

Brisbane river



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The Brisbane River has flowed for over 400 million years. The catchment of the Brisbane River has overcome phases of flood and drought while its origins altered as the surrounding land changed overtime.

In 1823, John Oxley entered the river for the first time. At the time the river appeared clean and unpolluted. Oxley immediately recognised the rivers potential as a site for new settlement, through his recommendation the city of Brisbane was established in 1825. The Brisbane River extends inland for 300km reaching its source at the foothills of the Great Dividing Range. The rivers catchment occupies an area of approximately 30, 000km² and releases its waters into Moreton Bay. The once pristine waters were used as a source of drinking water and recreational purposes. Industries saw the river as a cheap and efficient source for waste discharge. Before road links were established with Sydney the river held the only form of transport including trade. The Brisbane River was and still is the cities most valuable asset for both recreational, relaxational and transportational purposes.

Throughout the past century the Brisbane River has been over used and polluted. The river basin has provided fertile agricultural and grazing lands, and suitable catchment sites for damming purposes. The advantages the river presented were carelessly exploited, to an extent self reparation seemed impossible. Today, the Brisbane River has experience substancial modification to satisfy the requirements of the increasing population.

Through extensive public awarness promotions the river gained political support in the form of anti-polution acts. The responsibility of water quality control in the Brisbane now rests in the hands of the Queensland Parliament which passed two acts designed to protect the river from pollutants. These

include: the Pollution of Waters by Oil Act of 1973 and the Clean Waters Act of 1971.

Through increasing public awareness and involvement the water quality the river is steadily improving, however, its pollution levels still exceed safe levels. One must remember that the river supports approximately 2 million people with industry and transport heavily reliant on its waters, therefore, certain levels of pollution are understandable.

The ultimate purpose of this report is to analyse the condition of Brisbane River water in 2001. Through testing of river water in different collection locations a statement can be made concerning the overall health of the river. From the results collected recommendations can be made to reduce pollution and erosion levels along the river. Throughout the collection period for different locations were visited where water samples were collected from each. The sites included:

The water from the locations stated was tested for temperature, dissolved oxygen content, pH, turbidity, suspended and dissolved solids, sulphates, chlorides, nitrates, phosphates, aluminium ions, zinc ions, lead ions, manganese ions, detergents, colour, odour, conductivity, surrounding animal of plant life and land use.

2. OCURRENT STATE OF THE BRISBANE RIVER

The Brisbane River has seen substantial modification during the past 150 years of European occupation. The river has supported waves of exploration, grazing, land clearing, agriculture, settlement and current urbanisation which requires water storage for drinking purposes and flood mitigation; dredging construction materials, shipping channels and flood prevention.

Sand extraction through dredging has dominated history along the river, proving extremely important to local construction industries. Between the years 1900 and 1970 an estimated 12 million cubic metres were removed. Extraction of sand reached its peak in the mid 1970s at around 1.45 million cubic metres of sand per year. Annual production was decreased to 1 million cubic metres and later ceased in 1996-7. Extraction primarily took place between Mt Crosby Weir and Milton with small operations between Milton and East Brisbane. The Port of Brisbane is now responsible for maintenance dredging of the lower reaches to maintain a deep channel for cargo vessels. The extensive dredging operations over the years has significantly deepened the river causing river bank instability.

The banks of the river have serviced a foundation for city growth. The reaches of the river between Wivenhoe and Mt Crosby Weir are most aesthetically pleasing with a rural atmosphere and green vegetation. Between Mt Crosby and Jindalee the river widens flowing through rural and residential areas, human interference is evident. From Jindalee to the Botanical Gardens human occupation and urban development is obvious with high rise building lines on the banks of St Lucia and Toowong. Strong urban development is particularly evident throughout the city and south bank reach. As the river continues towards Pinkenba industrial and commercial areas dominate. (fig1). From the Murarrie to the mouth the river becomes a mangrove lined estuary dominated by commercial shipping activity. A distinct industrial character dominates the area with the hustle and bustle of a major port.

The speed of the river is generally determined by season. The river exhibiting maximum flow in summer with its characteristic high rainfall

levels, and minimum flow in Winter where rainfall is generally minimal. Due to the slow water flow accumulation of pollutants and general deterioration of water quality can occur. However, the release of water from storage dams upstream can eliminate this accumulation. Somerset and Wivenhoe dams release set amounts of water to satisfy Brisbanes water needs. Wivenhoe allows for a more even flow of water throughout the year, improving the general water quality of the River. Wivenhoe is also used as a flood prevention mechanism to reduce water flow from the Range.

Concentrated large-scale drainage points where discharge from operations such as waste water, treatment plants and industry comprise major sources of pollutants in the river. At the present time sewage discharge is mainly treated to a secondary standard with a small proportion only to a primary standard. The sewage discharges not only contribute substantially to the nutrient load and demand for oxygen in the water but also to the toxicant load. This leads to the contamination of fish and other marine organisms by such substances. Sewage discharges in the Brisbane area are commonly chlorinated imposing a negative impact on the river. The most apparent discharges are those situated around the highly industrialised portion of the river. Brisbane City has two major waste water treatment plants, including: Luggage Point on the northside and Gibson Island on the southside, both of which situated in this heavily industrialized section. Additionally, two oil refineries- BP at Bulwer Island and Caltex at Lytton discharge streams from potentially contaminated sites into the river. Discharges into the river such as run-off from urban and industrial land and from upstream parts of the catchment can discharge significant quantities of toxic pollutants (eg pesticides) into the river. Accidents occur relatively infrequently but can

have a major impact when they do occur. Spills of insecticides, petroleum and other substances occur periodically in the city, often resulting in severe contamination of the river, leading to extensive fish kills. On the 27th of April, 1998 a 230m tanker " Barrington" that was docked at the AMPOL Refined Products berth at White Island, near Fishermans Islands in Brisbane was hit by a local Tugboat named Austral Salvor. The accident caused 8 tonnes of heavy fuel oil to be spilled into the Brisbane River (fig2).

To recommend possible improvements towards the safe management of the Brisbane River one must acquire a degree of knowledge concerning the current quality of the water. The following tests were conducted on water samples at each of the four sample locations.

Tested conducted in school laboratory:

(figure 3 Specific site location for Pinkenba)

As figure 3 represents, the location of the Pinkenba site is in close proximity with the mouth of the river and entrance to Moreton bay. The site is engulfed in the typical characteristics of a jubilant industrial trade ground. From the Pinkenba site the Caltex and BP oil refineries are visible, the Incitec fertiliser plant is also in close proximity. Industrial locations line the banks of this particular site. Evidence of flora or fauna were minimal. (figure 4. Diagram of land use surrounding the Pinkenba site)

(figure 5 Specific sample site location Story Bridge)

As figure five represents, the location of the Story Bridge site is situated in the Central Business District of Brisbane and 23 kilometres from the mouth of the Brisbane River and entrance to Moreton Bay. The featured site displays the typical characteristics of that of a CBD district. The site is

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located directly under the Story Bridge on the southern side of the river. The land use is predominantly residential development both houses and high rises in nature. Across the river from the testing site is the CBD where building sites and storm water drains predominate. Ferries and Citycats often passed the site while testing was performed. The parkland surrounding the site provided a backdrop of lush, green vegetation, lined with numerous trees and shrubs. This parkland provided a habitat for bird and animal life. Pollution output around the site appeared to be limited to the carelessly strewn litter from other students, however, the presence of sewage outlets under the bank could not be identified.

(figure 6 Photo of land use around the Story Bridge site)

(figure 7 Specific sample site location for Fig Tree Pocket)

As figure 7 suggests Fig Tree Pocket is located on the western side of the city and measured approximately 45 km from the mouth of the river and entrance to Moreton Bay. The site is in a predominantly semi residential semi rural location. The site of testing was situated in Mandalay Park, where residential land use predominated. On the other side of the river a more semi rural impression was given with the occasional house amongst dense green foliage. The site appeared reasonably clean with no apparent signs of waste products entering the river. The site was aesthetically pleasing with a variety of trees and lush grass.

(figure 8 Photo of site and surrounding land at Fig Tree Pocket)

(figure 8 Specific sample site location for Mt Crosby Weir)

As figure 8 suggest Mt Crosby Weir is located on the western side of the city measuring approximately 80 km from the mouth of the river and entrance to Moreton Bay. The site is surrounded by all the characteristics classical of a

rural environment. The site is based directly below the Mt Crosby Weir. The site is completely surrounded by lush vegetation with the only exception that of the council pumping station. The site is dominated by native trees and shrubs, wildlife is prolific. No signs of waste production was observed as the site receives minimal human interference.

(figure 9 Photo of land use surrounding the Mt Crosby Weir)

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