



# EcosystemHealth

Monitoring Program



Maps Inside

# Report Card

2012

for the waterways and catchments of South East Queensland



Sunshine Coast Council



Brisbane City Council



Seqwater



# Keeping mud on the land

One of the major issues affecting waterway health in South East Queensland is the increased amount of sediment (or mud) entering our waterways.

When mud is washed off the land into our waterways it can smother and kill seagrass, reducing the amount of food for fish, turtles and dugongs. Mud increases the turbidity (or murkiness) of waterways and contains pollutants that have a negative impact on water quality.

During the January 2011 flood, millions of tonnes of mud entered Moreton Bay. In order to reduce the amount of mud entering our waterways, we must prepare our catchments for heavy rainfall events.

## Actions for individuals

We all have a role to play in protecting and improving waterway health. Small lifestyle changes can help to protect our waterways for future generations to enjoy.

For more information on what you can do, Healthy Waterways has produced a range of fact sheets which are available on our website.



### Plant vegetation along riverbanks

Protecting and planting native vegetation along the water's edge significantly reduces the amount of mud that enters our waterways.

Since European settlement, it is estimated that 80% of South East Queensland's native vegetation has been cleared for agriculture, industry and housing.

The roots of vegetation hold the soil of riverbanks in place and reduce erosion. Riverbank vegetation also filters rainwater and traps mud, nutrients and other debris.

Vegetation provides habitat for land-based animals, fallen branches provide habitat for fish and over-hanging trees provide shade to moderate water temperature.



#### Winner of the 2012 Healthy Waterways – Government Award

More than 80,000 trees have been planted in the Oxley Creek Catchment.

Project conducted by Brisbane City Council as part of the Lord Mayor's Oxley Creek Taskforce, a collaboration of local councils, business, community and water utilities.



### Improve stormwater runoff

Using Water Sensitive Urban Design improves the quality of stormwater runoff and reduces the amount of mud entering local waterways.

In highly developed catchments, hard surfaces such as roads and roofs reduce the amount of rainfall that can soak into the ground. This excess rain becomes stormwater runoff which is carried by drains straight into the nearest creek. Stormwater contains a range of pollutants such as mud, chemicals and litter. Water Sensitive Urban Design seeks to minimise the impact of stormwater runoff by using an innovative approach to urban planning and development. For example, raingardens can be built in your backyard or new housing developments. Raingardens use native plants and soil to capture, filter and treat stormwater runoff.

In addition, careful management of construction sites can reduce the amount of mud washing off the land during development.



#### Winner of the 2012 Healthy Waterways – Water Sensitive Urban Design Award

At the Fitzgibbon Chase development (in the Pine Catchment), stormwater is captured through bioretention systems to supply 84% of water for residential gardens.

Project conducted by the Urban Land Development Authority in collaboration with developers, community and government.



### Protect wetlands

Wetlands are important for maintaining waterway health because they capture mud, reduce the impact of floods and provide habitat for native plants and animals.

In the past, the role of wetlands in protecting waterway health was not well understood. As a result, approximately half of Australia's natural wetlands have been destroyed since European settlement.

Wetlands are often referred to as 'nature's kidneys' because they act as a sponge that soaks up and slowly releases rain water, therefore reducing the impact of flooding.

By slowing the movement of water travelling through the catchment, wetlands encourage mud and nutrients to settle out, therefore improving water quality downstream.



#### Finalist of the 2012 Healthy Waterways – Industry Award

The constructed wetlands at Brentwood Estate (in the Lower Brisbane Catchment) are designed to remove approximately 23,700 kg of mud per year from stormwater runoff.

Project conducted by AECOM (with Investa and Hyder).



### Restore floodplains

Restoring our floodplains can slow the flow of water and reduce the amount of mud entering our waterways.

Floodplains are areas of low-lying land next to a waterway which are subject to flooding.

Many decades of urban development and vegetation clearing have altered the dynamics of floodplains.

Natural, vegetated floodplains provide a critical function during flood events because they spread and slow the flow of floodwater. By slowing the floodwater, they allow water and mud to soak into the ground. This reduces flooding downstream and reduces erosion associated with fast moving water.

Floodplain restoration involves planting native vegetation and incorporating parks, public spaces and buildings designed to withstand water inundation.



#### Finalist of the 2012 Healthy Waterways – Government Award

Over 20 hectares of land in the Mooloolah River floodplain were restored by planting a native vegetation corridor.

Project conducted by Sunshine Coast Council, in collaboration with local landholders.

## Ecosystem Health Monitoring Program

The Ecosystem Health Monitoring Program (EHMP) is one of the most comprehensive freshwater, estuarine and marine monitoring programs in Australia. The EHMP delivers a regional assessment of ecosystem health for each of South East Queensland's (SEQ) 19 major catchments, 18 river estuaries and nine zones in Moreton Bay.

Healthy Waterways manages the program on behalf of our member organisations, and it is delivered by a large team of experts from the Queensland Government, CSIRO, Griffith University and the University of Queensland.

## Report Card Grades – What do they mean?

For over ten years, the EHMP has produced an annual Ecosystem Health Report Card to highlight whether the health of our waterways is improving or declining. Ecosystem health is assessed against water quality guidelines, resulting in a single grade for each freshwater, estuarine and marine system.

A total of 389 sites are monitored across SEQ and Moreton Bay: 135 freshwater sites are monitored biannually, and 254 estuarine and marine sites are monitored monthly.

The 2012 Report Card grades ('A' to 'F') are based on analysis of data collected from July 2011 to June 2012.

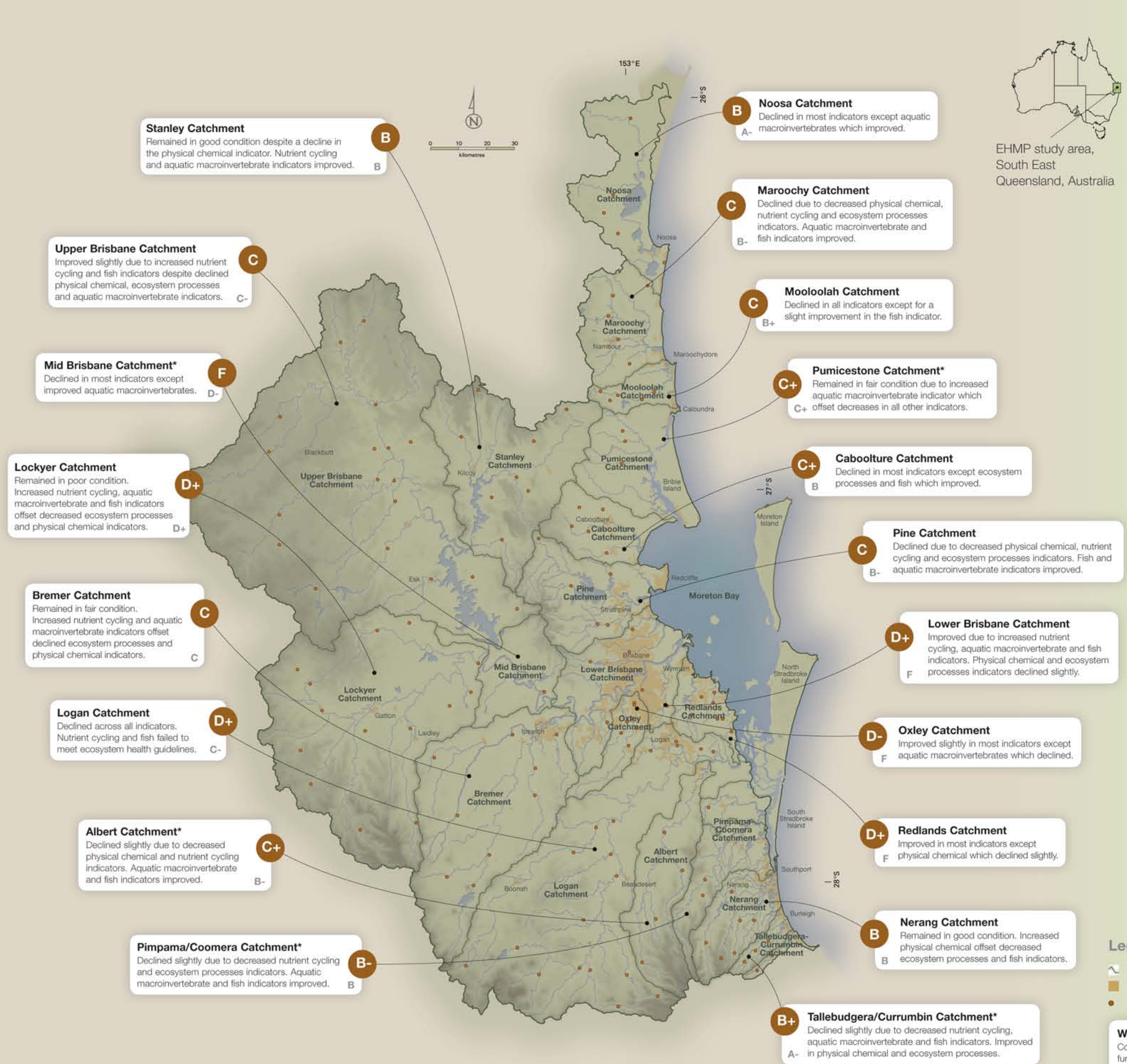
- A Excellent:** Conditions meet all set ecosystem health values. All key processes are functional and all critical habitats are in near pristine condition.
- B Good:** Conditions meet all set ecosystem health values in most of the reporting region. Most key processes are functional and most critical habitats are intact.
- C Fair:** Conditions meet some of the set ecosystem health values in most of the reporting region. Some key processes are functional and some critical habitats are impacted.
- D Poor:** Conditions meet few set ecosystem health values in most of the reporting region. Many key processes are not functional and many critical habitats are impacted.
- F Fail:** Conditions do not meet set ecosystem health values. Most key processes are not functional and most critical habitats are severely impacted.

## Indicators used for assessing ecosystem health

- Freshwater**  
Five ecological indicator groups are measured:
- physical chemical
  - nutrient cycling
  - ecosystem processes
  - aquatic macroinvertebrates
  - fish.

- Estuarine and Marine**  
Ecological Health Index indicators measured are:
- algae (phytoplankton)
  - Lyngbya
  - secchi depth (water clarity)
  - total phosphorus
  - total nitrogen
  - sewage nitrogen signal
  - turbidity
  - dissolved oxygen.
- Biological Health Rating indicators measured are:
- seagrass
  - coral
  - nutrient processing
  - sewage nitrogen signal
  - riparian condition.

For more information, please refer to the 2012 Report Card Methods on our website [www.healthywaterways.org](http://www.healthywaterways.org).

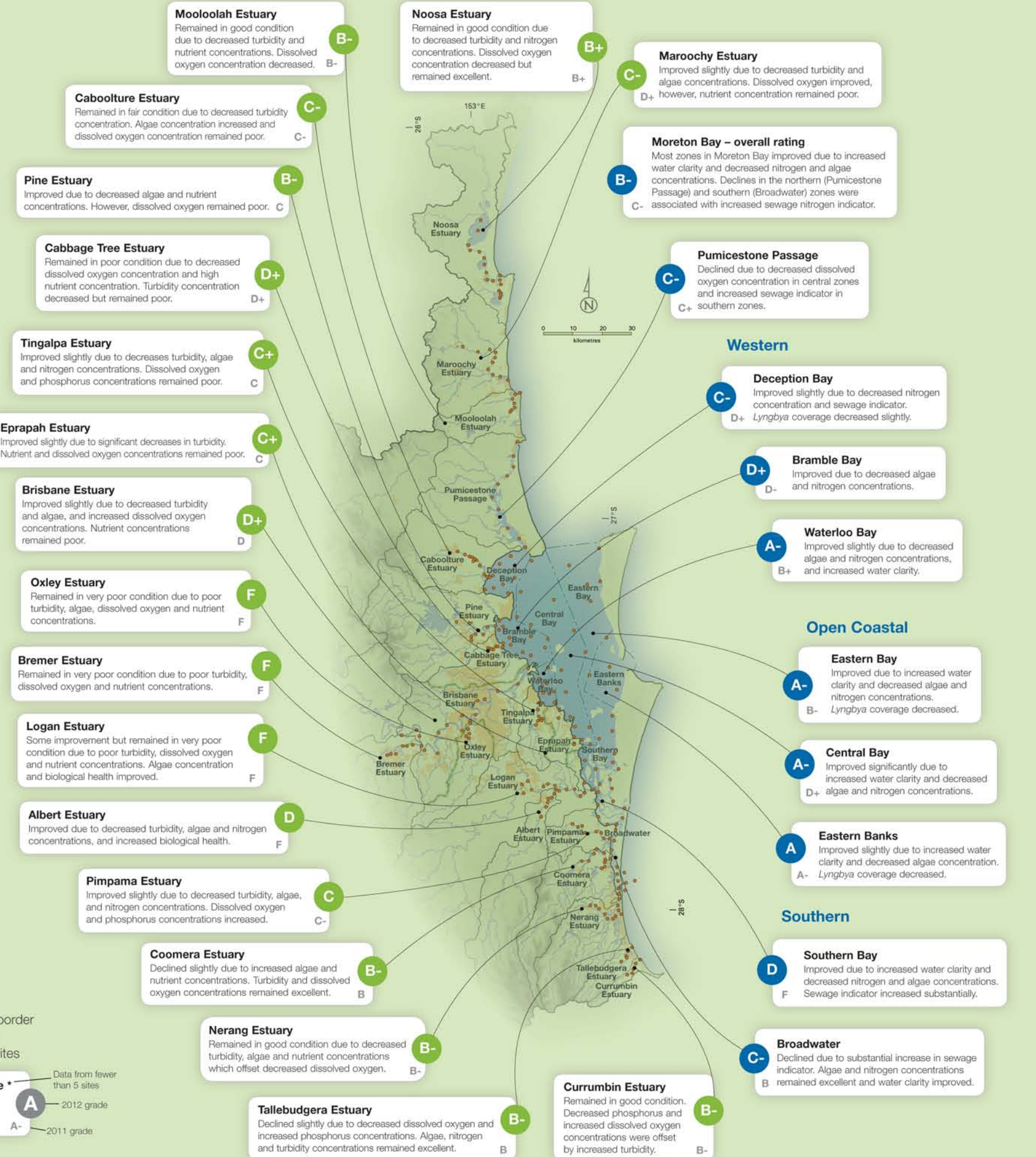


**Legend**

- Catchment border
- Urban areas
- Monitoring sites

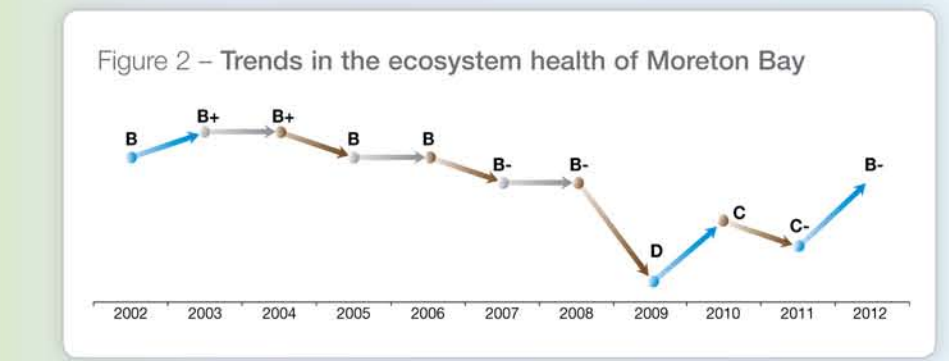
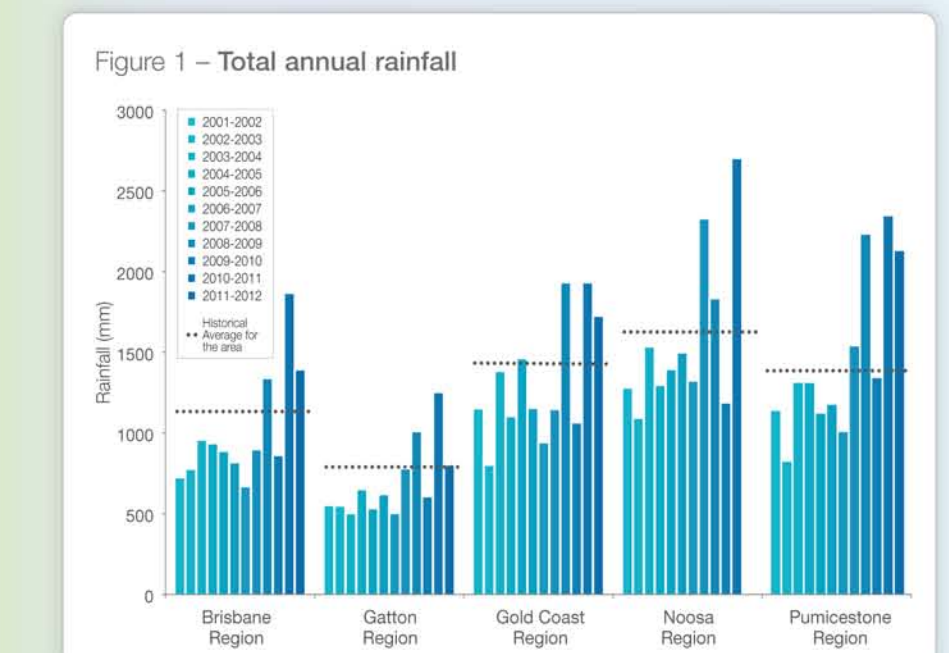
**Waterway name**

- Data from fewer than 5 sites
- 2012 grade
- 2011 grade



## The 2012 Report Card provides insight into the health of South East Queensland's waterways and Moreton Bay.

Overall, there was a small decline in freshwater grades and an improvement in the estuarine and marine grades. During the reporting period, the northern and southern catchments of South East Queensland received above average rainfall and this led to an increase in nutrients entering these waterways. Moreton Bay improved in grade (C- to B-), returning closer to its long term average of a B grade, following three consecutive years of poor grades associated with the drought breaking rain in 2009. This improvement occurred despite large amounts of deposited mud which smothered the bottom of Moreton Bay after the January 2011 flood.



## Freshwater

On average, freshwater streams across the region declined slightly, returning to more typical conditions. However, for the first time since 2002, streams in highly urbanised catchments improved in grade – Lower Brisbane (F to D+), Oxley (F to D-) and Redlands (F to D+). Several freshwater streams declined in grade, including the Albert (B- to C+) and Mid Brisbane (D- to F) which received their worst grade since monitoring began. The Mid Brisbane, which has continued to decline over the last four years, received an F grade for the first time. Increases in nutrients and riverbank slumping in the Mid Brisbane and Lockyer catchments may have contributed to this decline.

## Estuaries

Most estuaries in South East Queensland either improved in grade or stayed the same, with the average grade remaining a C. The largest improvement occurred in the Pine Estuary (C to B-), which received its highest grade since monitoring began in 2000. This was the result of a decrease in turbidity, nutrients and algae. In contrast, Coomera (B to B-) and Tallebudgera (B to B-) estuaries declined due to increases in algae and nutrients, and a decline in dissolved oxygen. The Oxley, Bremer and Logan estuaries remained a fail, due to high concentrations of nutrients.

## Moreton Bay

The improvement in Moreton Bay (C- to B-) resulted from an increase in water clarity and a decrease in nutrients and algae. Central Bay showed the greatest improvement (D+ to A-) as a result of a large decrease in algae. The only two regions in Moreton Bay that declined were Pumicestone (B to C-) and the southern end of Pumicestone Passage which caused an overall decline (C+ to C-).

The health of seagrass beds and corals appear to have returned to pre-flood conditions. This was unexpected as the 2011 flood deposited large amounts of mud on seagrass and coral habitats. Moreton Bay's recovery from such an extreme weather event is encouraging and highlights the resilience of the bay.

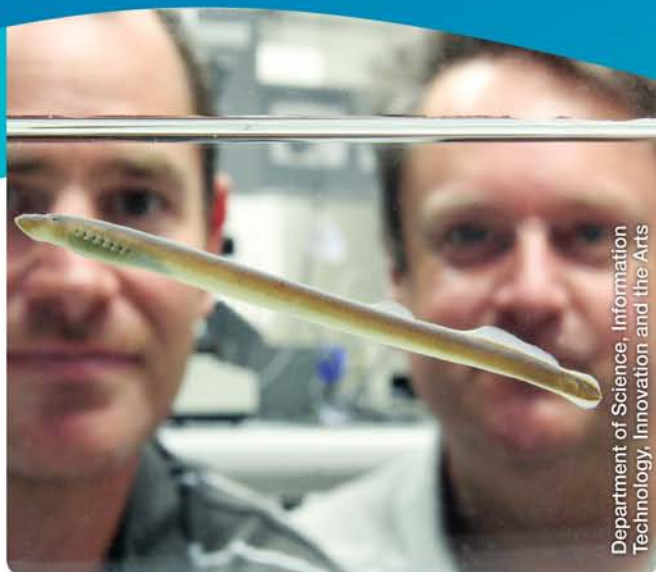
## New species of 'living fossil' discovered in our waterways

Scientists believe they have found a new species of lamprey, a slender eel-like animal, on the Sunshine Coast during fieldwork for the Ecosystem Health Monitoring Program.

Previously, only four species of lamprey had been found in the Southern Hemisphere. A genetic study of the lamprey indicates they are a new species.

Lampreys are regarded as the oldest living vertebrates. With little change occurring in over 360 million years, the lamprey provides an important insight into evolution.

Lampreys typically live in cold climates, and were previously only thought to occur in eastern Australia south of Sydney. The discovery of a new species on the Sunshine Coast has been a surprising find and highlights that we still have much to learn about our waterways.



Department of Science, Information Technology, Innovation and the Arts

Scientists study lamprey to confirm possibility of new species.

## Measuring the success of waterway initiatives

Work is underway to deliver a Monitoring and Evaluation Program to assess how well our waterways are being managed.

Measures of success may include:

- number of landholders protecting waterways by keeping soil on their property
- percentage of construction sites complying with water quality objectives
- kilometres of riparian vegetation helping to stabilise riverbanks
- uptake of raingardens to manage stormwater
- quality of industrial and sewage discharge
- investment in maintenance of waterway recreation areas.

Monitoring the success of waterway initiatives will help to ensure that the time, effort and money invested in achieving our regional vision for waterway health is effective.

Become a member of Healthy Waterways and join a network of people and organisations that are working together to protect and improve waterway health. **Join today.**

## Report Card online

Check out the Report Card grades on your iPhone and online now!

Search for '2012 Report Card' in the App Store.

Access results and underlying data through our interactive website [www.healthywaterways.org](http://www.healthywaterways.org)



**For further information please contact:**  
Healthy Waterways  
PO Box 13086, George Street, Brisbane, Qld 4003  
Phone: (07) 3177 9100 Fax: (07) 3177 9190  
Email: [hwinfo@healthywaterways.org](mailto:hwinfo@healthywaterways.org)  
[www.healthywaterways.org](http://www.healthywaterways.org)

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