

Wendy Pyper dips into south-east Queensland's strategy for managing the waters that make Moreton Bay

Hands across the water

'South-east Queensland's catchments and waterways will, by 2020, be healthy living ecosystems supporting the livelihoods and lifestyles of people in south-east Queensland and will be managed through collaboration between community, government and industry.'

This vision marked the beginning of south-east Queensland's Regional Water Quality Management Strategy. It was born of a realisation that Moreton Bay and its four major rivers were slowly choking on increasing amounts of sediment, nutrients and toxicants.

Further deterioration was inevitable as the state's population burgeoned. Lured by the Queensland sun, surf and relaxed lifestyle, more people would mean more sewage, more domestic animals and livestock, and a need for more intensive agriculture. Government, industry and community representatives realised that without action, these trends would reduce the bay's ability to support dugongs, turtles, migratory wading birds, recreational and commercial fisheries, and the lifestyle sought by so many.

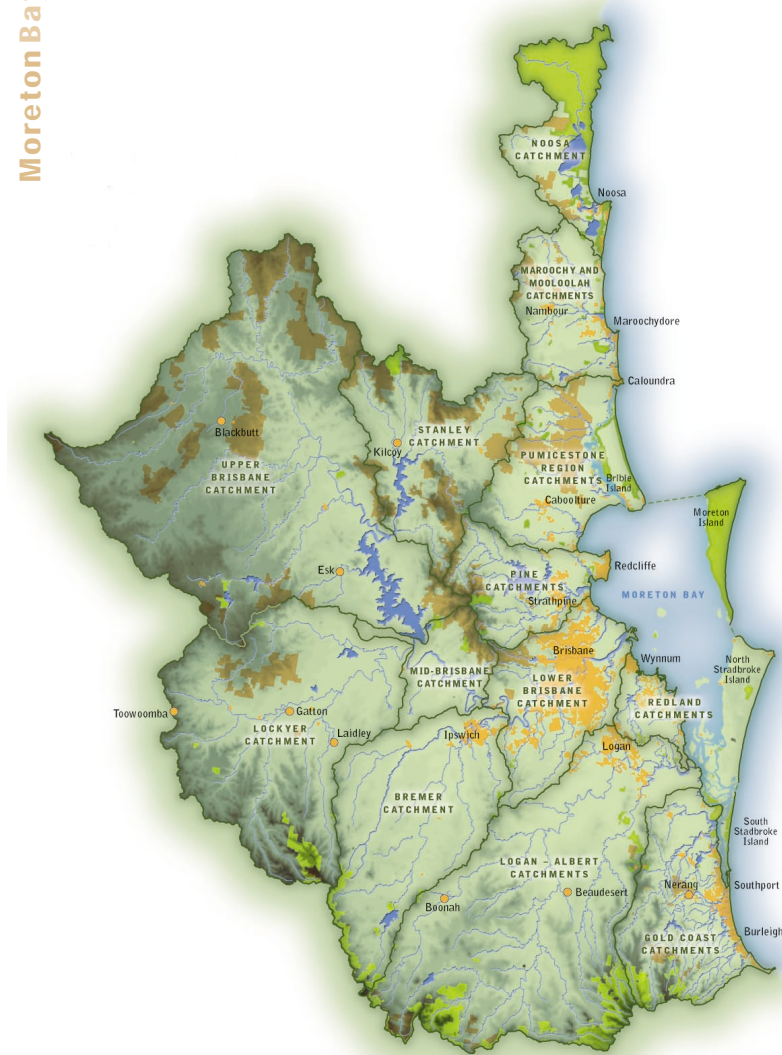
In 1994, the Queensland Government and six local councils were awarded funds from the National

Heritage Trust to assess historical water quality information on Moreton Bay and estuaries in the Brisbane, Bremer, Pine and Caboolture Rivers.

The study found that concentrations of nitrate, phosphate and suspended sediments had increased in the past 50–80 years. A framework for developing an integrated water quality management strategy for south-east Queensland was subsequently proposed.

In 1996, the Moreton Bay Study focussed on developing a system-wide understanding of the nutrient and sediment problem in the bay and estuaries. A conceptual model of the ecosystem was developed, and a set of 17 scientific tasks was identified to quantify and verify the importance of different processes in the conceptual model. These tasks were carried out by scientists from 11 organisations including CSIRO, the Queensland Environmental Protection Agency (EPA) and the University of Queensland, in consultation with local government and industry stakeholders.

The Healthy Waterways vision will help maintain coastal ecosystems as Queensland's growing population increases pressures on Moreton Bay and its rivers.



Major catchments of the The Moreton Bay Study area.

The catchment area of Moreton Bay is dominated by the Brisbane River catchment which extends west to the Great Dividing Range. (Image courtesy of SEQRWQMS, 2001.)

The scientific tasks included:

- quantifying sediment, nutrient and toxicant loads entering the waterways;
- understanding the flushing patterns in Moreton Bay;
- measuring turbidity (light penetration) in the Brisbane River;
- measuring the impact of nutrients on the abundance and growth of phytoplankton, zooplankton, mangroves and seagrass; and
- identifying chemical, physical and biological indicators suitable for monitoring and reporting on bay and estuary health through the Design and Implementation of Baseline Monitoring.

As a result of this research, a Regional Water Quality Management Strategy was developed for the bay and estuaries, focussing initially on sewage and wastewater discharges. To monitor the success of this strategy, an Ecosystem Health Monitoring Program (EHMP), was also implemented.

'The monitoring program acts as an independent audit of the effectiveness of management measures implemented by participating councils,' scientific co-ordinator of the study, Dr Eva Abal, says.

'Chemical and biological indicators of ecosystem health are measured at sites around the bay and estuaries. Then a report card is produced giving a mark for water quality and ecological health, and general comments on the areas surveyed.'

Similar research and monitoring programs were initiated for the freshwater regions of the Moreton Bay catchment in 1999. These aimed to extend the scope of the Regional Water Quality Management Strategy.

'The health of Moreton Bay is affected by the actions of thirteen other councils upstream,' Abal says. 'So it was important to recognise the connectivity between the catchments and waterways, and to extend the study into freshwater areas.'

One of the major tasks was to identify indicators suitable for measuring and reporting on changes in freshwater ecosystem health.

Scientists from CSIRO, Griffith University, EPA, the Queensland Department of Natural Resources and Mines, the CRC for Freshwater Ecology, and Streamtec identified five groups of suitable indicators, including freshwater fish and macroinvertebrates. A freshwater EHMP and report card, based on these indicators, will be implemented later this year.

Other studies conducted in freshwater areas included:

- modelling erosion processes and tracing sediment sources;
- riparian revegetation studies;
- measuring light and nutrient availability and their effect on benthic algae;
- measuring denitrification (the conversion of nitrate to nitrogen gas by bacteria); and
- identifying triggers for outbreaks of the toxic cyanobacterium *Lyngbya majuscula*.

The marine and freshwater research efforts provide a scientific basis upon which local government and industry stakeholders can make environmental management decisions. Improved riparian, stormwater, and sewage management plans have been developed, or are being developed, by the 19 councils participating in the Water Quality Management Strategy. Four industry stakeholders have also upgraded plans for wastewater treatment.

These plans, and a framework for future management actions, are detailed in the technical handbook *SEQ Regional Water Quality Management Strategy*. The newly formed Moreton Bay Waterways and Catchments Partnership, or Waterways Partnership, will help stakeholders meet these commitments.

More about the study

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