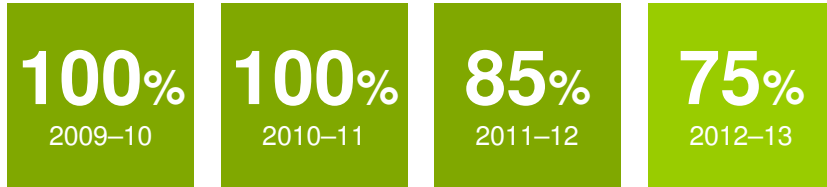


# Lake Macquarie City Council

## State of the Beaches 2012–2013

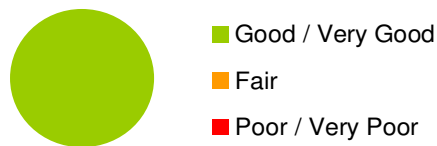
### Overall results

Percentage of sites graded as Good or Very Good:



Fifteen of the 20 swimming sites were graded as Very Good or Good in 2012–2013. During 2009–2010 and 2010–2011, only data from the six ocean beaches monitored by Hunter Water Corporation were included in the overall percentage. Since 2011–2012, the results also cover thirteen swimming sites in Lake Macquarie and one ocean beach monitored by Lake Macquarie City Council under the Beachwatch Partnership Program.

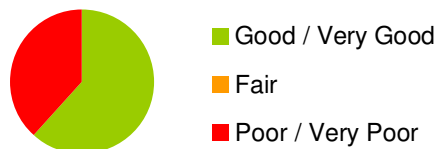
### Ocean beaches



Four of the seven ocean beaches were graded as Very Good: Dudley Beach, Blacksmiths Beach, Caves Beach and Catherine Hill Bay. Water quality at these locations was suitable for swimming almost all of the time.

Glenrock Lagoon Beach, Redhead Beach and Swansea Heads Little Beach were graded as Good. Water quality at these sites was also of a high standard and suitable for swimming for most of the time.

### Lake/lagoon swimming sites



All 13 swimming sites are in Lake Macquarie.

Balcolyn was graded as Very Good. The water quality was suitable for swimming for almost all of the time and there are few significant sources of contamination.

A further seven sites were graded as Good: Croudace Bay, Arcadia Vale, Belmont, Cams Wharf, Toronto, Wangi Point (Van Park) and Sunshine. While water quality was suitable for swimming most of the time, elevated enterococci levels can sometimes be recorded following rainfall and swimming should be avoided at these times.

### Best beaches

**Dudley Beach, Blacksmiths Beach, Caves Beach, Catherine Hill Bay and Balcolyn.**

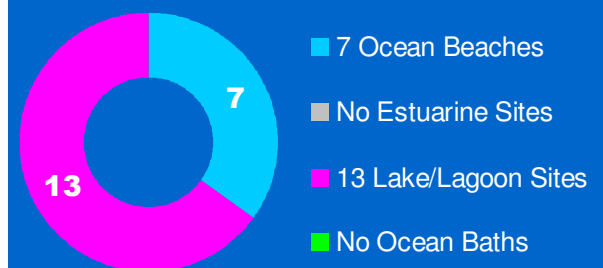
These sites had excellent water quality and were suitable for swimming almost all of the time.

**20**  
sites

**every 6**  
**days\***

**717**  
samples

**year**  
**round\***



\* Six locations were monitored by Hunter Water Corporation as a requirement of Environment Protection Licences. Samples were collected every sixth day throughout the year.

Fourteen locations were monitored by Lake Macquarie City Council. Samples were collected weekly between November and April and sampling and laboratory analysis was fully funded by the council.

Five swimming locations were graded as Poor: Swansea, Kilaben Bay, Bolton Point and Speers Point Park. It is recommended that swimming at these sites be avoided during and for up to three days following rainfall or if there are signs of stormwater pollution, such as discoloured water or floating debris.

Elevated levels of enterococci were recorded at Eleebana (Lions Park) during both dry and wet weather conditions. Swimming at this site should be avoided due to the unpredictable nature of the contamination.

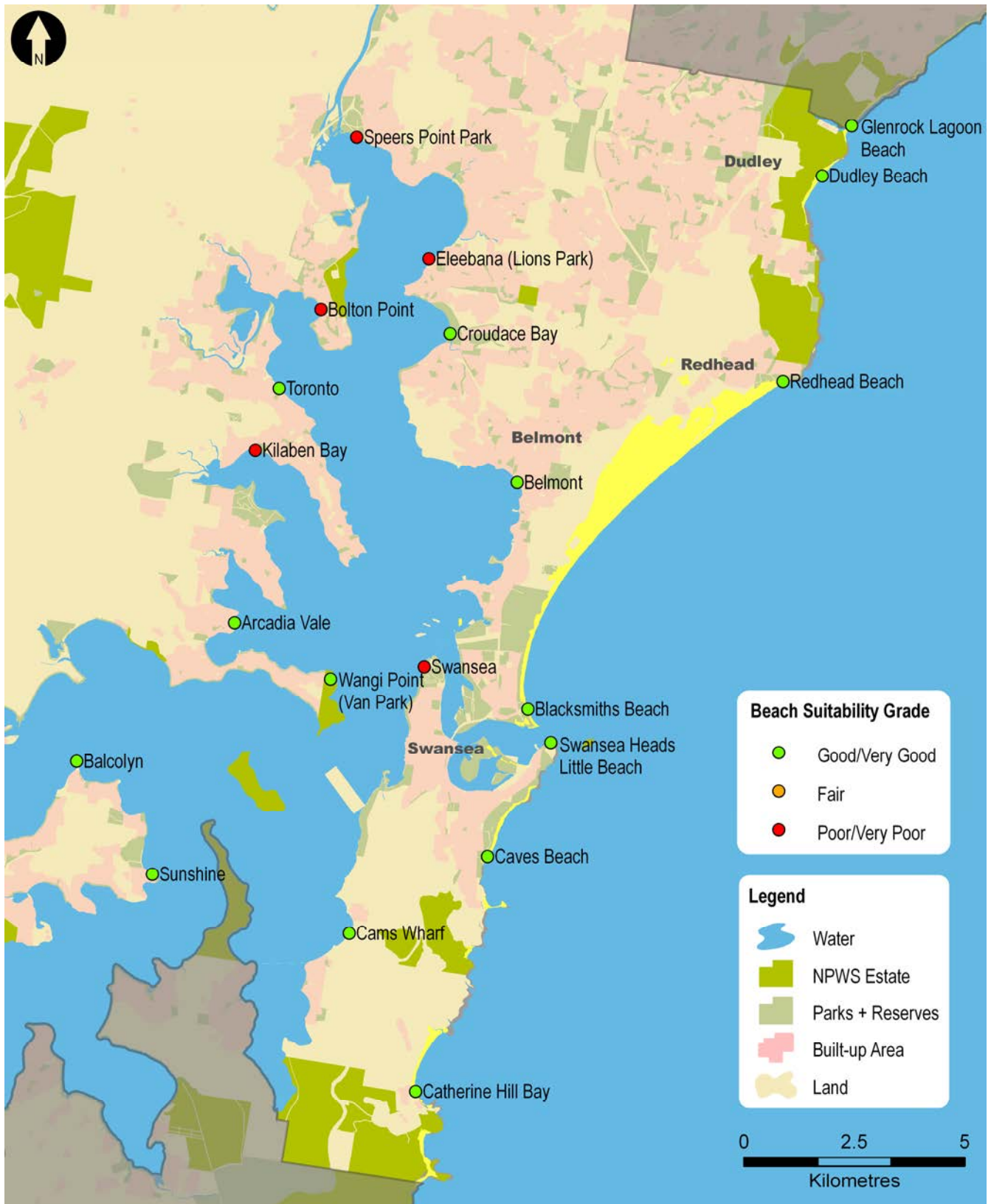
## Management

Hunter Water Corporation is required to report on any sewage overflows to the stormwater system or swimming areas. If water quality could be affected, the swimming area is closed and temporary on-site warning signs are erected. A warning is also placed on the council website and media releases are issued if appropriate.

Hunter Water has recently completed upgrades to Toronto and Edgeworth wastewater treatment plants and the Cardiff Wastewater Pumping Station to meet the demand of increasing population in the area.

During 2009–2010, \$2.5 million in projects to improve the environmental quality of Lake Macquarie were undertaken by the council. Works included stream bank rehabilitation, foreshore stabilisation, construction of stormwater quality improvement devices, wetland and saltmarsh rehabilitation activities, water quality monitoring, biological monitoring, education and community reporting.

Although water quality was of a high standard at Glenrock Lagoon beach, a health risk assessment commissioned by Hunter Water Corporation in 2009 indicated that there was a small risk that the effluent plume from Burwood Beach Wastewater Treatment Plant (WWTP) could be driven back to the coast under certain combinations of wind and current. This risk was considered as part of the sanitary inspections for this beach. The WWTP is currently being upgraded to improve its operational reliability and to cater for population growth. Hunter Water Corporation is also planning to disinfect the effluent to address the small health risk identified in the study, as part of future upgrade works at the plant.



Sampling sites and Beach Suitability Grades in Lake Macquarie Council

# Glenrock Lagoon Beach

Beach Suitability Grade: **Good**



See 'How to read this report' for key to map

Glenrock Lagoon Beach is 300 metres long and is located toward the southern end of Burwood Beach. The beach is backed by Glenrock State Conservation Area.

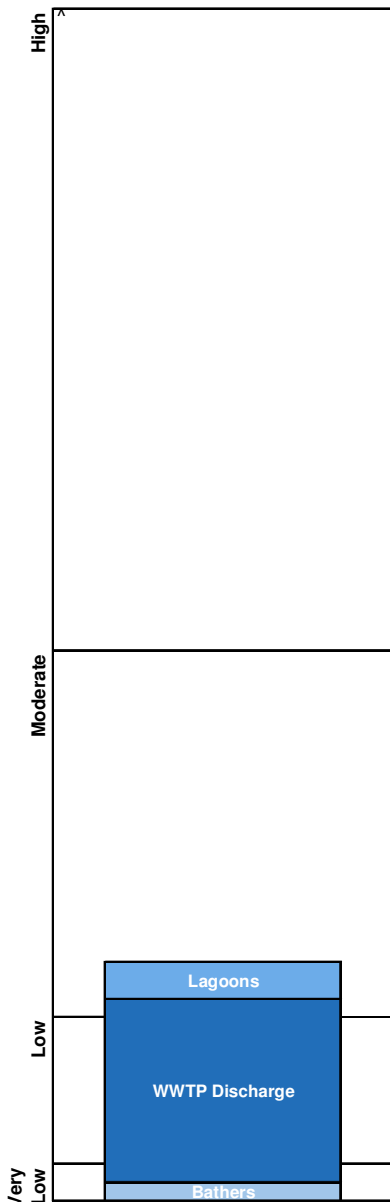
The Beach Suitability Grade of Good indicates that the microbial water quality is considered suitable for swimming most of the time but the water may be susceptible to pollution from a few potential sources of faecal contamination.

The response to rainfall graph indicates that enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit in response to 10 mm of rainfall.

The site has been monitored since 1996 and microbial water quality has generally been of a high standard.

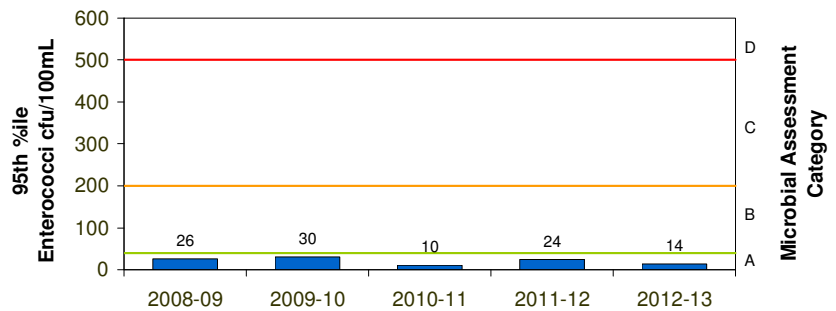
## Sanitary Inspection: Moderate

Source: ■ Very Low ■ Low ■ Moderate ■ High



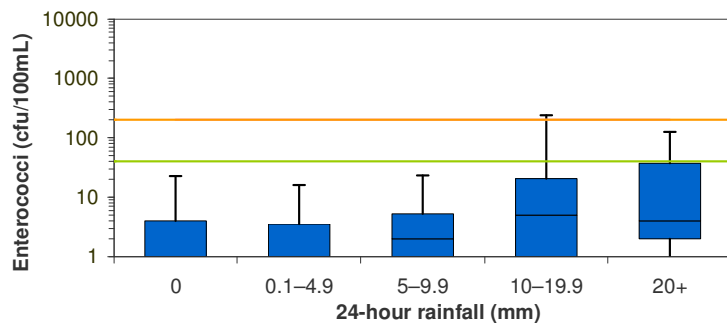
## Microbial Assessment: A

Monitoring period for 2012–13 result is September 2011 to April 2013.

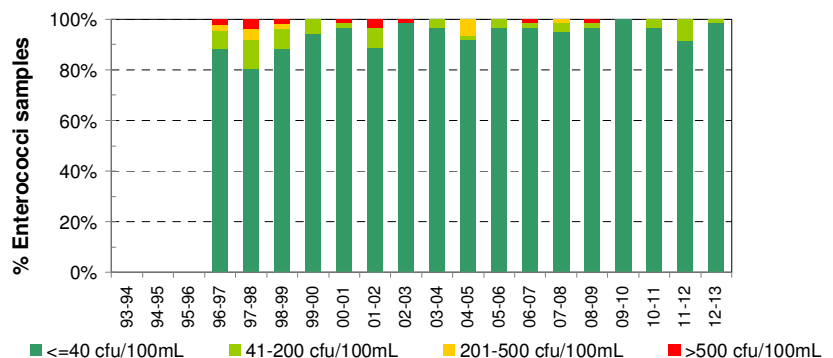


## Response to rainfall

Rainfall from Burwood Beach WWTP rain gauge



## Trends in enterococci data through time



# Dudley Beach

**Beach Suitability Grade: Very Good**



See 'How to read this report' for key to map

Dudley Beach is one kilometre long. It is in the Glenrock State Conservation Area and is backed by bushland.

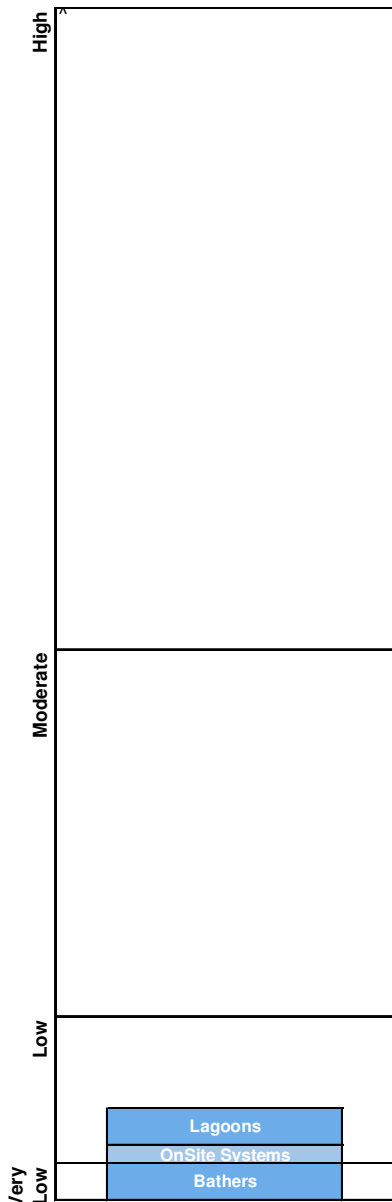
The Beach Suitability Grade of Very Good indicates that the microbial water quality is considered suitable for swimming almost all of the time, with few potential sources of faecal contamination.

The response to rainfall graph indicates that enterococci levels increased slightly with increasing rainfall but generally remained below the safe swimming limit across all rainfall categories.

The site has been monitored since 1996 and microbial water quality has generally been of a high standard.

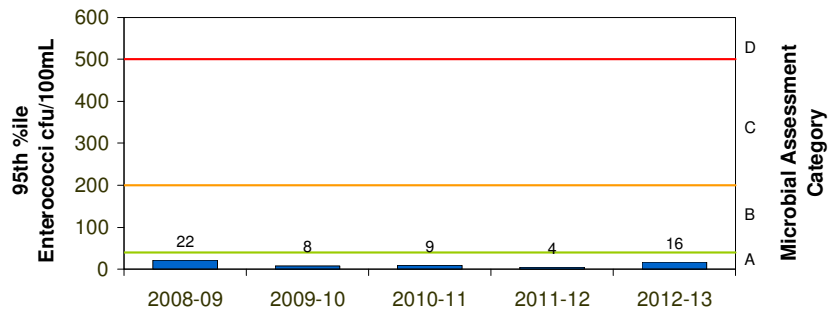
## Sanitary Inspection: Low

Source: ■ Very Low ■ Low ■ Moderate ■ High



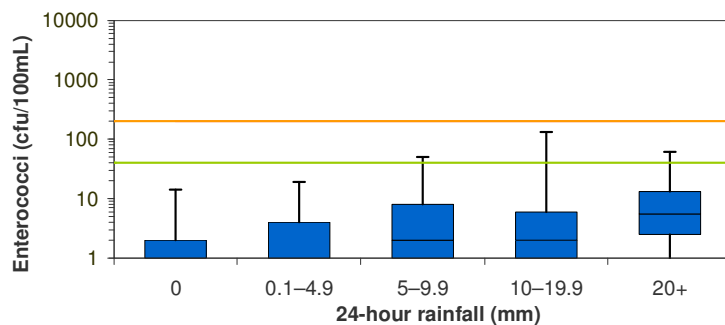
## Microbial Assessment: A

Monitoring period for 2012–13 result is September 2011 to April 2013.

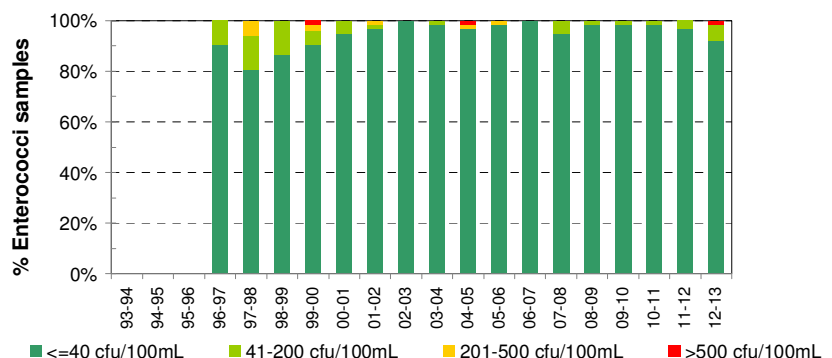


## Response to rainfall

Rainfall from Burwood Beach WWTP rain gauge



## Trends in enterococci data through time





# Redhead Beach

Beach Suitability Grade: **Good**



See 'How to read this report' for key to map

Redhead Beach is located at the northern end of a ten kilometre stretch of beach and is backed by extensive sand dunes and a grassy reserve.

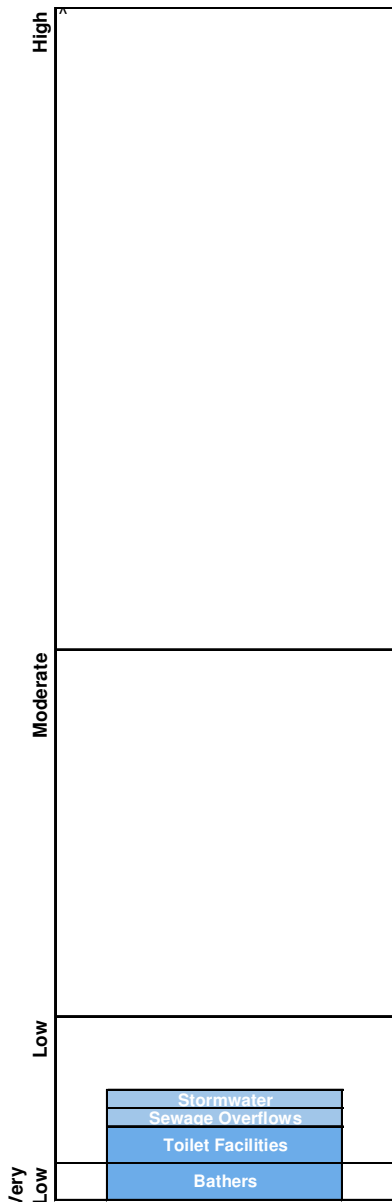
The Beach Suitability Grade of Good indicates that the water quality is safe for swimming most of the time, with several potential sources of minor faecal contamination.

The response to rainfall graph indicates that enterococci levels increased slightly with increasing rainfall but generally remained below the safe swimming limit across all rainfall categories.

The site has been monitored since 1996 and microbial water quality has generally been of a high standard.

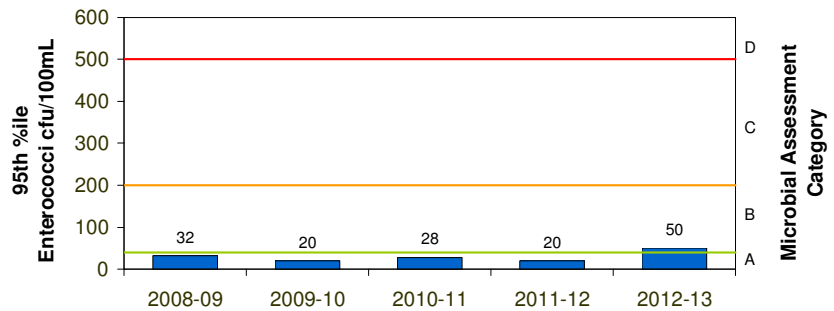
## Sanitary Inspection: Low

Source: ■ Very Low ■ Low ■ Moderate ■ High



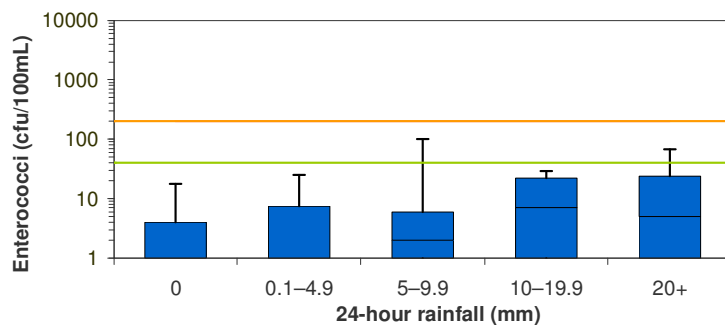
## Microbial Assessment: B

Monitoring period for 2012–13 result is September 2011 to April 2013.

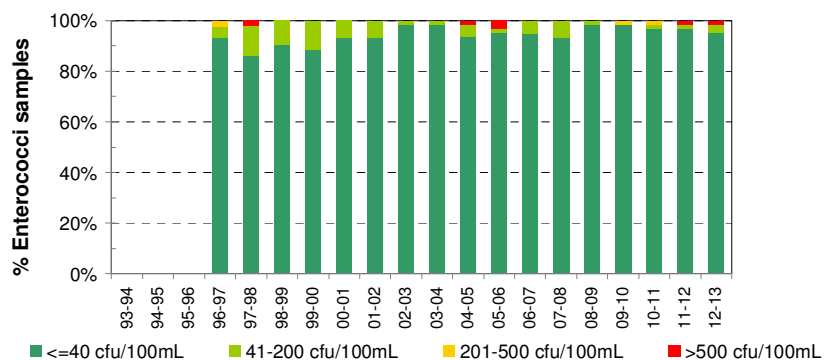


## Response to rainfall

Rainfall from Belmont rain gauge



## Trends in enterococci data through time



# Blacksmiths Beach

Beach Suitability Grade: **Very Good**



Blacksmiths Beach is toward the southern end of a ten kilometre stretch of beach. A sea wall along the southern end protects the beach from outflow from Lake Macquarie.

The Beach Suitability Grade of Very Good indicates that the microbial water quality is considered suitable for swimming almost all of the time, with few significant sources of faecal contamination.

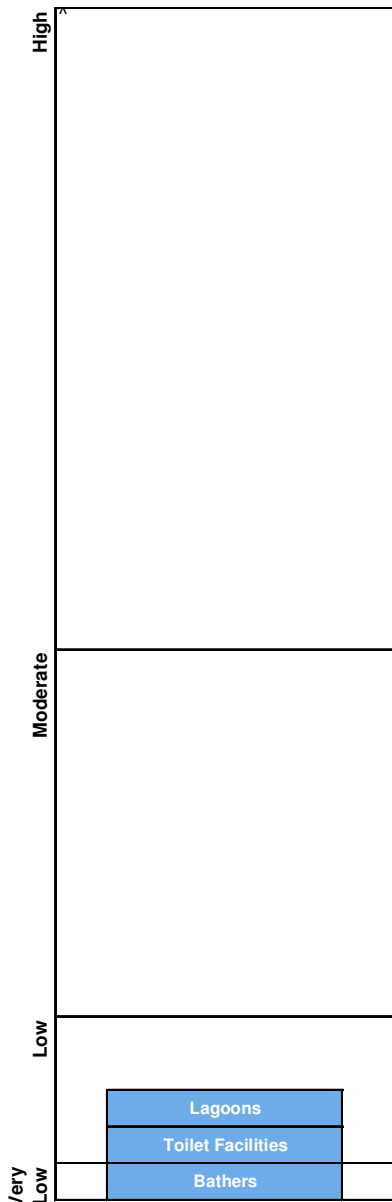
The response to rainfall graph indicates that enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit in response to 20 mm of rainfall.

The site has been monitored since 1996 and microbial water quality has been of a consistently very high standard.

See 'How to read this report' for key to map

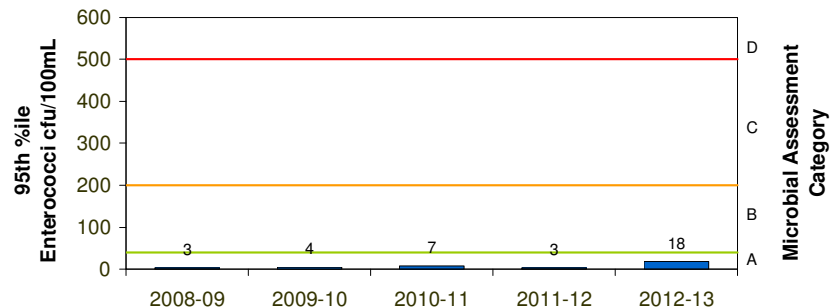
## Sanitary Inspection: Low

Source: ■ Very Low ■ Low ■ Moderate ■ High



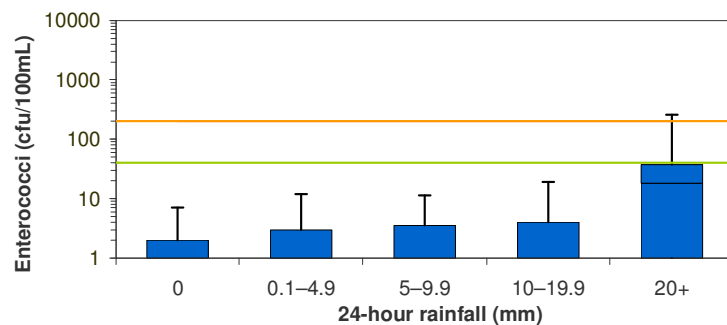
## Microbial Assessment: A

Monitoring period for 2012–13 result is September 2011 to April 2013.

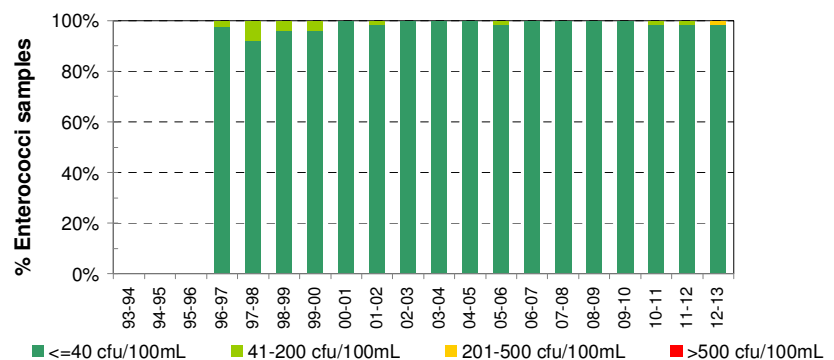


## Response to rainfall

Rainfall from Belmont rain gauge



## Trends in enterococci data through time



# Swansea Heads Little Beach Beach Suitability Grade: **Good**



See 'How to read this report' for key to map

Swansea Heads Little Beach is 60 metres long and is directly south-east of the entrance to Lake Macquarie. It is bounded by a small sea wall to the north-west and by a rock platform backed by steep vegetated bluffs to the south-east.

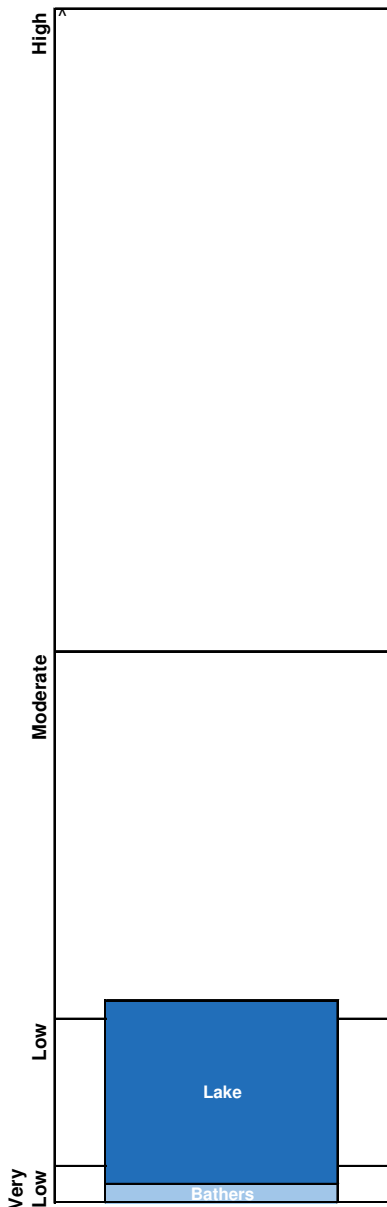
The Beach Suitability Grade of Good indicates that the microbial water quality is generally suitable for swimming but the water may be susceptible to pollution from the outflow from Lake Macquarie.

The response to rainfall graph indicates that enterococci levels had little response to rainfall, occasionally exceeding the safe swimming limit across all rainfall categories.

The site has been monitored since 1996. A small percentage of elevated enterococci results has been recorded in most years.

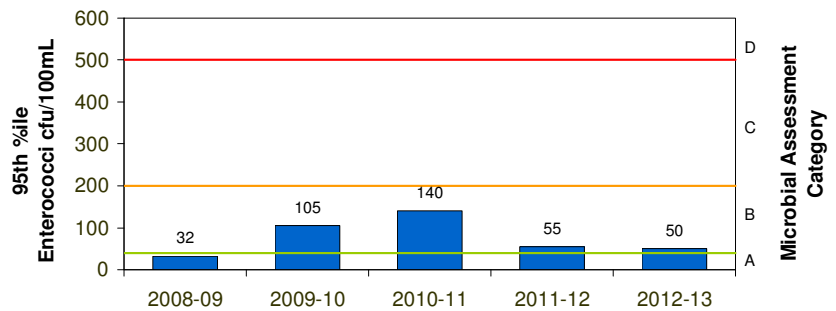
## Sanitary Inspection: **Moderate**

Source: ■ Very Low ■ Low ■ Moderate ■ High



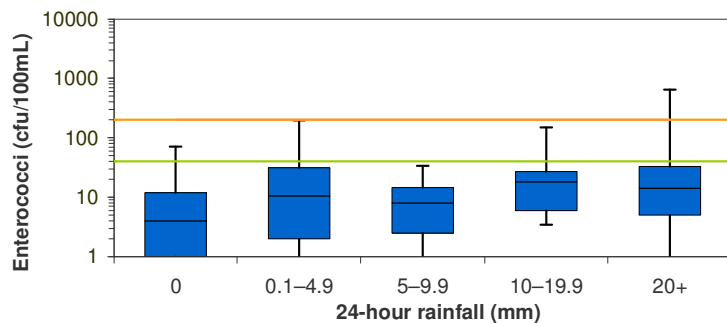
## Microbial Assessment: **B**

Monitoring period for 2012–13 result is September 2011 to April 2013.

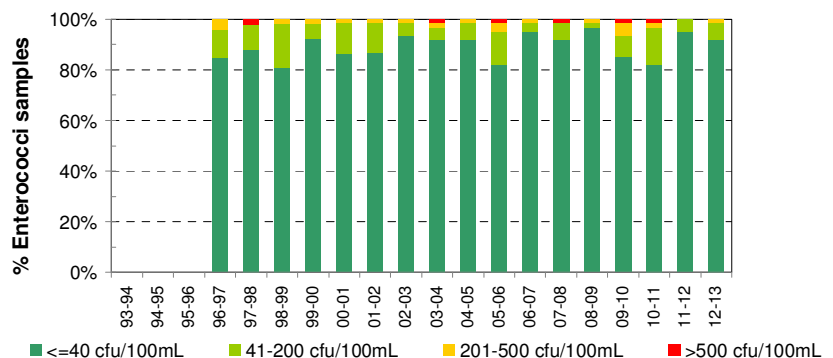


## Response to rainfall

Rainfall from Belmont rain gauge



## Trends in enterococci data through time





# Caves Beach

Beach Suitability Grade: **Very Good**



See 'How to read this report' for key to map

Caves Beach is located at the southern end of a 1.8 kilometre beach that runs south from Swansea Heads.

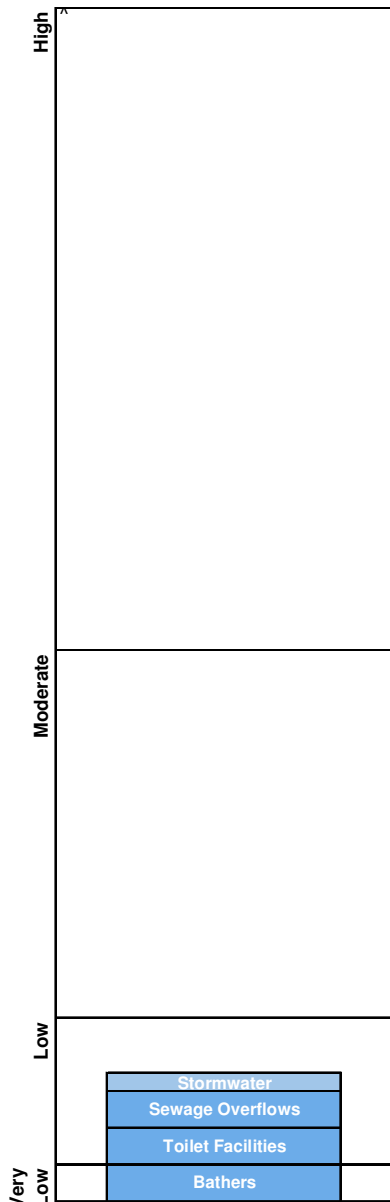
The Beach Suitability Grade of Very Good indicates that the microbial water quality is considered suitable for swimming almost all of the time, with few potential sources of faecal contamination.

The response to rainfall graph indicates that enterococci levels increased slightly with increasing rainfall, but generally remained below the safe swimming limit across all rainfall categories.

The site has been monitored since 1996. Water quality has generally been of a very high standard.

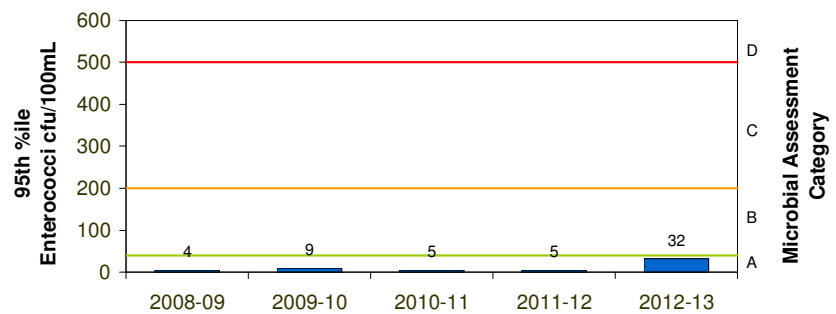
## Sanitary Inspection: Low

Source: ■ Very Low ■ Low ■ Moderate ■ High



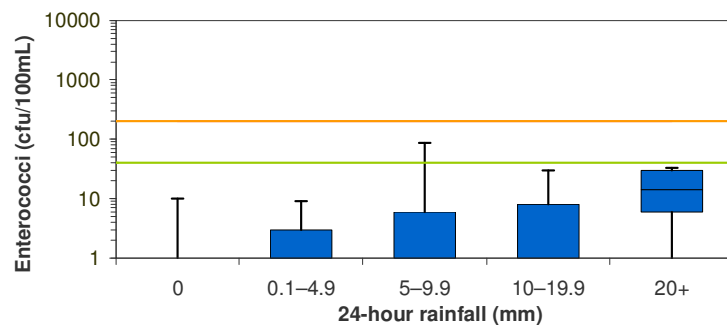
## Microbial Assessment: A

Monitoring period for 2012–13 result is September 2011 to April 2013.

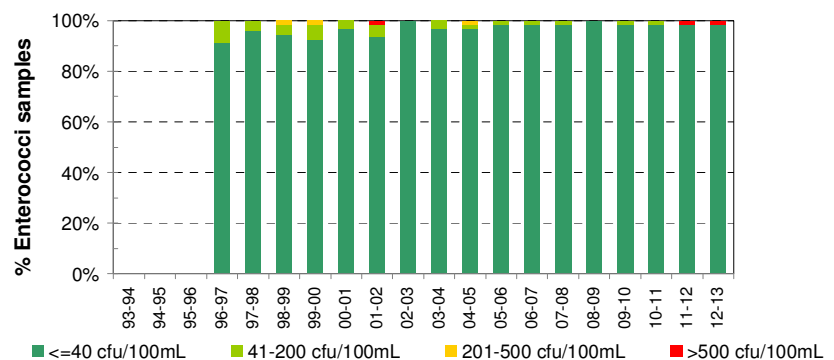


## Response to rainfall

Rainfall from Belmont rain gauge



## Trends in enterococci data through time



# Eleebana (Lions Park)

Beach Suitability Grade: **Poor**



See 'How to read this report' for key to map

Eleebana is located at the northern end of Lake Macquarie in Warners Bay. The adjacent foreshore reserve has toilet and picnic facilities.

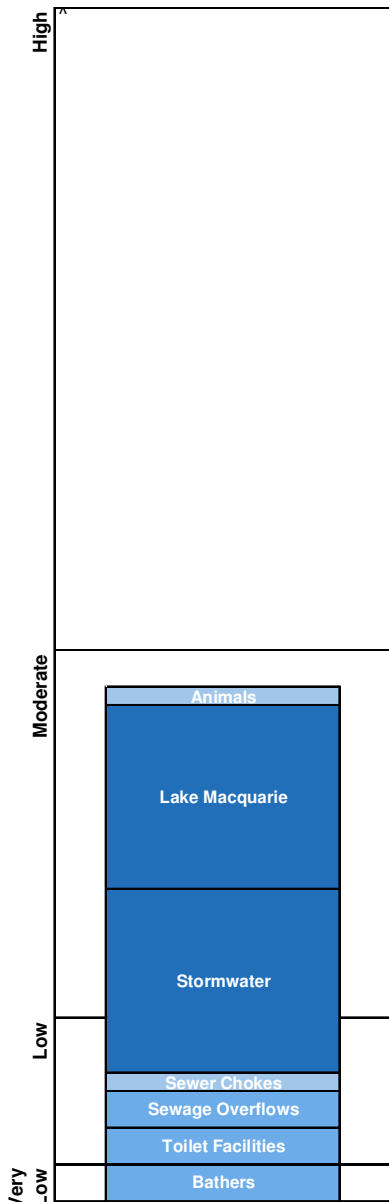
The Beach Suitability Grade of Poor indicates that the water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination.

The response to rainfall graph indicates that enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit in response to little or no rain.

The site has been monitored since 2010, with elevated levels of enterococci recorded in up to 30 per cent of samples in 2010–2011.

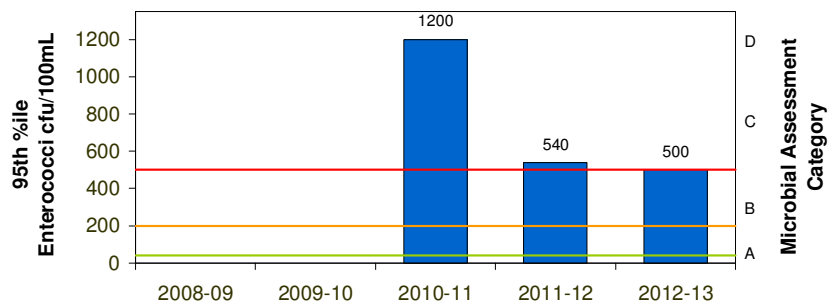
## Sanitary Inspection: Moderate

Source: ■ Very Low ■ Low ■ Moderate ■ High



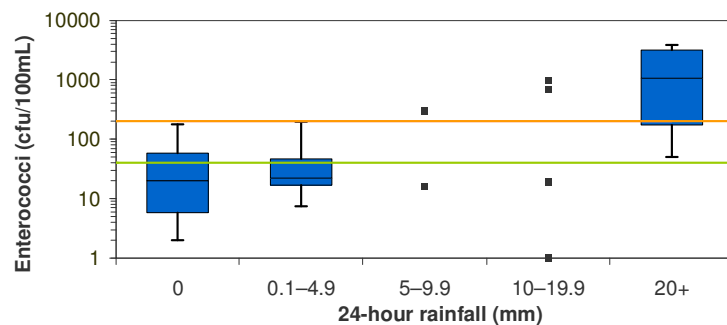
## Microbial Assessment: C

Monitoring period for 2012–13 result is November 2010 to April 2013.

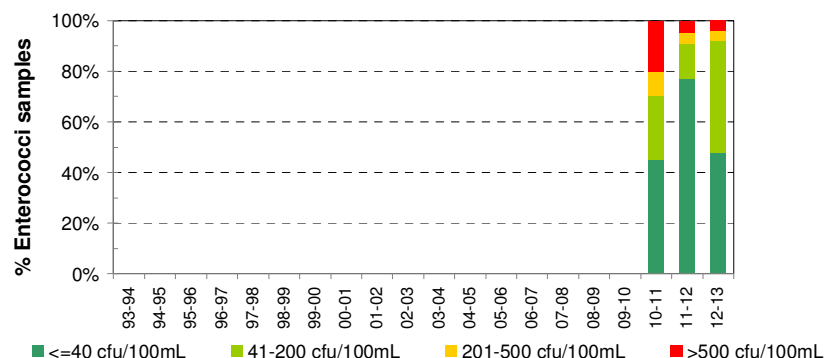


## Response to rainfall

Rainfall from Toronto rain gauge

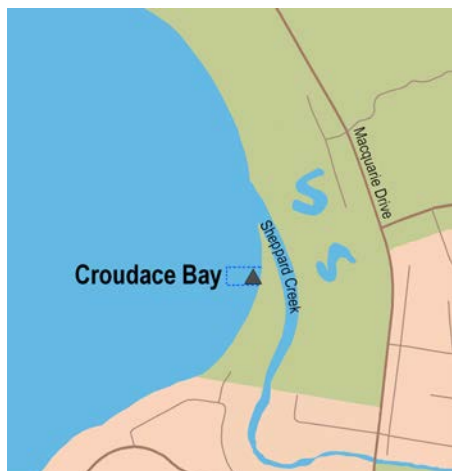


## Trends in enterococci data through time



# Croudace Bay

Beach Suitability Grade: **Good**



See 'How to read this report' for key to map

Croudace Bay is a netted swimming enclosure near Sheppard Creek on the eastern side of Lake Macquarie. Picnic tables and a car park are located in the immediate foreshore of the baths.

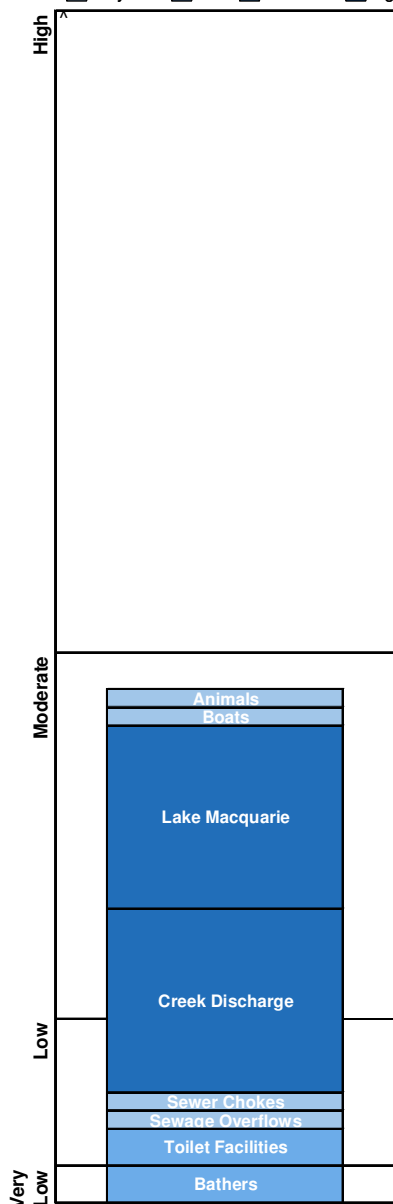
The Beach Suitability Grade of Good indicates that the microbial water quality is considered suitable for swimming most of the time but the water may be susceptible to pollution from several potential sources of faecal contamination.

The response to rainfall graph indicates that enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit in response to little or no rain.

The site has been monitored since 2010.

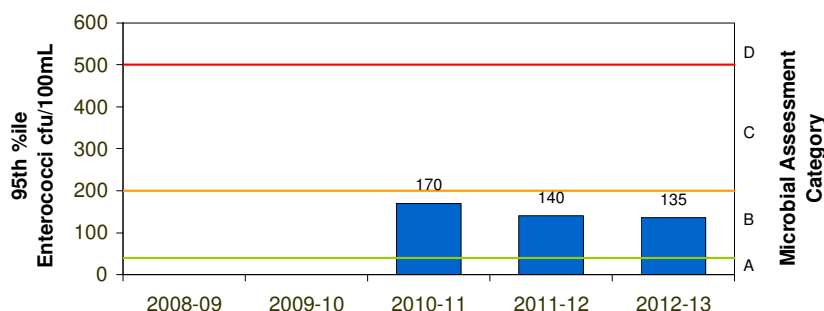
## Sanitary Inspection: Moderate

Source: ■ Very Low ■ Low ■ Moderate ■ High



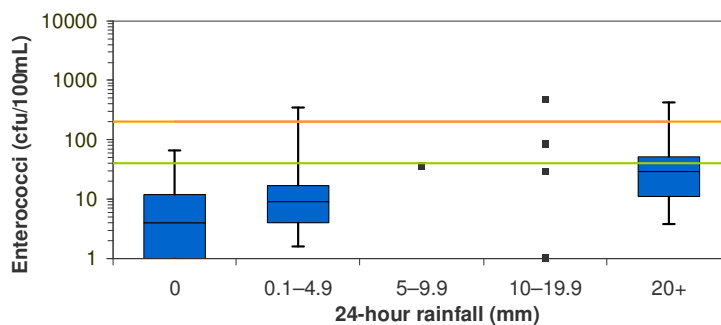
## Microbial Assessment: B

Monitoring period for 2012–13 result is November 2010 to April 2013.

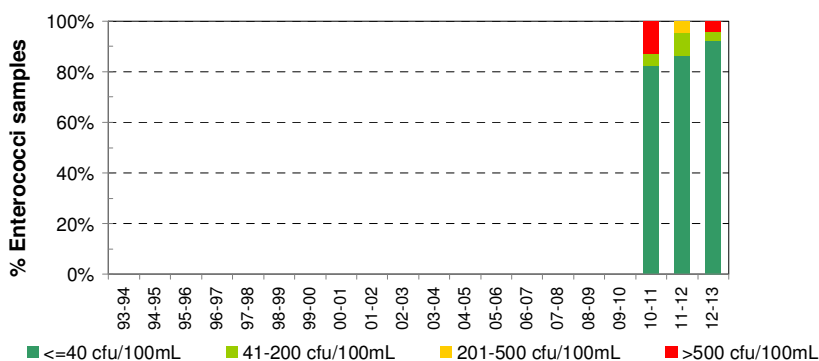


## Response to rainfall

Rainfall from Belmont rain gauge



## Trends in enterococci data through time



# Arcadia Vale

Beach Suitability Grade: **Good**



Arcadia Vale is situated on the western side of Lake Macquarie. There is a playground, toilets and picnic tables in the adjacent park.

The Beach Suitability Grade of Good indicates that the microbial water quality is considered suitable for swimming most of the time but the water may be susceptible to pollution from a few potential sources of faecal contamination.

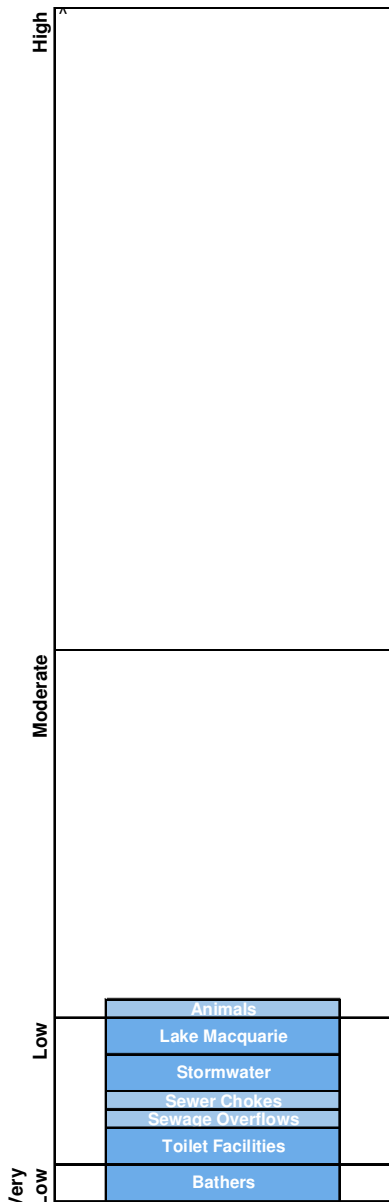
The response to rainfall graph indicates that enterococci levels increased slightly with increasing rainfall, but mostly remained below the safe swimming limit.

The site has been monitored since 2010 and microbial water quality has generally been of a high standard.

See 'How to read this report' for key to map

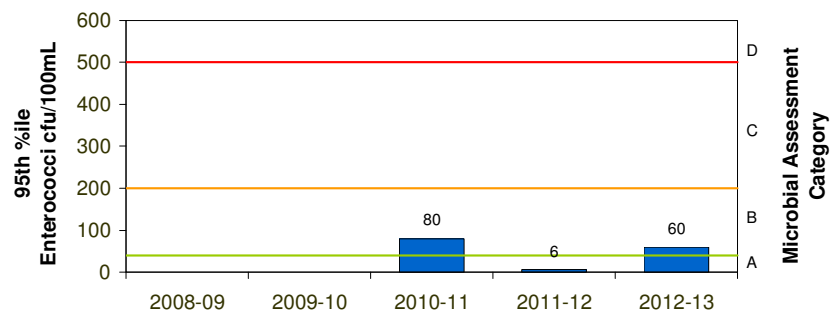
## Sanitary Inspection: Moderate

Source: ■ Very Low ■ Low ■ Moderate ■ High



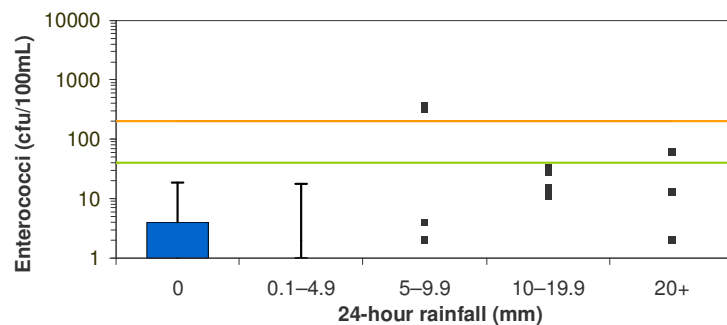
## Microbial Assessment: B

Monitoring period for 2012–13 result is November 2010 to April 2013.

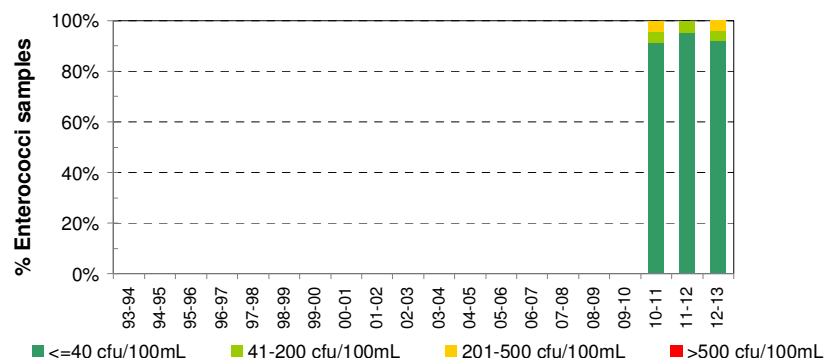


## Response to rainfall

Rainfall from Swansea rain gauge



## Trends in enterococci data through time



# Belmont

Beach Suitability Grade: **Good**



See 'How to read this report' for key to map

Belmont is located on the eastern side of Lake Macquarie. Access to the sample site is from Belmont Lions Park along Brooks Parade, Belmont. The sample is collected at the baths, from the jetty. The site is adjacent to toilet facilities and residential and commercial properties.

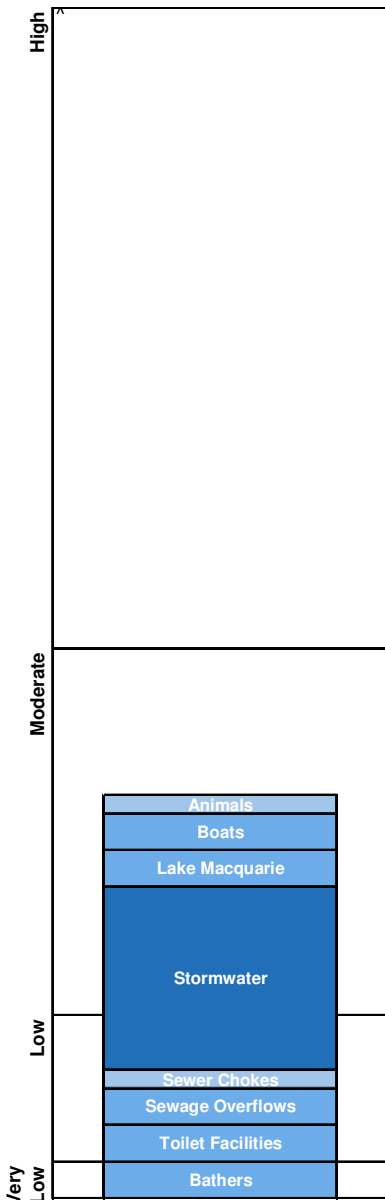
The Beach Suitability Grade of Good indicates that the microbial water quality is considered suitable for swimming most of the time but the water may be susceptible to pollution from a few potential sources of faecal contamination, including stormwater.

The response to rainfall graph indicates that enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit in response to light rain, and frequently after 20 mm or more.

The site has been monitored since 2010.

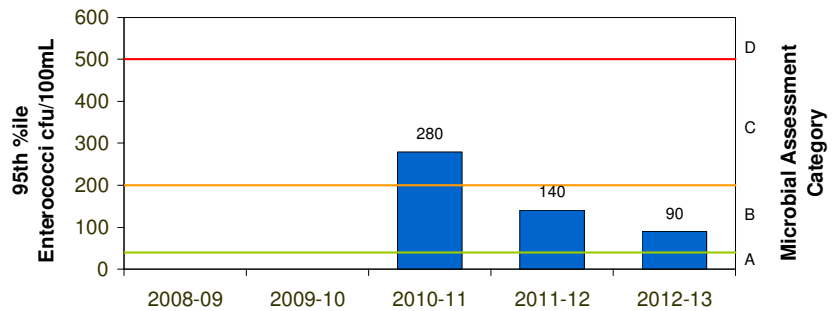
## Sanitary Inspection: Moderate

Source: ■ Very Low ■ Low ■ Moderate ■ High



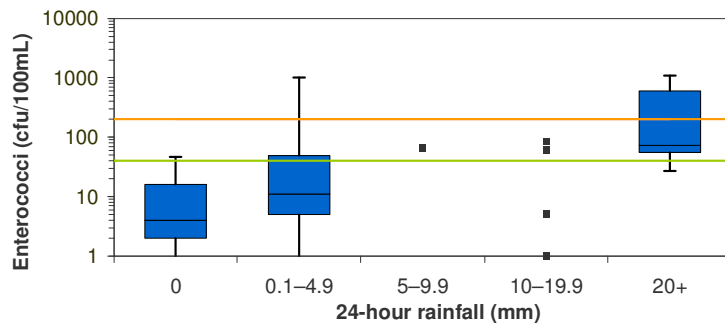
## Microbial Assessment: B

Monitoring period for 2012–13 result is November 2010 to April 2013.

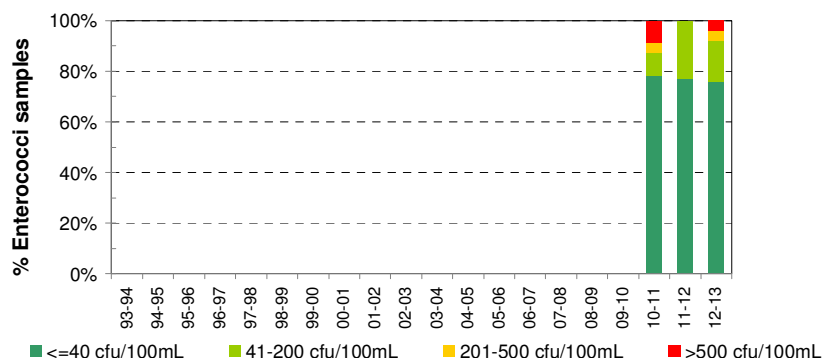


## Response to rainfall

Rainfall from Belmont rain gauge



## Trends in enterococci data through time





# Swansea

Beach Suitability Grade: **Poor**



Swansea is on the eastern edge of Lake Macquarie near Swansea Channel and Lakes Entrance. A caravan park is located nearby with a small creek discharging close to the site.

The Beach Suitability Grade of Poor indicates that the water quality is susceptible to faecal pollution, with several potential sources of faecal contamination.

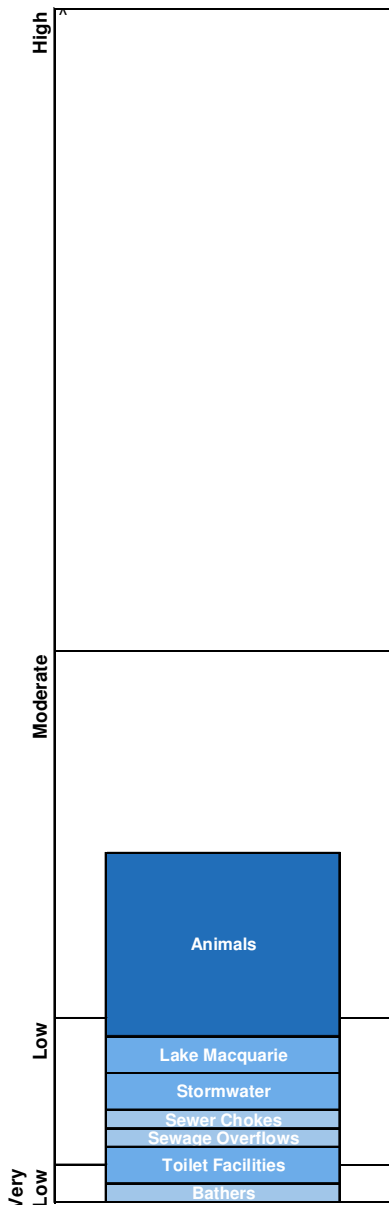
The response to rainfall graph indicates that enterococci levels occasionally exceeded the safe swimming limit in response to little or no rain.

The site has been monitored since 2010.

See 'How to read this report' for key to map

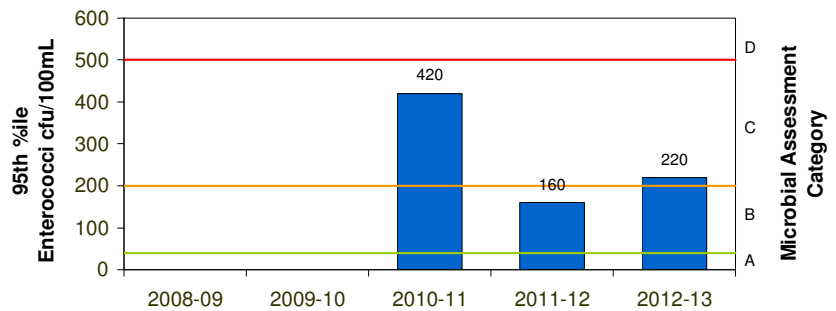
## Sanitary Inspection: Moderate

Source: ■ Very Low ■ Low ■ Moderate ■ High



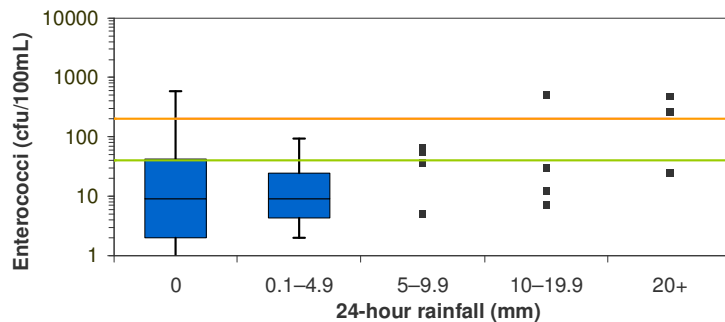
## Microbial Assessment: C

Monitoring period for 2012–13 result is November 2010 to April 2013.

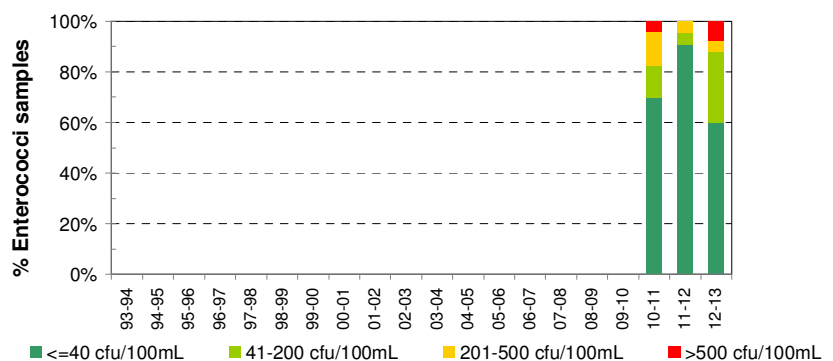


## Response to rainfall

Rainfall from Swansea rain gauge

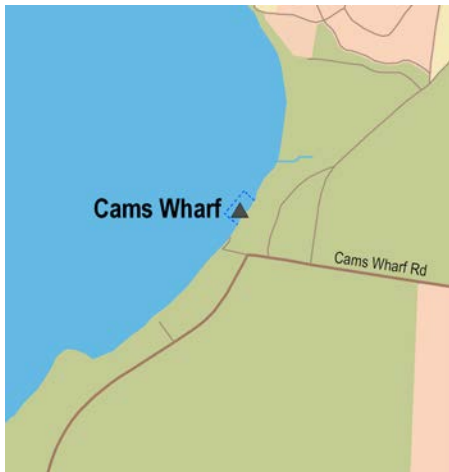


## Trends in enterococci data through time



# Cams Wharf

Beach Suitability Grade: **Good**



Cams Wharf is a netted swimming enclosure on the eastern side of Lake Macquarie. A foreshore reserve, toilet amenities, car park and boat ramp are located in the immediate vicinity of the site.

The Beach Suitability Grade of Good indicates that the microbial water quality is considered suitable for swimming most of the time but the water may be susceptible to pollution from a few potential sources of faecal contamination, including stormwater discharge from a nearby creek.

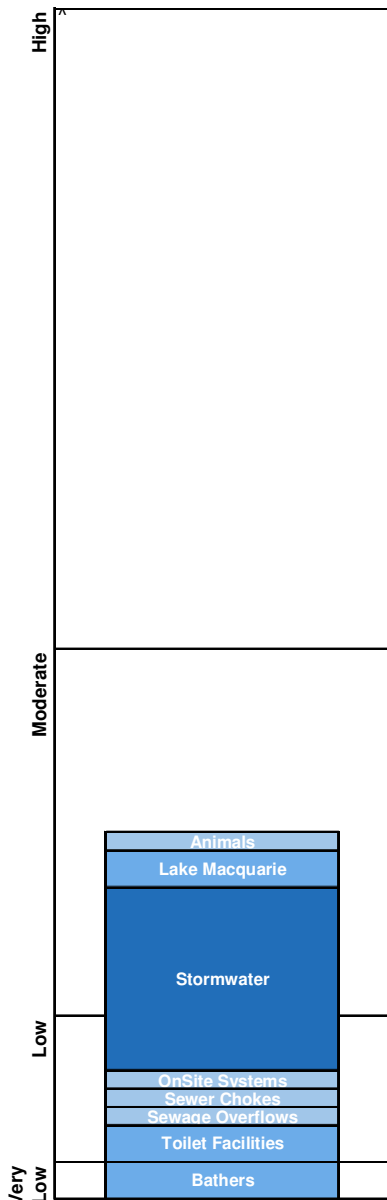
The response to rainfall graph indicates that enterococci levels generally increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit across all rainfall categories.

The site has been monitored since 2010.

See 'How to read this report' for key to map

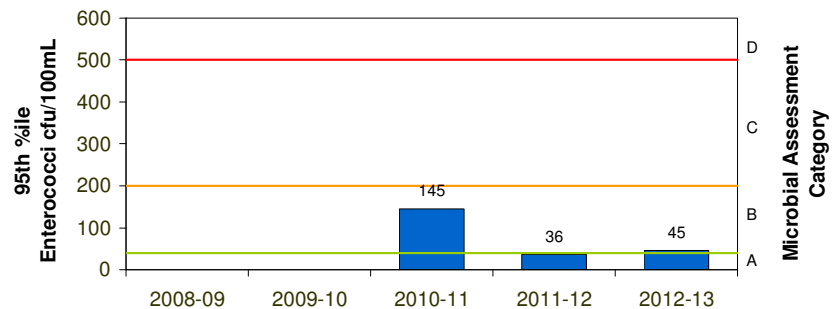
## Sanitary Inspection: Moderate

Source: ■ Very Low ■ Low ■ Moderate ■ High



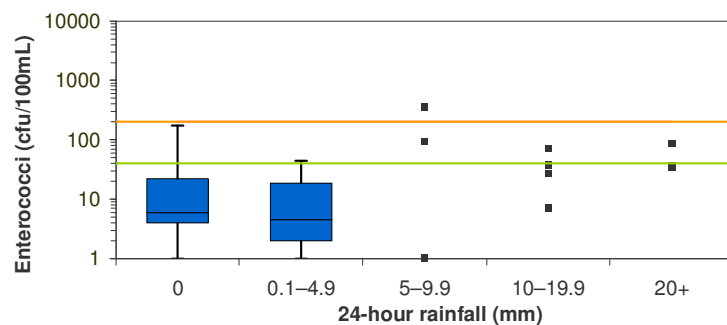
## Microbial Assessment: B

Monitoring period for 2012–13 result is November 2010 to April 2013.

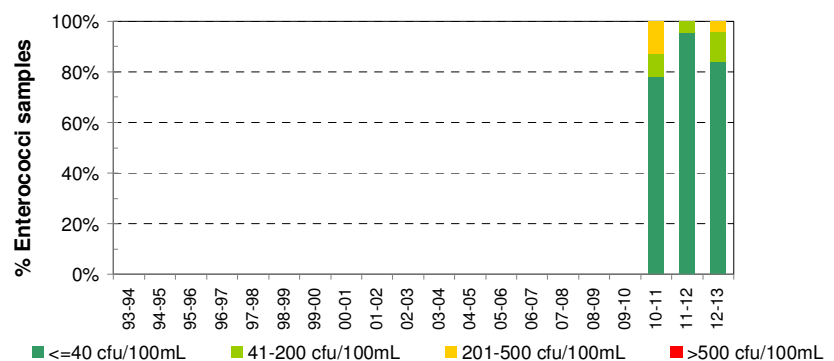


## Response to rainfall

Rainfall from Swansea rain gauge



## Trends in enterococci data through time



# Catherine Hill Bay

Beach Suitability Grade: **Very Good**



Catherine Hill Bay is at the southern end of a two kilometre stretch of ocean beach. The beach is patrolled by council lifeguards from September to April.

The Beach Suitability Grade of Very Good indicates that the microbial water quality is considered suitable for swimming almost all of the time, with few significant sources of faecal contamination.

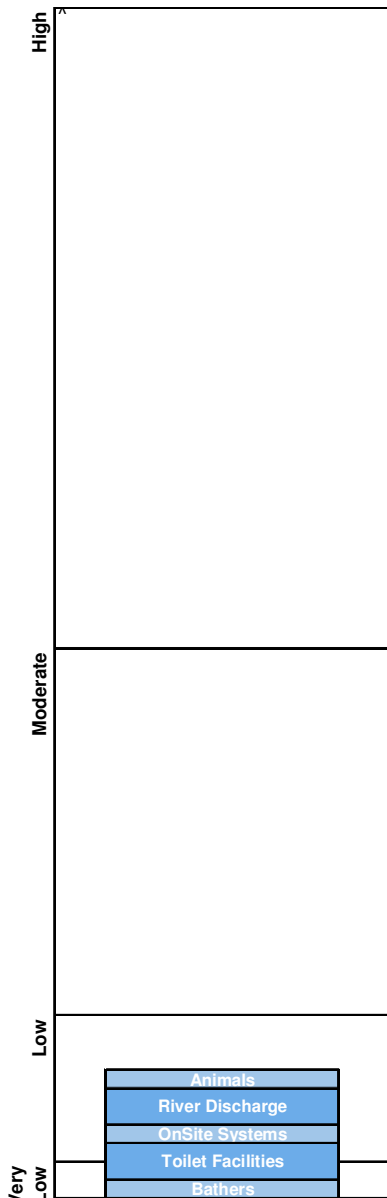
The response to rainfall graph indicates that enterococci levels had little response to rainfall and generally remained below the safe swimming limit across all rainfall categories.

The site has been monitored since 2010 and microbial water quality has generally been of a very high standard.

See 'How to read this report' for key to map

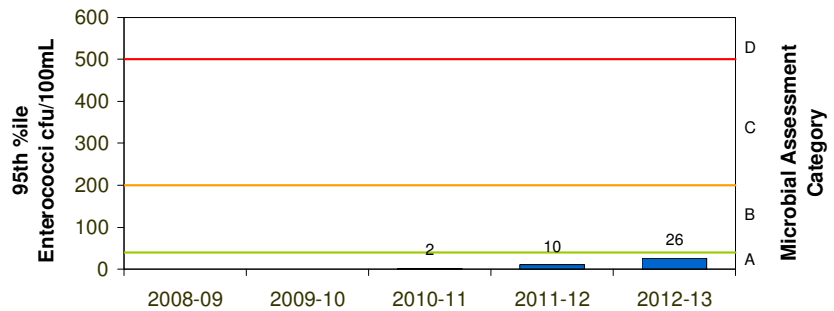
## Sanitary Inspection: Low

Source: ■ Very Low ■ Low ■ Moderate ■ High



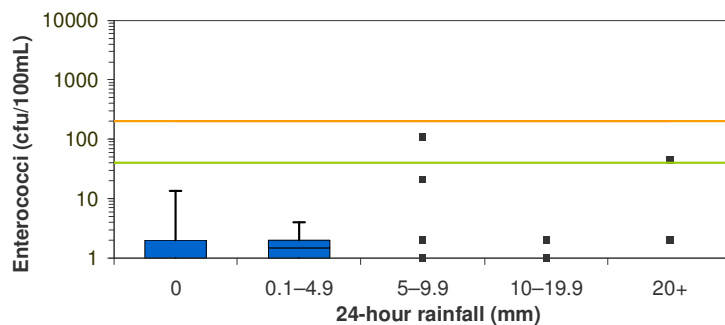
## Microbial Assessment: A

Monitoring period for 2012–13 result is November 2010 to April 2013.

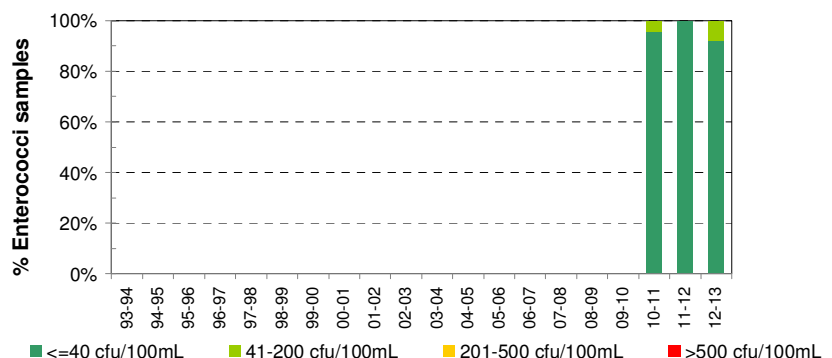


## Response to rainfall

Rainfall from Swansea rain gauge

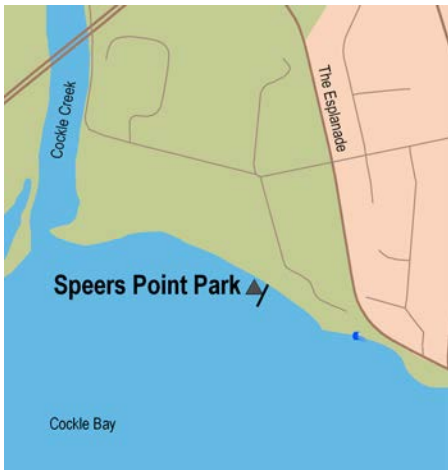


## Trends in enterococci data through time



# Speers Point Park

Beach Suitability Grade: **Poor**



Speers Point is in Cockle Bay at the northern end of Lake Macquarie. The sample is collected from the end of the public jetty. A playground, sporting fields, swimming centre and car park facilities are located in the adjacent foreshore.

The Beach Suitability Grade of Poor indicates that the microbial water quality is susceptible to faecal pollution, particularly after rainfall, with a number of potential sources of faecal contamination including discharge from Cockle Creek.

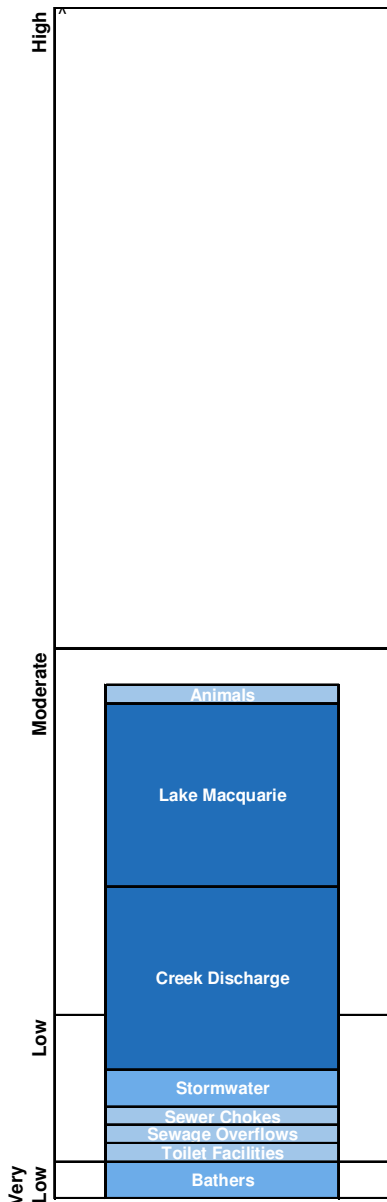
The response to rainfall graph indicates that enterococci levels increased with increasing rainfall, and often exceeded the safe swimming limit after small amounts of rainfall.

The site has been monitored since 2010.

See 'How to read this report' for key to map

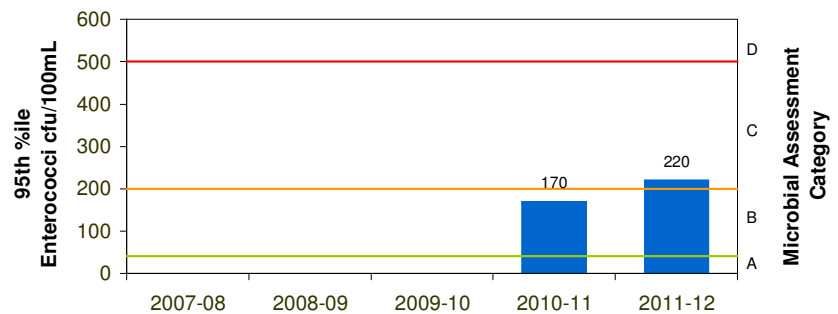
## Sanitary Inspection: Moderate

Source: ■ Very Low ■ Low ■ Moderate ■ High



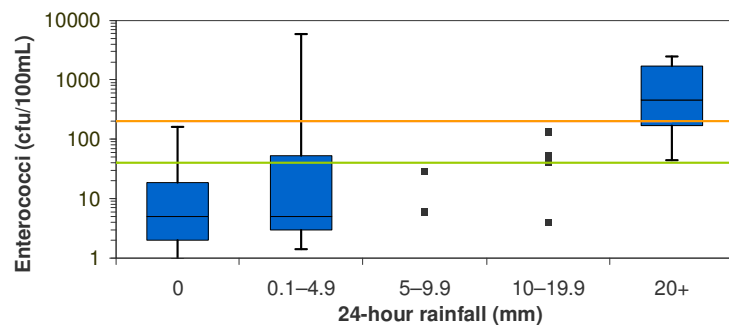
## Microbial Assessment: C

Monitoring period for 2012–13 result is November 2010 to April 2013.

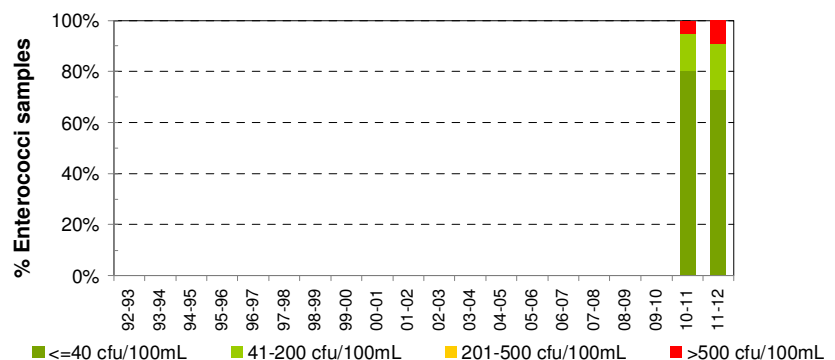


## Response to rainfall

Rainfall from Toronto rain gauge



## Trends in enterococci data through time



# Bolton Point

Beach Suitability Grade: **Poor**



See 'How to read this report' for key to map

Bolton Point is a netted swimming enclosure on the north-western side of Lake Macquarie. There is a foreshore and car park in the immediate vicinity of the baths.

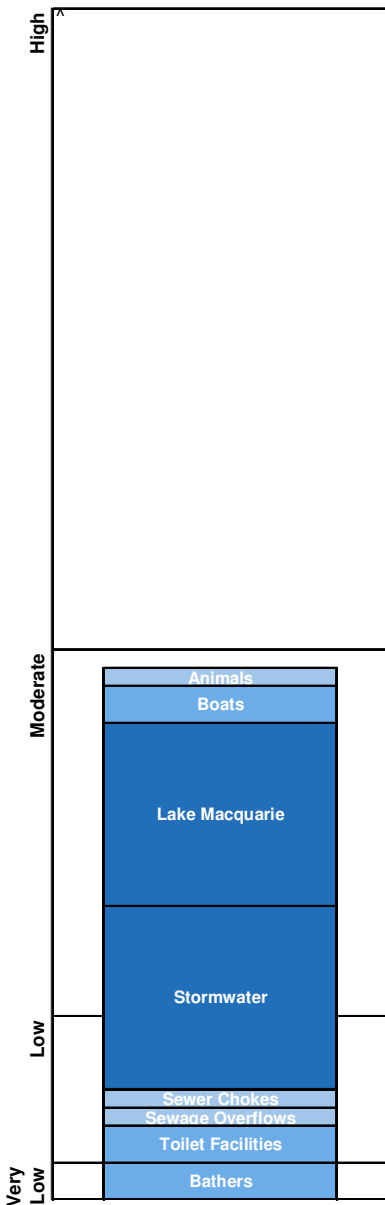
The Beach Suitability Grade of Poor indicates that the microbial water quality is susceptible to faecal pollution, particularly after rainfall, with a number of potential sources of faecal contamination.

The response to rainfall graph indicates that enterococci levels increased with increasing rainfall, regularly exceeding the safe swimming limit after only small amounts of rainfall.

The site has been monitored since 2010.

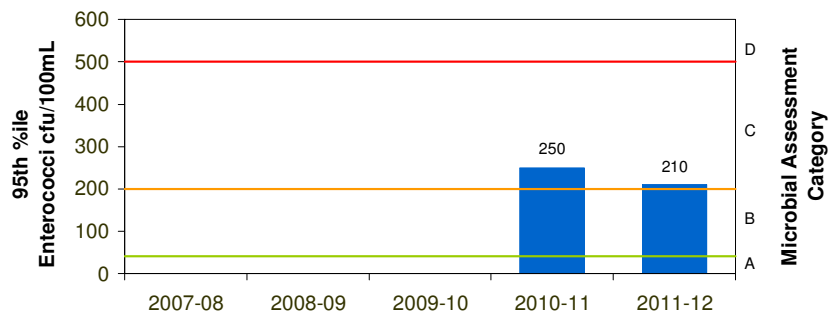
## Sanitary Inspection: Moderate

Source: ■ Very Low ■ Low ■ Moderate ■ High



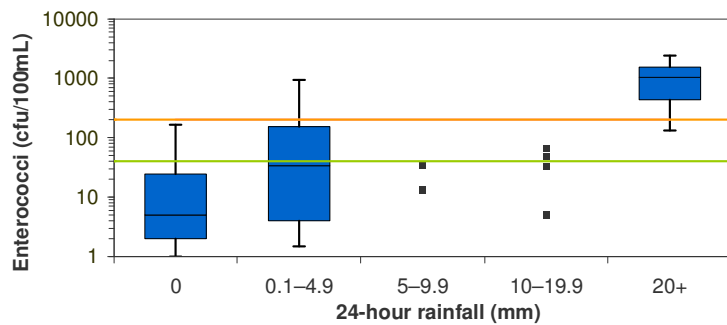
## Microbial Assessment: C

Monitoring period for 2012–13 result is November 2010 to April 2013.

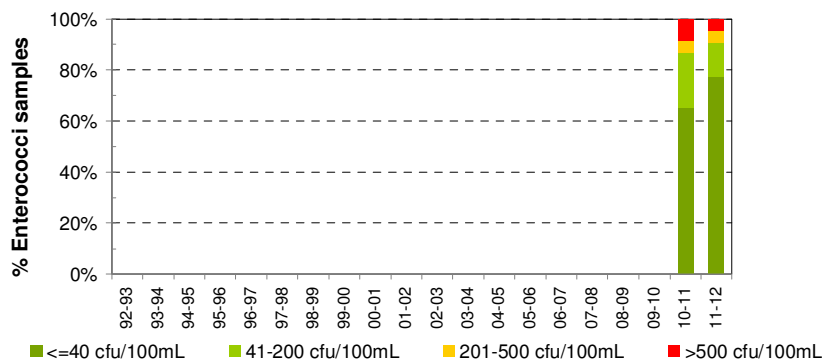


## Response to rainfall

Rainfall from Toronto rain gauge



## Trends in enterococci data through time





# Toronto

Beach Suitability Grade: **Good**



Toronto is a netted swimming enclosure on the western side of Lake Macquarie. The sample is collected near the jetty at the baths.

The Beach Suitability Grade of Good indicates that the microbial water quality is considered suitable for swimming most of the time but the water may be susceptible to pollution from several potential sources of faecal contamination, including stormwater from a nearby drain.

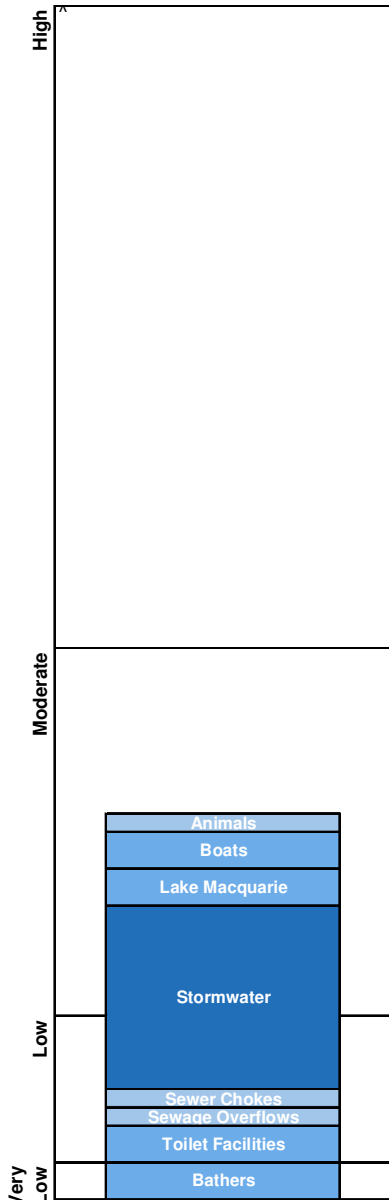
The response to rainfall graph indicates that enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after small amounts of rainfall.

The site has been monitored since 2010.

See 'How to read this report' for key to map

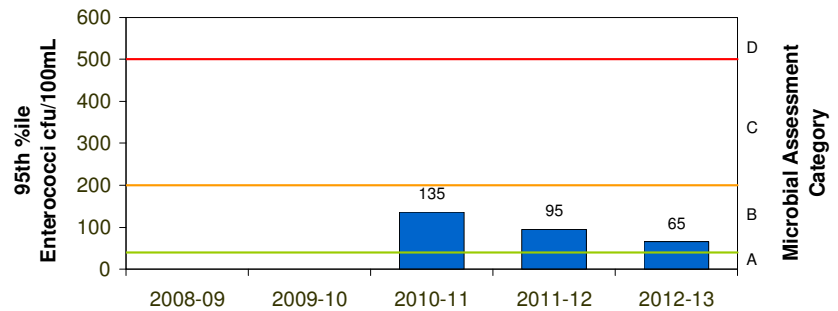
## Sanitary Inspection: Moderate

Source: ■ Very Low ■ Low ■ Moderate ■ High



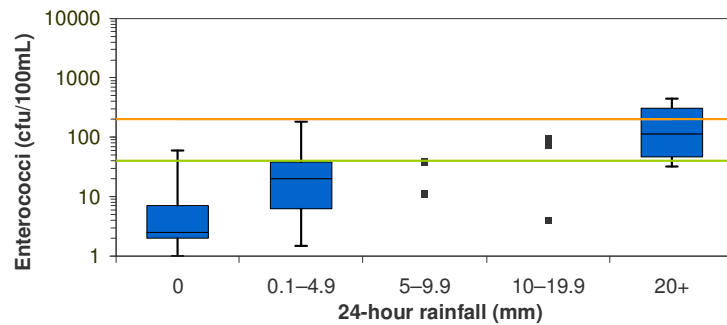
## Microbial Assessment: B

Monitoring period for 2012–13 result is November 2010 to April 2013.

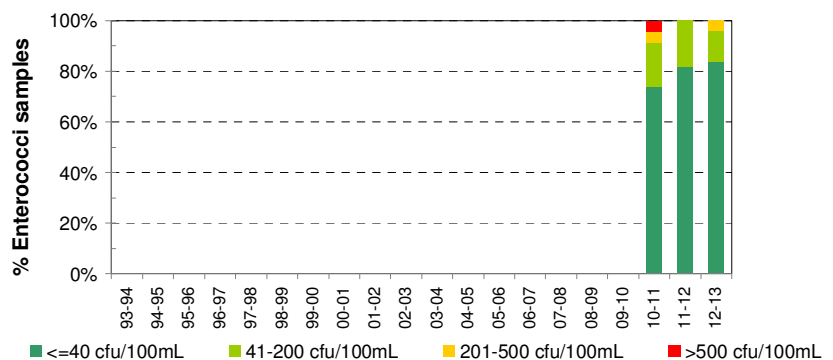


## Response to rainfall

Rainfall from Toronto rain gauge



## Trends in enterococci data through time



# Kilaben Bay

Beach Suitability Grade: **Poor**



Kilaben Bay is located on the western side of Lake Macquarie. The sample is collected from the baths which are adjacent to Kilaben Park.

The Beach Suitability Grade of Poor indicates that the water quality is susceptible to faecal pollution from several potential sources of faecal contamination, including stormwater.

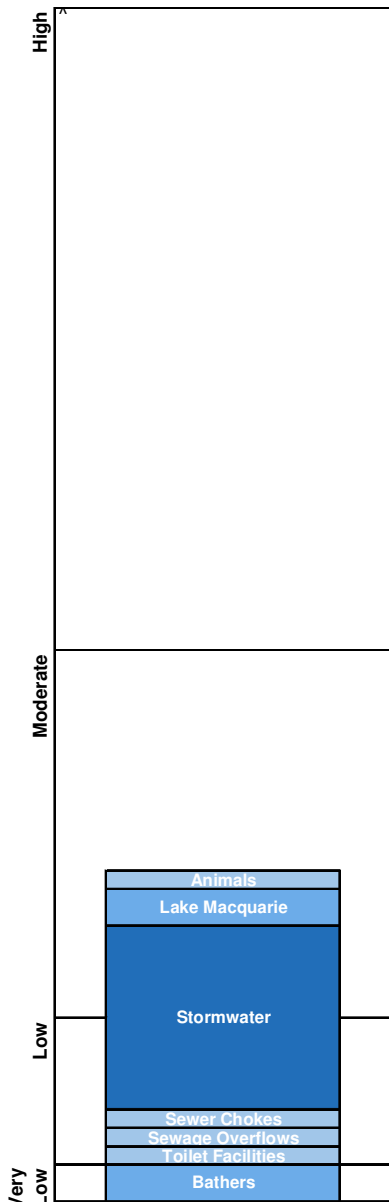
The response to rainfall graph indicates that enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after only light rain.

The site has been monitored since 2010.

See 'How to read this report' for key to map

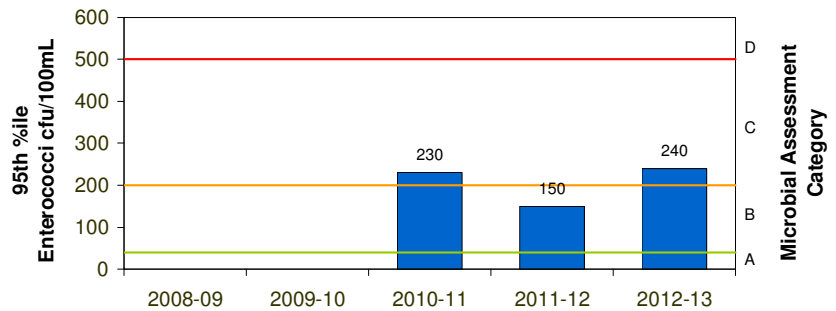
## Sanitary Inspection: Moderate

Source: ■ Very Low ■ Low ■ Moderate ■ High



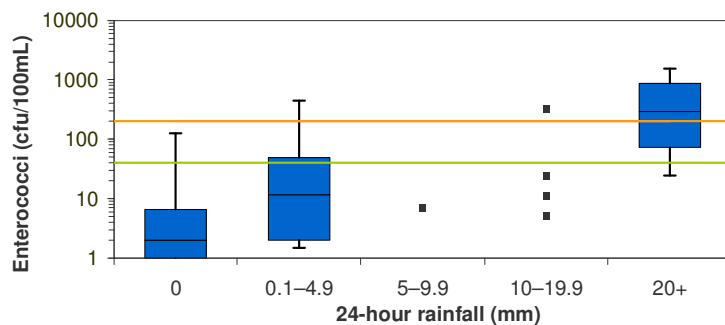
## Microbial Assessment: C

Monitoring period for 2012–13 result is November 2010 to April 2013.

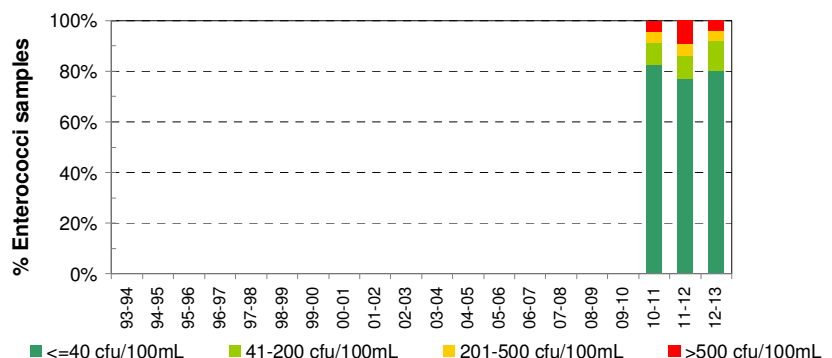


## Response to rainfall

Rainfall from Toronto rain gauge

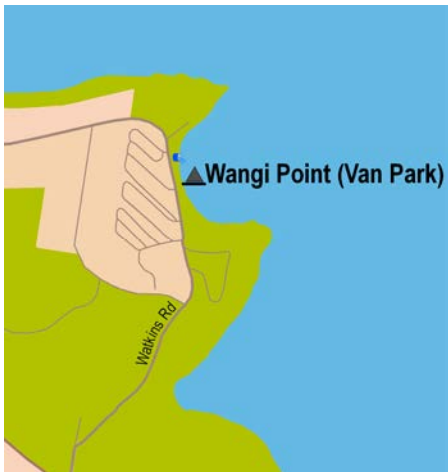


## Trends in enterococci data through time



# Wangi Point (Van Park)

Beach Suitability Grade: **Good**



Wangi Point is on the western side of Lake Macquarie and access to the site is from Watkins Road. The samples are collected near the jetty, opposite Wangi Point Lakeside Holiday Park.

The Beach Suitability Grade of Good indicates that the microbial water quality is considered suitable for swimming most of the time but the water may be susceptible to pollution from several minor sources of faecal contamination, including stormwater.

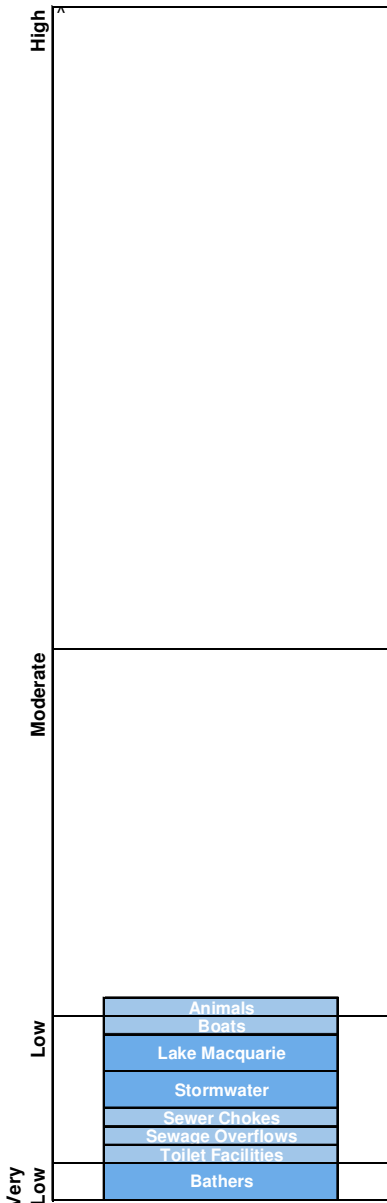
The response to rainfall graph indicates that enterococci levels increased slightly with increasing rainfall and often exceeded the safe swimming limit after 20 mm of rainfall or more.

The site has been monitored since 2010.

See 'How to read this report' for key to map

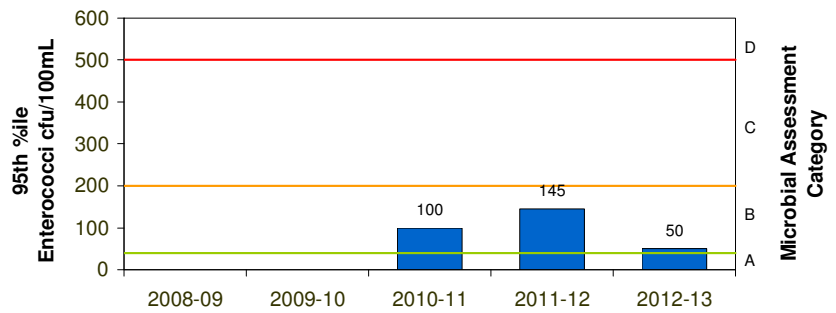
## Sanitary Inspection: Moderate

Source: ■ Very Low ■ Low ■ Moderate ■ High



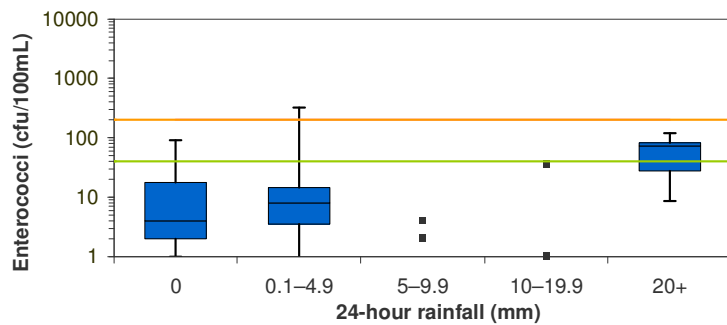
## Microbial Assessment: B

Monitoring period for 2012–13 result is November 2010 to April 2013.

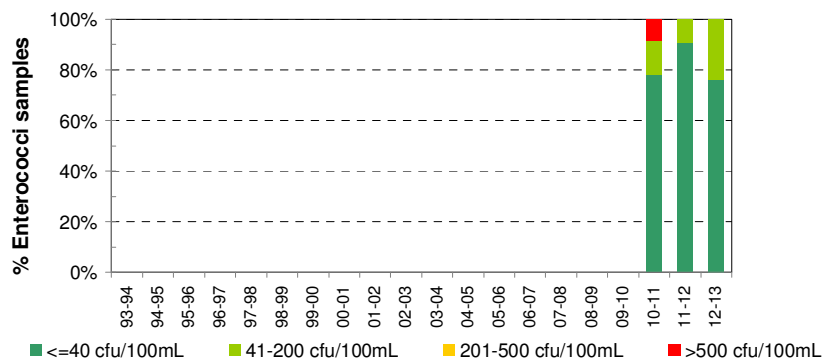


## Response to rainfall

Rainfall from Morisset rain gauge



## Trends in enterococci data through time



# Balcolyn

Beach Suitability Grade: **Very Good**



See 'How to read this report' for key to map

Balcolyn is on the western side of Lake Macquarie. The sample is collected from the boat ramp.

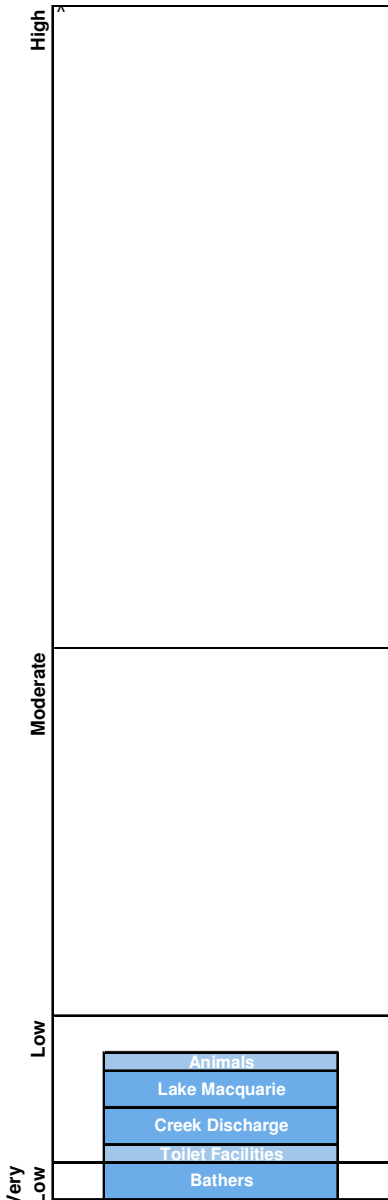
The Beach Suitability Grade of Very Good indicates that the water quality is considered safe for swimming almost all of the time, with few significant sources of faecal contamination.

The response to rainfall graph indicates that enterococci levels increased with increasing rainfall and usually exceeded the safe swimming limit after 20 mm of rainfall or more.

The site has been monitored since 2010.

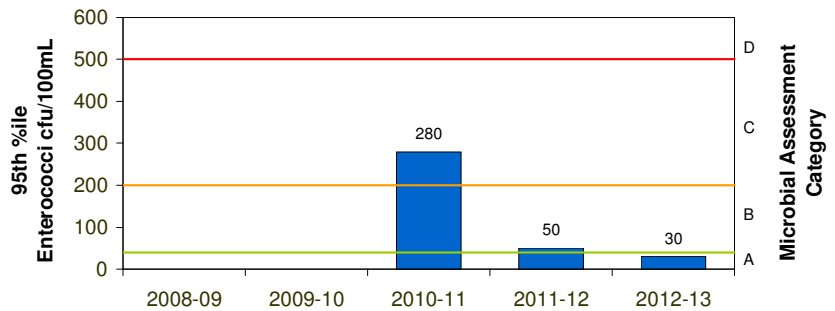
## Sanitary Inspection: Low

Source: ■ Very Low ■ Low ■ Moderate ■ High



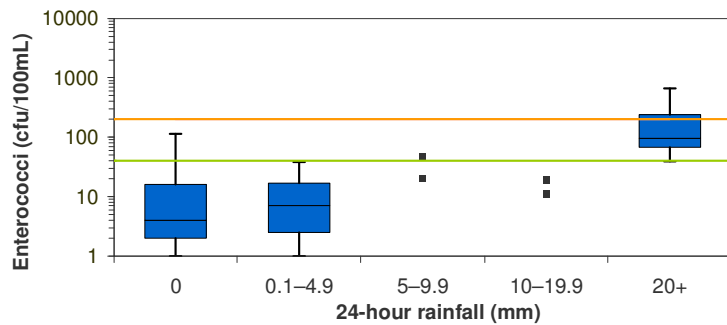
## Microbial Assessment: A

Monitoring period for 2012–13 result is November 2010 to April 2013.

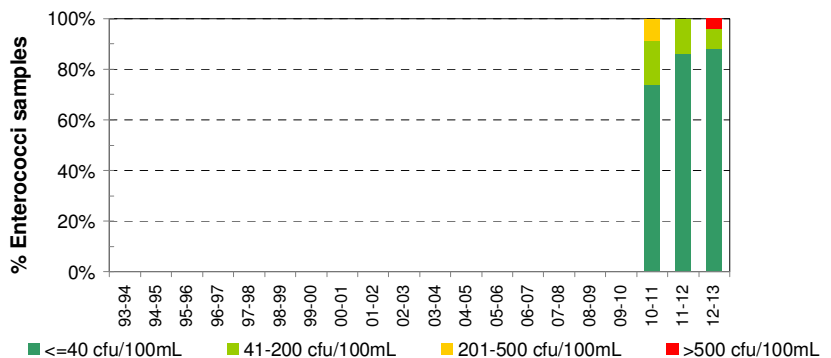


## Response to rainfall

Rainfall from Morisset rain gauge



## Trends in enterococci data through time



# Sunshine

Beach Suitability Grade: **Good**



See 'How to read this report' for key to map

Sunshine is a netted swimming enclosure on the western side of Lake Macquarie. There are toilet facilities close to the site.

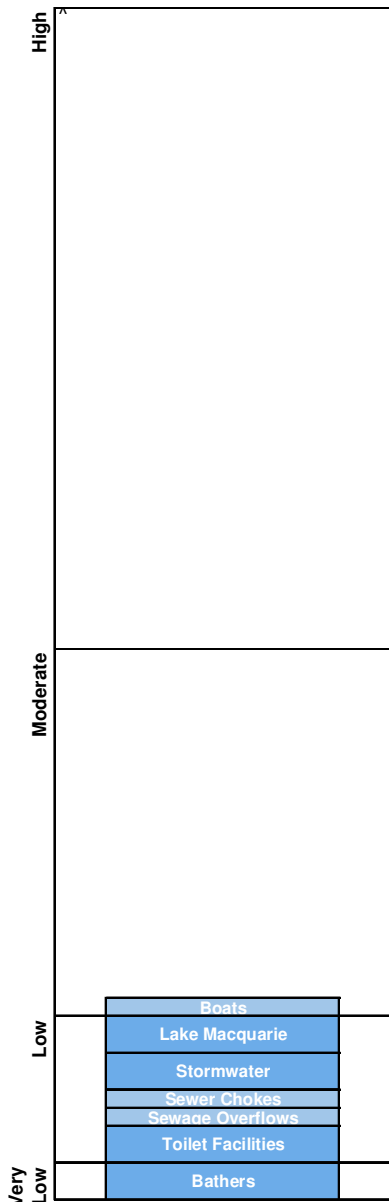
The Beach Suitability Grade of Good indicates that the microbial water quality is considered suitable for swimming most of the time but the water may be susceptible to pollution from several potential sources of faecal contamination, including stormwater.

The response to rainfall graph indicates that enterococci levels generally increased slightly with increasing rainfall, but mostly remained below the safe swimming limit.

The site has been monitored since 2010 and microbial water quality has generally been of a very high standard.

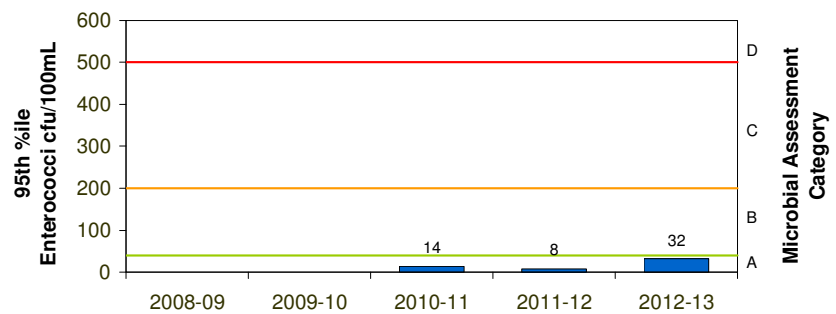
## Sanitary Inspection: Moderate

Source: ■ Very Low ■ Low ■ Moderate ■ High



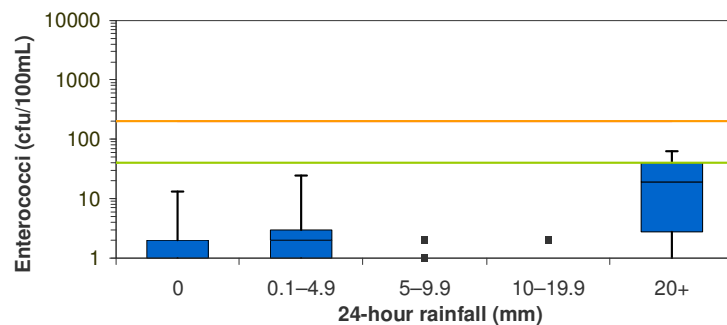
## Microbial Assessment: A

Monitoring period for 2012–13 result is November 2010 to April 2013.



## Response to rainfall

Rainfall from Morisset rain gauge



## Trends in enterococci data through time

