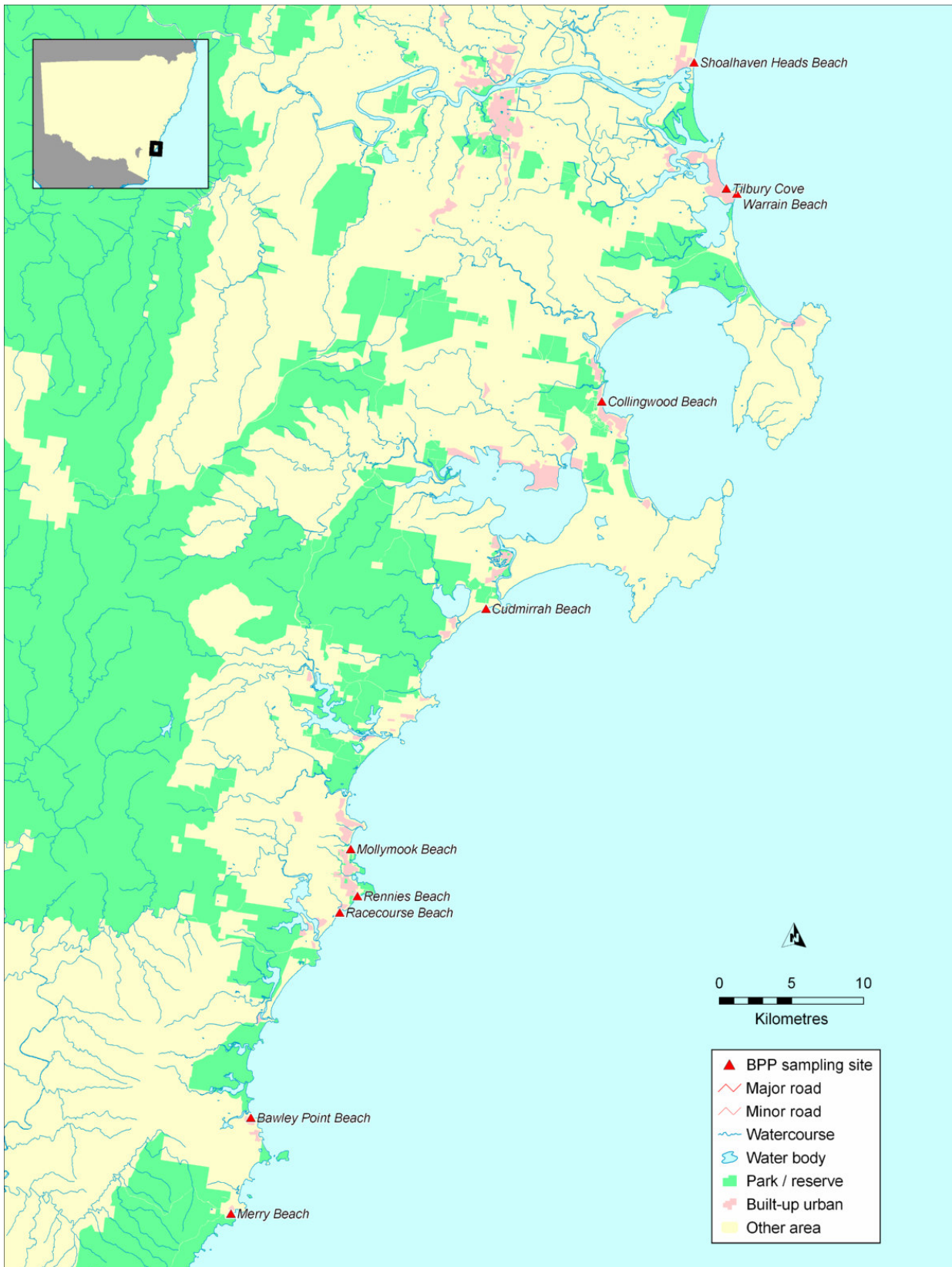


Shoalhaven City Council

Ocean beaches: Shoalhaven Heads, Tilbury Cove, Warrain, Collingwood, Cudmirrah, Mollymook, Rennies, Racecourse, Bawley Point, Merry.



Local government area description

Shoalhaven City Council is located on the New South Wales South Coast and extends from Broughton in the north to North Durras in the south. The council covers an area of 4,660 square kilometres and includes approximately 1,000 kilometres of coastline.

The population of the region is approximately 90,700 but reaches more than 320,000 during the peak holiday period.

The Shoalhaven has more visitors each year than any other regional local government area in New South Wales and tourism is very important to the local economy. Dairy farming, light industry and fishing are also important commercial activities in the region (Shoalhaven City Council 2003).

Research by Tourism Australia indicates that, on average each year, more than one million people holiday in the Shoalhaven and a further one million people visit for the day. 'Going to the beach' is listed as a top activity by more than 80% of international tourists and 50% of domestic tourists holidaying in the area (Tourism Research Australia, 2008).

Program outline

Ten ocean beaches were monitored during summer 2008–2009: Shoalhaven Heads, Warrain, Tilbury Cove, Collingwood, Cudmirrah, Mollymook, Rennies, Racecourse, Bawley Point and Merry.

Faecal coliform and enterococci samples were collected from all locations between December 2008 and February 2009, the three busiest months of the summer swimming season. Results were used to assess compliance with the NHMRC (1990) swimming water quality guidelines.

The required five samples were not collected in all months and so the closest sample in time from an adjacent month was 'borrowed' to provide the five samples for the compliance calculation.

Rainfall

Rainfall data presented in the timeseries plots were obtained from the Bureau of Meteorology's gauges at Jervis Bay (Point Perpendicular) and Ulladulla. Rainfall for each site is from the closest rain gauge.

Ocean beaches

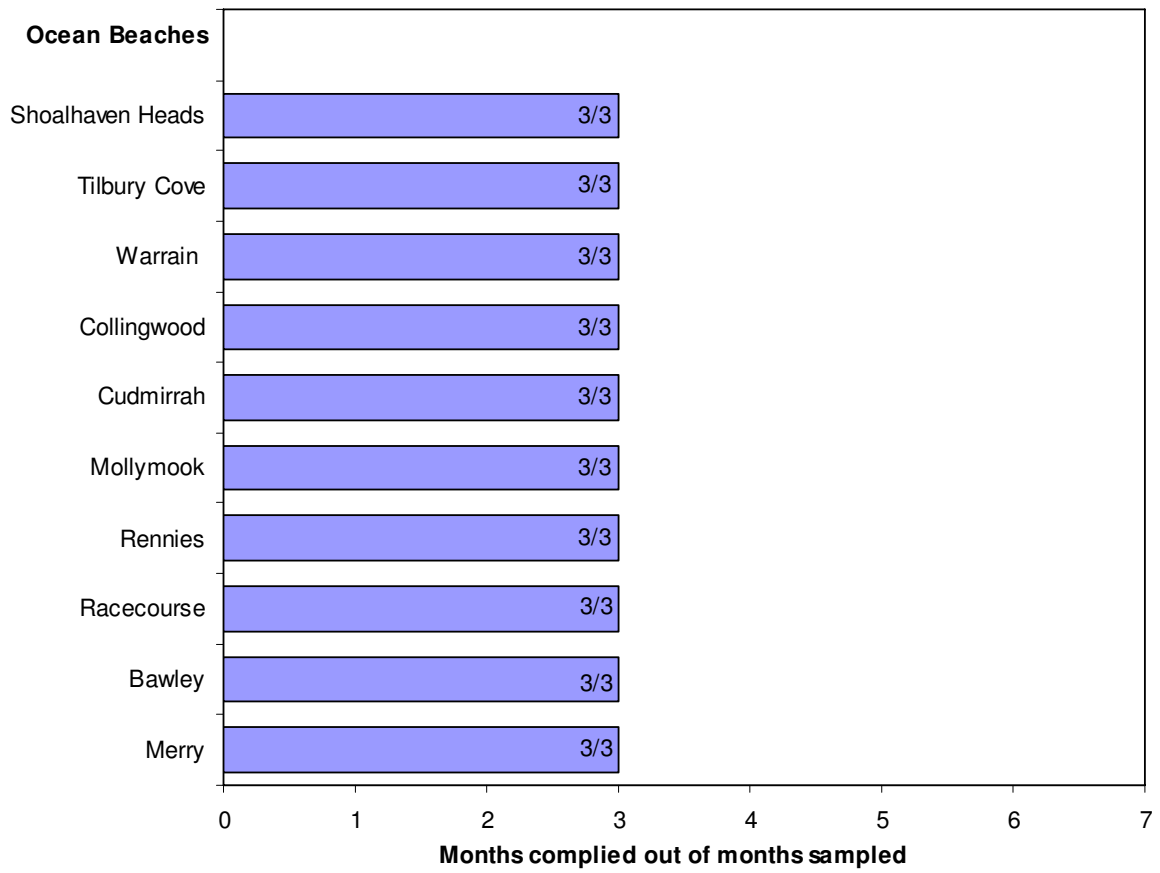
Guideline compliance

A high level of compliance with the NHMRC (1990) swimming water quality guidelines was recorded at ocean beaches in the Shoalhaven, with all ten locations passing in all three months (Figure 11).

Response to rainfall

Levels of faecal coliforms and enterococci measured at the ocean beaches were generally low throughout the monitoring period. Occasionally, slightly elevated results were recorded, usually in response to heavy rainfall.

Figure 11: Summary of compliance with NHMRC (1990) microbiological guidelines for swimming at Shoalhaven City Council swimming sites over the 2008–2009 summer season



Shoalhaven Heads Beach

See page 142 for key to map

Description

Shoalhaven Heads Beach is located towards the southern end of Seven Mile Beach, at the township of Shoalhaven Heads. The sampling site is located in front of the surf club. The beach is popular with the local community and tourists.

Pollution sources

Tertiary treated effluent from the Shoalhaven Heads STP is pumped into sand dunes behind the beach. Stormwater and sewage overflows from a pumping station may also affect beach water quality during periods of wet weather. The Shoalhaven River periodically opens to the south of the main swimming area during flood.



Compliance

Shoalhaven Heads Beach complied with NHMRC (1990) guidelines in all three months between December 2008 and February 2009.

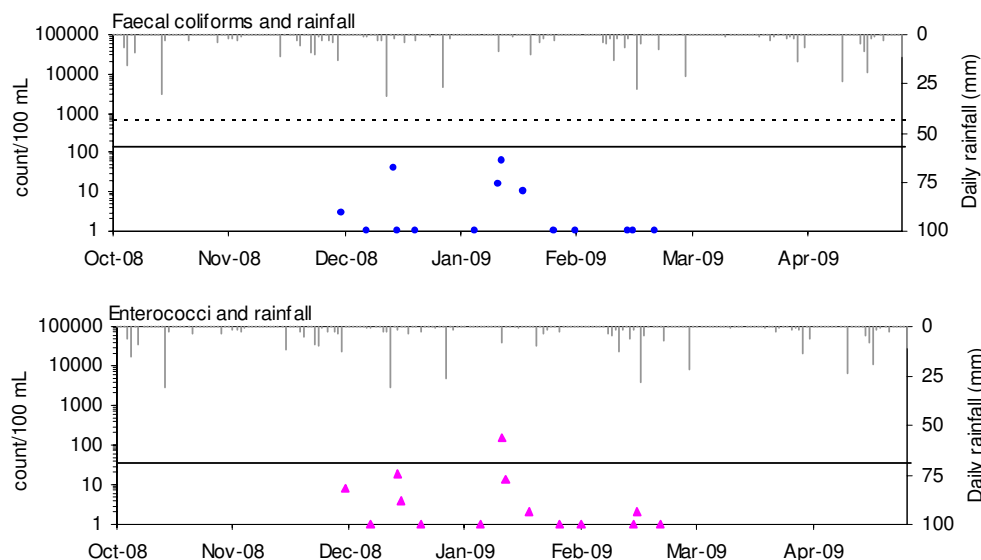
Compliance with NHMRC (1990) swimming guidelines at Shoalhaven Heads Beach

	DEC '08	JAN '09	FEB '09
FC	PASS*	PASS	PASS*
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.

Timeseries plots

Levels of faecal coliforms and enterococci were generally very low over the monitoring period. A single enterococci result exceeded the geometric mean guideline in mid January 2009 in response to rainfall.



See page 5 for key to graph

Tilbury Cove

See page 142 for key to map

Description

Tilbury Cove is located in the south-eastern corner of Culburra Beach, adjacent to the township of Culburra. The waters are sheltered by Penguin Head and offer generally calmer swimming conditions than the patrolled northern end of the beach. The sampling site is located in front of the Ocean Street car park. Amenities and a boat ramp are also located at the site.



Pollution sources

Urban stormwater is discharged to the north of the sampling site. Treated sewage effluent is sometimes discharged via an ocean outfall at Penguin Head when extended wet weather events occur. Beach water quality may also be affected by possible sewage overflows from a nearby sewage pumping station and illegal disposal of effluent from boats.

Compliance

Tilbury Cove complied with NHMRC (1990) guidelines in all three months between December 2008 and February 2009.

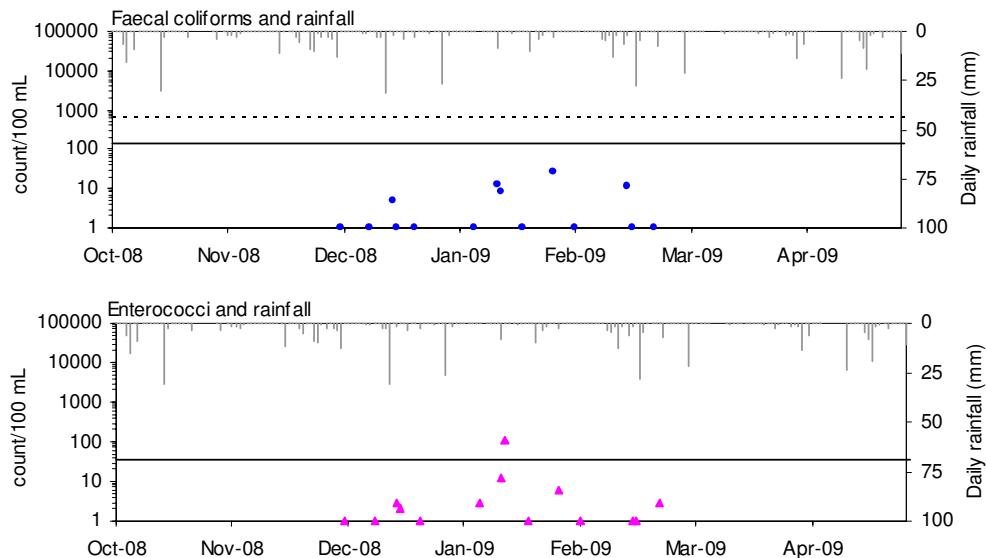
Compliance with NHMRC (1990) swimming guidelines at Tilbury Cove

	DEC '08	JAN '09	FEB '09
FC	PASS*	PASS	PASS*
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.

Timeseries plots

Levels of faecal coliforms and enterococci were generally low over the monitoring period. A single, slightly elevated enterococci value was recorded in mid January 2009 following rainfall.



See page 5 for key to graph

Warrain Beach

Description

Warrain Beach is located north of Lake Wollumboola and south of the Tilbury Cove Headland. A surf club, residential area and car park are located behind the beach. The sampling site is located at the end of Farrant Ave, Culburra.

Pollution sources

A sewage outfall is located on the headland north of the beach. Stormwater from households, streets and car parks is dispersed in sand dunes. Rubbish from people visiting the beach may also affect water quality at the beach.

Compliance

Warrain Beach complied with NHMRC (1990) guidelines in all three months between December 2008 and February 2009.



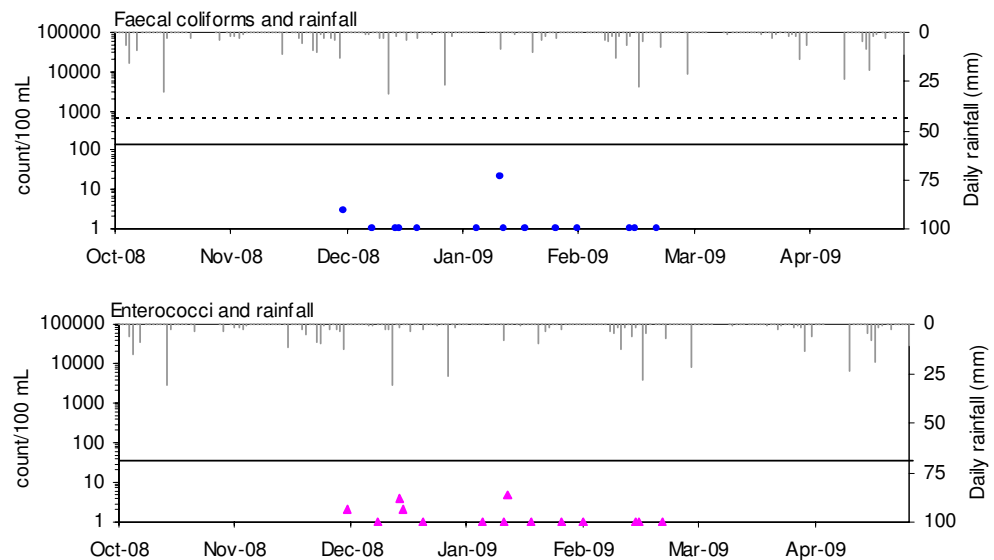
Compliance with NHMRC (1990) swimming guidelines at Warrain Beach

	DEC '08	JAN '09	FEB '09
FC	PASS*	PASS	PASS*
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.

Timeseries plots

Levels of faecal coliforms and enterococci were consistently low over the monitoring period, with all bacterial levels below guideline limits.



See page 5 for key to graph

Collingwood Beach

See page 142 for key to map

Description

Collingwood Beach is located in Jervis Bay, adjacent to the town of Vincentia. The beach is approximately two kilometres long and faces the entrance to Jervis Bay. Moona Moona Creek discharges at the northern end of the beach. The sampling site is located off Montague Street.



Pollution sources

Urban stormwater, animal faeces and illegal disposal of effluent from boats may affect water quality at this site.

Compliance

Collingwood Beach complied with NHMRC (1990) guidelines in all three months between December 2008 and February 2009.

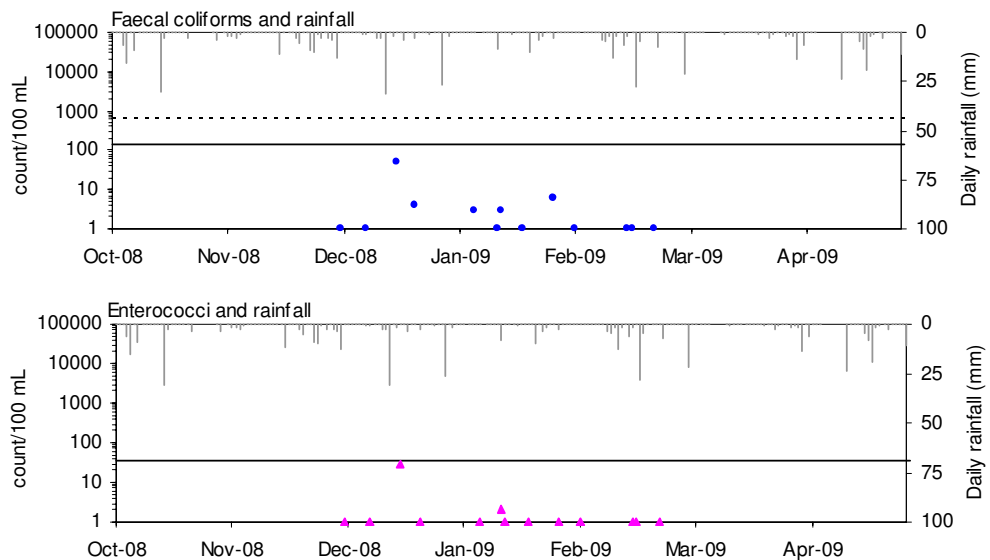
Compliance with NHMRC (1990) swimming guidelines at Collingwood Beach

	DEC '08	JAN '09	FEB '09
FC	PASS*	PASS	PASS*
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.

Timeseries plots

Levels of faecal coliforms and enterococci were generally low over the monitoring period, remaining below the guideline limits.



See page 5 for key to graph

Cudmirrah Beach

Description

Cudmirrah Beach is the main surf beach for the township of Sussex Inlet. The beach is approximately three kilometres long and extends from the mouth of Sussex Inlet in the north to the mouth of Swan Lake in the south. A surf club and car park are located behind the northern end of the beach. The sampling site is located at the end of Pacificana Drive.



Pollution sources

Tertiary treated effluent from Sussex Inlet Sewage Treatment Plant is pumped into sand dunes to the south of the main swimming area but is unlikely to affect water quality. Urban and rural runoff in outflow from St Georges Basin and Swan Lake may affect beach water quality, particularly following heavy rainfall.

Compliance

Cudmirrah Beach complied with NHMRC (1990) guidelines in all three months between December 2008 and February 2009.

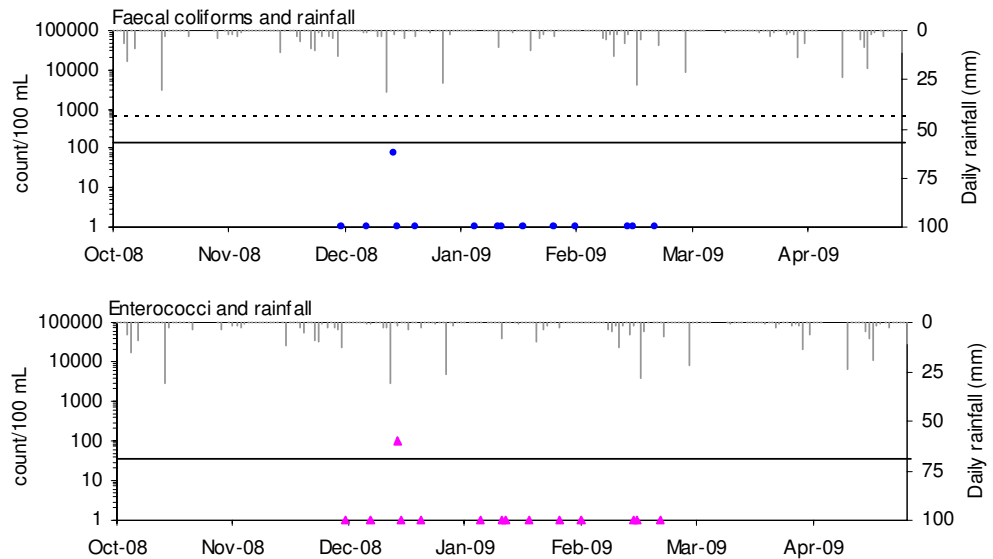
Compliance with NHMRC (1990) swimming guidelines at Cudmirrah Beach

	DEC '08	JAN '09	FEB '09
FC	PASS*	PASS	PASS*
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.

Timeseries plots

Levels of faecal coliforms and enterococci were generally very low over the monitoring period, with a single, slightly elevated result recorded for both bacterial indicators following heavy rainfall in December 2008.



See page 5 for key to graph

Mollymook Beach

See page 142 for key to map

Description Mollymook Beach is adjacent to the township of Mollymook. The beach is approximately two kilometres long, with a rocky reef in the centre. A surf club is located at the southern end of the beach, where sampling is undertaken.

Pollution sources Urban stormwater discharges to the beach following rainfall and may affect water quality. Animal faeces and illegal disposal of effluent from boats are also potential sources of pollution.

Compliance Mollymook Beach complied with NHMRC (1990) guidelines in all three months between December 2008 and February 2009.

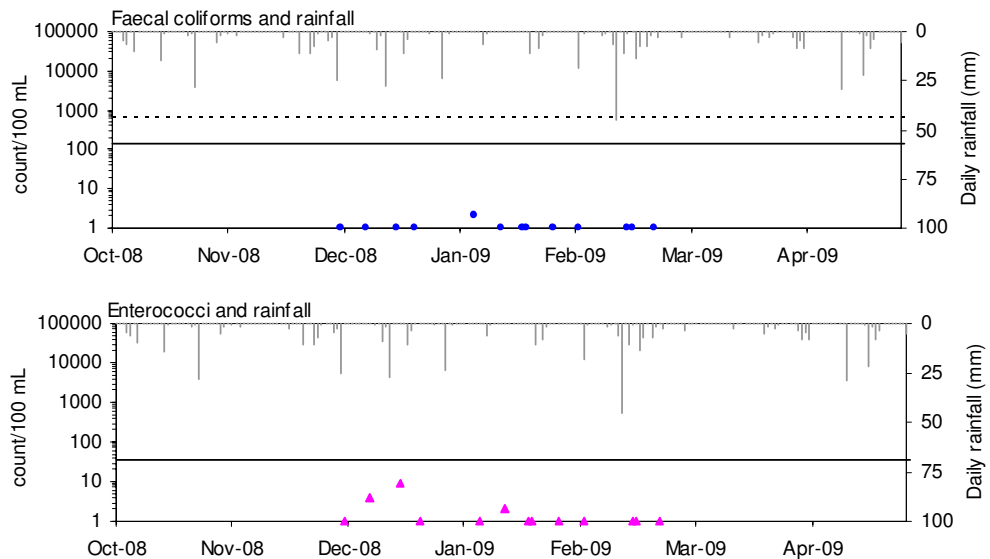


Compliance with NHMRC (1990) swimming guidelines at Mollymook Beach

	DEC '08	JAN '09	FEB '09
FC	PASS*	PASS	PASS*
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.

Timeseries plots Levels of faecal coliforms and enterococci were very low over the monitoring period.



See page 5 for key to graph

Rennies Beach

See page 142 for key to map

Description

Rennies Beach is adjacent to the township of Ulladulla. The beach is approximately 60 metres long and is surrounded by 20 metre-high bluffs. The sampling site is located directly in front of the access stairs from Rennies Beach Close. The beach is a popular surfing location, but swimming can be hazardous due to rocks and rips.



Pollution sources

Urban stormwater discharges to the beach following rainfall and may affect water quality. Animal faeces and illegal disposal of effluent from boats are also potential sources of pollution.

Compliance

Rennies Beach complied with NHMRC (1990) guidelines in all three months between December 2008 and February 2009.

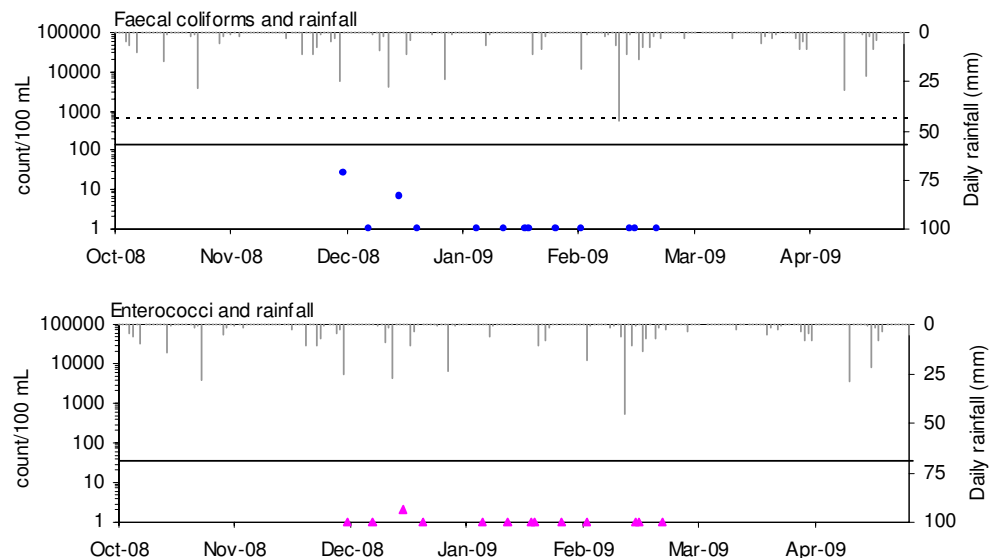
Compliance with NHMRC (1990) swimming guidelines at Rennies Beach

	DEC '08	JAN '09	FEB '09
FC	PASS*	PASS	PASS*
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.

Timeseries plots

Levels of faecal coliforms and enterococci were generally very low over the monitoring period.



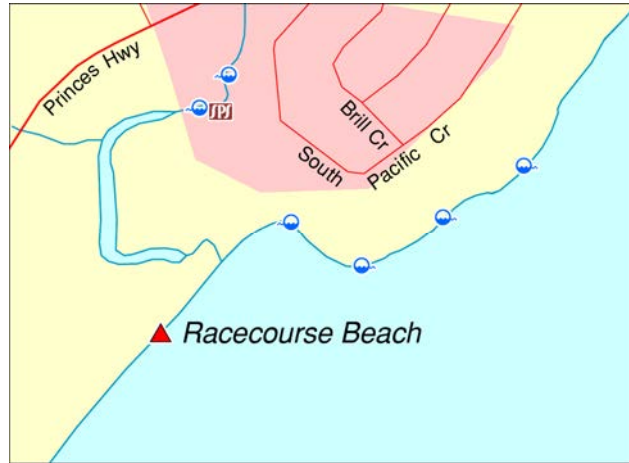
See page 5 for key to graph

Racecourse Beach

See page 142 for key to map

Description

Racecourse Beach is adjacent to the township of Ulladulla. The beach is approximately one kilometre long, with a small headland close to the centre. The sampling site is located to the south of Racecourse Creek. The beach is a popular surfing location, but swimming can be hazardous due to rocks and rips.



Pollution sources

Urban stormwater is discharged to the beach in wet weather via stormwater outlets and Racecourse Creek. Secondary treated sewage effluent is discharged via an ocean outfall on the headland to the north of the beach. Animal faeces and illegal disposal of effluent from boats are also potential sources of pollution.

Compliance

Racecourse Beach complied with NHMRC (1990) guidelines in all three months between December 2008 and February 2009.

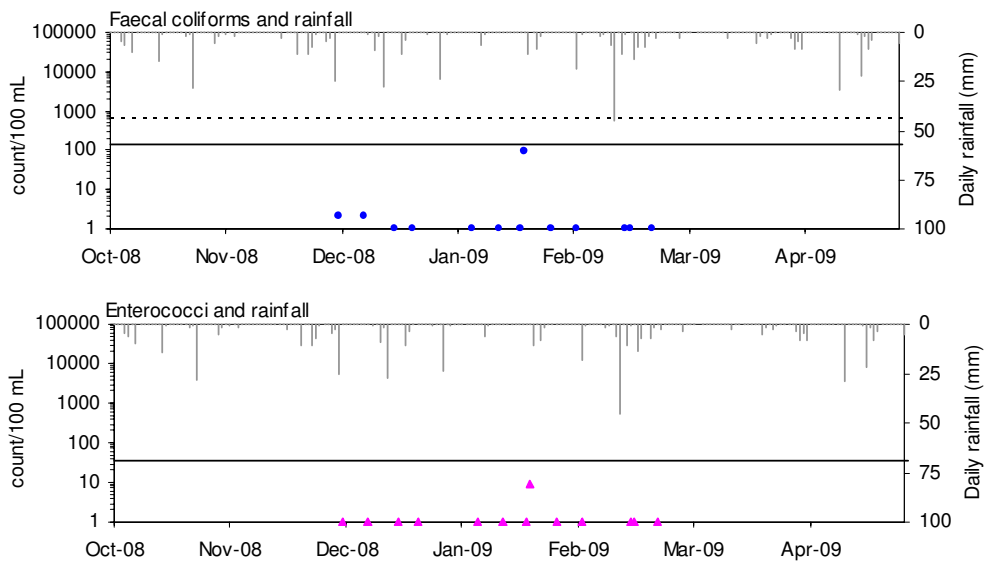
Compliance with NHMRC (1990) swimming guidelines at Racecourse Beach

	DEC '08	JAN '09	FEB '09
FC	PASS*	PASS	PASS*
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.

Timeseries plots

Levels of faecal coliforms and enterococci were generally low over the monitoring period.



See page 5 for key to graph

Bawley Point Beach

See page 142 for key to map

Description

Bawley Point Beach is located near the township of Bawley Point. The beach is approximately 300 metres long and is backed by a car park, a park and picnic area. The sampling site is accessed from Tingira Drive and is located approximately 20 metres north of the boat ramp at the southern end of the beach.



Pollution sources

Urban stormwater discharges to the beach following rainfall and may affect water quality. Sewage management facilities, animal faeces and illegal disposal of effluent from boats are also potential sources of pollution.

Compliance

Bawley Point Beach complied with NHMRC (1990) guidelines in all three months between December 2008 and February 2009.

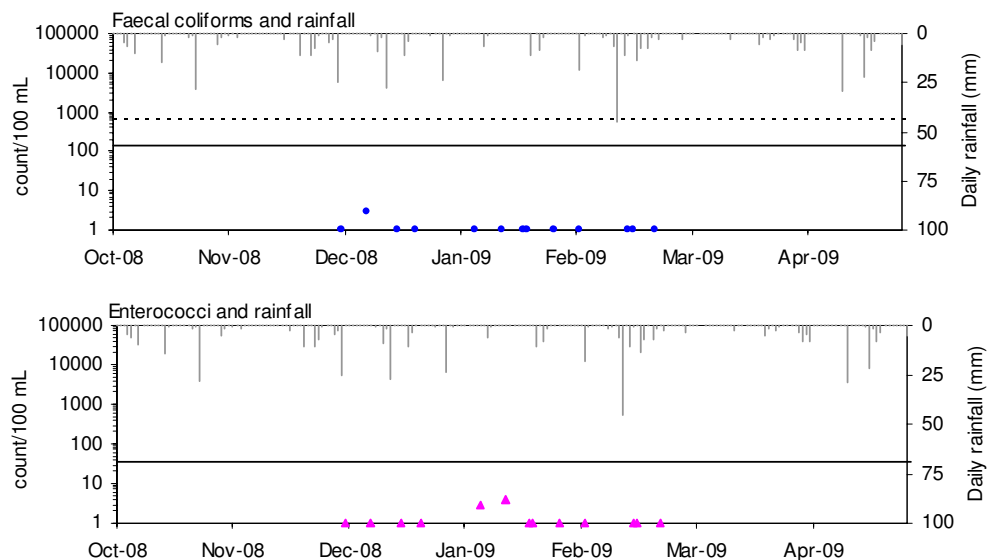
Compliance with NHMRC (1990) swimming guidelines at Bawley Point Beach

	DEC '08	JAN '09	FEB '09
FC	PASS*	PASS	PASS*
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.

Timeseries plots

Levels of faecal coliforms and enterococci were consistently low over the monitoring period.



See page 5 for key to graph

Merry Beach

Description

Merry Beach is located just south of the township of Kiola. The beach is approximately 300 metres long and is backed by a car park, a park and a caravan park. The sampling site is located directly in front of the walking track that leads to the centre of the beach.



Pollution sources

Urban stormwater discharges to the beach following rainfall may affect water quality. Sewage management facilities, animal faeces and illegal disposal of effluent from boats are also potential sources of pollution.

Compliance

Merry Beach complied with NHMRC (1990) guidelines in all three months between December 2008 and February 2009.

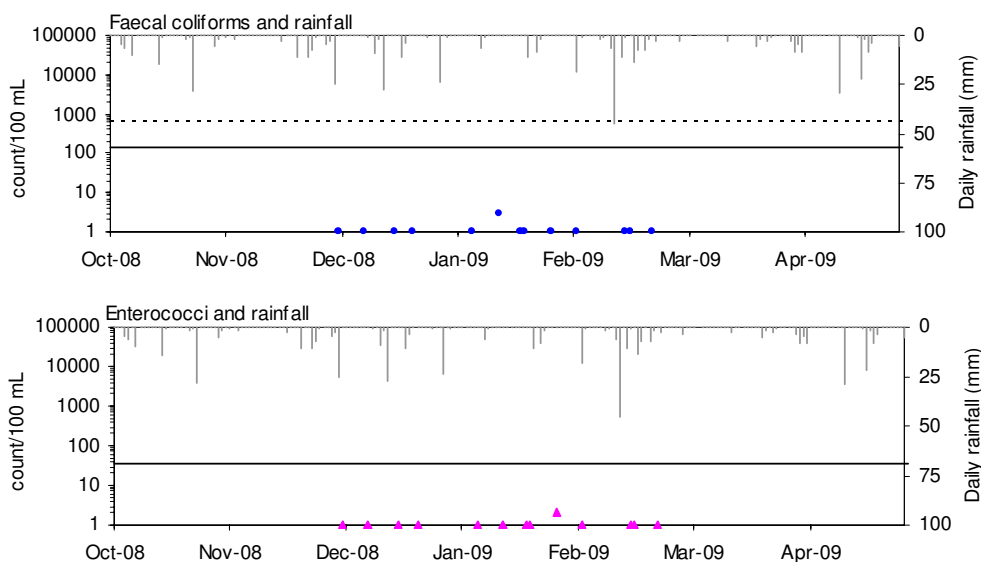
Compliance with NHMRC (1990) swimming guidelines at Merry Beach

	DEC '08	JAN '09	FEB '09
FC	PASS*	PASS	PASS*
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.

Timeseries plots

Levels of faecal coliforms and enterococci were consistently low over the monitoring period.



See page 5 for key to graph