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Grades and Overview
October 2009

HEALTHY WATERWAYS

EcosystemHealth
Monitoring Program

Report Card 2009

for the waterways and catchments of South East Queensland

Dedicated to a better Brisbane · Gold Coast City Council · Logan City Council · Redland City Council · Sunshine Coast Regional Council · Toowoomba Regional Council · City of Ipswich · Moreton Bay Regional Council · Scenic Rim Regional Council

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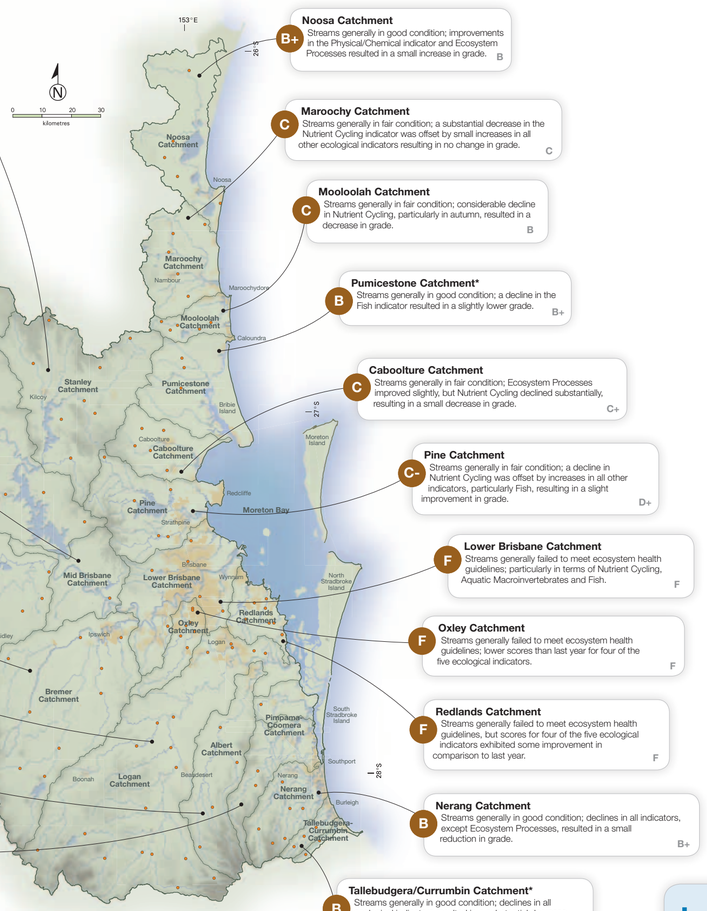
Freshwater Report Card 2009



Stanley Catchment B
Streams generally in good condition; grade declined slightly due to a lower score this year for Nutrient Cycling. B+

Noosa Catchment B+
Streams generally in good condition; improvements in the Physical/Chemical indicator and Ecosystem Processes resulted in a small increase in grade. B

Maroochy Catchment C
Streams generally in fair condition; a substantial decrease in the Nutrient Cycling indicator was offset by small increases in all other ecological indicators resulting in no change in grade. C

Mooloolah Catchment C
Streams generally in fair condition; considerable decline in Nutrient Cycling, particularly in autumn, resulted in a decrease in grade. B

Pumicestone Catchment* B
Streams generally in good condition; a decline in the Fish indicator resulted in a slightly lower grade. B+

Upper Brisbane Catchment D+
Streams generally in poor condition; grade has improved over the past three years, but the Fish indicator still scores poorly. D-

Mid Brisbane Catchment* C+
Streams generally in fair condition; an increase in Fish offset by substantial declines in Nutrient Cycling and Ecosystem Processes resulted in a decline in grade. B

Caboolture Catchment C
Streams generally in fair condition; Ecosystem Processes improved slightly, but Nutrient Cycling declined substantially, resulting in a small decrease in grade. C+

Lockyer Catchment D
Streams generally in poor condition; small increases in four of the five ecological indicators resulted in an improvement in grade. F

Pine Catchment C-
Streams generally in fair condition; a decline in Nutrient Cycling was offset by increases in all other indicators, particularly Fish, resulting in a slight improvement in grade. D+

Bremer Catchment D+
Streams generally in poor condition; increases in Ecosystem Processes, Aquatic Macroinvertebrates and Fish resulted in an increase in grade. D-

Lower Brisbane Catchment F
Streams generally failed to meet ecosystem health guidelines; particularly in terms of Nutrient Cycling, Aquatic Macroinvertebrates and Fish. F

Logan Catchment D
Streams generally in poor condition; improved scores for three of the five ecological indicators, but no change in grade. D

Oxley Catchment F
Streams generally failed to meet ecosystem health guidelines; lower scores than last year for four of the five ecological indicators. F

Redlands Catchment F
Streams generally failed to meet ecosystem health guidelines, but scores for four of the five ecological indicators exhibited some improvement in comparison to last year. F

Albert Catchment* A-
Streams generally in excellent condition; improved scores for four of the five ecological indicators resulted in a substantial increase in grade. B-

Nerang Catchment B
Streams generally in good condition; declines in all indicators, except Ecosystem Processes, resulted in a small reduction in grade. B+

Pimpama/Coomera Catchment* B+
Streams generally in very good condition; improvements in Ecosystem Processes and Aquatic Macroinvertebrates resulted in an increase in grade. B-

Tallebudgera/Currumbin Catchment* B
Streams generally in good condition; declines in all ecological indicators resulted in a substantial decrease in grade. A-

Grades – what do they mean?

Ecosystem Health Report Card Grades ('A' to 'F') are generated for 19 catchments and 18 estuaries in South East Queensland and Moreton Bay. Parameters for freshwater, estuarine and marine ecosystems are assessed against guidelines resulting in the determination of a single grade for each system.

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 are unlikely to meet 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.

Environmental Goals

Freshwater
- Protect/restore riparian vegetation and habitat
- Protect fish and macroinvertebrates
- Minimise nuisance algal blooms and growth of aquatic weeds
- Minimise sediments and nutrients

Estuarine
- Protect/restore estuarine habitats; seagrass, mangroves, saltmarsh and riparian vegetation
- Protect fish and macroinvertebrates
- Minimise nuisance algal blooms and growth of aquatic weeds
- Minimise sediments and nutrients

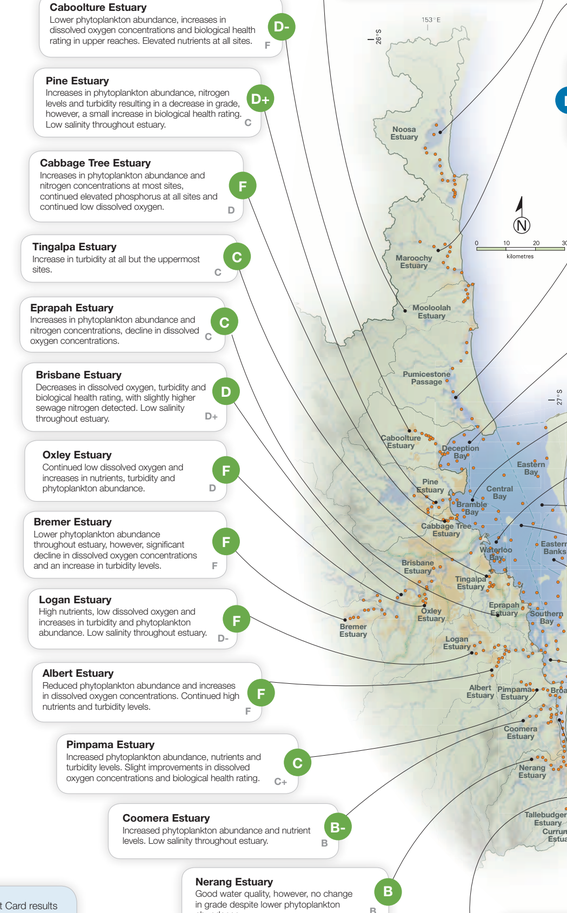
Marine
- Protect/restore marine habitats; seagrass, mangroves and saltmarsh
- Protect fish and macroinvertebrates
- Minimise nuisance algal blooms
- Minimise sediments and nutrients

Legend

- Catchment border
- Urban areas
- Monitoring sites
- Data from fewer than 5 sites

Waterway name
Comments and further detail.
2009 grade: A
2008 grade: A-

Estuarine and **Marine** Report Card 2009



Mooloolah Estuary B
Good water quality, however, minor increases in nutrient levels throughout estuary. B

Noosa Estuary B+
Decreases in dissolved oxygen concentrations and turbidity due to extensive rainfall in the region. Low salinity throughout the estuary. A-

Maroochy Estuary D
Decreases in dissolved oxygen and increases in turbidity, nutrients and phytoplankton abundance, particularly in the mid reaches of the estuary, small increase in biological health rating. Low salinity throughout estuary. C

Moreton Bay–Overall rating D
The overall health of Moreton Bay in 2008-2009 has significantly declined since last year with slight improvements in the Pumicestone Passage and Eastern Banks offset by dramatic decreases in water quality in the Waterloo, Bramble and Southern Bay regions. B-

Caboolture Estuary D-
Lower phytoplankton abundance, increases in dissolved oxygen concentrations and biological health rating in upper reaches. Elevated nutrients at all sites. F

Pine Estuary D+
Increases in phytoplankton abundance, nitrogen levels and turbidity resulting in a decrease in grade, however, a small increase in biological health rating. Low salinity throughout estuary. C

Cabbage Tree Estuary F
Increases in phytoplankton abundance and nitrogen concentrations at most sites, continued elevated phosphorus at all sites and continued low dissolved oxygen. D

Tingalpa Estuary C
Increase in turbidity at all but the uppermost sites. C

Eprapah Estuary C
Increases in phytoplankton abundance and nitrogen concentrations, decline in dissolved oxygen concentrations. C

Brisbane Estuary D
Decreases in dissolved oxygen, turbidity and biological health rating, with slightly higher sewage nitrogen detected. Low salinity throughout estuary. D+

Oxley Estuary F
Continued low dissolved oxygen and increases in nutrients, turbidity and phytoplankton abundance. D

Bremer Estuary F
Lower phytoplankton abundance throughout estuary, however, significant decline in dissolved oxygen concentrations and an increase in turbidity levels. F

Logan Estuary F
High nutrients, low dissolved oxygen and increases in turbidity and phytoplankton abundance. Low salinity throughout estuary. D-

Albert Estuary F
Reduced phytoplankton abundance and increases in dissolved oxygen concentrations. Continued high nutrients and turbidity levels. F

Pimpama Estuary C
Increased phytoplankton abundance, nutrients and turbidity levels. Slight improvements in dissolved oxygen concentrations and biological health rating. C+

Coomera Estuary B-
Increased phytoplankton abundance and nutrient levels. Low salinity throughout estuary. B

Nerang Estuary B
Good water quality, however, no change in grade despite lower phytoplankton abundance. B

Tallebudgera Estuary B
Good water quality, improved dissolved oxygen concentrations, however increases in nitrogen concentrations and phytoplankton abundance. B

Western

Pumicestone Passage C+
Improvement in grade due to minor increases in all indicators. C

Deception Bay D-
Increases in phytoplankton abundance and nitrogen concentrations; improvement in biological health rating. Continued low sewage nitrogen signal. D

Bramble Bay F
Declines in all indicators, decreases in salinity at sites near the Brisbane River mouth related to increased flows from the Brisbane River. C

Waterloo Bay D+
Significant decline in grade due to increases in phytoplankton abundance, sewage nitrogen signal, *Lyngbya* and decreases in water clarity and biological health rating. A

Open Coastal

Eastern Bay B-
Increases in phytoplankton abundance and *Lyngbya*; improvement in biological health rating. B

Central Bay D
Increases in phytoplankton abundance and nitrogen concentrations. Decline in water clarity and biological health rating. C

Eastern Banks A
Excellent water quality, improved water clarity and reduced phytoplankton abundance, however, greater extent of *Lyngbya*. A-

Southern

Southern Bay F
Decline in water clarity and increases in phytoplankton abundance. Extensive sewage nitrogen plume detected within bay region. C

Broadwater C-
Generally good water quality, however, increased nitrogen and sewage nitrogen concentrations. B

Currumbin Estuary B-
Increases in phytoplankton abundance and nutrient concentrations. Slight improvement in turbidity levels. B

A snapshot of waterway health

Ecosystem Health Monitoring Program

The Ecosystem Health Monitoring Program (EHMP) has produced an annual Ecosystem Health Report Card since 1999. The Report Card presents an 'A' to 'F' health rating for the waterways of South East Queensland (SEQ) and Moreton Bay, providing a succinct 'snapshot' of ecosystem health. These health ratings aim to raise awareness of the issues affecting waterways and to identify the necessary actions required to improve ecosystem health.

The 2009 Report Card provides grades for 19 catchments and 18 estuaries in SEQ, as well as 9 zones within Moreton Bay, for the period of July 2008 to June 2009. It involves the analysis of data from 135 freshwater and 254 estuarine and marine sites (389 in total).

The EHMP is managed by the South East Queensland Healthy Waterways Partnership and implemented by a large team of experts from the Queensland Government (the Department of Environment and Resource Management and Queensland Health Forensic and Scientific Services), universities (The University of Queensland and Griffith University) and CSIRO, on behalf of the South East Queensland Healthy Waterways Partners.

Key Messages from the 2009 Report Card

In 2008-2009, the catchments of South East Queensland received significant rainfall; the highest rainfall in the last decade. While the freshwater streams showed improvements in biological indicators (macroinvertebrates and fish), reflecting the positive influence of more flows, there were declines in nutrient processing due to the high nutrient and sediment loads (diffuse source pollution) entering the waterways. The receiving waters of the estuaries and Moreton Bay took the impact of this diffuse source pollution and showed significant declines in ecosystem health with the overall health of Moreton Bay declining from B- (in 2008) to D (in 2009).

In the past, significant investments in reducing point source pollution (through upgrades of wastewater treatment plants) have resulted in improvements in the ecosystem health of the estuaries and Moreton Bay, especially western Moreton Bay. However, this year any improvement in the overall health of Moreton Bay resulting from these investments has been overshadowed by the impacts of major flood events. The results of the 2009 Ecosystem Health Report Card highlight that diffuse source pollution is currently the key challenge for managing the health of South East Queensland's waterways. Thus, we must prepare our catchments for high flow rainfall events.

Greater investment in protection and restoration is required, particularly in the catchment areas that are under development pressures such as expanding urban centres and changing agricultural areas and practices. The Healthy Country project, which is a collaboration between the SEQ Healthy Waterways Partnership, SEQ Catchments, Queensland Government and the SEQ Traditional Owners Alliance, is a proof-of-concept initiative which focuses on ways to reduce non-urban diffuse source pollution entering waterways from catchments. The expansion of this initiative to other areas across South East Queensland is needed. In addition, Water Sensitive Urban Design must be implemented across new and existing urban areas to reduce diffuse source pollution entering our streams.

This year's Ecosystem Health Report Card also raises the need to understand the resilience of South East Queensland's waterways and Moreton Bay to the pressures associated with extreme rainfall events. How long will it take the waterways and Moreton Bay to recover? As climate variability increases and high rainfall events may become more common, we face an added challenge to maintain good ecosystem health for our waterways.

In 2008-2009, the catchments of South East Queensland received the highest annual average rainfall since the start of the EHMP (1999). This resulted in more flows in the freshwater streams, however, the increased rainfall also carried extremely high loads of sediment and nutrients (diffuse source pollution) from the catchments into the rivers, and then to the estuaries and Moreton Bay.

Freshwater

There was no significant change in the overall health of South East Queensland's freshwater streams from 2008 to 2009. Slight improvements in the biological health indicators (aquatic macroinvertebrates and fish) associated with increased flows from the high rainfall were offset by a decrease in the nutrient cycling indicator. This decrease in the nutrient cycling indicator reflects the overwhelming amount of diffuse source pollution entering the streams.

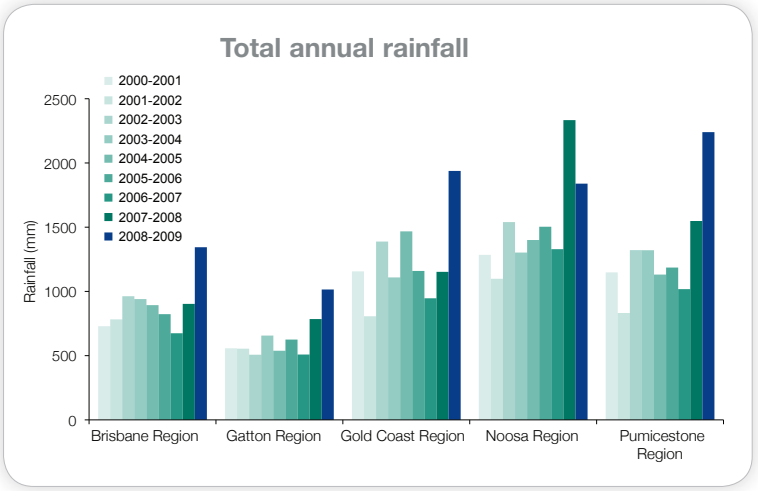
Freshwater streams in the highly urbanised catchments of Lower Brisbane, Lower Oxley, and Redland maintained F ratings. The Albert Catchment received an improved grade (B- to A-), indicating excellent water quality. Generally, more native fish species and a lower proportion of alien fish were recorded within South East Queensland's streams this year.

Estuaries

The 2009 Estuarine Report Card results have revealed an overall decline in the ecosystem health of South East Queensland's estuaries, with only the Caboolture Estuary improving slightly (F to D-). Of the remaining 17 estuaries, seven retained the same grade as the 2008 Report Card and 10 decreased in grade, with Cabbage Tree, Oxley, Bremer, Logan and Albert estuaries receiving an F. The major causes of the decline in ecosystem health were increased turbidity, nutrients and phytoplankton abundance, and decreased dissolved oxygen.

Moreton Bay

The ecosystem health of Moreton Bay was also affected by the high rainfall carrying significant loads of nutrients and sediment from the catchments. This resulted in decreased water clarity and increased phytoplankton abundance, total nitrogen and sewage-derived nitrogen and led to a significant decrease in the overall grade for Moreton Bay (B- to D). Only two of the nine reporting regions improved in grade: Pumicestone Passage (C to C+) and Eastern Banks (A- to A). The remaining seven reporting regions showed declines in ecosystem health, with Waterloo Bay showing the most significant reduction in grade (A to D+). These results emphasise the need to understand the resilience of Moreton Bay to cope with extreme pressures brought about by high rainfall events.



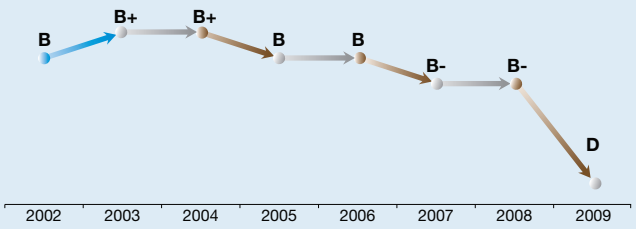
A wake-up call for SEQ waterways and Moreton Bay

Since 2000, there have been significant investments in reducing point source pollution through upgrades to wastewater treatment plants. Consequently, in spite of increasing population, there has been less sewage entering Moreton Bay. Sewage, which is the dominant nutrient input to our waterways during dry weather and drought conditions, has been effectively managed and hence Moreton Bay has previously maintained a good ecosystem health rating (ranging from B- to B+).

In 2008-2009, South East Queensland received the highest annual rainfall since the Ecosystem Health Report Card was first released in 1999. This rainfall led to increased flows which flushed and improved the conditions for some of the freshwater streams. However, the increased rainfall also carried high loads of nutrients and sediment from the catchments (diffuse source pollution). These had detrimental impacts on our waterways, in particular the receiving waters of the estuaries and Moreton Bay.

This year, Moreton Bay received the lowest ecosystem health rating (D) in over a decade, a significant decline from last year's rating (B-).

Trends in the ecosystem health of Moreton Bay



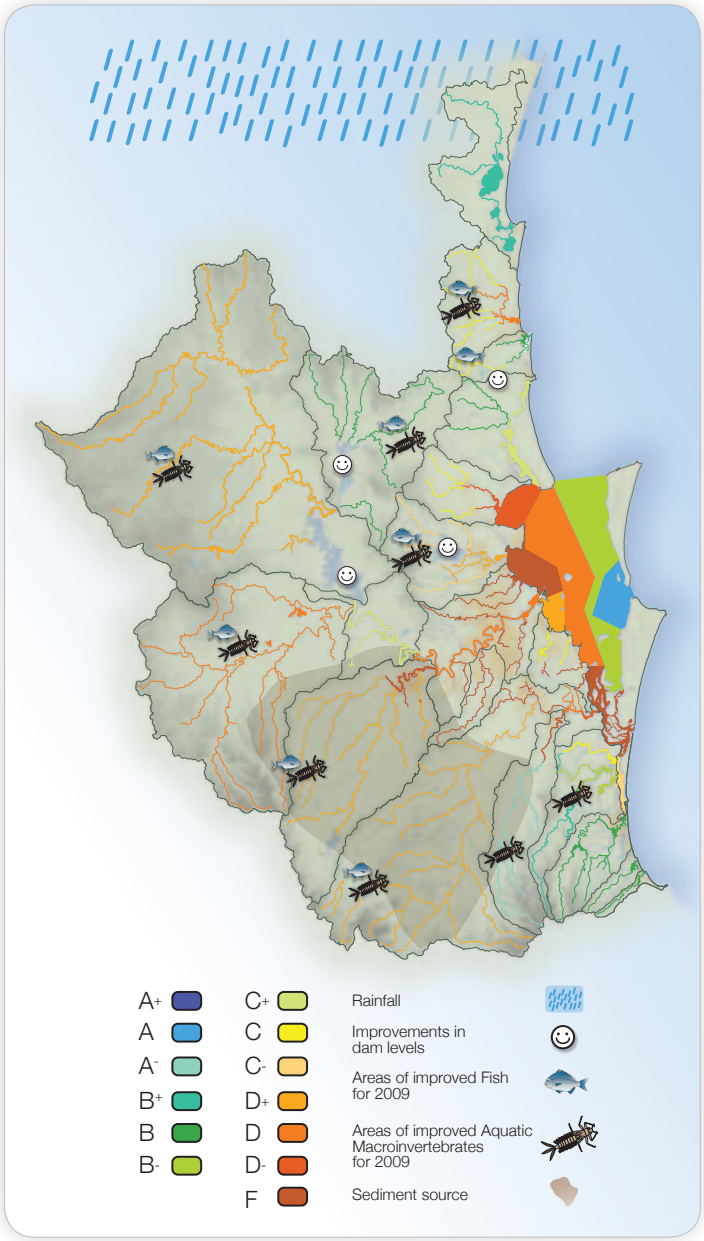
How do we improve our waterways?

We need to prepare the catchments for high flow rainfall events. Investments are required to reduce diffuse source pollution entering the waterways. This includes riparian (riverbank) restoration, channel stabilisation and Water Sensitive Urban Design. Unless significant investments occur, future improvements in the health of Moreton Bay is likely to be small and highly variable.

How resilient are our waterways and Moreton Bay?

Better riparian condition and catchment protection will ensure our waterways become more resilient. But the question is: how long will it take for our waterways and Moreton Bay to recover from the impacts of high rainfall events?

Studies have shown that it takes from 1 to 20 years for fine-grained sediments to travel from the catchments, through the waterways to Moreton Bay. If we improve the condition of riparian areas and catchments now, we will see the overall ecosystem health of South East Queensland's waterways and Moreton Bay restored within decades.



Bank erosion at Cannon Creek, SEQ Catchments

Erosion of new urban development, Sunshine Coast Regional Council

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