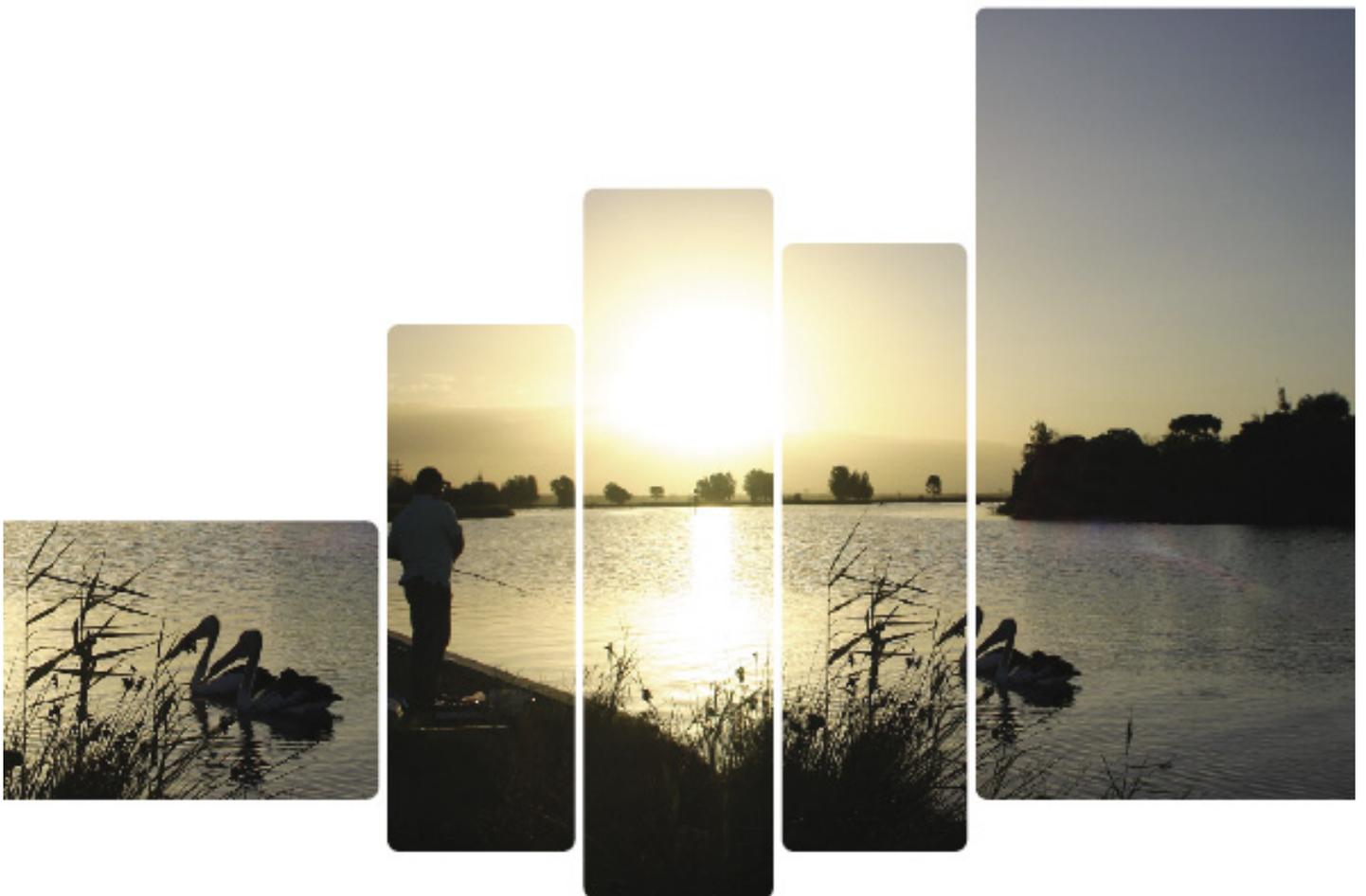




Australian Government

Australia's National Programme of
Action for the Protection of the Marine
Environment from Land-Based Activities

October 2006



case study 22: douglas shire council

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introduction

Douglas Shire (see [Figure 1](#)) has an area of 2456 square kilometres, about 85 per cent of which is World Heritage listed. The coastal waters adjacent to the Shire are part of the Great Barrier Reef World Heritage Area. The shire has a population of over 11,000 that is growing at an average 2.2 per cent annual rate.

The Douglas Shire has 4 catchments draining to the coastal waters of the Great Barrier Reef World Heritage Area.

pollution issues

The major land-based issues contributing to marine pollution in the Douglas Shire are diffuse source sediment and nutrient pollution. There is also some point source pollution from aquaculture and sewage. Agricultural pesticide may also impact on reef waters.

Marine pollution management in Douglas Shire relates primarily to reduction of amounts of nutrients and sediments entering the marine environment. The majority of the catchment is largely untouched by development, however research and modelling studies indicate that European settlement has seen an increased annual discharge of around 60,000 tonnes of sediment 280 tonnes of nitrogen and 55 tonnes of phosphorus from rivers in the catchment. These are respectively 1.8, 1.1 and 1.5 times greater than pre-European levels but most of the load comes from the coastal and agricultural strip of Douglas Shire.

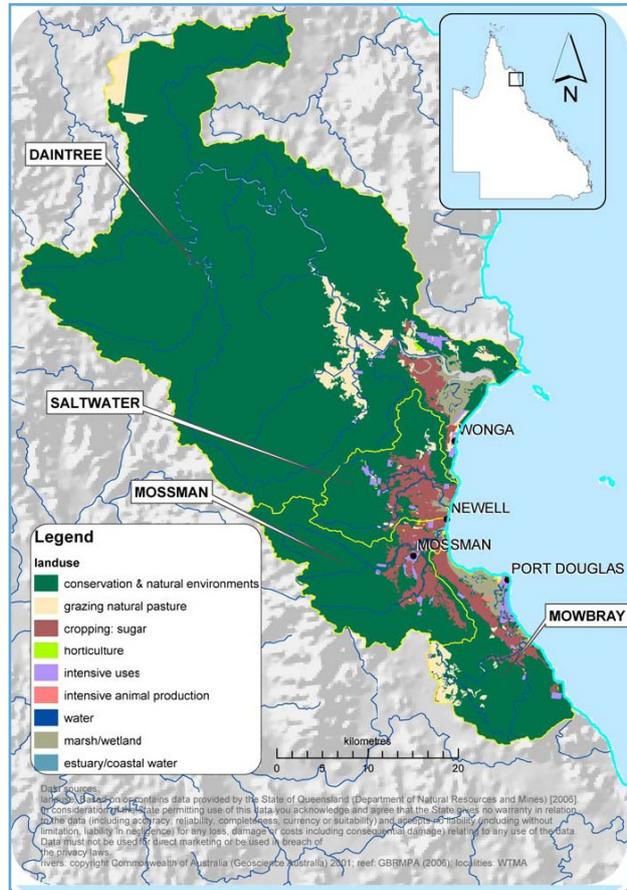
Other research at Low Isles off Port Douglas compared water quality data from 1928/30 and 1990 and demonstrated that the inshore waters had become eutrophic with consequent changes to the ecology of the Low Isles reef, related marine habitats and biological communities.

management context

The past 25 years has seen a transition as the economy of Douglas Shire has moved from one based on agriculture with major activities of sugar cane cropping and cattle grazing to a strong predominance of tourism and associated residential and commercial activities. The most important economic activity in the shire is tourism with a direct value of about \$200 million per annum. The second most important activity is agriculture, which had a gross value of production in the Shire of \$11.9 million for crops, principally sugar cane, and \$1.1 million for livestock for the year ending June 2001.

Tourism is strongly based on the natural environment settings and nature-based recreational activities provided through the Wet Tropics and Great Barrier Reef World Heritage Areas.

Figure 1: Douglas Shire



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Douglas Shire Council has adopted the vision of: “*A healthy lifestyle and a prosperous community in harmony with the environment*”.

The Council aims to achieve the vision through becoming a world leader in the preservation of biodiversity and in the understanding and management of ecological processes that support the region's environment.

Douglas Shire has developed a Water Quality Improvement Program within the Douglas Shire catchments that is an important element of the Commonwealth Government's *Coastal Catchments Initiative* and the joint Commonwealth and Queensland Government *Reef Water Quality Protection Plan* to protect the Great Barrier Reef from land-based sources of marine pollution.

The total value of the funding for the initial research, planning and implementation of the program was \$2,587,600 provided as part of the Natural Heritage Trust priority for improving water quality entering the Great Barrier Reef Lagoon.

the douglas shire water quality improvement plan

The *Douglas Shire Water Quality Improvement Plan* (WQIP) identifies the current status of pollutant loads, commits to a set of management actions which will take initial steps to achieve sustainable pollutant loads, and develops modelling and monitoring systems, with adaptive implementation strategies. Within a 25 year period, it aims to halve the anthropogenic loads of sediment, nitrogen and phosphorus entering the waters of the Great Barrier Reef from Douglas Shire.

These pollutant loads were selected as the targets for the plan because they provide a measure of the total quantity of pollutant able to reach receiving waters such as the Great Barrier Reef lagoon over an extended period. Pollutant concentrations are used for river health targets because they provide a measure of the pollutant available to aquatic organisms in the water column.

The Queensland Environmental Protection Agency (EPA) was contracted by the Australian Government Department of Environment and Heritage to assist Douglas Shire Council in the development of the WQIP through the establishment of environmental values and water quality objectives. The framework for setting environmental values and water quality objectives is well established through the *National Water Quality Management Strategy* (NWQMS) and is embedded in the Queensland *Environmental Protection (Water) Policy 1997*.

The development and implementation of the WQIP has been undertaken through projects designed to provide background information on the Shire and current land management practices, as well as to determine management actions to reduce current impacts. Projects include:

- Identifying pre-European nutrient and sediment loads in waters discharging to coastal waters;
- Identifying and trialling agricultural best management practices which will result in reductions in pollutant exported to the Great Barrier Reef;
- Identifying and commencing work to implement possible reductions in point source discharges;
- Developing and applying measures to control point source discharges of sediment and nutrient in Douglas Shire with the seven year target of reducing export of all pollutants by 75 per cent including:
 - o Upgrading Mossman Sewage Treatment plant to tertiary level with the objective of reducing total discharge levels for nitrogen from 1.58 to 0.045 tonnes per year and for phosphorus from 0.879 to 0.004 tonnes per year.

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- Connecting smaller settlements to major tertiary sewage treatment plants.
- Inspection to ensure compliance with EPA guidelines for local industrial discharges including, aquaculture, sugar mills, sand and gravel extraction, concrete batching and motor vehicle workshops.
- Developing capacity and implementing legislative measures to provide and require the use of port based sewage pump out facilities at marinas and wharves.
- Implementing a code for new on-site sewage treatment standards for domestic and small-scale sewage treatment systems (less than 21 equivalent persons) in unsewered residential areas.
- Inspecting and applying measures necessary to bring existing small systems with off-site impacts on water quality up to an acceptable standard.
- Developing and adopting agricultural cropping and grazing best management practice for sediment and nutrient reduction in Douglas Shire including:
 - Determining and demonstrating agricultural best management practice in the Saltwater Creek catchment of Douglas Shire.
 - Appraising best management practice cost-effectiveness, to be used as the basis for farm planning.
 - Achieving an overall commitment from the Shire's landholders to adopt agricultural best management practices.
 - Developing agreements to protect public investments in best management practice implementation, particularly through riparian and wetland management controls.
- Protecting, restoring or rehabilitating riparian and wetland areas in Douglas Shire:
 - Rehabilitating through stabilization of river banks and developing vegetation buffers to trap pollutants through a prioritized program with a 25 year target of rehabilitation of 95 per cent of riparian areas.
- Managing road sediment:
 - Installing and maintaining infrastructure to trap sediments.
 - Establishing and maintaining grass verges.
- Monitoring and modelling of sediment and nutrient flow within and from the waters of Douglas Shire.

The implementation of the program is being undertaken progressively. Planning and the indicative funding level for 2005-2011 is approximately \$30 million of which approximately \$25 million will be allocated to upgrading sewage treatment capacity and the remainder to non-point source issues including:

- Management of stormwater and roads to reduce sediment runoff;
- Biodiversity restoration (including riparian and wetland areas);
- Extension to support uptake and self-assessment of best practice agriculture; and
- Pollutant load monitoring.