Report Card 2009

for the waterways and catchments of

Cobaki and Terranora Broadwaters

Ecosystem Health Monitoring

This report card shows the results of an estuary health investigation conducted by Tweed Shire Council in Cobaki and Terranora Broadwaters and their catchments. Water Quality and other estuary health indicators, for example sea grass condition, have been measured for 12 months, and the results analysed to provide a description of the overall condition of the entire system.

A healthy estuary and catchment is one which can sustain all the forms of life that would be expected in an undisturbed natural environment. Agricultural and urban development in the Cobaki and Terranora catchment and the release of treated effluent in Terranora Creek all have an impact on our estuaries' health. It is not a pristine system, but with care it can and should support a diverse range of natural life and the social and economic values on which we all depend.

This report card gives a rating between A and F for the health of the system, with data collected from a total of 43 sites in both the tidal and freshwater parts of the waterways, between November 2007 and November 2008.

Cobaki and Terranora Broadwaters, their freshwater catchments and Terranora Creek are extremely valuable natural resources. The waterways sustain a huge range of plants and animals, including rich fish nurseries, and provide enjoyment to thousands of Tweed residents and visitors.

As well as being valuable, these waterways are sensitive. Due to limited tidal flushing, their tolerance of pollution and other disturbance is very low. Despite this, the Cobaki and Terranora systems need to cope with a large range of human impacts.

In 2003 Council received a report on the health of the Tweed River, which included an assessment of the state of the Cobaki and Terranora system. This report card allows a comparison with earlier results to determine whether estuary health is getting better or worse.

The estuary health assessment has been undertaken for Council by the International WaterCentre in collaboration with Tweed Laboratory Centre and a team of experts from the Queensland Department of Natural Resources and Water, The University of Queensland and CSIRO.

INTERNATIONAL WATERCENTRE | HEALTHY WATERWAYS | THE UNIVERSITY OF QUEENSLAND AUSTRALIA | Tweed Laboratory Centre | CSIRO | Queensland Government | Gold Coast Airport

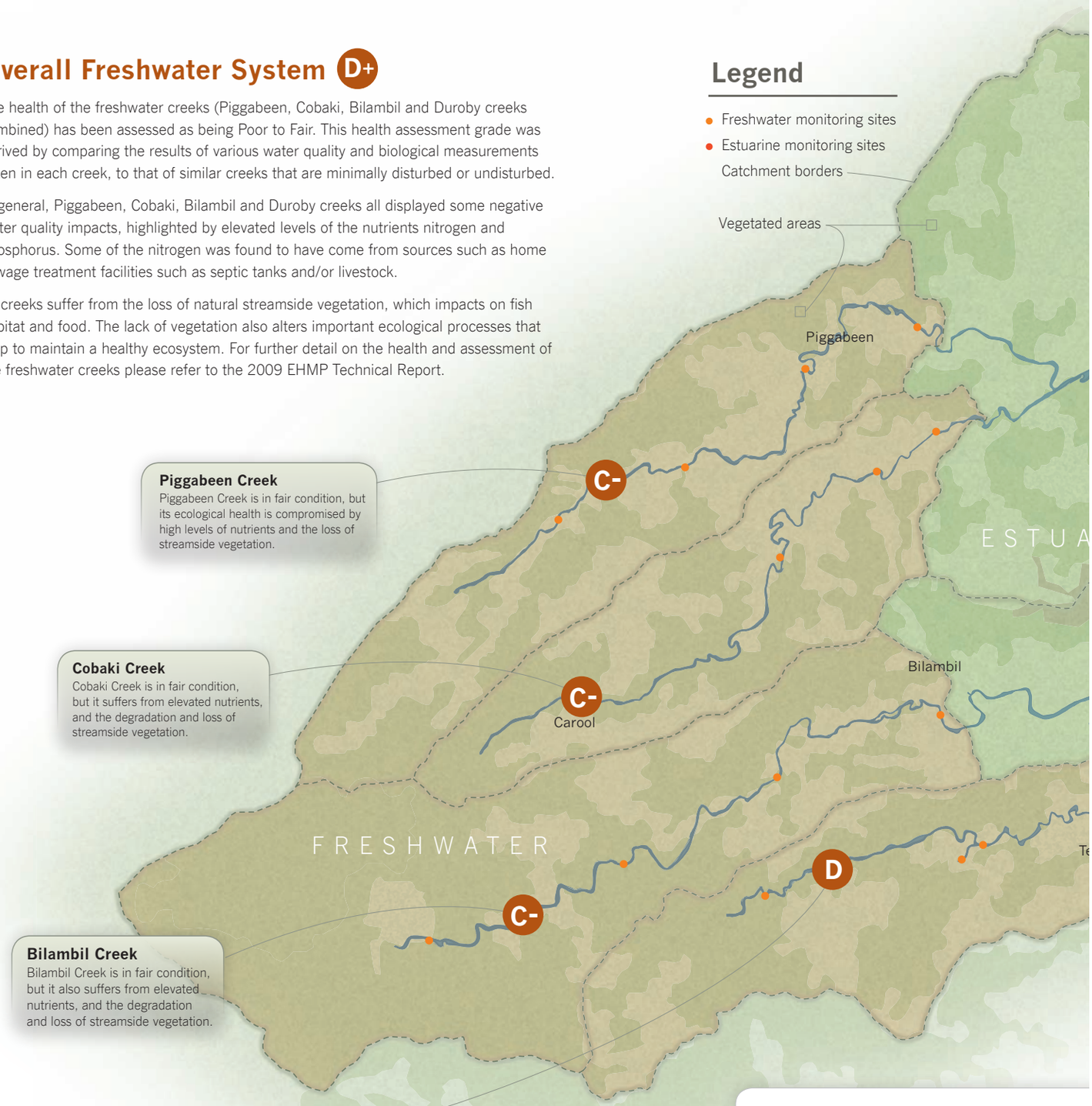
Freshwater and **Estuarine** Report Card 2009

Overall Freshwater System D+

The health of the freshwater creeks (Piggabeen, Cobaki, Bilambil and Duroby creeks combined) has been assessed as being Poor to Fair. This health assessment grade was derived by comparing the results of various water quality and biological measurements taken in each creek, to that of similar creeks that are minimally disturbed or undisturbed.

In general, Piggabeen, Cobaki, Bilambil and Duroby creeks all displayed some negative water quality impacts, highlighted by elevated levels of the nutrients nitrogen and phosphorus. Some of the nitrogen was found to have come from sources such as home sewage treatment facilities such as septic tanks and/or livestock.

All creeks suffer from the loss of natural streamside vegetation, which impacts on fish habitat and food. The lack of vegetation also alters important ecological processes that help to maintain a healthy ecosystem. For further detail on the health and assessment of the freshwater creeks please refer to the 2009 EHMP Technical Report.



Piggabeen Creek
Piggabeen Creek is in fair condition, but its ecological health is compromised by high levels of nutrients and the loss of streamside vegetation.

Cobaki Creek
Cobaki Creek is in fair condition, but it suffers from elevated nutrients, and the degradation and loss of streamside vegetation.

Bilambil Creek
Bilambil Creek is in fair condition, but it also suffers from elevated nutrients, and the degradation and loss of streamside vegetation.

Duroby Creek
Duroby Creek is in poor condition, as a result of elevated levels of nutrients, and low biological indicator scores. Duroby Creek showed the poorest health condition of all four creeks.

Fish
19 different species of native fish and two alien species were caught in the survey. 25% of the total number of fish caught were comprised of the two alien species.

DPI FISHERIES

Grades—what do they mean

Ecosystem Health Report Card Grades ('A' to 'F') are generated for each of the four freshwater streams and four major areas of the Terranora and Cobaki Estuary.

Results of ecosystem testing in both freshwater and estuary areas is compared to established guidelines, resulting in the application of a single grade for each waterway.

A **Excelle** all essent pristine c

B **Good:** C most of t present a

C **Fair:** Co in most o present a

D **Poor:** C ecosyster processe

F **Fail:** Co most ess are sever

Cobaki Broadwater
The water quality in the broadwater deteriorates during the wetter months due to sediment and nutrient inputs from the catchment. The riparian vegetation is in good to very good condition.
2001 RATING: **C**

Terranora Creek
Water quality within Terranora Creek is influenced by the two broadwaters and tends to improve with distance towards the Tweed River mouth.
Wastewater discharges into the creek don't appear to have influenced the results of monthly water quality monitoring. However, the presence of sewage related nitrogen has been mapped and occurs along the entire length of the creek. The riparian vegetation has been assessed as fair to good condition.
2001 RATING: **C to B-**

Tweed River Mouth
Water quality within the estuary mouth is good to excellent due to the high level of ocean exchange. The riparian condition is poor due to development along much of the river banks.
2001 RATING: **B+**

Terranora Broadwater
The water quality in the broadwater deteriorates during the wetter months due to sediment and nutrient inputs from the catchment. Water quality improves with distance away from the two creeks. The riparian vegetation is in good to very good condition.
2001 RATING: **C**

Seagrass
Although seagrass meadows appear healthy and stable, recent survey results may indicate a slight decline in the depths with which they occur. Further monitoring is needed to confirm these results.

CHRIS ROELFSEMA, MARINE BOTANY, UQ

Overall Estuarine System C

The ecological condition of the Cobaki-Terranora estuary has been assessed as being fair. This assessment was derived from a combination of 12 months of water quality sampling, and a range of biological assessments.

In 2001, the Terranora inlet and Cobaki and Terranora broadwaters were reported as being in fair to good health, with a report card rating of C to B-. Although the 2001 and 2008 assessments were similar in approach, the two differed considerably in terms of the area covered and the length of time for which they were monitored. Direct comparisons between the two monitoring events are therefore difficult, however, the similar report card results do suggest that the health of the estuary has remained relatively unchanged with no significant improvements apparent.

In general, the water quality within the estuary tends to improve with distance towards the river mouth. This trend is likely to be associated with the increase in flushing that occurs closer to the Tweed River mouth. Water quality also tends to improve during the drier winter months compared with the wetter summer months. This wet-dry difference suggests that the water quality within the estuary is significantly affected by run-off from the catchment.

The biological assessment of the estuary has identified the two broadwaters as having good riparian condition. Generally, the riparian condition tends to decline with distance up-steam and downstream from each of the two broadwaters. Other biological indicators such as sea grass depth range and sewage plume mapping show similar results to previous assessments. For further detail on the health and assessment of the estuary please refer to the 2009 EHMP Technical Report.

ean?

xcellent: Conditions meet all characteristics of a healthy ecosystem; essential ecological processes are present and habitats are in near-istine condition.

ood: Conditions meet all characteristics of a healthy ecosystem in ost of the reporting region; most essential ecological processes are esent and most habitats are intact.

air: Conditions meet some of the characteristics of a healthy ecosystem most of the reporting region; some essential ecological processes are esent and some habitats are impacted.

oor: Conditions are unlikely to meet the characteristics of a healthy cosystem in most of the reporting region; many essential ecological ocesses are not present and many habitats are impacted.

ail: Conditions do not meet the characteristics of a healthy ecosystem; ost essential ecological processes are not present and most habitats e severely impacted.

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Key Messages from the 2009 Report Card

This ecosystem health investigation and report card shows that the aquatic environment of Cobaki and Terranora Broadwaters and their catchments are not in good shape. A concerted effort from Government and the Community is required to prevent these waterways from becoming terminally ill. Ecosystem response modelling undertaken through the Cobaki and Terranora Broadwater Catchment Management Plan shows just what is needed to halt and reverse this loss of ecological health.

The health of the Cobaki and Terranora Broadwaters is directly affected by land use and management of waterways in the rural areas upstream of Bilambil and Piggabeen. A major priority for Cobaki and Terranora Broadwaters is to improve cattle management in rural areas, particularly adjacent to creeks. Key targets and actions are as follows:

Terranora Broadwater and Terranora Creek Targets and Actions

1. Reduce nutrient discharge from the Banora Point Stormwater Drainage Scheme.
2. Prevent an increase in nutrient runoff from all new urban development. We must also identify sites to install stormwater quality improvement devices in existing urban areas and encourage all residents to improve their own stormwater management in urban areas.
3. Reduce nutrient concentrations in Duroby and Bilambil Creeks. The most important areas of Bilambil and Duroby Creeks to rehabilitate/ revegetate are the estuarine and mid-zones.

Cobaki Broadwater Targets and Actions

1. Reduce nutrient load exported from the rural catchment. A priority action is to rehabilitate Piggabeen and Cobaki Creeks in the mid and estuarine zones.
2. There must be no net increase in the runoff of nutrients from new developments.

UQ, VISION AND REMOTE SENSING

Seagrass, mangroves and salt marsh at Ukerebagh Island, Terranora Creek.

Key Actions for all Rural Areas

1. Restrict stock access to creeks and encourage off-stream watering.
2. Fence and rehabilitate ephemeral gullies.
3. Inspect and improve septic and on-site sewage treatment systems.
4. Undertake a more detailed investigation of nutrient runoff hotspots to identify precise rehabilitation actions for each part of the catchment.

Bilambil Creek

Mt Warning and sugar cane fields

LEFT: UQ, CRM RIGHT: TSC

What if we don't act?

If the total load of nutrients, particularly Nitrogen is not reduced, then it is likely that we will see a continuing gradual decline in the health of our waterways. This could mean increased algae blooms and the loss of seagrass beds which are vital to a healthy ecosystem.

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