

Kempsey Shire Council

Ocean beaches: Grassy Head, Horseshoe Bay, Trial Bay, Hat Head, Killick Beach.

Estuarine location: Stuarts Point. **Creeks:** Back Creek, Saltwater Creek, Korogoro Creek, Killick Creek.



Local government area description

Kempsey Shire is situated in the Macleay Valley on the Mid North Coast of New South Wales. The Shire covers an area of 3,376 square kilometres of which almost 30% is under formal reserve. The council area has more than 80 kilometres of coastline.

The Kempsey Shire is part of the fastest growing non-metropolitan area in New South Wales and has a population of more than 28,000 (Kempsey Shire Council 2006).

The Macleay River is a significant natural feature of the region. It travels from the mountains of the New England Tableland through Kempsey, exiting to the ocean at South West Rocks.

Research by Tourism Australia indicates that, on average each year, more than 327,000 people holiday in the Kempsey Shire Council area and a further 221,000 people visit for the day. 'Going to the beach' is listed as a top activity by 65% of international tourists and almost 50% of domestic tourists holidaying in the area (Tourism Research Australia, 2008).

Program outline

Ten swimming locations were monitored in the Kempsey Shire: five ocean beaches, one estuarine swimming location and four creeks. These sites have been monitored since summer 2004–2005 and previous results are available in the State of the Beaches reports (DEC 2006a, DEC 2006b, DECC 2007 and DECC 2008).

Enterococci samples were collected between October 2008 and April 2009 to assess compliance with the NHMRC (1990) swimming water quality guidelines.

It should be noted that the five samples necessary to calculate compliance were not collected in all months. In months with only four samples, a sample from an adjacent month was 'borrowed' in order to provide the five data points required. In months when less than four samples were collected, compliance could not be determined.

Rainfall

Rainfall data presented in the timeseries plots were obtained from the Bureau of Meteorology gauge at South West Rocks.

Ocean beaches

Guideline compliance

A high level of compliance with NHMRC (1990) swimming guidelines was recorded at the ocean beaches during the 2008–2009 summer swimming season (Figure 6). Grassy Head, Horseshoe Bay, Trial Bay and Hat Head beaches complied with the swimming guidelines in all four months in which sufficient samples were collected. Killick Beach complied with the guidelines in all five months in which sufficient samples were collected.

Response to rainfall

Typically, very low levels of enterococci were measured at the ocean beaches during dry weather conditions.

Elevated enterococci levels were recorded in response to rainfall at most sites during the last three months of the monitoring period.

Estuarine location

Guideline compliance

Stuarts Point complied with the NHMRC (1990) swimming water quality guidelines in three of the four months in which sufficient samples were collected (Figure 6). The site failed the guidelines in March 2009.

Response to rainfall

Enterococci levels at Stuarts Point were generally low throughout the monitoring period, with some elevated results recorded in response to heavy rainfall in March and April 2008.

Creeks

Guideline compliance

Compliance with the NHMRC (1990) swimming water quality guidelines varied substantially among the creek locations (Figure 6). The highest level of compliance was recorded at Korogoro Creek, which complied in four of the five months in which sufficient samples were collected to calculate compliance.

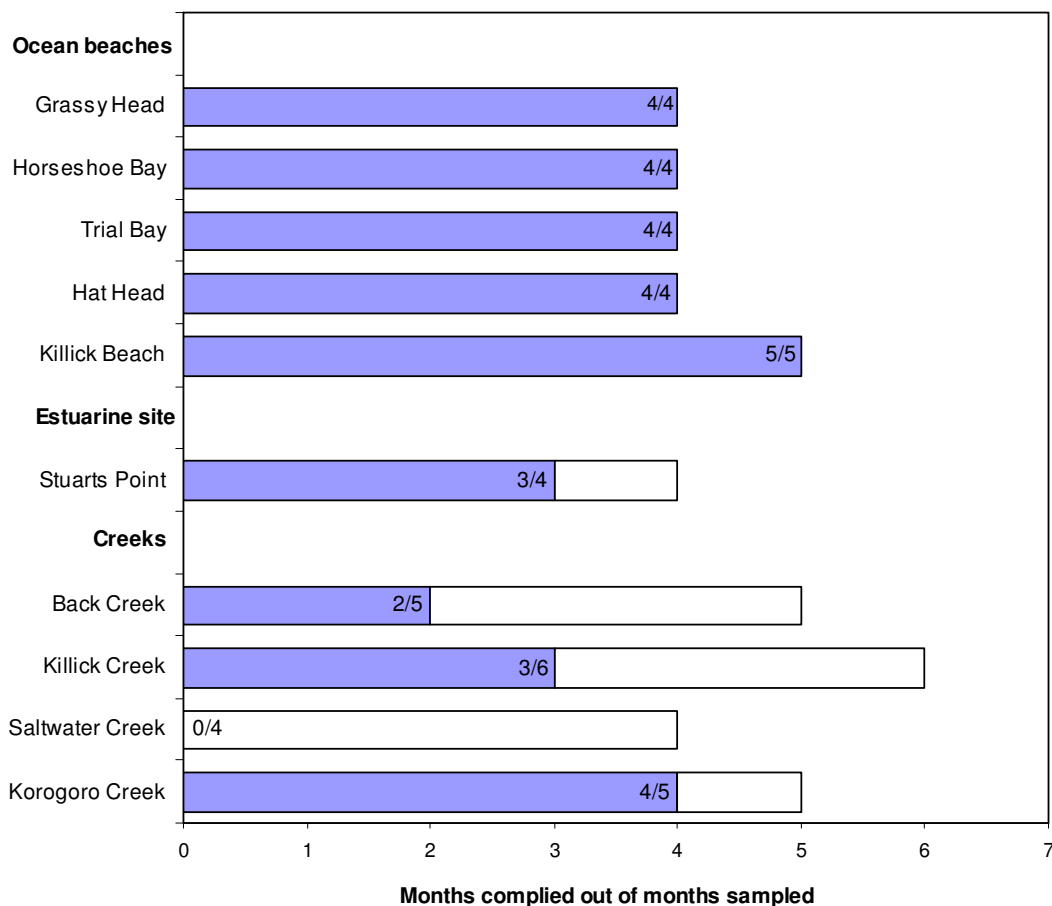
Killick Creek complied with the swimming guidelines in three of the six months and Back Creek complied in two of the five months in which sufficient samples were collected.

The lowest level of compliance was recorded at Saltwater Creek which failed to comply with the swimming guidelines in all four months in which sufficient samples were collected. Similar results were recorded during the 2007–2008 summer season (DECC, 2008).

Response to rainfall

Elevated enterococci levels were recorded at all creek sites in response to rainfall during the 2008–2009 summer swimming season. As a precaution, swimming in these creeks should be avoided for several days following rainfall.

Figure 6: Summary of compliance with NHMRC (1990) microbiological guidelines for swimming at Kempsey Shire Council swimming sites during the 2008–2009 summer swimming season



Grassy Head

See page 53 for key to map

Description The site is situated in the southern corner of Grassy Beach, adjacent to Grassy Head, which provides some protection from southerly ocean swells. The beach and surrounds are undeveloped and the area is used mainly by visitors staying at the nearby caravan park.

Pollution sources Much of the catchment is Crown land and State Forest, and apart from the caravan park there are few known potential sources of pollution.

Compliance Water quality at Grassy Head complied with NHMRC (1990) swimming guidelines in all four months of the 2008–2009 summer swimming season in which sufficient samples were collected.



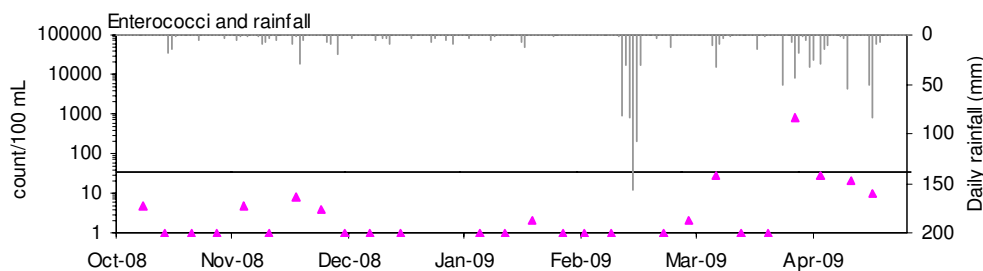
Compliance with NHMRC (1990) swimming guidelines at Grassy Head

	OCT '08	NOV '08	DEC '08	JAN '09	FEB '09	MAR '09	APR '09
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 Enterococci levels generally remained low and below the geometric mean guideline throughout the monitoring period. A single elevated enterococci result was recorded in March 2009 in response to heavy rainfall.



See page 5 for key to graph

Stuarts Point

See page 53 for key to map

Description

The swimming area is located on the Macleay Arm – a broad, shallow, sandy riverbed that was once the main channel of the Macleay River. The site is a popular play area for young children and visitors that want protected non-surf swimming. Sampling takes place from a footbridge that crosses the river.

Pollution sources

The site receives stormwater from State Forest, rural lands, coastal Crown land and the small community of Stuarts Point.

Compliance

Water quality at Stuarts Point complied with NHMRC (1990) swimming guidelines in three of the four months of the 2008–2009 summer swimming season in which sufficient samples were collected. The site failed to comply in March 2009.



Compliance with NHMRC (1990) swimming guidelines at Stuarts Point

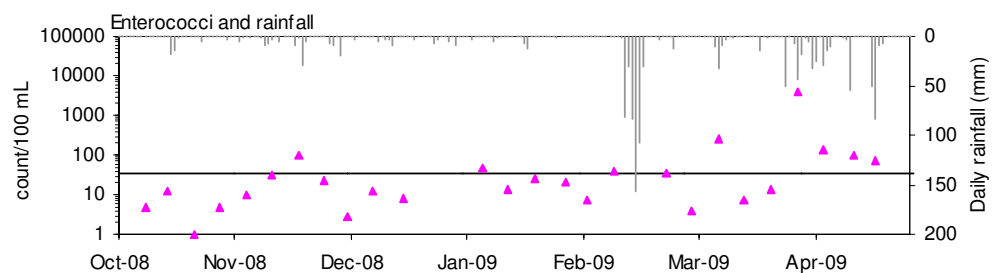
	OCT '08	NOV '08	DEC '08	JAN '09	FEB '09	MAR '09	APR '09
ENT	PASS*	PASS*	**	PASS*	**	FAIL	**

* 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 remained below the geometric mean guideline for most of the monitoring period, with some elevated values recorded in March 2009 and April 2009 in response to heavy rainfall.



See page 5 for key to graph

Horseshoe Bay

See page 53 for key to map

Description

Horseshoe Bay is a crescent-shaped beach approximately 100 metres long and located near the commercial centre of South West Rocks. The beach is enclosed by headlands and is very protected, making it very popular with families and children.



Pollution sources

The beach receives stormwater runoff from the town's commercial and urban areas and a carpark. The mouth of the Macleay River is situated 1.5 kilometres to the north and outflow may affect the swimming site following severe rain events.

Compliance

Water quality at Horseshoe Bay complied with NHMRC (1990) swimming guidelines in all four months of the 2008–2009 summer swimming season in which sufficient samples were collected.

Compliance with NHMRC (1990) swimming guidelines at Horseshoe bay

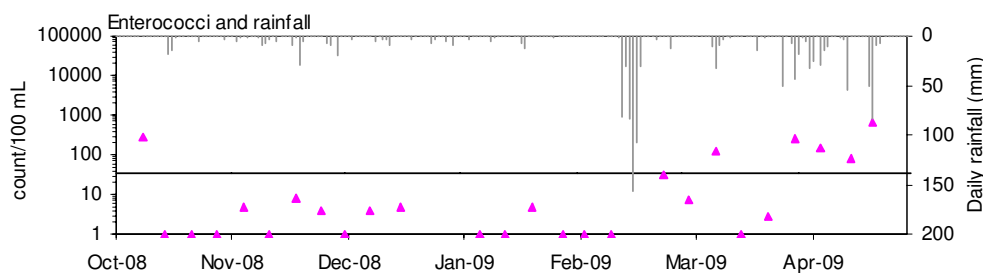
	OCT '08	NOV '08	DEC '08	JAN '09	FEB '09	MAR '09	APR '09
ENT	PASS*	PASS*	**	PASS*	**	PASS	**

* 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 low over most of the monitoring period. The geometric mean guideline was exceeded on a number of occasions, generally in response to rainfall.



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Trial Bay

See page 53 for key to map

Description

The sampling site is located at the western end of the three kilometre-long Trial Bay Beach, near the town of South West Rocks. The beach is within walking distance from the town centre and is a popular location for families with children. There is a surf club adjacent to the site and Saltwater Creek discharges nearby.



Pollution sources

Discharges from Saltwater Creek may be a source of pollution at the site. The creek receives urban stormwater and the catchment also includes semi-rural land and nature reserves. The mouth of the Macleay River is situated two kilometres to the north and outflow may affect the swimming site during severe rain events.

Compliance

Water quality at Trial Bay complied with NHMRC (1990) swimming guidelines in all five months of the 2008–2009 summer swimming season in which sufficient samples were collected.

Compliance with NHMRC (1990) swimming guidelines at Trial Bay

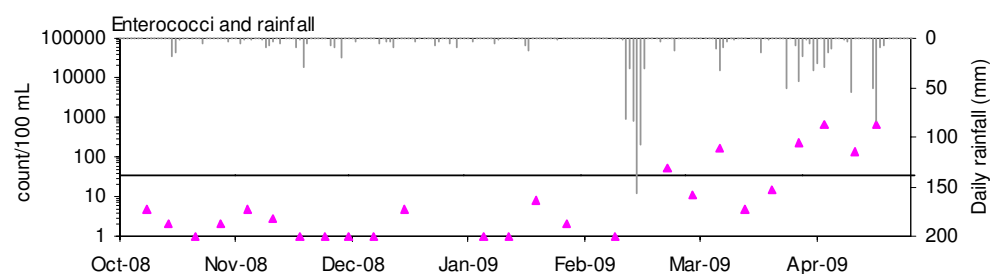
	OCT '08	NOV '08	DEC '08	JAN '09	FEB '09	MAR '09	APR '09
ENT	PASS*	PASS*	**	PASS*	**	PASS	PASS*

* 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 below the geometric mean guideline for most of the monitoring period, with some elevated values recorded in March 2009 and April 2009 in response to heavy rainfall.



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Hat Head Beach

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Description The beach is situated in the southern corner of South Smokey Beach, adjacent to Hat Head and Korogoro Point, which provides protection from ocean swells from the south. There is a surf club and the beach is popular mainly with visitors to the area.



Pollution sources Much of the catchment is covered by Hat Head National Park and is composed of near-pristine coastal dunes and wetlands. The beach is near the mouth of Korogoro Creek, which receives urban stormwater from the township and caravan park and is generally open to the ocean.

Compliance Water quality at Hat Head Beach complied with NHMRC (1990) swimming guidelines in all four months of the 2008–2009 summer swimming season in which sufficient samples were collected.

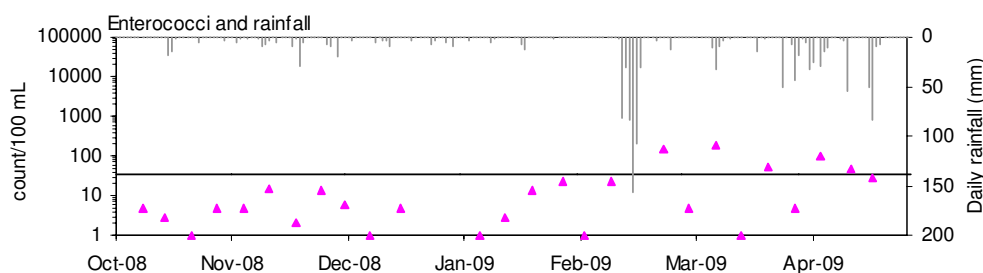
Compliance with NHMRC (1990) swimming guidelines at Hat Head Beach

	OCT '08	NOV '08	DEC '08	JAN '09	FEB '09	MAR '09	APR '09
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 Enterococci levels remained generally low over the monitoring period, exceeding the geometric mean guideline on a number of occasions in March 2009 and April 2009 in response to heavy rainfall.



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Killick Beach

See page 53 for key to map

Description

The site is situated in the southern corner of Killick Beach, adjacent to the Crescent Head township and Little Nobby Point, which provides some protection from ocean swells. There are a surf club and golf club near the beach, and the area is popular with surfers and families with small children.



Pollution sources

Although much of the catchment is Hat Head National Park and is composed of near-pristine coastal dunes and wetlands, the swimming area is at the mouth of Killick Creek, which receives stormwater from the township and caravan park and is generally open to the ocean.

Compliance

Water quality at Killick Beach complied with NHMRC (1990) swimming guidelines in all five months of the 2008–2009 summer swimming season in which sufficient samples were collected.

Compliance with NHMRC (1990) swimming guidelines at Killick Beach

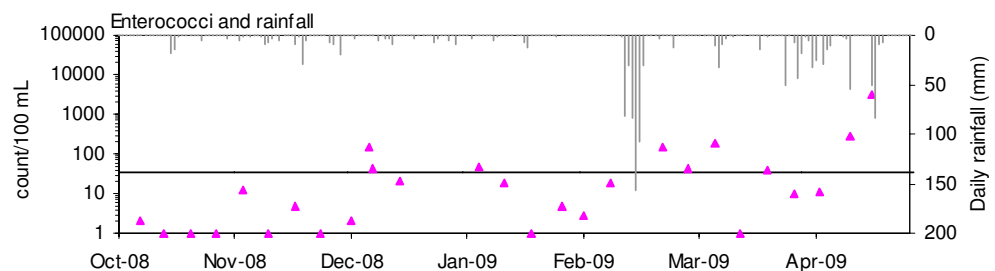
	OCT '08	NOV '08	DEC '08	JAN '09	FEB '09	MAR '09	APR '09
ENT	PASS*	PASS*	PASS*	PASS*	**	PASS	**

* 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

Enterococci levels were mostly low throughout the monitoring period but exceeded the geometric mean guideline on a number of occasions in response to heavy rainfall.



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Back Creek

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Description

This small coastal creek is kept open to the ocean to allow the passage of commercial and recreational fishing boats, and there are a number of moorings upstream of the site. An area at the mouth forms a shallow intertidal area that is protected from the ocean. This shallow and broad riverbed is a popular play area for families and younger children.



Pollution sources

Much of the small catchment consists of mangroves, saltmarsh and wetlands. The creek is on the northern fringe of South West Rocks and could be subject to urban stormwater discharges. An unknown source of dry weather contamination is also likely to be present.

Compliance

Water quality at Back Creek complied with NHMRC (1990) swimming guidelines in two of the five months of the 2008–2009 summer swimming season in which sufficient samples were collected. The site failed to comply to swimming guidelines in January 2009, February 2009 and March 2009.

Compliance with NHMRC (1990) swimming guidelines at Back Creek

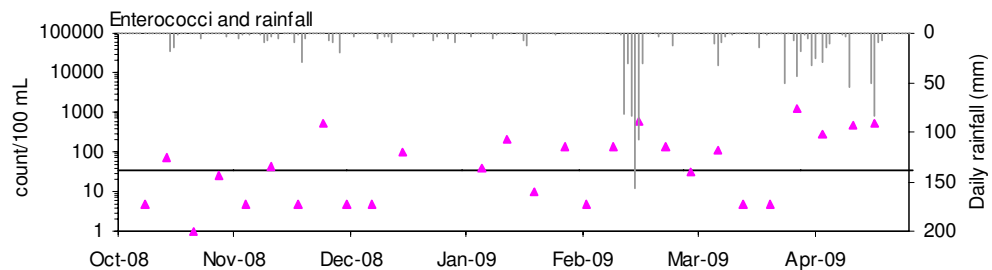
	OCT '08	NOV '08	DEC '08	JAN '09	FEB '09	MAR '09	APR '09
ENT	PASS*	PASS*	**	FAIL	FAIL*	FAIL	**

* 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 were slightly elevated throughout the monitoring period and exceeded the guidelines limit on several occasions in both wet and dry weather conditions.



See page 5 for key to graph

Killick Creek

See page 53 for key to map

Description

The sampling site is located at the mouth of the creek in a very shallow, sandy area. It is backed by a caravan park and the semi-urban centre of Crescent Head. The water is calm and attracts families with small children staying at the caravan park.



Pollution sources

The creek runs through the town of Crescent Head and receives stormwater from urban and commercial areas. An unknown source of dry weather contamination is also likely to be present.

Compliance

Water quality at Killick Creek complied with NHMRC (1990) swimming guidelines in three of the six months of the 2008–2009 summer swimming season in which sufficient samples were collected. The site failed to comply to swimming guidelines in February 2009, March 2009 and April 2009.

Compliance with NHMRC (1990) swimming guidelines at Killick Creek

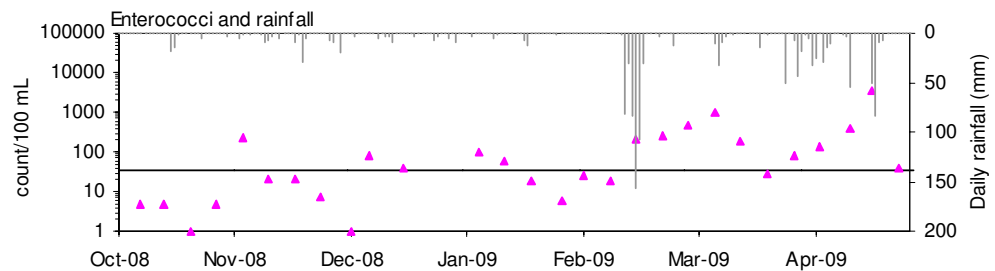
	OCT '08	NOV '08	DEC '08	JAN '09	FEB '09	MAR '09	APR '09
ENT	PASS*	PASS*	**	PASS*	FAIL*	FAIL	FAIL*

* 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

Elevated enterococci levels were recorded in the last three months of the monitoring period, with very high values recorded in both dry and wet weather conditions.



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Saltwater Creek

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Description The creek is shallow and sandy, and is located within the South West Rocks town centre. It is a popular play area for young children. There is a shaded picnic area nearby, with food retail outlets within walking distance. The creek is intermittently open to the ocean.



Pollution sources Saltwater Creek runs for approximately three kilometres and passes a caravan park, golf course, urban areas and semi-rural lands with septic systems. Stormwater discharges from these areas are potential sources of pollution during and following rainfall.

Compliance Water quality at Saltwater Creek failed to comply with NHMRC (1990) swimming guidelines in all four months of the 2008–2009 summer swimming season in which sufficient samples were collected.

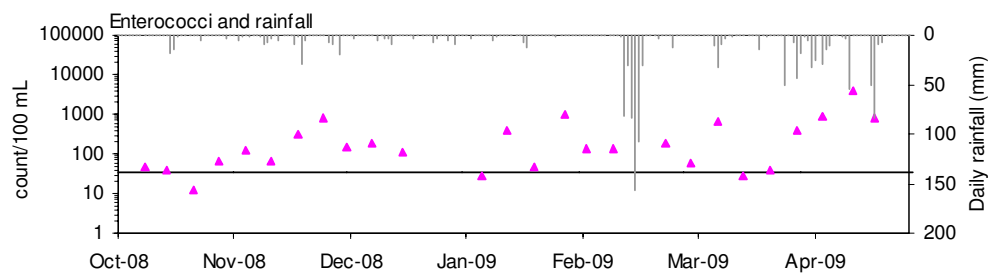
Compliance with NHMRC (1990) swimming guidelines at Saltwater Creek

	OCT '08	NOV '08	DEC '08	JAN '09	FEB '09	MAR '09	APR '09
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 Elevated levels of enterococci were measured throughout the monitoring period, in both wet and dry weather conditions.



See page 5 for key to graph

Korogoro Creek

See page 53 for key to map

Description

This sampling site is located at the mouth of the creek in a protected sand-spit. It is backed by native vegetation and Hat Head National Park. The water is calm and attracts families with small children. The creek is well flushed with ocean water every tidal cycle.



Pollution sources

The creek runs behind the town of Hat Head for approximately three kilometres and receives stormwater from urban and commercial areas.

Compliance

Water quality at Korogoro Creek complied with NHMRC (1990) swimming guidelines in four of the five months of the 2008–2009 summer swimming season in which sufficient samples were collected. The site failed to comply to swimming guidelines March 2009.

Compliance with NHMRC (1990) swimming guidelines at Korogoro Creek

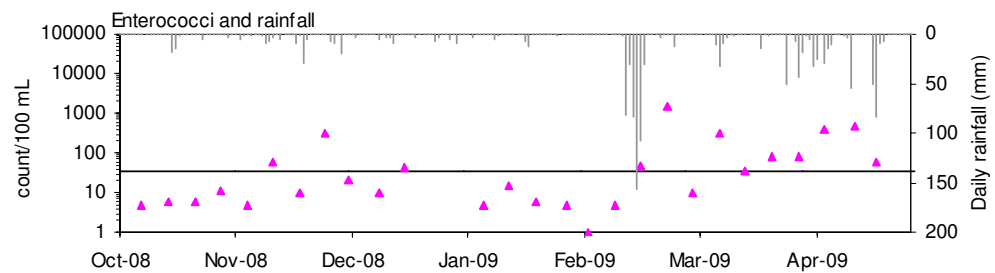
	OCT '08	NOV '08	DEC '08	JAN '09	FEB '09	MAR '09	APR '09
ENT	PASS*	PASS*	**	PASS*	PASS*	FAIL	**

* 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

Elevated enterococci levels were recorded in the last three months of the monitoring period, with very high values recorded in response to heavy rainfall.



See page 5 for key to graph