region.

### Projects:

- ⇒ The GBR Project, current
- ⇒ Reef Check Townsville, current
- ⇒ SE Queensland in 2007
- ⇒ Reef Check Ningaloo, to be finalized

### Organisation support to date:

- ⇒ State Gov. – GBRMPA, EPA/QPWS, NRW.
- ⇒ Local Gov. – Noosa Council
- ⇒ Non-Gov. – Sunshine Coast Dive Club (SCDC) Noosa Integrated Catchment Assoc, Sunshine Coast Environment Council, Coolum Coast Care.
- ⇒ Businesses – Noosa Blue Water Dive, Davo's Bait n Tackle, Reef Check Aust (JCU).
- ⇒ Universities – University of the Sunshine Coast (USC)(Local Scientific Research Body), James Cook University, Townsville (JCU).

## Socio-economic research [demography, economics and traditional knowledge]

It is intended that the socio-economic research and monitoring within the Biosphere Reserve area will continue and expand over the coming five to ten year period. A new research Foundation has recently been established in the Nominated Area to progress increased research in this discipline. The Noosa Institute for Socio Economic Research (NISER) has been established by private interests in the local community. The institute aims encourage and facilitate increased socio economic research in the local area, and to link this research to projects being undertaken at the regional, state, national and international levels. The institute's aims and objective are outlined in Appendix 5 of this submission. These aims and objectives are consistent with the purpose and direction of the Noosa Biosphere Reserve and the Seville Strategy. There are several other locally based not for profit organisations that undertake socio economic research and development activities in the Nominated Area.

The Local Government is working with the Community Sector Boards and the Tourism Board to undertake a range of local socio economic research and development programs aimed at furthering the sustainable human development of the area. The research undertaken to date in the development of the Noosa Social Plan (outlined in 15.1.3) is planned to continue with regular sampling of a representative resident sample group. The sample group will be used to gather data from the local population about issues and trends across a range of socio economic subjects.

### Estimated number of national scientists participating in research within the proposed Biosphere Reserve

#### On a permanent basis: ~ 23

- ⇒ Water Quality and Ecosystem Health in the Noosa River system – 18 national scientists;
- ⇒ Beach fauna monitoring – 3 national scientists;
- ⇒ Seagrass research/monitoring – 1 national scientist;
- ⇒ Coxen's Fig Parrot – 1 National Scientist; and
- ⇒ Forest timber production population genetics, tree improvement and growth rates including leaf oils and non wood products – 5.

#### On an occasional basis: ~42

- ⇒ Water Quality and Ecosystem Health Noosa River system ~ 10 national scientists;
- ⇒ Resident and migratory wader birds, and shore birds ~ 3 national scientists;
- ⇒ Ecological impacts of motor vehicles and recreational activities on for dunes and beaches – 7 national scientists;

- ⇒ Pest plant distribution, vectors and control mechanisms – 4 national scientists;
- ⇒ Coxen's Fig Parrot - 1 national scientist.
- ⇒ Glossy Black Cockatoo research – 4 national scientists; and
- ⇒ Nest Box Utilisation in plantation forest plots – 4 national scientists.

### **Estimated number of foreign scientists participating in research within the proposed Biosphere Reserve**

#### **On a permanent basis: ~ 3**

- ⇒ Forest timber production population genetics, propagation and tree improvement, growth rates including leaf oils and non wood products – 2 Foreign Scientists.
- ⇒ Pest plant control mechanisms – 1 Foreign Scientists.

#### **On an occasional basis: ~ 20**

- ⇒ Zoology – description of new taxa – 1 Foreign Scientists.
- ⇒ Coxen's fig Parrot 2 Foreign Scientists.
- ⇒ Forest timber production research ~ 15-20 Foreign Scientists.

### **Estimated number of masters and/or doctoral theses carried out on the proposed Biosphere Reserve each year**

Approximately 1 – 5 masters or doctoral theses are carried out on the proposed Biosphere Reserve each year.

### **Research station(s) within the proposed Biosphere Reserve**

#### **[3] = permanent**

The CSIRO Cooroy research facility is part of Australia's Commonwealth Scientific and Industrial Research Organisation. The facility was established in 2003 to support the 'Timber Precinct' concept at the Nandroya Mill site in the Noosa Hinterland. The Timber Precinct project has been driven by the Queensland Government to develop a centre where industry and research organisations collaborate and advance industry opportunities. CSIRO Cooroy supports new plantation and processing industries, with a key focus on enhancing the productivity of subtropical and tropical plantations. The Cooroy CSIRO office is planned to increase from six to 20 staff over the next five years. Through the Cooroy office, CSIRO Forestry and Forest Products (FFP) is linked to a national and international network of forest growing and processing industries. FFP has six other research sites around Australia in areas convergent with major industry investment. FFP possesses a range of leading-edge technologies used by industries worldwide, which deliver increased economic, social and environmental benefits related to forestry activities.

Central Queensland University (CQU) has recently established a campus in Noosa. CQU Noosa Hub is part of a unique partnership with Educational Queensland and Noosa Shire Council. Central teaching areas co-exist with the Cooroora Secondary College.

**Coursework associated with each program is conducted at the College, and at other local education work sites.**

- ⇒ Currently, the main degree offered by CQU from their Pomona base is an undergraduate degree – Bachelor in Learning Management. This provides undergraduate students with practical training, working in a school from the first week of the program.
- ⇒ Sunshine Coast University (USC) has also recently established a campus in Noosa.
- ⇒ Currently, the main courses of study offered by USC from the Noosa Youth Centres located at Noosa Junction, is an undergraduate degree – Bachelor in Business Management.
- ⇒ Both of these universities have indicated an interest in establishing a research presence in the biosphere area.

**[0] = temporary**

There are no temporary research stations currently in operation in the proposed Biosphere Reserve area at this time.

**Permanent research station(s) outside the proposed Biosphere Reserve**

The closest permanent research station located outside the Biosphere Reserve is the Queensland's Department of Primary Industry and Fisheries *Maroochy Research Station* located near Nambour. Research and extension specialists at the Maroochy Research Station work in the development of subtropical fruit and nut industries, including avocado, ginger and macadamia. Their work includes activities such as plant breeding, integrated pest management, plant pathology, post harvest solutions and applied biotechnology. There is also a QDPI&F research station at Gympie which undertakes work related to forestry production and post harvest processing. This facility is also involved in research of genetics, taxonomy, site preparation, and silvicultural regimes.

The station has strong links with many other research centres both nationally and internationally, and regularly hosts visiting scientists and industry groups. Staff members are also involved in a number of international projects, primarily in Southeast Asia through the Australian Centre for International Agricultural Research.

The closest major university campus (with associated research programs and facilities) is the University of the Sunshine Coast located at Sippy Downs, approximately 40 km from the proposed Biosphere Reserve area. This University was established in 1996 and aims to become a major catalyst for the innovative and sustainable economic, cultural and educational advancement of the region through the pursuit of international standards in teaching and research. There are strong links between the University and the Biosphere Reserve, particularly in the areas of environmental management and business development. The University has a campus in the biosphere area and is currently involved in a number of the research projects mentioned under section 15.1.5.

There are several other research stations, and major research facilities located within the region surrounding the proposed Biosphere Reserve. These include a range of government, private and University research facilities.

**The major research Universities in the region are:**

- ⇒ University of the Sunshine Coast;
- ⇒ University Of Queensland;
- ⇒ Queensland University of Technology;
- ⇒ Griffith University;
- ⇒ Southern Cross University;
- ⇒ Bond University (Private); and
- ⇒ Central Queensland University.

**Permanent monitoring plots**

There are a number of monitoring plots located within the proposed Biosphere Reserve for monitoring ecosystem process. The following provides an overview of the known monitoring plots in the nominated area. However, the level of activity in the shire may be higher than recorded here due to the difficulty of identifying all of the scientific activities in the nominated area.

There are numerous historical Forest Inventory Sites located in the transitional native hardwood production forests of the proposed biosphere area. These plots were established by the Queensland Government as long ago as the 1920/s with a view towards providing long term baseline data on vegetation growth rates, structure and floristics in Australian native subtropical hardwood forests and are in various levels of active observation and data collection. They provide for observations over long periods of growth, ecosystem dynamics and regeneration of the production forests of the region. The monitoring plots have been established on the protocols of the Queensland Government.

The Noosa and District Landcare group has also established a number of monitoring plots on private landholdings where private plantation forests have been established. These plots have been established to measure long-term forest productivity under varying regimes of mixed species planting, soil types, topography, site preparation, and silvicultural management techniques.

*Hygrophila costata* is a significant introduced pest plant in Queensland. The plant is being monitored at various photo monitoring locations established in 2006 within the Lake Macdonald catchment area. The monitoring has been established to determine the efficacy of a range of pest control strategies and natural regeneration responses. The plant is amongst the highest class of declared plant in Queensland. It currently has limited distribution but has the potential for wide spread infestation. The research project in Lake Macdonald is designed to develop effective control strategies for the weed. Lake Macdonald is the domestic water supply for the urban populations of the proposed biosphere area. The monitoring sites are observed annually under a locally developed monitoring protocol.

Bushland regeneration photo monitoring plots were established at various sites in the proposed Biosphere Reserve area in 2003 to monitor the rehabilitation of ecosystems on previously cleared lands. The sites are all located on lands managed by the local government for conservation. The monitoring aims to determine the rates of regeneration of native vegetation following varying rehabilitation programs/ techniques. It is intended that the monitoring will assist with the refinement of operational approaches to site planning, site preparation, species selection, maintenance practices, and pest management. The monitoring sites are observed annually under a locally developed monitoring protocol.

Fire management photo monitoring plots were established at various sites in the proposed Biosphere Reserve area in 2005 to monitor the response of various ecosystems to managed fire regimes. Ecosystems found within the proposed Biosphere Reserve area exhibit varying degrees of adaptation and dependence on fire for maintenance of ecosystem processes. The sites are all located on lands managed by the local government for conservation. The monitoring aims to determine the response of ecosystems to the application or prohibition of fire. It is intended that the monitoring will assist with the refinement of operational approaches to fire management in conservation lands. The monitoring sites are observed annually under a locally developed monitoring protocol. The local government also undertakes an annual monitoring program to determine the presence and absence of terrestrial and aquatic weeds across all privately owned freehold lands and local government managed lands within the proposed biosphere area. This monitoring program was established in the early 1990's and is undertaken using a locally developed monitoring protocol. Information obtained through the monitoring program is used to support regulatory actions for declared pest plant control. The data is also used to inform the development of the local government pest plant management strategy.

Thirteen water quality monitoring sites have been established in the shire for monitoring physio-chemical and biological indicators. The Moreton Bay Waterways and Catchments Partnership Ecosystem Health Monitoring Program (EHMP) monitor eight estuarine sites monthly. A further five freshwater sites are monitored by EHMP every six months. The EHMP has been developed by the MBWCP Scientific expert panel in accordance with the Australian and New Zealand Guidelines for water quality. Estuarine sites have been monitored since 2001 and freshwater sites have been monitored since 2003. The monitoring results are used to produce the annual ecosystem health report card for the Noosa River System as part of a regional report card produced for South East Queensland. This monitoring program is undertaken by NATA accredited laboratory and field operations and all results of this monitoring are peer reviewed by an independent team of scientific experts prior to being published.

In 2002 the Moreton Bay Waterways and catchments partnership established 3 monitoring sites on private land at Sister Tree Creek, Kin Kin. The monitoring sites were established under a protocol developed by the Scientific Expert Panel of Healthy Waterways based on the fresh water Ecosystem Health Monitoring Program. The site is an area where assisted riparian area regeneration has taken place. The monitoring site provides information about the rate of recovery of the water quality in streams with cleared riparian areas as they are assisted to regenerate into function riparian ecosystems.

A community based water quality monitoring program "Waterwatch" operates at 35 sites within the nominated area. The program was established in 1993 and is operated by the Noosa and District Landcare group. The monitoring sites are monitored 12 times per year using the Australian National Waterwatch Guidelines developed by the Australian Government. The Waterwatch program involves 20 community volunteers who

undertake the monitoring under the supervision of a scientific coordinator. Since 1993 more than 100 sites have been included in the regular monitoring program. An additional 5 sites are monitored annually.

The local government undertakes water quality monitoring at high flow stormwater outlets to creeks and beaches in urban areas of the proposed Biosphere Reserve. The monitoring is undertaken during high rainfall periods using a monitoring methodology developed locally for deployment of rising stage samplers and event triggered pumping samplers. The monitoring program was established in 2000 and provides data on long term trends in water quality in stormwater from urban areas and short term information about the suitability of waterways for varying levels of recreational contact.

Two monitoring sites exist for the receiving water quality of streams into which sewage treatment plants outfall in the nominated area. These monitoring programs provide information about the impacts of STP discharges on natural streams. Data from the monitoring programs are reported to the state government under the environmental licensing conditions for the operation of the plants. The monitoring is undertaken by registered scientific laboratories under protocols determined by the State Government.

The Coxen's Fig Parrot Recovery Team has 5 monitoring sites in the nominated area. These sites were established based on a field survey of likely habitat for this endangered bird in 2002. The sites are monitored regularly in accordance with key activity times for the birds (eg. mating and nesting seasons). The objective of the monitoring is to develop long-term information about habitat extent and condition and presence or absence of the birds. The monitoring program has been developed locally based on expert knowledge of the parrot and its behavior.

The Glossy Black Cockatoo Conservancy has established numerous sites across the nominated area to monitor the feeding and watering behavior of this vulnerable species. The Conservancy was established to study Glossy Black Cockatoos in 2002 and established its first monitoring plots in Noosa in 2004. There are 15 scientists working on the project across the region 4 of which are directly involved in the monitoring work being undertaken in Noosa. A team of volunteer researchers supports these scientists. 15 local community volunteers are working on this project in the nominated area.

### **Research facilities of research station(s)**

The Australian Bureau of Meteorology has monitoring stations located within the proposed biosphere area as follows:

#### **1) Stream Height Noosa River System:**

- ⇒ Teewah Ck at Coops Corner;
- ⇒ L Cootharaba at Boreen Point;
- ⇒ L Cooroibah;
- ⇒ Noosa R at Tewantin; and
- ⇒ Noosa R at Noosa Bar.

⇒

## **2) Stream Height Mary River System (Six Mile Creek):**

- ⇒ Six Mile Ck at Lake MacDonald Dr; and
- ⇒ Six Mile Ck at Cooran.

## **3) Rainfall Stations:**

- ⇒ Black Pinch Road;
- ⇒ Boreen Point ;
- ⇒ Lake Cooroibah;
- ⇒ Lake Cooroibah;
- ⇒ Mount Tinbeerwah;
- ⇒ Tewantin;
- ⇒ Noosa Heads;
- ⇒ Cooroy;
- ⇒ Pomona; and
- ⇒ Cooran.

The local government has a central library open to the public. The library supports a number of ongoing community based research programs focused on local history and genealogy. In 2005 a major historical research project was initiated through the library to develop a recorded oral history of the proposed Biosphere Reserve area using both indigenous and non-indigenous oral histories. This project is in the latter stages of production.

### **Other facilities**

The nominated area provides lodging for overnight accommodation for up to 15,000 persons. The lodging includes a full range of accommodation from bush camping to 5 star hotels. There is vehicle and boat access across the proposed biosphere area. The Noosa North Shore Ecotourism Portal is a major visitor facility under development on the north coast of the Noosa North Shore locality. This facility provides a full range of lodging and will incorporate a research institute, environmental education centre and a conference facility. This facility is located at an entry point to tract 1 of the biosphere core area.

## Internet connectivity

Noosa Shire has extensive telecommunications facilities, which includes Internet connections. The Noosa Council is also a strong supporter of the new Sunshine Coast Broadband Demand Aggregation Program to increase Shire-wide broadband availability.

It is estimated that approximately:

- ⇒ 61200 households (defined as occupied private dwellings) are connected to the internet (approximately 38.8%);
- ⇒ 3,788 businesses are connected to the internet (approximately 88%).

Noosa Shire is currently investigating the development of high speed broadband internet access that would facilitate additional research facilities.

---

## 3. ENVIRONMENTAL EDUCATION & PUBLIC AWARENESS

The nominated area provides life long opportunities for education and learning about the environment, society and sustainable development. There are 10 primary, 4 secondary and 3 tertiary educational institutions that have campus in the area. These institutions all offer educational programs dealing with some aspects of sustainable development.

In addition to these established educational institutions there are a range of less formal learning opportunities provided in the proposed Biosphere Reserve which provide for education and training.

These programs include:

- ⇒ Noosa Sustainable Living and Building program – a partnership program delivered through the local government and Noosa integrated catchment association to provide information, education and promotion to the general public about sustainable lifestyle and building options.
- ⇒ Noosa and District Landcare Farm Forestry/silviculture training program.
- ⇒ Permaculture Noosa hosting training programs for members and the boarder community.
- ⇒ Noosa Parks Association's Friday Environment Forum is a community environmental awareness program that has been running continuously in Noosa for over 10 years.
- ⇒ Wildlife Volunteers Association of Queensland (Sunshine Coast Brach) offers a range of occasional courses in wildlife care and release techniques.

There is one recently established education institution "Noosa Institute for Socio Economic Research" and another proposed Noosa North Shore Environmental Research Institute (associated with the NNS Ecotourism Portal). These two bodies are examples of the new and exciting developments within the private sector in

Noosa to establish research institutions that will help to provide depth, independence and robustness to the educational opportunities available in the proposed Noosa Biosphere Reserve.

The local government has established an ongoing partnership with the Mary River Catchment Coordinating Committee and the Lake Macdonald Catchment Care Group, to host an annual environment festival at Lake Macdonald. The Lake is the water supply reservoir for the nominated area. The festival is a showcase of culture, music art and the environmental issues drawing guest speakers and performers from across the region. The festival is the major component of the community's World Environment Day celebrations.

A six month upper primary school education unit called 'Sustainable Homes' has been developed through a partnership between The Noosa Living Smart Project team and the Pomona Primary School. The unit covers energy, water and material efficiency, design for climate, ecological footprints, climate change, ethical consumerism and native plants and wildlife. (Targeted at Year 6/7 students and sometimes involving parents).

A design excellence category has been established for Junior Eco-Designers for student sustainable house models - resulting from above unit. (Target Upper Primary students and their schools)

Noosa Integrated Catchment Association undertakes catchment, stormwater and litter awareness education at local schools on a regular basis.

The local government is delivering a Travelsmart Education and Behaviour-Change Program with targeted local schools to increase uptake of alternative transport modes.

The local government is delivering a Waterwise Education Programs with targeted local schools to raise awareness of water efficiency issues and encourage water conservation.

Permaculture Noosa have established demonstration Permaculture Gardens at community centres such as the RFN Pomona and the Cooroy Butter Factory. (Targets whole community)

Noosa and District Landcare group undertake Waterwatch and Landcare class presentations and on-ground works with school classes. (Targets schools)

QUESSI (Qld Environmentally Sustainable Schools Initiative) is being implemented in the shire via regional community hubs to work with individual schools on their energy, water, waste and systems efficiency - Noosa Groups such as Living Smart, working closely with Maroochydore Hub to share resources and promote case studies. (Targets school staff, teachers, grounds & cleaning staff etc)

The Living Smart Program has established Noosa's annual 'Glossies' Awards for industry and community achievements in sustainable building and landscaping . The awards are named in honour of the rare Glossy Black Cockatoo which has a stronghold in the shire and is regularly seen in urban areas. (Targets whole local community and building/design industry).

The Cooroy Chamber of Commerce and the Creative Noosa Unit of Noosa Council host an annual expo of fine furniture at the Cooroy Butter Factory (community art space) to showcase high end value added use of native timber products.

Regular newspaper columns on the Living Smart Program and Noosa's Native Plants. These fortnightly columns appear in the Noosa News (Targets whole community).

The Noosa Parks Association (NPA) offers a number of educational programs in the nominated area. These include the NPA Botany Group which has operated for 10 years studying and documenting the of local flora of Noosa. Reference material produced by the group includes "Botany Notes by Dr Arthur Harrold", "Gum trees of Noosa Shire", "Wattle of Noosa", Ferns of Noosa Shire. "Herbaria" is a local herbarium establish by the highly regarded local conservationist Dr Arthur Harrold's. Botany Group (pressed specimens for easy access and general use) and the Weeds of Noosa Shire.

A list of over 100 local native species is searchable at the web page [www.noosasnativeplants.com.au](http://www.noosasnativeplants.com.au). This page has been developed by the Noosa Integrated Catchment Association and provides a powerful resource for the community with filtered search capabilities. The Noosa Integrated Catchment Association has also produced a full color 392 page field guide to 'Noosa Native Plants' that is highly regarded and widely used. This book is now in the recommended reading list for for students at the University of the Sunshine Coast. This publication has been produced as part of NICA's environmental awareness and public education activities. Other NICA publications include "Noosa's Worst Weeds" which has been widely distributed across the shire to assist local residents and bush care group members in weed identification.

The local government has established a network of private properties where the property owners voluntarily manage part of the their property for nature conservation. This program is call "Land for Wildlife". Land for Wildlife property holders receive a quarterly newsletter on private land conservation issues and the local government in partnership with other community based conservation groups provides training and extension services to land for wildlife property holders. The local government has also established 12 "Community Bushland Care Groups" to facilitate community involvement in the management and restoration of publicly owned conservation lands. The groups meet monthly to undertake conservation works. The local government supervises the work of the groups and provides training an support to their members.

## Facilities

The Noosa Environment Centre located at Wallace Park Community Precinct (Noosaville) is an environmental education and visitor centre. The centre is home to the Noosa Parks Association, which is a very active conservation group with a wide community base. The centre is the focal point for a range of conservation education and awareness programs.

Regular events coordinated through the centre include interpretive birding, bird survey work, insect and fauna observation, bush walking the activities of the local botany group. The centre also hosts a community discussion forum each week.

The Queensland National Parks and Wildlife Service has 2 major public information centres located within the nominated area. These centres are located at visitor access points for the major conservation attractions of the area being the Noosa National Park (Noosa Headlands Section), and the adjacent to the Noosa North Shore ferry crossing. There are also minor visitor facilities at Kinibah and Elanda Point on the Noosa River System. All of these centres have high utilisation by the public. The Noosa National Park is a very popular visitor destination and tourism industry research indicates that the centre has passing foot traffic of approximately 1.5 million

people per year. The Noosa Heads centre provides a range of visitor education program including guided walks both day and night time.

The Rural Futures Centre was developed through a partnership between education Queensland, the Noosa Shire Council and the Noosa and District Landcare Group in 2002. The centre is located in the hinterland township of Pomona and provides office space for the NDLC and the Rural Futures Network. The centre is also used extensively by the Central Queensland University as a teaching campus. The centre has a demonstration native farm forestry timber plot and a permaculture garden. It also demonstrates a range of alternative aspects of building design. The NDLC farm forestry nursery is located on the site. The site is regularly used to host training courses and workshops about a range of socio-economic and environmental issues.

The Noosa Council local government offices are located at the township of Tewantin on the Noosa River in the coastal area of the shire. The local government offices are used extensive for training, awareness raising activities and conferences on sustainability, socio economic cultural and environmental issues. The local government regularly hosts major community, economic and environment projects. The Noosa Regional Gallery is located at the Tewantin Centre and plays host to the biennial floating land community art and the environment program. The local government hosts meetings of many major environmental and natural resource management groups within the nominated area including the following:

- ⇒ Northern Implementation Group of the Healthy Waterways Partnership (Moreton Bay and Catchments partnership);
- ⇒ South East Queensland Catchments Natural Resource Management Group;
- ⇒ Lake Macdonald Catchment Care group;
- ⇒ Noosa North Shore Working Group; and
- ⇒ Noosa River Plan Implementation Committee and Advisory Committee.

The Gerry Cook Mary River Cod Fish Hatchery is a complex established at Lake Macdonald in the early 1980's to implement a breeding program for the critically endangered Mary River Cod. The hatchery also serves a very important education and community awareness raising function for schools groups and members of the public about the plight of this amazing fish. A new hatchery building is currently being planned in a near by but more accessible site, at the Noosa Botanical Gardens. The new hatchery centre will have improved visitor facilities and incorporate improved displays, a theatre and community meeting space. It is anticipated that the new hatchery will attract up to 3 schools excursions per week during the school semester. The new hatchery is also expected to receive greater visitation of ecotourists.

The Noosa North Shore Ecotourism Portal is a major resort development under construction on the Noosa North Shore. This development will provide a major new environment centre within the proposed biosphere area. The environment centre planned for this site will house an office of the National Parks and Wildlife Service and will incorporate a major public access space for interpretation of the values of the Cooloola Section of the Great Sandy Region. The new centre is also planned to house a new research institute focused on conservation and sustainable development research in the Noosa area.

Noosa Integrated Catchment Association (NICA) has offices located at Noosaville in the coastal area of the proposed Biosphere Reserve. NICA is an incorporated organization made up of members from 22 sectors of the Noosa community. The organization was formed to develop an integrated catchment management (ICM) plan for the river system. NICA hosts a number of community based awareness raising, education and conservation programs focused on ICM in the Noosa River Catchment. The centre is available for use by any of the 22 member organizations.

**At present the centre is the base for the following programs:**

- ⇒ Noosa Living Smart Program;
  - ⇒ Noosa River Seagrass Watch Monitoring Program;
  - ⇒ Noosa River Ranger Volunteer Program;
  - ⇒ Noosa Fishing Line Recovery Program; and
  - ⇒ Noosa Litter Prevention and Stormwater Quality Improvement Program.
- 

## 4. SPECIALIST TRAINING

There are a wide range of specialist training activities undertaken in the nominated area each year. As outlined elsewhere in this submission there are a number of research institutions, educational facilities and community groups operating in the nominated area that undertake education programs targeted at sustainable socio-economic development and environmental conservation.

**Some of the more notable training projects recently completed or underway include:**

- ⇒ Training for local government staff and community volunteers in Glossy Black Cockatoo monitoring techniques;
- ⇒ Training for local government staff and community group members in fire management planning and conducting controlled burn regimes;
- ⇒ Training for local government staff and community volunteers in response and management of marine mammal stranding;
- ⇒ Training for community volunteers in fauna rescue, rehabilitation and release strategies;
- ⇒ Training for community volunteers in monitoring threatened frog species; and
- ⇒ Training for community volunteers in private forestry/silvicultural practices.

In addition the state and local government work with community-based organizations to provide extension services to members of the local community in weed identification and control techniques, bushland

regeneration, native plant propagation, introduced pest animal control, conservation management planning, and responsible recreational fishing activities.

One particularly noteworthy specialist training project which is currently in the nominated area is a program involving Noosa Council Staff and the Australian Institute for Research into Education For Sustainability (ARIES). Under this program researchers from ARIES are providing detailed mentoring to staff of ten local government from across Australia. The mentoring program is aimed at increasing capacity with local governments to effectively engage with their local communities to implement sustainability related conservation programs. In Noosa the mentoring work is being used to support the development of the next phase of the Living Smart Program. This project will be aimed increasing sustainable behavior change amongst all Noosa householders.

## 5. BIOSPHERE COMMUNITY

### Potential contribution to the world network of Biosphere Reserves

The nominated area has a great potential to contribute to a world network of Biosphere Reserves. The Noosa area has a diverse range of community organizations, educational institutions, research organisations and government bodies that currently have strong links with regional, national and international bodies. This includes links with international and national research organizations through programs like the Healthy Waterways Program, the Cooroy CRISO Timber research Group, the Lake Macdonald Catchment Care Group and CSIRO Entomology Group biological control investigations for Cabomba. Noosa is also an active member of the Cities for Climate Protection and has embarked on the “Beyond Milestone Five” by joining a group of local governments across Australia working to improve the integration of sustainability into operational decision making practices. The Mayor of the Noosa Local Government is an active member of the steering group for the ARIES and holds a seat on the Policy Council of the Moreton Bay Waterways and Catchment Partnership. Senior staff of the local government and Councilors also hold numerous seats on regional, state and national professional associations and government consultative groups.

Many of the members of local community organizations from the nominated area also hold positions seats on regional, state and national level nongovernmental organizations, research bodies and government consultative groups. For example the Noosa and District Landcare Group has a board member who is a member of the boards of Regional Natural Resource Management Body. A staff member of the same organization is one of 2 community representatives on the National Aquatic Weeds Working Group. There are many other examples of this type of connection between the nominated area and higher levels of government, industry and community organizations.

The nominated area is located in close proximity to a major city and international airport. It has extensive visitor accommodation and a range of conferencing facilities that could cater for conferences up to 1000 delegates. There is a high level of Internet access and most active community based organizations have their own meeting spaces and Internet access points.

The number of web pages established from within the nominated area has grown rapidly and many of the key community based organizations and industry groups now have their own web pages.

The culture of the local community is based on a pride in the outstanding environmental values of the area and the considered approach to community planning and land use. There are already many private business and community organizations actively involved in promoting the approach to sustainability that has been developed for the proposed biosphere area to neighboring communities and those outside the region. This culture is founded on the pervading view of the Noosa community that as improvements in sustainability are achieved in Noosa those improvement should communicated more widely to provide a positive example to other communities that are grappling with the same issues.

### Collaboration with existing Biosphere Reserves at a national level

A new network is currently being formed by members of the existing Biosphere Reserve areas in Australia to promote greater collaboration "Australian Biosphere Volunteers Incorporated". It is understood that a proposal for the formation of the network has been submitted to the Australian Government for consideration. The Noosa Biosphere Working Group has indicated its support for the formation of such a network and has signaled its willingness to become an active member of the group when it is formed. Noosa stakeholders have also commenced discussions with the Australian Government about the possibility of hosting the inaugural meeting of the Association in Noosa in July 2007.

## Collaboration with existing Biosphere Reserves at the regional or subregional levels

At this point in time no specific collaboration or twinning arrangements have been considered. However the Noosa Biosphere group would be interested in establish collaborative relationships with any existing Biosphere Reserves within the regional and sub-regional levels where the collaboration was of mutual benefit.

## Collaboration with existing Biosphere Reserves in thematic networks at regional or international levels

At this point in time no specific collaboration or twinning arrangements have been considered. However the Noosa Biosphere group would be interested in establish collaborative relationships with any existing Biosphere Reserves based on thematic networks at the regional or international levels, where the collaboration was of mutual benefit. The Noosa Local Government was fortunate to host a flying visit by Dr Ishwaran to the proposed Biosphere Reserve area in November 2006.

This was a very positive visit from the point of view of the stakeholders in Noosa and the Noosa Biosphere Implementation group will be continuing to takes steps to further develop cooperative relationships with other biospheres domestically and internationally, and with the UNESCO MAB secretariat.

## Collaboration with existing Biosphere Reserves at the international level

At this point in time no specific collaboration or twinning arrangements have been considered. However the Noosa Biosphere group would be interested in establish collaborative relationships with any existing Biosphere Reserves at the international level.

- ⇒ The subjects of particular interest for collaboration with other Biosphere Reserves would involve:
- ⇒ Ecotourism development and management;
- ⇒ Sustainable land use planning;
- ⇒ Gondwanan ecosystem development and species genetics;
- ⇒ Endangered species management;
- ⇒ Managing fire in fire adapted landscapes;

- ⇒ Applications of renewable energy system and water efficiency recycling programs;
- ⇒ Education for sustainable behavior;
- ⇒ Sustainable forest practices and timber processing; and
- ⇒ Rehabilitation or degraded farming lands and establishment of sustainable farming practices.