

## Clarence Valley Council

**Ocean beaches:** Minnie Water Harbour. **Estuarine beaches:** Iluka Bay, Whiting Beach, Woolli Estuary North, Woolli Estuary South. **Lagoons:** Kolara Lake. **Riverine swimming sites:** Maclean Jetty, Ulmarra Jetty, Corcoran Park, Grafton Sailing Club, Prince St.



## **Local government area description**

Clarence Valley Council was created in February 2004 from the merger of Copmanhurst, Grafton, Maclean and Pristine Waters councils.

The council extends from the temperate New England Plateau to the rugged Gibraltar Ranges, through rural lands and river plains to 80 kilometres of coastline. The council area covers 11 000 square kilometres and has a total population of approximately 49 000.

Clarence Valley Council is the largest local government area in the northern rivers region, covering 51% of the land area. The region has significant agricultural areas as well as extensive areas of National Parks and State Forests.

The Clarence River is the area's most significant natural feature, stretching over 400 kilometres from the Queensland border to Yamba (Clarence Valley Council, 2004).

## **Program outline**

Eleven swimming locations were monitored in the Clarence Valley council area during summer 2005–2006. The sites were an ocean beach, a coastal lagoon, four estuarine swimming locations (two at the mouth of the Clarence River and two at the mouth of the Woolli Woolli River) and five locations in the Clarence River.

These 11 locations were also monitored during the 2004–2005 summer season and the results were reported in the State of the Beaches report for that year (Department of Environment and Conservation 2006). Monitoring was also undertaken during the 2003–2004 summer swimming season and the 2002–2003 summer swimming season. The results were reported in the BPPP State of the Beaches reports for these years (Department of Environment and Conservation 2004b and 2004c).

Enterococci samples were collected between November 2005 and March 2006 to assess compliance with NHMRC (1990) swimming water quality guidelines. It should be noted that the five samples necessary to calculate compliance were not collected in all months. Where only four samples were

collected, the closest sample in time from an adjacent month was 'borrowed' in order to provide the five data points required.

Compliance was not calculated for December 2005 as there were insufficient samples at all sites. At Minnie Water Main Beach, Woolli Estuary North and Woolli Estuary South, there were also insufficient samples to calculate compliance in March 2006.

## **Rainfall**

Rainfall data presented in the timeseries plots were obtained from the Bureau of Meteorology's gauges at Grafton Olympic Pool, Yamba and Woolli Beach. Rainfall for each site is from the closest rain gauge.

## **Ocean beaches**

### ***Guideline compliance***

Minnie Water Main Beach complied with the NHMRC (1990) swimming water quality guidelines in November 2005, January 2006 and February 2006, the three months in which sufficient samples were collected (Figure 3).

This site was also monitored during summer 2002–2003 and summer 2003–2004, and consistently complied with the NHMRC (1990) swimming water quality guidelines at these times (Department of Environment and Conservation 2004b and 2004c).

### ***Response to rainfall***

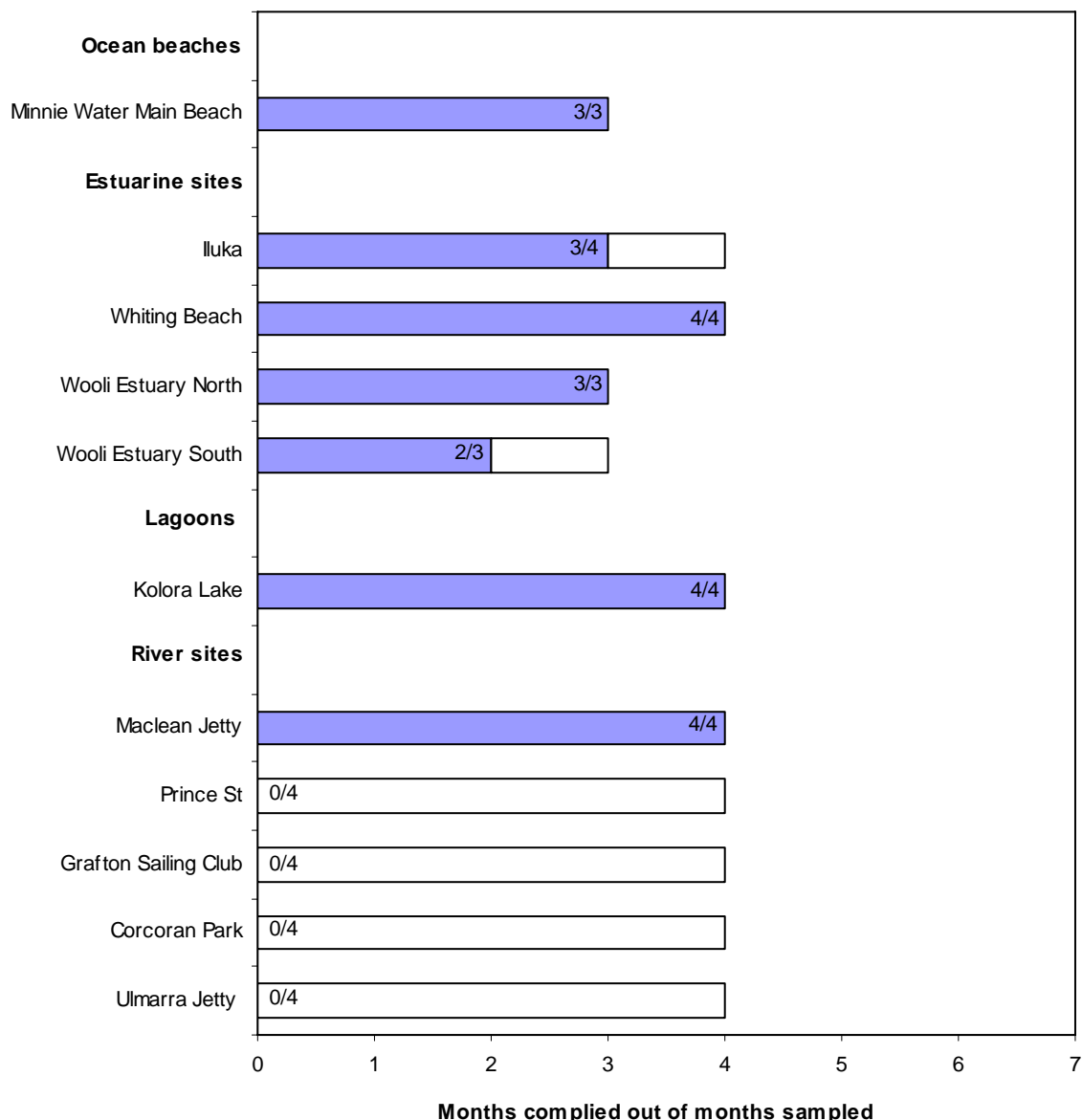
Water quality at Minnie Water Main Beach showed little response to rainfall, with generally low enterococci levels measured at the site. Slightly elevated levels were measured on several occasions, not in response to rainfall.

## **Clarence River**

### ***Guideline compliance***

Seven locations were monitored in the Clarence River: two estuarine swimming sites (Whiting Beach and Iluka Bay) and five riverine swimming sites (Maclean Jetty, Prince Street, Grafton Sailing Club, Corcoran Park and Ulmarra Jetty).

**Figure 3: Summary of compliance with NHMRC (1990) microbiological guidelines for swimming at Clarence Valley Council swimming sites during the 2005–2006 summer swimming season**



A high level of compliance was recorded at Whiting Beach, which complied in all four months in which sufficient samples were collected (Figure 3). Similarly high levels of compliance were also recorded at Whiting Beach in previous summer seasons (Department of Environment and Conservation 2004b, 2004c and 2006).

A relatively high level of compliance was also recorded at Iluka Bay, which complied in three of the four months in which sufficient samples were collected. This is a significant improvement on the results from the previous summer season, when the site

complied in only one of the four months (Department of Environment and Conservation 2006). Iluka Bay was suitable for swimming in all six months of the 2003–2004 summer swimming season and in six of the seven months of the 2002–2003 summer swimming season (Department of Environment and Conservation 2004b and 2004c).

Maclean Jetty, located further upstream on the Clarence River near the town of Maclean, complied with the NHMRC (1990) swimming guidelines in all four months in which sufficient samples were collected. Again, this is an improvement on the results

from the previous summer season, when the site failed in two of the four months (Department of Environment and Conservation 2006). Higher levels of compliance were recorded during monitoring conducted over the 2002–2003 and 2003–2004 summer seasons (Department of Environment and Conservation 2004b and 2004c).

Ulmarra Jetty is located upstream of Maclean at the town of Ulmarra. The site failed the NHMRC (1990) swimming guidelines in all four months in which sufficient samples were collected. In the previous summer season the site complied in all months (Department of Environment and Conservation 2006).

Compliance levels at Prince Street, Grafton Sailing Club and Corcoran Park, were also very low. All three sites failed the NHMRC (1990) swimming guidelines in all four months (Figure 3).

Clarence Valley Council will be erecting warning signs at sites with low compliance and will undertake further monitoring to investigate the pollution source at these locations.

#### ***Response to rainfall***

Previous monitoring conducted at Maclean Jetty and Iluka Bay has indicated that water quality at these two sites may be unsuitable for swimming for up to two days following heavy rainfall (Department of Environment and Conservation 2004b).

During the 2005–2006 summer swimming season, elevated enterococci levels were recorded at Prince Street, Grafton Sailing Club, Ulmarra Jetty and Corcoran Park in both dry and wet weather conditions.

## **Wooli Wooli River Estuary**

#### ***Guideline compliance***

Two locations were monitored in the Wooli Wooli River estuary. Sufficient samples to calculate compliance were collected in November 2005, January 2006 and February 2006. Wooli Estuary North was suitable for swimming in all three months, and Wooli Estuary South was suitable in two of the three months. The site failed the swimming guidelines in November 2005 owing to slightly elevated levels of enterococci (Figure 3).

During summer 2004–2005, both sites complied in all three months (Department of Environment and Conservation 2006).

#### ***Response to rainfall***

Enterococci levels remained generally low over the monitoring period, with slightly elevated levels measured on several occasions in response to rainfall.

## **Kolora Lake**

#### ***Guideline compliance***

Kolora Lake, located between the town of Yamba and the Clarence River, complied with the swimming water quality guidelines in the four months of the 2005–2006 summer swimming season in which samples were collected (Figure 3).

#### ***Response to rainfall***

Elevated enterococci levels were measured on several occasions during summer 2005–2006 in response to heavy rainfall.

Sampling conducted at the site during wet weather events in May and June 2003 indicated that water quality in the Lake may be unsuitable for swimming for up to two days following heavy rainfall (Department of Environment and Conservation 2004b).

## Minnie Water Main Beach

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### Description

Minnie Water Main Beach is approximately 1.5 kilometres long and located at the village of Minnie Water. The swimming area is located at the northern end and is backed by a small reserve with a shop and amenities. Four-wheel drives and dogs are permitted on the beach, and a boat ramp is located towards the southern end of the beach. The beach is used extensively in summer and is particularly popular with families and young children.



### Pollution sources

Leachate from the onsite wastewater management systems in the village of Minnie Water is a potential source of pollution. Leachate from the public toilet behind the beach was previously found to be a problem, but has now been diverted away from the beach. A small creek discharges runoff from the residential area and surrounding National Park near the sampling area.

### Compliance

Minnie Water Main Beach was monitored between November 2005 and March 2006. Levels of enterococci complied with NHMRC (1990) swimming guidelines in the three months when sufficient samples were collected.

#### Compliance with NHMRC (1990) swimming guidelines at Minnie Water Main Beach

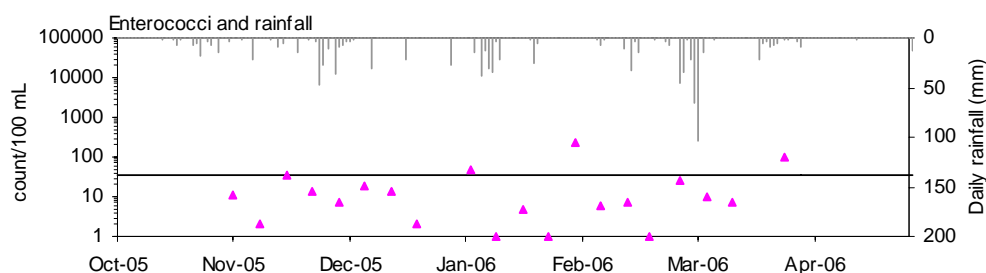
	NOV '05	DEC '05**	JAN '06	FEB '06*	MAR '06**
ENT	PASS	-	PASS	PASS	-

\* Only four samples were collected in this month. An additional data point was borrowed from an adjacent month to calculate compliance.

\*\* Insufficient samples to calculate compliance were collected in this month.

### Timeseries plots

Slightly elevated levels of enterococci were measured on several occasions, but the majority of results were below the geometric mean guideline level.



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# Iluka Bay

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## Description

The swimming area is a netted enclosure protected by a sea wall at the northern end of Iluka Bay. It is very popular during holiday periods and important to local tourism. The area is backed by a commercial area, caravan park and public toilets. There is also significant bird life and boat use within the Bay.

## Pollution sources

Stormwater from the commercial and urban areas is discharged to the swimming area in wet weather. Litter and other gross pollutants are commonly observed in the discharge. Overflows from septic tanks in the caravan park and public toilets are further potential sources of contamination. Effluent from boats and faecal deposits from domestic animals and wild birdlife may also be pollutants at this site.



## Compliance

Iluka Bay was monitored between November 2005 and March 2006 and complied with NHMRC (1990) swimming guidelines in three of the four months. The site failed in March 2006 owing to elevated levels of enterococci.

### Compliance with NHMRC (1990) swimming guidelines at Iluka Bay

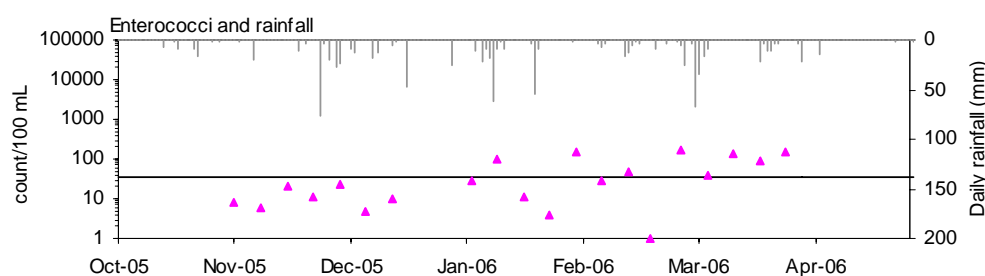
	NOV '05	DEC '05**	JAN '06	FEB '06*	MAR '06*
ENT	PASS	-	PASS	PASS	FAIL

\* Only four samples were collected in this month. An additional data point was borrowed from an adjacent month to calculate compliance.

\*\* Insufficient samples to calculate compliance were collected in this month.

## Timeseries plots

Levels of enterococci that exceeded the geometric mean guideline limit were measured on several occasions during the second half of the monitoring period, in both dry and wet weather conditions.



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## Whiting Beach

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### Description

Whiting Beach is a calm-water swimming area situated on a short peninsula behind the seawalls at the mouth of the Clarence River. The beach is backed by the town of Yamba. The beach is important to tourism and the local economy.



### Pollution sources

Urban and commercial stormwater from the town of Yamba is discharged into the Clarence River on the other side of a short peninsula. Droppings from domestic animals and wild birdlife are potential sources of faecal contamination at the location. Upstream, rural land use and boating in the river may also contribute to pollution at the site.

### Compliance

Whiting Beach was monitored between November 2005 and March 2006 and complied with NHMRC (1990) swimming guidelines in all four months.

#### Compliance with NHMRC (1990) swimming guidelines at Whiting Beach

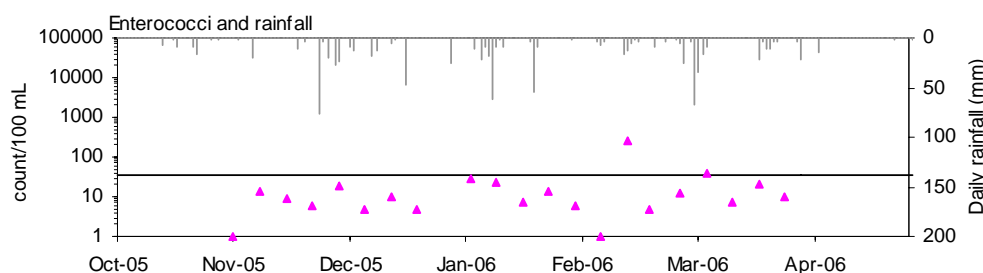
	NOV '05	DEC '05**	JAN '06	FEB '06*	MAR '06*
ENT	PASS	-	PASS	PASS	PASS

\* Only four samples were collected in this month. An additional data point was borrowed from an adjacent month to calculate compliance.

\*\* Insufficient samples to calculate compliance were collected in this month.

### Timeseries plots

Levels of enterococci remained generally low over the monitoring period, exceeding the geometric mean guideline limit on one occasion in mid February 2006.



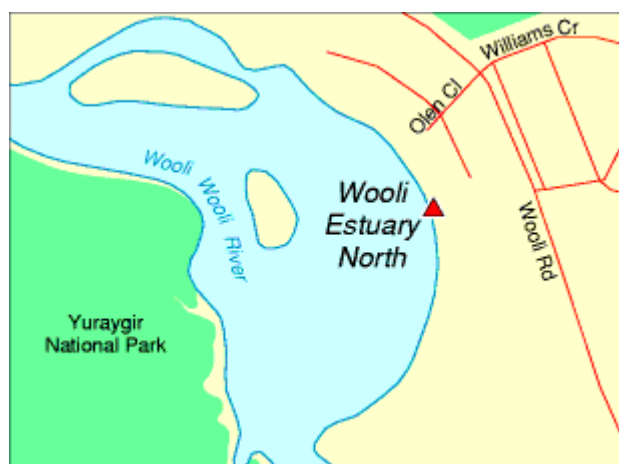
See page 4 for key to graph

# Wooli Estuary North

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## Description

The sampling location is a shallow sandy area, approximately four kilometres upstream from the mouth of the Wooli Wooli River and approximately two kilometres north of Wooli town. The area is tidal and well flushed, and is a popular location in summer, as it provides protected swimming waters suitable for children.



## Pollution sources

Leachate from the septic systems of dwellings near the sampling site or in Wooli may affect the water quality at times.

## Compliance

Wooli Estuary North was monitored between November 2005 and March 2006. Levels of enterococci complied with NHMRC (1990) swimming guidelines in the three months where sufficient samples were collected.

### Compliance with NHMRC (1990) swimming guidelines at Wooli Estuary North

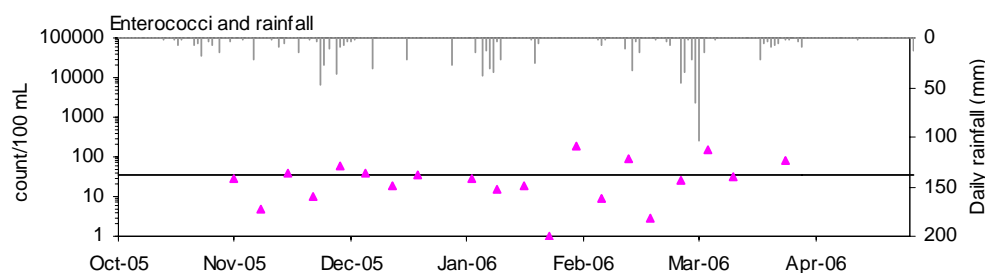
	NOV '05	DEC '05**	JAN '06	FEB '06*	MAR '06**
ENT	PASS	-	PASS	PASS	-

\* Only four samples were collected in this month. An additional data point was borrowed from an adjacent month to calculate compliance.

\*\* Insufficient samples to calculate compliance were collected in this month.

## Timeseries plots

Levels of enterococci generally remained below the geometric mean guideline during the monitoring period, with slightly elevated levels measured on several occasions in February and March 2006.



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## Wooli Estuary South

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### Description

The sampling location is a shallow, sandy estuary area near the mouth of the Wooli Wooli River, approximately two kilometres south of Wooli town. The river is open to the ocean and receives good tidal flushing. This area is a popular location in summer, as it provides protected swimming waters suitable for children.

### Pollution sources

Leachate from camp toilets or the caravan park in Wooli may affect water quality at the site at times.

### Compliance

Wooli Estuary South was monitored between November 2005 and March 2006. Levels of enterococci complied with NHMRC (1990) swimming guidelines in two of the three months in which sufficient samples were collected. The site failed the swimming guidelines in November 2005.



### Compliance with NHMRC (1990) swimming guidelines at Wooli Estuary South

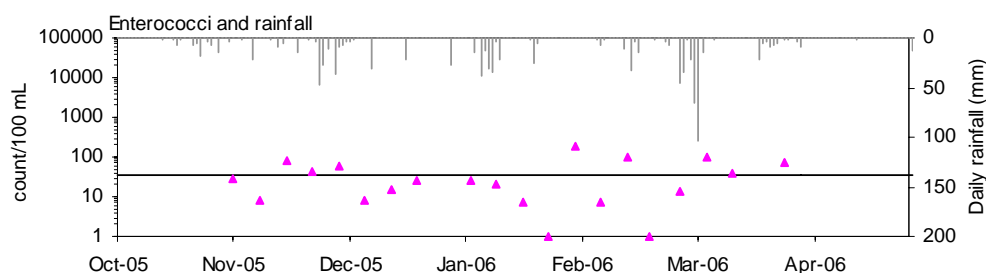
	NOV '05	DEC '05**	JAN '06	FEB '06*	MAR '06**
ENT	FAIL	-	PASS	PASS	-

\* Only four samples were collected in this month. An additional data point was borrowed from an adjacent month to calculate compliance.

\*\* Insufficient samples to calculate compliance were collected in this month.

### Timeseries plots

Levels of enterococci exceeded the geometric mean guideline on several occasions during the monitoring period, generally in response to rainfall.



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## Kolora Lake

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### Description

Kolora Lake is situated between the town of Yamba and the Clarence River and is bordered on two sides by urban and commercial development. It is a popular swimming location, particularly in the holiday season, and is of major importance to the local community.

### Pollution sources

Stormwater containing nutrients and faecal contamination from the surrounding urban and commercial areas is discharged to the lake. Sediment eroded from these areas is a further potential pollutant.

### Compliance

Kolora Lake was monitored between November 2005 and March 2006, and levels of enterococci complied with NHMRC (1990) swimming guidelines in all four months in which sufficient samples were collected.



#### Compliance with NHMRC (1990) swimming guidelines at Kolora Lake

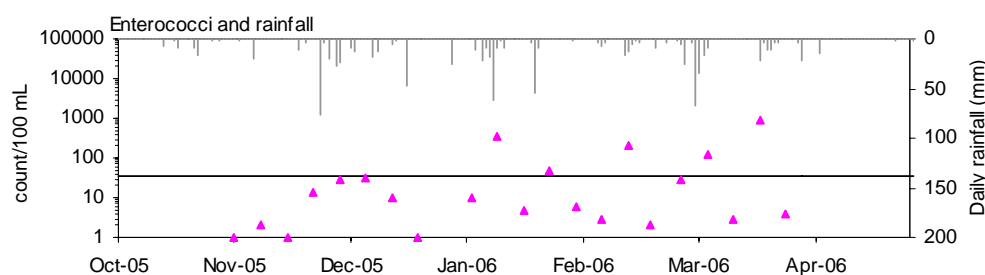
	NOV '05	DEC '05**	JAN '06	FEB '06*	MAR '06*
ENT	PASS	-	PASS	PASS	PASS

\* Only four samples were collected in this month. An additional data point was borrowed from an adjacent month to calculate compliance.

\*\* Insufficient samples to calculate compliance were collected in this month.

### Timeseries plots

Levels of enterococci exceeded the geometric mean guidelines level on several occasions during the monitoring period, generally in response to rainfall.



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## Maclean Jetty

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**Description** Maclean Jetty is situated in the Clarence River and backed by the town of Maclean. The sampling area is immediately downstream of the South Arm tributary. The location is a prominent recreational area, frequently used for fishing and visited by tourists.

**Pollution sources** Pollution sources at this site include run-off from the urban area and agricultural land that may contain nutrients, toxicants, oils and faecal contamination. Urban stormwater from the town is controlled with a gross pollutant trap. Two sewage treatment plants discharge treated effluent upstream and downstream of the site.

**Compliance** Maclean Jetty was monitored between November 2005 and March 2006, and levels of enterococci complied with NHMRC (1990) swimming guidelines in all four months in which sufficient samples were collected.



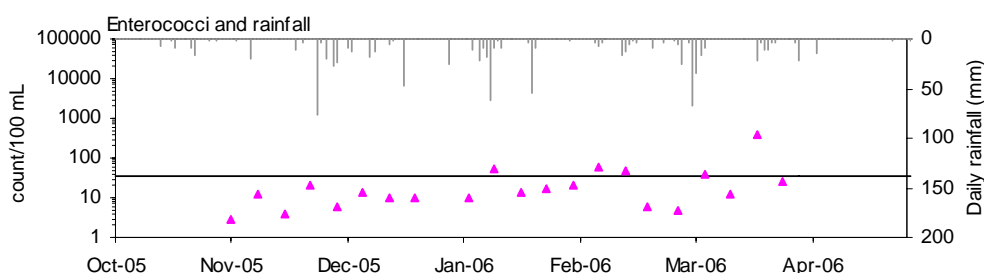
### Compliance with NHMRC (1990) swimming guidelines at Maclean Jetty

	NOV '05	DEC '05**	JAN '06	FEB '06*	MAR '06*
ENT	PASS	-	PASS	PASS	PASS

\* Only four samples were collected in this month. An additional data point was borrowed from an adjacent month to calculate compliance.

\*\* Insufficient samples to calculate compliance were collected in this month.

**Timeseries plots** Levels of enterococci were generally below the geometric mean guideline level, with slightly elevated levels recorded on several occasions in the latter half of the monitoring period.



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# Ulmarra Jetty

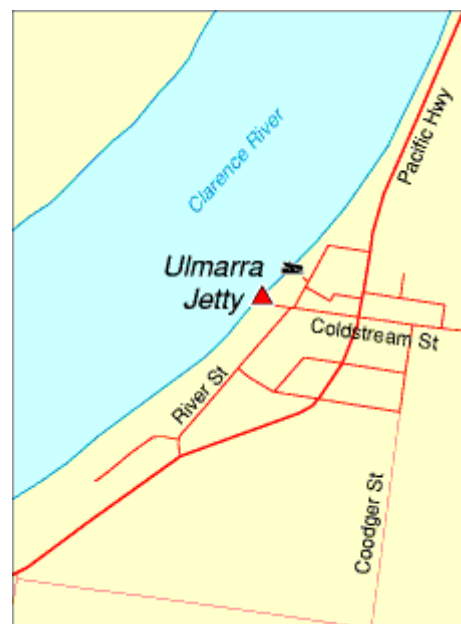
See page 22 for key to map

## Description

The sampling site is on the south bank of the Clarence River at the jetty in the centre of Ulmarra, approximately 40 kilometres from the ocean. This site is not a popular swimming location but is popular for recreational boating, with houseboat charters in the area.

## Pollution sources

The Clarence River extends for over 200 kilometres upstream from this location and the catchment (22,000 square kilometres) includes a broad combination of land uses, ranging from intensive primary industry to wilderness bushland. The township of Ulmarra and surrounds is criss-crossed by stormwater channels that can discharge effluent of poor quality to this area in heavy rainfall, and failure of septic systems may occur at times.



## Compliance

Ulmarra Jetty was monitored between November 2005 and March 2006. Levels of enterococci failed the NHMRC (1990) swimming guidelines in all four months in which sufficient samples were collected.

### Compliance with NHMRC (1990) swimming guidelines at Ulmarra Jetty

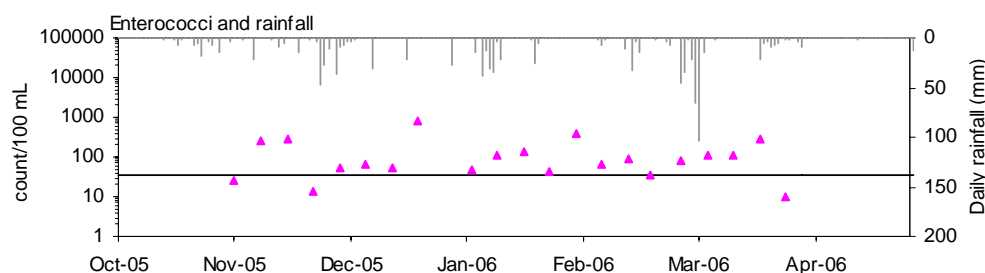
	NOV '05	DEC '05**	JAN '06	FEB '06*	MAR '06*
ENT	FAIL	-	FAIL	FAIL	FAIL

\* Only four samples were collected in this month. An additional data point was borrowed from an adjacent month to calculate compliance.

\*\* Insufficient samples to calculate compliance were collected in this month.

## Timeseries plots

Levels of enterococci exceeded the geometric mean guideline value for most of the monitoring period.



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## Prince Street

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### Description

The sampling site is located on the northern shore of the Clarence River and is backed by the city of Grafton. The site is approximately 55 kilometres upstream of the ocean. A jetty and boat ramp are located at the site and provide an entry point for swimming. A public reserve and a park are nearby.



### Pollution sources

Several stormwater drains discharge in the immediate vicinity of the site. The site may also be affected by agricultural runoff from within the catchment (an area of approximately 22,000 square kilometres).

### Compliance

Prince Street was monitored between November 2005 and March 2006. Levels of enterococci failed the NHMRC (1990) swimming guidelines in all four months in which sufficient samples were collected.

#### Compliance with NHMRC (1990) swimming guidelines at Prince Street

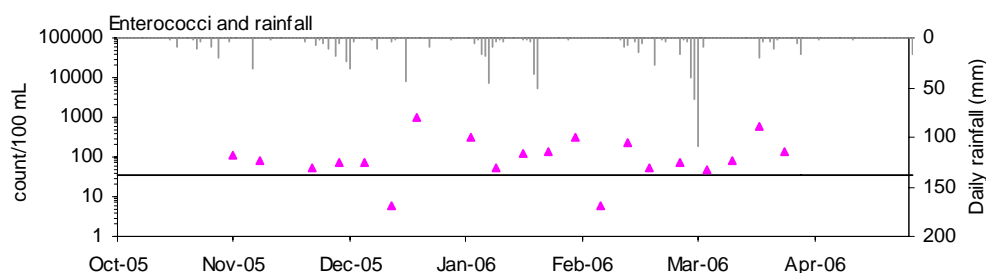
	NOV '05	DEC '05**	JAN '06	FEB '06*	MAR '06*
ENT	FAIL	-	FAIL	FAIL	FAIL

\* Only four samples were collected in this month. An additional data point was borrowed from an adjacent month to calculate compliance.

\*\* Insufficient samples to calculate compliance were collected in this month.

### Timeseries plots

Enterococci levels exceeded the geometric mean guideline level throughout most of the monitoring period.



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## Grafton Sailing Club

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### Description

The Grafton Sailing Club is located on the northern shore of the Clarence River, just upstream of the Grafton Bridge and approximately 55 kilometres upstream from the ocean. The club is a centre for aquatic recreation in the town, and this area of the river is a popular venue for sailing races between September and May involving children and adults. The area is also a popular swimming location in summer.



### Pollution sources

Several stormwater drains discharge in the vicinity of the site. The site may also be affected by agricultural runoff from within the catchment (an area of approximately 22,000 square kilometres).

### Compliance

Grafton Sailing Club was monitored between November 2005 and March 2006. Levels of enterococci failed the NHMRC (1990) swimming guidelines in all four months in which sufficient samples were collected.

#### Compliance with NHMRC (1990) swimming guidelines at Grafton Sailing Club

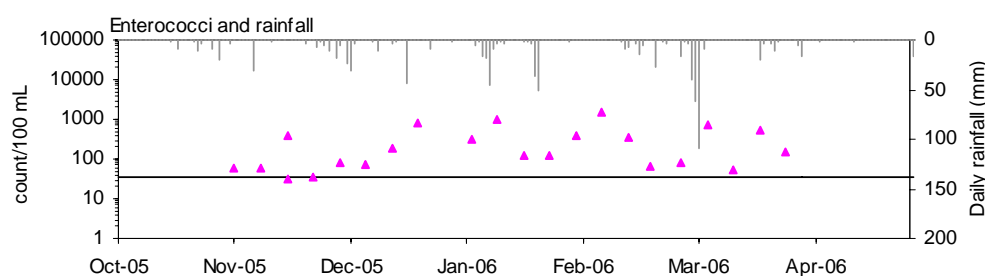
	NOV '05	DEC '05**	JAN '06	FEB '06*	MAR '06*
ENT	FAIL	-	FAIL	FAIL	FAIL

\* Only four samples were collected in this month. An additional data point was borrowed from an adjacent month to calculate compliance.

\*\* Insufficient samples to calculate compliance were collected in this month.

### Timeseries plots

Levels of enterococci exceeded the geometric mean guideline limit throughout most of the monitoring period. Particularly high values were recorded in response to heavy rainfall.



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## Corcoran Park

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### Description

Corcoran Park is located on the northern shore of the Clarence River and is backed by the city of Grafton. The site is approximately 50 kilometres from the ocean and is backed by a large park with facilities. The area is used for boating, fishing and swimming.

### Pollution sources

Treated sewage effluent is discharged approximately 500 metres downstream of the site. The site may also be affected by agricultural runoff from within the catchment and stormwater runoff from the city of Grafton.

### Compliance

Corcoran Park was monitored between November 2005 and March 2006. Levels of enterococci failed the NHMRC (1990) swimming guidelines in all four months in which sufficient samples were collected.



### Compliance with NHMRC (1990) swimming guidelines at Corcoran Park

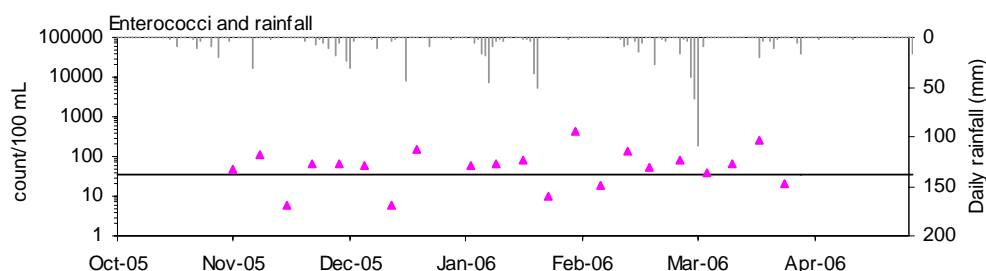
	NOV '05	DEC '05**	JAN '06	FEB '06*	MAR '06*
ENT	FAIL	-	FAIL	FAIL	FAIL

\* Only four samples were collected in this month. An additional data point was borrowed from an adjacent month to calculate compliance.

\*\* Insufficient samples to calculate compliance were collected in this month.

### Timeseries plots

Enterococci levels remained just above the geometric mean guideline level throughout most of the monitoring period.



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