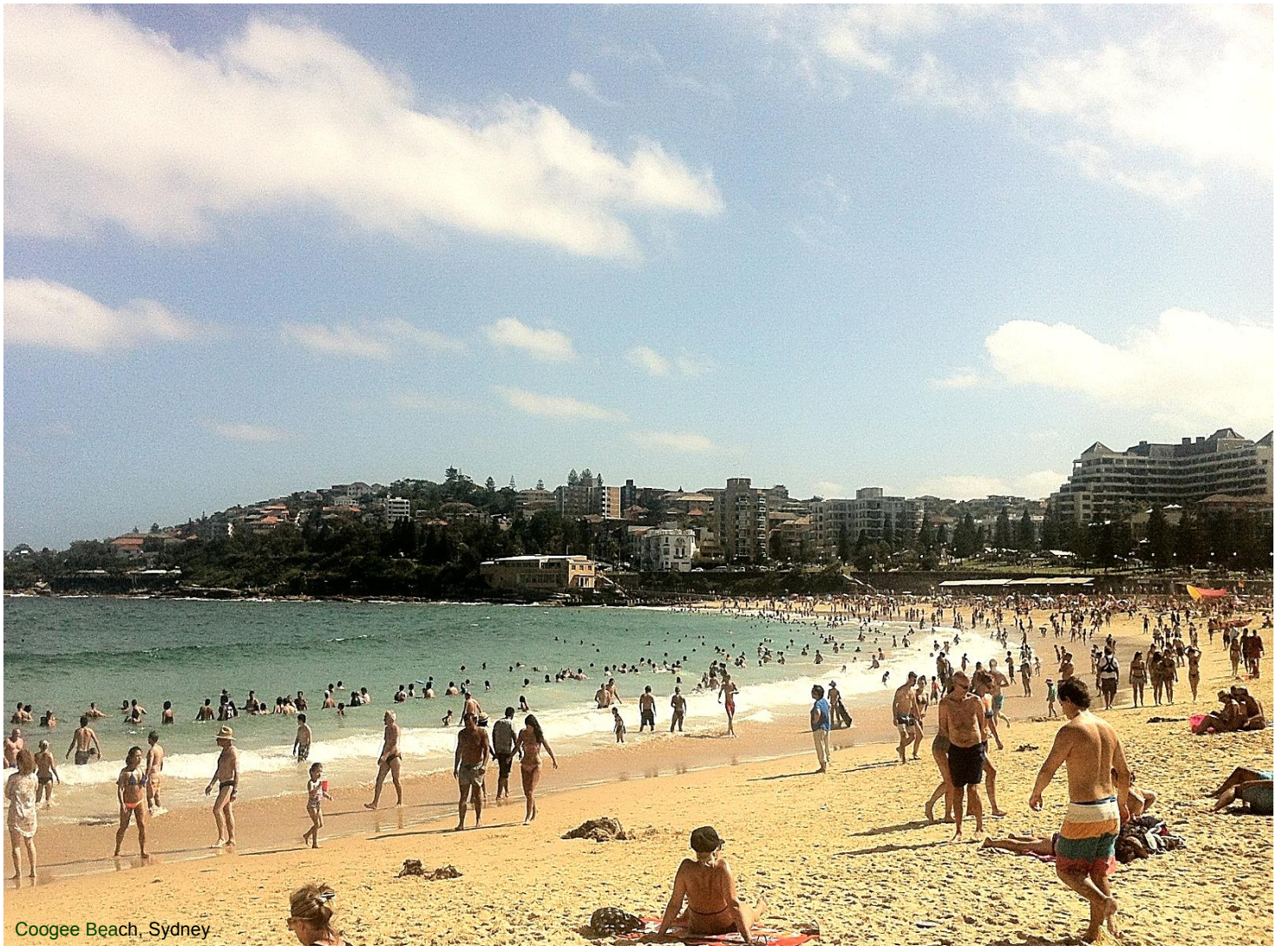
NSW GOVERNMENT Office of Environment & Heritage

Beachwatch



Coogee Beach, Sydney

State of the Beaches 2014–2015

Sydney Region New South Wales

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Sydney Region
SUMMARY 2014–2015

Beach monitoring in NSW

The water quality of beaches and other swimming locations is monitored under the NSW Government's Beachwatch programs to provide the community with accurate information on the cleanliness of the water and to enable individuals to make informed decisions about where and when to swim. Routine assessment also measures the impact of pollution sources, enables the effectiveness of stormwater and wastewater management practices to be assessed and highlights areas where further work is needed.

Swimming sites in NSW are graded as Very Good, Good, Fair, Poor or Very Poor in accordance with the National Health and Medical Research Council's 2008 *Guidelines for Managing Risks in Recreational Waters*. These Beach Suitability Grades provide a long-term assessment of how suitable a beach is for swimming. The grades are determined from the most recent 100 water quality results (two to four years' worth of data depending on the sampling frequency) and a risk assessment of potential pollution sources.

A guide on to how to read the report is provided on pages 120–123.

Rainfall impacts

Rainfall is the major driver of pollution to recreational waters, generating stormwater runoff and triggering discharges from the wastewater treatment and transport systems. Changes in rainfall patterns are reflected in beach water quality over time due to variation in the frequency and extent of stormwater and wastewater inputs.

The Beach Suitability Grades for 2014–2015 are based on water quality data collected over the last two to four years. Rainfall over this period has been diverse, beginning with sustained wet weather, then very dry conditions and a return to wet weather with several heavy rain events and severe thunderstorms:

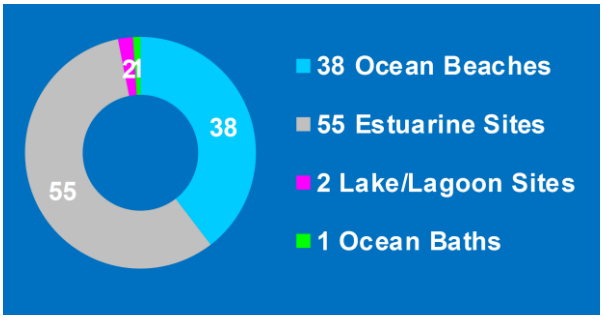
- 2011–2012: ninth-wettest summer on record
- 2012–2013: high levels of rainfall recorded in many areas
- 2013–2014: driest summer in almost 30 years
- 2014–2015: above average rainfall, particularly on the coast.

An East Coast Low storm event impacted the Sydney region in April 2015. The heavy rain, strong winds and high seas caused flash flooding, large-scale power outages and numerous sewage and wastewater discharges. This was the wettest month in Sydney since June 2007.

Statistics for 2014–2015:

96 sites

19 councils



Health risks

Contamination of recreational waters with faecal material from animal and human sources can pose significant health problems to beach users owing to the presence of pathogens (disease-causing micro-organisms) in the faecal material. The most common groups of pathogens found in recreational waters are bacteria, protozoans and viruses.

Exposure to contaminated water can cause gastroenteritis, with symptoms including vomiting, diarrhoea, stomach-ache, nausea, headache and fever. Eye, ear, skin and upper respiratory tract infections can also be contracted when pathogens come into contact with small breaks and tears in the skin or ruptures of the delicate membranes in the ear or nose.

Certain groups of users may be more vulnerable to the threat of microbial infection than others. Children, the elderly, people with compromised immune systems, tourists, and people from culturally and linguistically diverse backgrounds are generally most at risk.

Beach Suitability Grades for Sydney Region

		Site type	Sanitary Inspection Category	Microbial Assessment Category	Beach Suitability Grade
Northern Sydney	Palm Beach	Ocean beach	Low	Category A	VG
	Whale Beach	Ocean beach	Low	Category A	VG
	Avalon Beach	Ocean beach	Low	Category A	VG
	Bilgola Beach	Ocean beach	Low	Category A	VG
	Newport Beach	Ocean beach	Low	Category B	G
	Bungan Beach	Ocean beach	Low	Category A	VG
	Mona Vale Beach	Ocean beach	Low	Category A	VG
	Warriewood Beach	Ocean beach	Moderate	Category A	G
	Turimetta Beach	Ocean beach	Moderate	Category A	G
	North Narrabeen Beach	Ocean beach	Moderate	Category A	G
	Narrabeen Lagoon	Lagoon	Moderate	Category B	G
	Bilarong Reserve	Lagoon	Moderate	Category C	P
	Collaroy Beach	Ocean beach	Moderate	Category A	G
	Long Reef Beach	Ocean beach	Moderate	Category A	G
	Dee Why Beach	Ocean beach	Low	Category A	VG
	North Curl Curl Beach	Ocean beach	Moderate	Category B	G
	South Curl Curl Beach	Ocean beach	Low	Category A	VG
	Freshwater Beach	Ocean beach	Moderate	Category B	G
	Queenscliff Beach	Ocean beach	Moderate	Category B	G
	North Steyne Beach	Ocean beach	Moderate	Category B	G
	South Steyne Beach	Ocean beach	Moderate	Category B	G
	Shelly Beach	Ocean beach	Low	Category A	VG
	Barrenjoey Beach	Estuarine	Low	Category B	G
	Paradise Beach Baths	Estuarine	Low	Category B	G
	Clareville Beach	Estuarine	Moderate	Category B	G
	Taylors Point Baths	Estuarine	Moderate	Category A	G
	Bayview Baths	Estuarine	Moderate	Category C	P
	Elvina Bay	Estuarine	Low	Category B	G
	North Scotland Island	Estuarine	Moderate	Category A	G
	South Scotland Island	Estuarine	Moderate	Category A	G
	The Basin	Estuarine	Low	Category A	VG
	Great Mackerel Beach	Estuarine	Low	Category A	VG

VG Very Good G Good F Fair P Poor VP Very Poor

Beach Suitability Grades for Sydney Region

		Site type	Sanitary Inspection Category	Microbial Assessment Category	Beach Suitability Grade
Central Sydney	Bondi Beach	Ocean beach	Moderate	Category B	G
	Tamarama Beach	Ocean beach	Moderate	Category B	G
	Bronte Beach	Ocean beach	Moderate	Category B	G
	Clovelly Beach	Ocean beach	Low	Category A	VG
	Gordons Bay	Ocean beach	Moderate	Category B	G
	Coogee Beach	Ocean beach	Moderate	Category B	G
	Maroubra Beach	Ocean beach	Low	Category A	VG
	South Maroubra Beach	Ocean beach	Moderate	Category B	G
	South Maroubra Rockpool	Ocean Pool	Moderate	Category B	G
	Malabar Beach	Ocean beach	Moderate	Category B	G
	Little Bay Beach	Ocean beach	Moderate	Category B	G
	Watsons Bay	Estuarine	Low	Category B	G
	Parsley Bay	Estuarine	Moderate	Category B	G
	Nielsen Park	Estuarine	Low	Category A	VG
	Rose Bay Beach	Estuarine	Moderate	Category B	G
	Murray Rose Pool	Estuarine	Moderate	Category B	G
	Dawn Fraser Pool	Estuarine	Moderate	Category B	G
	Chiswick Baths	Estuarine	Moderate	Category B	G
	Cabarita Beach	Estuarine	Moderate	Category B	G
	Woolwich Baths	Estuarine	Moderate	Category B	G
	Tambourine Bay	Estuarine	Moderate	Category C	P
	Woodford Bay	Estuarine	Moderate	Category B	G
	Greenwich Baths	Estuarine	Moderate	Category B	G
	Hayes St Beach	Estuarine	Moderate	Category B	G
	Clifton Gardens	Estuarine	Moderate	Category B	G
	Balmoral Baths	Estuarine	Moderate	Category B	G
	Edwards Beach	Estuarine	Moderate	Category A	G
	Chinamans Beach	Estuarine	Moderate	Category B	G
	Northbridge Baths	Estuarine	High	Category B	F
	Davidson Reserve	Estuarine	High	Category C	P
	Gurney Crescent Baths	Estuarine	High	Category B	F
	Clontarf Pool	Estuarine	High	Category B	F
	Forty Baskets Pool	Estuarine	Moderate	Category A	G
	Fairlight Beach	Estuarine	Moderate	Category A	G
	Manly Cove	Estuarine	Moderate	Category B	G
	Little Manly Cove	Estuarine	Moderate	Category B	G

VG Very Good G Good F Fair P Poor VP Very Poor

Beach Suitability Grades for Sydney Region

		Site type	Sanitary Inspection Category	Microbial Assessment Category	Beach Suitability Grade
Southern Sydney	Boat Harbour	Ocean beach	Moderate	Category C	P
	Greenhills Beach	Ocean beach	Low	Category A	VG
	Wanda Beach	Ocean beach	Low	Category A	VG
	Elouera Beach	Ocean beach	Low	Category A	VG
	North Cronulla Beach	Ocean beach	Low	Category B	G
	South Cronulla Beach	Ocean beach	Low	Category B	G
	Shelly Beach	Ocean beach	Low	Category A	VG
	Oak Park	Ocean beach	Low	Category A	VG
	Silver Beach	Estuarine	Moderate	Category A	G
	Como Baths	Estuarine	Moderate	Category B	G
	Jew Fish Bay Baths	Estuarine	Moderate	Category B	G
	Oatley Bay Baths	Estuarine	Moderate	Category B	G
	Carss Point Baths	Estuarine	Moderate	Category B	G
	Sandringham Baths	Estuarine	Moderate	Category A	G
	Dolls Point Baths	Estuarine	Moderate	Category B	G
	Ramsgate Baths	Estuarine	Moderate	Category B	G
	Monterey Baths	Estuarine	Moderate	Category A	G
	Brighton-Le-Sands Baths	Estuarine	Moderate	Category A	G
	Kyeemagh Baths	Estuarine	Moderate	Category B	G
	Foreshores Beach	Estuarine	High	Category D	VP
	Yarra Bay	Estuarine	Moderate	Category B	G
	Frenchmans Bay	Estuarine	Moderate	Category B	G
	Congwong Bay	Estuarine	Low	Category A	VG
	Jibbon Beach	Estuarine	Low	Category A	VG
	Horderns Beach	Estuarine	Moderate	Category B	G
	Gymea Bay Baths	Estuarine	High	Category B	F
	Lilli Pilli Baths	Estuarine	Moderate	Category B	G
	Gunnamatta Bay Baths	Estuarine	Moderate	Category B	G

VG Very Good G Good F Fair P Poor VP Very Poor

Northern Sydney (Pittwater to Manly)

State of the Beaches 2014–2015

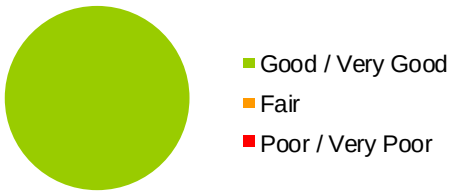
Overall results

Percentage of sites graded as Good or Very Good:

97%	97%	97%	94%
2011–12	2012–13	2013–14	2014–15

Thirty of the 32 swimming sites were graded as Very Good or Good in 2014–2015. The overall fall in performance from 2013–2014 was due to the addition of a new site, Bilarong Reserve in Narrabeen Lagoon, which was rated as Poor.

Ocean beaches

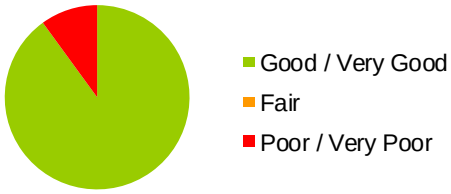


All 20 ocean beaches were graded as Very Good or Good.

Palm, Whale, Avalon, Bilgola, Bungan, Mona Vale, Dee Why, South Curl Curl and Shelly (Manly) beaches were graded as Very Good. The water quality at these sites was of a very high standard and suitable for swimming almost all of the time.

Newport, Warriewood, Turimetta, North Narrabeen, Collaroy, Long Reef, North Curl Curl, Freshwater, Queenscliff, North Steyne and South Steyne beaches were graded as Good. Water quality was suitable for swimming during dry weather conditions, but swimming should be avoided during and for up to one day following heavy rainfall.

Estuarine beaches



Great Mackerel Beach and The Basin in Pittwater were graded as Very Good. These sites had excellent water quality and were suitable for swimming almost all of the time.

Seven of the 10 estuarine beaches in Pittwater were graded as Good: Barrenjoey Beach, Paradise Beach Baths, Clareville Beach, Taylors Point Baths, Elvina Bay, North Scotland Island and South Scotland Island. The water quality at these locations was generally of a high standard,

Best beaches

Palm Beach, Whale Beach, Avalon Beach, Bilgola Beach, Bungan Beach, Mona Vale Beach, Dee Why Beach, South Curl Curl Beach, Shelly Beach, Great Mackeral Beach and **The Basin**

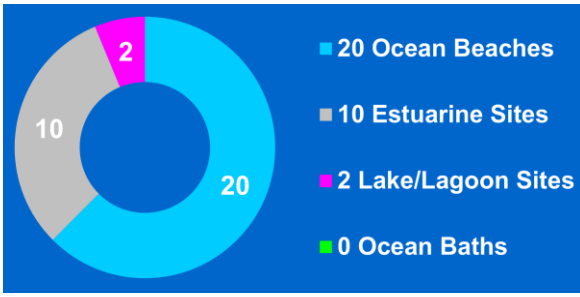
These sites had excellent water quality and were suitable for swimming almost all of the time.

32 sites

every 6 days*

1532 samples

year round*



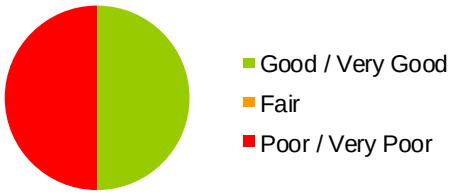
* Beachwatch samples the ocean beaches and Narrabeen Lagoon every sixth day throughout the year, and estuarine beaches every sixth day between October and April, and monthly from May to September.

See **How to Read this Report** for explanations of graphs and Beach Suitability Grades.

although elevated levels of enterococci were recorded at most locations following rainfall.

Bayview Baths was graded as Poor. This site had generally good water quality during dry weather but elevated enterococci levels were regularly measured following low levels of rainfall. As a precaution, swimming should be avoided at Pittwater swimming sites during and for up to two days following heavy rainfall or if there are signs of stormwater pollution such as discoloured water or floating debris.

Lake/lagoon swimming sites



The swimming location at the entrance to Narrabeen Lagoon (Birdwood Park) was graded as Good. This site had generally good water quality during dry weather but elevated enterococci levels were measured following low levels of rainfall. Discharge from Narrabeen Lagoon is a significant source of faecal contamination. It is recommended that swimming be avoided during and following rainfall and when the lagoon is closed. Microbial water quality at this site has improved over the last few years and may be a result of its location near the entrance of the lagoon which has been permanently opened to the ocean.

Bilarong Reserve in Narrabeen Lagoon was added to the program in 2014 and was graded as Poor. The water quality at this site was susceptible to pollution, particularly after rainfall and occasionally during dry weather conditions. Elevated levels of enterococci were recorded in 25 per cent of samples during 2014–2015 with a significant source of faecal contamination from stormwater runoff to the lagoon. This swimming site is located away from the lagoon entrance so is not well flushed by clean ocean water. Swimming at this site should 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.

Management

To reduce the incidence of wet weather sewage overflows in beach catchments between Narrabeen and Manly, Sydney Water increased the capacity of pipes and pumps and incorporated storage tanks into the sewerage system. An 18 million litre storage tank in the Brookvale industrial area to reduce overflows to Manly Lagoon and Curl Curl Lagoon was completed in 2013.

Sydney Water has inspected, cleaned and repaired sewer mains that have a high likelihood of discharging sewage to waterways if they become blocked. When significant tree root intrusion to the public sewer from the private sewer was identified, property owners were requested to remedy the problem.

Manly Council has continued with the Dry Weather Sewer Leak Program, which was developed with Sydney Water to locate and rectify sewer leaks. Under this program all stormwater pipe outlets with dry weather water discharges are tested for chemicals and microbes that could indicate a sewer leak. Manly Council is continuing to monitor stormwater pipes in areas of higher residential density during the swimming season.

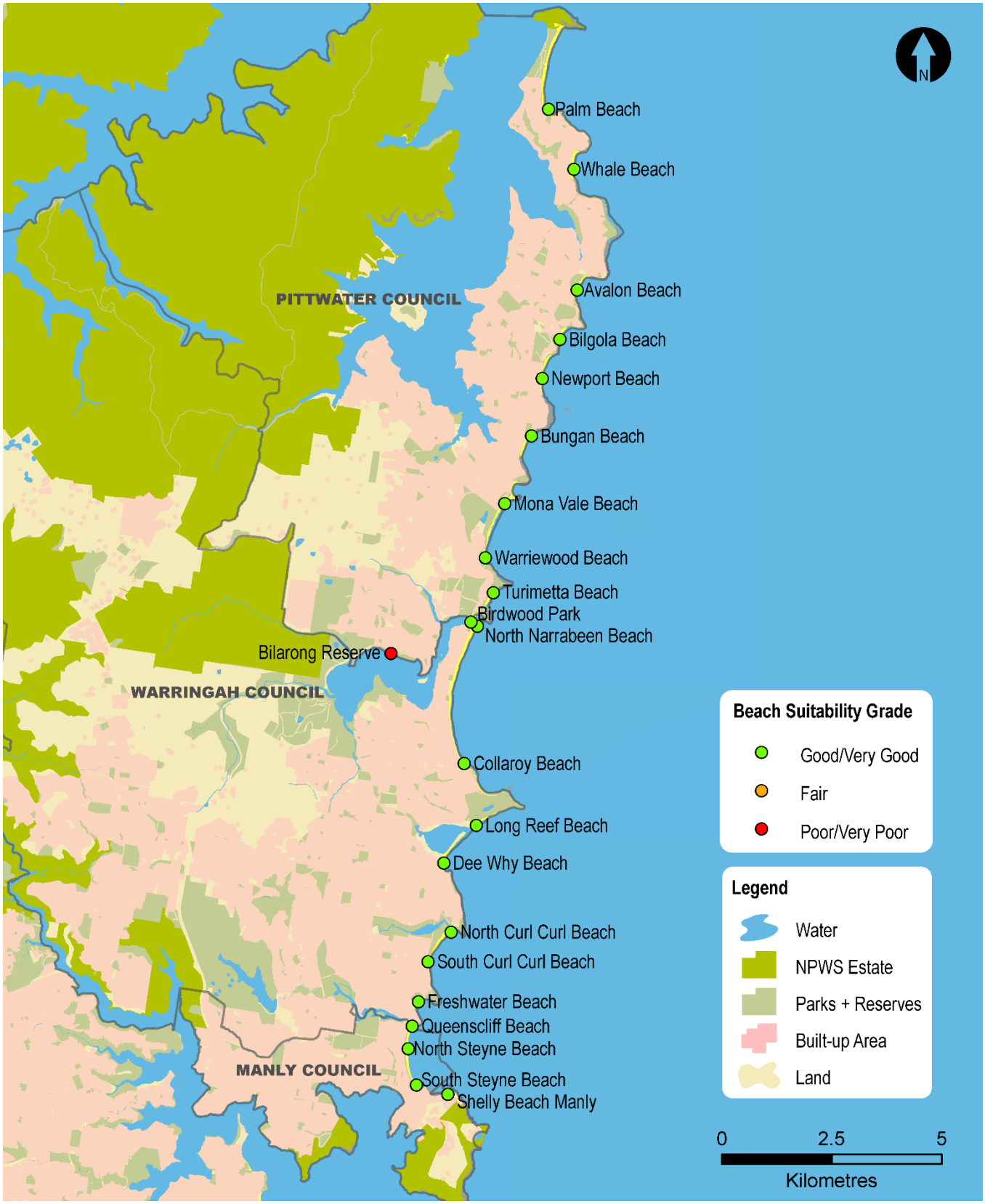
Manly Council removed 191 tonnes of sediment, litter and debris from stormwater quality improvement devices during 2014–2015. In addition, a sediment pollution basin is being constructed in Burnt Bridge Creek at Manly West Park. It will have the capacity to capture 600 tonnes of sediment, attached pollution and litter. This will allow the polluted material to be cost-effectively removed, before it can enter Manly Lagoon.

Warringah Council is examining bacterial levels in stormwater from the upper Narrabeen Lagoon Catchment to identify the impact on recreational water quality in the lagoon. Council has investigated dry weather sewer leaks in stormwater drains discharging to Narrabeen Lagoon and has found no evidence of sewage.

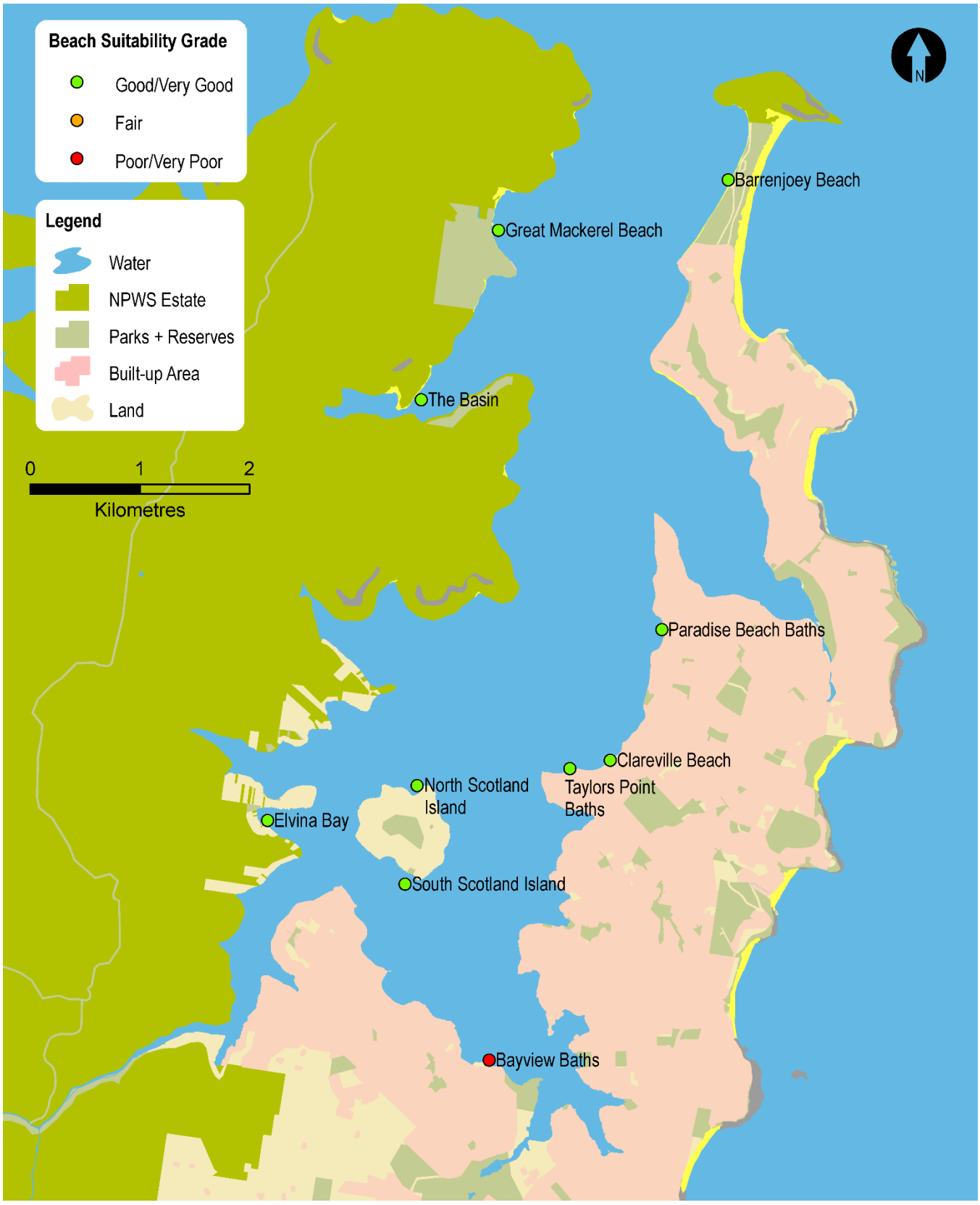
Warringah Council is updating policies to improve the water quality of receiving water bodies. Stormwater quality improvement assets have been constructed, including rain gardens in the Collaroy Basin, bioretention at Middle Creek and Collaroy Beach recreational area, and the Cromer Park Stormwater Harvesting Project. The Cromer Park Stormwater Harvesting Project reuses stormwater, irrigating the park and reducing pollutants entering Dee Why Lagoon. Council is improving stormwater water quality discharging from private developments through the Draft Water Management Policy.

Warringah Council has installed a number of gross pollutant traps and water quality devices, including a bioswale adjacent to Dee Why Lagoon. On average, 1000 tonnes of sediment and 17 cubic metres of floating debris are removed from these devices each year. Warringah Council is examining gross pollutant trap efficiencies and making improvements to maintenance regimes to ensure their effectiveness.

Pittwater Council's Stormwater Management Service Charge has helped fund various stormwater management schemes and the construction and maintenance of stormwater quality improvement devices throughout the Pittwater area. Currently there are 49 stormwater quality improvement devices which prevent around 235 tonnes of sediment and floating debris from entering the waterways each year.



Sampling sites and Beach Suitability Grades at Sydney's Northern Beaches



Sampling sites and Beach Suitability Grades in Pittwater

Palm Beach

Beach Suitability Grade: VG

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

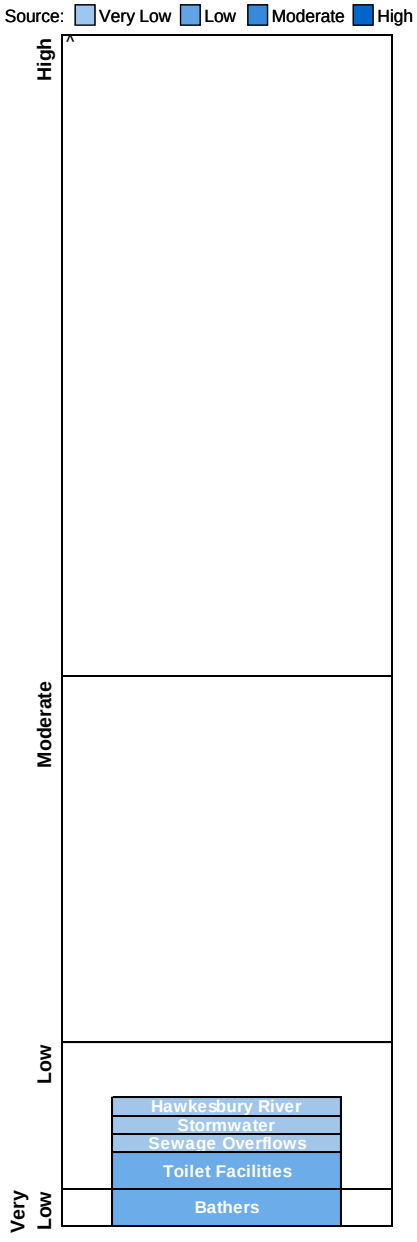
Palm Beach is 2.3 kilometres long, with rock baths in the southern corner. Samples are collected near the surf club at the southern end of the beach. Lifeguards patrol the beach from September to April.

The Beach Suitability Grade of Very Good indicates that microbial water quality is considered suitable for swimming almost all of the time, with few potential sources of significant 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 20 mm of rainfall or more.

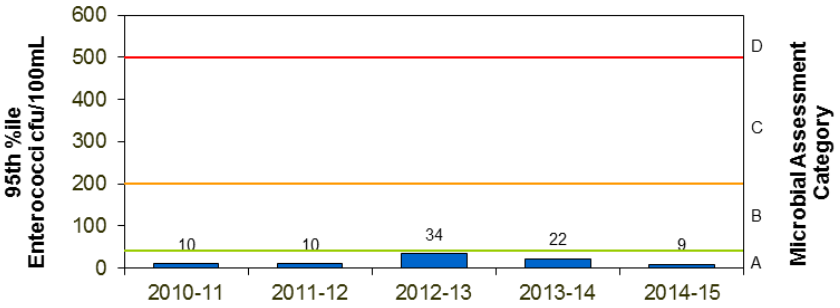
The site has been monitored since 1989. Water quality has generally been of a very high standard over the last ten years.

Sanitary Inspection: **Low**



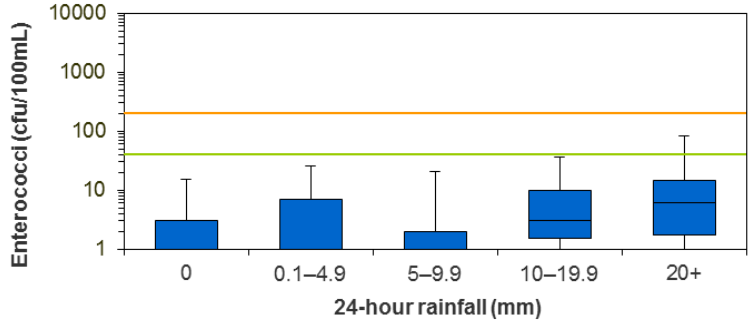
Microbial Assessment: **A**

Monitoring period for 2014–15 result is July 2013 to May 2015.

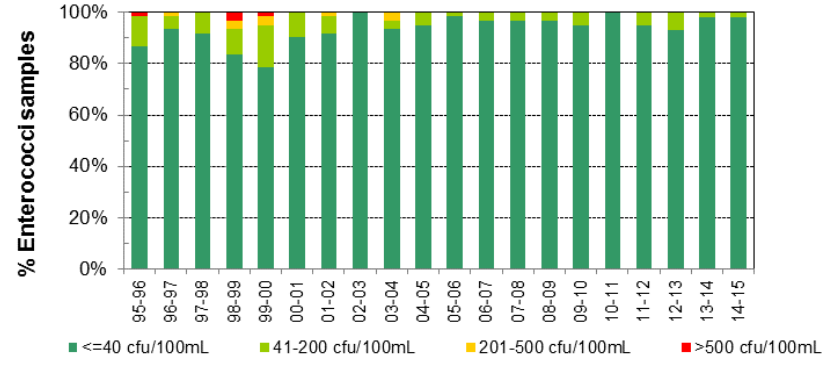


Response to rainfall

Rainfall from Avalon rain gauge

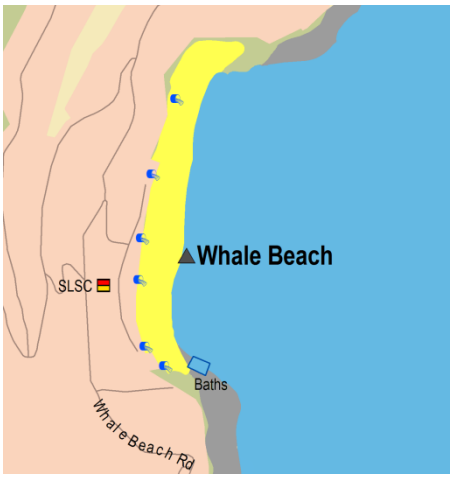


Trends in enterococci data through time



Whale Beach

Beach Suitability Grade: VG



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

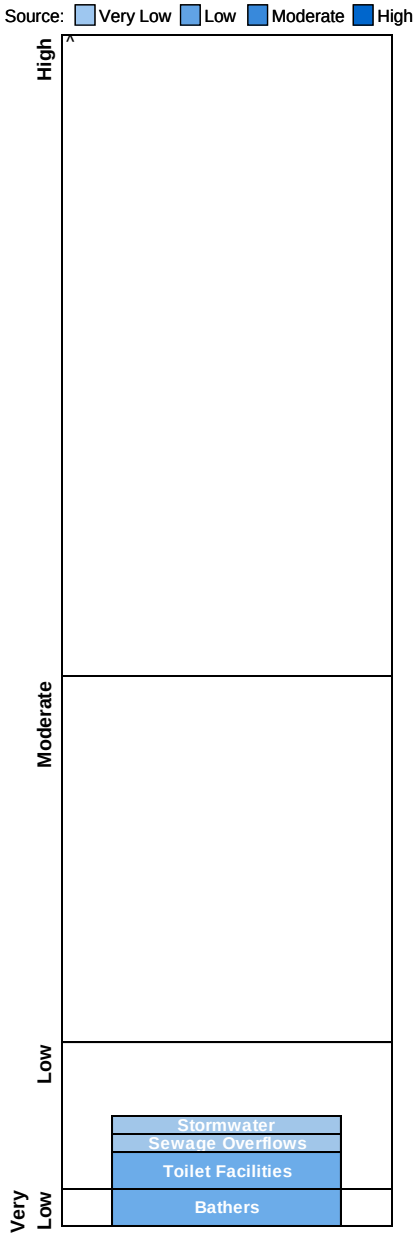
Whale Beach is 600 metres long, with rock baths located on the southern rock platform. Swimming is potentially hazardous because of persistent rips. Lifeguards patrol the beach from September to April.

The Beach Suitability Grade of Very Good indicates that 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, occasionally exceeding the safe swimming limit in response to 20 mm of rainfall or more.

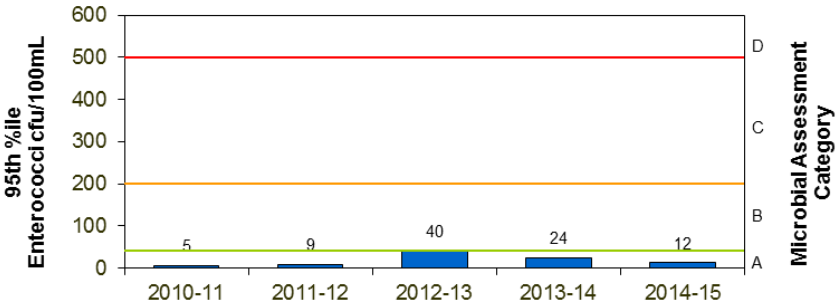
The site has been monitored since 1989. Water quality has generally been of a very high standard over the last ten years.

Sanitary Inspection: **Low**



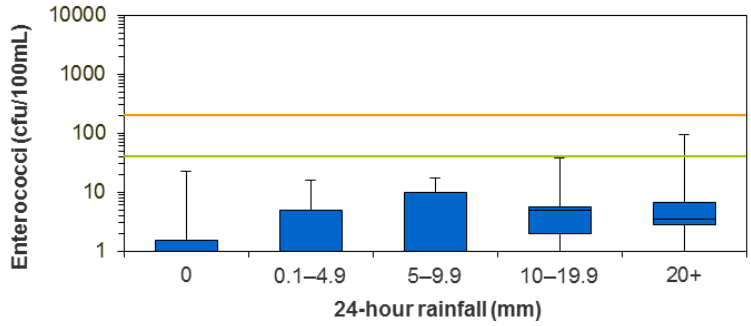
Microbial Assessment: **A**

Monitoring period for 2014–15 result is July 2013 to May 2015.

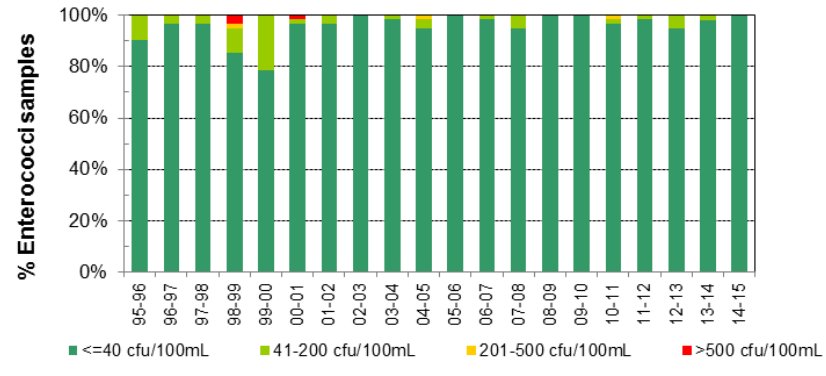


Response to rainfall

Rainfall from Avalon rain gauge



Trends in enterococci data through time



Avalon Beach

Beach Suitability Grade: VG

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

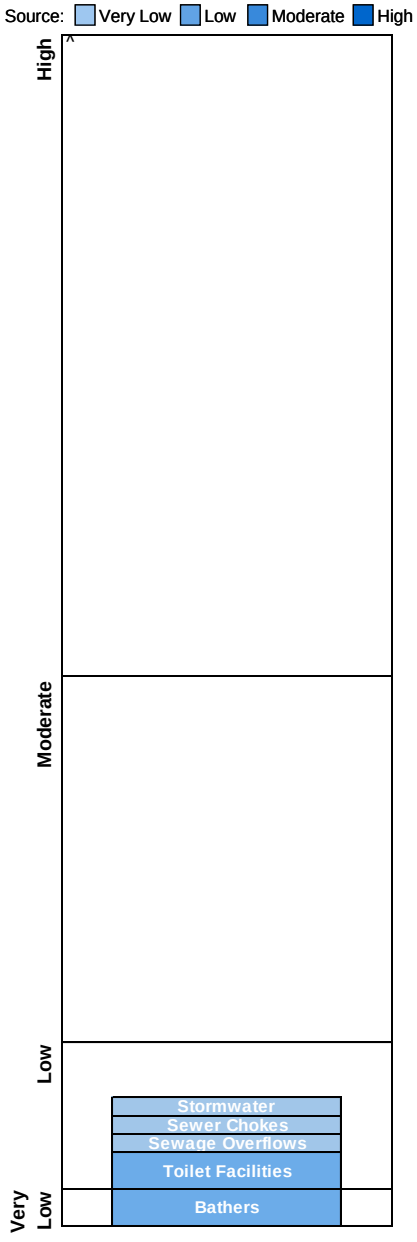
Avalon Beach is 500 metres long and backed by a park and picnic area. Swimming can be hazardous because of persistent rips. Lifeguards patrol the beach from September to April.

The Beach Suitability Grade of Very Good indicates that 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, occasionally exceeding the safe swimming limit in response to 20 mm of rainfall or more.

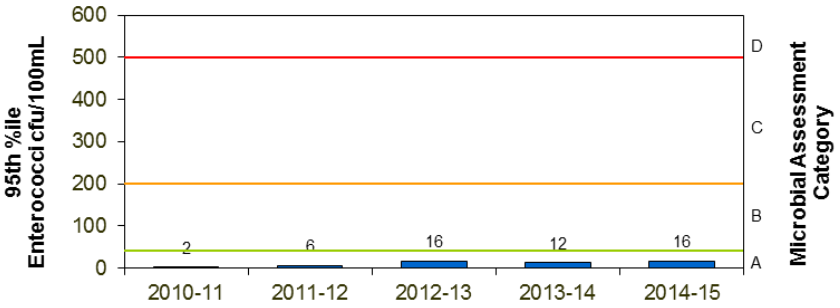
The site has been monitored since 1989. Water quality has generally been of a very high standard over the last ten years.

Sanitary Inspection: **Low**



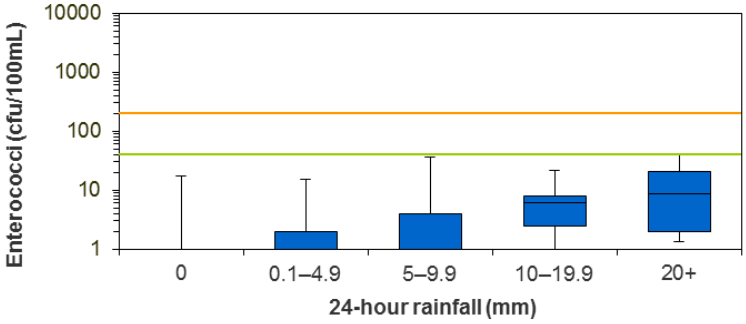
Microbial Assessment: **A**

Monitoring period for 2014–15 result is July 2013 to May 2015.

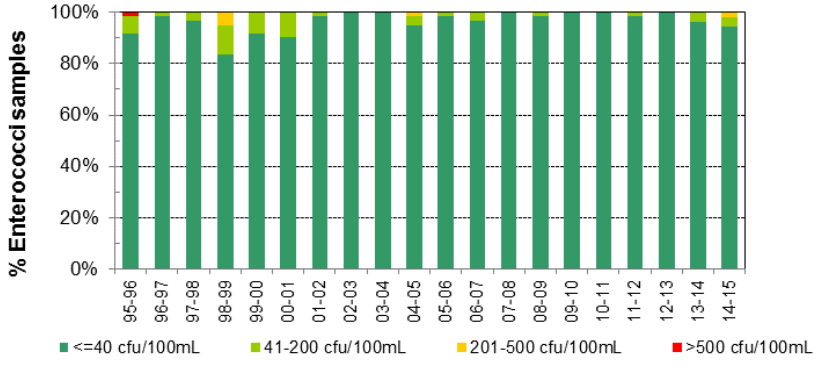


Response to rainfall

Rainfall from Avalon rain gauge



Trends in enterococci data through time



Bilgola Beach

Beach Suitability Grade: VG

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

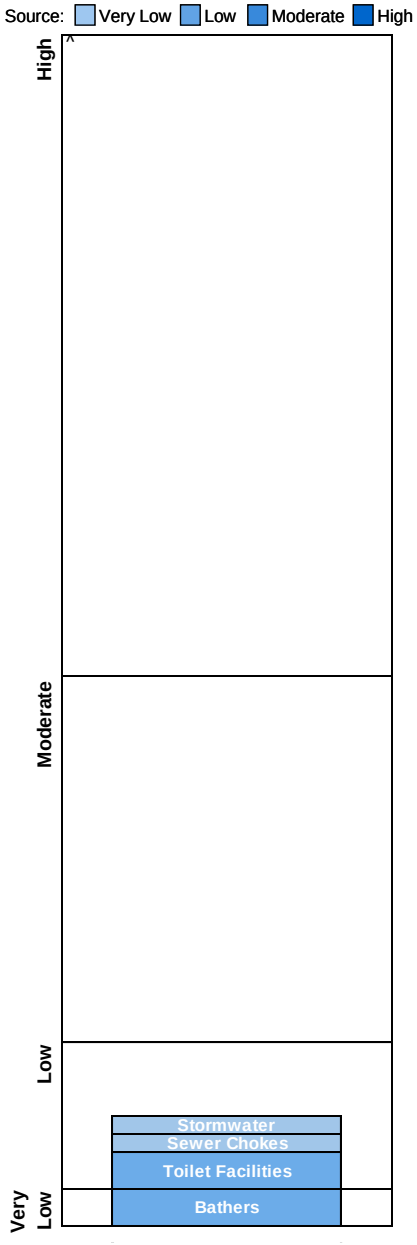
Bilgola Beach is 500 metres long, with rock baths located at the southern end. Swimming can be hazardous because of shifting and permanent rips. Lifeguards patrol the beach from September to April.

The Beach Suitability Grade of Very Good indicates that 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, regularly exceeding the safe swimming limit in response to 20 mm or more of rainfall.

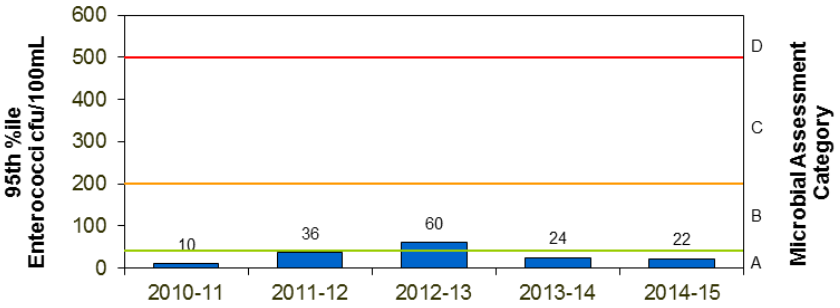
The site has been monitored since 1989. Water quality has generally been of a very high standard over the last ten years.

Sanitary Inspection: **Low**



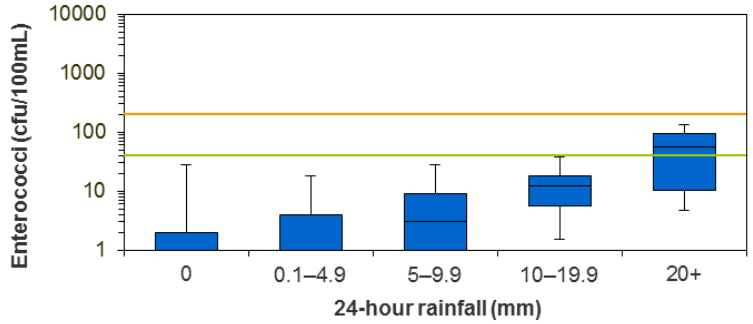
Microbial Assessment: **A**

Monitoring period for 2014–15 result is July 2013 to May 2015.

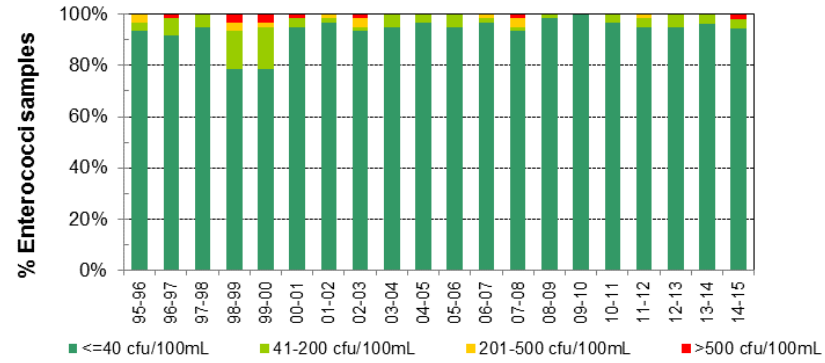


Response to rainfall

Rainfall from Avalon rain gauge



Trends in enterococci data through time



Newport Beach

Beach Suitability Grade: G

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

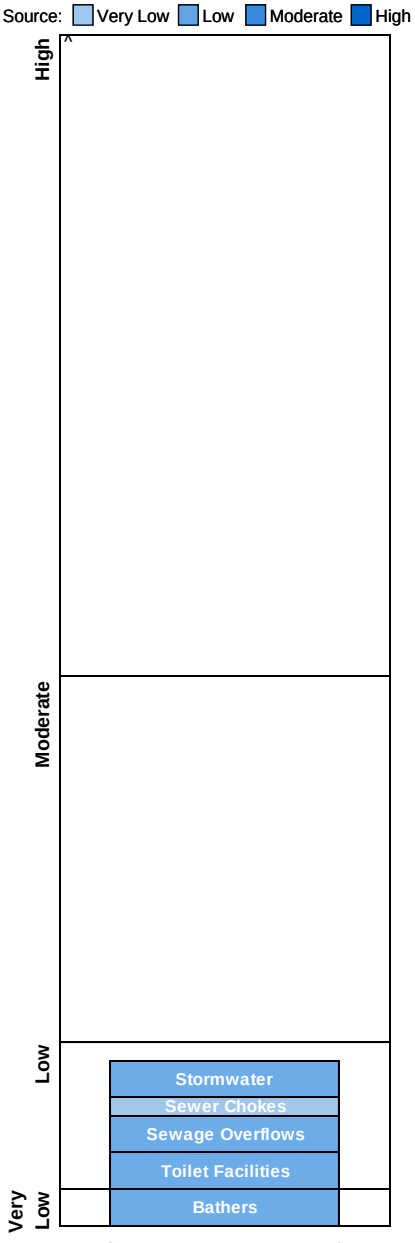
Newport Beach is 1.3 kilometres long. Several rips occur north of the surf club, and as a result beach conditions are safest in the patrolled area and in the southern corner. Lifeguards patrol the beach from September to April.

The Beach Suitability Grade of Good indicates that microbial water quality is suitable for swimming most of the time, but the water may be susceptible to pollution after rain, 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 10 mm of rainfall or more.

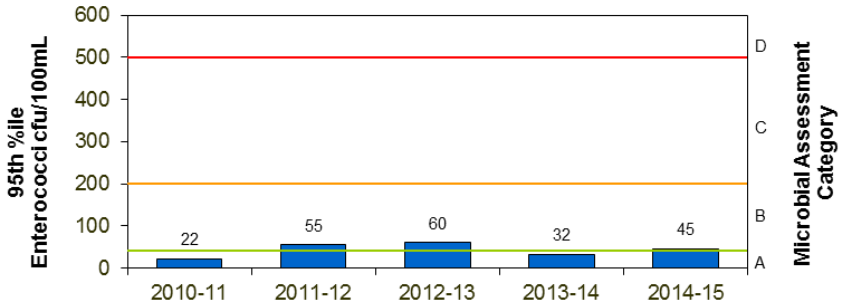
The site has been monitored since 1989. Water quality has generally been of a very high standard over the last ten years.

Sanitary Inspection: **Low**



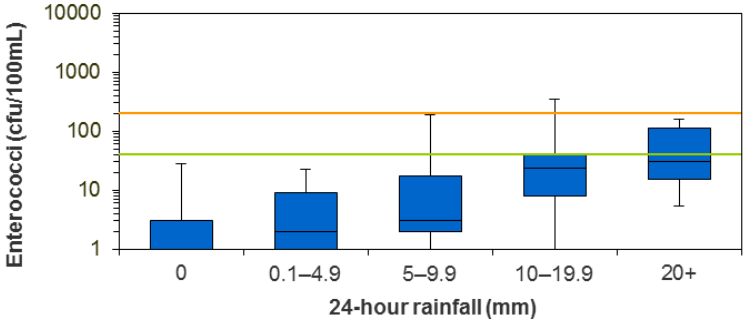
Microbial Assessment: **B**

Monitoring period for 2014–15 result is July 2013 to May 2015.

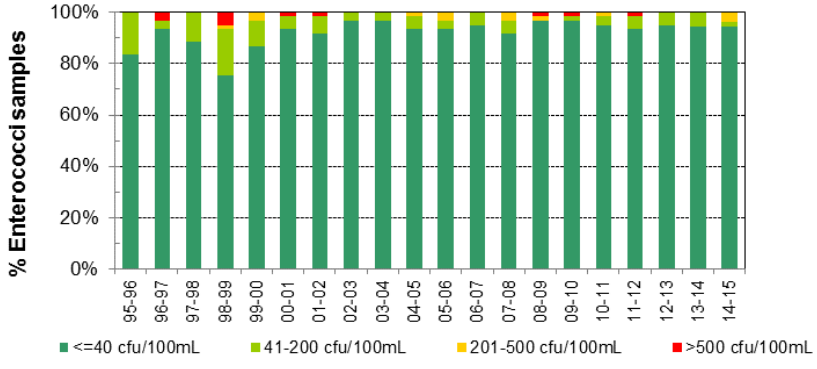


Response to rainfall

Rainfall from Warriewood WWTP rain gauge



Trends in enterococci data through time



Bungan Beach

Beach Suitability Grade: VG

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

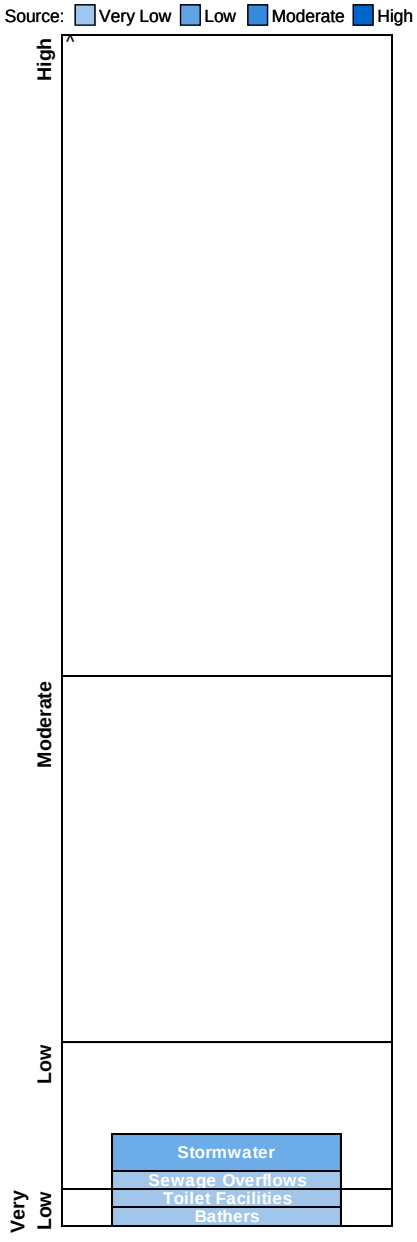
Bungan Beach is 600 metres long and backed by a steep escarpment. Swimming can be hazardous because of several shifting rips. Lifeguards patrol the beach from late December to the end of January.

The Beach Suitability Grade of Very Good indicates that microbial water quality is considered suitable for swimming almost all of the time, with few potential sources of significant 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 5 mm or more of rainfall.

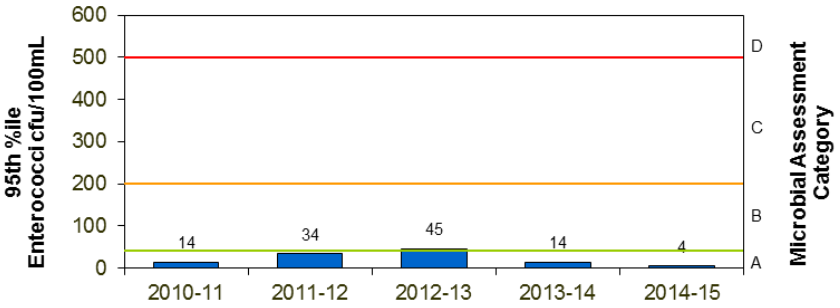
The site has been monitored since 1989. Water quality has generally been of a very high standard over the last ten years.

Sanitary Inspection: **Low**



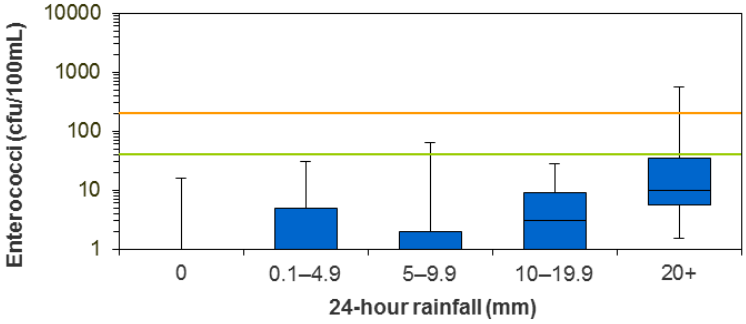
Microbial Assessment: **A**

Monitoring period for 2014–15 result is July 2013 to May 2015.

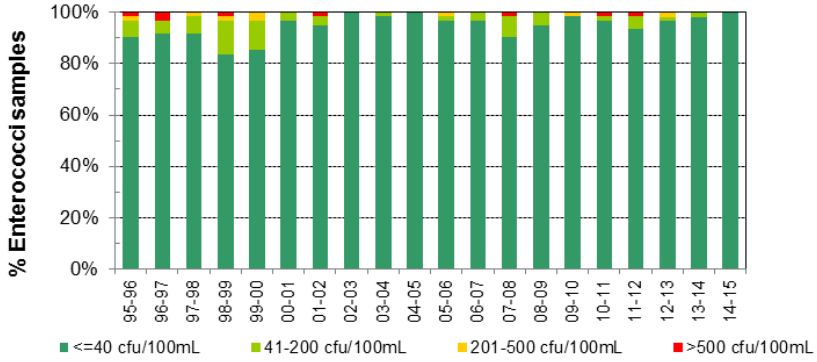


Response to rainfall

Rainfall from Warriewood WWTP rain gauge



Trends in enterococci data through time



Mona Vale Beach

Beach Suitability Grade: VG

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

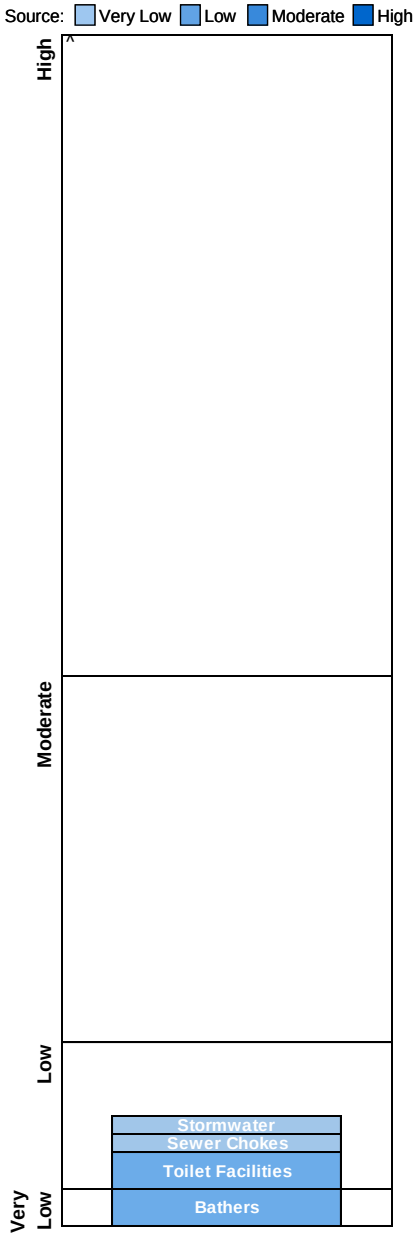
Mona Vale Beach is one kilometre long. Swimming is potentially hazardous because of a number of rips. Lifeguards patrol the beach from September to April.

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

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

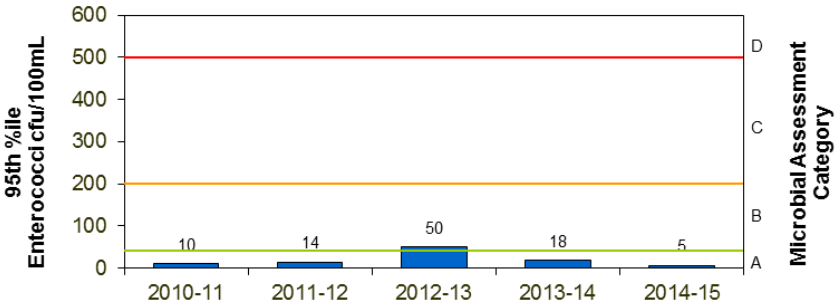
The site has been monitored since 1989. Water quality has generally been of a very high standard over the last ten years.

Sanitary Inspection: **Low**



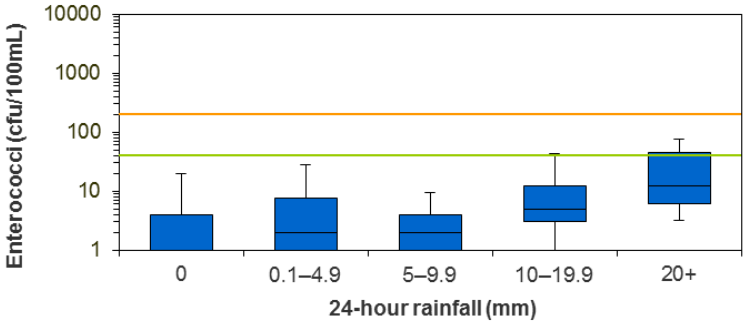
Microbial Assessment: **A**

Monitoring period for 2014–15 result is July 2013 to May 2015.

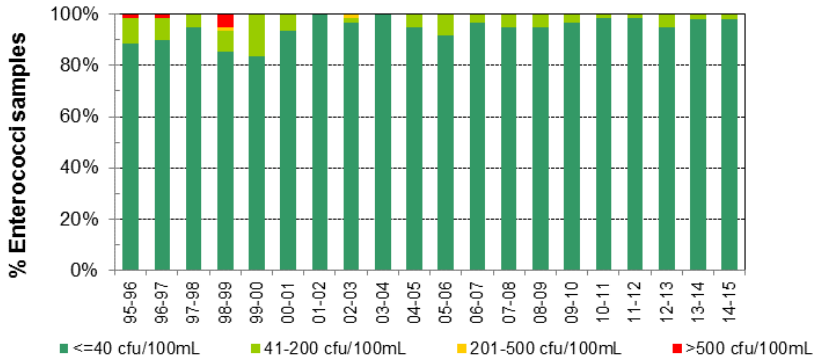


Response to rainfall

Rainfall from Warriewood WWTP rain gauge

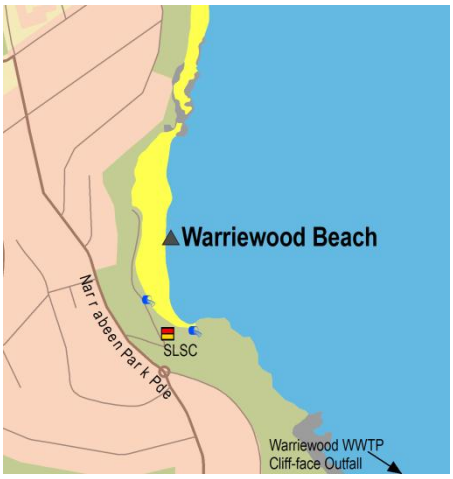


Trends in enterococci data through time



Warriewood Beach

Beach Suitability Grade: G



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

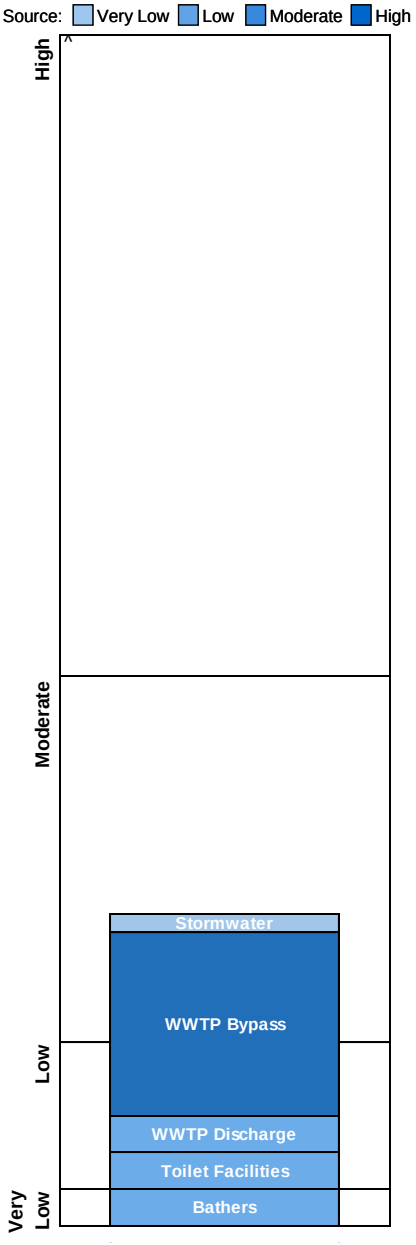
Warriewood Beach is 500 metres long and is situated below a steep bluff. Swimming can be hazardous because of rips. Lifeguards patrol the beach from December to February.

The Beach Suitability Grade of Good indicates that microbial water quality is suitable for swimming most of the time, but the water may be susceptible to pollution after rain, with several potential sources of faecal contamination including bypasses from Warriewood Wastewater Treatment Plant.

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 or more.

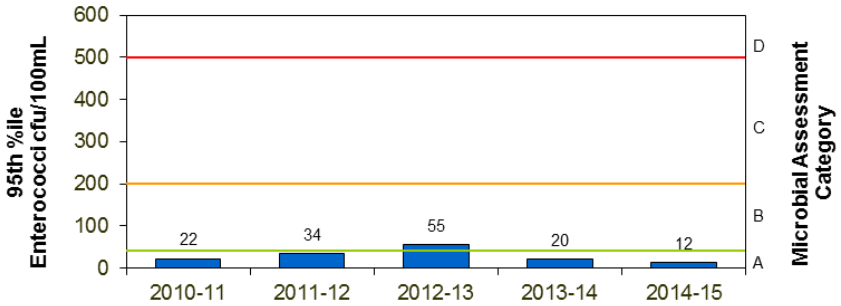
The site has been monitored since 1989. Water quality has generally been of a very high standard over the last ten years.

Sanitary Inspection: **Moderate**



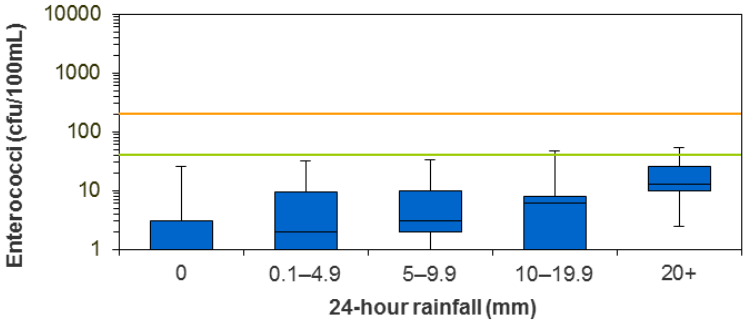
Microbial Assessment: **A**

Monitoring period for 2014–15 result is July 2013 to May 2015.

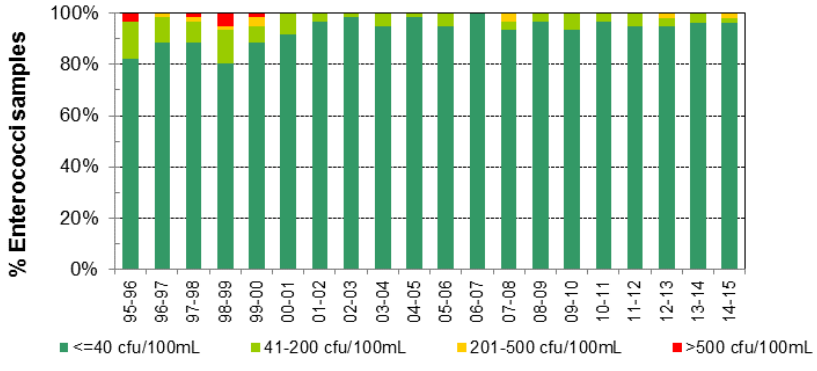


Response to rainfall

Rainfall from Warriewood WWTP rain gauge

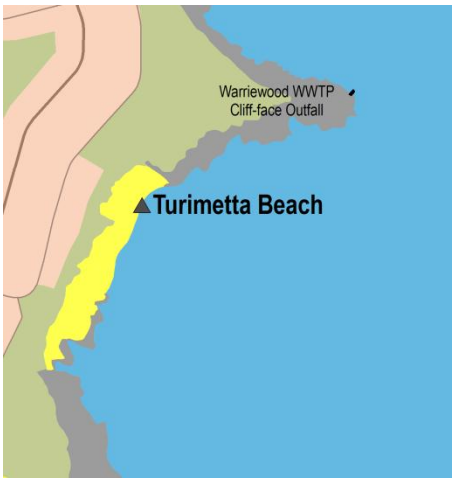


Trends in enterococci data through time



Turimetta Beach

Beach Suitability Grade: G



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

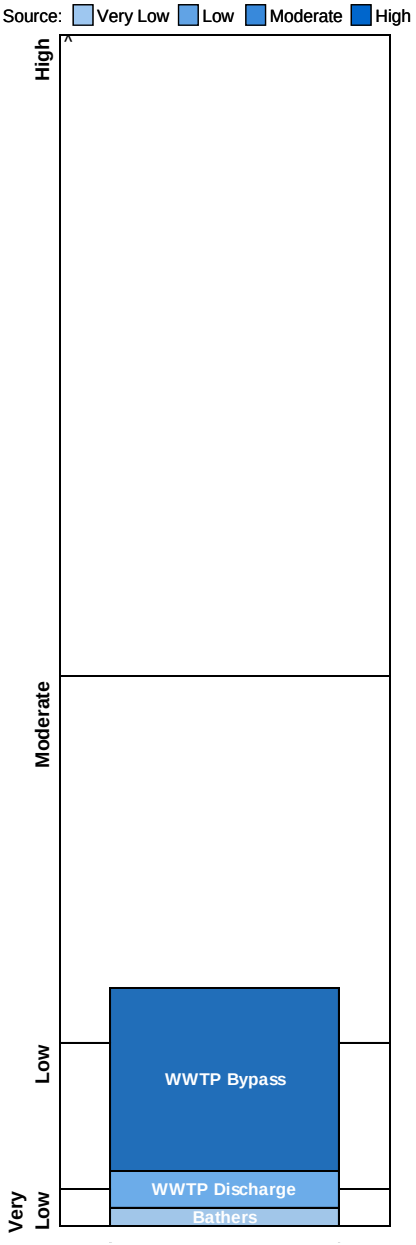
Turimetta Beach is 350 metres long and is backed by steep bluffs. Swimming can be hazardous because of rips at the centre and both ends of the beach. The beach is not patrolled by lifeguards.

The Beach Suitability Grade of Good indicates that microbial water quality is suitable for swimming most of the time, but the water may be susceptible to pollution after rain, with several potential sources of faecal contamination including bypasses from Warriewood Wastewater Treatment Plant.

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

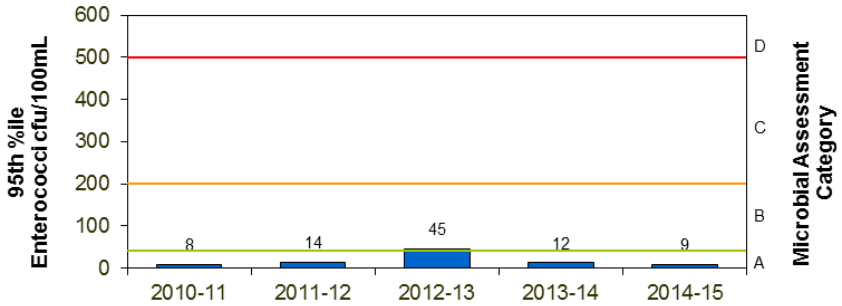
The site has been monitored since 1994. Water quality has generally been of a very high standard over the last ten years.

Sanitary Inspection: **Moderate**



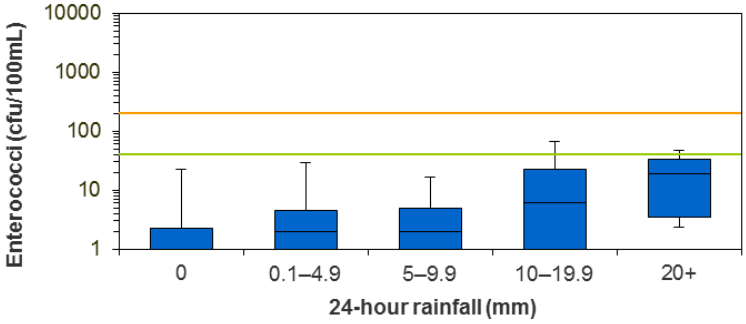
Microbial Assessment: **A**

Monitoring period for 2014–15 result is July 2013 to May 2015.

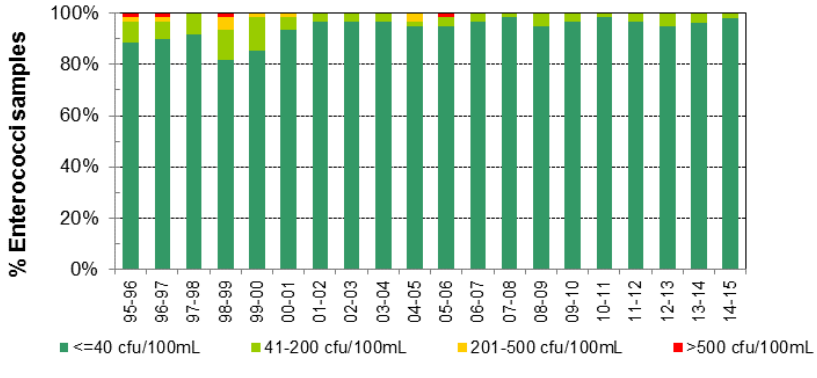


Response to rainfall

Rainfall from Warriewood WWTP rain gauge



Trends in enterococci data through time



North Narrabeen Beach

Beach Suitability Grade: G

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

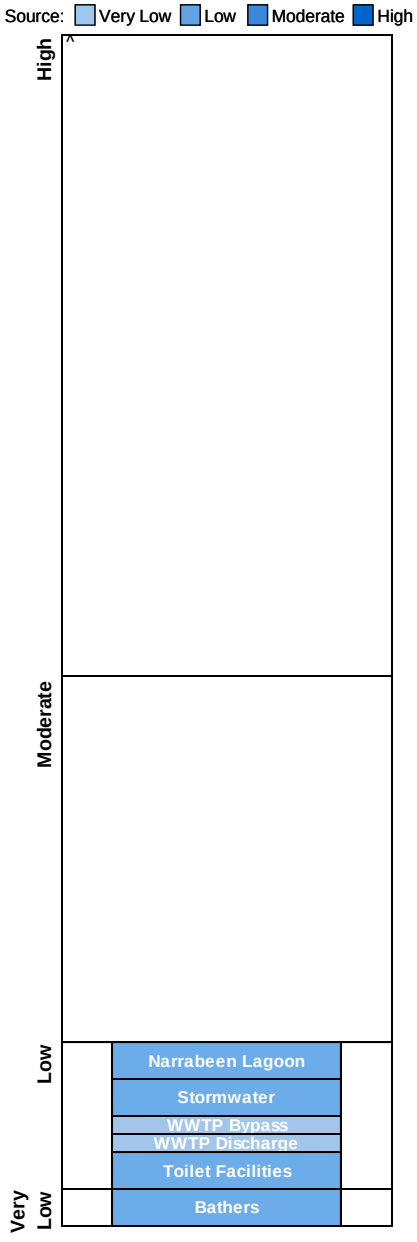
North Narrabeen Beach is located at the northern end of the 3.5 kilometre-long Narrabeen Beach. Strong rips can create hazardous swimming conditions and lifeguards patrol the beach from September to April.

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

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

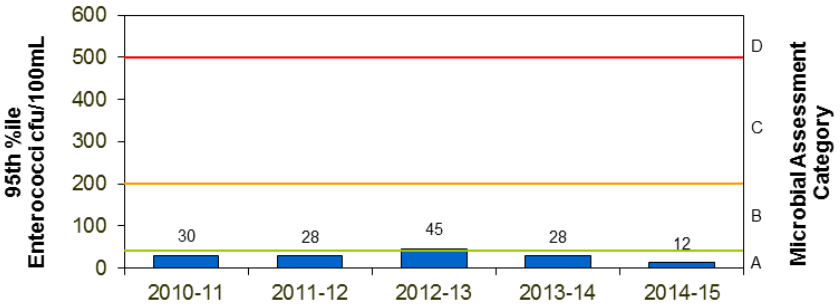
The site has been monitored since 1989. Water quality has generally been of a very high standard over the last ten years.

Sanitary Inspection: **Moderate**



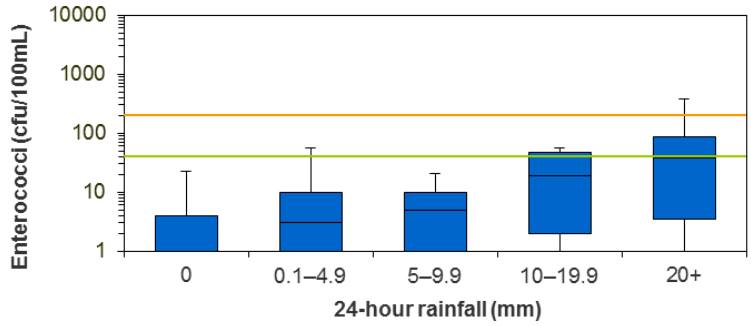
Microbial Assessment: **A**

Monitoring period for 2014–15 result is July 2013 to May 2015.

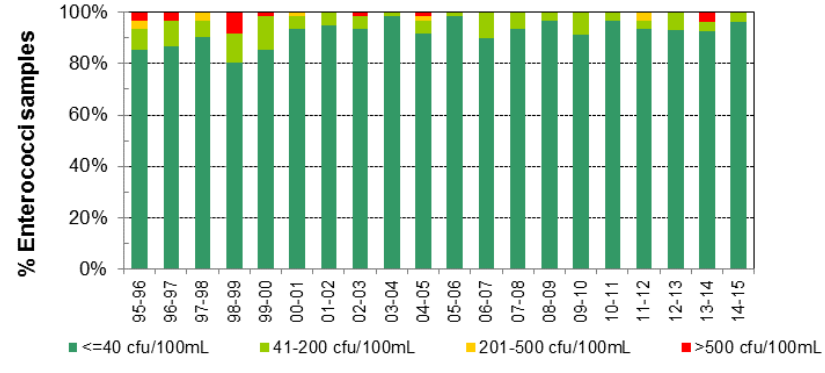


Response to rainfall

Rainfall from Warriewood WWTP rain gauge



Trends in enterococci data through time



Narrabeen Lagoon (Birdwood Park) Beach Suitability Grade: G

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

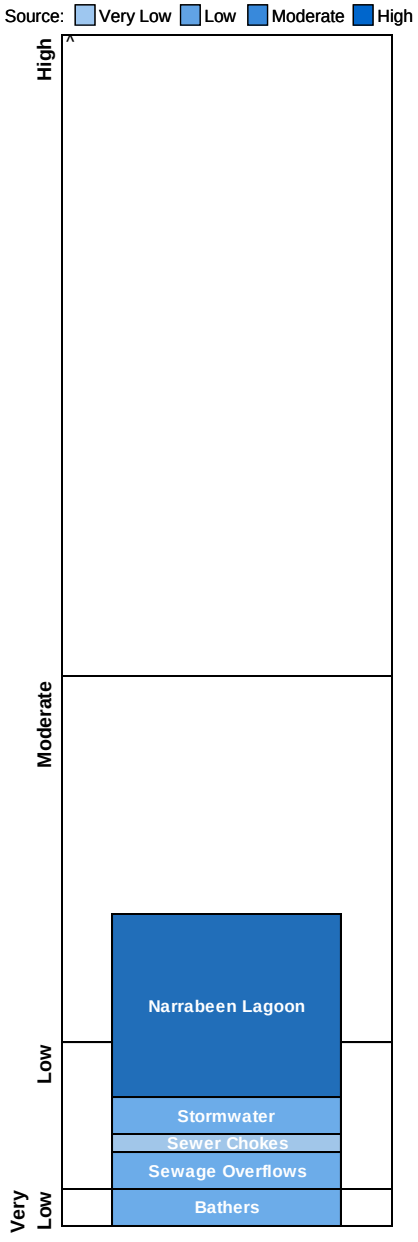
The Birdwood Park swimming site is a sandy stretch of beach located on the southern side of the entrance to Narrabeen Lagoon. The site is backed by a popular picnic area.

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

The response to rainfall graph indicates that enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit in dry weather conditions. The safe swimming limit was regularly exceeded after 5 mm of rainfall or more.

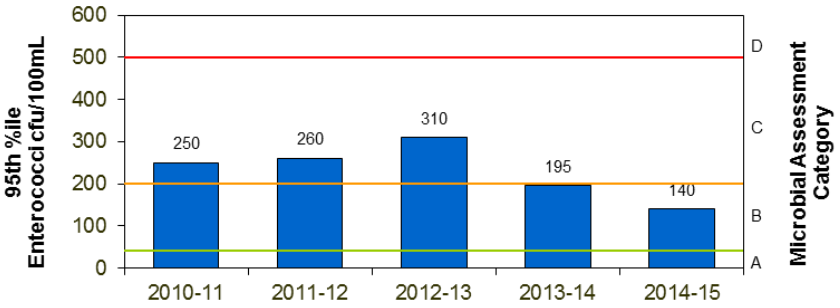
The site has been monitored since 2004.

Sanitary Inspection: **Moderate**



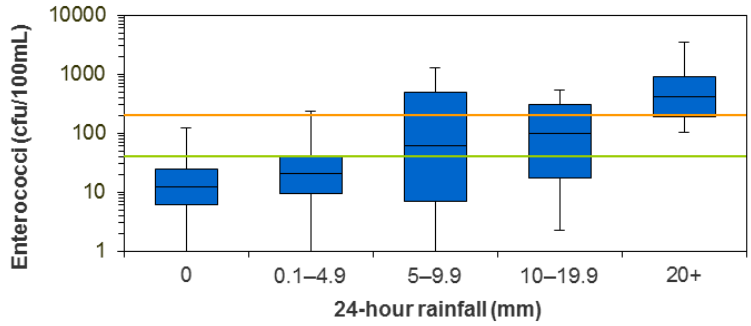
Microbial Assessment: **B**

Monitoring period for 2014–15 result is July 2013 to May 2015.

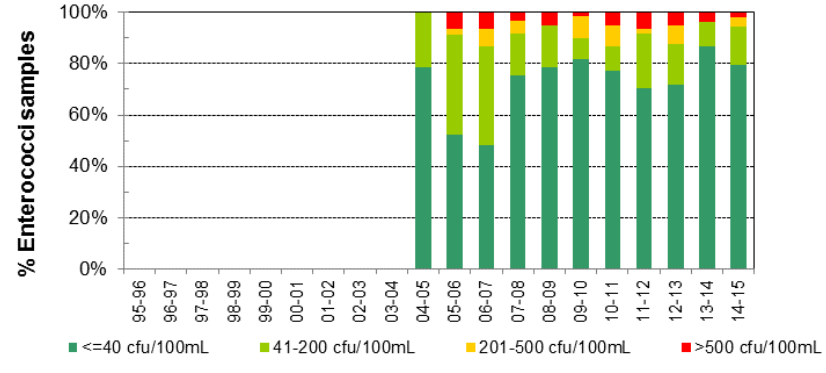


Response to rainfall

Rainfall from Warriewood WWTP rain gauge



Trends in enterococci data through time



Bilarong Reserve

Beach Suitability Grade: P

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

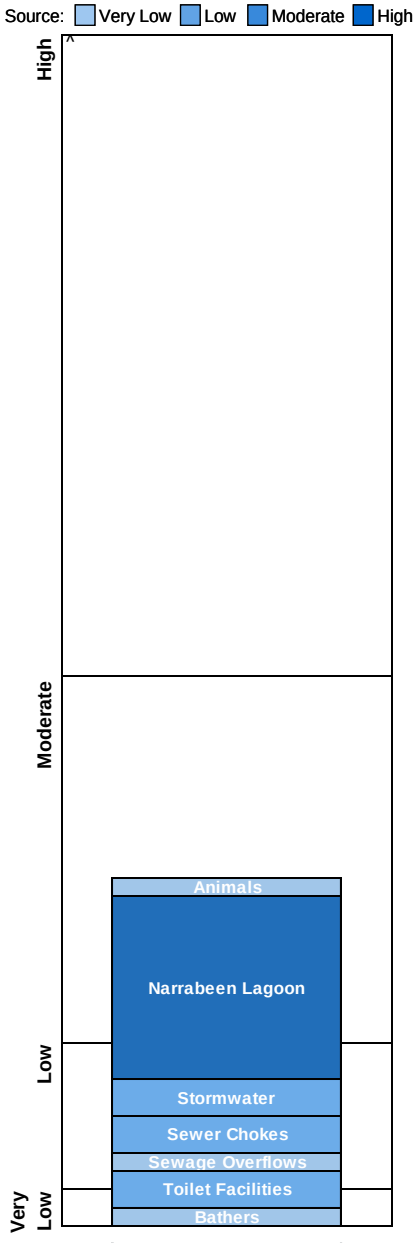
Bilarong Reserve is located on the northern shoreline of Narrabeen Lagoon. The site is backed by a playground, grass area and car park. A boat ramp and toilet block are located nearby.

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

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

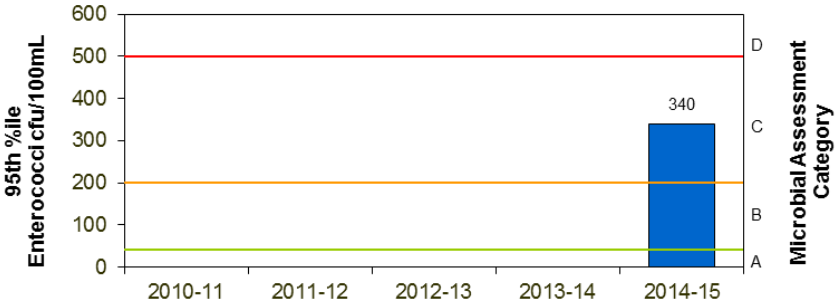
The site has been monitored since January 2014.

Sanitary Inspection: **Moderate**



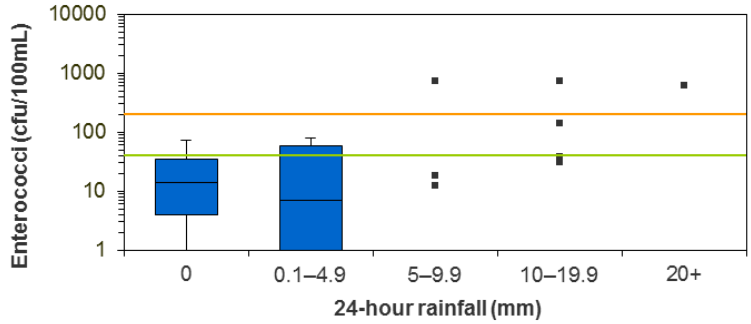
Microbial Assessment: **C**

Monitoring period for 2014–15 result is January 2014 to May 2015.

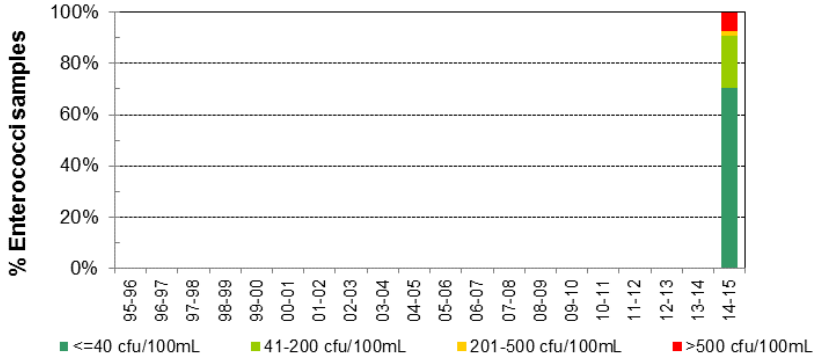


Response to rainfall

Rainfall from Warriewood WWTP rain gauge



Trends in enterococci data through time



Collaroy Beach

Beach Suitability Grade: G

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

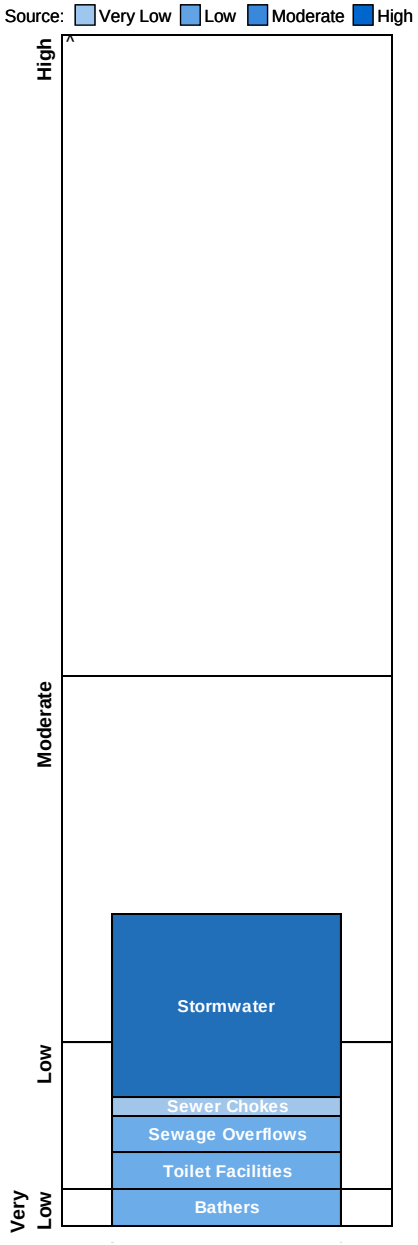
Collaroy Beach is backed by a park and picnic area, and rock baths are located at the southern end. Beach conditions are relatively safe south of the stormwater drain. Lifeguards patrol the beach from late September to April.

The Beach Suitability Grade of Good indicates that microbial water quality is 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 with increasing rainfall, often exceeding the safe swimming limit in response to 10 mm of rainfall or more.

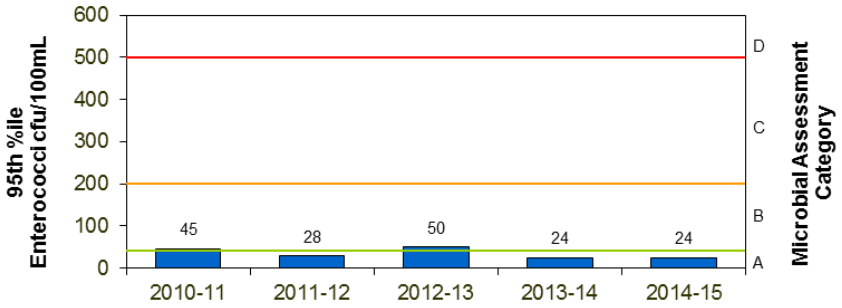
The site has been monitored since 1989. Water quality has generally been of a very high standard over the last ten years.

Sanitary Inspection: **Moderate**



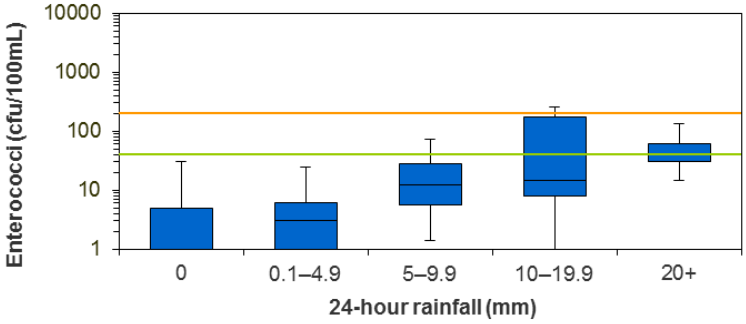
Microbial Assessment: **A**

Monitoring period for 2014–15 result is July 2013 to May 2015.

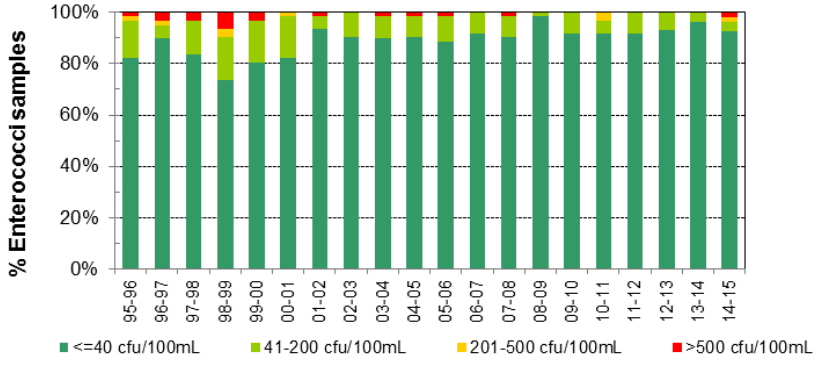


Response to rainfall

Rainfall from Dee Why rain gauge



Trends in enterococci data through time



Long Reef Beach

Beach Suitability Grade: G

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

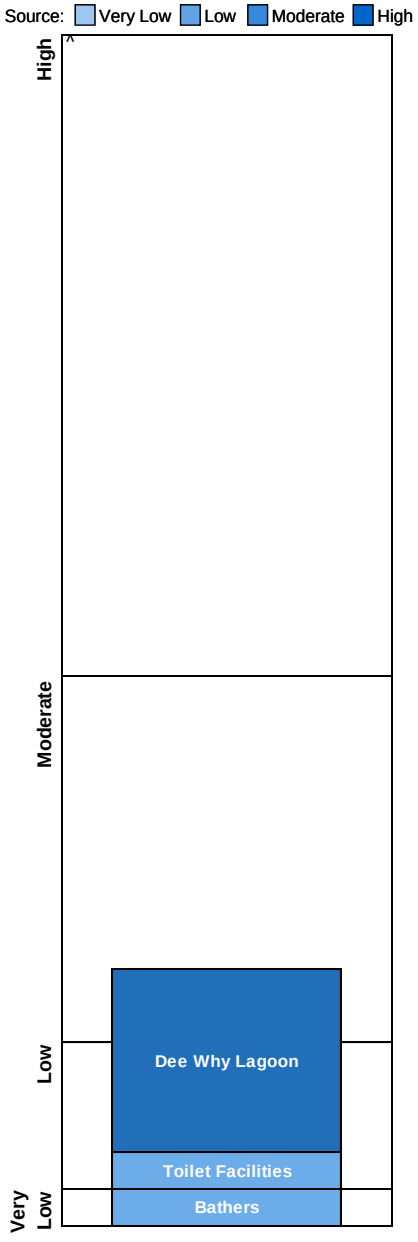
Long Reef Beach is backed by a golf course and a reserve. Strong rips create hazardous swimming conditions, and lifeguards patrol the beach from late September to April.

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

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

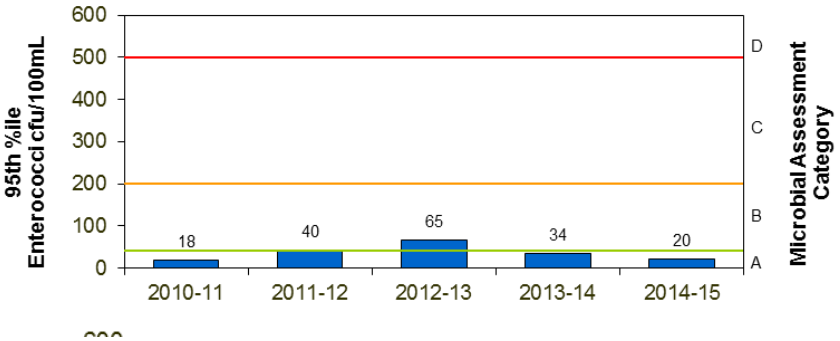
The site has been monitored since 1989. Water quality has generally been of a very high standard over the last ten years.

Sanitary Inspection: **Moderate**



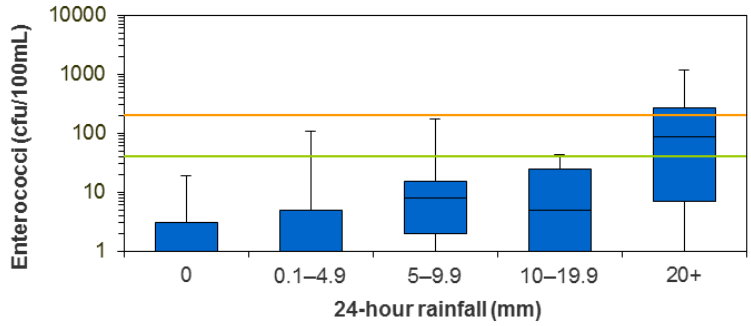
Microbial Assessment: **A**

Monitoring period for 2014–15 result is July 2013 to May 2015.

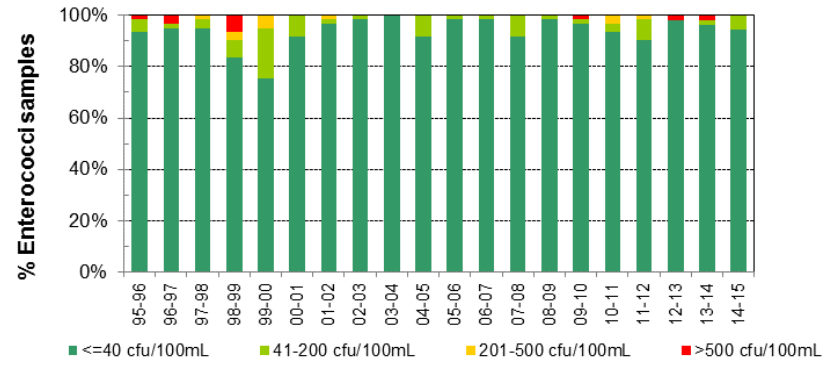


Response to rainfall

Rainfall from Dee Why rain gauge

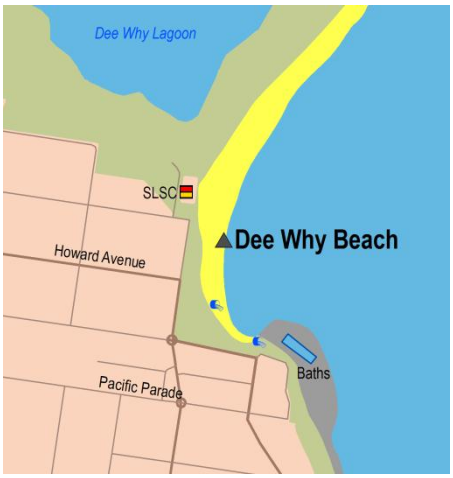


Trends in enterococci data through time



Dee Why Beach

Beach Suitability Grade: VG



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

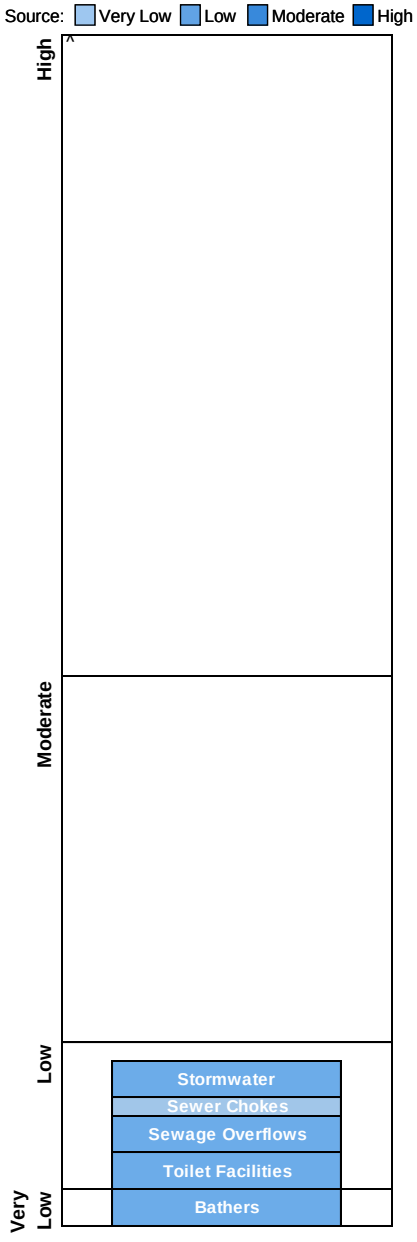
Dee Why Beach is backed in part by a park and picnic area and there is an ocean pool at the southern end. Swimming can be hazardous because of strong rips and lifeguards patrol the beach from late September to April.

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

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

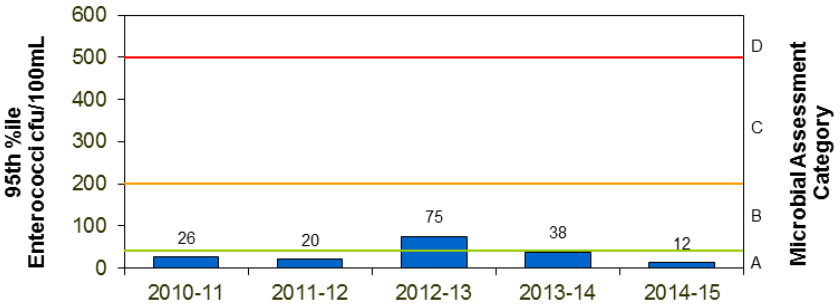
The site has been monitored since 1989. Water quality has generally been of a high standard over the last ten years.

Sanitary Inspection: **Low**



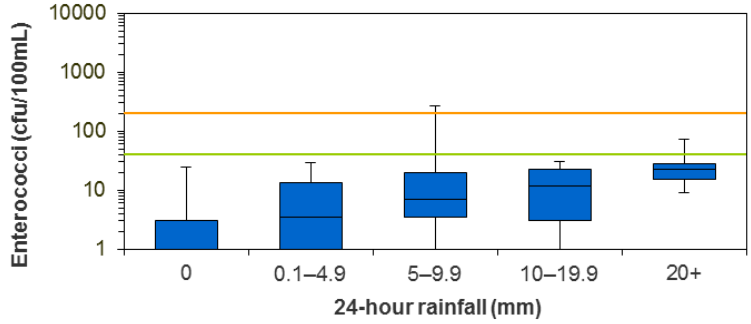
Microbial Assessment: **A**

Monitoring period for 2014–15 result is July 2013 to May 2015.

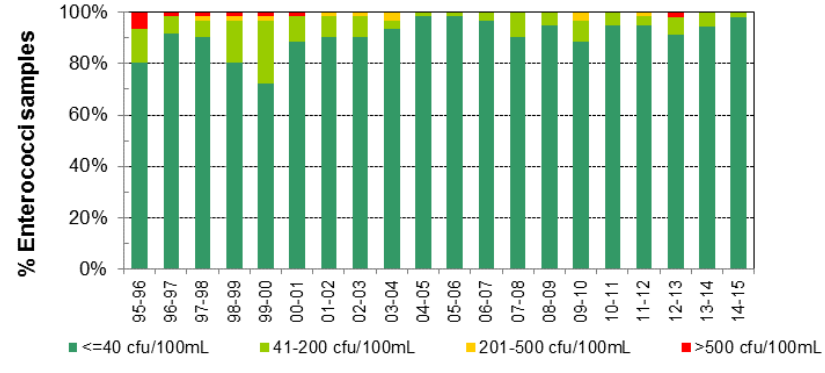


Response to rainfall

Rainfall from Dee Why rain gauge



Trends in enterococci data through time



North Curl Curl Beach

Beach Suitability Grade: G

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

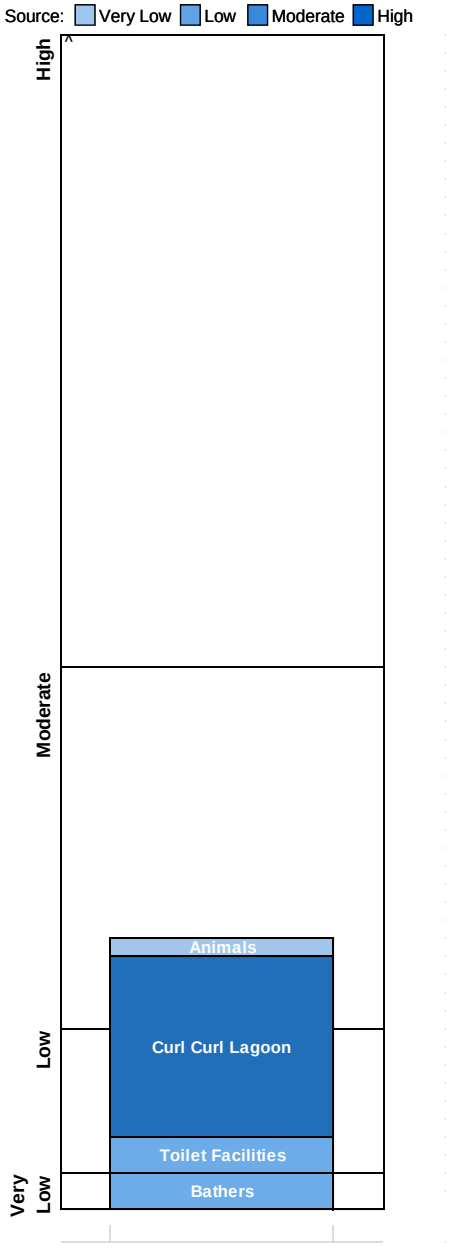
North Curl Curl Beach is safest in the northern corner. Lifeguards patrol the beach on weekends between late September and April and on weekdays as well between December and March.

The Beach Suitability Grade of Good indicates that microbial water quality is suitable for swimming most of the time, but the water may be susceptible to pollution after heavy rain, with several potential sources of faecal contamination, including discharge from Curl Curl Lagoon.

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

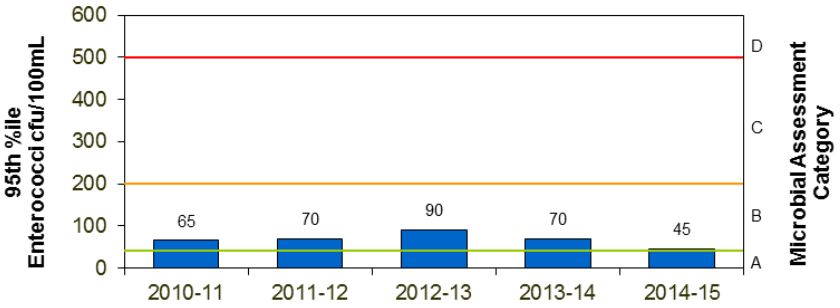
The site has been monitored since 1989. Water quality has generally been of a high standard, with year to year variations the result of lagoon openings and rainfall.

Sanitary Inspection: **Moderate**



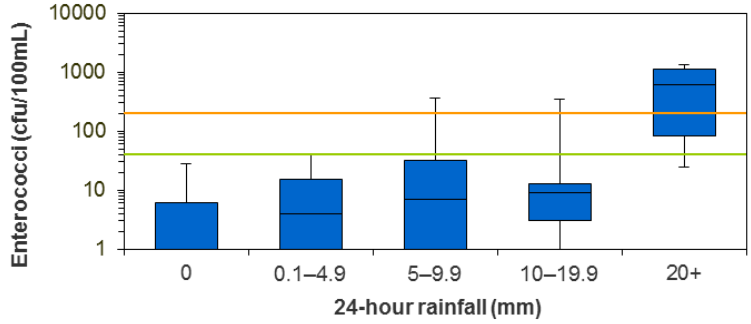
Microbial Assessment: **B**

Monitoring period for 2014–15 result is July 2013 to May 2015.

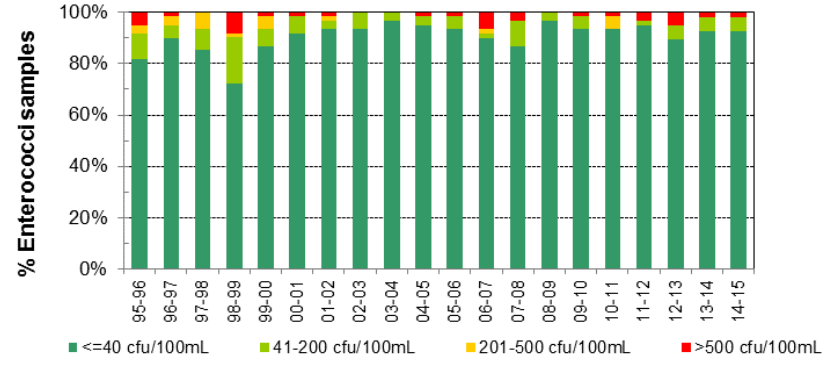


Response to rainfall

Rainfall from Harbord rain gauge



Trends in enterococci data through time



South Curl Curl Beach

Beach Suitability Grade: VG

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

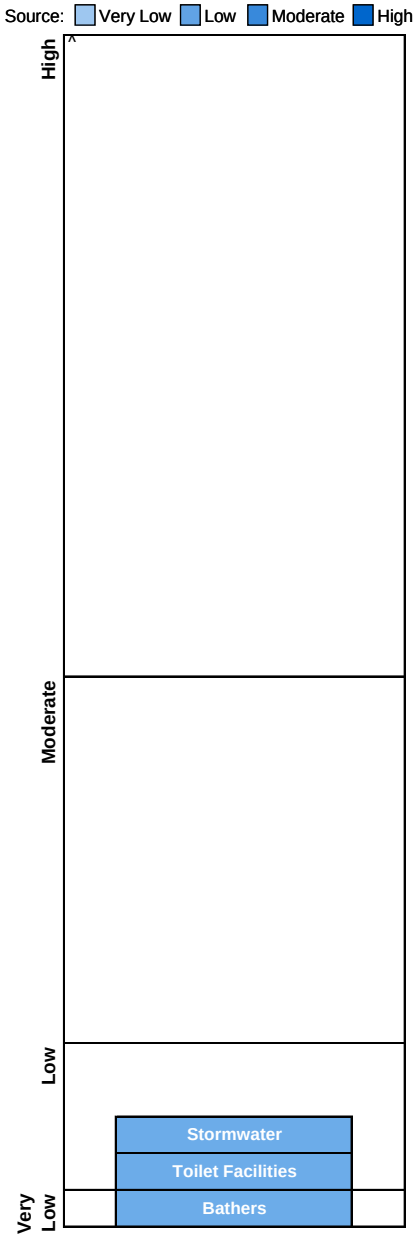
South Curl Curl Beach is at the southern end of Curl Curl Beach. Swimming can be hazardous because of rips, and lifeguards patrol the beach from late September to April.

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

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

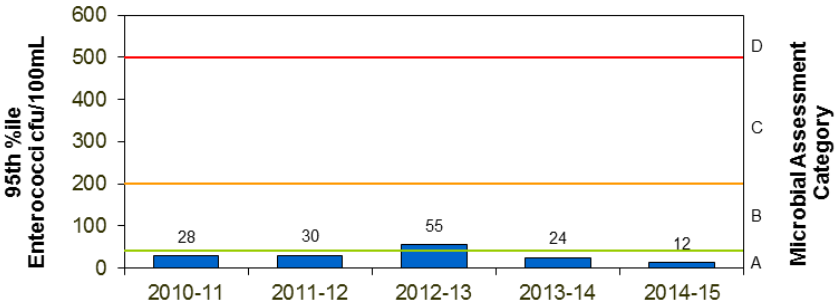
The site has been monitored since 1989. Water quality has been of a high standard over the last ten years.

Sanitary Inspection: **Low**



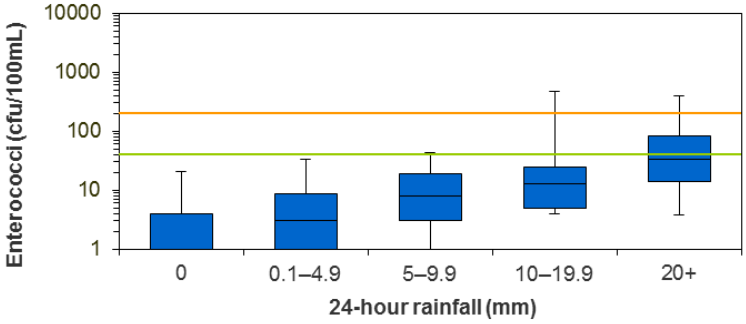
Microbial Assessment: **A**

Monitoring period for 2014–15 result is July 2013 to May 2015.

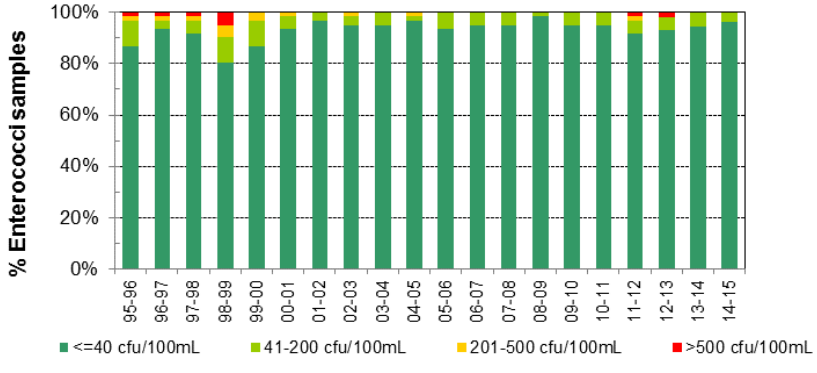


Response to rainfall

Rainfall from Harbord rain gauge



Trends in enterococci data through time



Freshwater Beach

Beach Suitability Grade: G

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

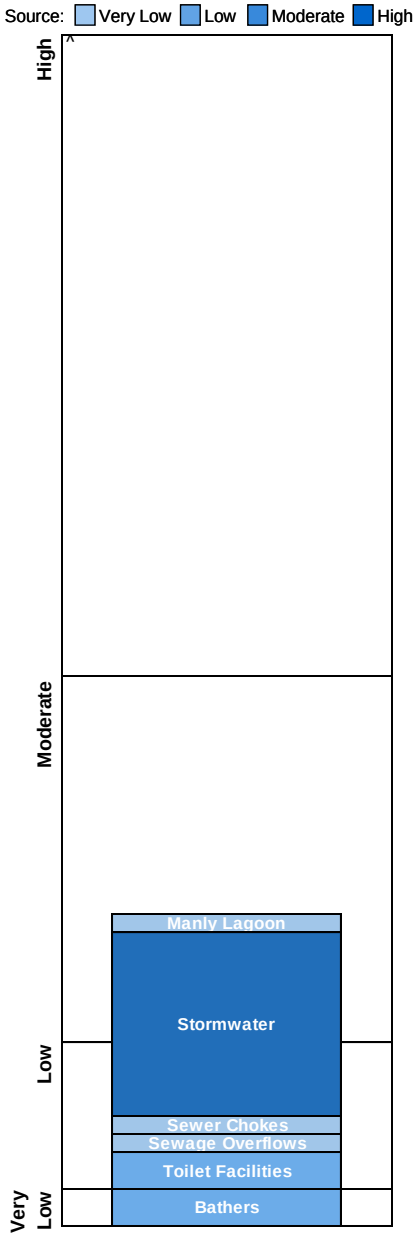
Freshwater Beach is approximately 350 metres long. Rock baths are located on the northern rock platform. Lifeguards patrol the beach from late September to April.

The Beach Suitability Grade of Good indicates that microbial water quality is 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 increased with increasing rainfall, occasionally exceeding the safe swimming limit in response to light rain, and often in response to 5 mm or more.

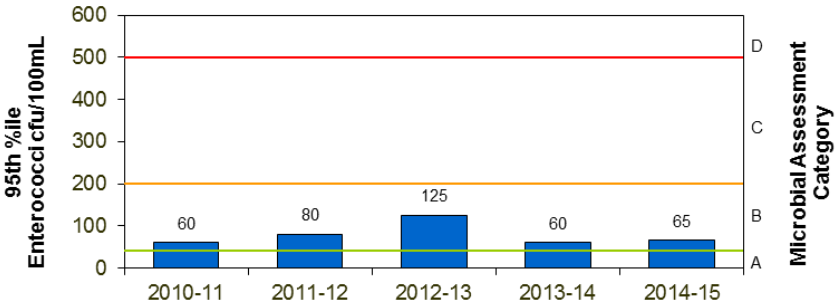
The site has been monitored since 1989. Water quality has been of a high standard over the last ten years.

Sanitary Inspection: **Moderate**



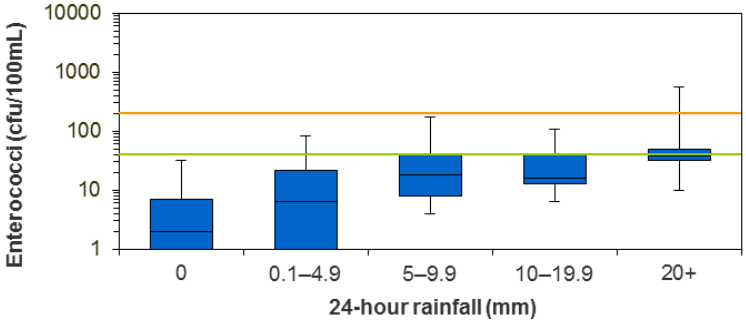
Microbial Assessment: **B**

Monitoring period for 2014–15 result is July 2013 to May 2015.

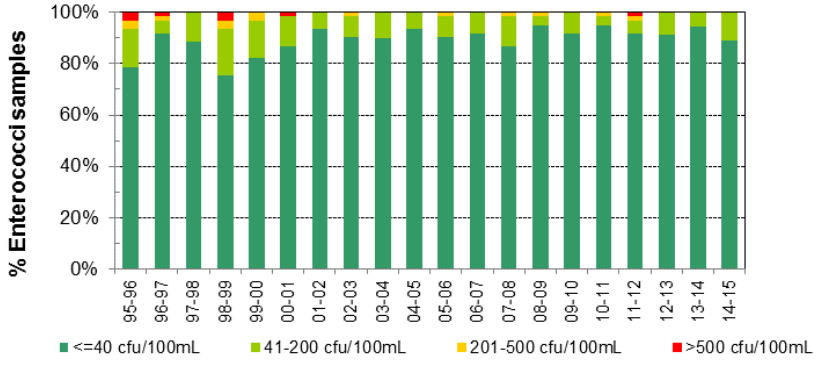


Response to rainfall

Rainfall from Harbord rain gauge



Trends in enterococci data through time



Queenscliff Beach

Beach Suitability Grade: G

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

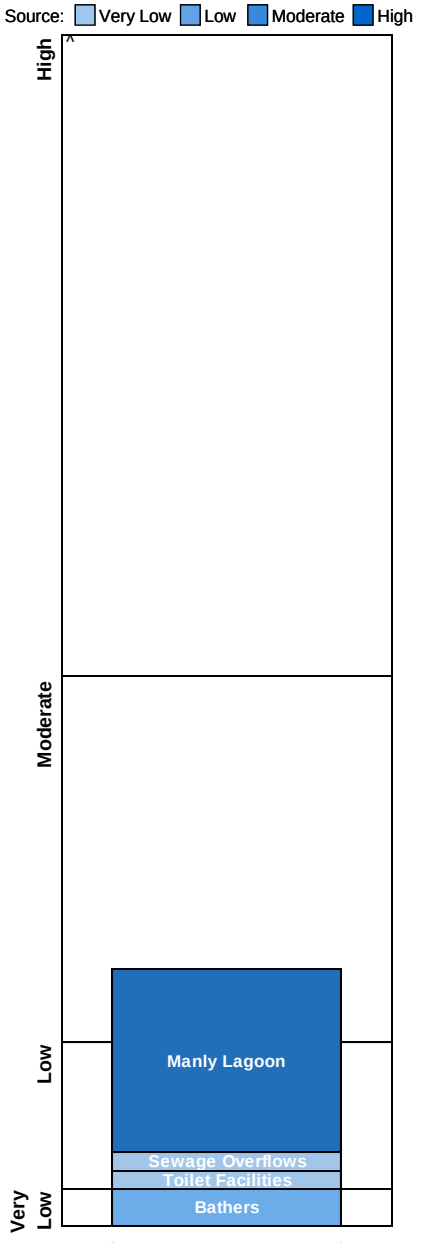
Queenscliff Beach is located at the northern end of Manly Beach. Swimming may be hazardous because of rips. Lifeguards patrol the beach from October to April.

The Beach Suitability Grade of Good indicates that microbial water quality is suitable for swimming most of the time, but the water may be susceptible to pollution after rain, with several 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 5 mm of rainfall or more.

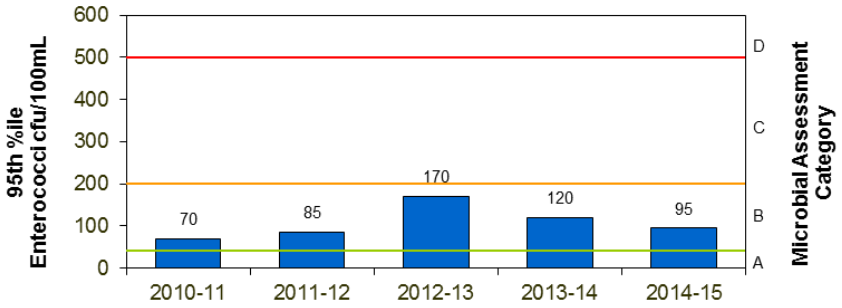
The site has been monitored since 1989, with variation in results since 1990 due to rainfall patterns and lagoon openings.

Sanitary Inspection: **Moderate**



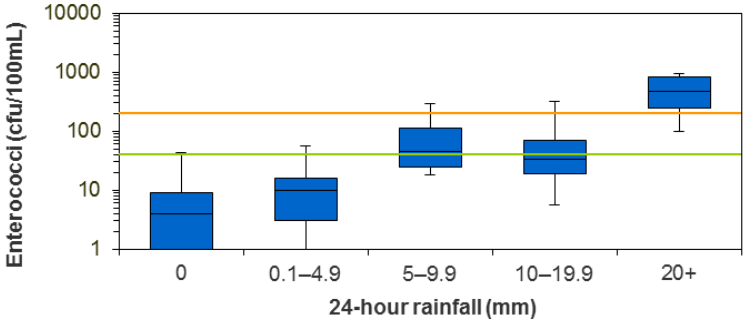
Microbial Assessment: **B**

Monitoring period for 2014–15 result is July 2013 to May 2015.

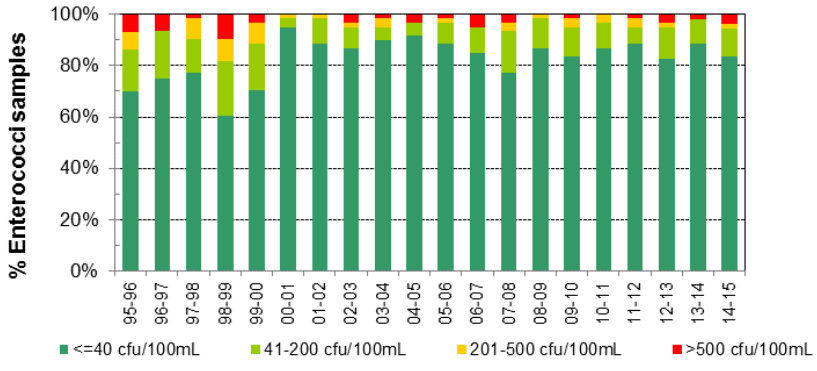


Response to rainfall

Rainfall from Manly rain gauge



Trends in enterococci data through time



North Steyne Beach

Beach Suitability Grade: G

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

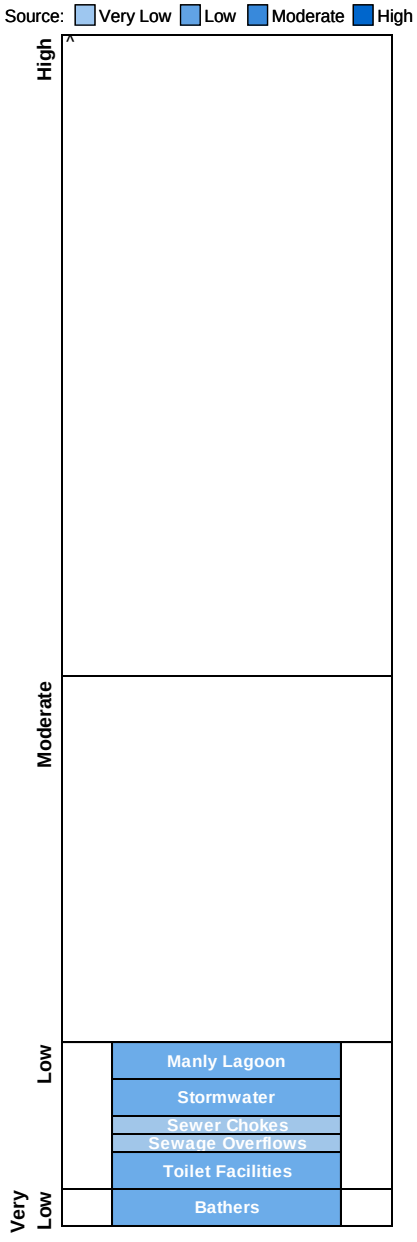
North Steyne Beach is the middle section of Manly Beach. Swimming can be hazardous, as rips occur along the beach. Lifeguards patrol the beach from October to April.

The Beach Suitability Grade of Good indicates that microbial water quality is suitable for swimming most of the time, but the water may be susceptible to pollution after heavy rain, with several potential sources of faecal contamination, including stormwater and discharge from Manly Lagoon.

The response to rainfall graph indicates that enterococci levels increased with increasing rainfall, regularly exceeding the safe swimming limit after 20 mm of rainfall or more.

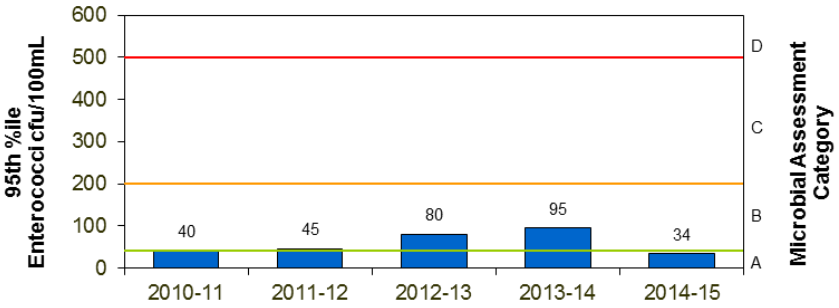
The site has been monitored since 1989.

Sanitary Inspection: **Moderate**



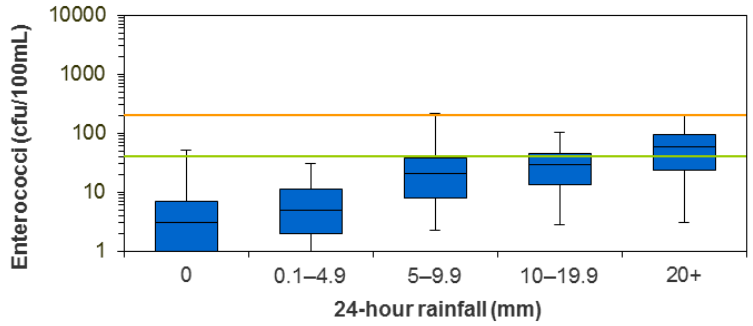
Microbial Assessment: **A**

Monitoring period for 2014–15 result is July 2013 to May 2015.

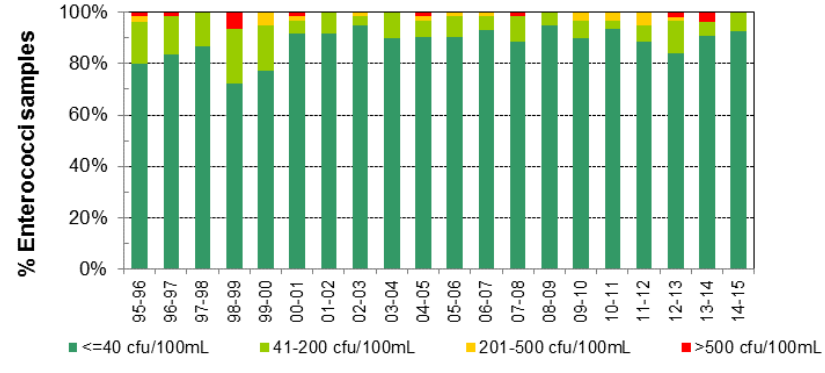


Response to rainfall

Rainfall from Manly rain gauge



Trends in enterococci data through time



South Steyne Beach

Beach Suitability Grade: G

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

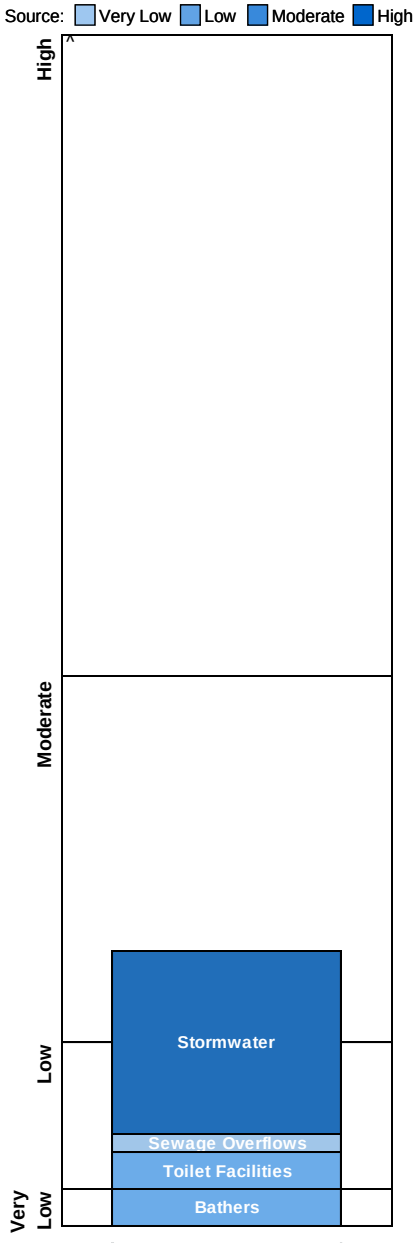
South Steyne Beach is at the southern end of Manly Beach. The beach is popular with tourists and locals. Lifeguards patrol the beach year round.

The Beach Suitability Grade of Good indicates that microbial water quality is 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 with increasing rainfall, often exceeding the safe swimming limit after 5 mm of rainfall or more.

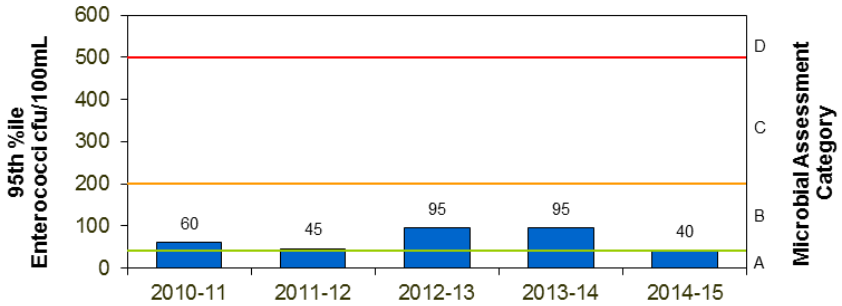
The site has been monitored since 1989.

Sanitary Inspection: **Moderate**



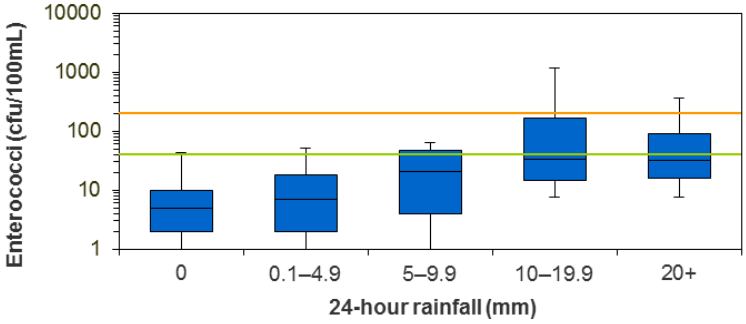
Microbial Assessment: **B**

Monitoring period for 2014–15 result is July 2013 to May 2015.

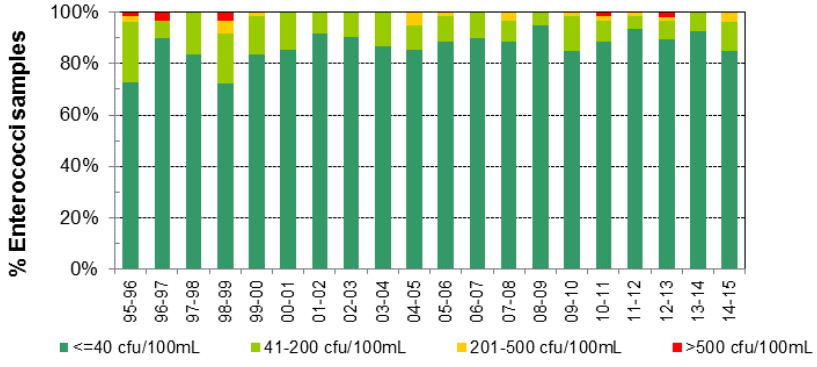


Response to rainfall

Rainfall from Manly rain gauge



Trends in enterococci data through time



Shelly Beach

Beach Suitability Grade: VG

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

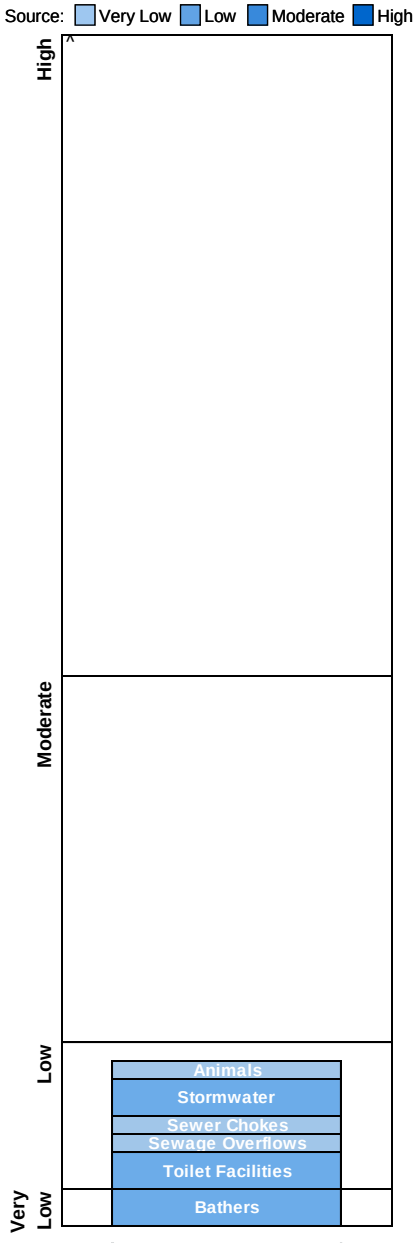
Shelly Beach is backed by a picnic area and reserve. The beach offers no surf and apart from the deep water close to shore, it is relatively safe for swimming. The beach is not patrolled by lifeguards.

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

The response to rainfall graph indicates that enterococci levels generally increased with increasing rainfall, often exceeding the safe swimming limit in response to 10 mm of rain or more.

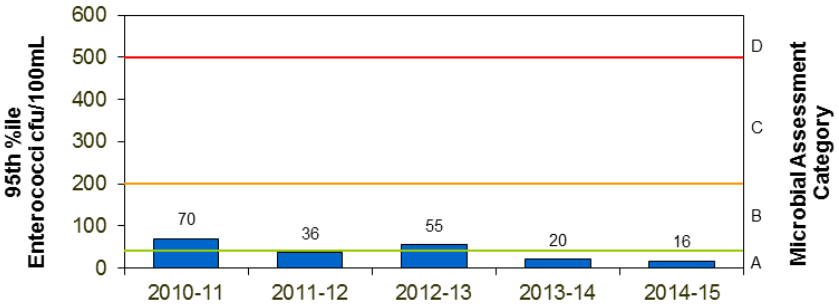
The site has been monitored since 1989. Microbial water quality improved in 2000–2001 when sewage overflows to the bay were diverted to North Head Wastewater Treatment Plant.

Sanitary Inspection: **Low**



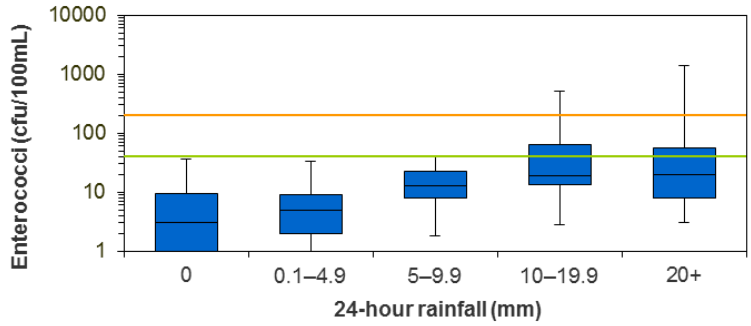
Microbial Assessment: **A**

Monitoring period for 2014–15 result is July 2013 to May 2015.

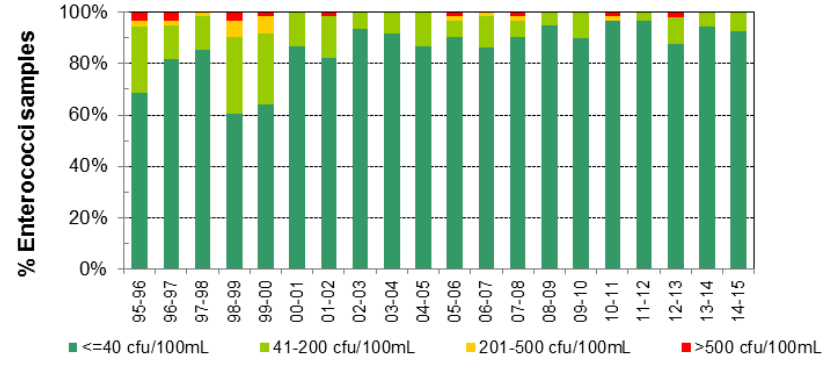


Response to rainfall

Rainfall from Manly rain gauge



Trends in enterococci data through time



Barrenjoey Beach

Beach Suitability Grade: G

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

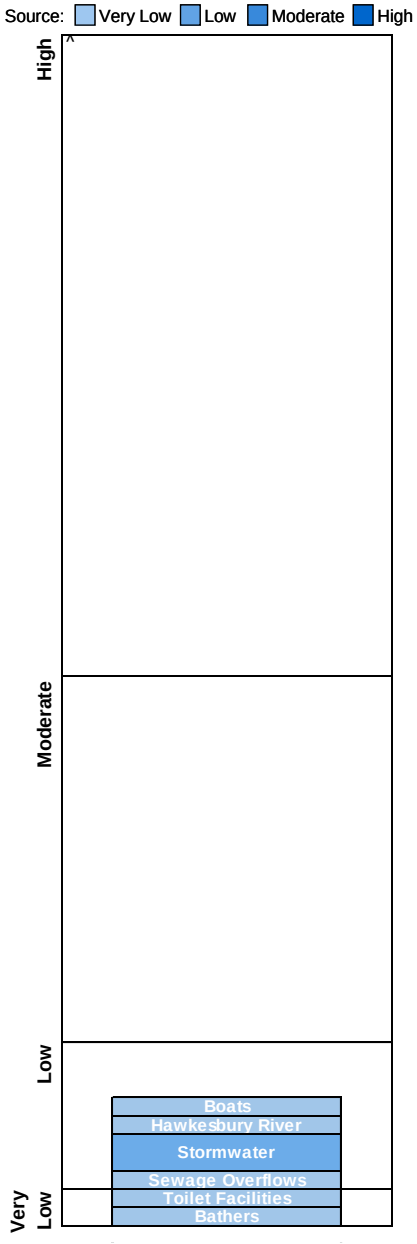
Barrenjoey Beach is approximately 1.5 kilometres long and located on the north-eastern foreshore of Pittwater. The beach is backed by a reserve.

The Beach Suitability Grade of Good indicates that the water quality is safe for swimming most of the time but can be susceptible to pollution after heavy rain, with several minor sources of faecal contamination, including stormwater.

The response to rainfall graph indicates that enterococci levels increased slightly with increasing rainfall, regularly exceeding the safe swimming limit after 10 mm or rain or more.

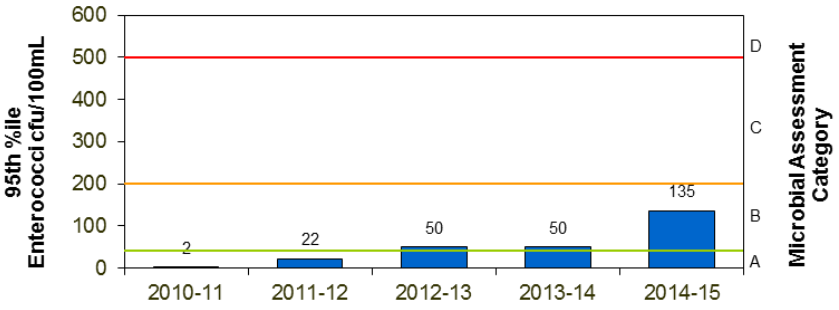
The site has been monitored since 1996. Microbial water quality improved significantly in 2000 when the toilet facilities at the beach were connected to the reticulated sewerage system. Since November 2014, the sampling point has moved to the shoreline as access by boat is restricted due to seagrass beds.

Sanitary Inspection: **Low**



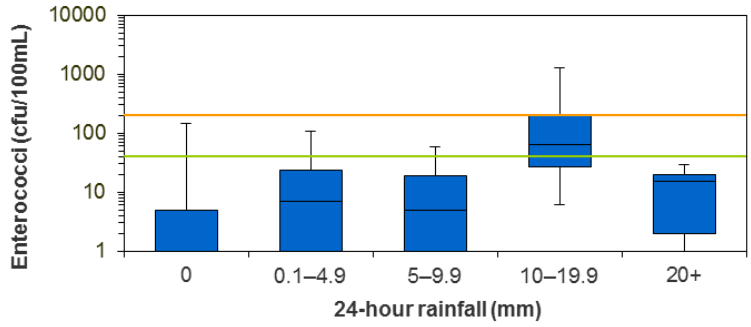
Microbial Assessment: **B**

Monitoring period for 2014–15 result is October 2012 to May 2015.

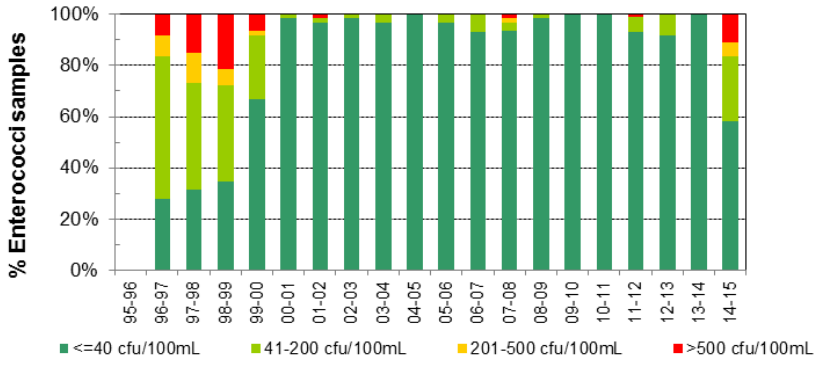


Response to rainfall

Rainfall from Avalon rain gauge



Trends in enterococci data through time



Paradise Beach Baths

Beach Suitability Grade: G

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

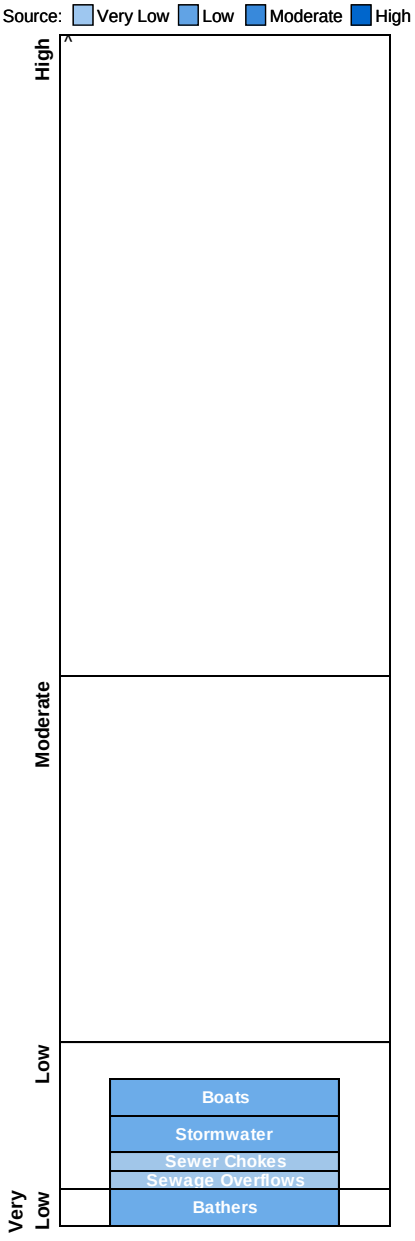
Paradise Beach Baths are a 30 by 20 metre netted swimming enclosure on the eastern foreshore of Pittwater, backed by a narrow sandy beach and a small park.

The Beach Suitability Grade of Good indicates that microbial water quality is suitable for swimming most of the time but the water may be susceptible to pollution from several minor 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 5 mm of rainfall or more.

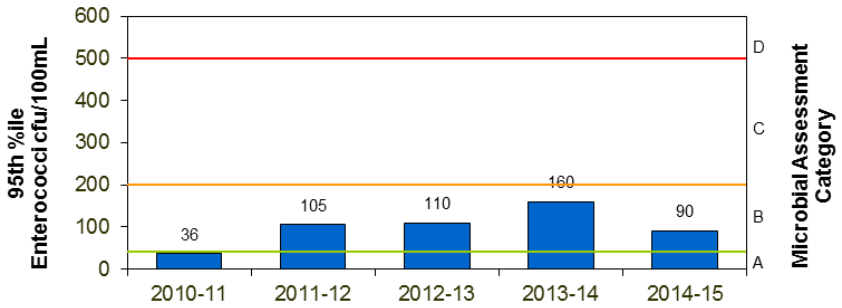
The site has been monitored since 1996. Microbial water quality improved slightly in 2000–2001 when much of the catchment was connected to reticulated sewerage.

Sanitary Inspection: **Low**



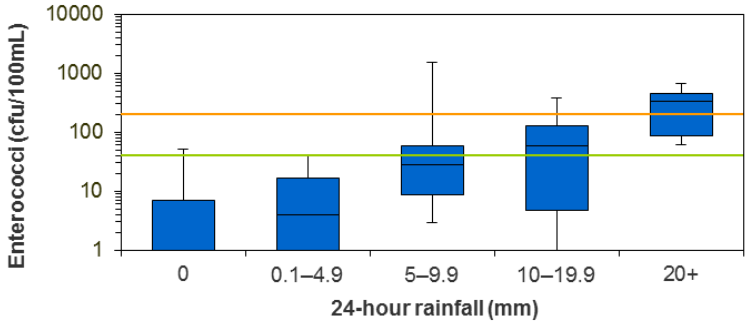
Microbial Assessment: **B**

Monitoring period for 2014–15 result is October 2012 to May 2015.

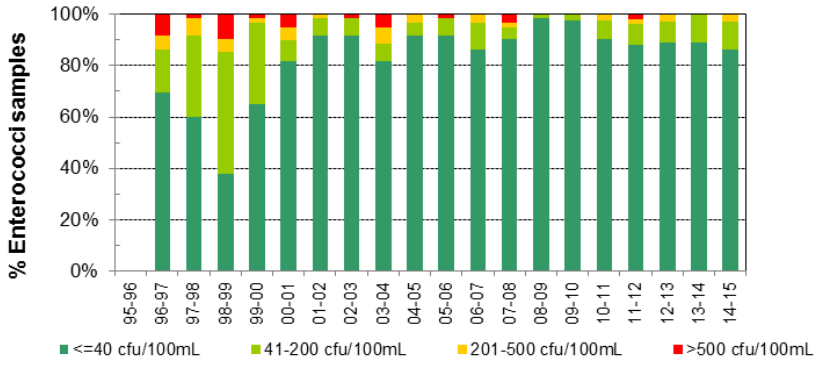


Response to rainfall

Rainfall from Avalon rain gauge

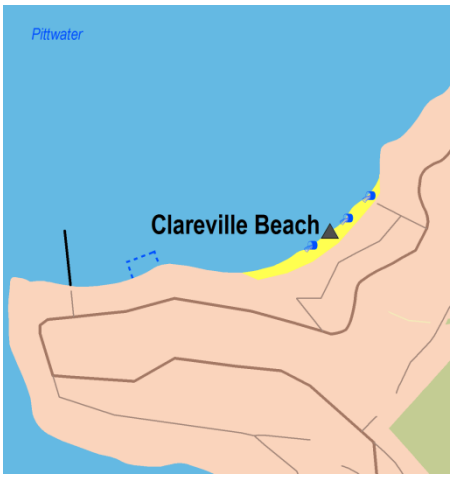


Trends in enterococci data through time



Clareville Beach

Beach Suitability Grade: G



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

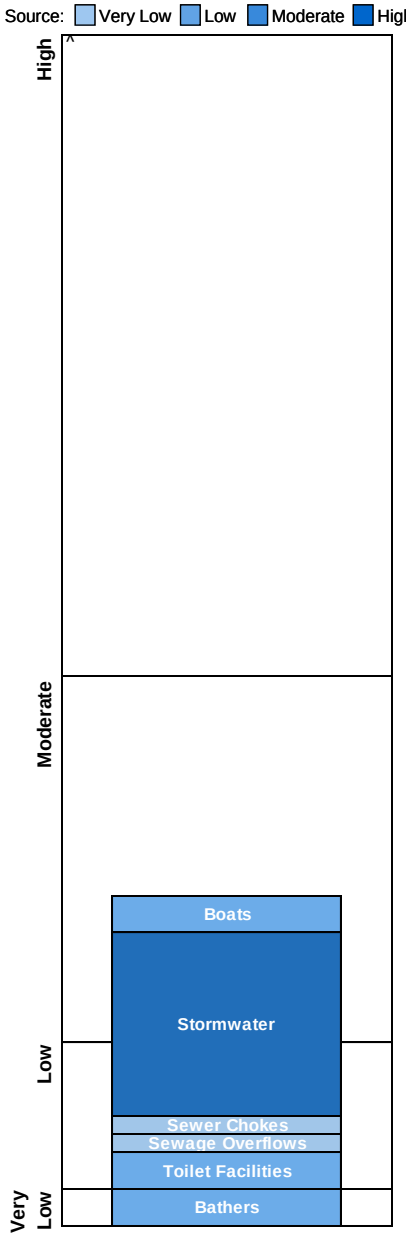
Clareville Beach is a narrow 250 metre long beach located on the eastern foreshore of Pittwater. A grassy park area backs the beach, with picnic facilities at the northern end.

The Beach Suitability Grade of Good indicates that microbial water quality is 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 increased with increasing rainfall, often exceeding the safe swimming limit in response to 5 mm of rainfall or more.

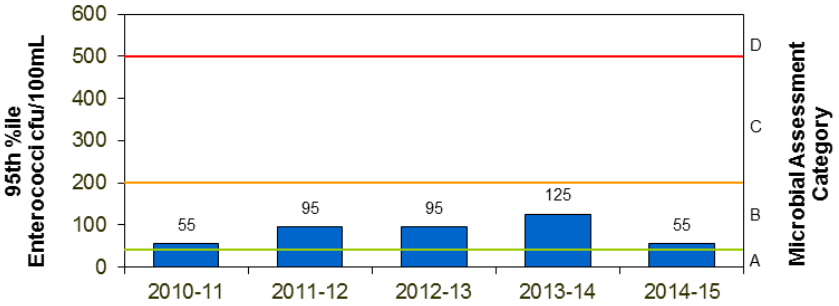
The site has been monitored since 1995. Microbial water quality improved in 2000–2001 when much of the catchment was connected to reticulated sewerage.

Sanitary Inspection: **Moderate**



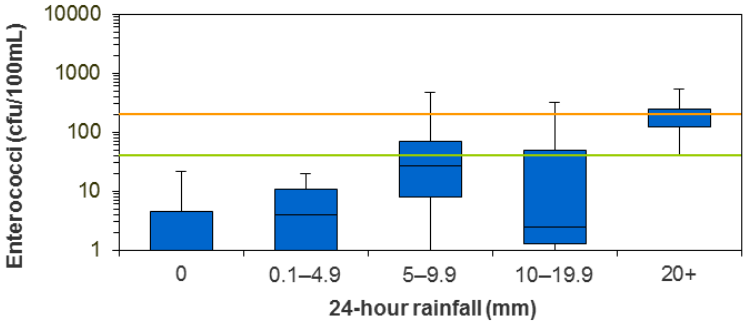
Microbial Assessment: **B**

Monitoring period for 2014–15 result is October 2012 to May 2015.

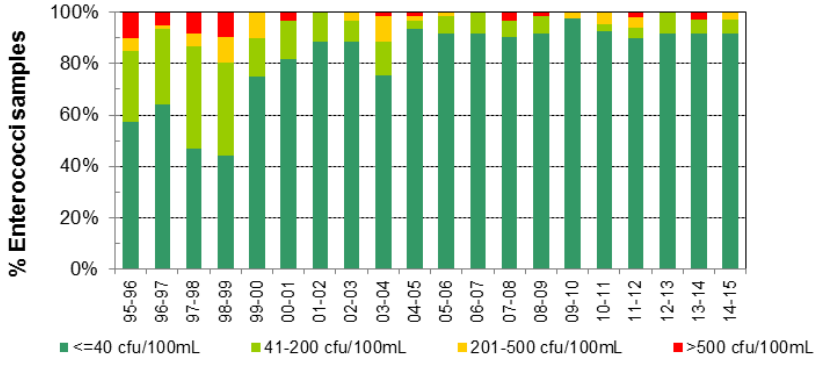


Response to rainfall

Rainfall from Avalon rain gauge

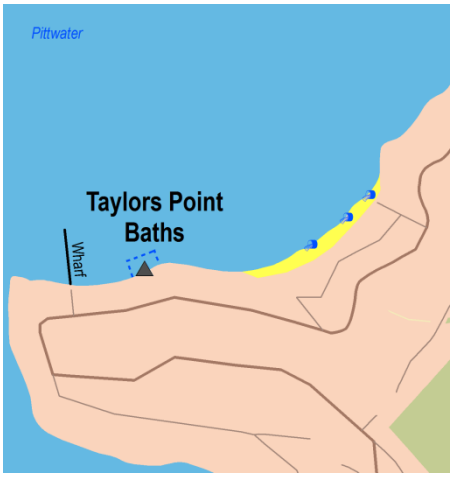


Trends in enterococci data through time



Taylors Point Baths

Beach Suitability Grade: G



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

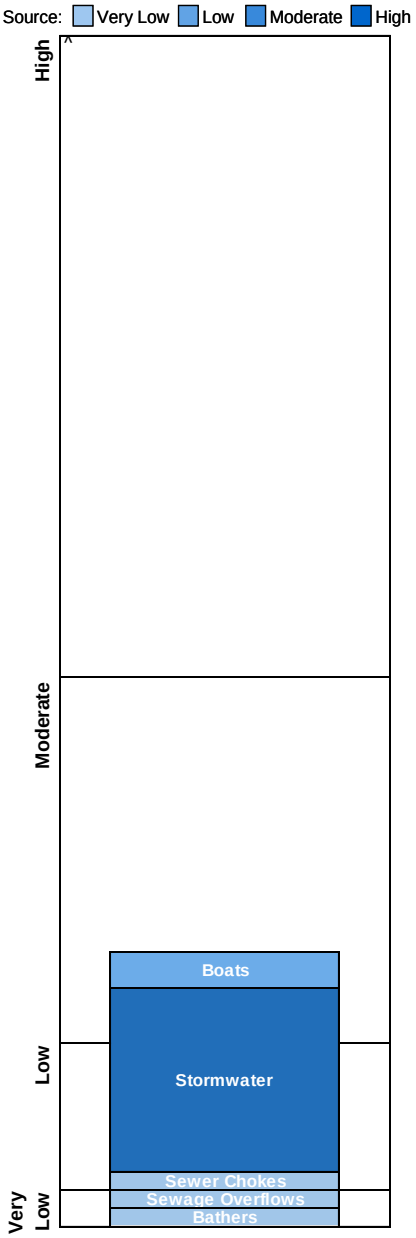
Taylors Point Baths are a 15 by 20 metre netted swimming enclosure on the eastern foreshore of Pittwater. The baths are backed by a narrow beach with a small grassed area.

The Beach Suitability Grade of Good indicates that microbial water quality is 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 increased with increasing rainfall, often exceeding the safe swimming limit in response to 5 mm of rainfall or more.

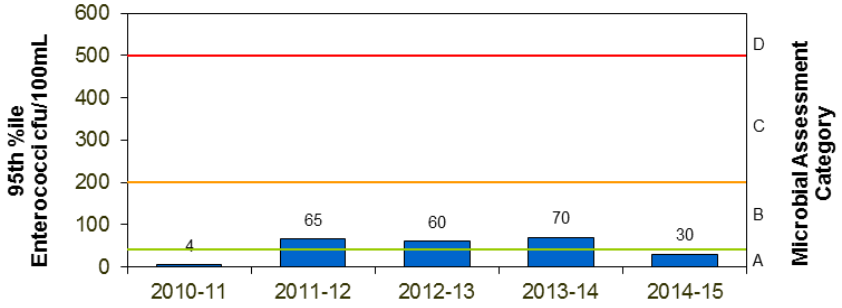
The site has been monitored since 2010 and water quality has generally been of a high standard.

Sanitary Inspection: **Moderate**



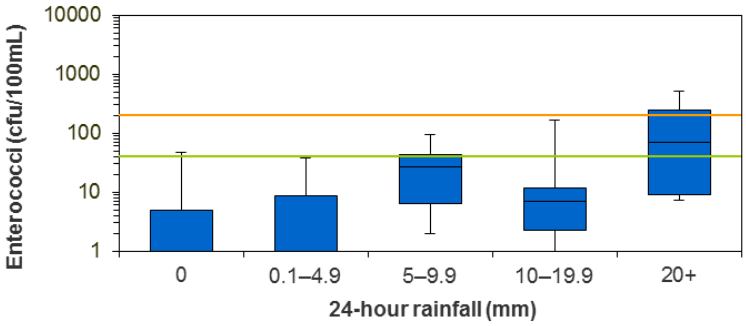
Microbial Assessment: **A**

Monitoring period for 2014–15 result is October 2012 to May 2015.

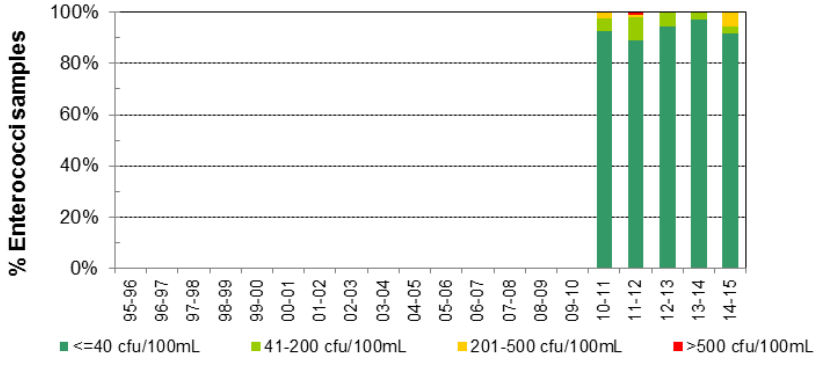


Response to rainfall

Rainfall from Avalon rain gauge



Trends in enterococci data through time



Bayview Baths

Beach Suitability Grade: **P**

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

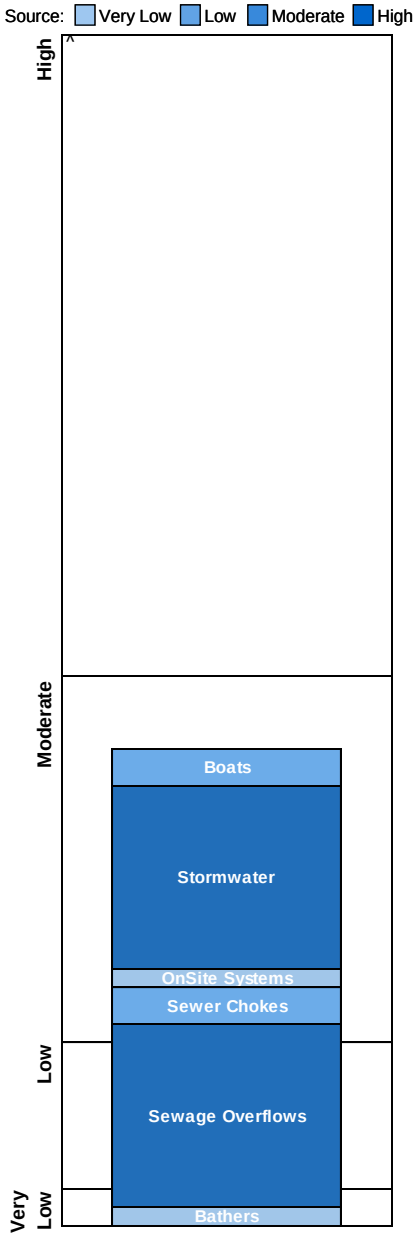
Bayview Baths are a 20 by 40 metre netted swimming enclosure on the southern foreshore of Pittwater. The baths are backed by a narrow beach with a small park. The baths are considerably silted up.

The Beach Suitability Grade of Poor indicates that microbial water quality is influenced by faecal pollution, usually triggered by rainfall, with potential faecal contamination from stormwater and sewage overflows.

The response to rainfall graph indicates that enterococci levels increased with increasing rainfall, regularly exceeding the safe swimming limit in response to 5 mm of rainfall or more.

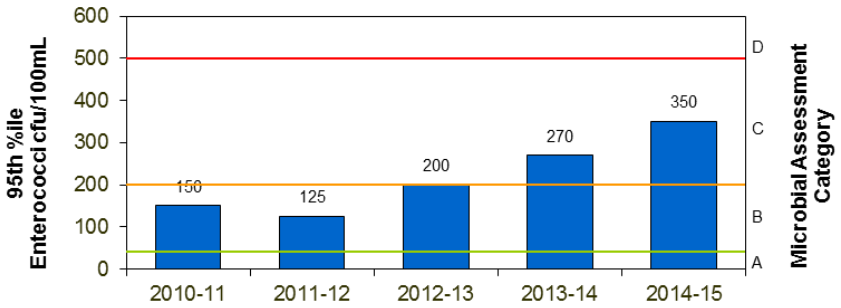
The site has been monitored since 1995. Microbial water quality improved in 2000–2001 when much of the catchment was connected to reticulated sewerage.

Sanitary Inspection: **Moderate**



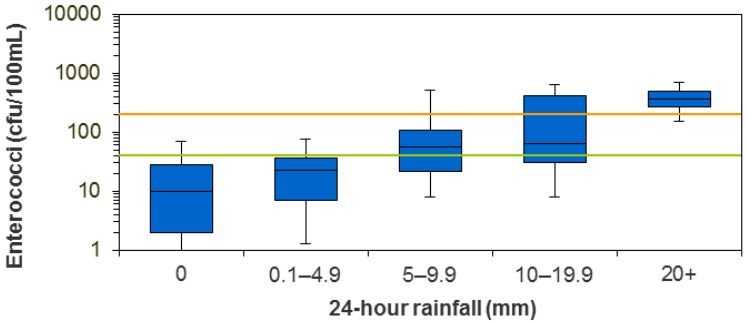
Microbial Assessment: **C**

Monitoring period for 2014–15 result is October 2012 to May 2015.

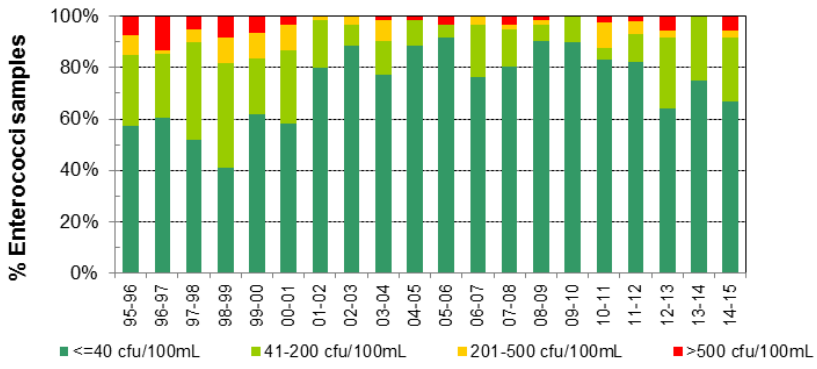


Response to rainfall

Rainfall from Avalon rain gauge



Trends in enterococci data through time



Elvina Bay

Beach Suitability Grade: G

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

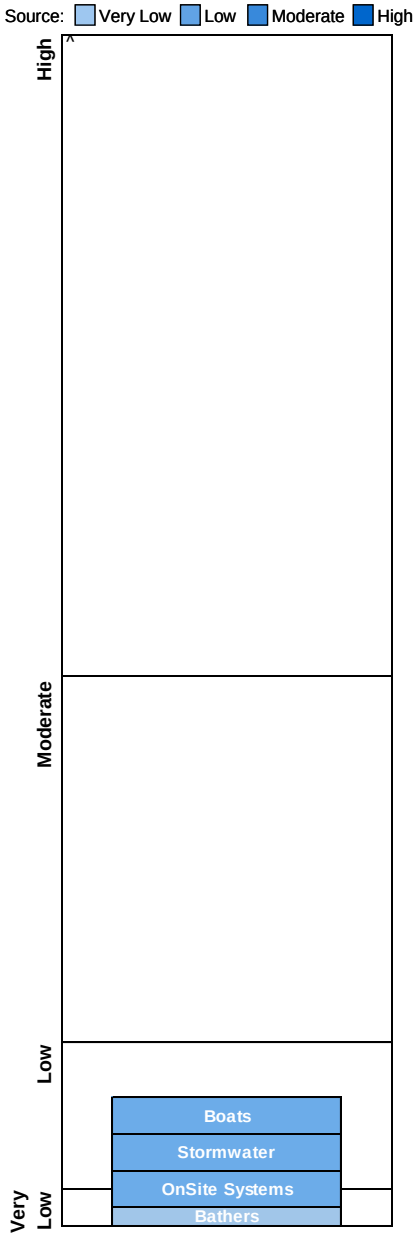
Elvina Bay is on the south-western foreshore of Pittwater. The swimming area is not netted. Water quality samples are collected from Elvina South Wharf on the southern side of Elvina Bay.

The Beach Suitability Grade of Good indicates that the water quality is safe for swimming, but can be susceptible to pollution after heavy rain, with several potential sources of minor faecal contamination.

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

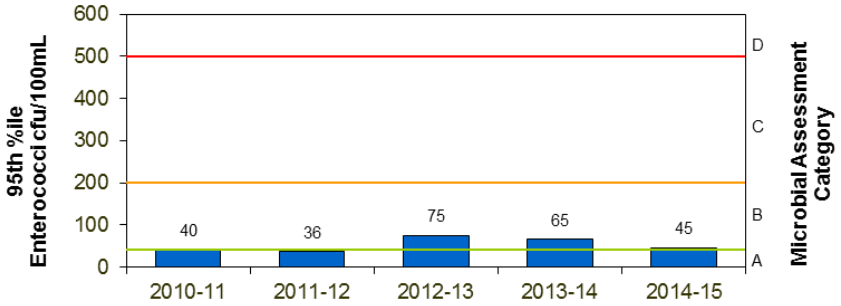
Microbial water quality improved slightly in 2000–2001 when much of the eastern side of Pittwater was connected to reticulated sewerage.

Sanitary Inspection: **Low**



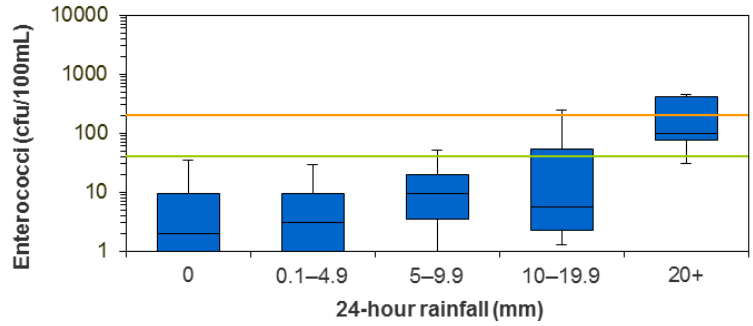
Microbial Assessment: **B**

Monitoring period for 2014–15 result is October 2012 to May 2015.

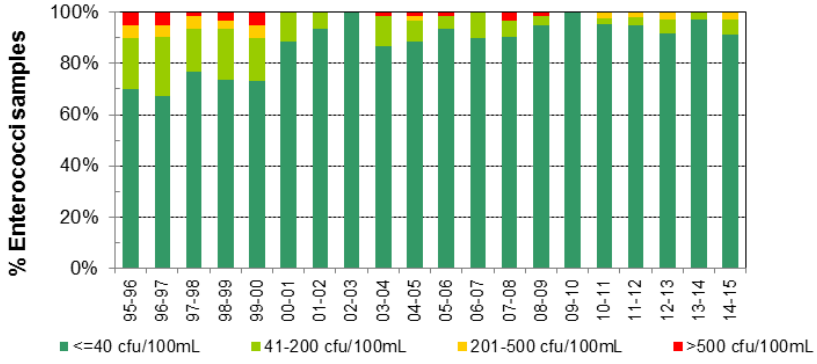


Response to rainfall

Rainfall from Avalon rain gauge



Trends in enterococci data through time



North Scotland Island

Beach Suitability Grade: G

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

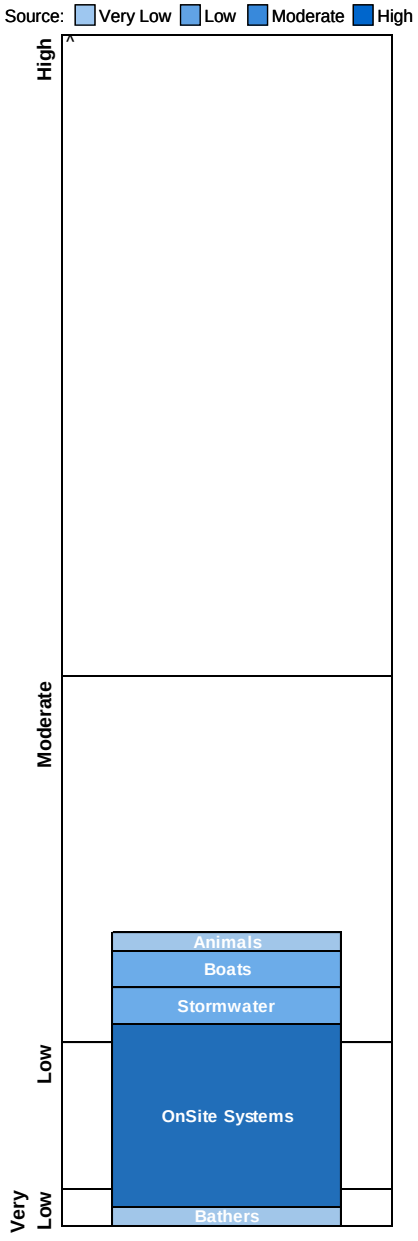
The North Scotland Island swimming site is a 15 by 50 metre netted enclosure located on the north side of Scotland Island in Pittwater. A park with picnic facilities backs the swimming area.

The Beach Suitability Grade of Good indicates that microbial water quality is suitable for swimming most of the time but the water may be susceptible to pollution from several potential sources of faecal contamination including on-site sewage management systems.

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

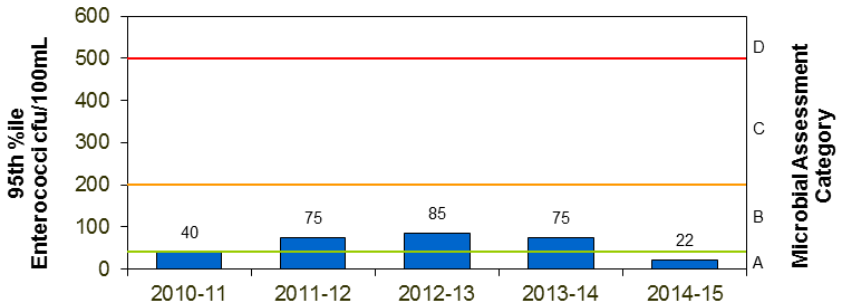
The site has been monitored since 1995. Microbial water quality improved slightly in 2000–2001 when much of the eastern side of Pittwater was connected to reticulated sewerage.

Sanitary Inspection: **Moderate**



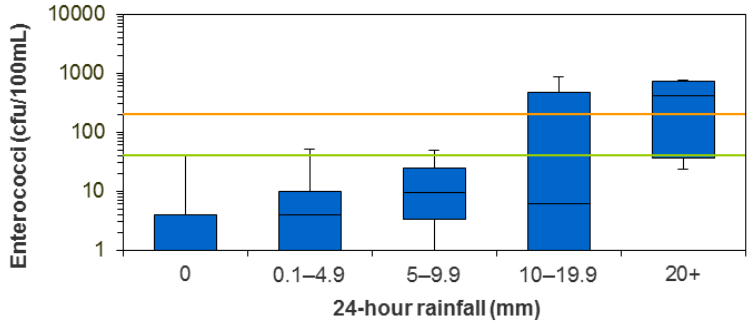
Microbial Assessment: **A**

Monitoring period for 2014–15 result is October 2012 to May 2015.

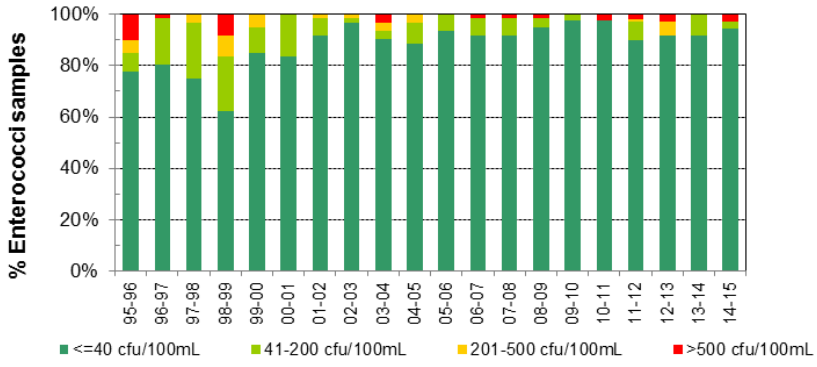


Response to rainfall

Rainfall from Avalon rain gauge



Trends in enterococci data through time



South Scotland Island

Beach Suitability Grade: G

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

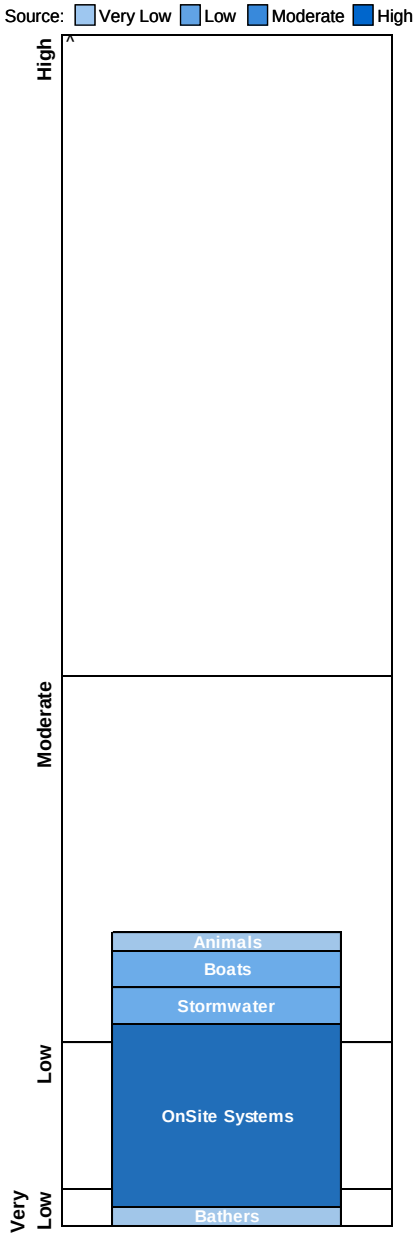
The South Scotland Island swimming site is located at Carols Wharf on the southern side of Scotland Island. The location is not netted and is backed by a reserve.

The Beach Suitability Grade of Good indicates that microbial water quality is suitable for swimming most of the time but the water may be susceptible to pollution from several potential sources of faecal contamination including on-site sewage management systems.

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

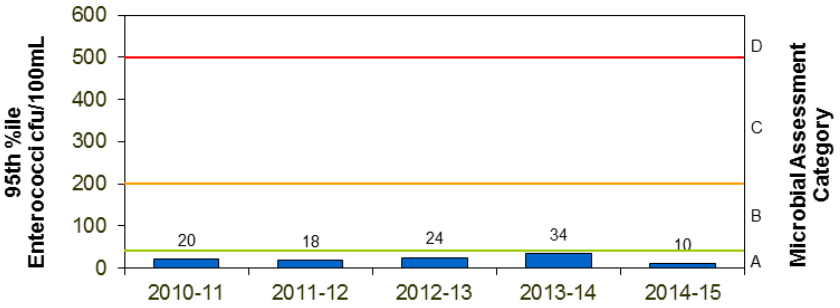
The site has been monitored since 1996. Microbial water quality improved slightly in 2000–2001 when much of the eastern side of Pittwater was connected to reticulated sewerage.

Sanitary Inspection: **Moderate**



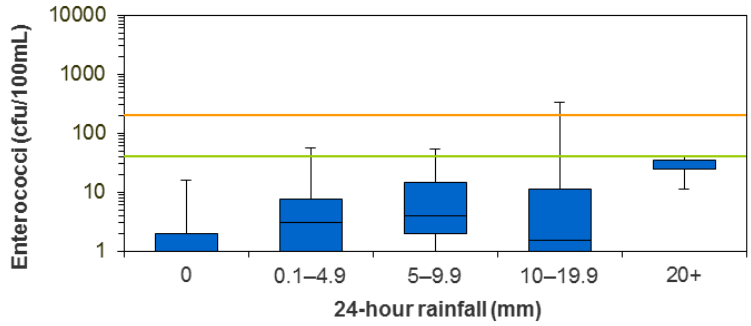
Microbial Assessment: **A**

Monitoring period for 2014–15 result is October 2012 to May 2015.

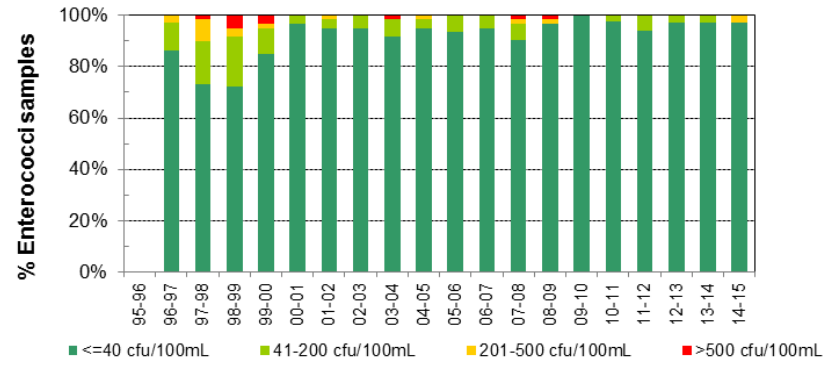


Response to rainfall

Rainfall from Avalon rain gauge



Trends in enterococci data through time



The Basin

Beach Suitability Grade: VG

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

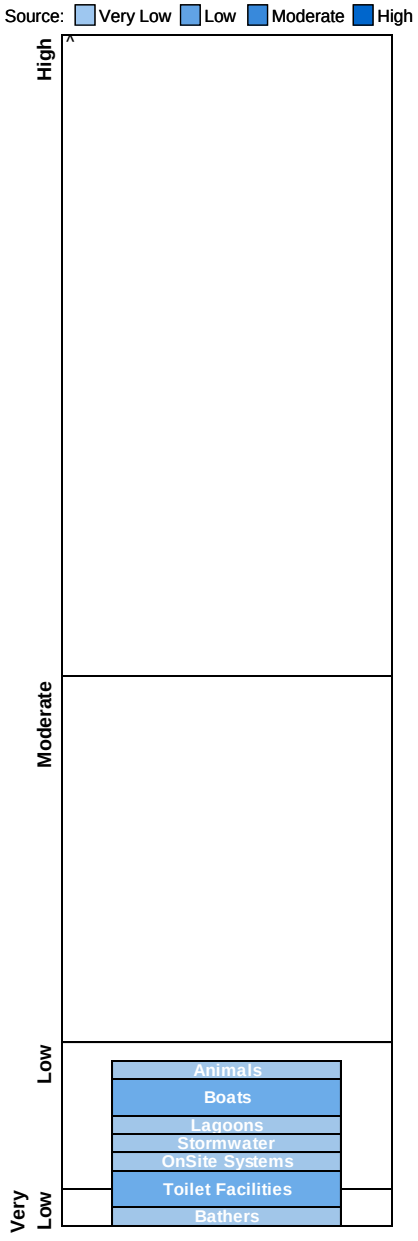
The Basin is a 500 metre sandy beach on the western side of Pittwater, backed by Ku-ring-gai Chase National Park. The sampling site is located at The Basin Wharf. The area is very popular and is also known as Coasters Retreat.

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

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

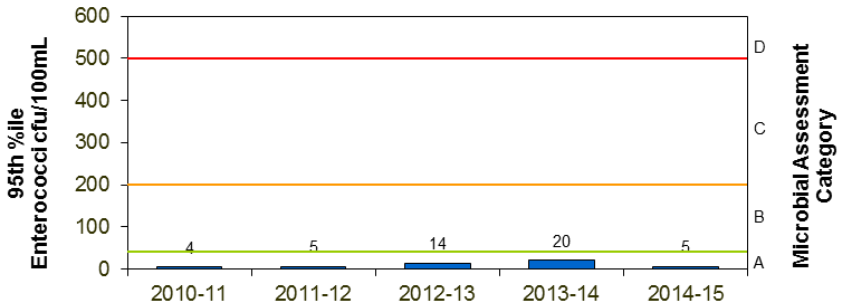
The site has been monitored since 1999 and water quality has generally been of a very high standard.

Sanitary Inspection: **Low**



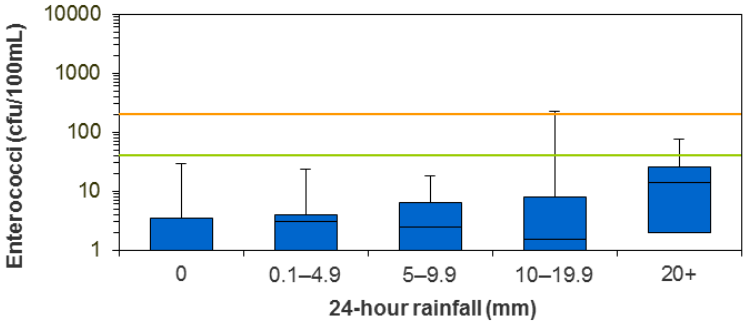
Microbial Assessment: **A**

Monitoring period for 2014–15 result is October 2012 to May 2015.

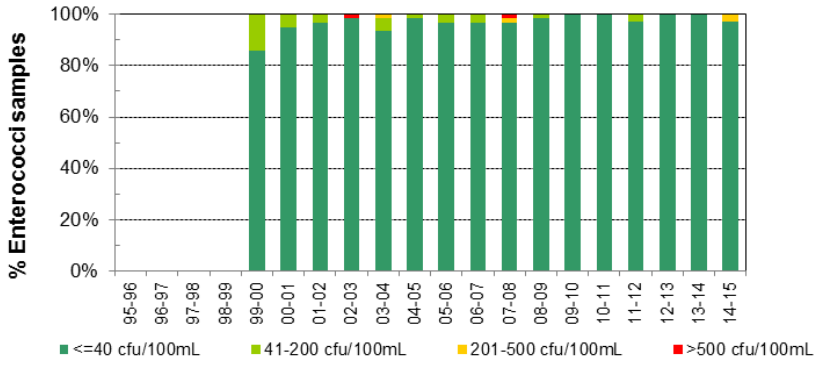


Response to rainfall

Rainfall from Avalon rain gauge

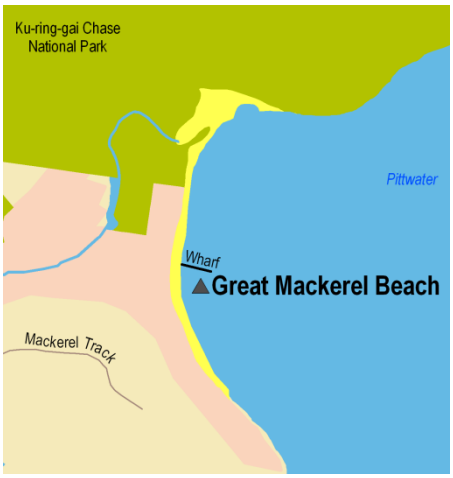


Trends in enterococci data through time



Great Mackerel Beach

Beach Suitability Grade: VG



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

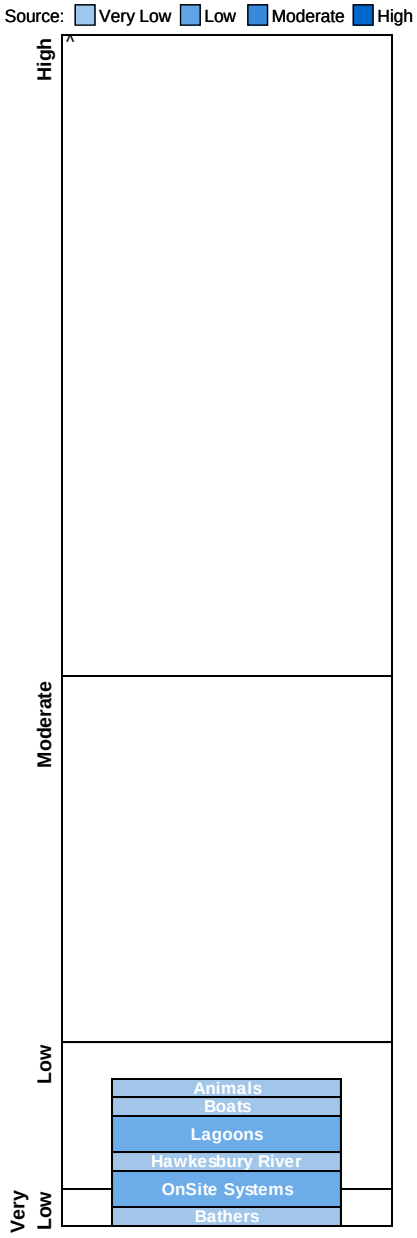
Great Mackerel Beach is a 500 metre long sandy beach on the north-western side of Pittwater. The northern end is backed by Ku-ring-gai Chase National Park and the southern end by a residential area. Samples are collected in the centre of the beach near Mackerel Beach Wharf.

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

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

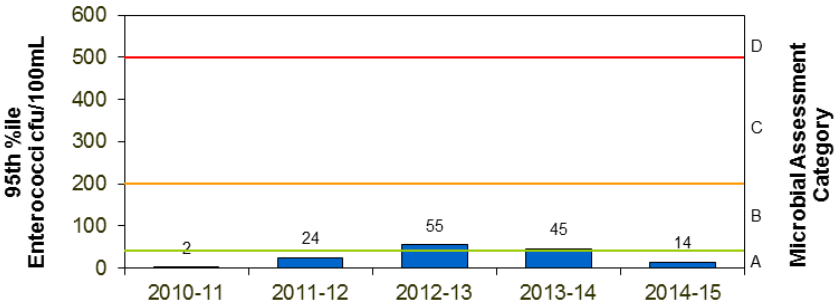
The site has been monitored since 1999. Water quality has generally been of a very high standard, with variation in results due to rainfall.

Sanitary Inspection: **Low**



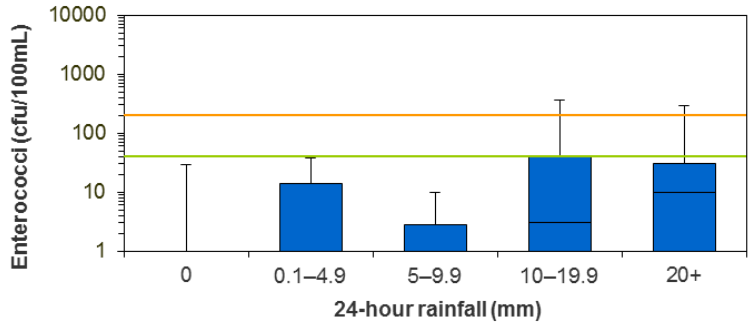
Microbial Assessment: **A**

Monitoring period for 2014–15 result is October 2012 to May 2015.

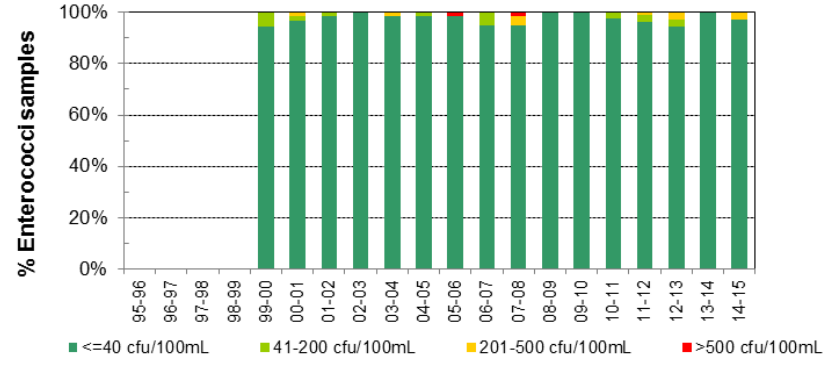


Response to rainfall

Rainfall from Avalon rain gauge



Trends in enterococci data through time



Central Sydney (Bondi to Little Bay & Sydney Harbour)

State of the Beaches 2014–2015

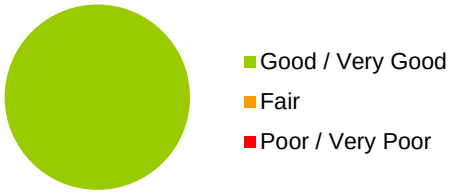
Overall results

Percentage of sites graded as Good or Very Good:

70%	82%	83%	86%
2011–12	2012–13	2013–14	2014–15

Thirty one of the 36 swimming sites were graded as Very Good or Good in 2014–2015, an improvement from previous years.

Ocean beaches



All ten ocean beaches were graded as Very Good or Good.

Clovelly Beach and Maroubra Beach were graded as Very Good. The water quality at these sites was of a very high standard and suitable for swimming almost all of the time.

Bondi, Tamarama, Bronte, Gordons Bay, Coogee, South Maroubra, Malabar and Little Bay beaches were graded as Good. These sites were suitable for swimming during dry weather conditions, but elevated enterococci levels were often recorded following rainfall. Swimming should be avoided at these sites during and for up to one day following rainfall or when there are signs of stormwater pollution such as discoloured water or floating debris.

While the water quality at Coogee Beach and Malabar Beach was generally good during dry weather conditions, the impacts of rainfall are more apparent at these beaches, which take longer to recover from stormwater events than surrounding areas. Lower levels of flushing increase the time needed to disperse and dilute pollution inputs. To reduce the risk of contracting swimming related illnesses at these beaches, carefully follow the pollution advisories in the daily Beachwatch Pollution Forecast (www.environment.nsw.gov.au/beach).

Best beaches

Clovelly Beach, Maroubra Beach and **Nielsen Park**.

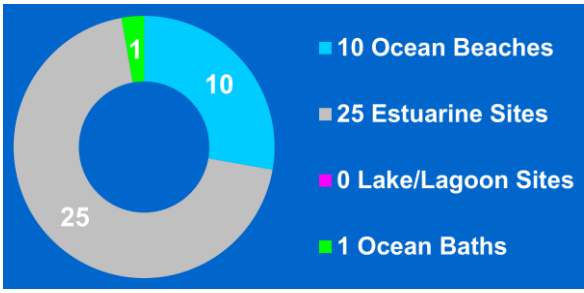
These sites had excellent water quality and were suitable for swimming almost all of the time.

36 sites

every 6 days*

1638 samples

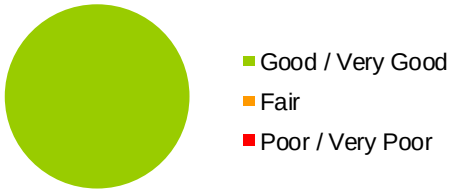
year round*



* Beachwatch samples the ocean beaches every sixth day throughout the year, and the estuarine beaches every sixth day between October and April, and monthly from May to September.

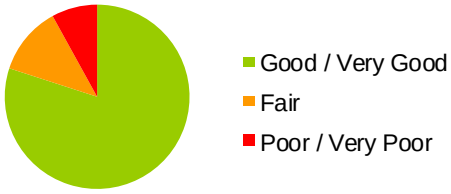
See **How to Read this Report** for explanations of graphs and Beach Suitability Grades.

Ocean baths



South Maroubra Rockpool was added to the program in 2014 and was graded as Good. This site was suitable for swimming during dry weather conditions, but elevated enterococci levels were often recorded following rainfall. Swimming at this site should be avoided during and for up to one day following rainfall, when the stormwater drain is discharging to the site or when there are signs of stormwater pollution such as discoloured water or floating debris.

Estuarine beaches



Nielsen Park in Sydney Harbour was graded as Very Good. This site had excellent water quality and was suitable for swimming almost all of the time. Elevated enterococci levels were occasionally recorded following heavy rainfall and swimming should be avoided at these times.

A further 19 of the 25 swimming locations in Sydney Harbour were graded as Good: Watsons Bay, Parsley Bay, Rose Bay Beach, Murray Rose Pool, Dawn Fraser Pool, Chiswick Baths, Cabarita Beach, Woolwich Baths, Woodford Bay, Greenwich Baths, Hayes Street Beach, Clifton Gardens, Balmoral Baths, Edwards Beach, Chinamans Beach, Forty Baskets Pool, Fairlight Beach, Manly Cove and Little Manly Cove. Rose Bay Beach was upgraded to Good from its 2013–2014 rating of Poor. These sites had mostly good water quality, although elevated enterococci levels were recorded following rainfall.

Three swimming locations were graded as Fair: Northbridge Baths, Gurney Crescent Baths and Clontarf Pool. Northbridge Baths was upgraded to Fair from its 2013–2014 rating of Poor. These sites had generally good water quality, but had more significant potential sources of microbial contamination.

Two swimming locations were graded as Poor: Tambourine Bay in the lower Lane Cove River and Davidson Reserve in the upper reaches of Middle Harbour. Although microbial water quality at these sites is generally suitable for swimming during dry weather conditions, elevated enterococci levels were frequently measured following light rainfall. These sites also have relatively low levels of tidal flushing.

As a precaution, swimming should be avoided at Sydney Harbour swimming sites during and for up to three days following rainfall or if there are signs of stormwater pollution such as discoloured water or floating debris.

Management

Ocean beaches

Sydney Water investigated wet weather sewage overflows in the Coogee Beach catchment and found that silt was accumulating within the Coogee Diversion Sewer (CDS) due to the very low slope of this sewer. As a result, Sydney Water is undertaking more frequent de-silting of the CDS and the grit pits at the northern end of the beach. This work will increase the capacity of the CDS and reduce the occurrence of overflows.

Sydney Water has inspected, cleaned and repaired sewer mains that have a high likelihood of discharging sewage to waterways if they become blocked. When significant tree root intrusion to the public sewer from the private sewer was identified, property owners were requested to remedy the problem.

Waverley Council and Sydney Water have collaborated to do intense dry weather monitoring of stormwater drains to identify

sewer leaks. Leaks from public sewers are repaired by Sydney Water and leaks from private sewers are addressed by the council. Randwick City Council and Sydney Water have extended this investigation to the beaches across the Randwick City Council local government area.

Gross pollutant traps have been installed in the Bondi Beach, Tamarama Beach, Bronte Beach, Clovelly Beach, Coogee Beach, Maroubra Beach, Malabar Beach, Little Bay and Yarra Bay catchments. Sydney Water operates two gross pollutant traps at Bondi Beach that prevent about 180 tonnes of sediment and floating debris from entering the ocean each year.

The Bronte Stormwater Harvesting Scheme collects and treats stormwater which is then re-used for toilets, park irrigation, ocean pool cleaning, and general cleaning of public places. The scheme saves over 15 million litres of water each year and reduces the volume of stormwater discharged to Bronte Beach.

The Bondi Stormwater Harvesting Scheme commenced in 2012 and supplies approximately 50 million litres of treated stormwater for park irrigation and toilets in Bondi Pavilion and South Bondi. An underground filtration system has also been installed to treat excess stormwater runoff from Campbell Parade, resulting in cleaner water at Bondi Beach.

Both Bronte and Bondi stormwater schemes were built by Waverley Council with support from the NSW Government's Climate Change Fund.

Randwick City Council operates and maintains two stormwater harvesting treatment systems at Clovelly Beach harvesting approximately 15 mega litres of stormwater per year. This system treats stormwater by removing suspended solids, bacteria and other organic and inorganic materials before it is used for irrigation in surrounding landscaped and garden areas.

A jointly funded project was completed in January 2013 installing a new stormwater harvesting system (including UV filtration) on the Coogee foreshore, treating up to 80 mega-litres of stormwater for re-use along the foreshore. This water would otherwise have been discharged directly into Coogee Beach untreated.

Randwick City Council installed and operates a stormwater harvesting system at Pioneers Park treating and reusing approximately 25 mega-litres of stormwater, irrigating Pioneers Park, Cromwell Park and Malabar beachfront. This would otherwise have been discharged directly and untreated into Malabar headland.

Randwick City Council maintains 34 gross pollutant traps on stormwater lines leading to the local bays, which are all cleaned regularly. In the last year, approximately 240 tonnes of material was removed from these GPTs. There is also a systematic cleaning program for all drainage pits including a regular street sweeping program which assists with reducing stormwater pollution to the local bays.

A stormwater harvesting system operates at Little Bay collecting approximately 40 megalitres per year for re-use to the surrounding landscaped areas located in the Prince Henry development.

The Commonwealth Government has recently completed installing a leachate capture system to the northern end of Malabar Headland collecting and discharging approximately 800 megalitres of leachate into the Sydney Water infrastructure.

North Sydney Harbour

The Northside Storage Tunnel was constructed by Sydney Water in 2000 and captures wet weather overflows from the four major overflow sites at Lane Cove, Quakers Hat Bay, Tunks Park and Scotts Creek. The tunnel has reduced the frequency of sewage overflows to less than 20 in an average 10-year period. Since the commissioning of the tunnel, about 82.8 billion litres of diluted sewage has been prevented from entering Sydney Harbour[1].

In March 2015, Sydney Water completed works to reduce the occurrence of wet weather overflows in the vicinity of Northbridge Baths.

Sydney Water has inspected, cleaned and repaired sewer mains on the northern side of Port Jackson that have a high likelihood of discharging sewage to waterways if they become blocked. Where significant tree root intrusion to the public sewer from the private sewer was identified, property owners were requested to remedy the problem.

Mosman Council's Botanic Road Stormwater Re-use Scheme is an underground storage system which captures stormwater and provides UV disinfection, after which it is pumped to Balmoral Oval and Balmoral Reserve for irrigation.

[1] *Northside storage tunnel – Tunnel status*. Sydney Water, Parramatta, NSW. [Available at sydneywater.com.au/SW/water-the-environment/how-we-manage-sydney-s-water/wastewater-network/northside-storage-tunnel/tunnel-status/index.htm. Accessed on 26/06/15]

Mosman Council has installed educational signage at beaches in the area advising not to swim up to three days after heavy rain due to the potential for pollution from stormwater. Stormwater quality improvement devices are installed at Balmoral Beach, Clifton Gardens, Edwards Beach and Chinamans Beach to capture sediment and floating debris.

Mosman Council implemented the 'There's no such thing as the Dog Poo Fairy' education campaign to raise awareness amongst dog owners of their responsibilities in picking up after their dog, which has led to an increase in responsible behaviour that assists in keeping the beaches and waterways clean. Flagging of parks and reserves, in January 2015, showed a 53% decrease in the amount of dog poo left in-situ in parks and reserves comparative to the commencement of the education campaign twelve months prior.

Willoughby City Council has installed signage at Northbridge Baths advising not to swim during rain and up to 48 hours after the rain has ceased due to the potential for pollution from stormwater. Ongoing education includes stormwater drain stencilling in the Sailors Bay catchment. Council has a Stormwater Asset Management Plan to improve and manage stormwater infrastructure including the maintenance of gross pollutant traps.

North Sydney Council's Stormwater Re-use Project continues to harvest, treat and re-use stormwater for the irrigation of sports fields and recreational parks, including St Leonards Park, Cammeray Park, Forsyth Park, Primrose Park and Tunks Park. This saves millions of litres of potable water, improves the quality and reduces the amount of stormwater entering the waterways.

North Sydney Council has constructed several raingardens and other water sensitive urban design structures to improve stormwater quality and reduce its velocity to receiving waters. The council undertakes regular catchment water quality monitoring.

South Sydney Harbour

The City of Canada Bay maintains over 25 stormwater quality improvement devices which prevent over 80 tonnes of pollutants (sediments, leaves and litter) from reaching the Parramatta River each year. Stormwater harvesting, rainwater re-use and rain gardens have been constructed in the Drummoyne Oval precinct to reduce stormwater and pollutant loads reaching Five Dock Bay. A stormwater recycling system has been constructed in Cintra Park to harvest and re-use stormwater for irrigation. This reduces the City of Canada Bay's demand on potable water and reduces the amount of stormwater and pollutants entering the waterways.

Woollahra Council's Environmental and Infrastructure Levy funds a range of projects aimed at protecting the local environment. Projects include upgrading infrastructure; installing and maintaining gross pollutant traps and pit baskets; flow diversion structures to reduce sediment loads; litter nets; bio-retention systems to remove contaminants from stormwater; porous paving infiltration systems; and stormwater harvesting systems, as well as conducting water quality monitoring, research and coastal management planning. Council is in the process of developing a Coastal Zone Management Plan which will direct management of the Woollahra coastal zone, including the management of stormwater quality. In 2014–2015 Council commenced site specific stormwater quality monitoring at Rose Bay to identify any dry weather pollution sources. Council is continuing to work with Sydney Water on improving the water quality at Rose Bay.

In addition, street sweeping, weekly beach cleaning, riparian vegetation and terrestrial bushland regeneration activities continue to contribute to improved stormwater quality at Woollahra's beaches.

Sydney Water operates a gross pollutant trap at Rose Bay Beach that prevents about 75 tonnes of sediment and floating debris from entering Sydney Harbour each year. Sydney Water also operates a gross pollutant trap at Murray Rose Pool that prevents about five tonnes of sediment and floating debris per year from entering the harbour.

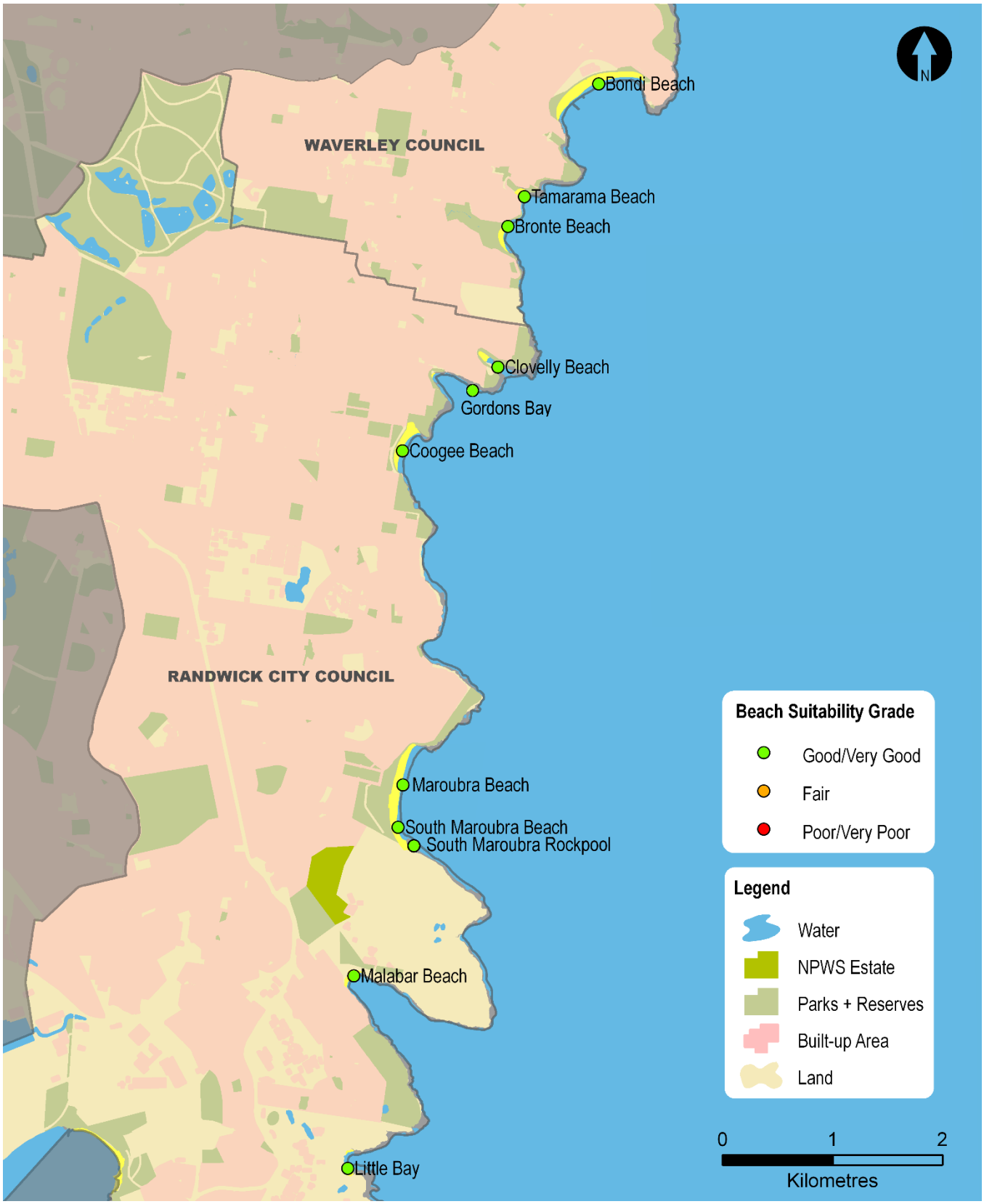
Sydney Water operates six more gross pollutant traps to improve stormwater flowing into Sydney Harbour, including two at Iron Cove, two at Rozelle Bay and two at Rushcutters Bay.

Sydney Water has inspected, cleaned and repaired sewer mains on about half of the southern side of Port Jackson that have a high likelihood of discharging sewage to waterways if they become blocked. Where significant tree root intrusion to the public sewer from the private sewer was identified, property owners were asked to remedy the problem.

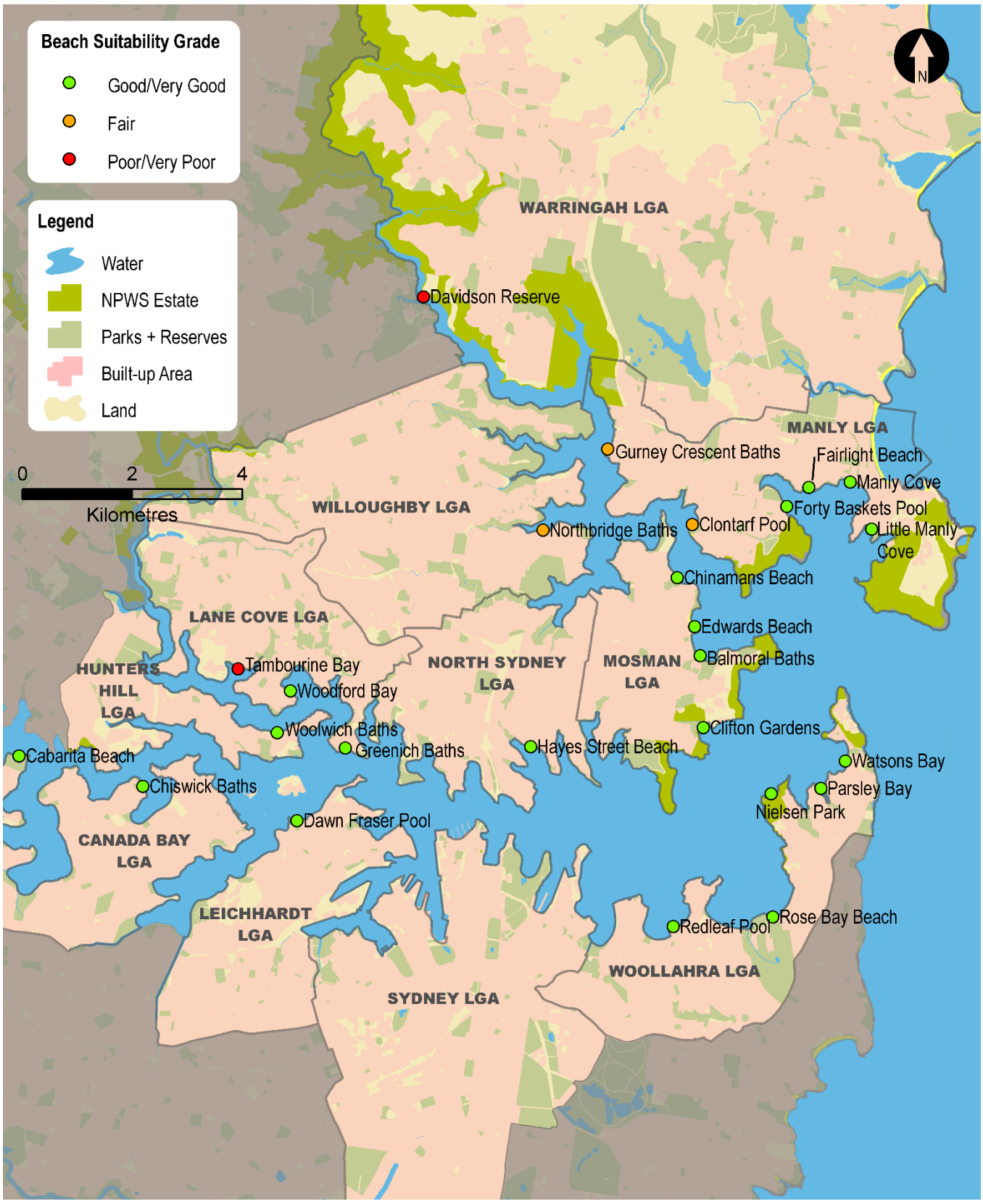
Leichhardt Council has finalised the design of the Blackmore Oval Constructed Wetland and Stormwater Harvesting project. Once implemented, cleaner water from the City West Link and adjoining catchment will be discharged into the Hawthorne Canal that runs into the bay. The stormwater harvesting will collect base flow, treat it and irrigate the Blackmore Oval, significantly reducing the potable water demand.

Leichhardt Council has constructed a gross pollutant trap in Birchgrove Oval to improve the quality of stormwater flow to the bay. Council is considering engaging a specialist consultant to audit existing gross pollutant traps to ensure they are functioning at their full capacity and meeting pollution reduction targets.

Leichhardt Council has recently rehabilitated the Taylor Street raingardens in Annandale. The works included reinstating the filter bed and improving the drainage system enabling the raingarden to work more efficiently and discharge cleaner water into Johnston Creek which drains to Rozelle Bay.



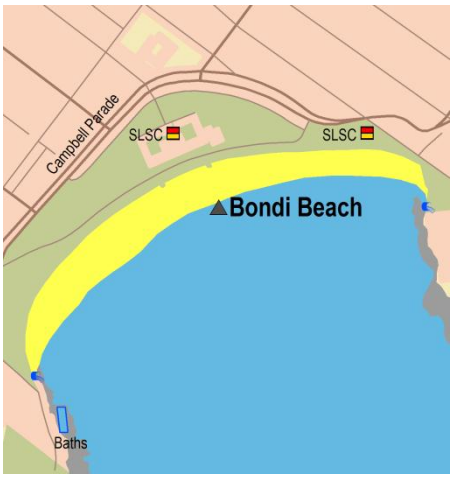
Sampling sites and Beach Suitability Grades at Sydney's ocean beaches



Sampling sites and Beach Suitability Grades in Sydney Harbour

Bondi Beach

Beach Suitability Grade: G



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

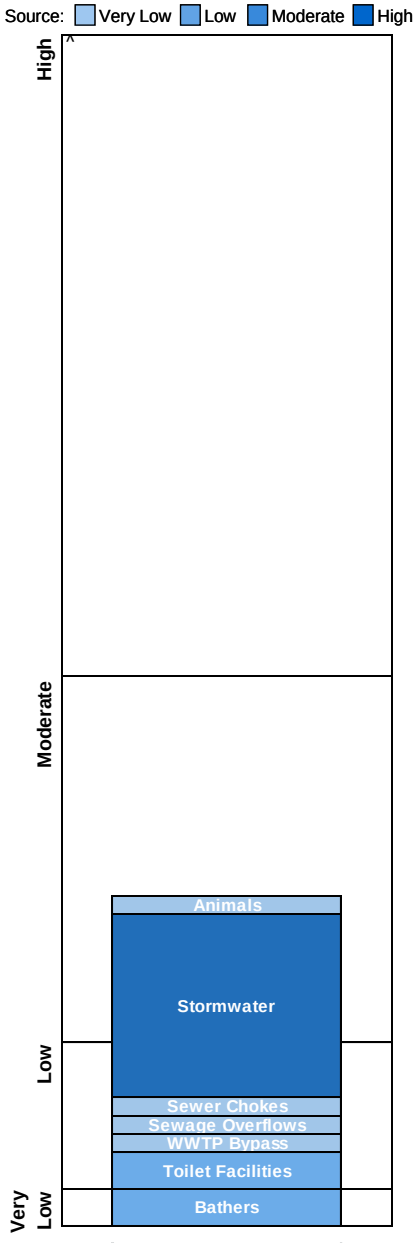
Bondi Beach is 800 metres long and backed by a promenade, car park and parklands. Beach conditions are safest at the northern end and lifeguards patrol the beach year round.

The Beach Suitability Grade of Good indicates that microbial water quality is 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 increased with increasing rainfall, often exceeding the safe swimming limit in response to 5 mm of rainfall or more.

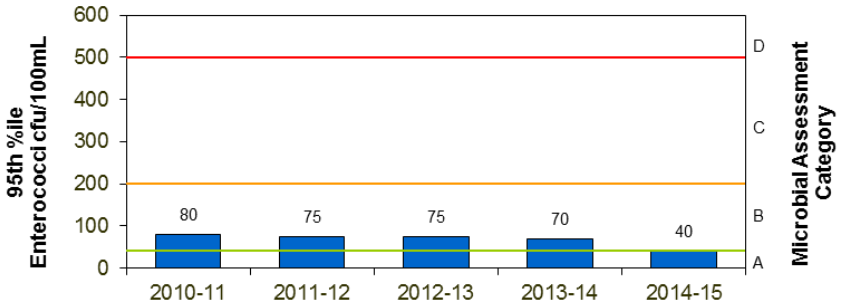
The site has been monitored since 1989.

Sanitary Inspection: **Moderate**



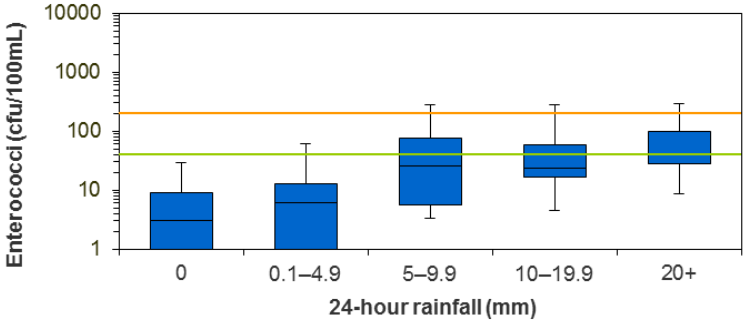
Microbial Assessment: **A**

Monitoring period for 2014–15 result is July 2013 to May 2015.

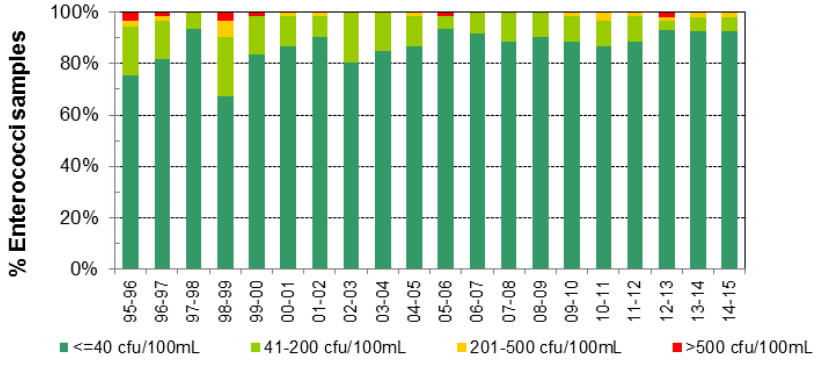


Response to rainfall

Rainfall from Waverly rain gauge

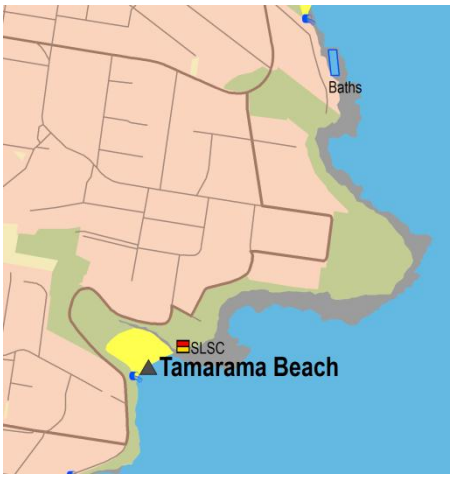


Trends in enterococci data through time



Tamarama Beach

Beach Suitability Grade: G



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

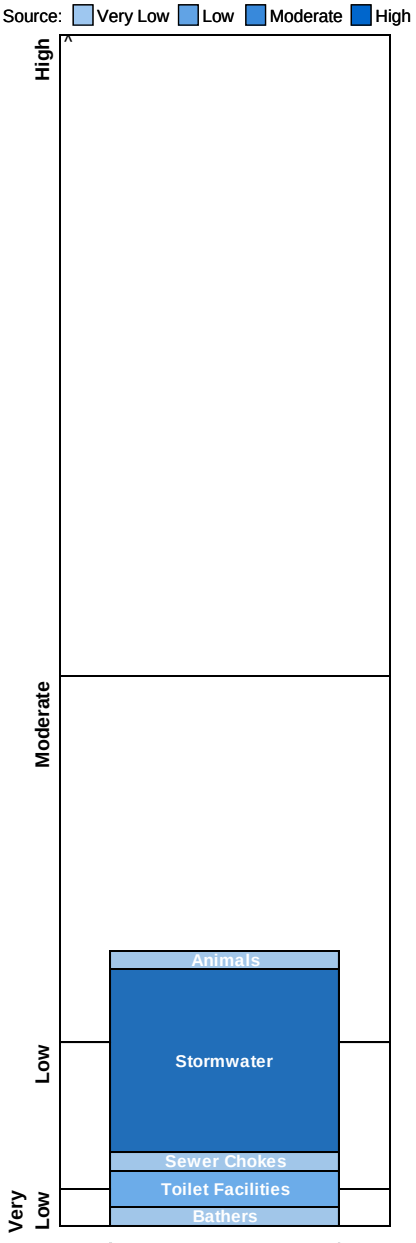
Tamarama Beach is approximately 80 metres long and is closed to board riders during patrol hours. Swimming can be very hazardous because of the rips. Lifeguards patrol the beach from late September to April.

The Beach Suitability Grade of Good indicates that microbial water quality is 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 increased with increasing rainfall, often exceeding the safe swimming limit in response to 5 mm of rainfall or more.

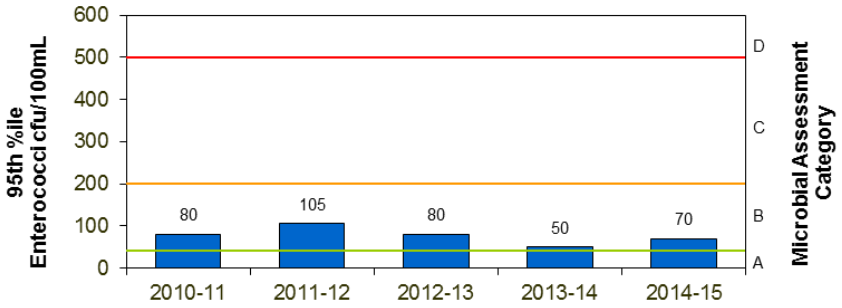
The site has been monitored since 1989.

Sanitary Inspection: **Moderate**



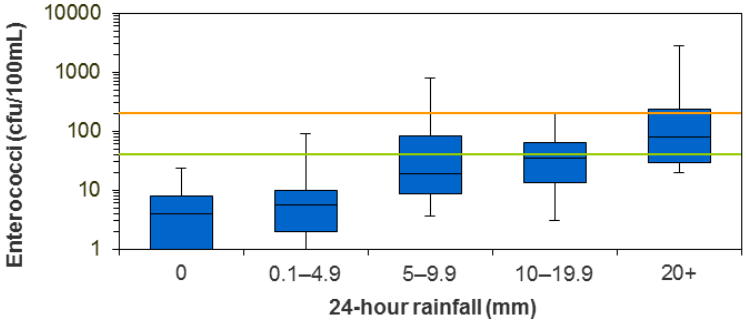
Microbial Assessment: **B**

Monitoring period for 2014–15 result is July 2013 to May 2015.

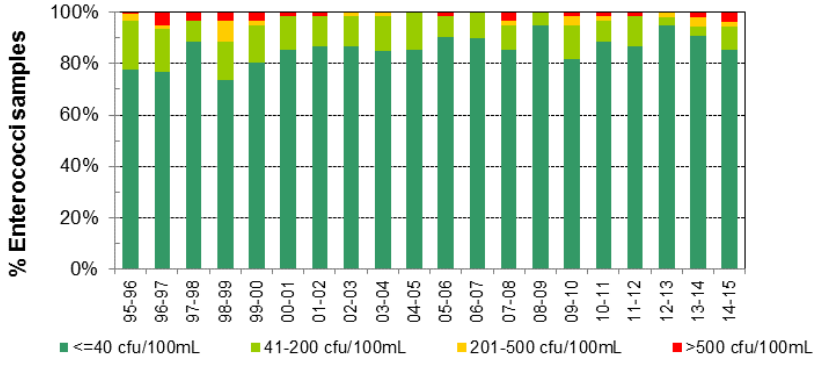


Response to rainfall

Rainfall from Waverly rain gauge



Trends in enterococci data through time



Bronte Beach

Beach Suitability Grade: G

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

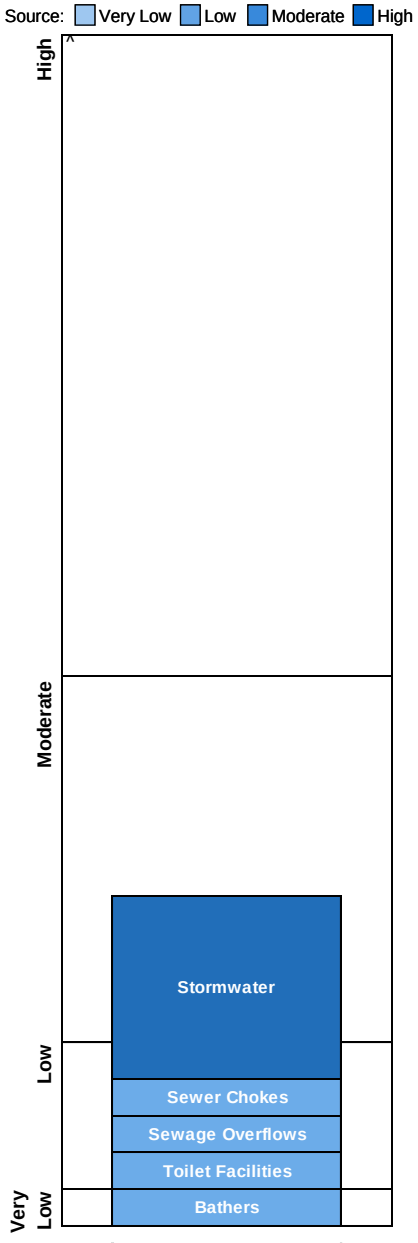
Bronte Beach is 250 metres long and backed by a large park and picnic area. Lifeguards patrol the beach between late September and mid-May.

The Beach Suitability Grade of Good indicates that microbial water quality is 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 with increasing rainfall, often exceeding the safe swimming limit after 5 mm of rainfall or more.

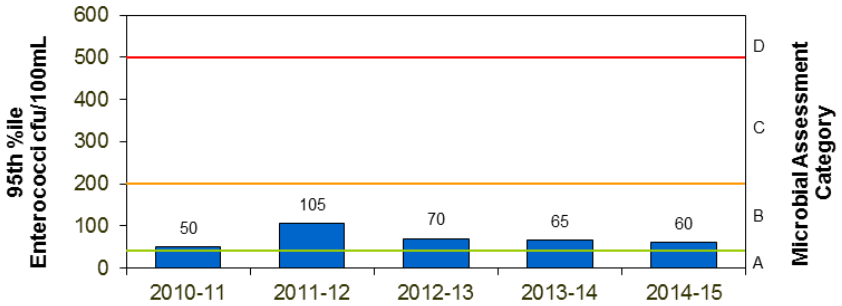
The site has been monitored since 1989.

Sanitary Inspection: **Moderate**



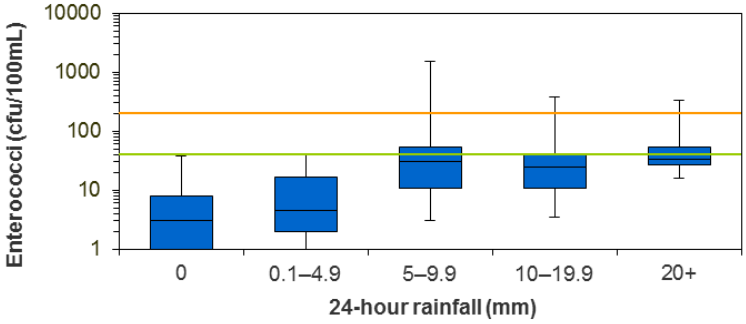
Microbial Assessment: **B**

Monitoring period for 2014–15 result is July 2013 to May 2015.

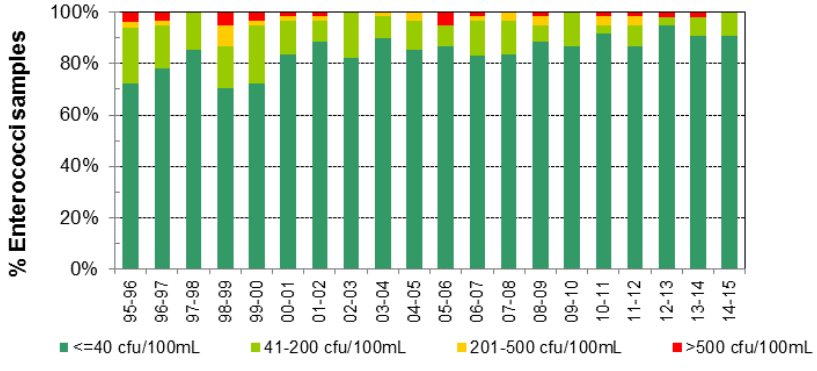


Response to rainfall

Rainfall from Waverly rain gauge



Trends in enterococci data through time



Clovelly Beach

Beach Suitability Grade: VG

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

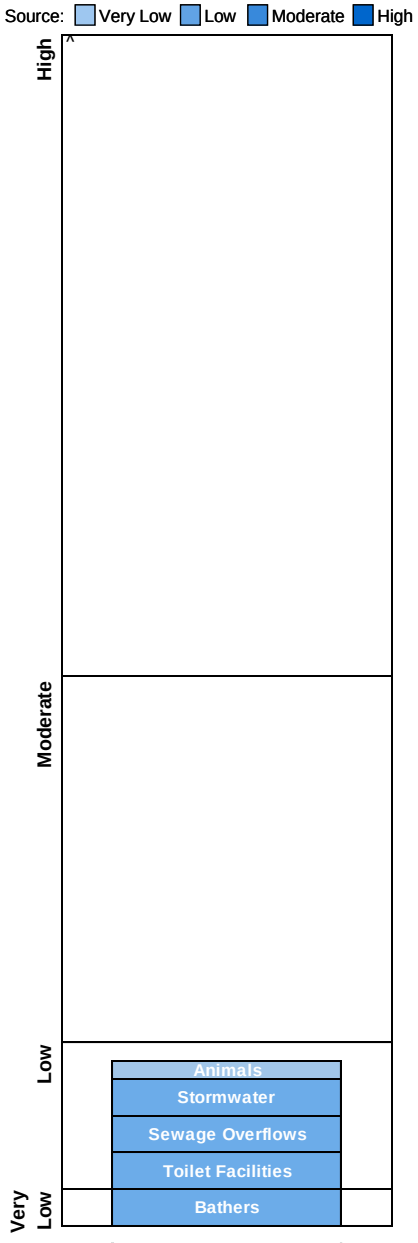
Clovelly Beach is at the end of a long and narrow bay and is protected from ocean swells. Wheelchair access to the water is provided. It is one of the safest beaches in Sydney and is patrolled from late September to April.

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

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

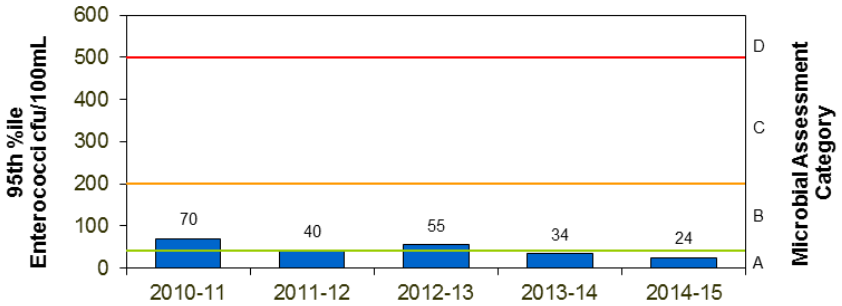
The site has been monitored since 1989.

Sanitary Inspection: **Low**



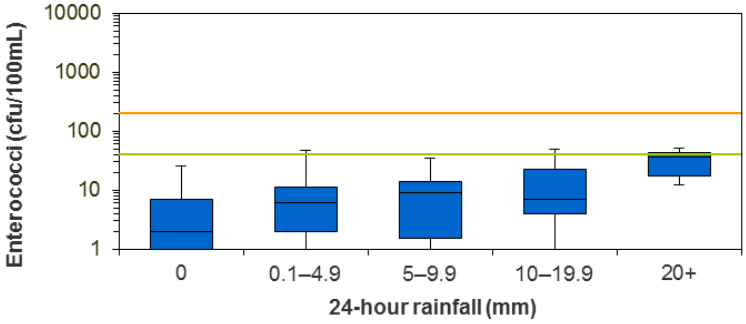
Microbial Assessment: **A**

Monitoring period for 2014–15 result is July 2013 to May 2015.

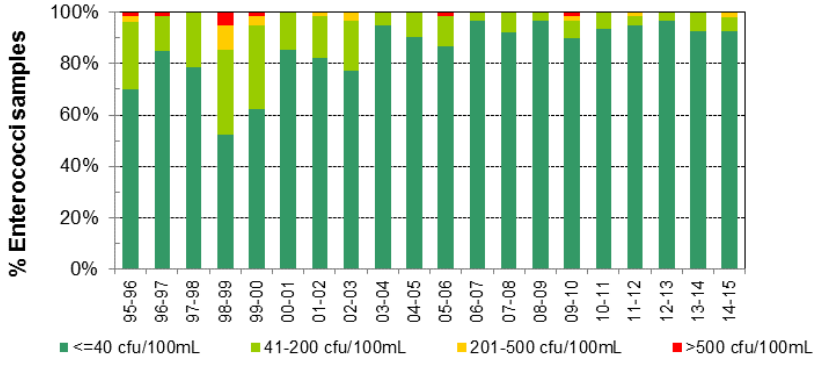


Response to rainfall

Rainfall from Waverly rain gauge



Trends in enterococci data through time



Gordons Bay

Beach Suitability Grade: G

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

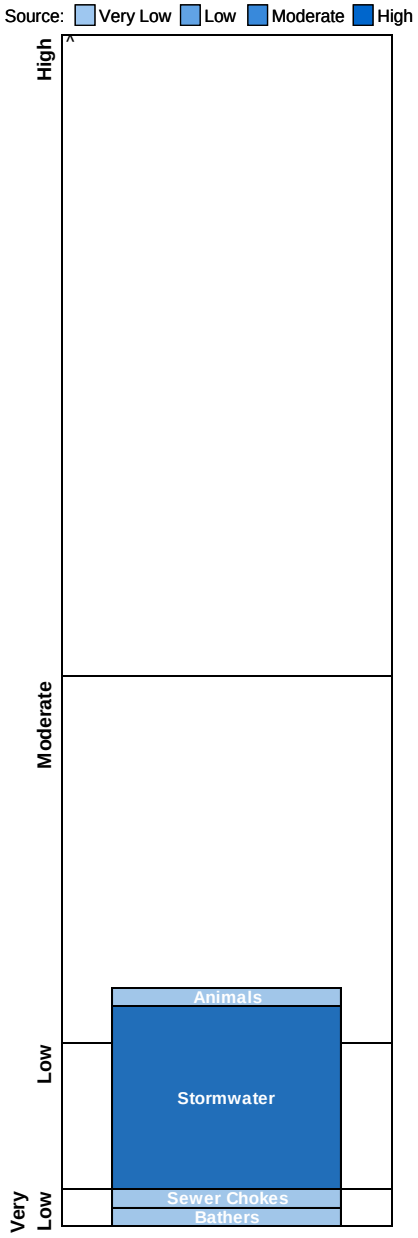
Gordons Bay is long and narrow with a small beach located at the end of the bay and sheer sandstone headlands. The bay is popular for snorkelling and diving but is not patrolled by lifeguards.

The Beach Suitability Grade of Good indicates that microbial water quality is 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 increased slightly with increasing rainfall, often exceeding the safe swimming limit after 5 mm of rainfall or more.

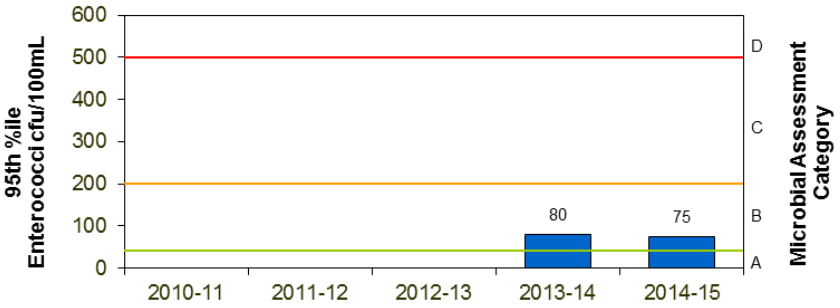
The site has been monitored since March 2013.

Sanitary Inspection: **Moderate**



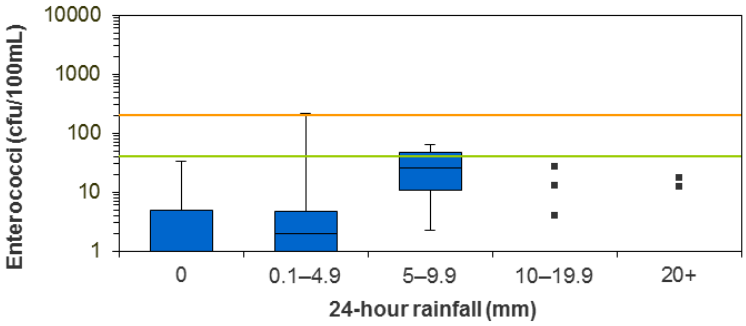
Microbial Assessment: **B**

Monitoring period for 2014–15 result is July 2013 to May 2015.

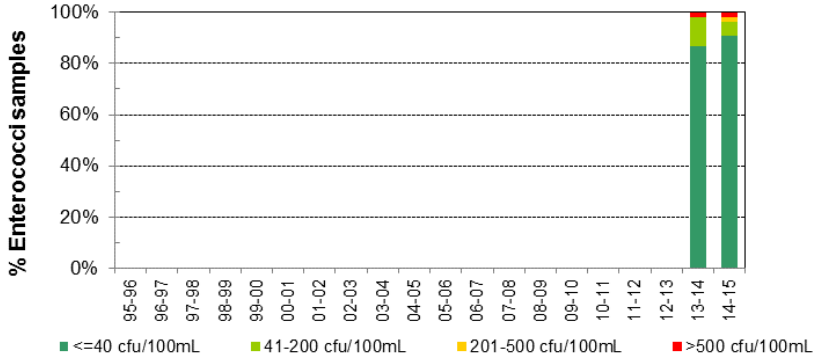


Response to rainfall

Rainfall from Malabar WWTP rain gauge



Trends in enterococci data through time



Coogee Beach

Beach Suitability Grade: G

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

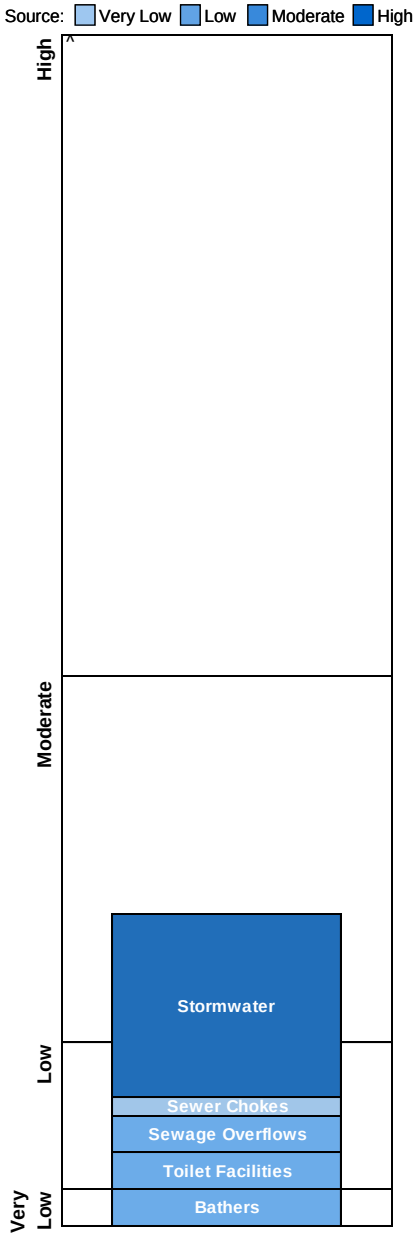
Coogee Beach is 400 metres long and is backed by a promenade and parklands. The beach has a reputation for safe swimming and lifeguards patrol the beach all year round.

The Beach Suitability Grade of Good indicates that microbial water quality is 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 increased with increasing rainfall, frequently exceeding the safe swimming limit after 5 mm of rainfall or more.

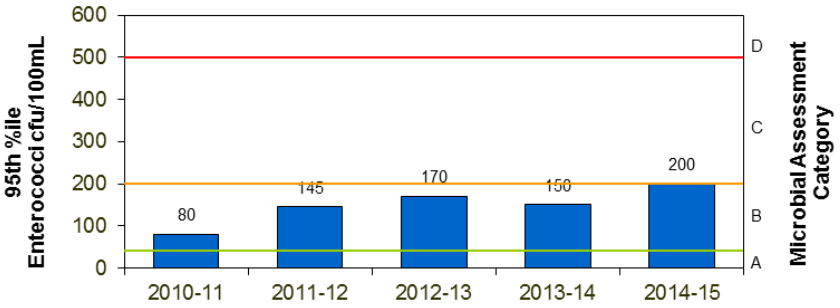
The site has been monitored since 1989.

Sanitary Inspection: **Moderate**



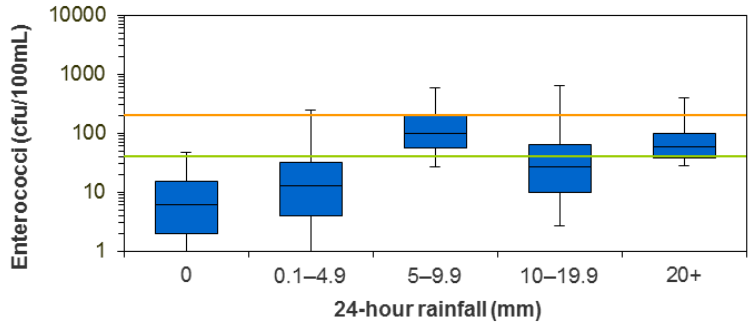
Microbial Assessment: **B**

Monitoring period for 2014–15 result is July 2013 to May 2015.

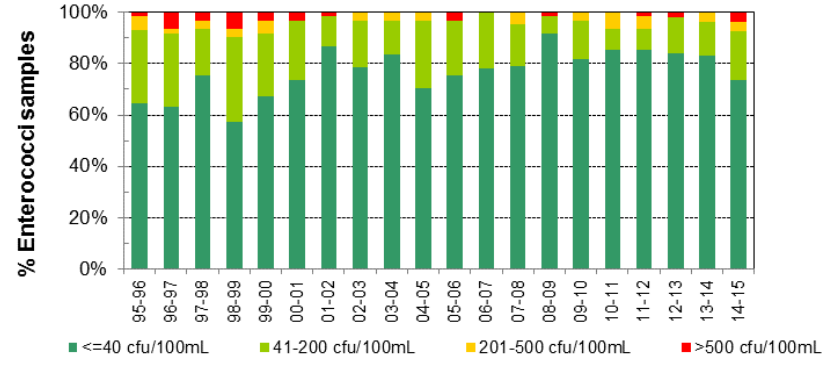


Response to rainfall

Rainfall from Malabar WWTP rain gauge



Trends in enterococci data through time



Maroubra Beach

Beach Suitability Grade: VG

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

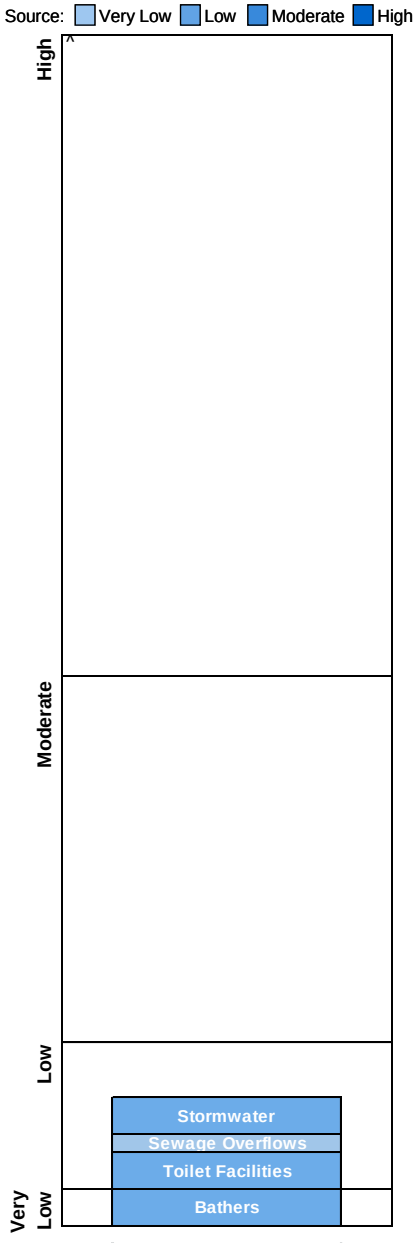
Maroubra Beach is one kilometre long. Strong rips create hazardous conditions at the beach, particularly in the centre and north. Lifeguards patrol the beach all year round.

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, often exceeding the safe swimming limit in response to 5 mm of rainfall.

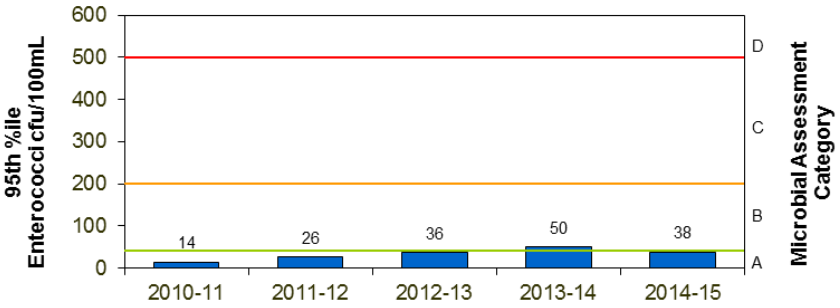
The site has been monitored since 1989.

Sanitary Inspection: **Low**



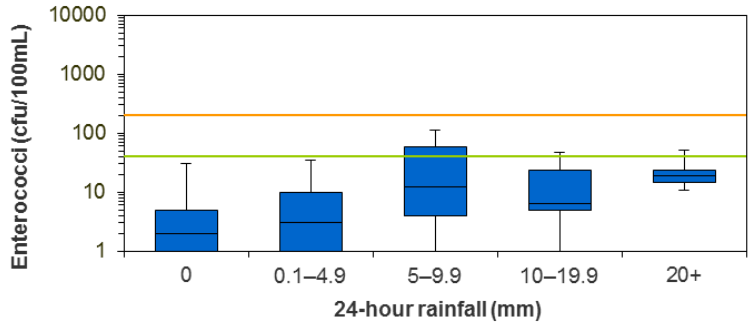
Microbial Assessment: **A**

Monitoring period for 2014–15 result is July 2013 to May 2015.

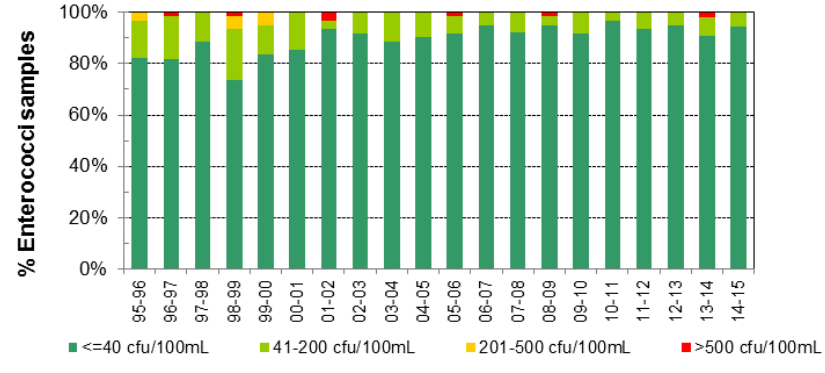


Response to rainfall

Rainfall from Malabar WWTP rain gauge

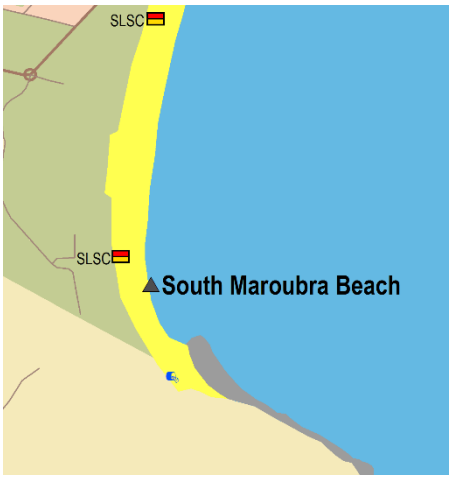


Trends in enterococci data through time



South Maroubra Beach

Beach Suitability Grade: G



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

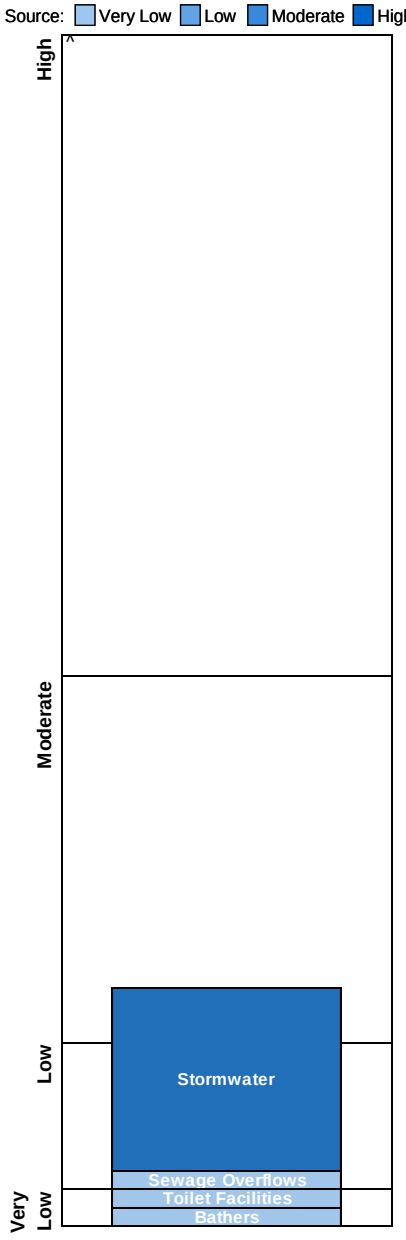
Maroubra Beach is one kilometre long. Strong rips create hazardous conditions at the beach, particularly in the centre and north. Lifeguards patrol the beach all year round.

The Beach Suitability Grade of Good indicates that microbial water quality is suitable for swimming most of the time, but the water may be susceptible to pollution following rainfall.

The response to rainfall graph indicates that enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit in response to 5 mm or more of rainfall.

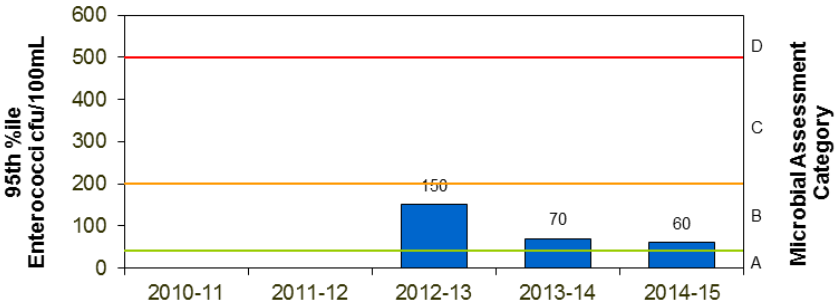
The site has been monitored since December 2012.

Sanitary Inspection: **Moderate**



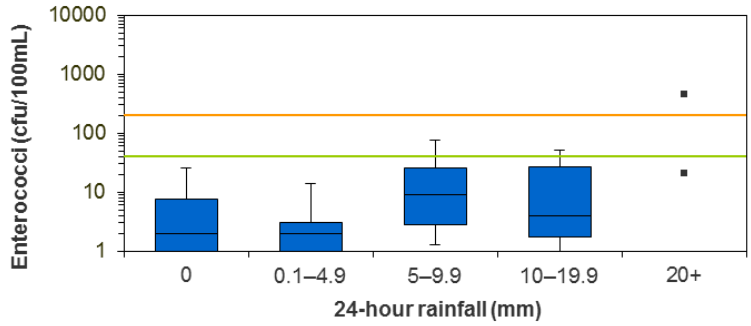
Microbial Assessment: **B**

Monitoring period for 2014–15 result is July 2013 to May 2015.

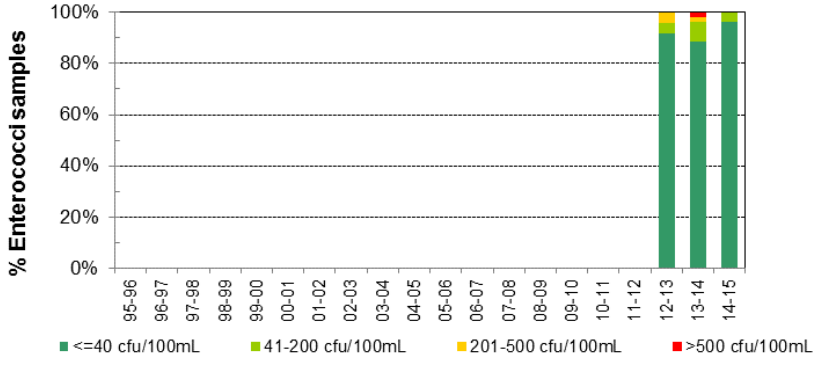


Response to rainfall

Rainfall from Malabar WWTP rain gauge

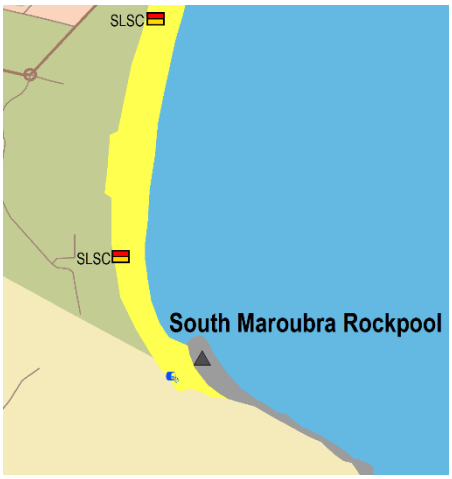


Trends in enterococci data through time



South Maroubra Rockpool

Beach Suitability Grade: G



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

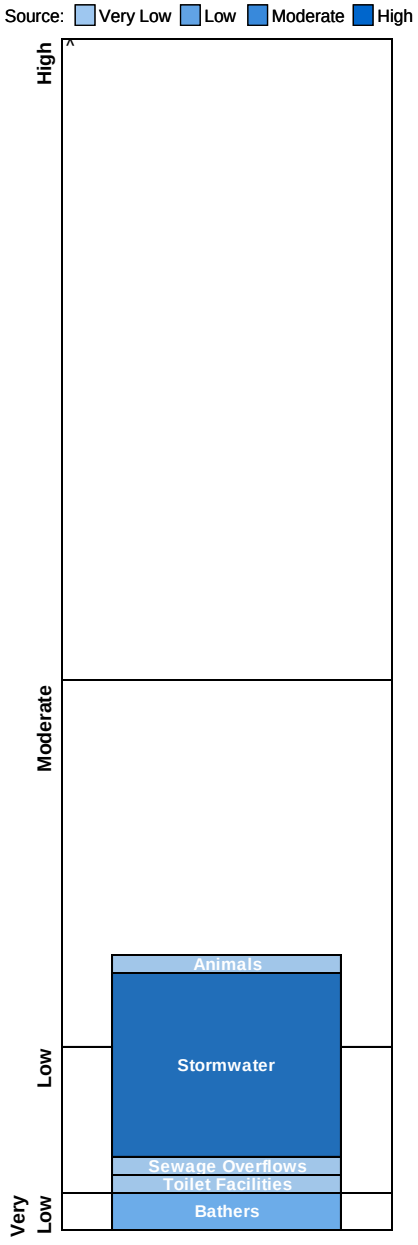
South Maroubra Rockpool is located at the southern end of Maroubra Beach. During very low tides, the rockpool may be empty. The rockpool is not patrolled.

The Beach Suitability Grade of Good indicates that microbial water quality is suitable for swimming most of the time, but the water may be susceptible to pollution following rainfall.

The response to rainfall graph indicates that enterococci levels increased with increasing rainfall, regularly exceeding the safe swimming limit in response to 5 mm or more of rainfall.

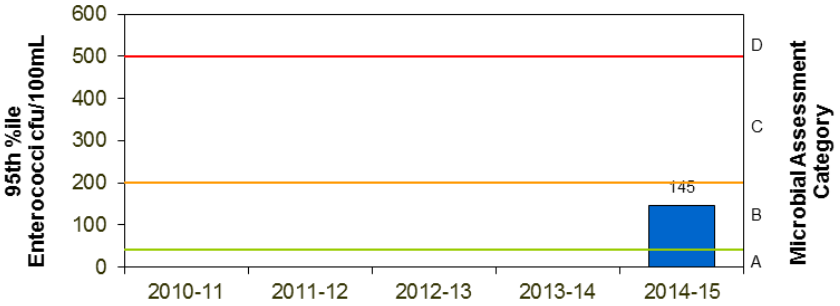
The site has been monitored since December 2012.

Sanitary Inspection: **Moderate**



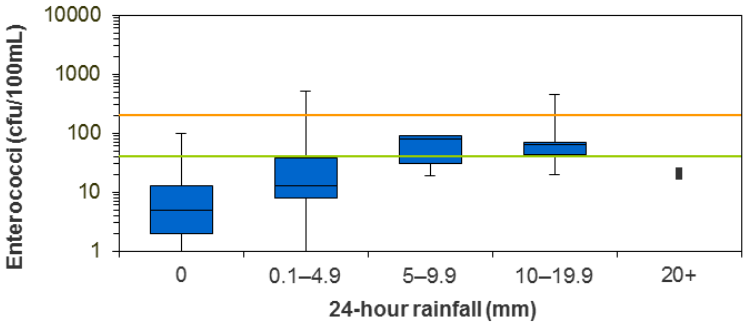
Microbial Assessment: **B**

Monitoring period for 2014–15 result is January 2013 to May 2015.

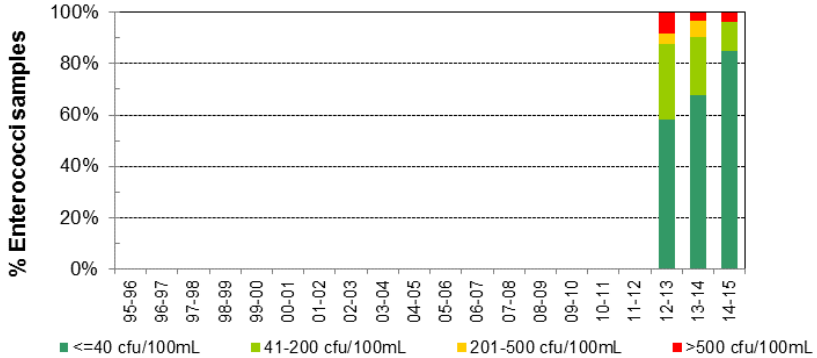


Response to rainfall

Rainfall from Malabar WWTP rain gauge

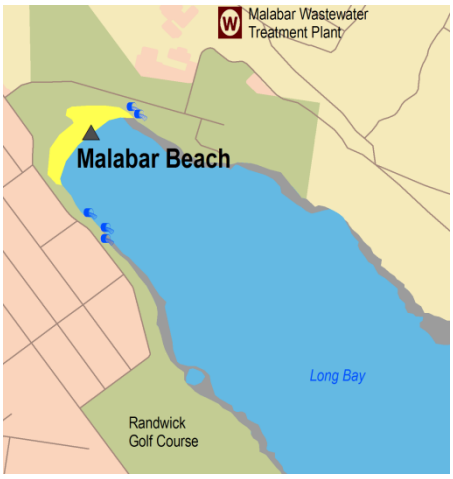


Trends in enterococci data through time



Malabar Beach

Beach Suitability Grade: G



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

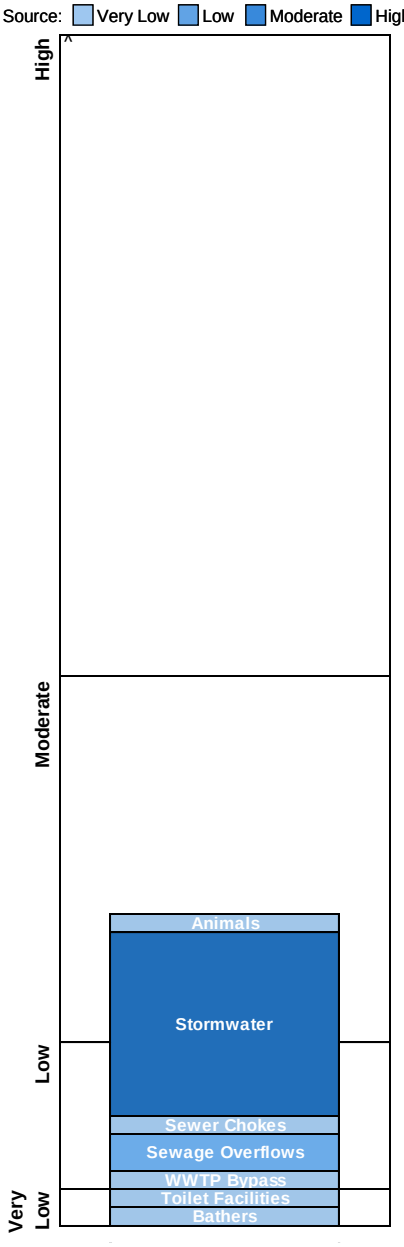
Malabar Beach is 150 metres long and situated at the end of a long, narrow bay. It is backed by a small park and picnic area. The beach is not patrolled.

The Beach Suitability Grade of Good indicates that microbial water quality is 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 increased with increasing rainfall, often exceeding the safe swimming limit after 5 mm of rainfall or more.

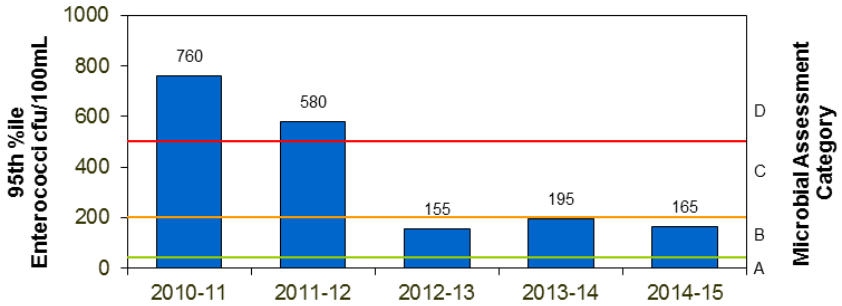
The site has been monitored since 1989, with significant improvements in water quality since 2012–2013 due to the diversion of the large stormwater drain at the northern end of the beach.

Sanitary Inspection: **Moderate**



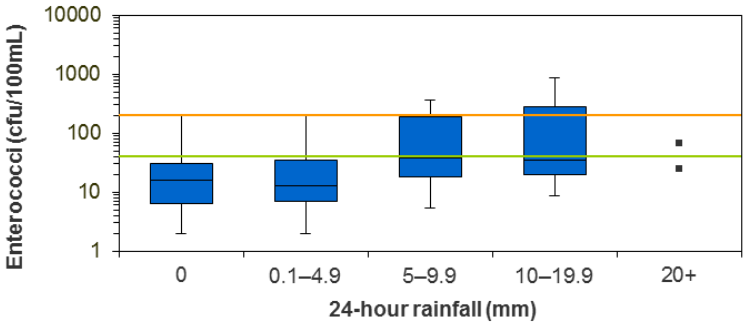
Microbial Assessment: **B**

Monitoring period for 2014–15 result is July 2013 to May 2015.

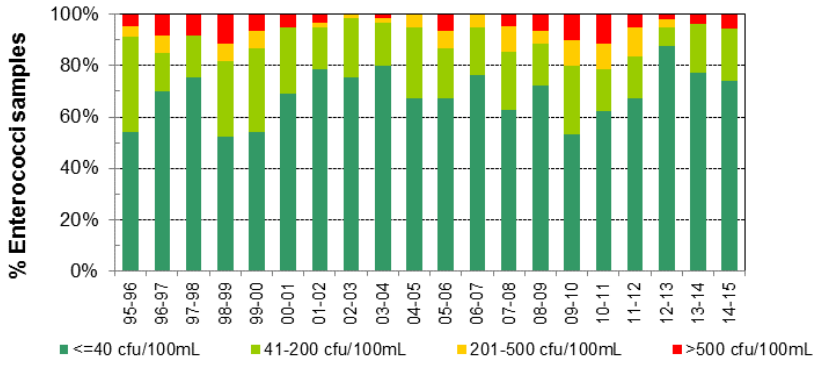


Response to rainfall

Rainfall from Malabar WWTP rain gauge



Trends in enterococci data through time



Little Bay Beach

Beach Suitability Grade: G

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

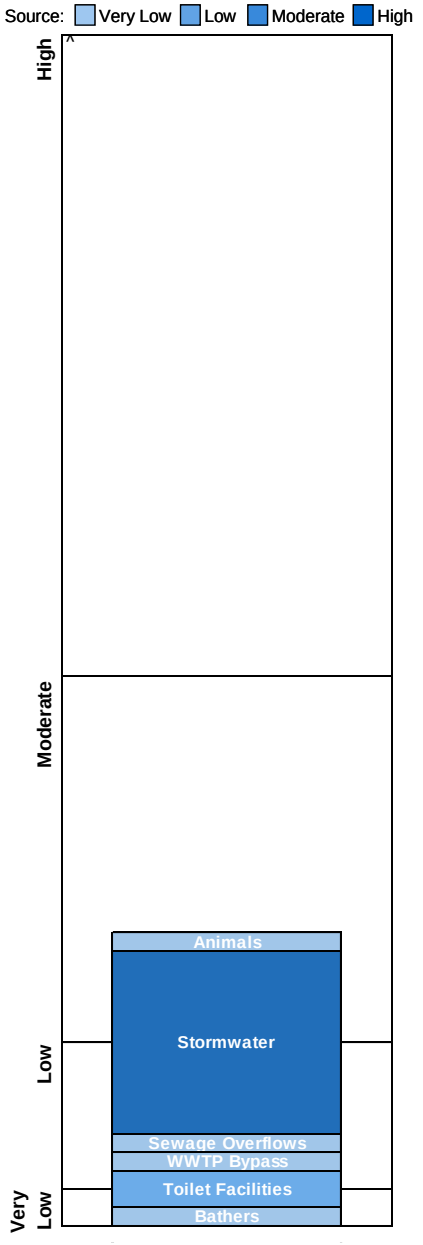
Little Bay Beach is a small, crescent-shaped beach bounded by rocky headlands to the north and south. Beach conditions are generally calm and the beach is not patrolled. The bay is backed by a golf course and a new residential development.

The Beach Suitability Grade of Good indicates that microbial water quality is safe for swimming most of the time, but the water can be susceptible to pollution, 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 after 5 mm of rainfall or more.

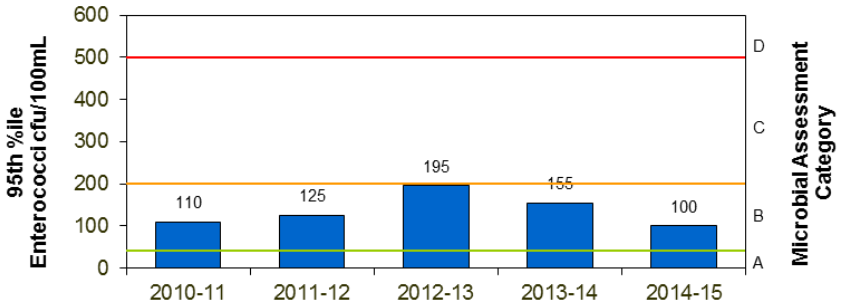
The site was monitored between 1989 and 1995. Sampling recommenced in 2006 in response to the increased popularity of the beach as a result of surrounding urban development.

Sanitary Inspection: **Moderate**



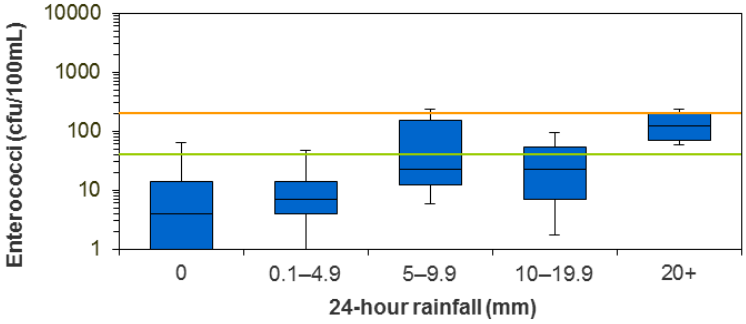
Microbial Assessment: **B**

Monitoring period for 2014–15 result is July 2013 to May 2015.

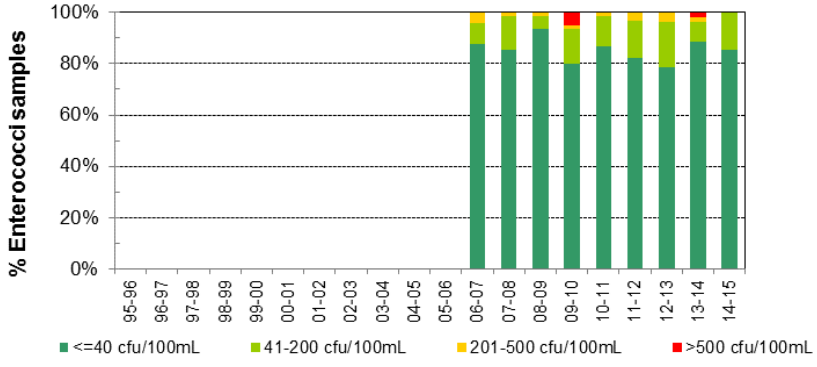


Response to rainfall

Rainfall from Malabar WWTP rain gauge



Trends in enterococci data through time



Watsons Bay

Beach Suitability Grade: G

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

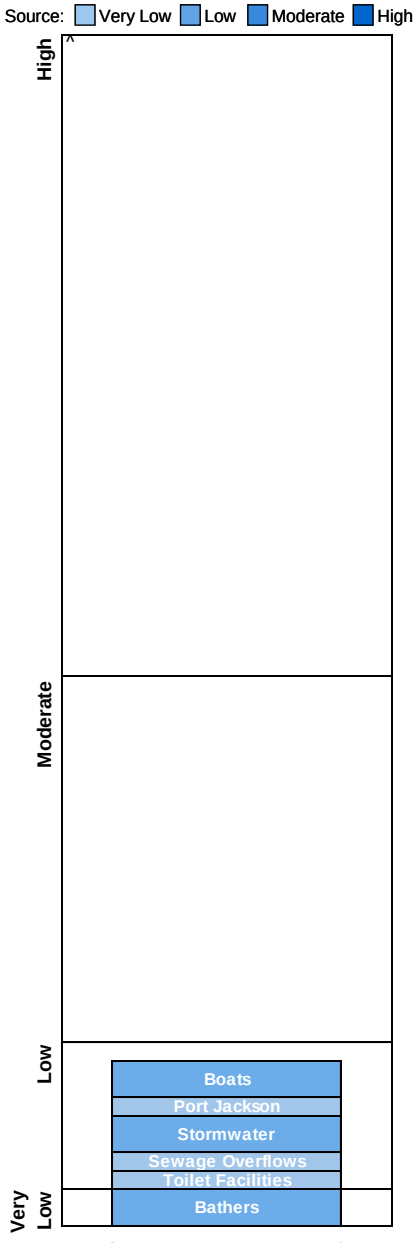
The swimming site is a 20 by 40 metre enclosed tidal swimming area next to the Vaucluse Yacht Club. The baths are backed by a narrow sandy beach and parklands with picnic facilities.

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

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

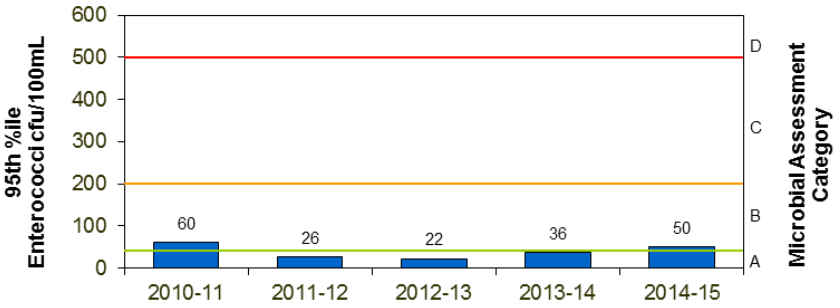
The site has been monitored since 1994. Microbial water quality has generally improved since 2000–2001 owing to licensing of discharges from the sewerage system and improved management of stormwater.

Sanitary Inspection: **Low**



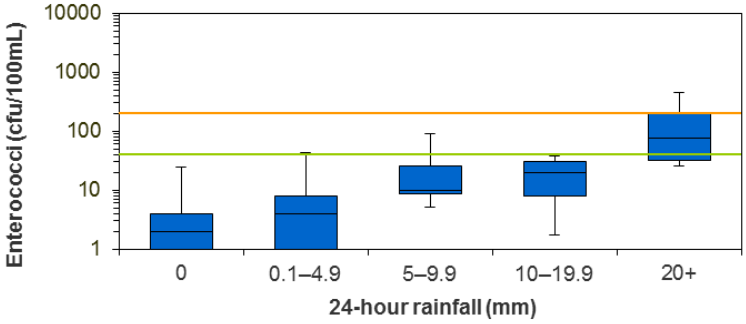
Microbial Assessment: **B**

Monitoring period for 2014–15 result is December 2012 to May 2015.

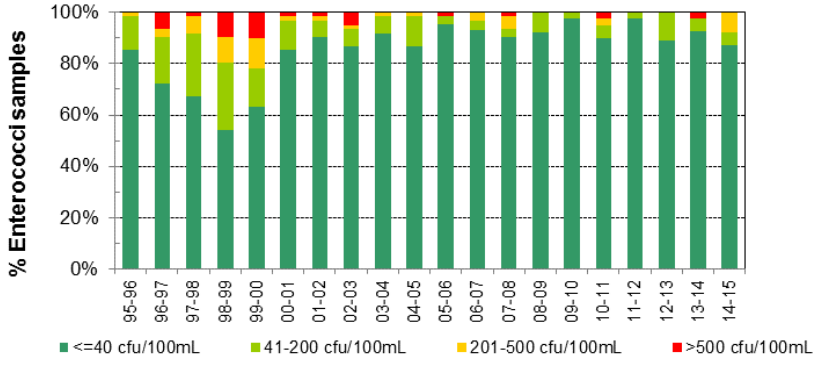


Response to rainfall

Rainfall from Mosman rain gauge

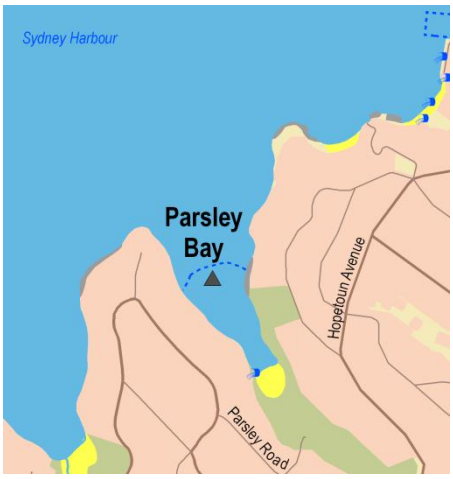


Trends in enterococci data through time



Parsley Bay

Beach Suitability Grade: G



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

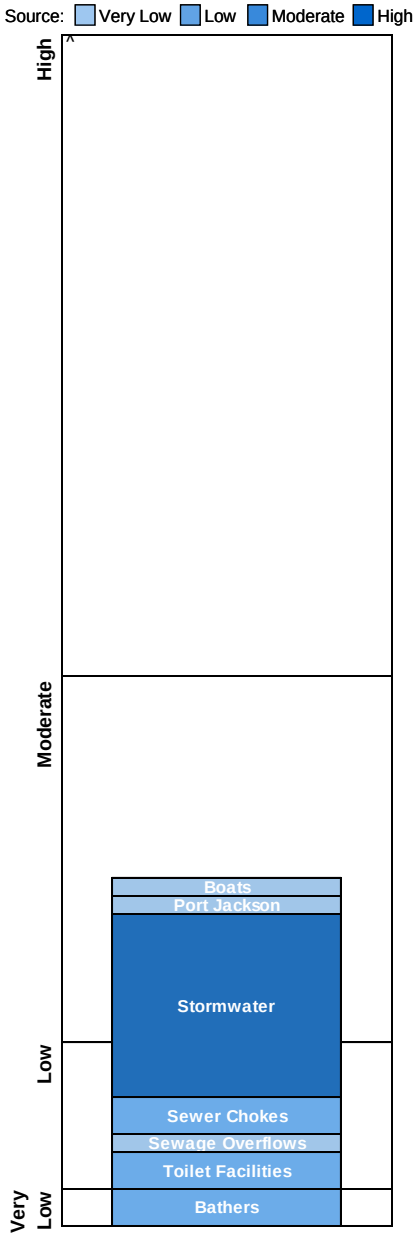
The southern end of Parsley Bay is netted from September to May to provide a large and safe swimming area. The sandy beach is backed by Parsley Bay Reserve, which contains picnic facilities and a playground.

The Beach Suitability Grade of Good indicates that microbial water quality is 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 increased with increasing rainfall, frequently exceeding the safe swimming limit in response to 20 mm of rainfall or more.

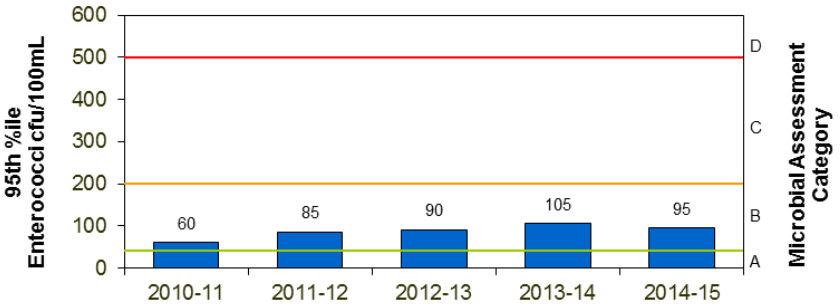
The site has been monitored since 1994. Microbial water quality has generally improved since 2000–2001 owing to licensing of discharges from the sewerage system and improved management of stormwater.

Sanitary Inspection: **Moderate**



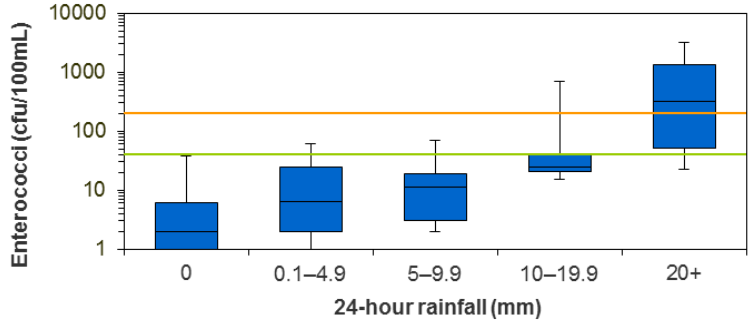
Microbial Assessment: **B**

Monitoring period for 2014–15 result is December 2012 to May 2015.



Response to rainfall

Rainfall from Mosman rain gauge



Trends in enterococci data through time

Nielsen Park

Beach Suitability Grade: VG

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

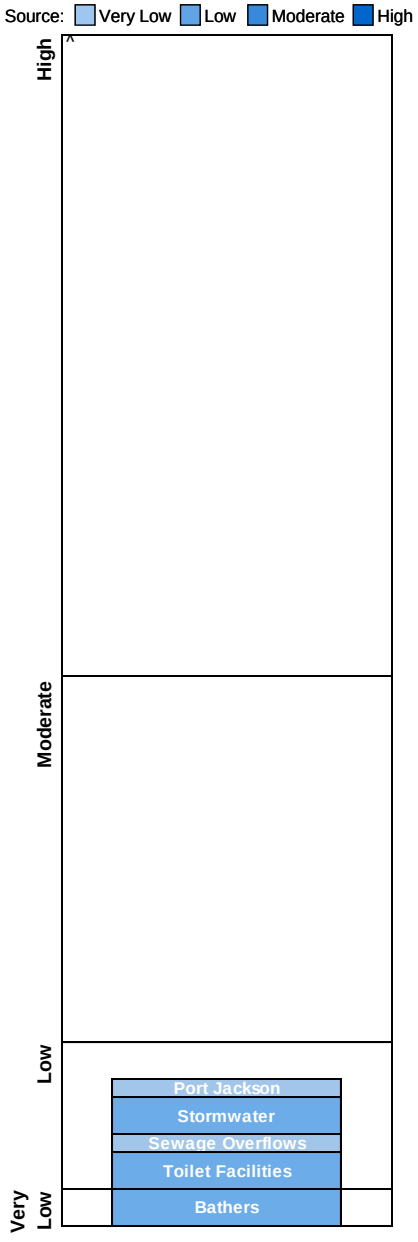
The Nielsen Park swimming area is approximately 150 metres long and enclosed by a shark net between October and April. The sandy beach and surrounding parklands are part of Sydney Harbour National Park. There are toilet and shower facilities, a café and a restaurant.

The Beach Suitability Grade of Very Good indicates that 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 slightly with increasing rainfall, often exceeding the safe swimming limit in response to 20 mm of rainfall or more.

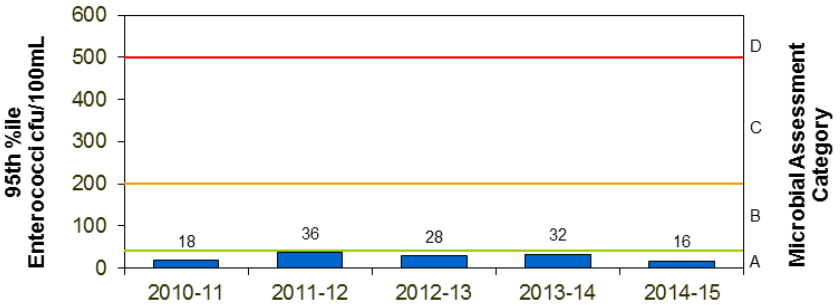
The site has been monitored since 1994. Microbial water quality has generally improved since 2000–2001 owing to licensing of discharges from the sewerage system and improved management of stormwater.

Sanitary Inspection: **Low**



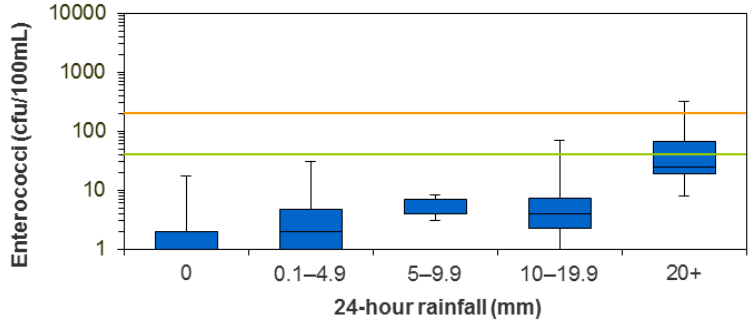
Microbial Assessment: **A**

Monitoring period for 2014–15 result is December 2012 to May 2015.

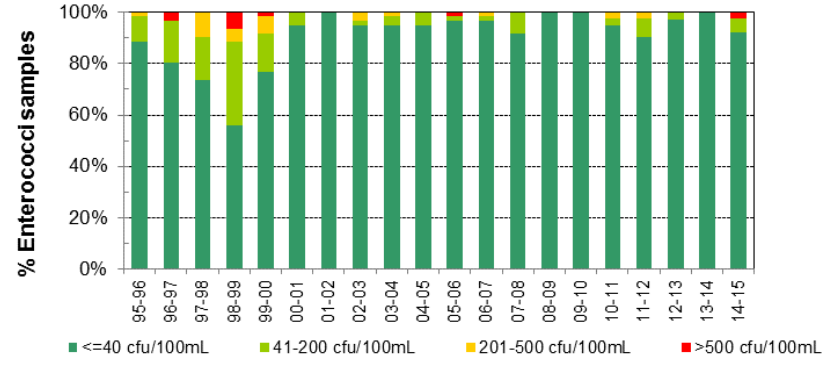


Response to rainfall

Rainfall from Mosman rain gauge



Trends in enterococci data through time



Rose Bay Beach

Beach Suitability Grade: G

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

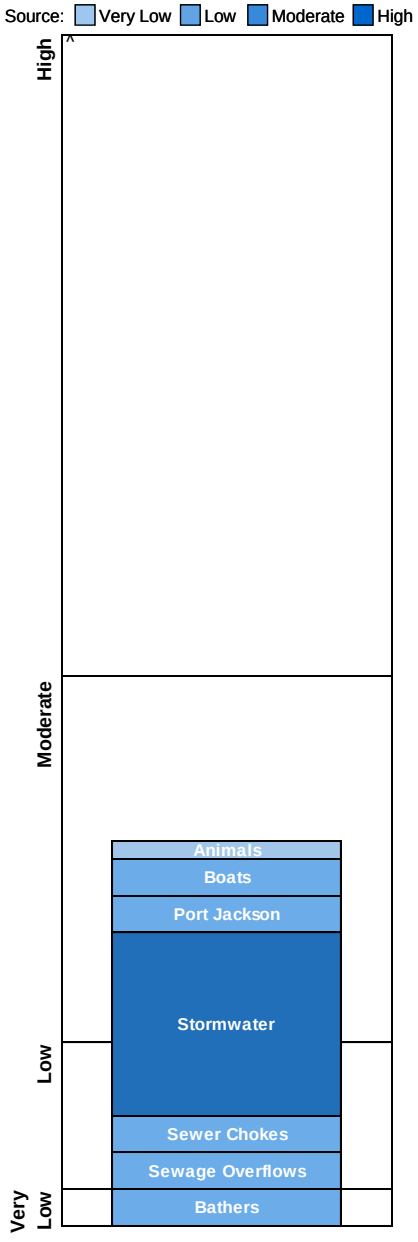
Rose Bay Beach is approximately 500 metres long and the swimming area is not netted. The bay is popular for recreational boating, and a sailing school and sailboat hire company operate in the area. A park with picnic and playground facilities is located adjacent to the beach.

The Beach Suitability Grade of Good indicates that microbial water quality is 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 increased with increasing rainfall, often exceeding the safe swimming limit in response to 10 mm of rainfall or more.

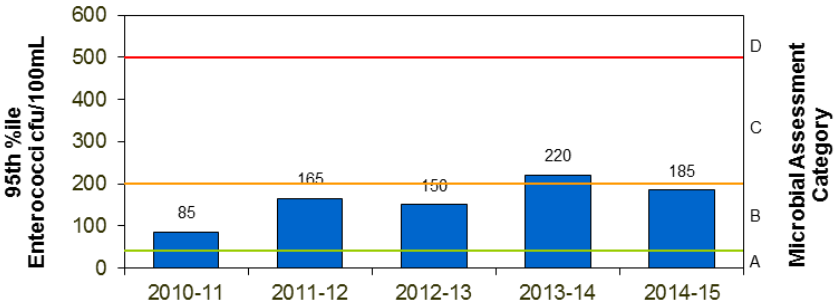
The site has been monitored since 1994. Microbial water quality has generally improved since 2000–2001 owing to licensing of discharges from the sewerage system and improved management of stormwater.

Sanitary Inspection: **Moderate**



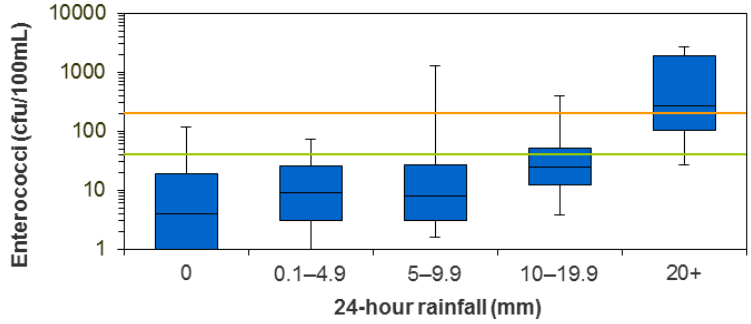
Microbial Assessment: **B**

Monitoring period for 2014–15 result is December 2012 to May 2015.

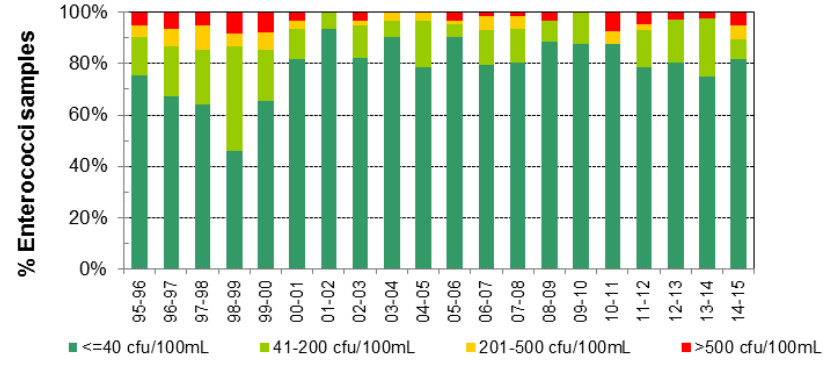


Response to rainfall

Rainfall from Mosman rain gauge



Trends in enterococci data through time



Murray Rose Pool

Beach Suitability Grade: G

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

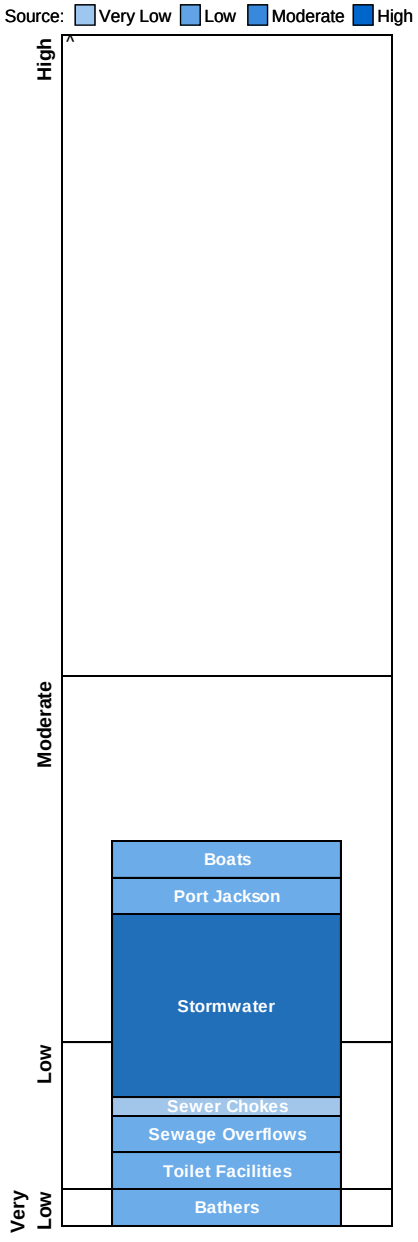
Murray Rose Pool (formerly Redleaf Pool) is a netted swimming enclosure located in Double Bay, at the end of Seven Shillings Beach. The pool is bordered on three sides by a narrow sun deck and is backed by a park and Woollahra Council office.

The Beach Suitability Grade of Good indicates that microbial water quality is 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 increased with increasing rainfall, often exceeding the safe swimming limit in response to 10 mm of rainfall or more.

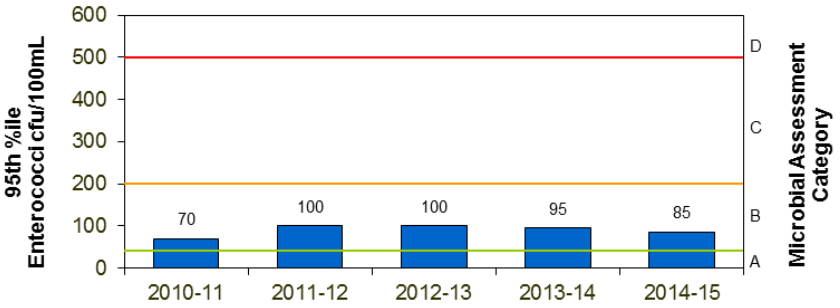
The site has been monitored since 1994. Microbial water quality has generally improved since 2000–2001 owing to licensing of discharges from the sewerage system and improved management of stormwater.

Sanitary Inspection: **Moderate**



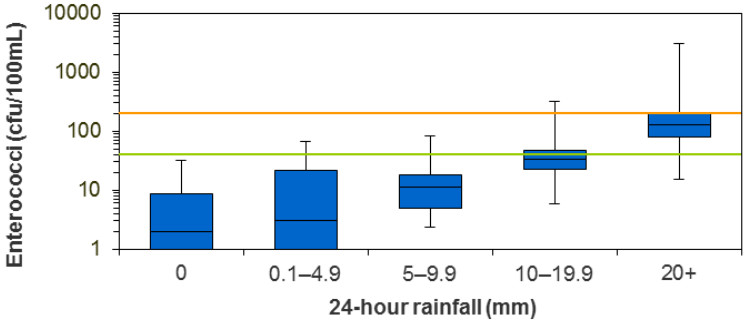
Microbial Assessment: **B**

Monitoring period for 2014–15 result is December 2012 to May 2015.

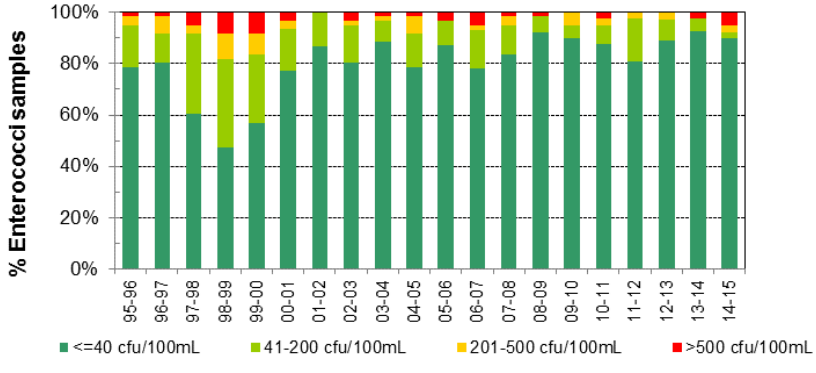


Response to rainfall

Rainfall from Mosman rain gauge

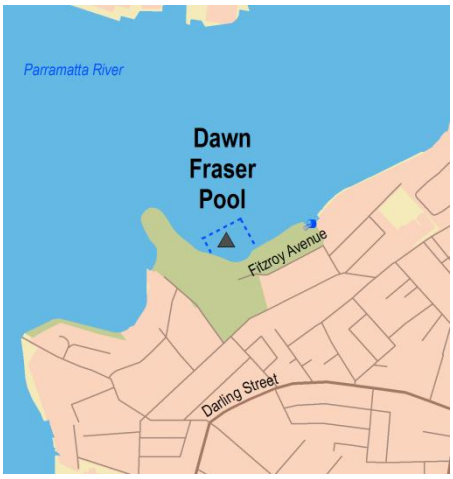


Trends in enterococci data through time



Dawn Fraser Pool

Beach Suitability Grade: G



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

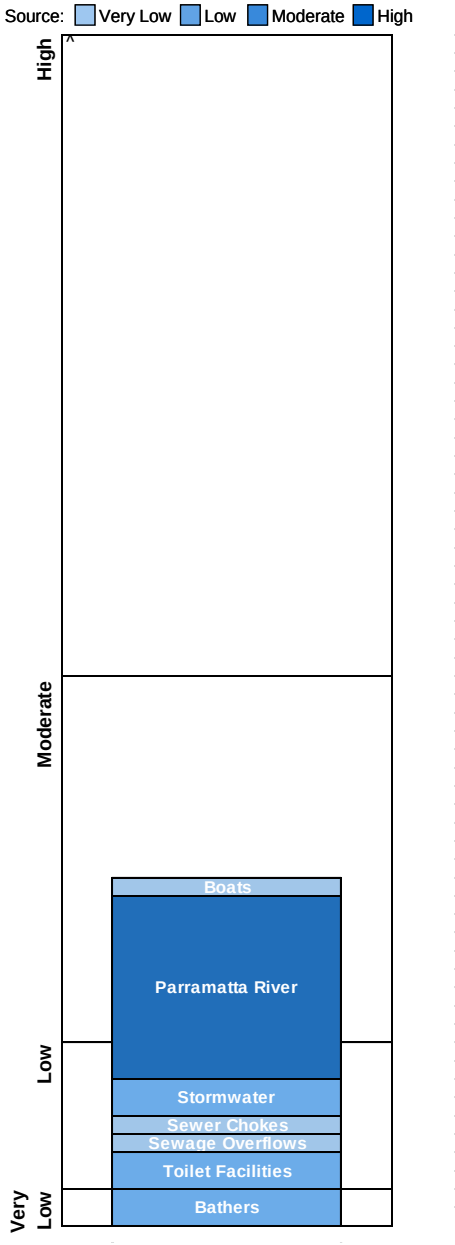
Dawn Fraser Pool in Balmain is the oldest pool and swimming club in Australia and is listed on the NSW State Heritage Register. Boardwalks and a pavilion surround the enclosed tidal swimming area. The pool is open between October and April each year.

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

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

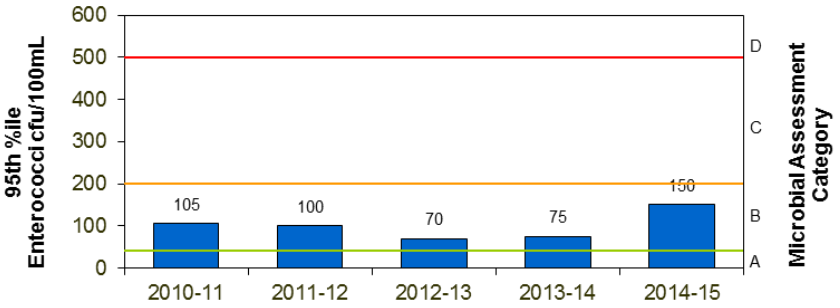
The site has been monitored since 1994. Microbial water quality has generally improved since 2000–2001 owing to licensing of discharges from the sewerage system and improved management of stormwater.

Sanitary Inspection: **Moderate**



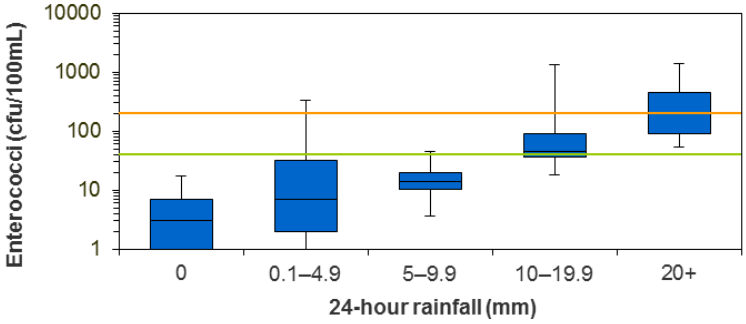
Microbial Assessment: **B**

Monitoring period for 2014–15 result is December 2012 to May 2015.

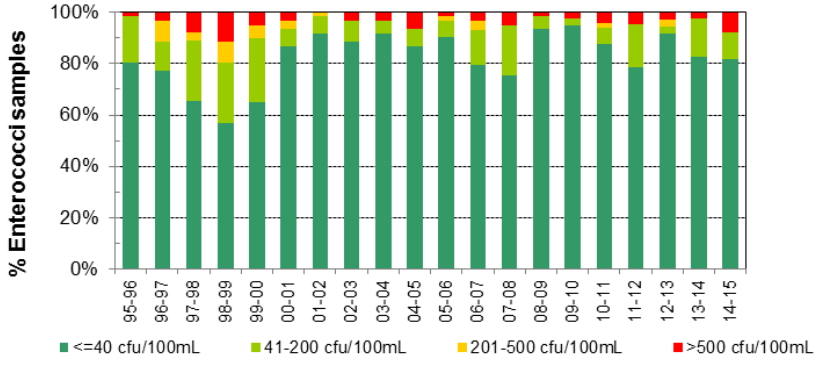


Response to rainfall

Rainfall from Lilyfield rain gauge

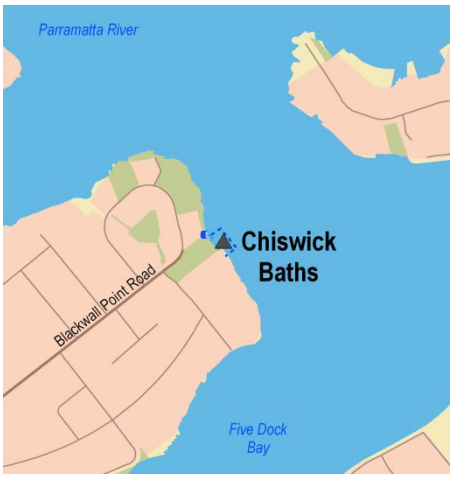


Trends in enterococci data through time



Chiswick Baths

Beach Suitability Grade: G



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

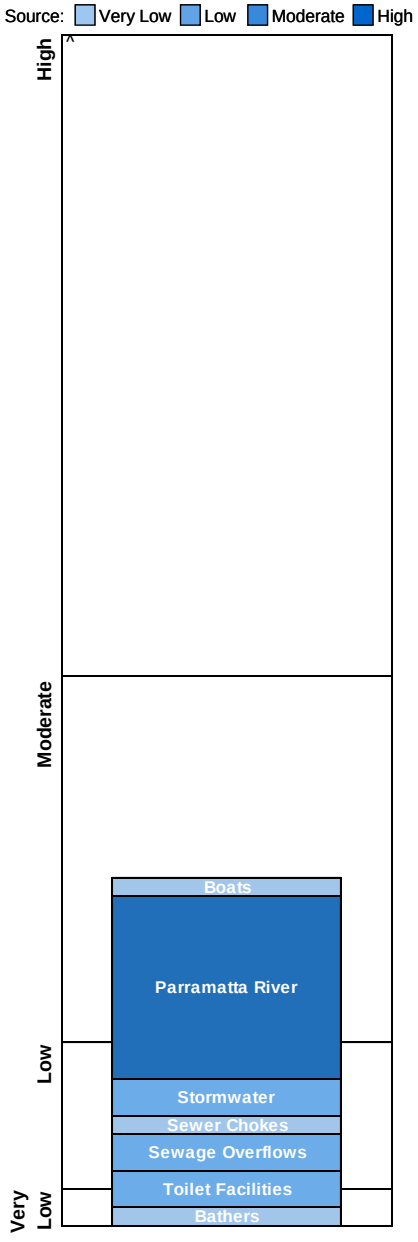
Chiswick Baths are a netted swimming enclosure in Five Dock Bay. The swimming site is backed by a narrow sandy beach and a park with picnic and barbeque facilities.

The Beach Suitability Grade of Good indicates that the water quality is safe for swimming most of the time but can be susceptible to pollution after heavy rain, with potential faecal contamination from stormwater and upstream sources in the Parramatta River.

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

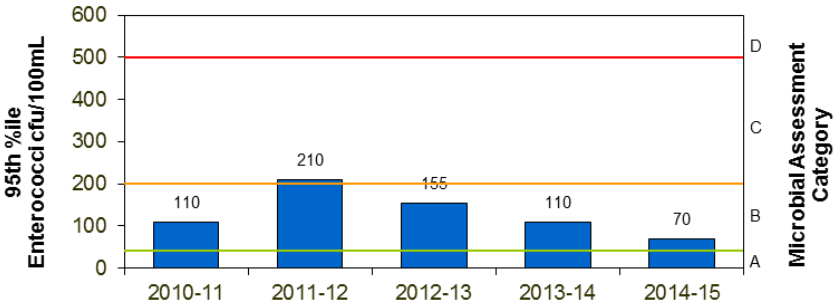
The site has been monitored since 1998. Microbial water quality has generally improved since 2000–2001 owing to licensing of discharges from the sewerage system and improved management of stormwater.

Sanitary Inspection: **Moderate**



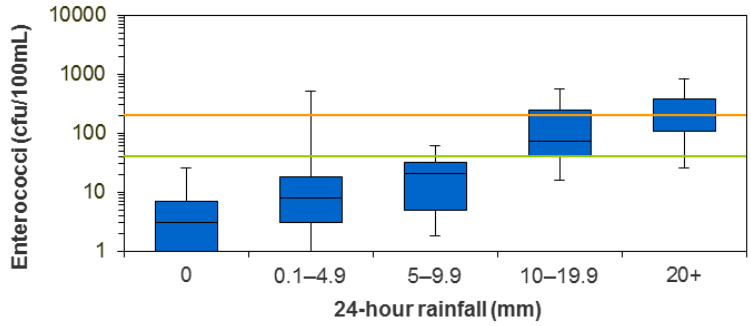
Microbial Assessment: **B**

Monitoring period for 2014–15 result is December 2012 to May 2015.

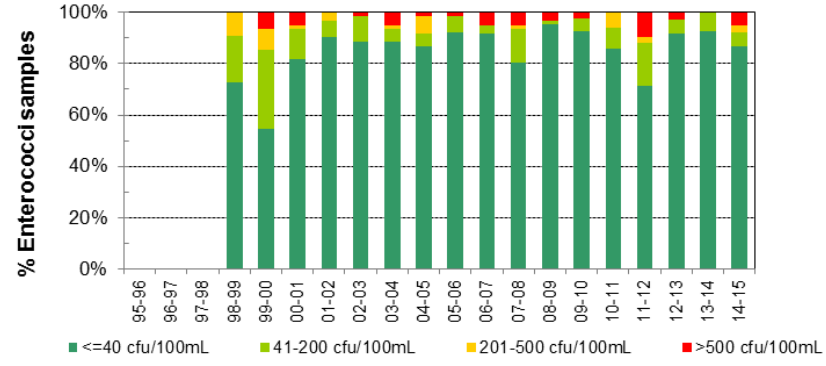


Response to rainfall

Rainfall from Gladesville rain gauge



Trends in enterococci data through time



Cabarita Beach

Beach Suitability Grade: G

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

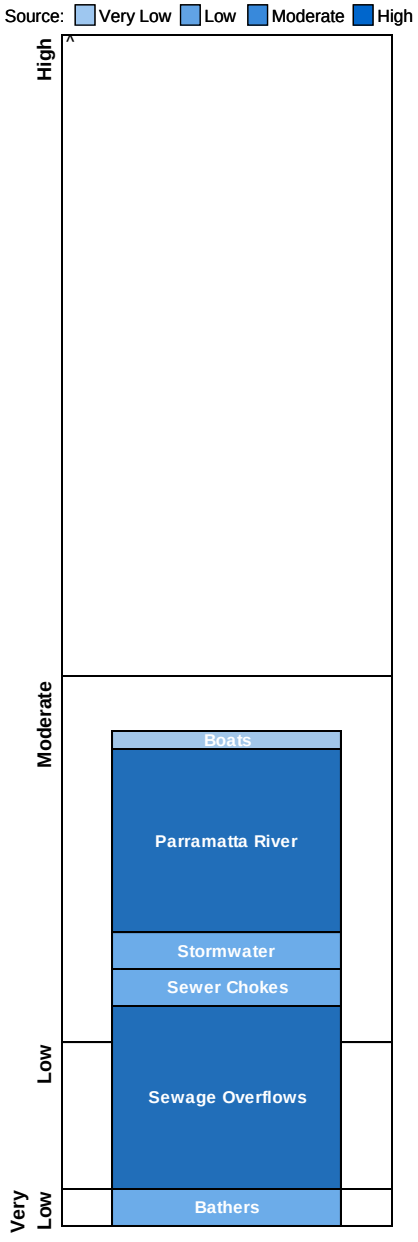
Cabarita Beach is located at the end of Cabarita Point. The beach is 120 metres long and is backed by parklands with picnic and barbeque facilities and a playground.

The Beach Suitability Grade of Good indicates that the water quality is safe for swimming most of the time but can be susceptible to pollution after heavy rain, with potential faecal contamination from sewage overflows and discharge from the Parramatta River.

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

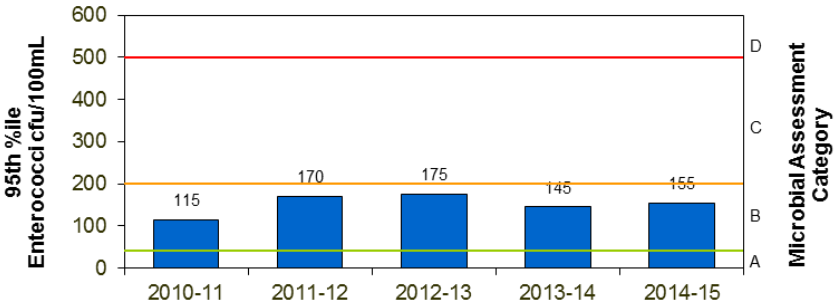
The site has been monitored since 1996. Microbial water quality has generally improved since 2000–2001 owing to licensing of discharges from the sewerage system and improved management of stormwater.

Sanitary Inspection: **Moderate**



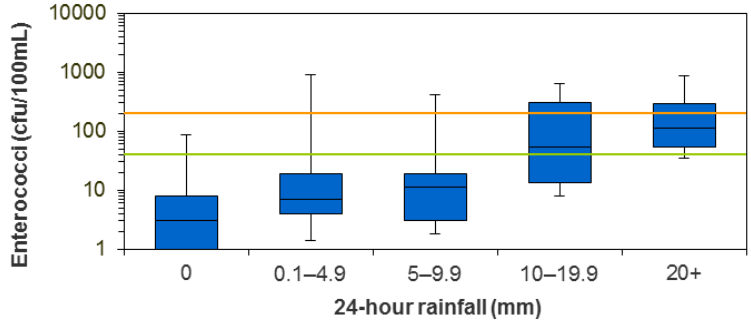
Microbial Assessment: **B**

Monitoring period for 2014–15 result is December 2012 to May 2015.

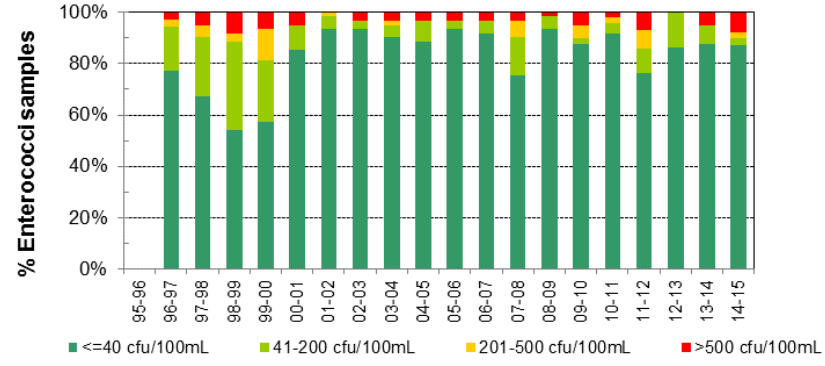


Response to rainfall

Rainfall from Gladesville rain gauge



Trends in enterococci data through time



Woolwich Baths

Beach Suitability Grade: G

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

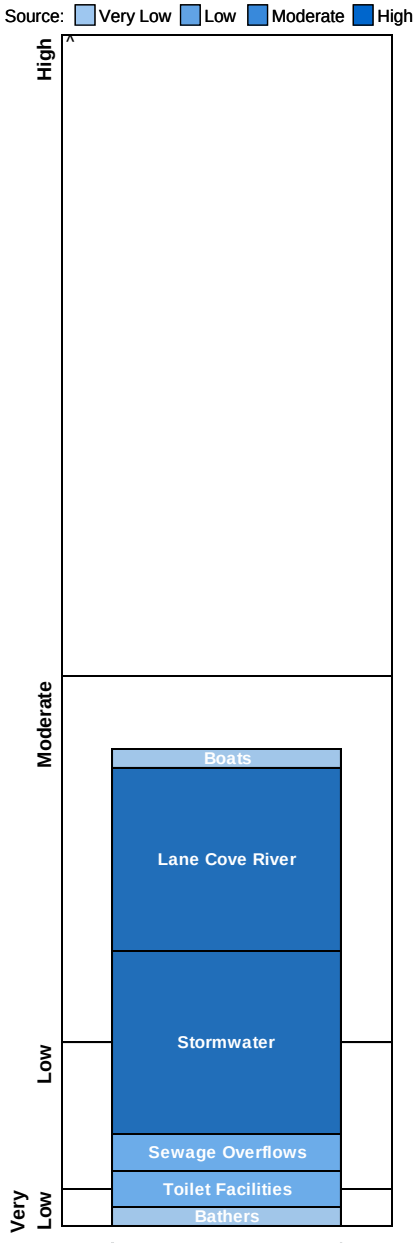
Woolwich Baths are a 20 by 30 metre netted swimming area in the lower Lane Cove River. The baths are backed by a narrow sandy beach and are adjacent to a reserve.

The Beach Suitability Grade of Good indicates that the water quality is safe for swimming most of the time but can be susceptible to pollution after heavy rain, with potential faecal contamination from stormwater, sewage overflows and discharge from the Lane Cove River.

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

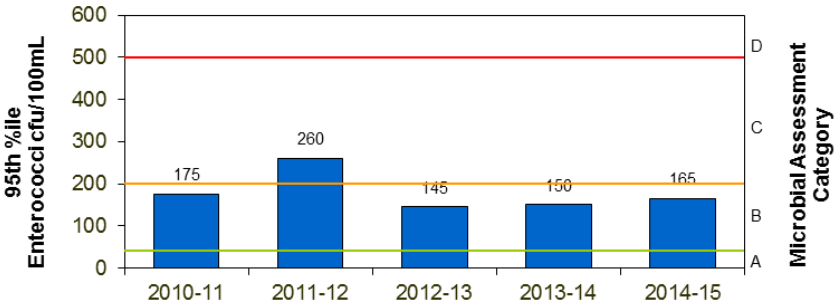
The site has been monitored since 1994. Microbial water quality has generally improved since 2000–2001 owing to licensing of discharges from the sewerage system and improved management of stormwater.

Sanitary Inspection: **Moderate**



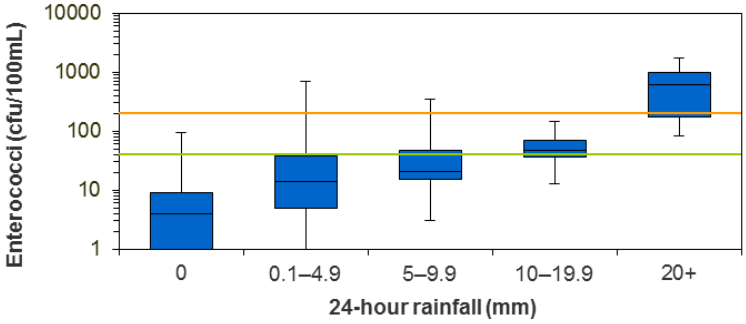
Microbial Assessment: **B**

Monitoring period for 2014–15 result is December 2012 to May 2015.

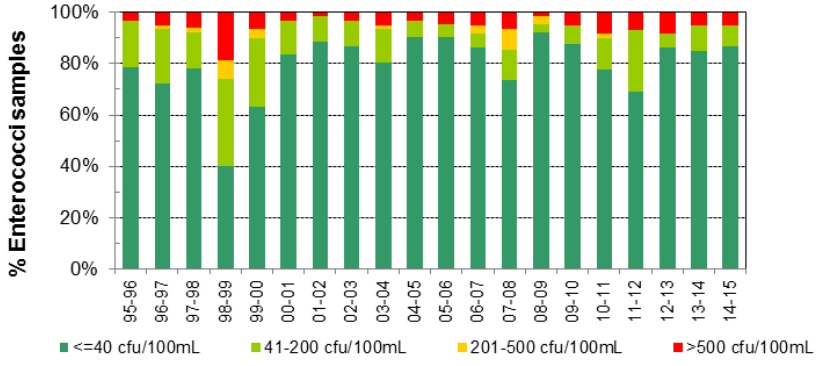


Response to rainfall

Rainfall from Gladesville rain gauge



Trends in enterococci data through time



Tambourine Bay

Beach Suitability Grade: P

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

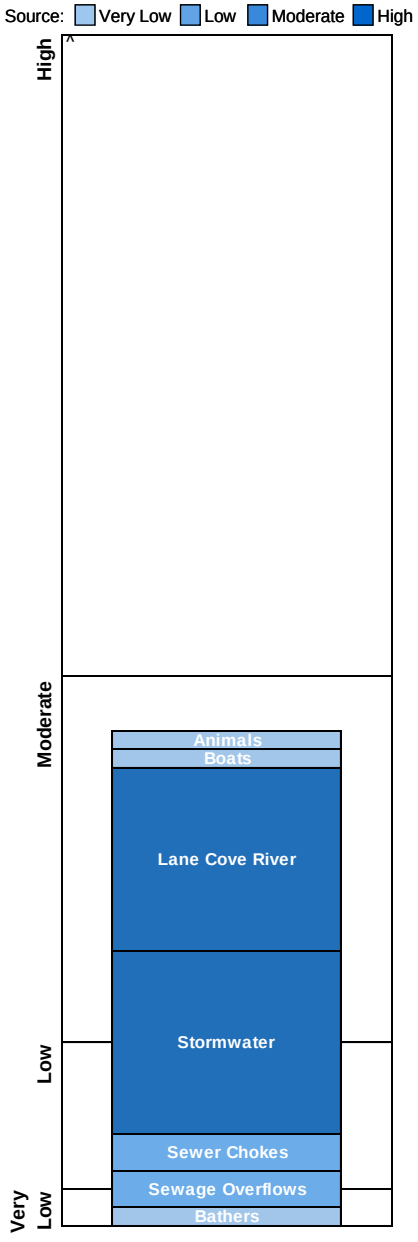
This pool is in Tambourine Bay in the lower Lane Cove River. It is backed by parklands with picnic and barbeque facilities and a playground. Lane Cove Council has currently closed the baths and the long-term future of the site is yet to be determined.

The Beach Suitability Grade of Poor indicates that microbial water quality is influenced by faecal pollution, usually triggered by rainfall, with potential faecal contamination from stormwater, sewage overflows and discharge from the Lane Cove River.

The response to rainfall graph indicates that enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit in response to little or no rain, and regularly after 5 mm of rainfall or more.

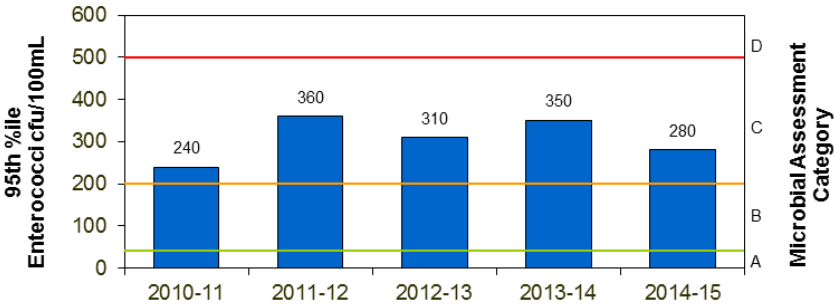
The site has been monitored since 1994. Microbial water quality has generally improved since 2000–2001 owing to licensing of discharges from the sewerage system and improved management of stormwater.

Sanitary Inspection: **Moderate**



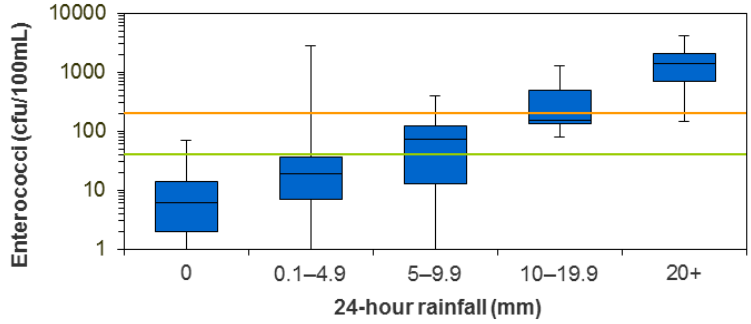
Microbial Assessment: **C**

Monitoring period for 2014–15 result is December 2012 to May 2015.

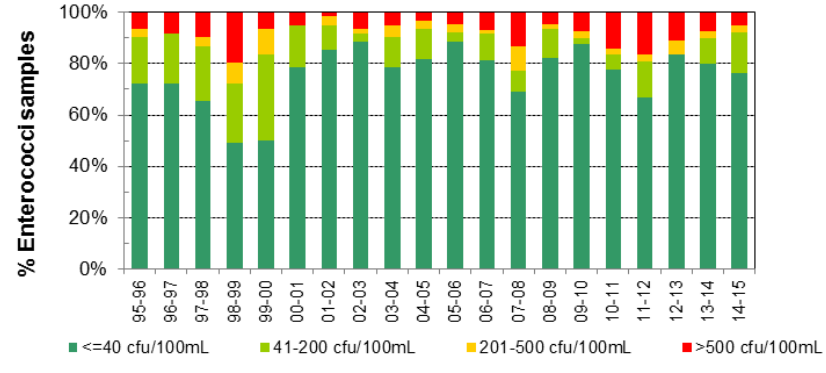


Response to rainfall

Rainfall from Gladesville rain gauge



Trends in enterococci data through time



Woodford Bay

Beach Suitability Grade: G

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

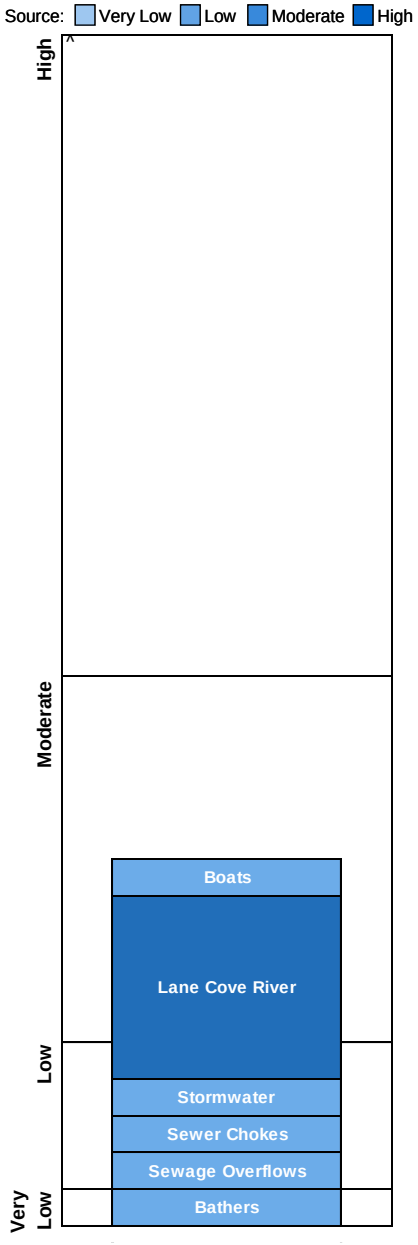
This site is a 20 by 25 metre enclosed swimming area on the western side of Woodford Bay in the lower Lane Cove River. The swimming area is backed by a narrow sandy beach and park.

The Beach Suitability Grade of Good indicates that microbial water quality is 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 with increasing rainfall, often exceeding the safe swimming limit in response to 5 mm of rainfall or more, and usually after 20 mm or more.

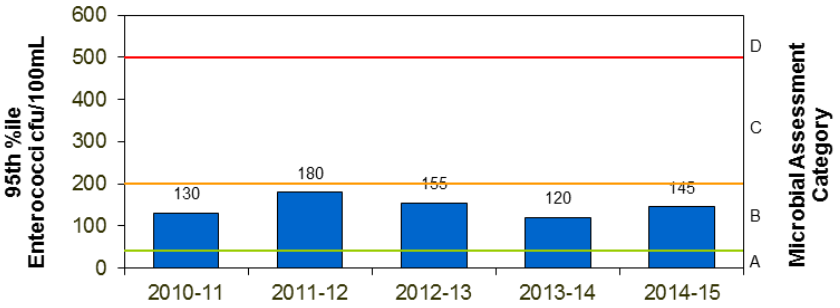
The site has been monitored since 1994. Microbial water quality has improved slightly since 2000–2001 owing to licensing of discharges from the sewerage system and improved management of stormwater.

Sanitary Inspection: **Moderate**



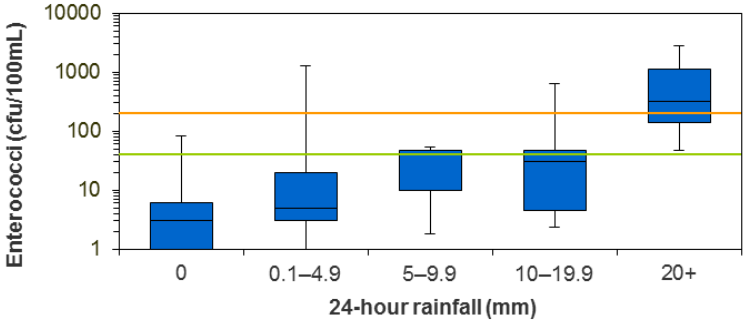
Microbial Assessment: **B**

Monitoring period for 2014–15 result is December 2012 to May 2015.

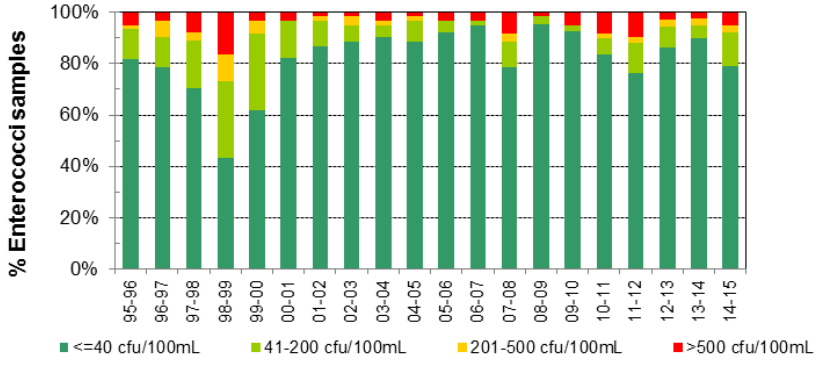


Response to rainfall

Rainfall from Gladesville rain gauge



Trends in enterococci data through time



Greenwich Baths

Beach Suitability Grade: G

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

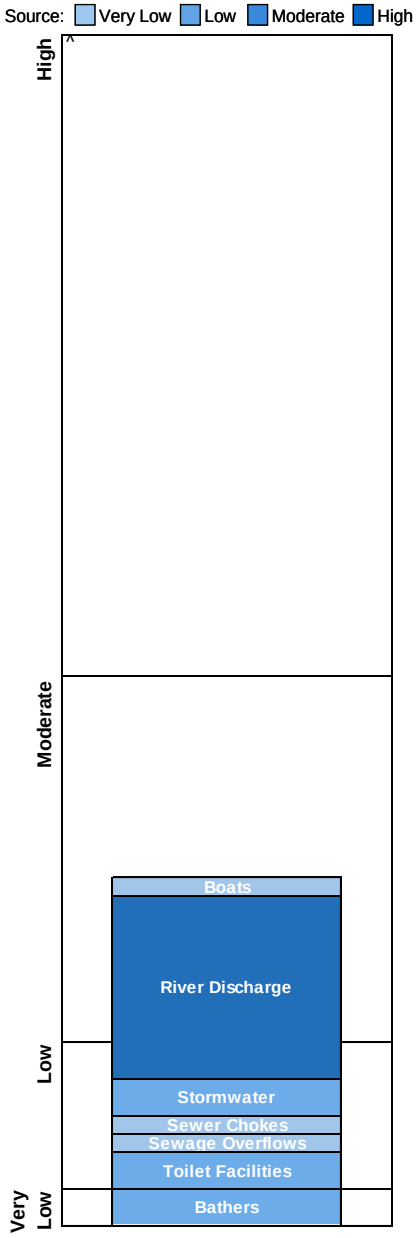
Greenwich Baths are a 40 metre long netted swimming area backed by a sandy beach. The baths are next to a park and are open during the swimming season. There are toilet and shower facilities and a kiosk.

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

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

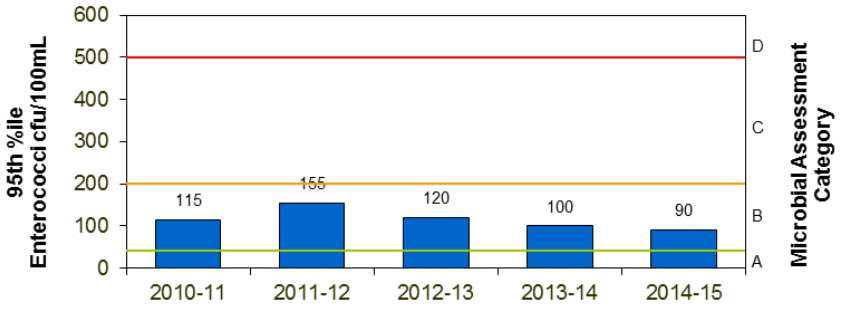
The site has been monitored since 1994. Microbial water quality has generally improved since 2000–2001 owing to licensing of discharges from the sewerage system and improved management of stormwater.

Sanitary Inspection: **Moderate**



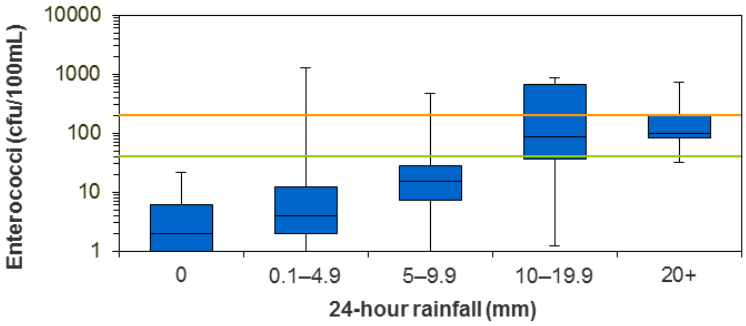
Microbial Assessment: **B**

Monitoring period for 2014–15 result is December 2012 to May 2015.

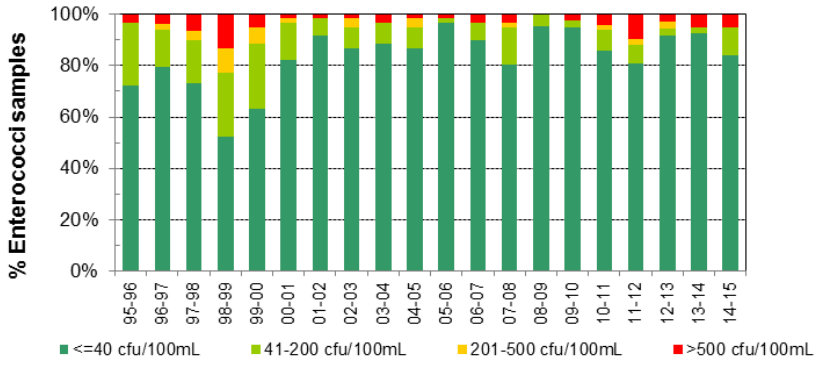


Response to rainfall

Rainfall from Lilyfield rain gauge



Trends in enterococci data through time



Hayes Street Beach

Beach Suitability Grade: G

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

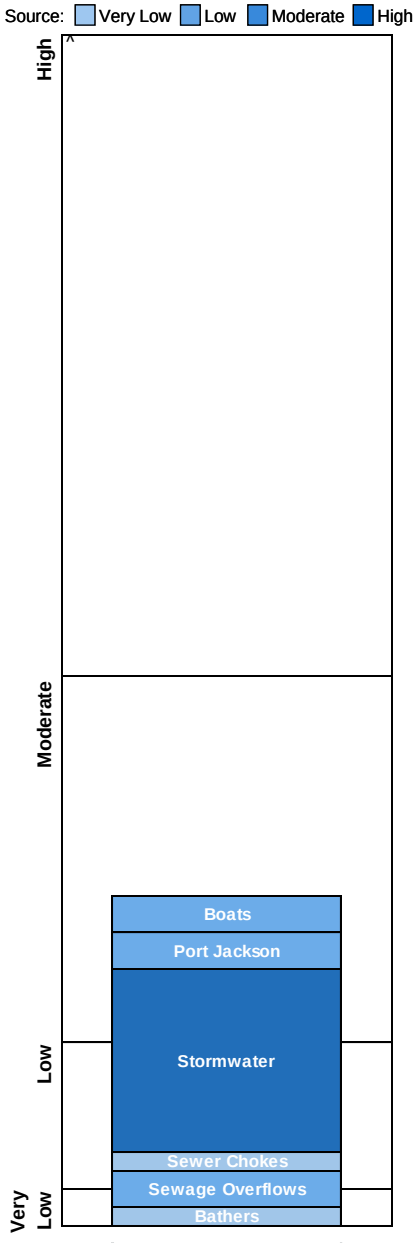
Hayes Street Beach is approximately 50 metres long and is located adjacent to the Hayes Street Ferry Wharf in Neutral Bay. The area is not netted.

The Beach Suitability Grade of Good indicates that the water quality is safe for swimming most of the time but can be susceptible to pollution from several potential sources of contamination.

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

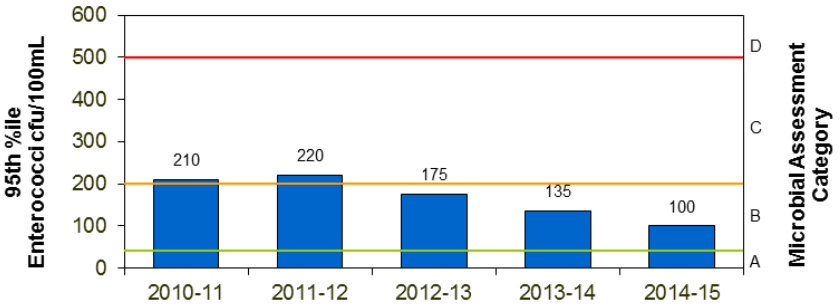
The site has been monitored since 1994. Microbial water quality has generally improved since 2000–2001 owing to the licensing of discharges from the sewerage system and improved management of stormwater.

Sanitary Inspection: **Moderate**



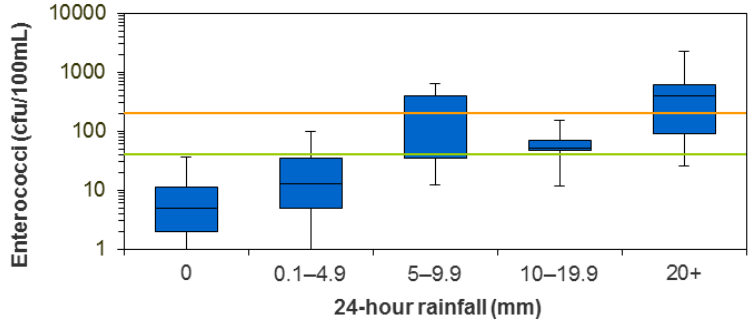
Microbial Assessment: **B**

Monitoring period for 2014–15 result is December 2012 to May 2015.

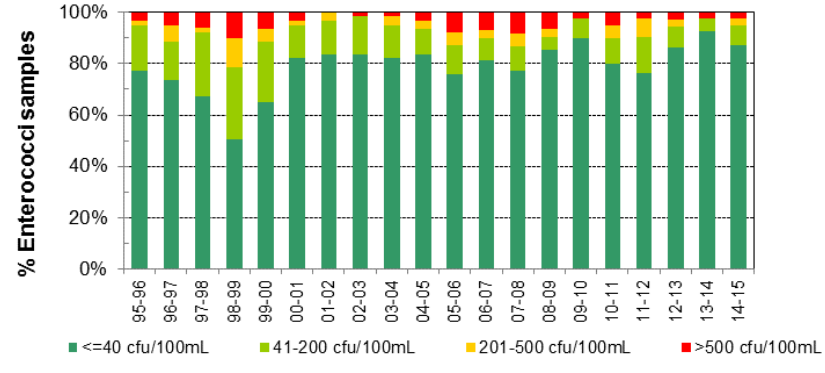


Response to rainfall

Rainfall from Mosman rain gauge



Trends in enterococci data through time



Clifton Gardens

Beach Suitability Grade: G

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

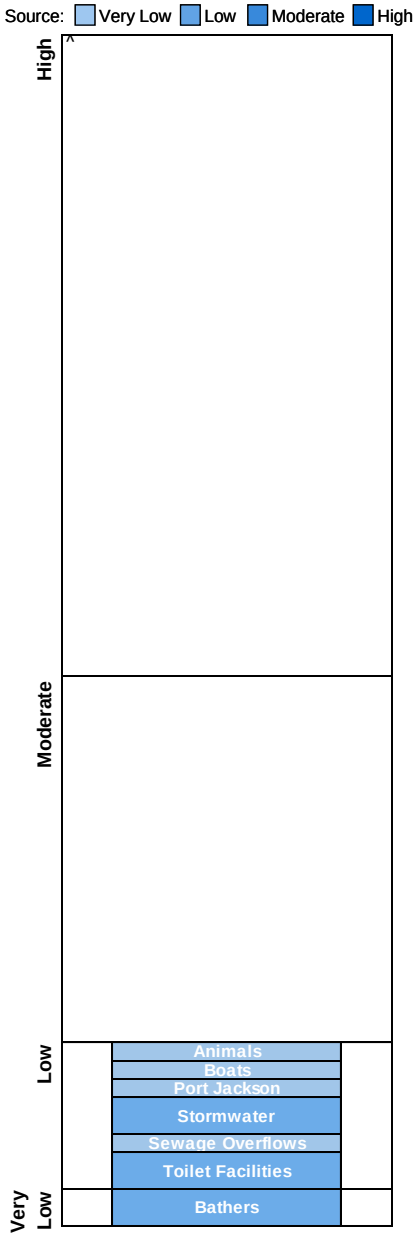
Clifton Gardens is a large netted swimming area at the western end of a 250 metre long beach in Chowder Bay. The beach is backed by Sydney Harbour National Park and a park with picnic and toilet facilities.

The Beach Suitability Grade of Good indicates that microbial water quality is suitable for swimming most of the time but the water may be susceptible to pollution from several minor 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 5 mm of rainfall or more, and frequently after 20 mm or more.

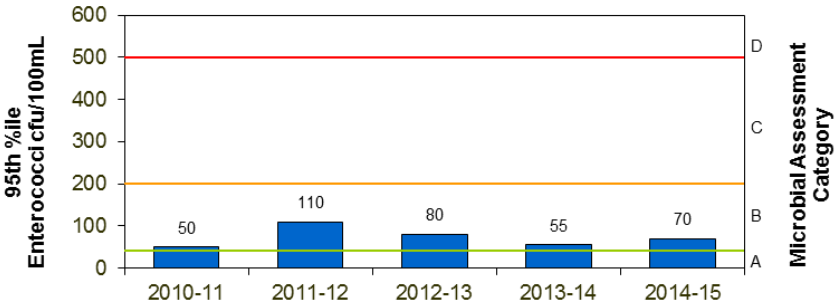
The site has been monitored since 1994. Microbial water quality has generally improved since 2000–2001 due to licensing of discharges from the sewerage system (and associated works such as the Northside Storage Tunnel) and improved management of stormwater.

Sanitary Inspection: **Moderate**



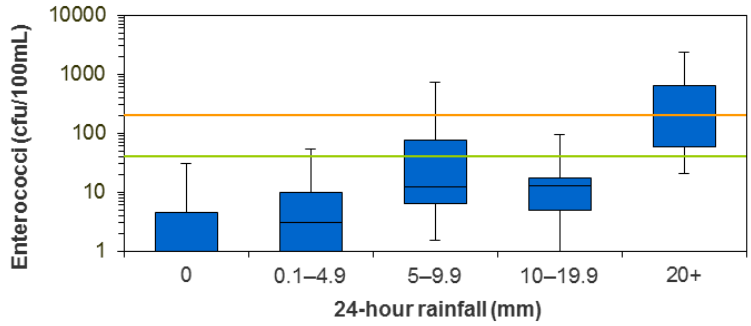
Microbial Assessment: **B**

Monitoring period for 2014–15 result is December 2012 to May 2015.

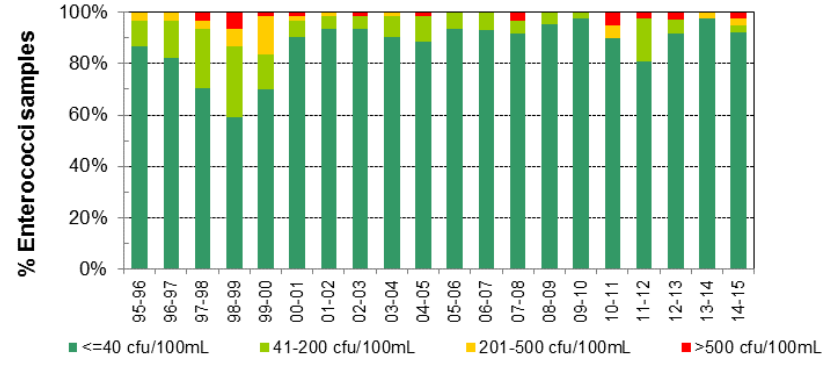


Response to rainfall

Rainfall from Mosman rain gauge



Trends in enterococci data through time



Balmoral Baths

Beach Suitability Grade: G

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

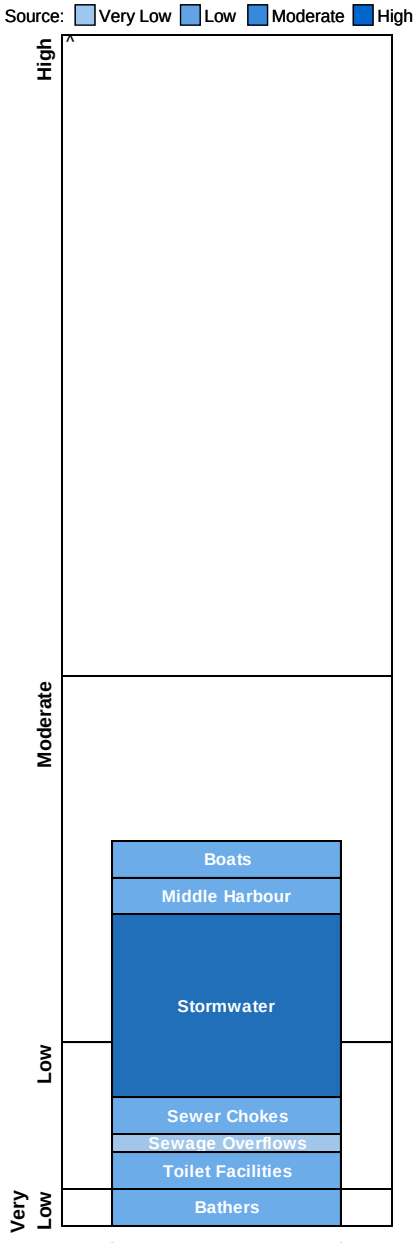
Balmoral Baths are a netted swimming area towards the eastern end of Balmoral Beach, backed by a park with picnic and toilet facilities.

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

The response to rainfall graph indicates that enterococci levels generally increased with increasing rainfall, often exceeding the safe swimming limit in response to 5 mm of rainfall or more, and regularly after 20 mm or more.

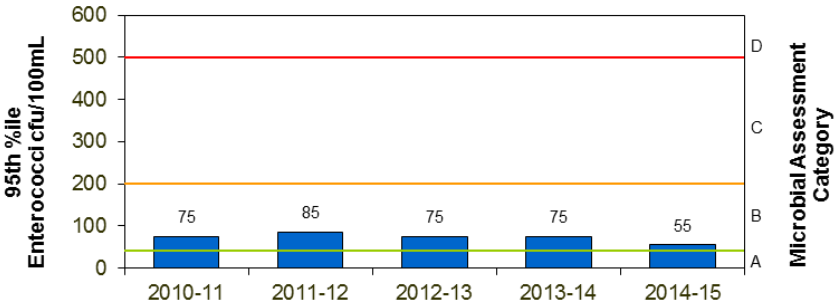
The site has been monitored since 1994. Microbial water quality has generally improved since 2000–2001 owing to licensing of discharges from the sewerage system (and associated works such as the Northside Storage Tunnel) and improved management of stormwater.

Sanitary Inspection: **Moderate**



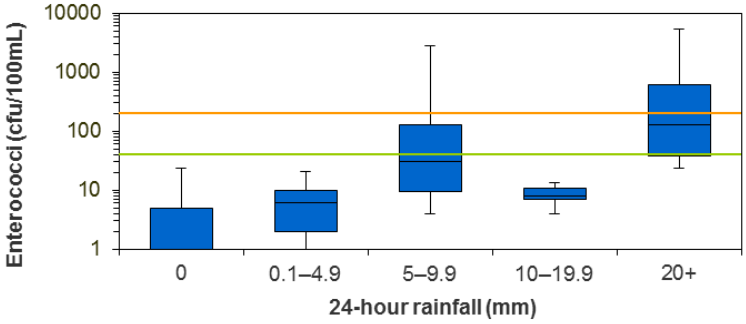
Microbial Assessment: **B**

Monitoring period for 2014–15 result is December 2012 to May 2015.

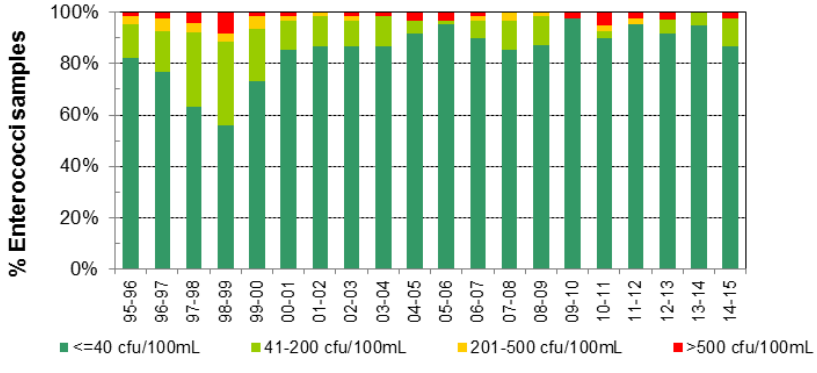


Response to rainfall

Rainfall from Mosman rain gauge

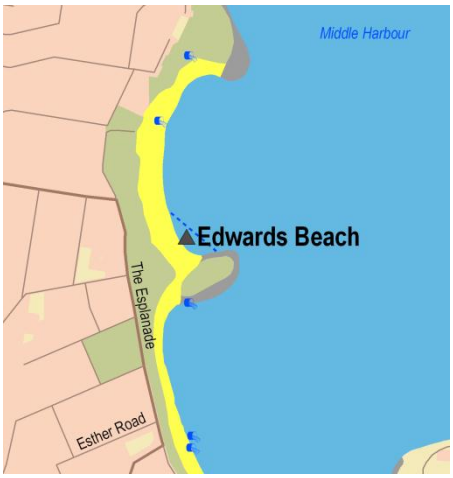


Trends in enterococci data through time



Edwards Beach

Beach Suitability Grade: G



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

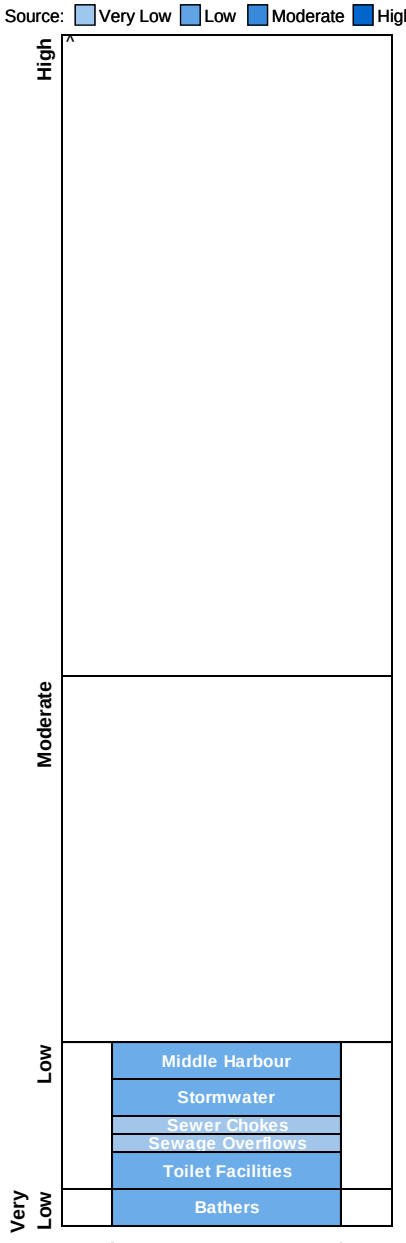
Edwards Beach is a popular swimming area located at the southern end of the beach backed by a walking track, park and café facilities.

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

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

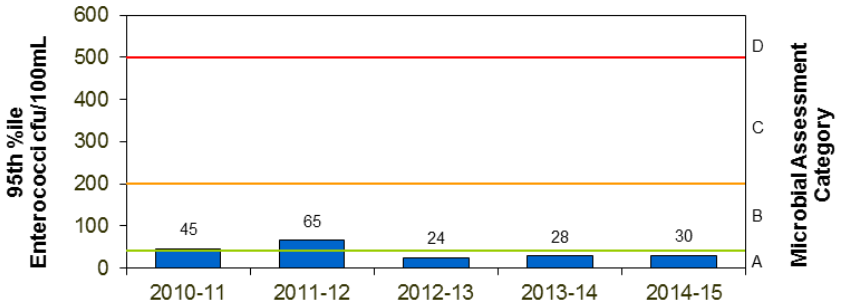
The site has been monitored since 1994. Microbial water quality has generally improved since 2000–2001 owing to licensing of discharges from the sewerage system (and associated works such as the Northside Storage Tunnel) and improved management of stormwater.

Sanitary Inspection: **Moderate**



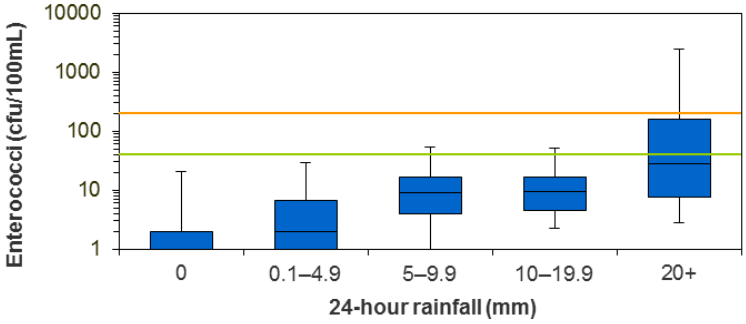
Microbial Assessment: **A**

Monitoring period for 2014–15 result is December 2012 to May 2015.

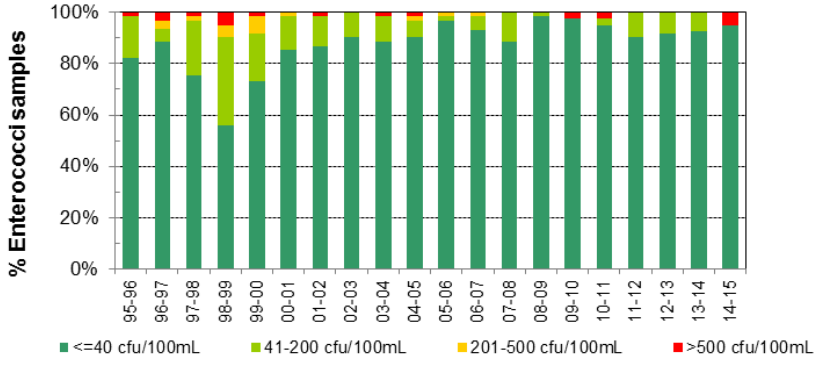


Response to rainfall

Rainfall from Mosman rain gauge



Trends in enterococci data through time



Chinamans Beach

Beach Suitability Grade: G

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

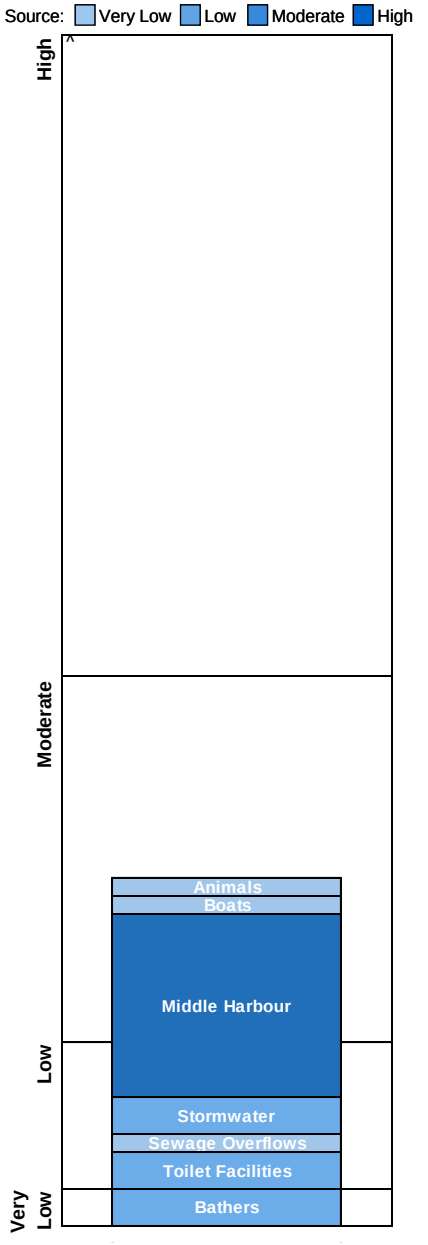
Chinamans Beach is approximately 250 metres long and is a popular swimming area in Middle Harbour. It is backed by Rosherville Reserve.

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

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

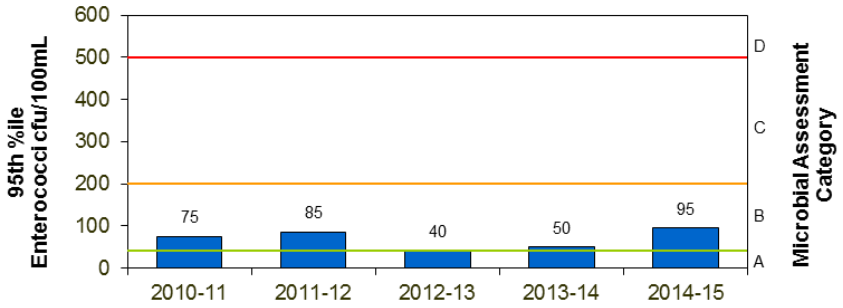
The site has been monitored since 1998. Microbial water quality has generally improved since 2000–2001 owing to licensing of discharges from the sewerage system (and associated works such as the Northside Storage Tunnel) and improved management of stormwater.

Sanitary Inspection: **Moderate**



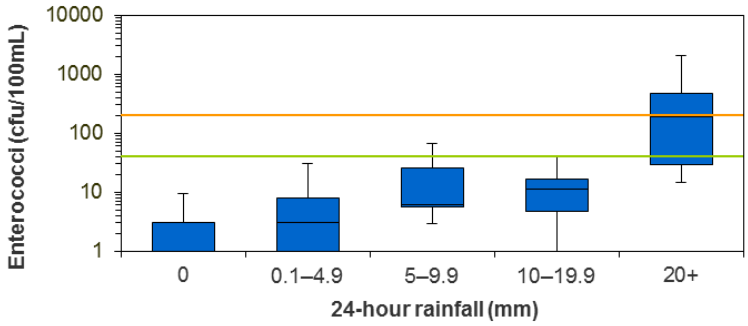
Microbial Assessment: **B**

Monitoring period for 2014–15 result is December 2012 to May 2015.

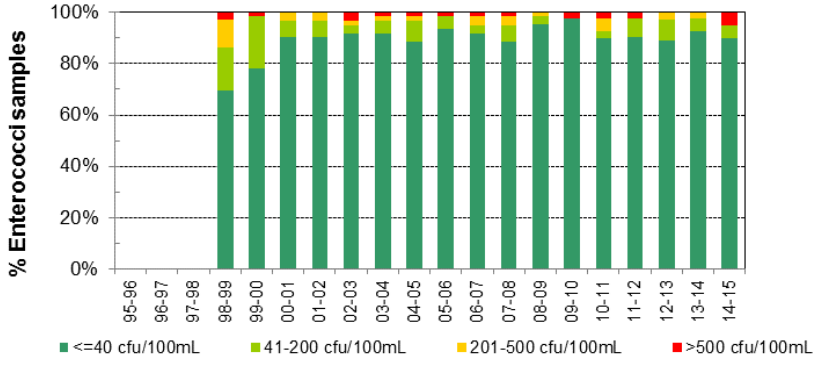


Response to rainfall

Rainfall from Mosman rain gauge



Trends in enterococci data through time



Northbridge Baths

Beach Suitability Grade: F

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

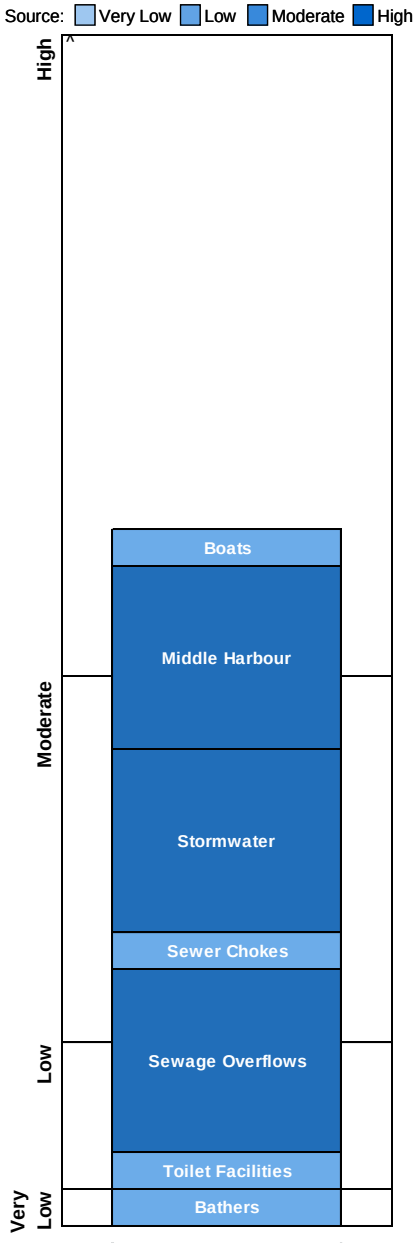
Northbridge Baths are a 30 by 65 metre enclosed swimming area in Sailors Bay, Middle Harbour. The baths are open year round; however, signage advises not to swim during and for up to 48 hours after rainfall.

The Beach Suitability Grade of Fair indicates that microbial water quality is occasionally influenced by faecal pollution, particularly after rainfall, with a number of potential sources of faecal contamination including stormwater, sewage overflows and upstream sources in Middle Harbour.

The response to rainfall graph indicates that enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit in response to light rainfall, and regularly after 5 mm or more.

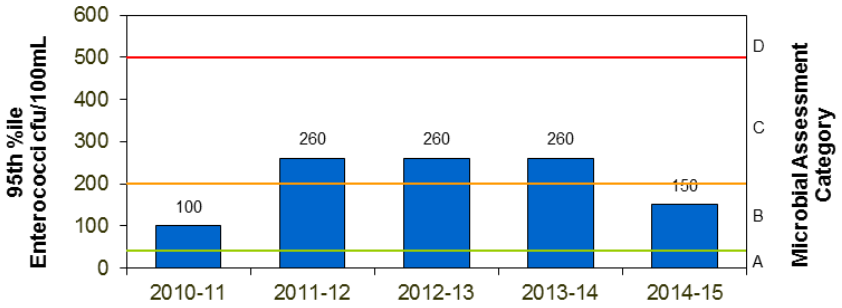
The site has been monitored since 1994. Microbial water quality has improved slightly since 2000–2001 owing to licensing of discharges from the sewerage system (and associated works such as the Northside Storage Tunnel) and improved management of stormwater.

Sanitary Inspection: **High**



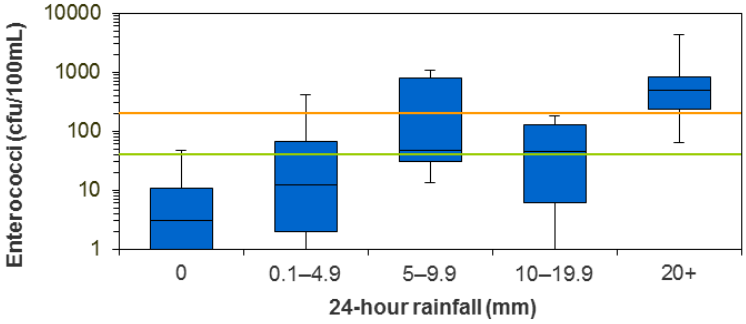
Microbial Assessment: **B**

Monitoring period for 2014–15 result is December 2012 to May 2015.

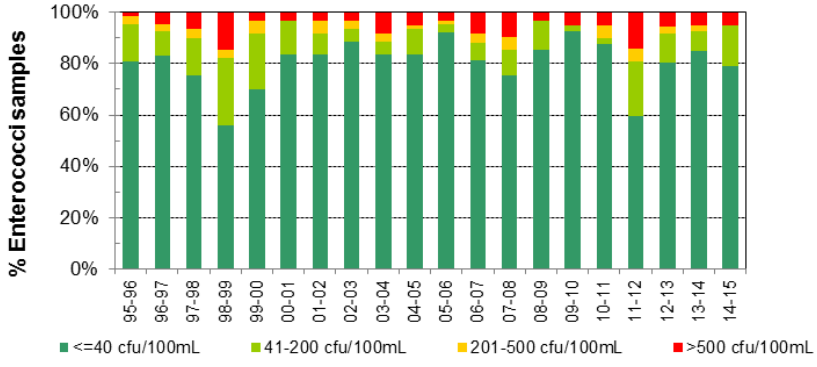


Response to rainfall

Rainfall from Mosman rain gauge



Trends in enterococci data through time



Davidson Reserve

Beach Suitability Grade: P

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

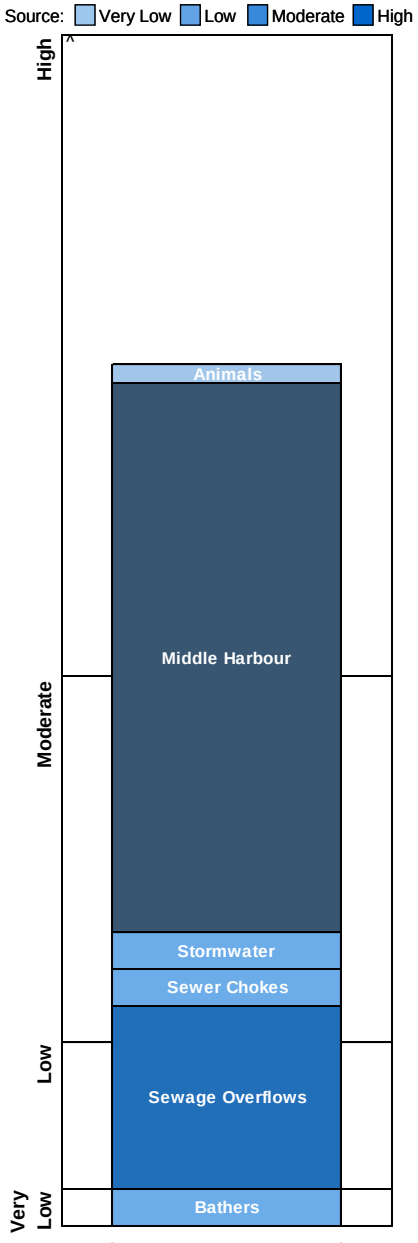
Davidson Reserve is a 25 metre long netted swimming area situated within Garigal National Park. The beach is backed by a reserve with picnic facilities.

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 potential faecal contamination from sewer chokes and sewage overflows and upstream sources in Middle Harbour.

The response to rainfall graph indicates that enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit in response to light rainfall and usually after 5 mm or more.

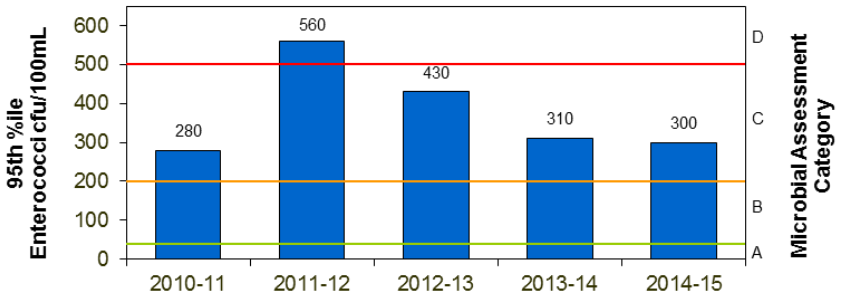
The site has been monitored since 1994.

Sanitary Inspection: **High**



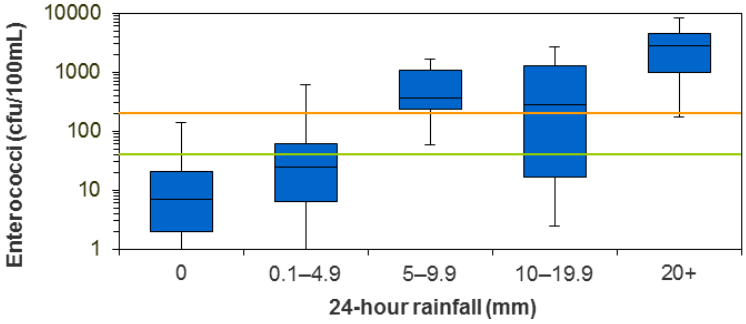
Microbial Assessment: **C**

Monitoring period for 2014–15 result is December 2012 to May 2015.

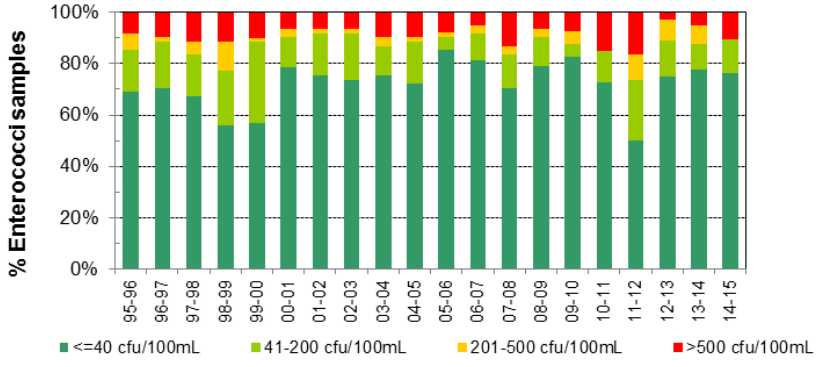


Response to rainfall

Rainfall from Mosman rain gauge



Trends in enterococci data through time



Gurney Crescent Baths

Beach Suitability Grade: F

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

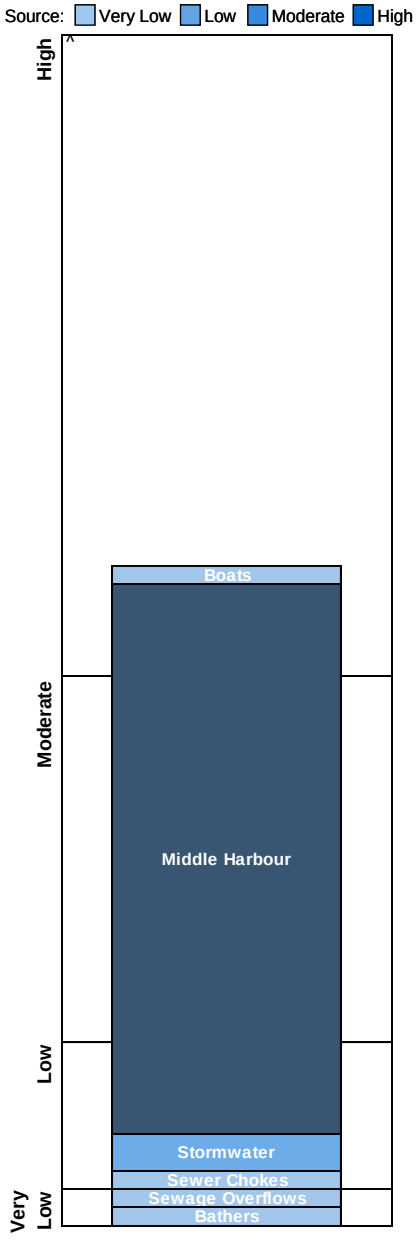
Gurney Crescent Baths are a 20 metre square netted swimming area located at Pickering Point, Middle Harbour. The baths are backed by a bush reserve and are not a popular swimming location.

The Beach Suitability Grade of Fair indicates that microbial water quality is occasionally influenced by faecal pollution, usually triggered by rainfall, with several potential sources of faecal contamination including river discharge and stormwater.

The response to rainfall graph indicates that enterococci levels increased with increasing rainfall, regularly exceeding the safe swimming limit in response to 5 mm of rainfall or more.

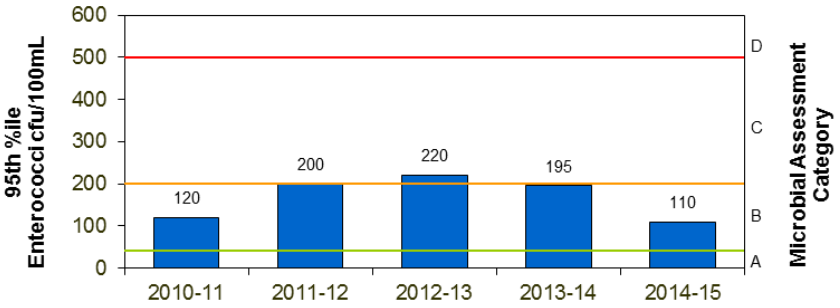
The site has been monitored since 1996.

Sanitary Inspection: **High**



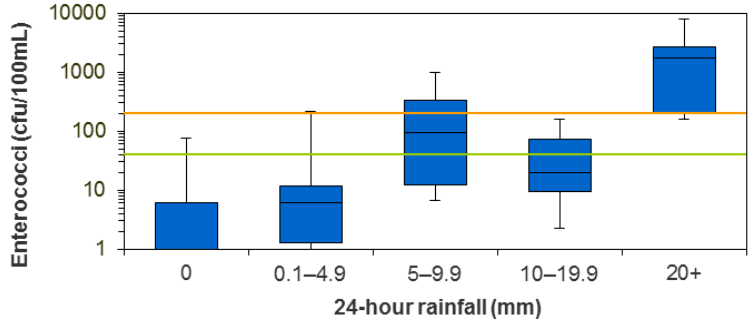
Microbial Assessment: **B**

Monitoring period for 2014–15 result is December 2012 to May 2015.

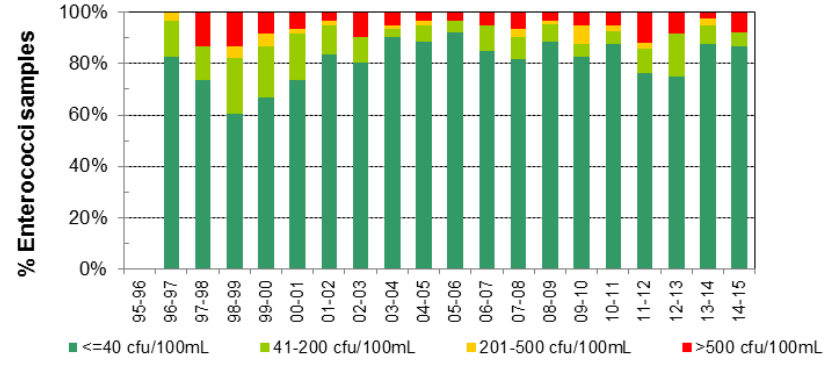


Response to rainfall

Rainfall from Mosman rain gauge

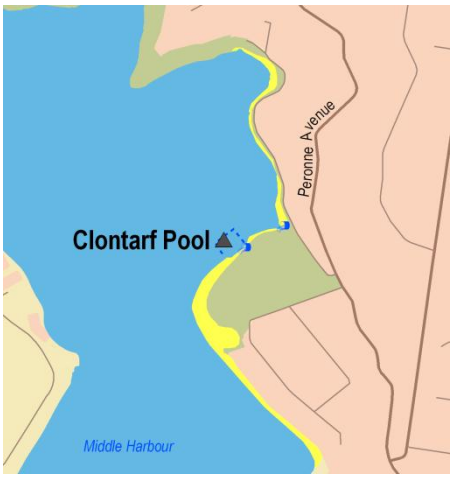


Trends in enterococci data through time



Clontarf Pool

Beach Suitability Grade: F



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

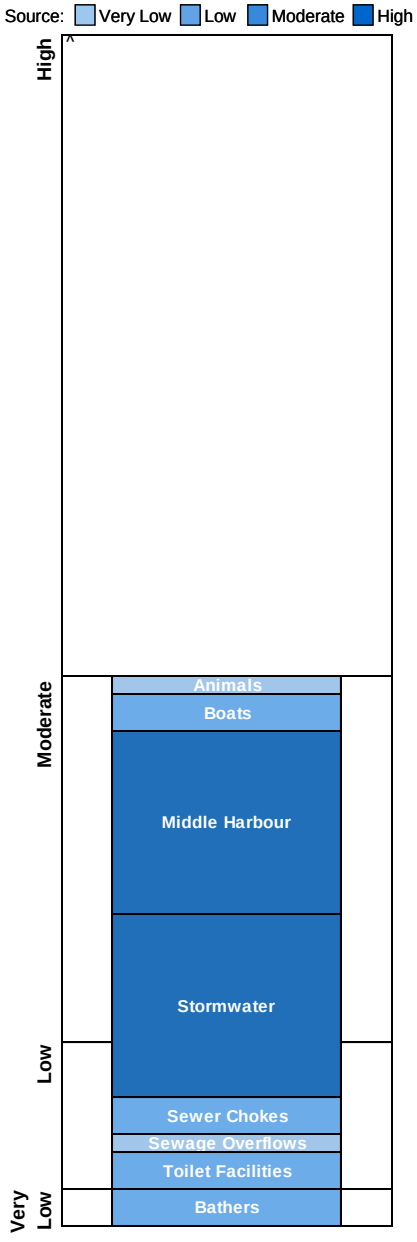
Clontarf Pool is a small netted swimming area accessed via Clontarf Reserve. The pool is backed by a narrow sandy beach and a park with a picnic area, barbeque facilities and a playground.

The Beach Suitability Grade of Fair indicates that microbial water quality is occasionally influenced by faecal pollution, usually triggered by rainfall, with several potential sources of faecal contamination including river discharge and stormwater.

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

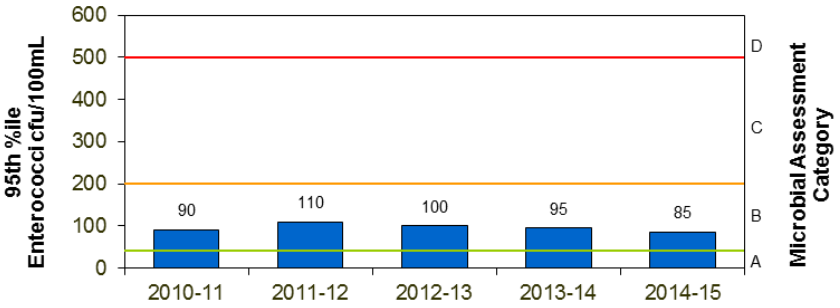
The site has been monitored since 1994. Microbial water quality has improved slightly since 2000–2001 owing to licensing of discharges from the sewerage system (and associated works such as the Northside Storage Tunnel) and improved management of stormwater.

Sanitary Inspection: **High**



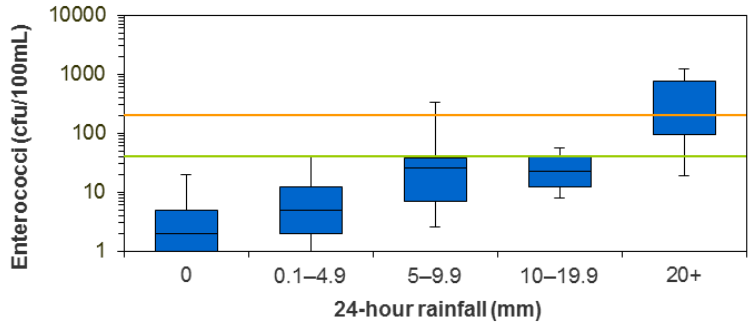
Microbial Assessment: **B**

Monitoring period for 2014–15 result is December 2012 to May 2015.

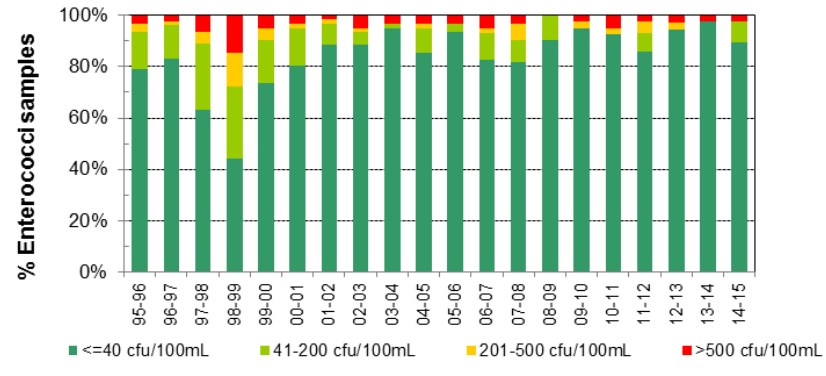


Response to rainfall

Rainfall from Mosman rain gauge



Trends in enterococci data through time



Forty Baskets Pool

Beach Suitability Grade: G

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

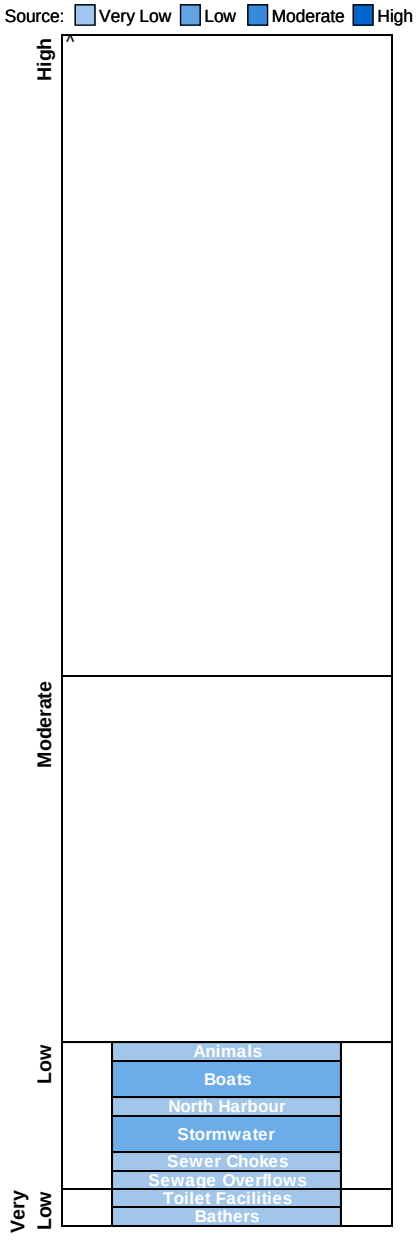
Forty Baskets Pool is a 20 by 40 metre netted swimming area at the northern end of Forty Baskets Beach in North Harbour. The beach is backed by boat storage and a small park with barbeque facilities.

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

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

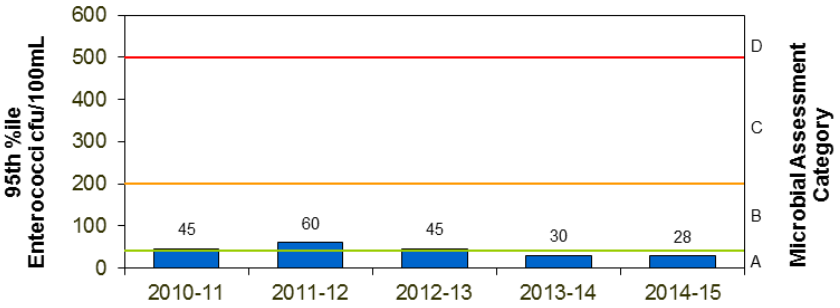
The site has been monitored since 1994. Microbial water quality has improved slightly since 2000–2001 owing to licensing of discharges from the sewerage system (and associated works such as the Northside Storage Tunnel) and improved management of stormwater.

Sanitary Inspection: **Moderate**



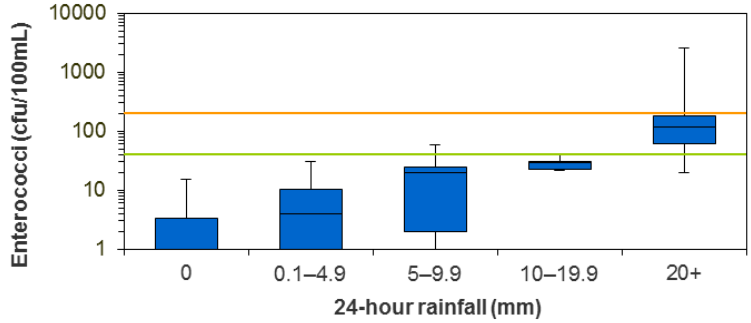
Microbial Assessment: **A**

Monitoring period for 2014–15 result is December 2012 to May 2015.

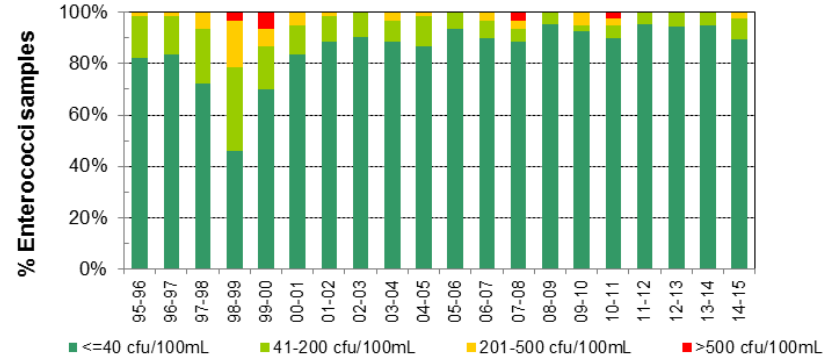


Response to rainfall

Rainfall from Manly rain gauge



Trends in enterococci data through time



Fairlight Beach

Beach Suitability Grade: G

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

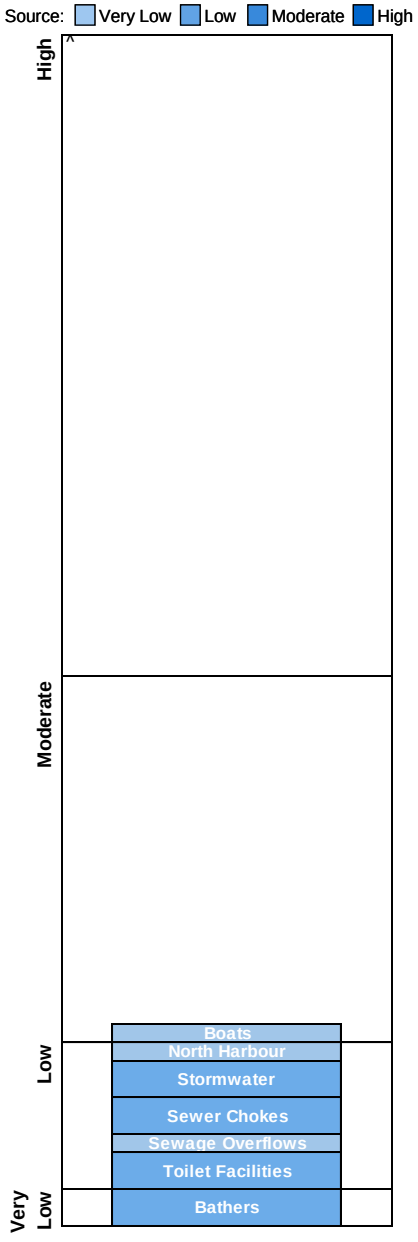
Fairlight Beach is a narrow beach located in North Harbour. The beach is backed by a small reserve and picnic area. A 25 metre pool filled with water from the harbour is adjacent to the beach.

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

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

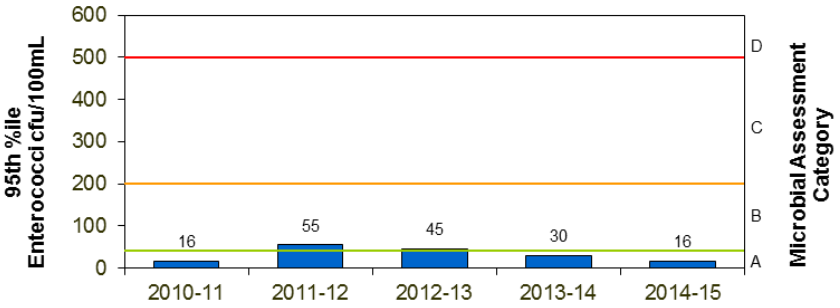
The site has been monitored since 1996. Microbial water quality has generally improved since 2000–2001 owing to licensing of discharges from the sewerage system and improved management of stormwater.

Sanitary Inspection: **Moderate**



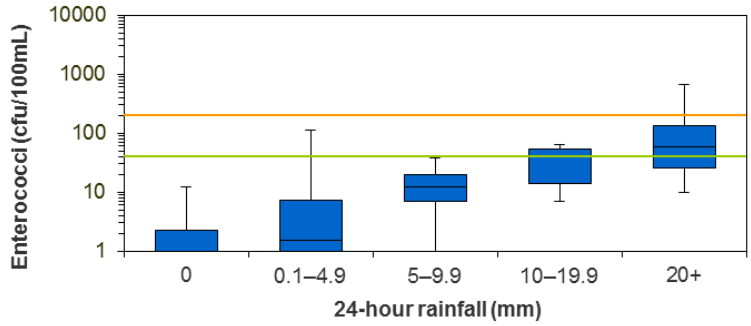
Microbial Assessment: **A**

Monitoring period for 2014–15 result is December 2012 to May 2015.

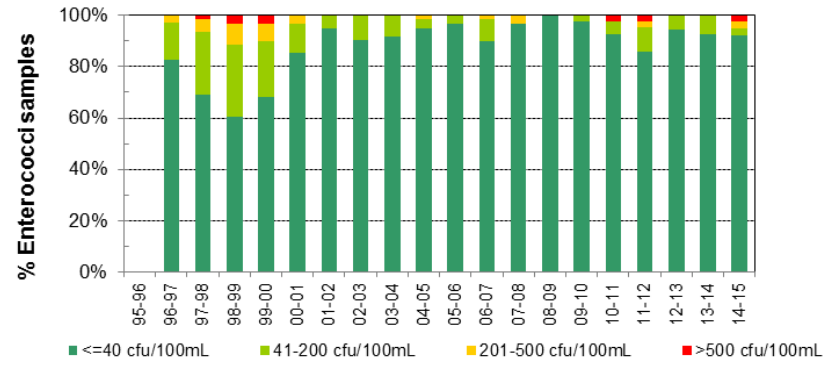


Response to rainfall

Rainfall from Manly rain gauge



Trends in enterococci data through time



Manly Cove

Beach Suitability Grade: G

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

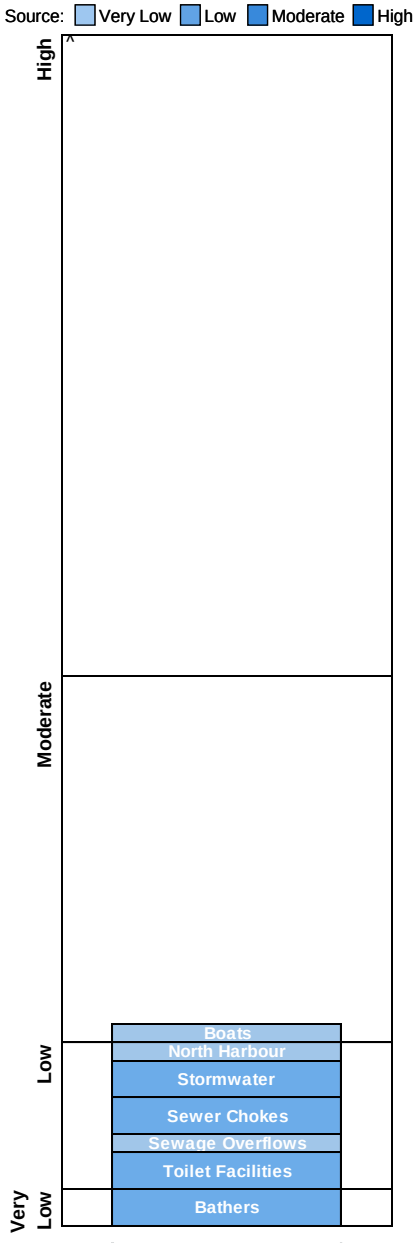
Manly Cove is a netted swimming enclosure near the centre of the 250 metre long beach that stretches to the west of the Manly Ferry Terminal. The beach is backed by a walking track and park.

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

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

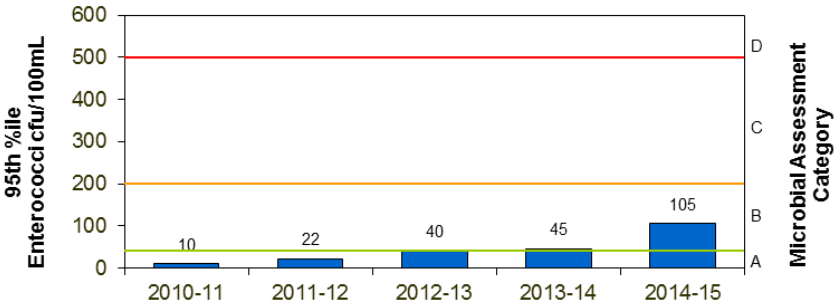
The site has been monitored since 1994. Microbial water quality has generally improved since 2000–2001 owing to licensing of discharges from the sewerage system and improved management of stormwater.

Sanitary Inspection: **Moderate**



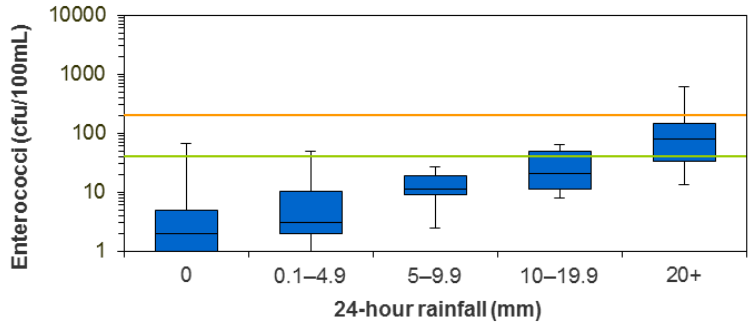
Microbial Assessment: **B**

Monitoring period for 2014–15 result is December 2012 to May 2015.

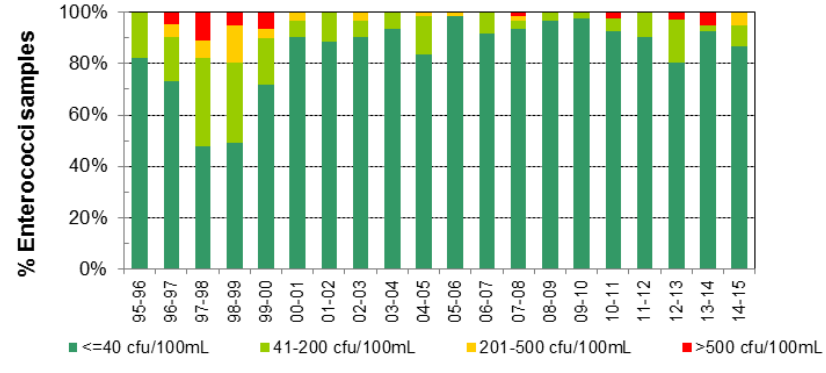


Response to rainfall

Rainfall from Manly rain gauge



Trends in enterococci data through time



Little Manly Cove

Beach Suitability Grade: G

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

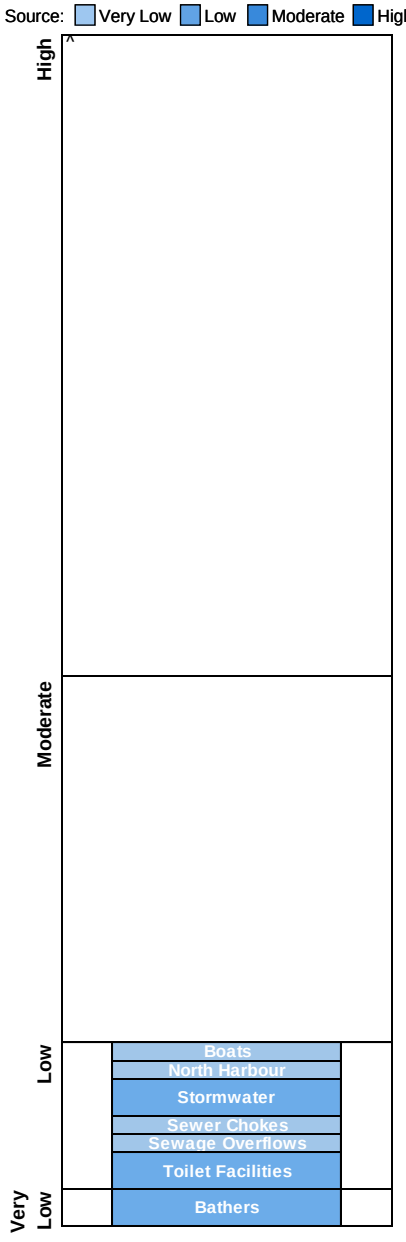
The 30 metre square swimming enclosure is at the eastern end of the beach in Little Manly Cove. The beach is backed by a small reserve. Boat launching facilities are at the western end of the beach.

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

The response to rainfall graph indicates that enterococci levels generally increased with increasing rainfall, often exceeding the safe swimming limit in response to 10 mm of rainfall or more.

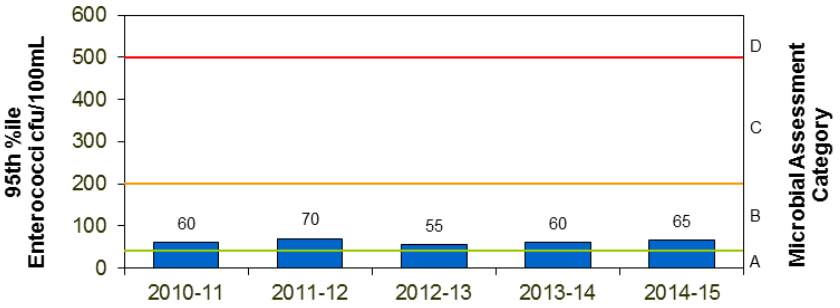
The site has been monitored since 1994. Microbial water quality has improved slightly since 2000–2001 owing to licensing of discharges from the sewerage system and improved management of stormwater.

Sanitary Inspection: **Moderate**



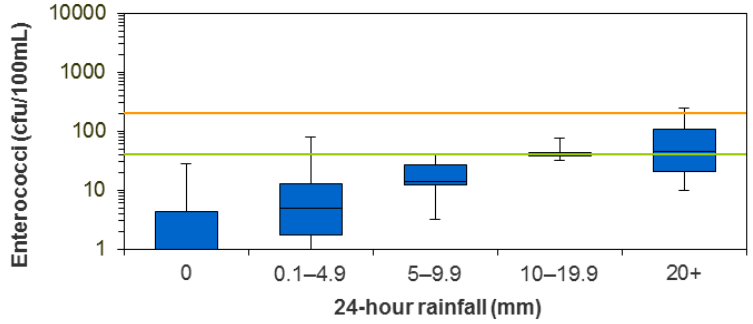
Microbial Assessment: **B**

Monitoring period for 2014–15 result is December 2012 to May 2015.

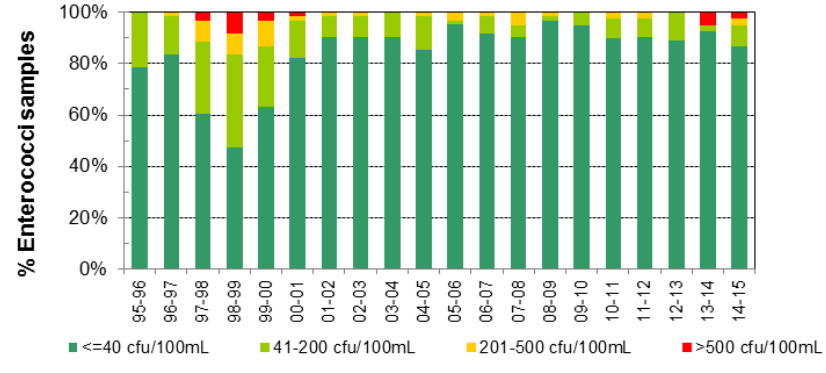


Response to rainfall

Rainfall from Manly rain gauge



Trends in enterococci data through time



Southern Sydney (Sutherland and Southern Harbours)

State of the Beaches 2014–2015

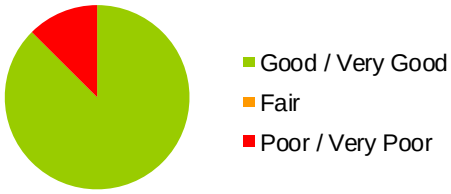
Overall results

Percentage of sites graded as Good or Very Good:

64%	75%	89%	**89%**
2011–12	2012–13	2013–14	2014–15

Twenty-five of the 28 swimming sites in Bate Bay, Botany Bay, lower Georges River and Port Hacking were graded as Very Good or Good in 2014–2015, similar to results from the previous year.

Ocean beaches



Seven of the eight ocean beaches in Bate Bay were graded as Very Good or Good.

Greenhills Beach, Wanda Beach, Elouera Beach, North Cronulla Beach, Shelly Beach and Oak Park were graded as Very Good. These sites all had excellent water quality and were suitable for swimming almost all of the time.

South Cronulla Beach was graded as Good. Microbial water quality was suitable for swimming most of the time, with enterococci levels rarely exceeding the safe swimming limit.

Boat Harbour was classified as Poor. While microbial water quality was generally suitable for swimming for up to 79 per cent of the time, elevated enterococci levels were occasionally measured during dry weather conditions and following low levels of rainfall. As a precaution, swimming should be avoided at Boat Harbour during and for one day following rainfall or if there are signs of pollution, such as discoloured water or floating debris.

The creek at the northern end of the beach has been identified as the source of ongoing low levels of contamination at Boat Harbour. Over summer 2014–2015, Beachwatch investigated whether the source of contaminants within the creek's catchment was human using caffeine analysis. The results were inconclusive.

Best beaches

Greenhills Beach, Wanda Beach, Elouera Beach, North Cronulla Beach, Shelly Beach, Oak Park, Jibbon Beach and **Congwong Bay**

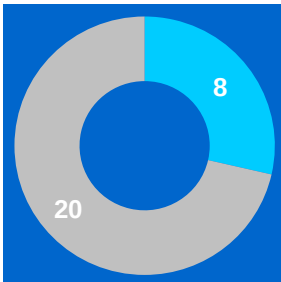
These sites had excellent water quality and were suitable for swimming almost all of the time.

28
sites

every 6 days*

1370
samples

year round*

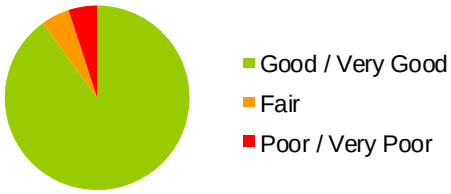


- 8 Ocean Beaches
- 20 Estuarine Sites
- 0 Lake/Lagoon Sites
- 0 Ocean Baths

* Beachwatch samples the ocean beaches every sixth day throughout the year, and estuarine beaches every sixth day between October and April, and monthly from May to September.

See **How to Read this Report** for explanations of graphs and Beach Suitability Grades.

Estuarine beaches



Jibbon Beach in Port Hacking and Congwong Bay in Botany Bay were graded as Very Good. These sites had excellent water quality and were suitable for swimming almost all of the time.

Sixteen of the 20 estuarine beaches were graded as Good: Silver Beach, Como Baths, Jew Fish Bay Baths, Oatley Bay Baths, Carss Point Baths, Sandringham Baths, Dolls Point Baths, Ramsgate Baths, Monterey Baths, Brighton-Le-Sands Baths, Kyeemagh Baths, Yarra Bay and Frenchmans Bay in Botany Bay and lower Georges River, and Hordens Beach, Lilli Pilli Baths and Gunnamatta Bay Baths in Port Hacking. These sites had mostly good water quality, although elevated enterococci levels were recorded following rainfall.

Gymea Bay Baths in Port Hacking was graded as Fair. Water quality at this site showed much improvement, upgraded from Poor in 2013–2014. Water quality was suitable for swimming during dry weather only, with elevated enterococci levels frequently measured following light rainfall.

As a precaution, swimming should be avoided at sites in Botany Bay, lower Georges River and Port Hacking during and for up to three days following rainfall or if there are signs of stormwater pollution, such as discoloured water or floating debris.

Foreshores Beach was graded as Very Poor. Although microbial water quality was often suitable for swimming during dry weather conditions, the site is very susceptible to faecal contamination from the sewage overflows which discharge into Mill Pond Creek. To reduce the risk of contracting swimming related illnesses at this site, carefully follow the pollution advisories in the Beachwatch Pollution Forecast (www.environment.nsw.gov.au/beach), avoid swimming during and up to three days following light rainfall, of if there are signs of pollution such as discoloured water, odour or floating debris.

Management

Ocean beaches

To reduce the incidence of wet weather sewage overflows in beach catchments across the Cronulla Peninsula, Sydney Water has amplified sewer pipes and pumps and included storage tanks.

Sydney Water has inspected, cleaned and repaired sewer mains that have a high likelihood of discharging sewage to waterways if they become blocked. When significant tree root intrusion to the public sewer from the private sewer was identified, property owners were requested to remedy the problem.

Sutherland Shire Council has installed more than 20 systems to improve stormwater quality, including artificial wetlands, gross pollutant traps, continuous deflective separators and natural sand drainage systems. It has also undertaken education programs, drain stencilling and water quality monitoring of the drainage system.

Botany Bay and lower Georges River

Randwick City Council and Sydney Water are collaborating to do intense dry weather monitoring of stormwater drains across the northern shore of Botany Bay to identify sewer leaks. Leaks from public sewers are repaired by Sydney Water and leaks from private sewers are addressed by the council.

To reduce the incidence of wet weather sewage overflows in the catchments of Lime Kiln Bay, Jew Fish Bay, Gungal Bay, Oatley Bay and Neverfail Bay, Sydney Water has increased the capacity of sewer pipes and pumps and included storage tanks.

Sydney Water has inspected, cleaned and repaired sewer mains that have a high likelihood of discharging sewage to waterways if they become blocked in the catchment of Brighton-Le-Sands and Oatley Bay Baths. When significant tree root intrusion to the public sewer from the private sewer was identified, property owners were requested to remedy the problem.

Sydney Water operates seven gross pollutant traps across the Botany Wetlands and Penrhyn Estuary that prevent about 630

tonnes of sediment and floating debris from entering Botany Bay each year. A boom at Carss Park prevents about 20 cubic metres of floating debris from entering Carss Point Baths each year.

Randwick City Council recently completed the installation of a jointly funded stormwater harvesting system in Bicentennial Park which captures approximately 27 mega-litres of stormwater from Phillip Bay catchment per year for treatment and reuse. This water is used to irrigate the surrounding parks and vegetation, significantly reducing the amount of stormwater entering Yarra Bay.

Randwick City Council recently completed site remediation works and the installation of a major stormwater harvesting system at the new Chifley Sports Reserve (formerly called the Amateur Women's Sports Field). The 900,000 litre underground tank enables stormwater to be captured, stored, treated and used to irrigate all on-site turf and landscaping areas, saving an estimated 33 mega-litres of potable water annually, and reducing stormwater entering Yarra Bay.

Randwick City Council maintains 34 gross pollutant traps on stormwater lines leading to the local bays, which are all cleaned regularly. In the last year, approximately 240 tonnes of material was removed from these GPTs. There is also a systematic cleaning program for all drainage pits including a regular street sweeping program which assists with reducing stormwater pollution to the local bays.

Kogarah City Council is in the process of designing and constructing a stormwater harvesting plant in Carlton. Water from the plant will be used at Council's works depot for irrigation, vehicle wash-down, street sweeping and other uses. The system may be expanded to supply local industry and irrigation systems within the area. This will reduce stormwater entering Kogarah Bay, improving water quality.

Kogarah City Council also continues to develop water sensitive urban design projects, including a greenroof on its customer service centre. This structure not only treats and reduces stormwater, but provides a green space and habitat for organisms within the urban environment.

Kogarah City Council has installed an array of gross pollutant traps to prevent litter, organic matter, sediment and oil from entering its waterways. This includes continuous deflective separation units around Oatley Bay, a trash rack at Oatley Pleasure Grounds, butt traps around Kogarah Town Centre and six litter traps in underground pits at the Oatley Shopping Centre. Council has also installed two litter traps specially designed for tidal channels at the Beverley Park stormwater channel and the Carrs Park stormwater channel. Once litter comes into contact with the device it is immediately trapped within a gate system. Council staff are then able to clean out the system regularly.

Rockdale Council completed a comprehensive water quality program across 17 sites. Parameters monitored included nutrients, turbidity, heavy metals and sewage bacteria. The report identified hot spot areas to be targeted for future work.

Rockdale Council upgraded aerators at Scarborough Ponds to improve the habitat value of these ponds for fish, and the installation of floating reed beds in Bicentennial Ponds to remove excess nutrients before they reach Botany Bay. Council undertakes ongoing maintenance of litter and sediment control traps preventing pollutants from entering the waterways.

Hurstville Councils 'Peakhurst Light Industrial Stormwater Harvesting and Re-use Scheme' has provided over 25 ML of harvested stormwater to irrigate Hurstville Golf Couse in the year since it was commissioned in February 2014. At the constructed Lime Kiln Bay Wetlands a new hydraulic pathway has been installed to increase residence time of water in the sedimentation ponds, and improve circulation and dissolved oxygen levels. Designs are currently being commissioned for additional improvement works at both the wetlands and further upstream to improve the quality of water that is discharged to the Georges River. Council is also currently working towards the addition of a stormwater harvesting scheme at Gannons Park (Upper Boggywell Creek). This scheme will involve the re-naturalisation of Upper Boggywell Creek which runs through Gannon's Park and will include a bioretention system, wetland, storage pond and swales to remove pollutants and sediments from stormwater draining through Gannon's Park to the Georges River estuary. The treated water stored in the wetland will also be used to irrigate the sportsfield within the park, which will result in substantial water savings in the long term. Council have also had the Riverkeeper and Green Army teams working along creeklines and the foreshore of the Georges River to remove rubbish, weeds and debris.

Sutherland Shire Council's stormwater levy funds projects such as the installation of pipes, drains and stormwater quality improvement devices, as well as riparian revegetation works to alleviate flooding and improve water quality in creeks and rivers. The levy also funds stormwater infrastructure maintenance.

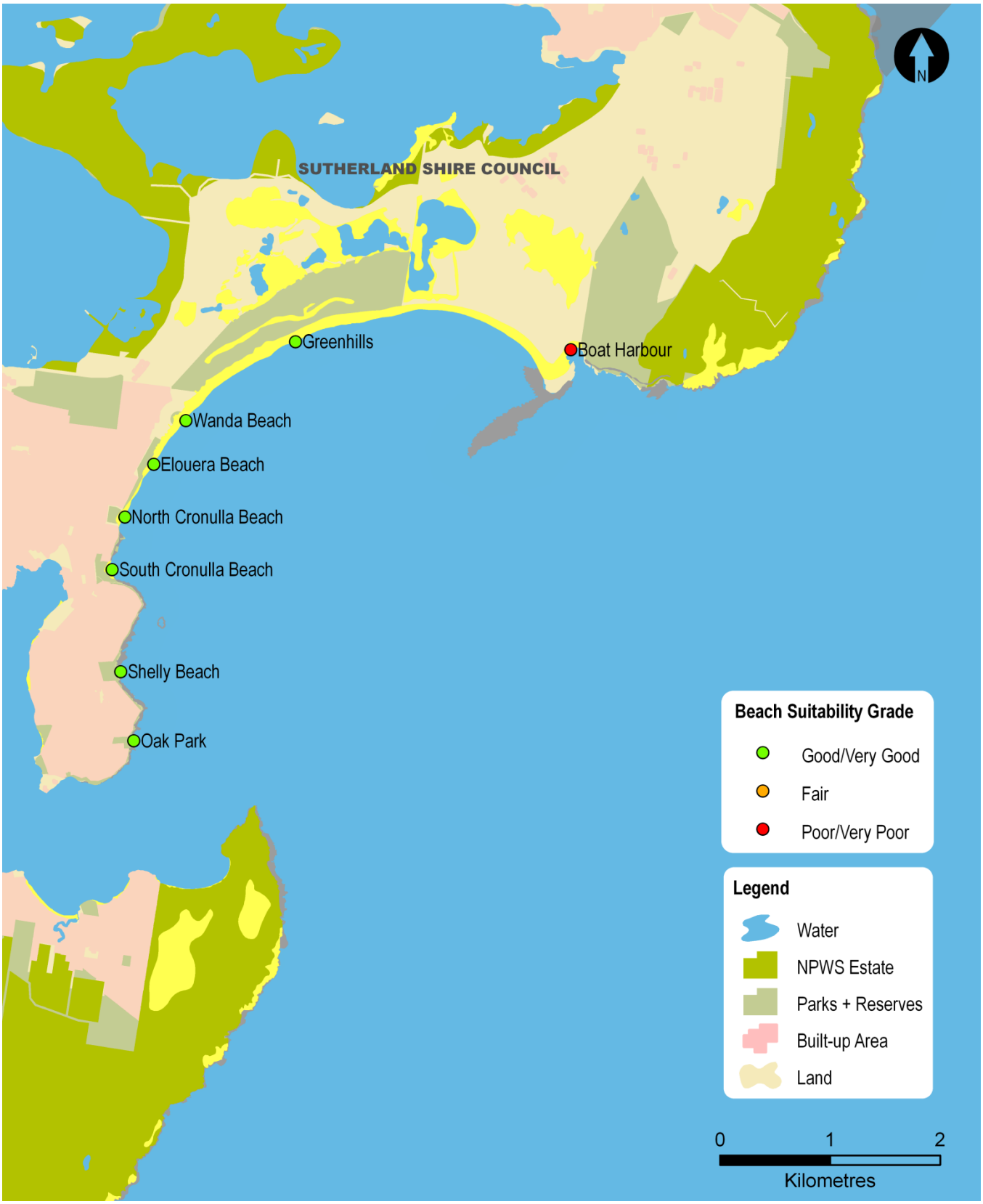
Port Hacking

There are 430 registered on-site sewage management systems in the Port Hacking catchment. The majority of these systems dispose of sewage by pumping it to the sewer main. Sutherland Shire Council inspects these systems to ensure they are operating correctly and to identify risks to human health or the environment.

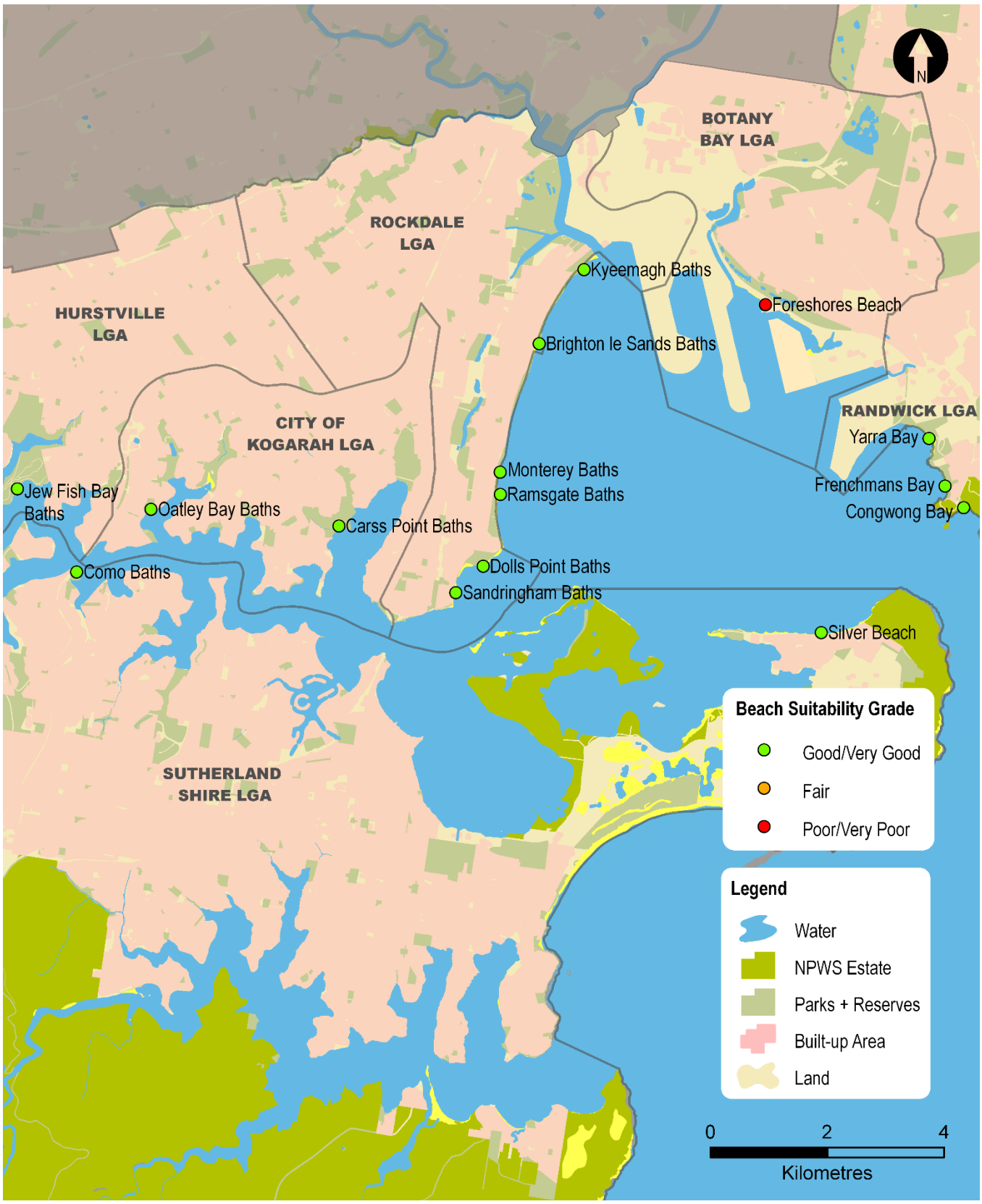
To reduce the incidence of wet weather sewage overflows in the catchments of Gunnamatta Bay Baths, Sydney Water has amplified pipes and pumps and included storage tanks across the Cronulla Peninsula.

Sydney Water has inspected, cleaned and repaired sewer mains on the northern side of Port Hacking that have a high likelihood of discharging sewage to waterways if they become blocked. When significant tree root intrusion to the public sewer from the private sewer was identified, property owners were requested to remedy the problem.

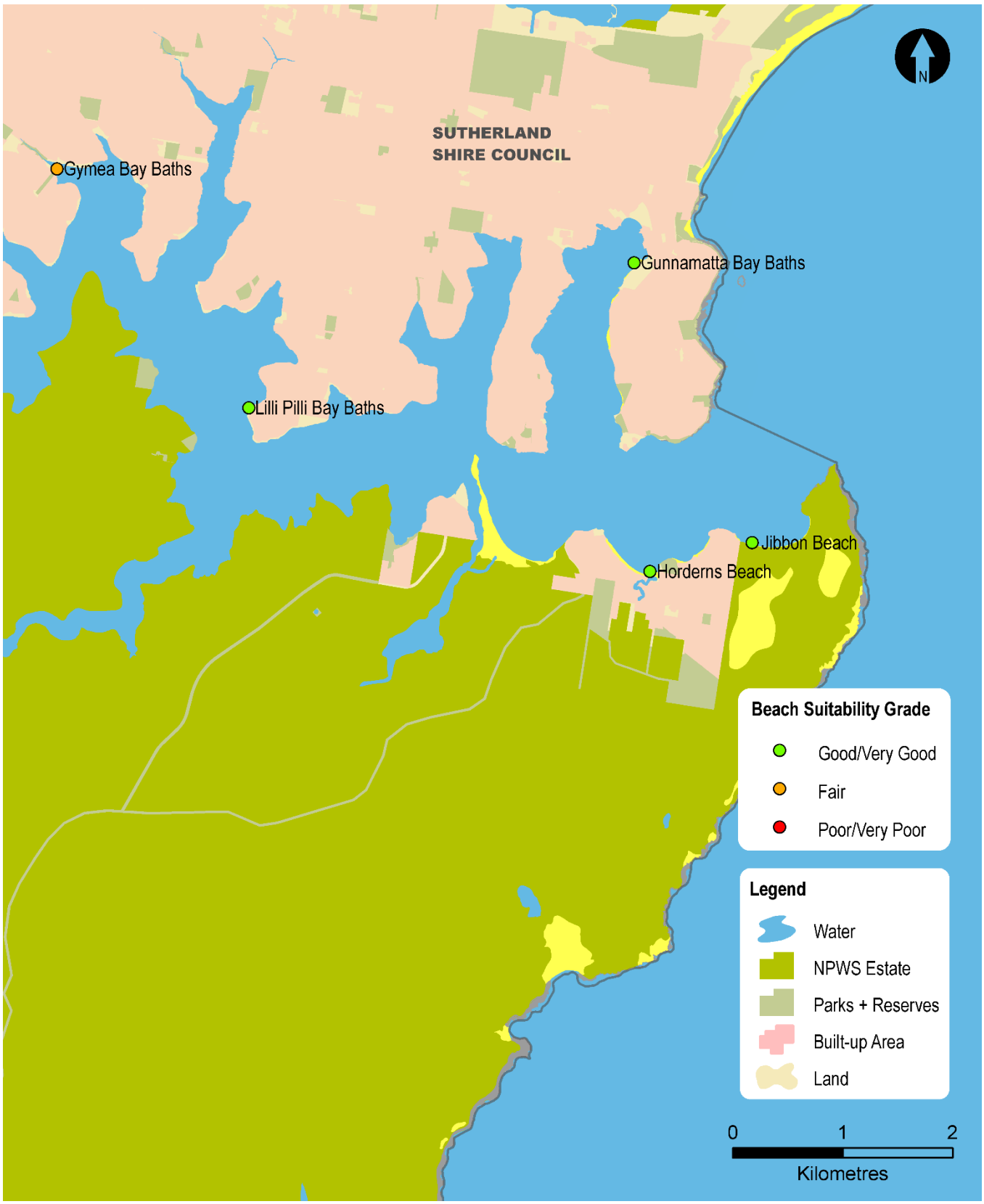
The Hacking River Stormwater Management Plan was developed by Wollongong and Sutherland councils and identifies and prioritises actions to improve stormwater quality and reduce flooding in the Port Hacking catchment.



Sampling sites and Beach Suitability Grades at Sydney's Southern Beaches



Sampling sites and Beach Suitability Grades in Botany Bay and lower Georges River



Sampling locations and Beach Suitability Grades in Port Hacking

Boat Harbour

Beach Suitability Grade: P

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

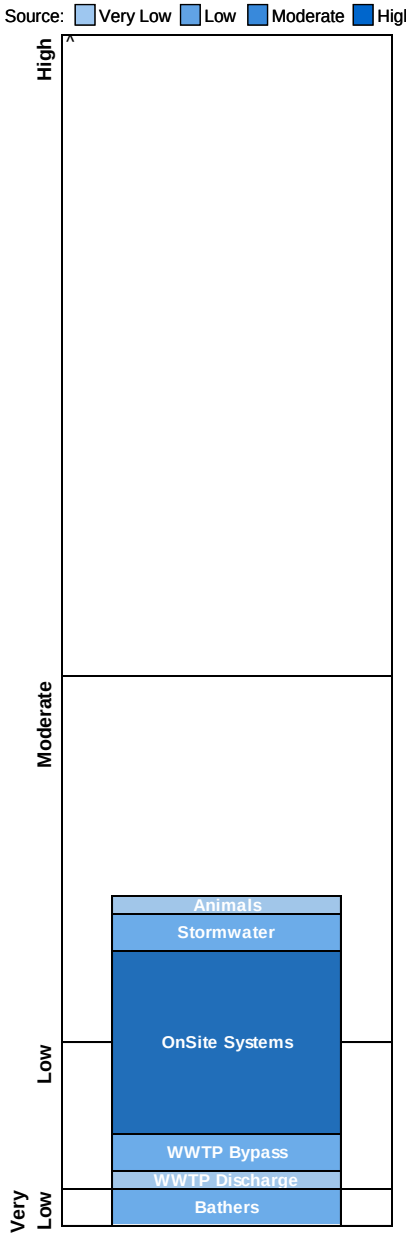
Boat Harbour is a narrow, 150 metre long private beach at the northern end of Bate Bay. It is the beach closest to the Cronulla WWTP outfall at Potter Point. Boat Harbour is not patrolled by lifeguards.

The Beach Suitability Grade of Poor indicates that microbial water quality is influenced by faecal pollution, with on-site sewer systems behind the beach a potential source of contamination.

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

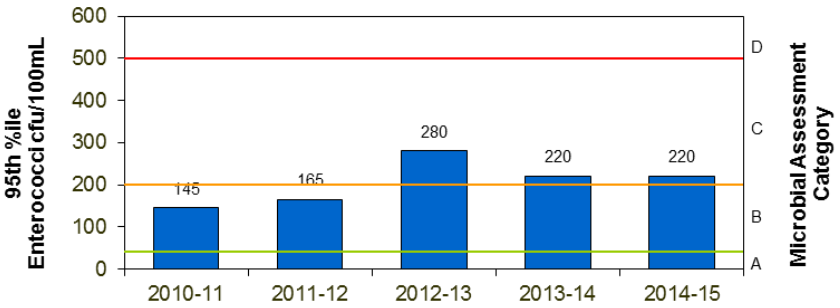
The site has been monitored since 1989. Microbial water quality improved in 2001–2002 following the upgrade of the Cronulla WWTP in April 2001. The creek at the northern end of the beach has been identified as the source of ongoing low levels of contamination in Boat Harbour. Further investigations have been unable to identify if the source of contaminants is human or non-human.

Sanitary Inspection: **Moderate**



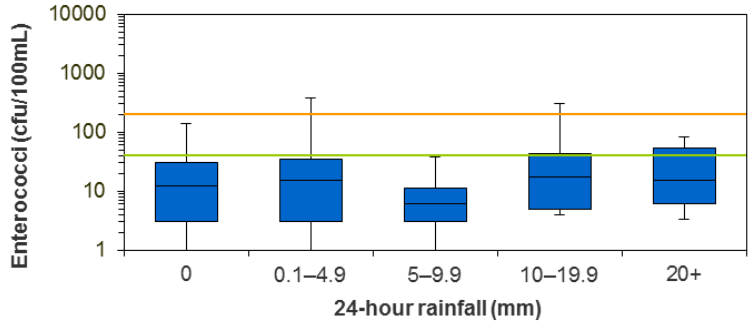
Microbial Assessment: **C**

Monitoring period for 2014–15 result is June 2013 to May 2015.

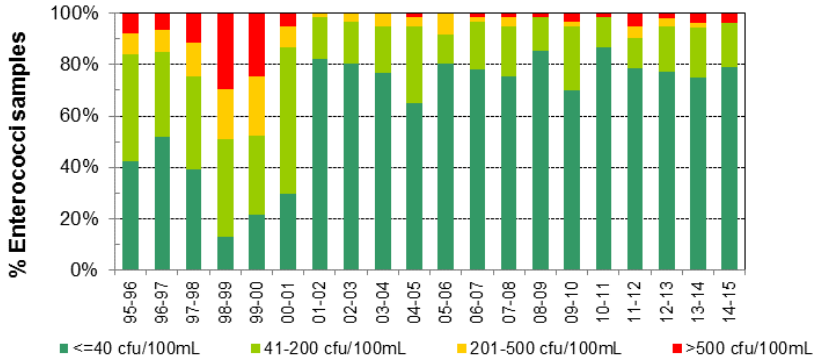


Response to rainfall

Rainfall from Cronulla STP rain gauge

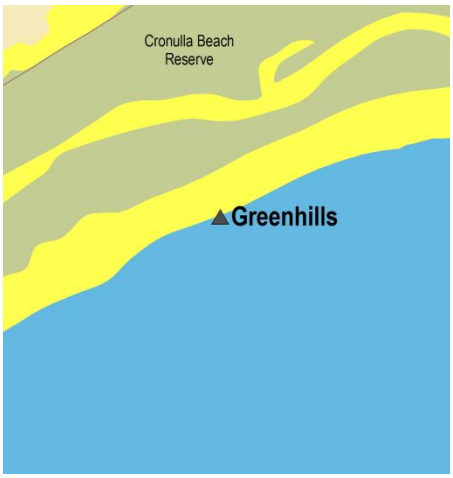


Trends in enterococci data through time



Greenhills Beach

Beach Suitability Grade: VG



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

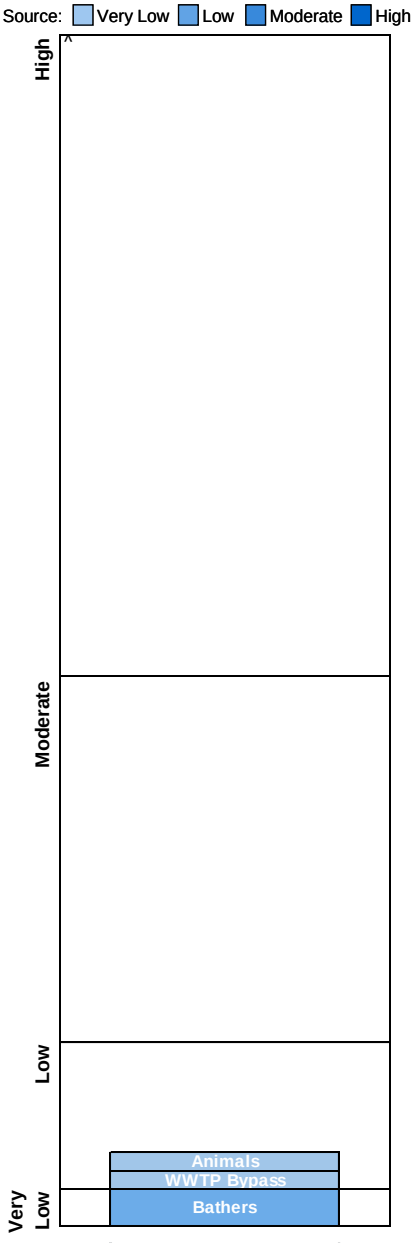
Greenhills Beach is three kilometres long and situated at the northern end of Bate Bay. Merries Reef protects the beach at the north end from the larger waves and rips common at the southern end. The beach is not patrolled.

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

The response to rainfall graph indicates that enterococci levels had little response to rainfall, occasionally exceeding the safe swimming limit after light rain.

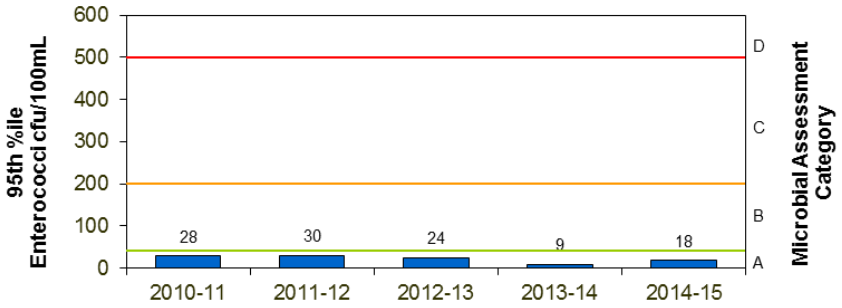
The site has been monitored since 1989. Microbial water quality improved in 2001–2002 following the upgrade of the Cronulla WWTP in April 2001. Since then, small variations between years have been due to rainfall patterns.

Sanitary Inspection: **Low**



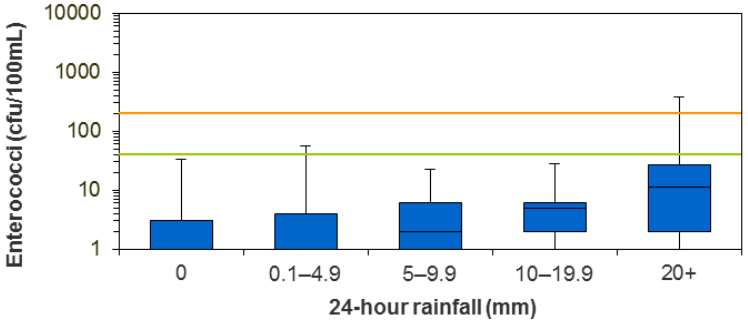
Microbial Assessment: **A**

Monitoring period for 2014–15 result is June 2013 to May 2015.

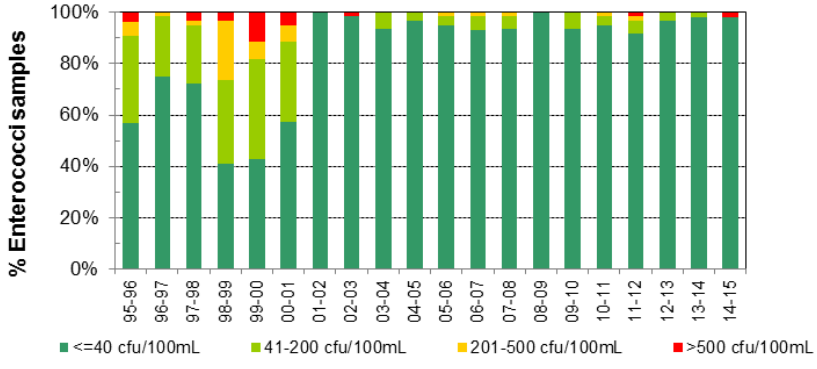


Response to rainfall

Rainfall from Cronulla STP rain gauge

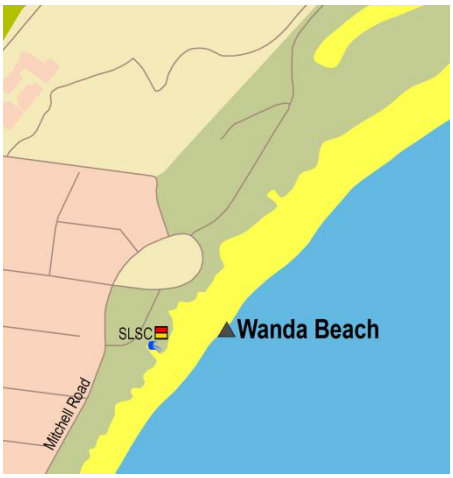


Trends in enterococci data through time



Wanda Beach

Beach Suitability Grade: VG



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

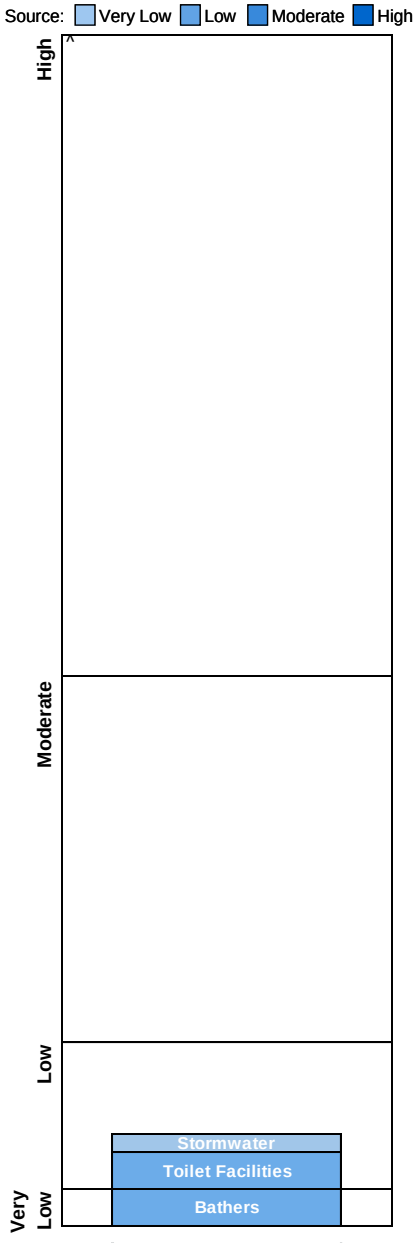
Wanda, Elouera and North Cronulla beaches form a 1.5 kilometre stretch of beach towards the southern end of Bate Bay. Swimming can be hazardous, with numerous rips. Lifeguards patrol from October to April.

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

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

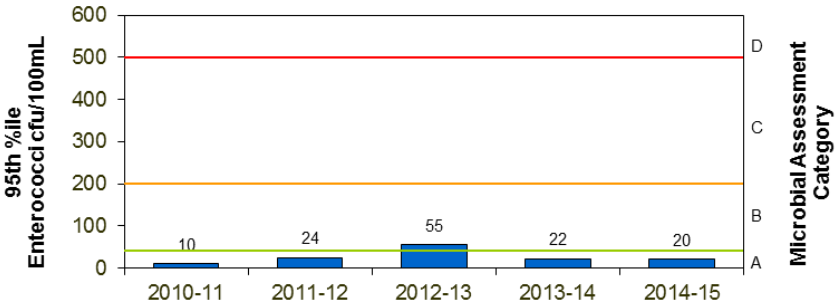
The site has been monitored since 1989. Microbial water quality improved in 2001–2002 following the upgrade of the Cronulla WWTP in April 2001.

Sanitary Inspection: **Low**



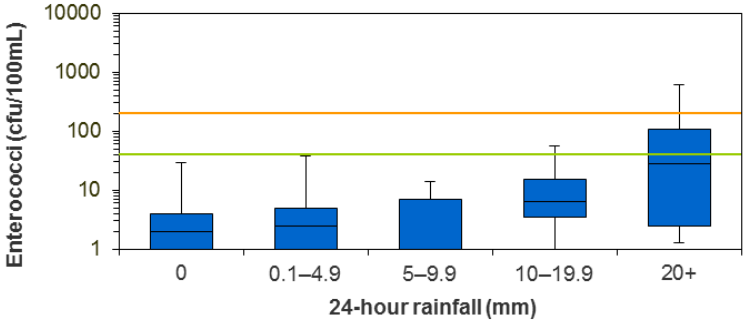
Microbial Assessment: **A**

Monitoring period for 2014–15 result is June 2013 to May 2015.

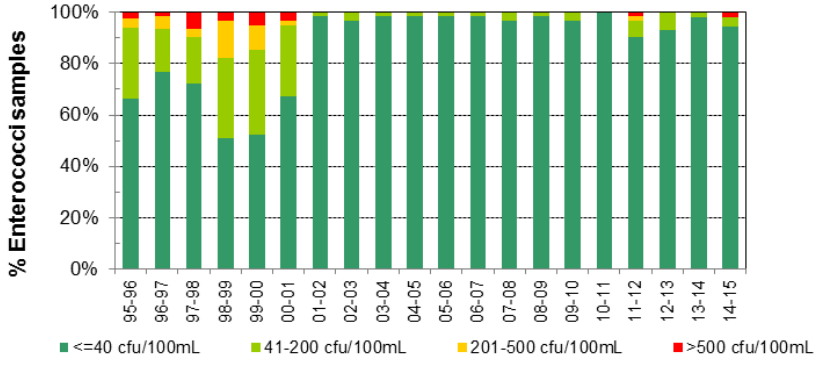


Response to rainfall

Rainfall from Cronulla STP rain gauge



Trends in enterococci data through time



Elouera Beach

Beach Suitability Grade: VG

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

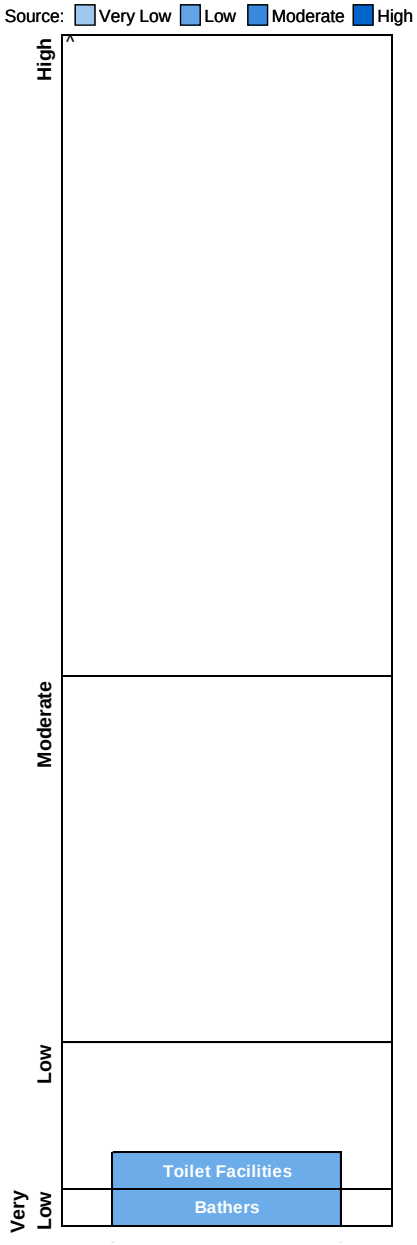
Wanda, Elouera and North Cronulla beaches form a 1.5 kilometre stretch of beach towards the southern end of Bate Bay. Swimming can be hazardous, with numerous rips, and lifeguards patrol the beach from October to April.

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

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

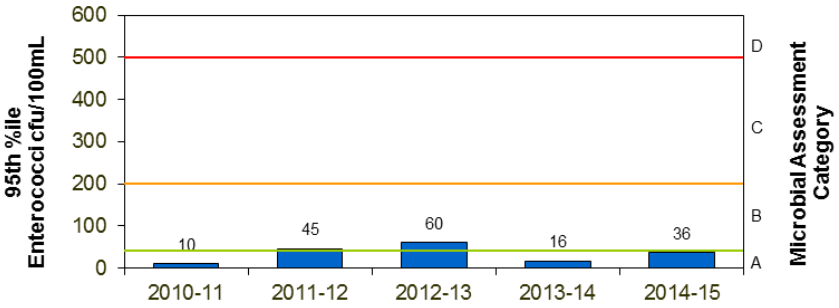
The site has been monitored since 1989. Microbial water quality improved in 2001–2002 following the upgrade of the Cronulla WWTP in April 2001.

Sanitary Inspection: **Low**



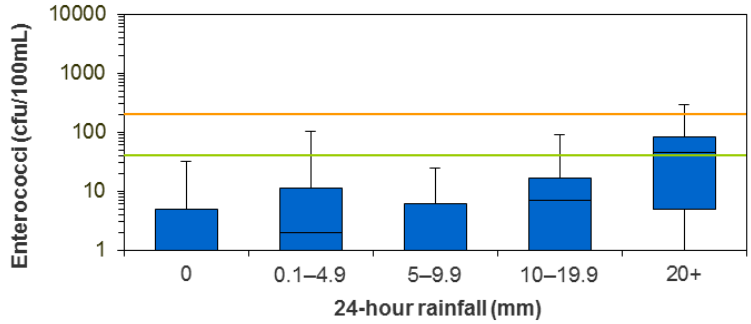
Microbial Assessment: **A**

Monitoring period for 2014–15 result is June 2013 to May 2015.

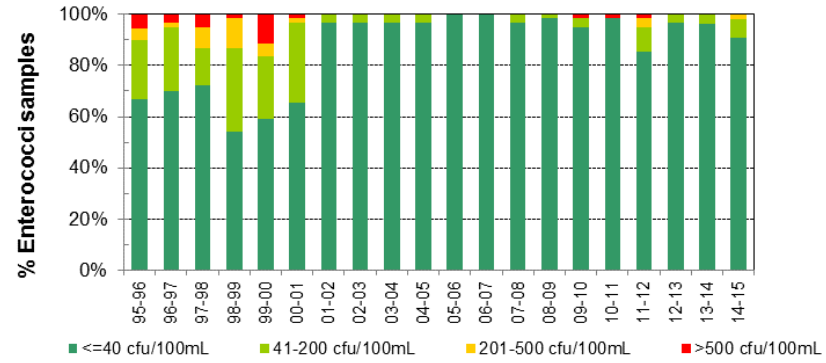


Response to rainfall

Rainfall from Cronulla STP rain gauge



Trends in enterococci data through time



North Cronulla Beach

Beach Suitability Grade: VG

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

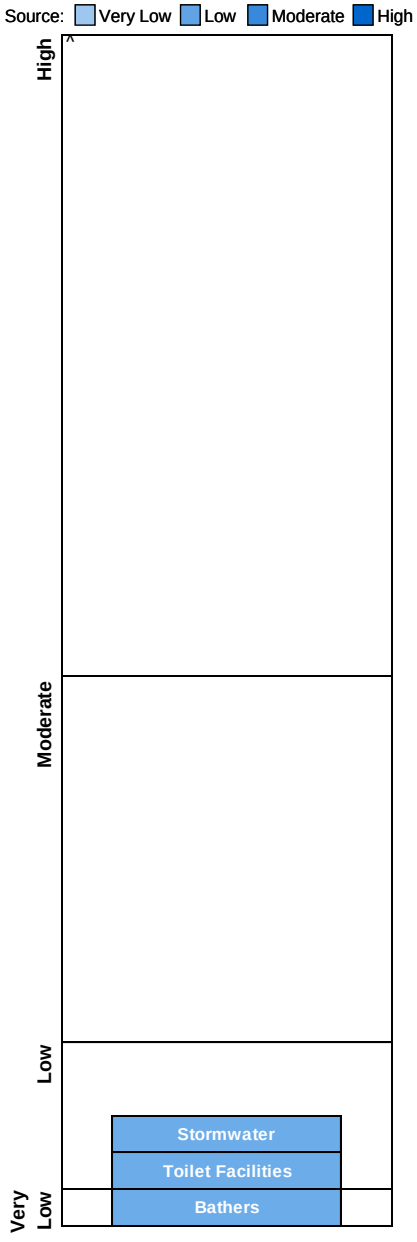
North Cronulla Beach is at the southern end of a 1.5 kilometre stretch of beach in Bate Bay. Swimming can be hazardous, with numerous rips. Lifeguards patrol the beach all year round.

The Beach Suitability Grade of Very Good indicates that microbial water quality is 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, frequently exceeding the safe swimming limit in response to 20 mm or more of rainfall.

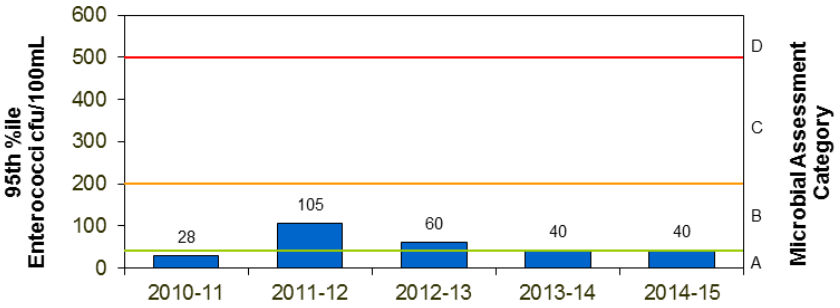
The site has been monitored since 1989. Microbial water quality improved in 2001–2002 following the upgrade of the Cronulla WWTP in April 2001.

Sanitary Inspection: **Low**



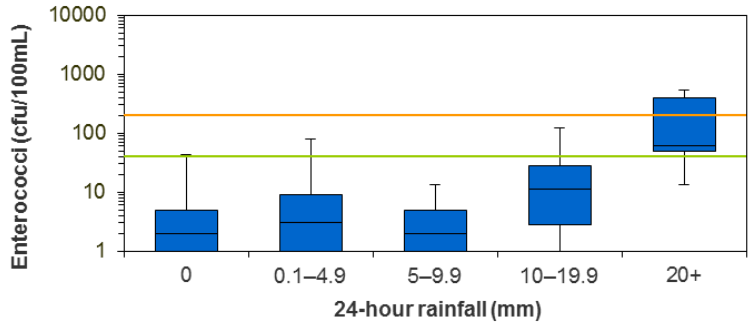
Microbial Assessment: **A**

Monitoring period for 2014–15 result is June 2013 to May 2015.

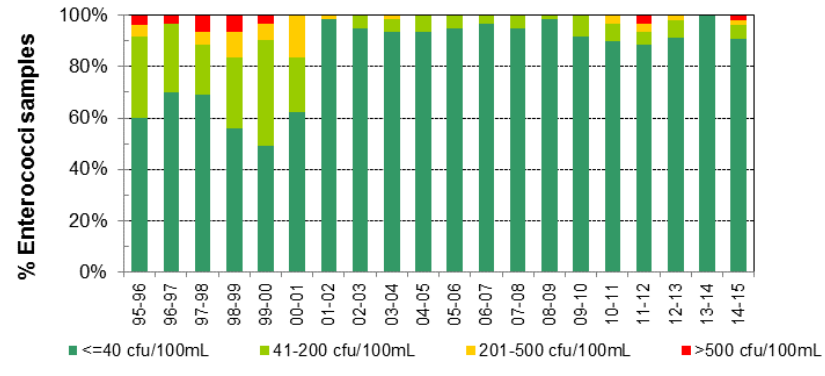


Response to rainfall

Rainfall from Cronulla STP rain gauge



Trends in enterococci data through time



South Cronulla Beach

Beach Suitability Grade: G

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

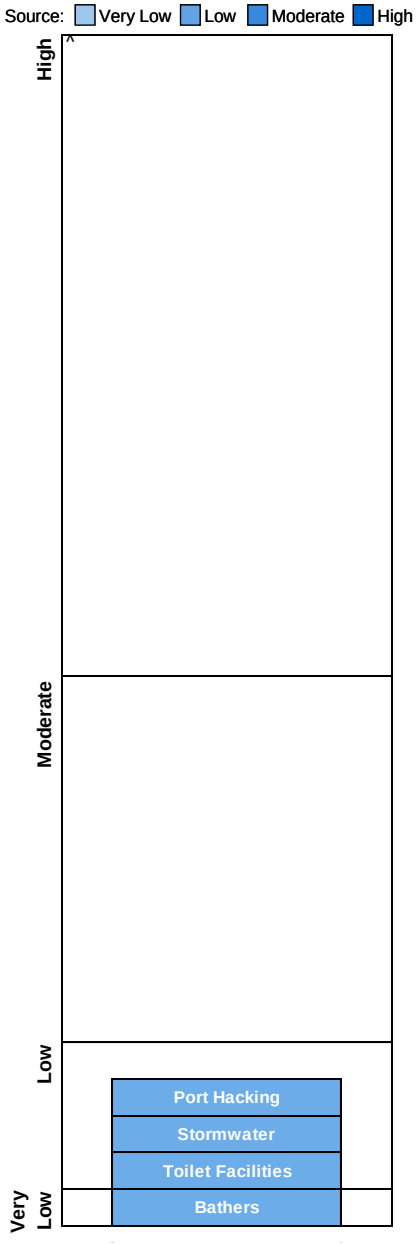
South Cronulla beach is 300 metres long and situated at the southern end of Bate Bay. Swimming is relatively safe, but rips occasionally form at either end of the beach. Lifeguards patrol the beach all year round.

The Beach Suitability Grade of Good indicates that microbial water quality is 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 increased slightly with increasing rainfall, regularly exceeding the safe swimming limit in response to 20 mm or more of rainfall.

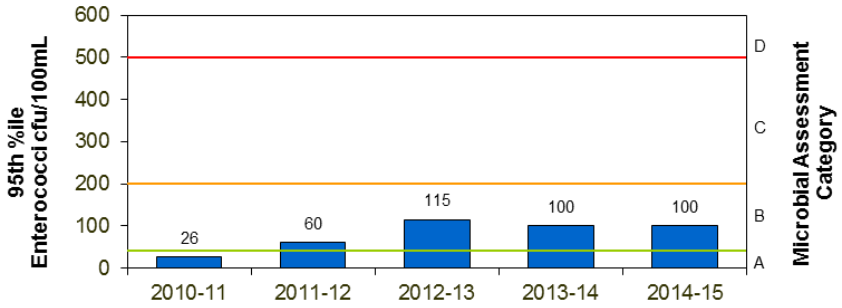
The site has been monitored since 1989. Microbial water quality improved in 2001–2002 following the upgrade of the Cronulla WWTP in April 2001. Since then, small variations among years have been the result of rainfall.

Sanitary Inspection: **Low**



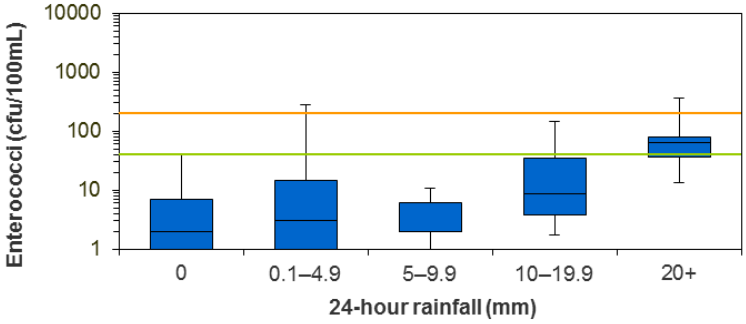
Microbial Assessment: **B**

Monitoring period for 2014–15 result is June 2013 to May 2015.

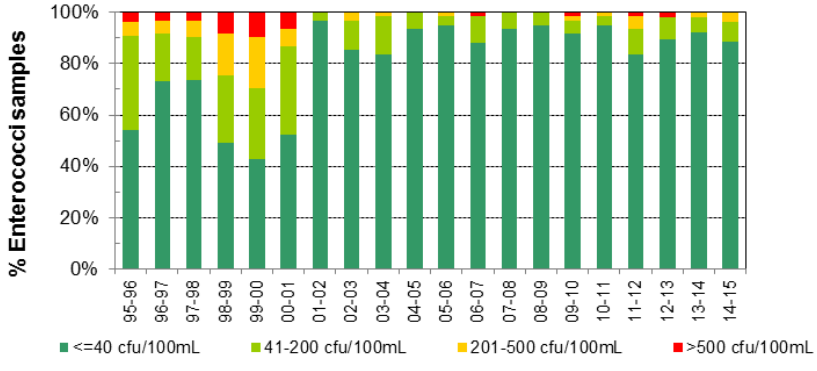


Response to rainfall

Rainfall from Cronulla STP rain gauge



Trends in enterococci data through time



Shelly Beach

Beach Suitability Grade: VG

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

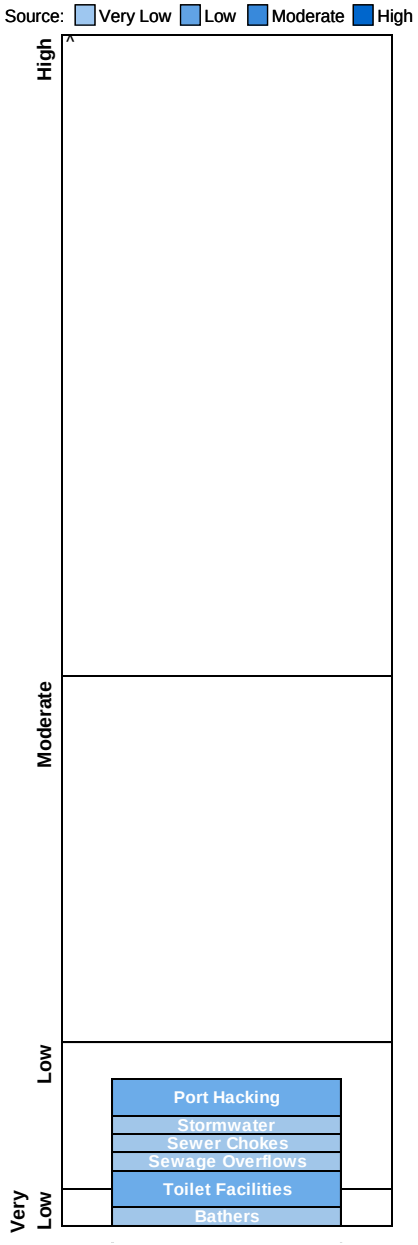
Shelly beach is 50 metres long and backed by a foreshore walk and a large park and picnic area. The adjacent ocean pool is the most suitable area for swimming. Lifeguards do not patrol the swimming area.

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

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

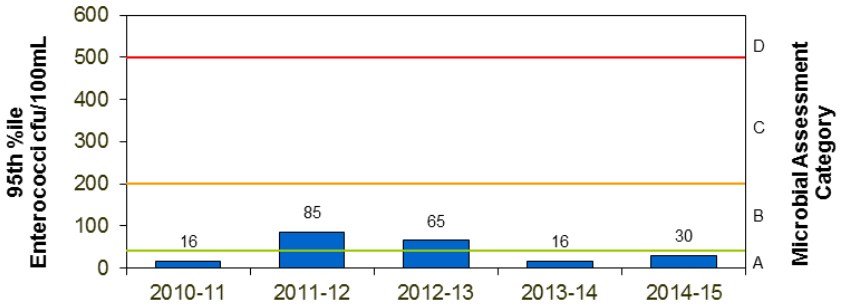
The site has been monitored since 1989. Microbial water quality improved in 2001–2002 following the upgrade of the Cronulla WWTP in April 2001. Since then, small variations among years have been the result of rainfall.

Sanitary Inspection: **Low**



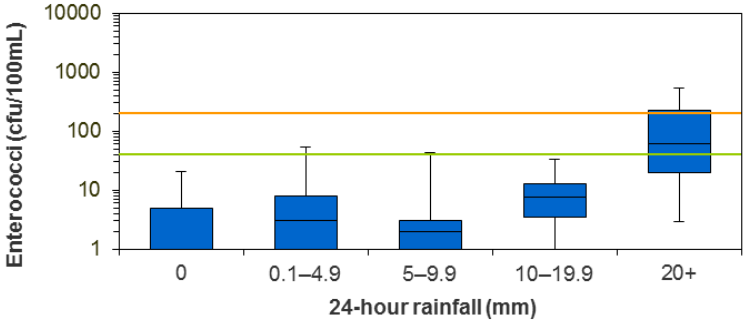
Microbial Assessment: **A**

Monitoring period for 2014–15 result is June 2013 to May 2015.

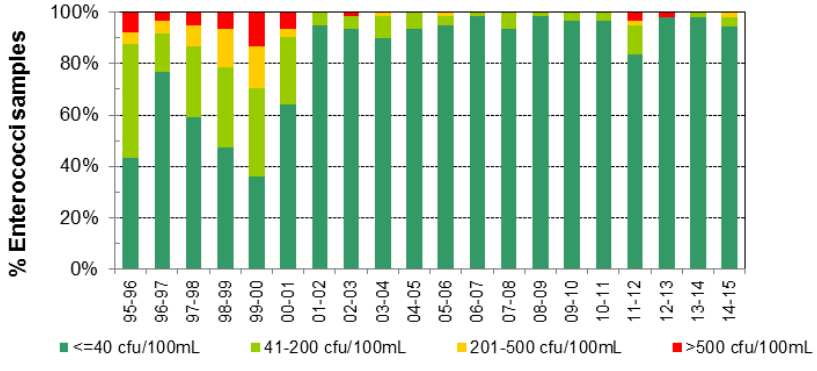


Response to rainfall

Rainfall from Cronulla STP rain gauge

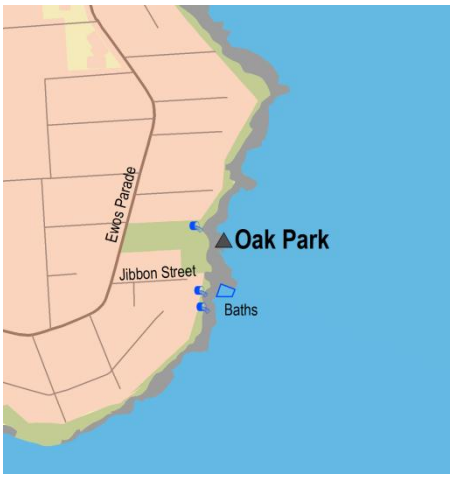


Trends in enterococci data through time



Oak Park

Beach Suitability Grade: VG



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

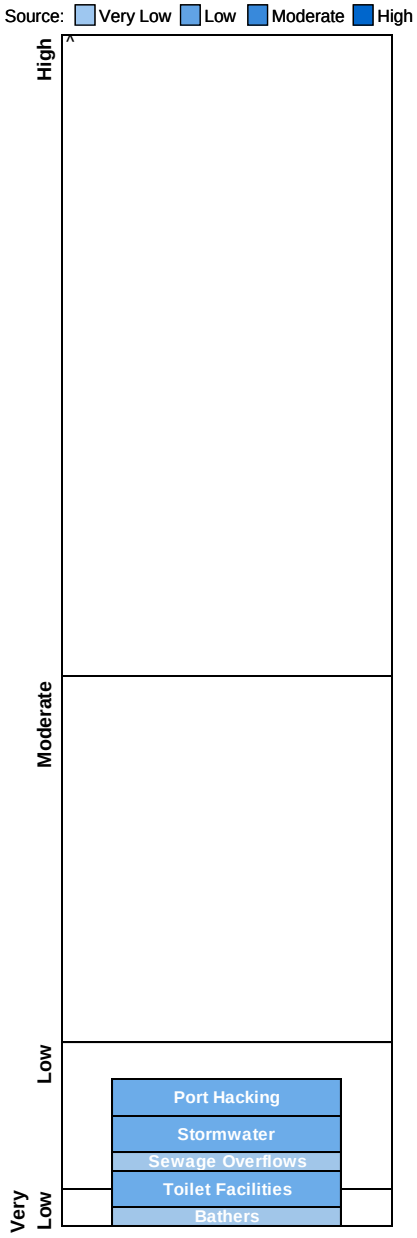
Oak Park beach is 15 metres long, with the most suitable area for swimming adjacent to the ocean pool. The beach is backed by a park and picnic area. Lifeguards do not patrol the swimming area.

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

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

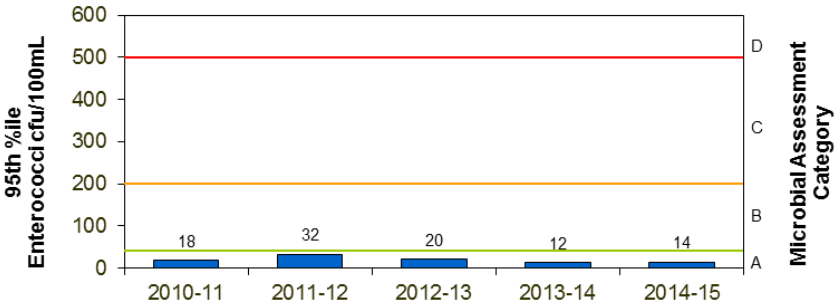
The site has been monitored since 1989. Microbial water quality improved in 2001–2002 following the upgrade of the Cronulla WWTP in April 2001. Since then, small variations among years have been the result of rainfall.

Sanitary Inspection: **Low**



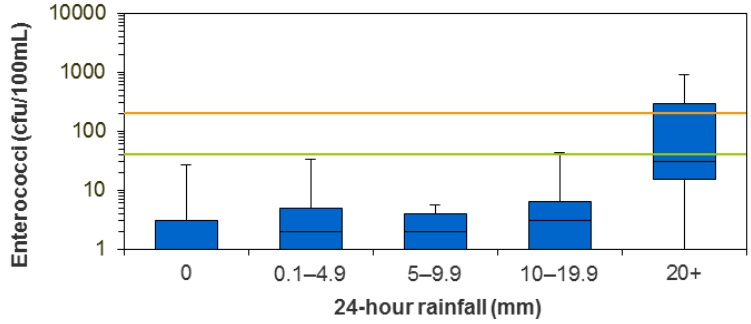
Microbial Assessment: **A**

Monitoring period for 2014–15 result is June 2013 to May 2015.

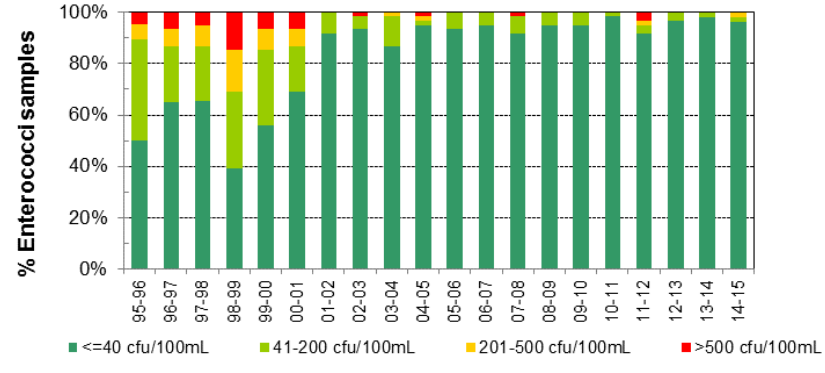


Response to rainfall

Rainfall from Cronulla STP rain gauge



Trends in enterococci data through time



Silver Beach

Beach Suitability Grade: G

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

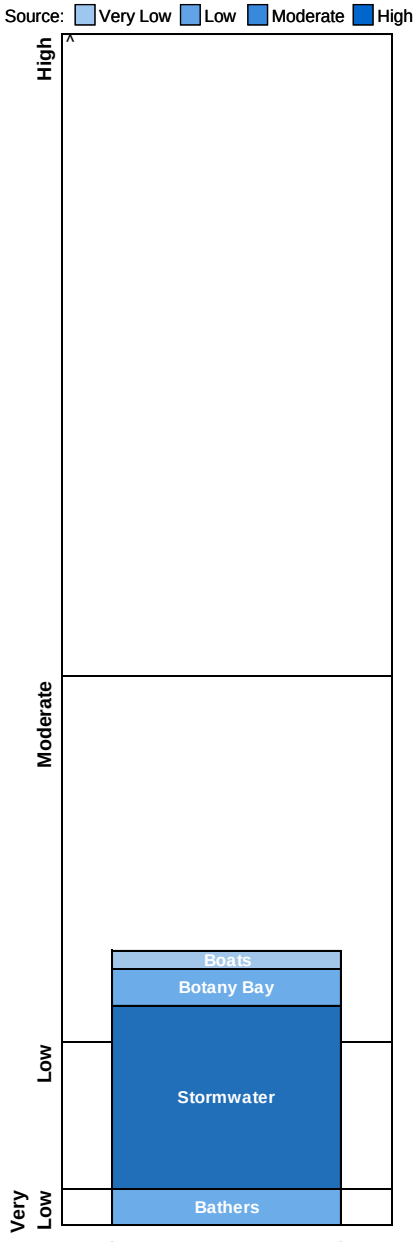
Silver Beach is approximately 2.8 kilometres long and is on the southern shore of Botany Bay. The netted swimming area is 150 by 100 metres and is near the centre of the beach.

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

The response to rainfall graph indicates that enterococci levels generally increased with increasing rainfall, often exceeding the safe swimming limit after 10 mm of rainfall or more.

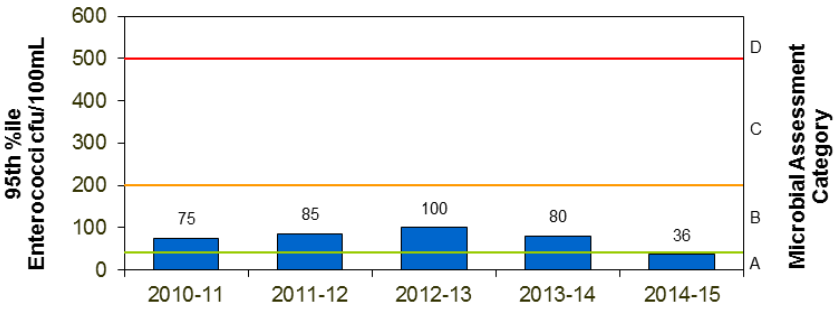
The site has been monitored since 1994. Microbial water quality has varied among years owing to variations in rainfall.

Sanitary Inspection: **Moderate**



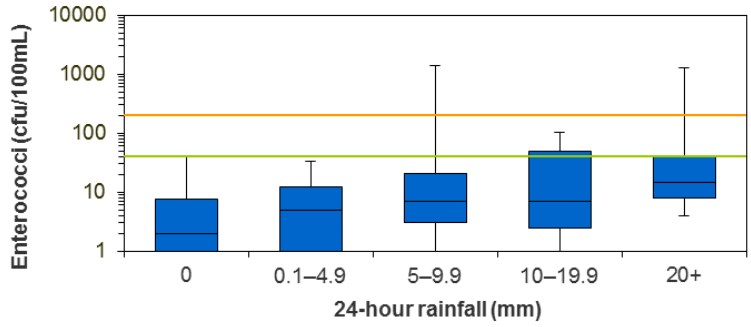
Microbial Assessment: **A**

Monitoring period for 2014–15 result is November 2012 to May 2015.

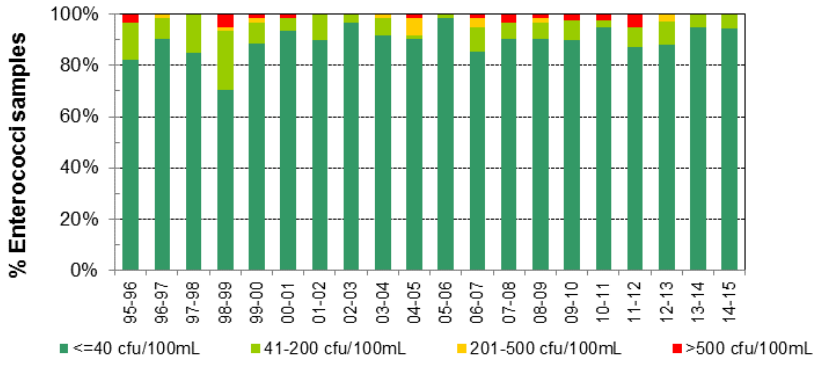


Response to rainfall

Rainfall from Malabar WWTP rain gauge

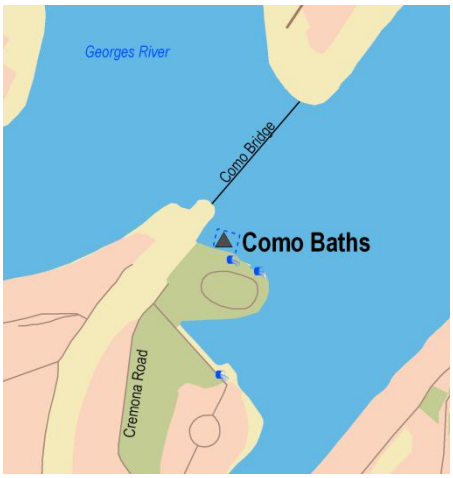


Trends in enterococci data through time



Como Baths

Beach Suitability Grade: G



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

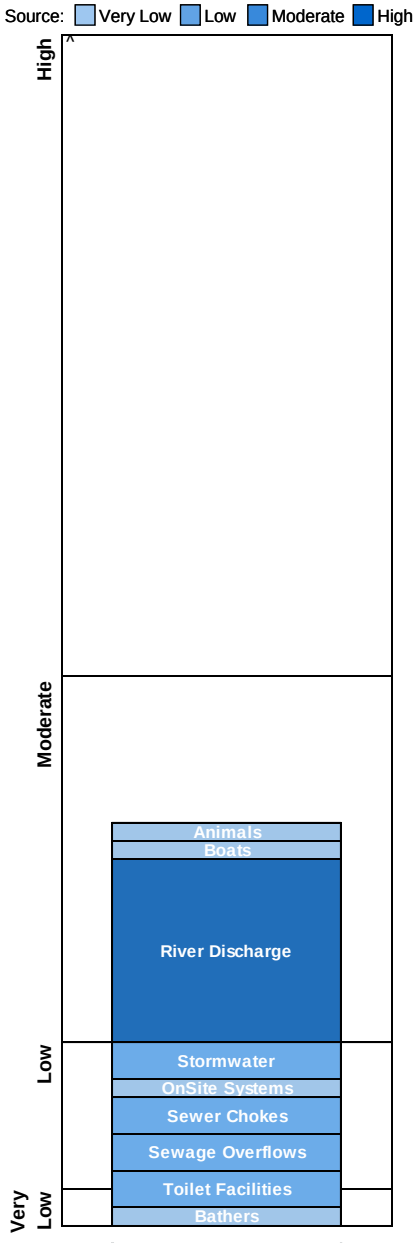
Como Baths are approximately 25 metres wide and backed by a narrow sandy beach in the lower Georges River. Adjacent to the baths is Como Pleasure Grounds, a heritage-listed park established in the 1880s.

The Beach Suitability Grade of Good indicates that the water quality is safe for swimming most of the time but can be susceptible to pollution after heavy rain, with potential faecal contamination from sources upstream in the Georges River.

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

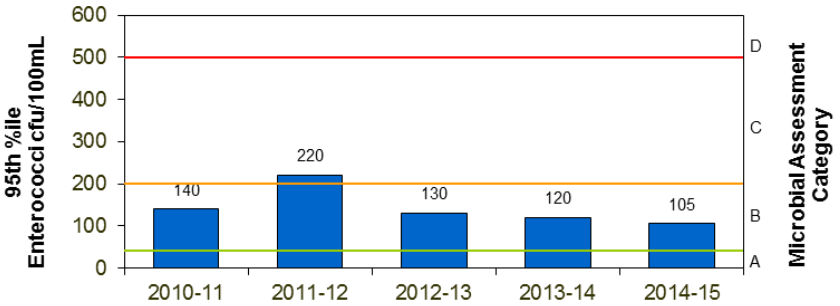
The site has been monitored since 1994. Microbial water quality has varied among years owing to variations in rainfall.

Sanitary Inspection: **Moderate**



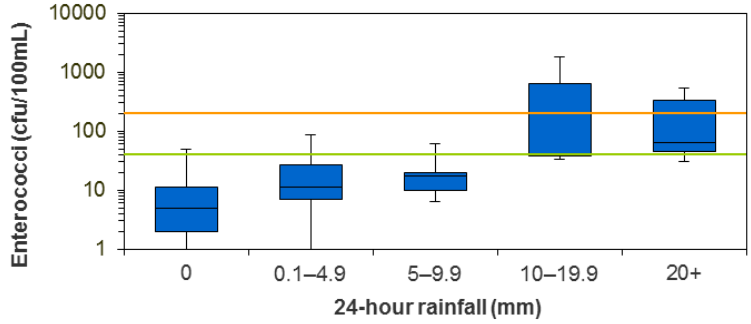
Microbial Assessment: **B**

Monitoring period for 2014–15 result is November 2012 to May 2015.

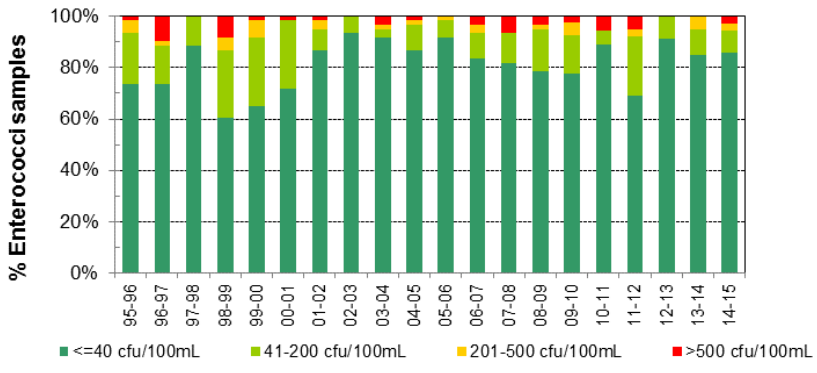


Response to rainfall

Rainfall from Kyle Bay rain gauge

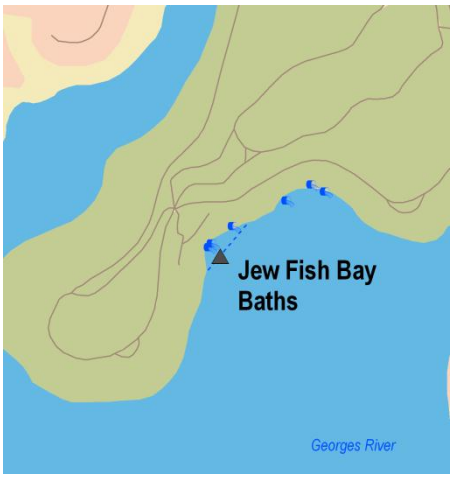


Trends in enterococci data through time



Jew Fish Bay Baths

Beach Suitability Grade: G



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

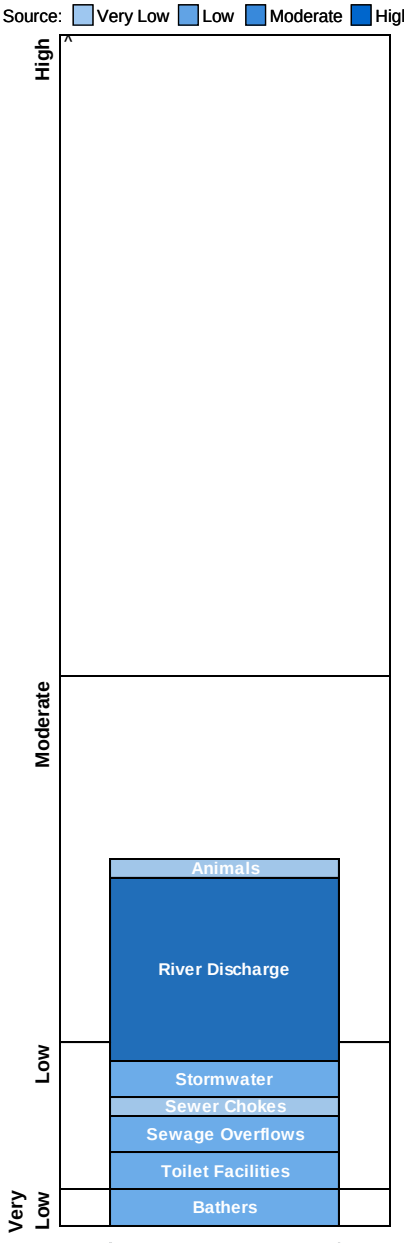
The baths are a 200 metre long netted swimming area located in Jew Fish Bay in the lower Georges River. The swimming area is backed by a narrow sandy beach and the extensive bushland of Oatley Park.

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

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

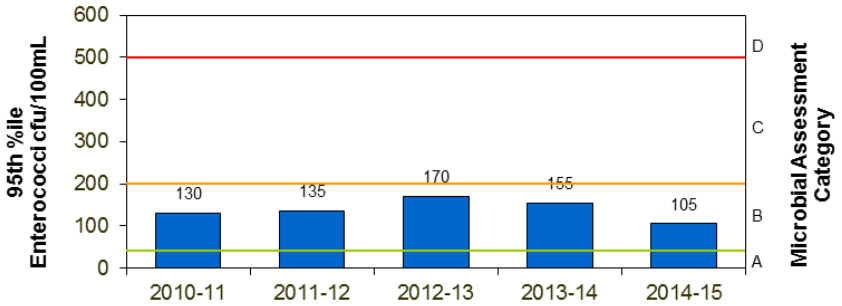
The site has been monitored since 1994. Microbial water quality has varied among years owing to variations in rainfall.

Sanitary Inspection: **Moderate**



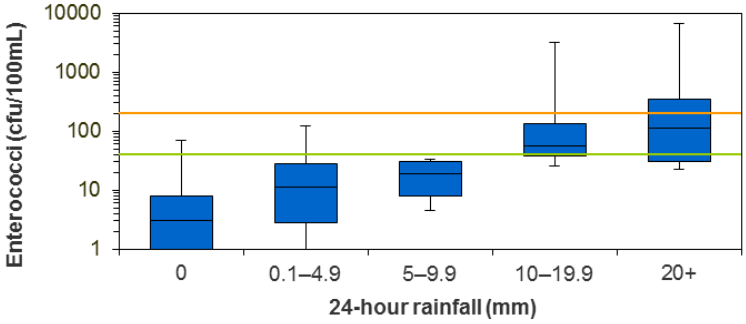
Microbial Assessment: **B**

Monitoring period for 2014–15 result is November 2012 to May 2015.

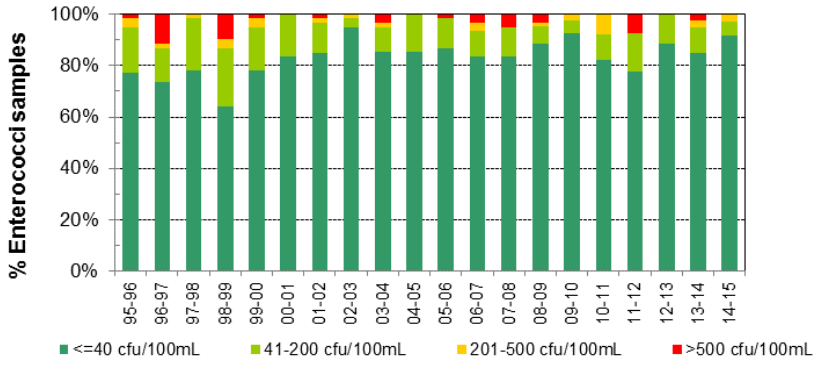


Response to rainfall

Rainfall from Kyle Bay rain gauge



Trends in enterococci data through time



Oatley Bay Baths

Beach Suitability Grade: G

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

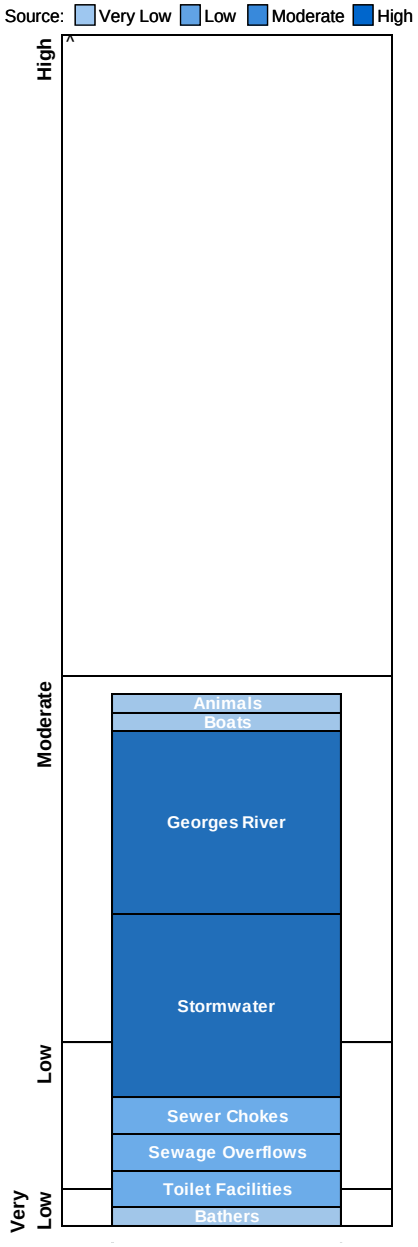
Oatley Bay Baths are located on the western shore of Oatley Bay in the lower Georges River. The netted swimming area is approximately 50 metres long and backed by a small beach and Oatley Pleasure Grounds.

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

The response to rainfall graph indicates that enterococci levels increased with increasing rainfall, regularly exceeding the safe swimming limit after 5 mm of rainfall or more.

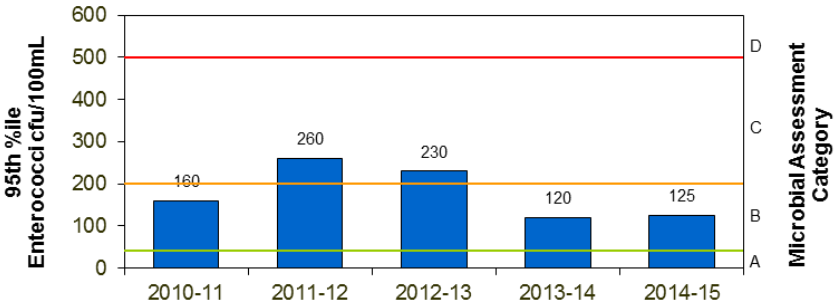
The site has been monitored since 1994. Microbial water quality has varied among years owing to variations in rainfall.

Sanitary Inspection: **Moderate**



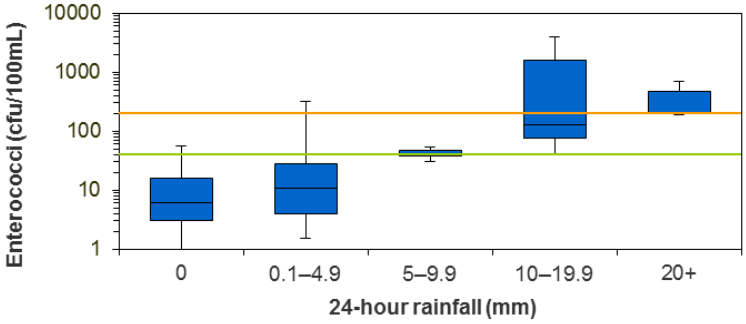
Microbial Assessment: **B**

Monitoring period for 2014–15 result is November 2012 to May 2015.

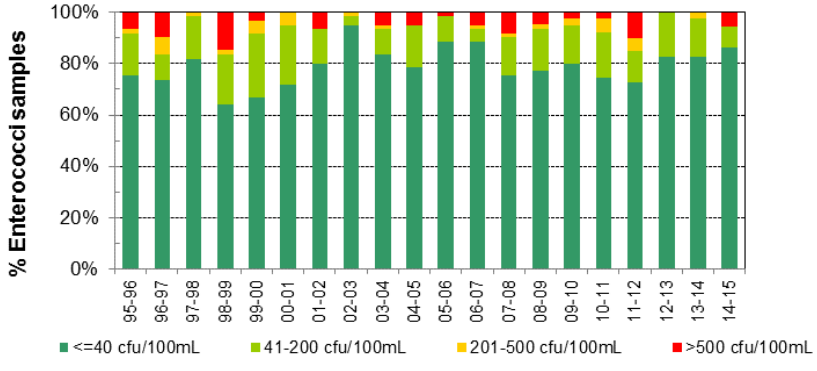


Response to rainfall

Rainfall from Kyle Bay rain gauge



Trends in enterococci data through time



Carss Point Baths

Beach Suitability Grade: G

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

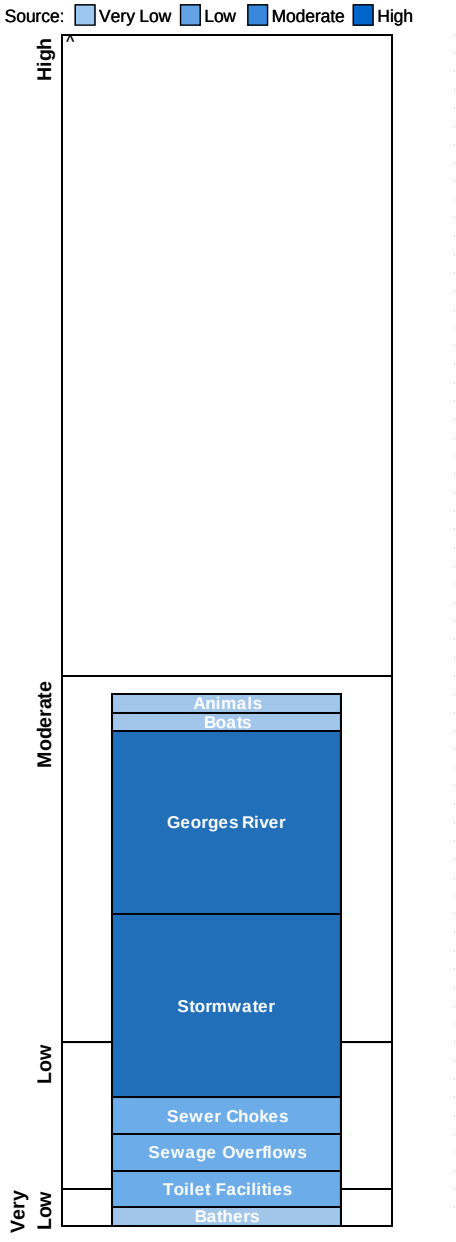
Carss Point Baths are a 100 by 60 metre netted swimming enclosure on the western shore of Kogarah Bay in the lower Georges River. The swimming area is backed by a narrow beach and Carss Bush Park.

The Beach Suitability Grade of Good indicates that microbial water quality is suitable for swimming most of the time but the water may be susceptible to pollution from a number of potential sources of faecal contamination including stormwater, sewer chokes and sources upstream in the Georges River.

The response to rainfall graph indicates that enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit in response to light rainfall and regularly after 5 mm of rain or more.

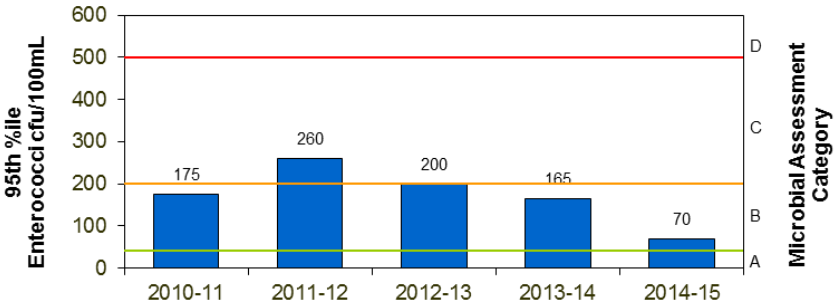
The site has been monitored since 1994. Microbial water quality has varied considerably among years with variations in rainfall.

Sanitary Inspection: **Moderate**



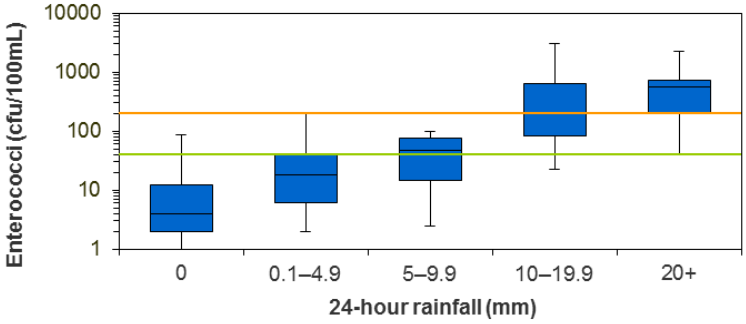
Microbial Assessment: **B**

Monitoring period for 2014–15 result is November 2012 to May 2015.

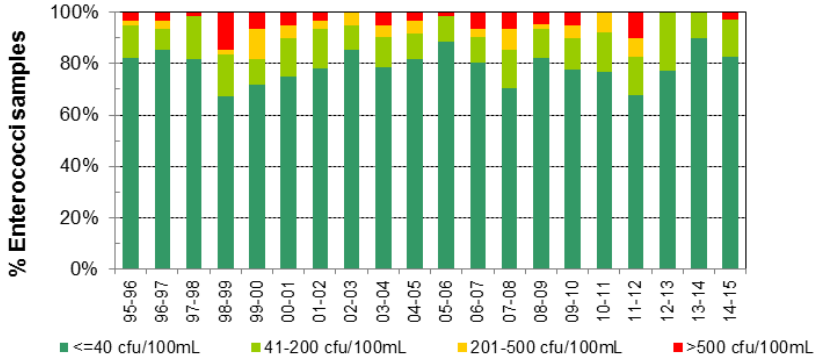


Response to rainfall

Rainfall from Kyle Bay rain gauge



Trends in enterococci data through time



Sandringham Baths

Beach Suitability Grade: G

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

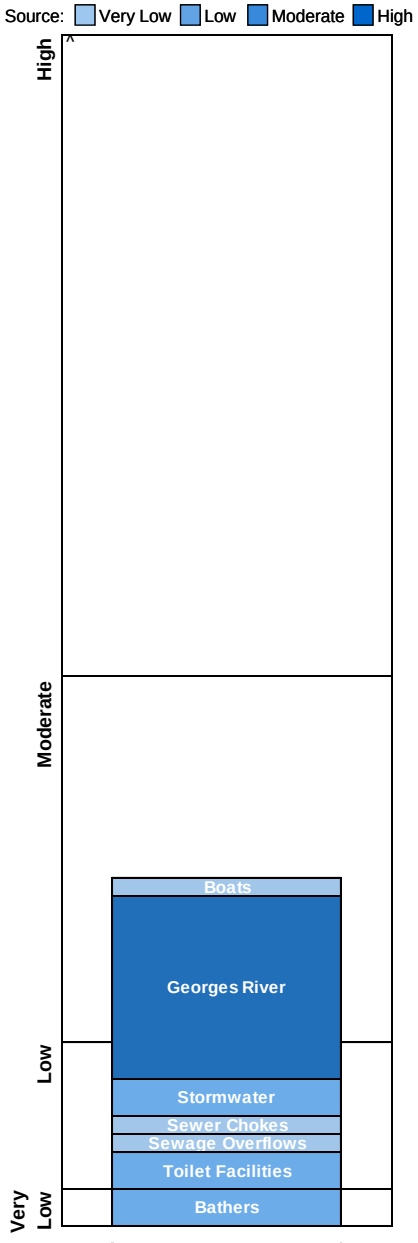
Sandringham Baths are a 30 by 40 metre netted swimming area near the mouth of the Georges River, backed by a small beach and walking track.

The Beach Suitability Grade of Good indicates that microbial water quality is suitable for swimming most of the time but the water may be susceptible to pollution following heavy rain, with potential faecal contamination from river discharge.

The response to rainfall graph indicates that enterococci levels generally increased with increasing rainfall, often exceeding the safe swimming limit in response to 10 mm of rain or more.

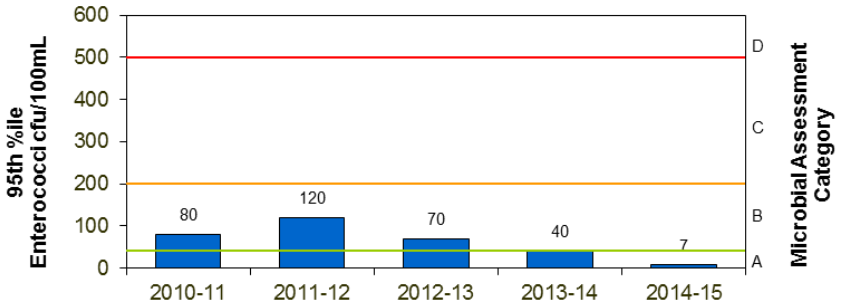
The site has been monitored since 1994. Microbial water quality has varied between years owing to variations in rainfall.

Sanitary Inspection: **Moderate**



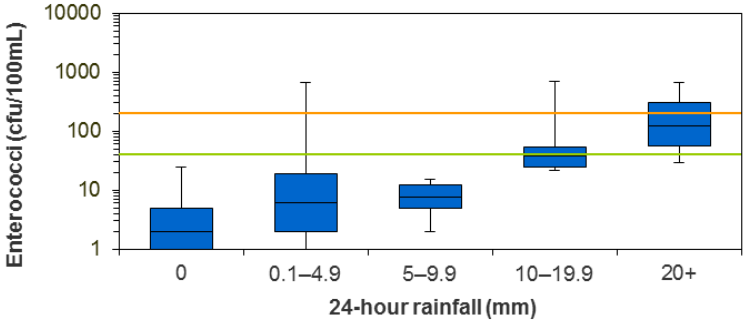
Microbial Assessment: **A**

Monitoring period for 2014–15 result is November 2012 to May 2015.

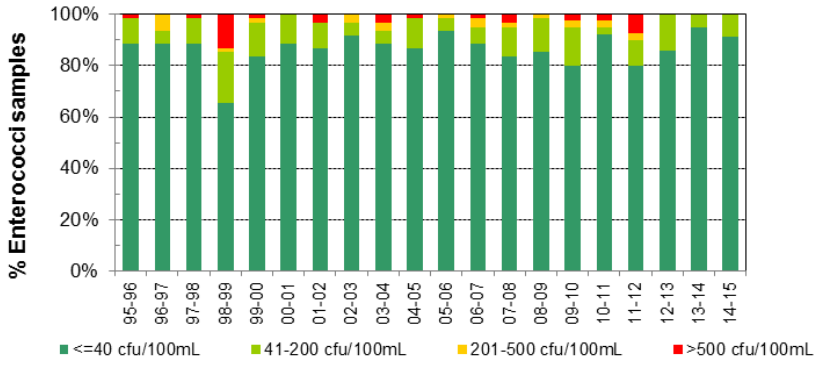


Response to rainfall

Rainfall from Kyeemagh rain gauge



Trends in enterococci data through time



Dolls Point Baths

Beach Suitability Grade: G

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

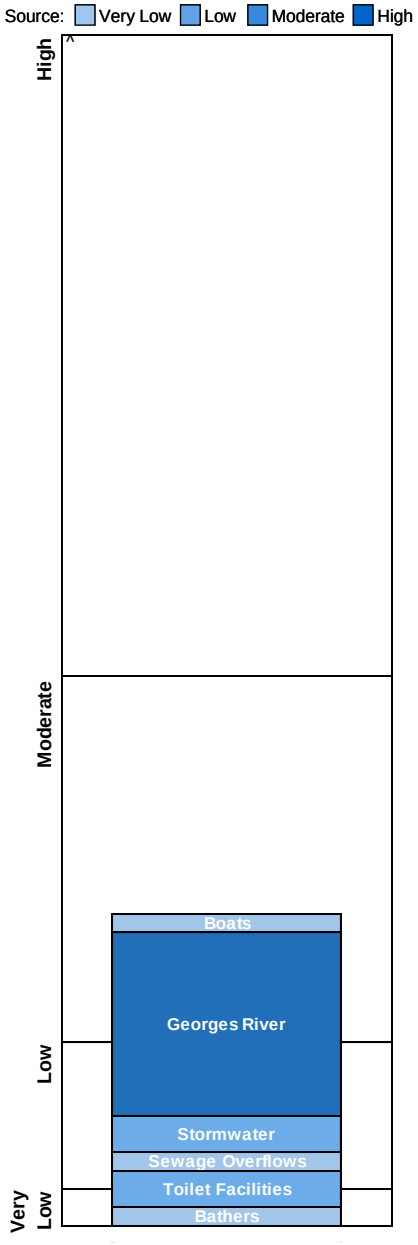
Dolls Point Baths are a 50 by 30 metre netted swimming area at the southern end of Lady Robinsons Beach in Botany Bay. The baths are backed by a sandy beach and park with barbeque and picnic facilities.

The Beach Suitability Grade of Good indicates that microbial water quality is suitable for swimming most of the time but the water may be susceptible to pollution after heavy rain, with potential faecal contamination from river discharge.

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

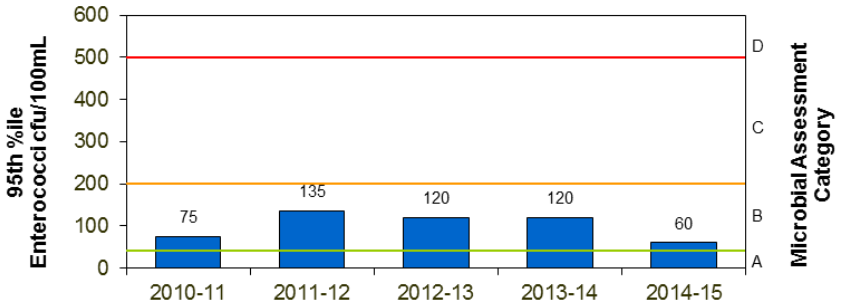
The site has been monitored since 1994. Microbial water quality has varied among years owing to variations in rainfall.

Sanitary Inspection: **Moderate**



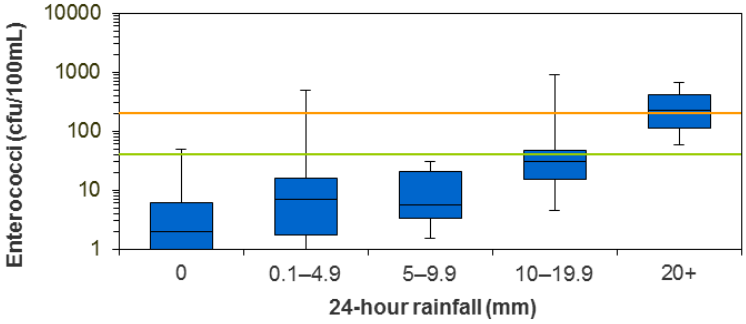
Microbial Assessment: **B**

Monitoring period for 2014–15 result is November 2012 to May 2015.

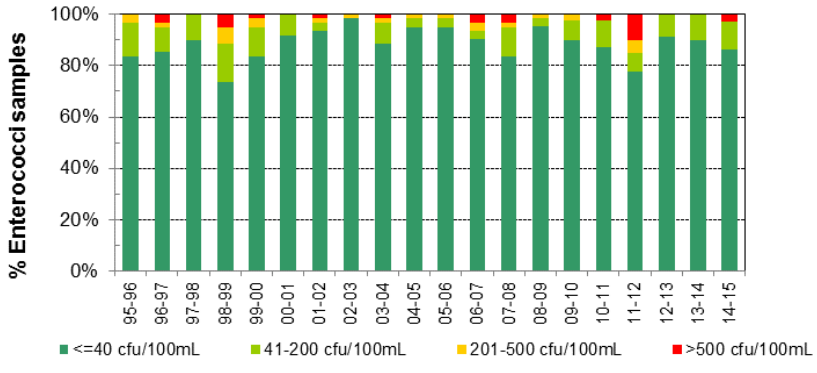


Response to rainfall

Rainfall from Kyeemagh rain gauge



Trends in enterococci data through time



Ramsgate Baths

Beach Suitability Grade: G

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

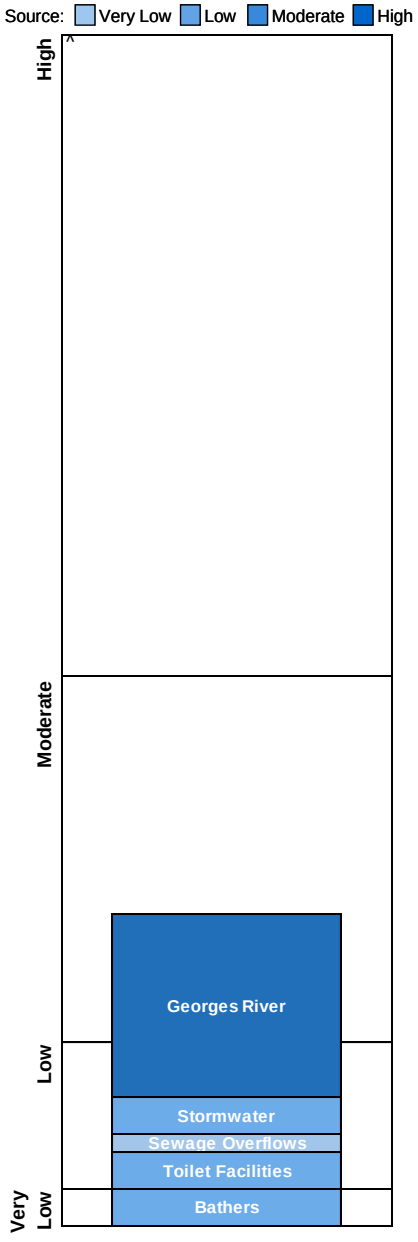
Ramsgate Baths are a 50 metre square swimming enclosure near the southern end of Lady Robinsons Beach in Botany Bay. The baths are backed by a sandy beach, a walking track and a small park.

The Beach Suitability Grade of Good indicates that the water quality is safe for swimming most of the time but can be susceptible to pollution after heavy rain, with potential faecal contamination from river discharge.

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

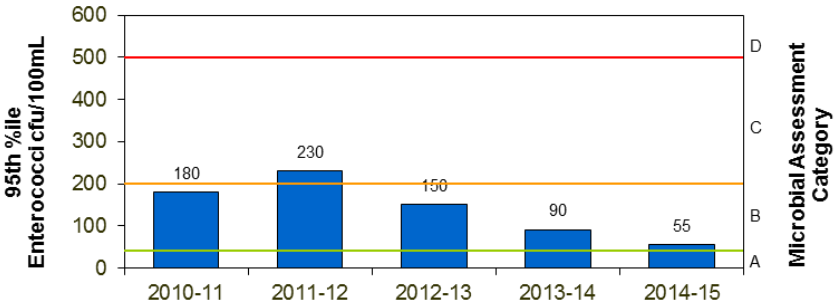
The site has been monitored since 1994.

Sanitary Inspection: **Moderate**



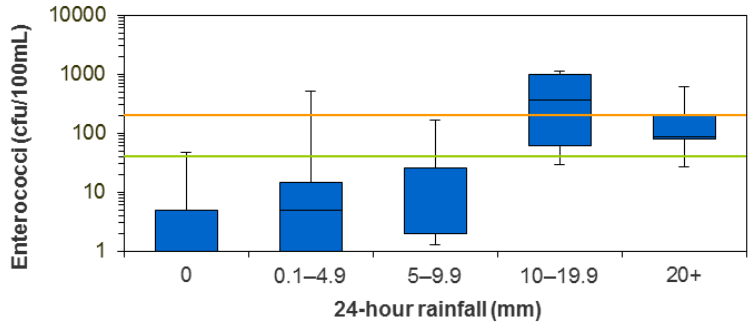
Microbial Assessment: **B**

Monitoring period for 2014–15 result is November 2012 to May 2015.

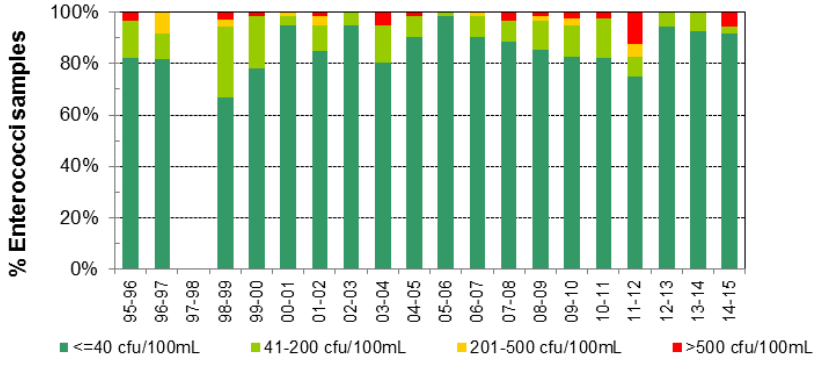


Response to rainfall

Rainfall from Kyeemagh rain gauge



Trends in enterococci data through time



Monterey Baths

Beach Suitability Grade: G

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

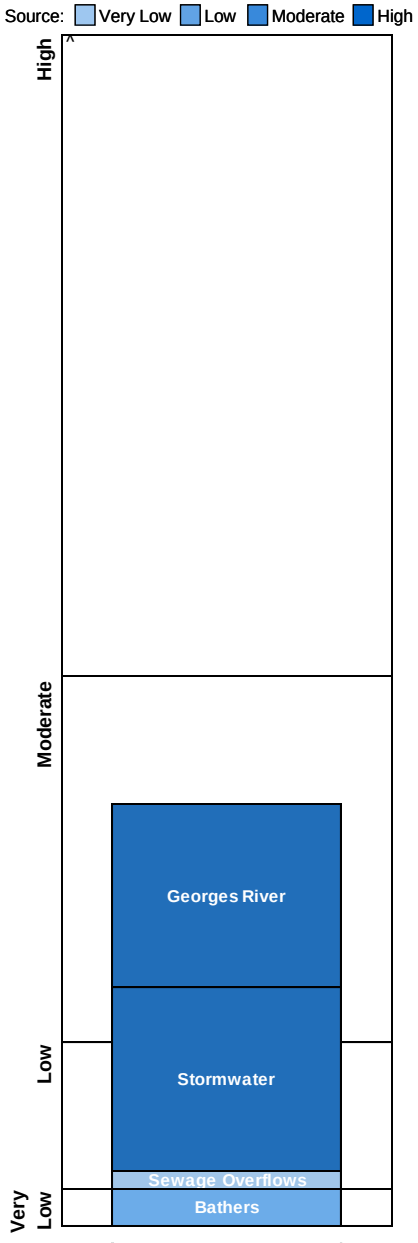
Monterey Baths are located towards the southern end of Lady Robinsons Beach in Botany Bay. The sampling site is near a large stormwater drain, backed by a sandy beach.

The Beach Suitability Grade of Good indicates that microbial water quality is suitable for swimming most of the time but the water may be susceptible to pollution after heavy rain, with potential faecal contamination from river discharge and stormwater.

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

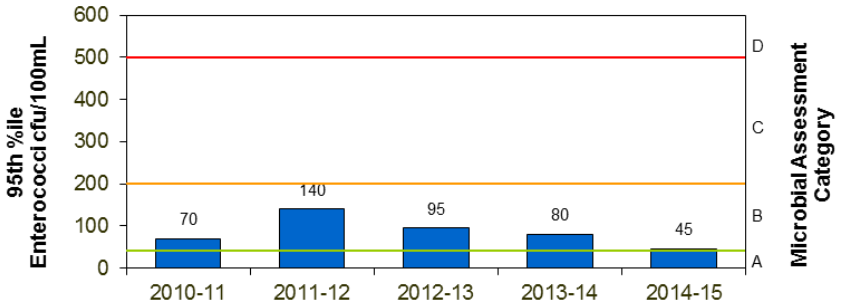
The site has been monitored since 1994.

Sanitary Inspection: **Moderate**



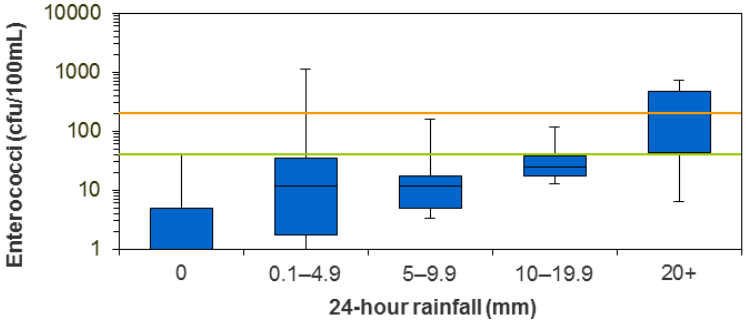
Microbial Assessment: **B**

Monitoring period for 2014–15 result is November 2012 to May 2015.

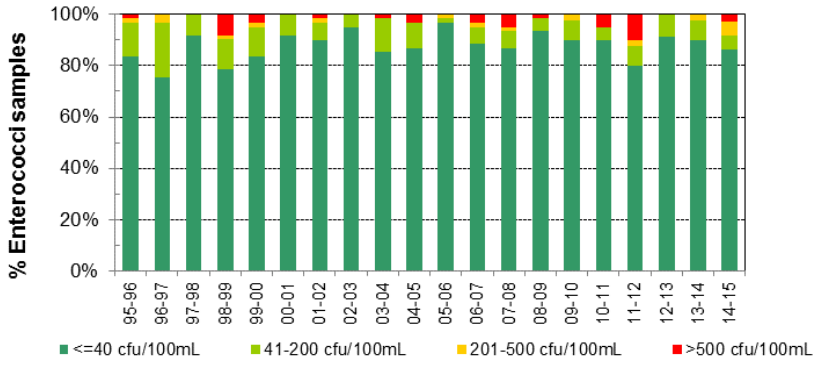


Response to rainfall

Rainfall from Kyeemagh rain gauge



Trends in enterococci data through time



Brighton-Le-Sands Baths

Beach Suitability Grade: G

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

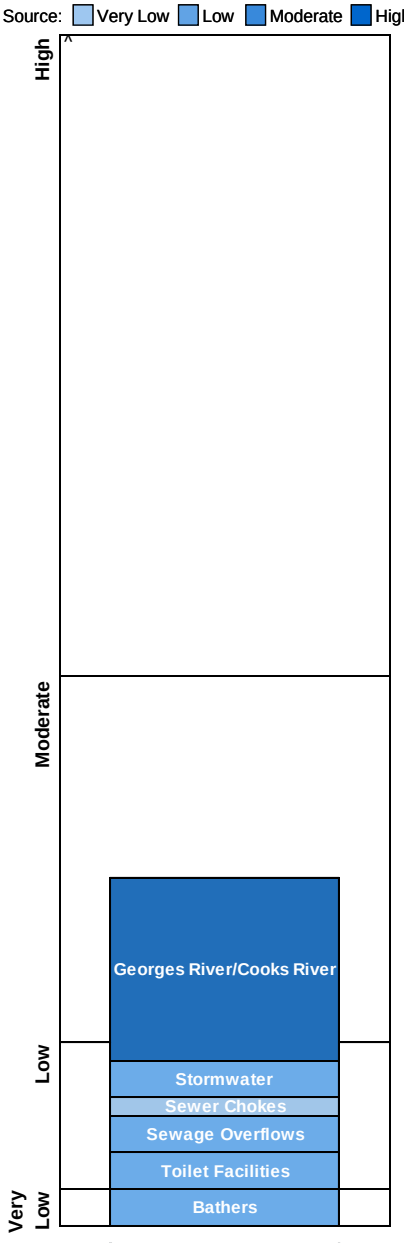
Brighton-Le-Sands Baths are located towards the centre of Lady Robinsons Beach. The baths are netted and backed by a sandy beach and restaurant.

The Beach Suitability Grade of Good indicates that microbial water quality is suitable for swimming most of the time but the water may be susceptible to pollution from a number of potential sources of faecal contamination including sewage overflows and river discharge.

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

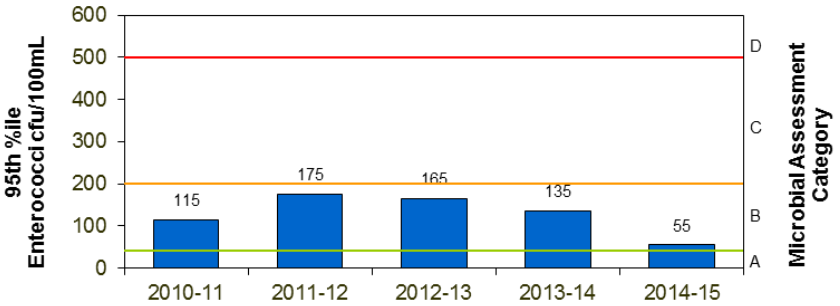
The site has been monitored since 1994.

Sanitary Inspection: **Moderate**



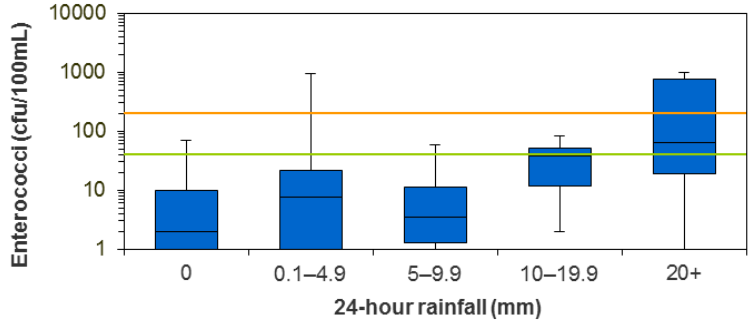
Microbial Assessment: **B**

Monitoring period for 2014–15 result is November 2012 to May 2015.

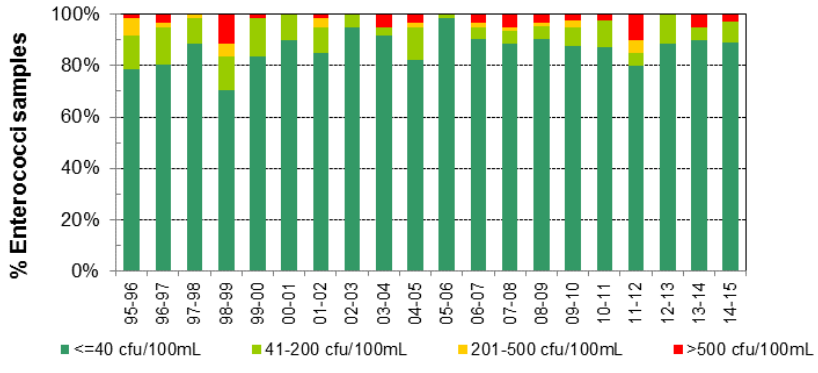


Response to rainfall

Rainfall from Kyeemagh rain gauge



Trends in enterococci data through time



Kyeemagh Baths

Beach Suitability Grade: G

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

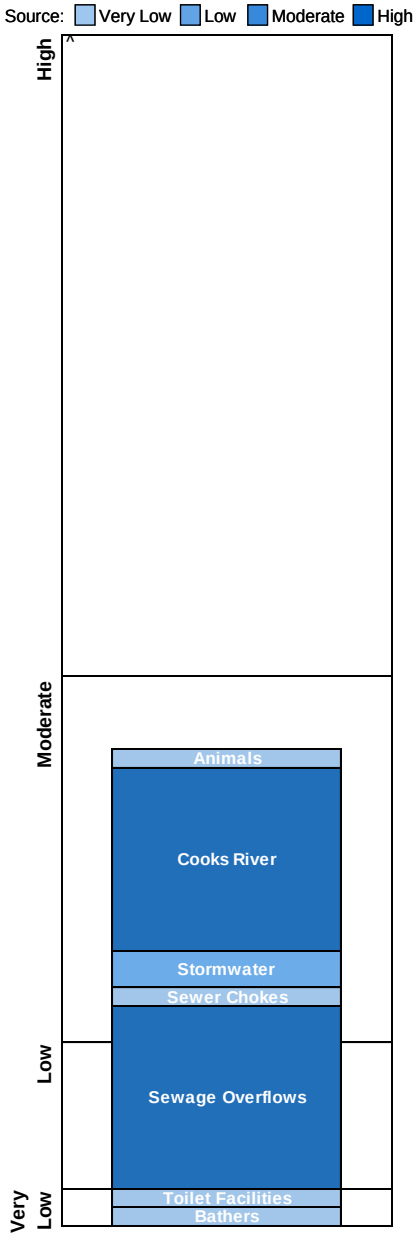
Kyeemagh Baths are located at the northern end of Lady Robinsons Beach. The baths are netted and backed by a sandy beach and reserve.

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

The response to rainfall graph indicates that enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit in response to light rainfall and frequently after 10 mm of rainfall or more.

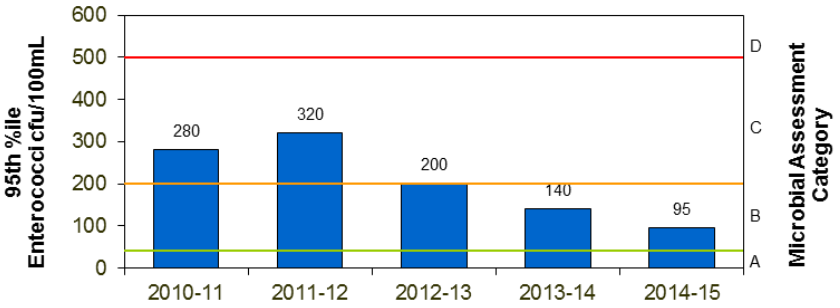
The site has been monitored since 1994.

Sanitary Inspection: **Moderate**



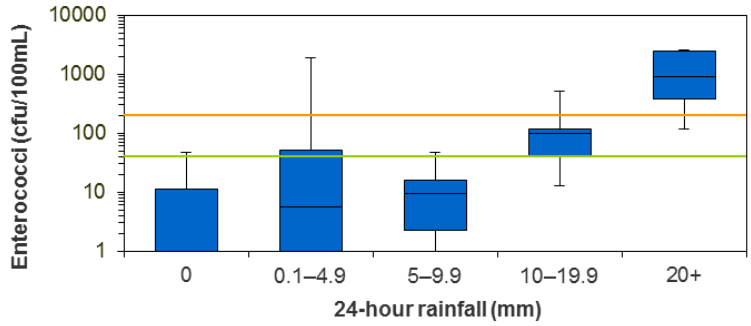
Microbial Assessment: **B**

Monitoring period for 2014–15 result is November 2012 to May 2015.

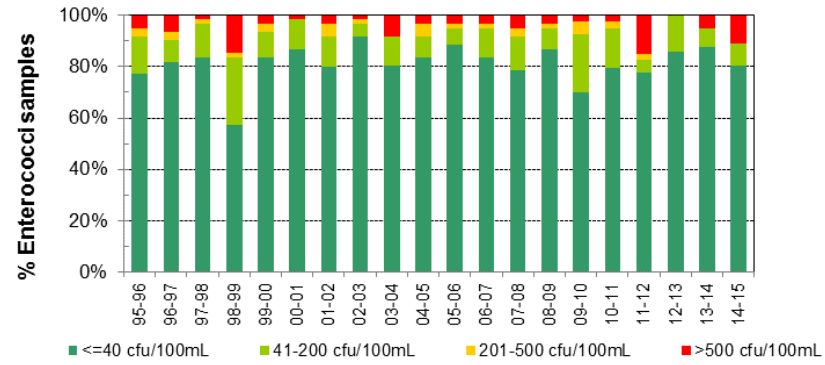


Response to rainfall

Rainfall from Kyeemagh rain gauge



Trends in enterococci data through time



Foreshores Beach

Beach Suitability Grade: VP

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

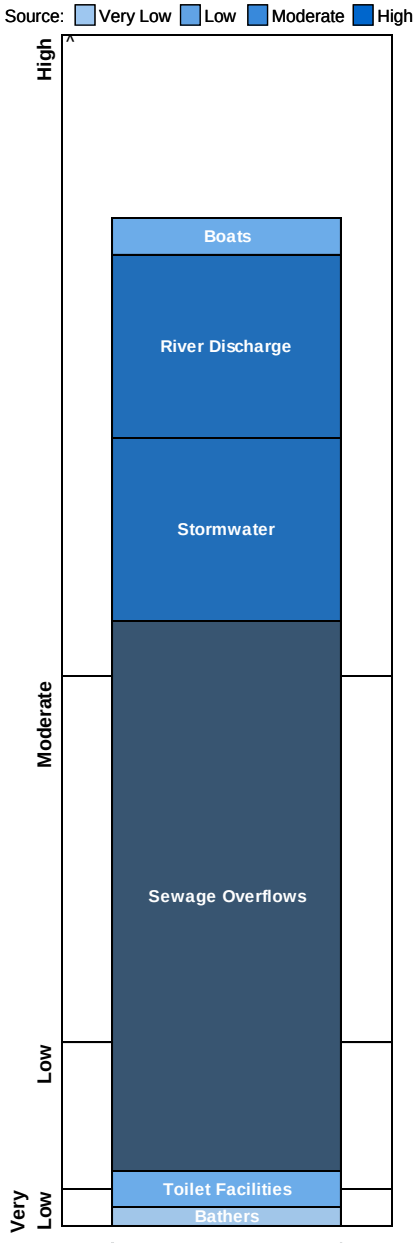
Foreshores Beach is adjacent to Sydney Airport's third runway and the Port Botany Terminal 3 completed in late 2013. The swimming area is not netted and has recently been redeveloped to include toilets, a car park and boat launching facilities.

The Beach Suitability Grade of Very Poor indicates that microbial water quality is highly influenced by faecal pollution, particularly after rainfall, and is very susceptible to faecal contamination from the sewage overflows which discharge into Mill Pond Creek.

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, and frequently after 5 mm or more.

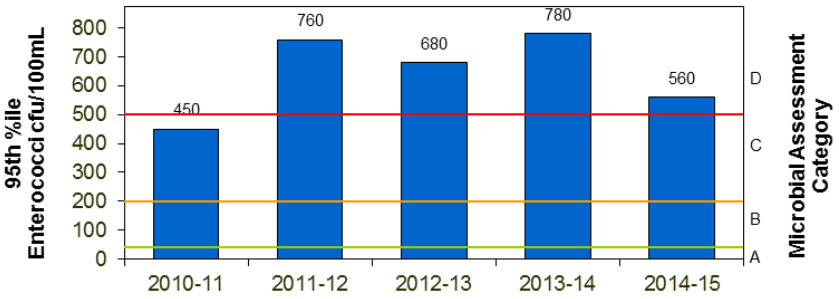
The site has been monitored since 1994.

Sanitary Inspection: **High**



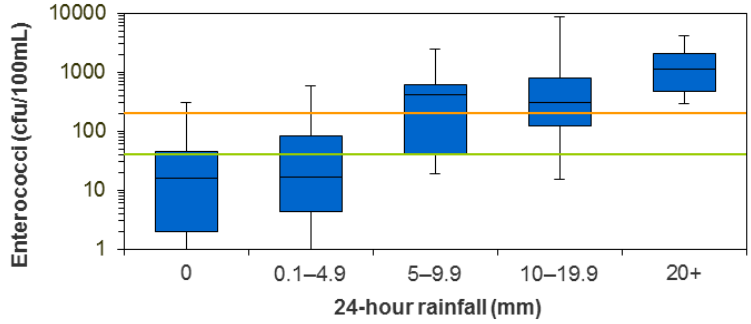
Microbial Assessment: **D**

Monitoring period for 2014–15 result is November 2012 to May 2015.

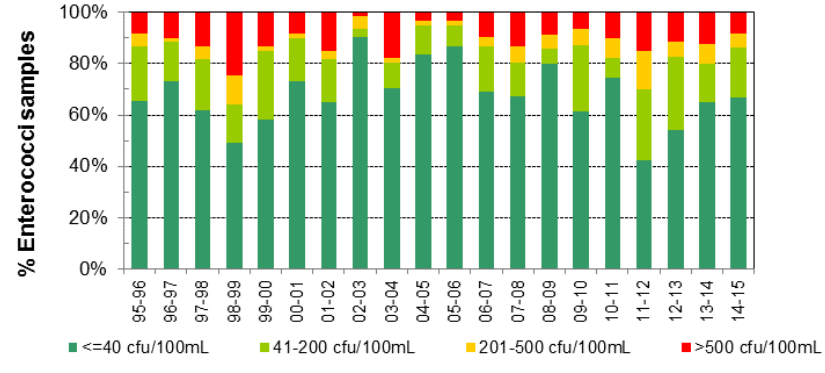


Response to rainfall

Rainfall from Malabar WWTP rain gauge



Trends in enterococci data through time



Yarra Bay

Beach Suitability Grade: G

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

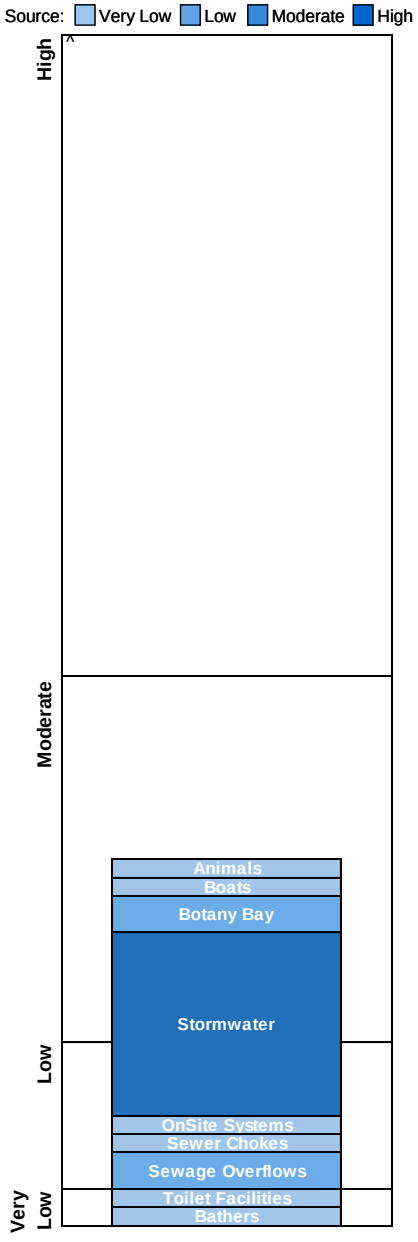
Yarra Bay is approximately 750 metres long, with a rock groyne 100 metres from the southern end. The swimming area is not netted. The southern half of the beach is bordered by Yarra Bay Bicentennial Park and Yarra Bay Sailing Club.

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

The response to rainfall graph indicates that enterococci levels generally increased with increasing rainfall, regularly exceeding the safe swimming limit after 5 mm or more of rainfall.

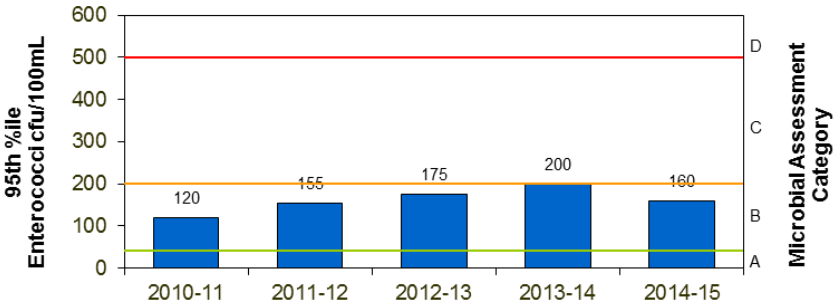
The site has been monitored since 1994.

Sanitary Inspection: **Moderate**



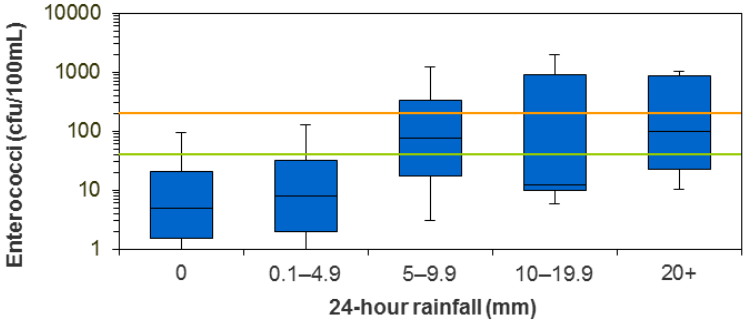
Microbial Assessment: **B**

Monitoring period for 2014–15 result is November 2012 to May 2015.

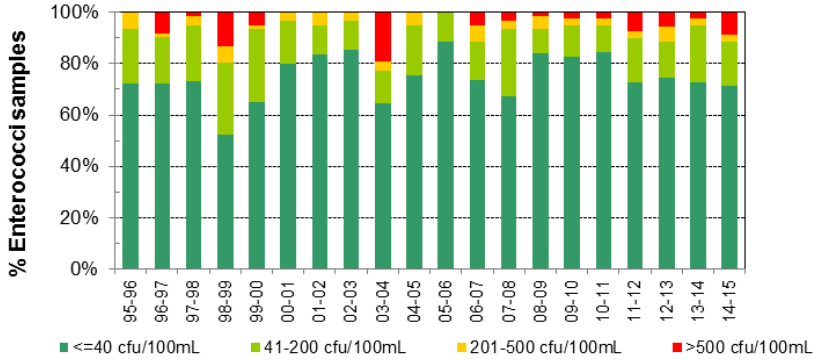


Response to rainfall

Rainfall from Malabar WWTP rain gauge



Trends in enterococci data through time



Frenchmans Bay

Beach Suitability Grade: G

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

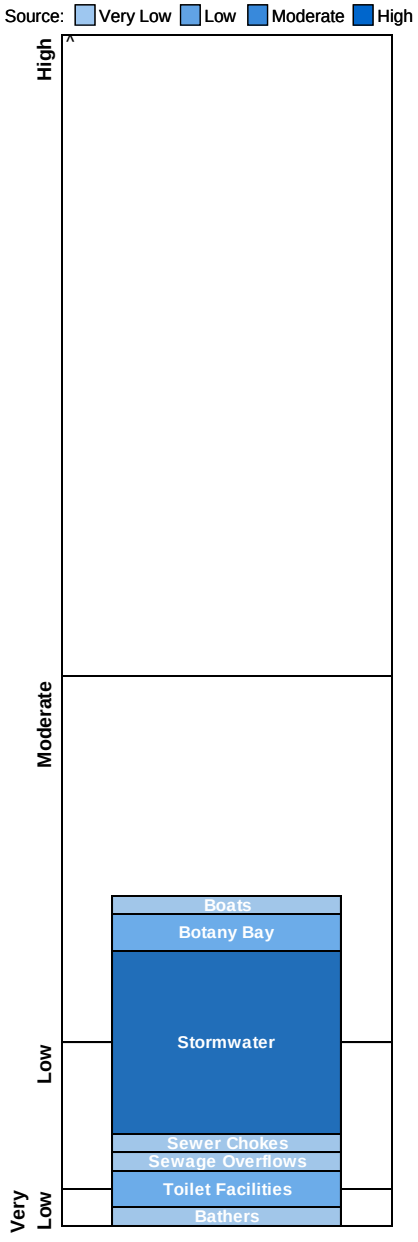
Frenchmans Bay is approximately 500 metres long, with a rock wall towards the northern end. The swimming area is not netted. A small recreational reserve is located behind the southern end of the beach.

The Beach Suitability Grade of Good indicates that the water quality is safe for swimming most of the time but can be susceptible to pollution after heavy rain, from a number of 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 10 mm of rainfall or more.

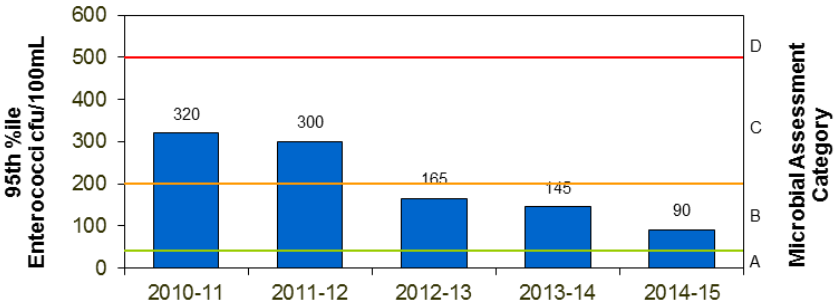
The site has been monitored since 1994.

Sanitary Inspection: **Moderate**



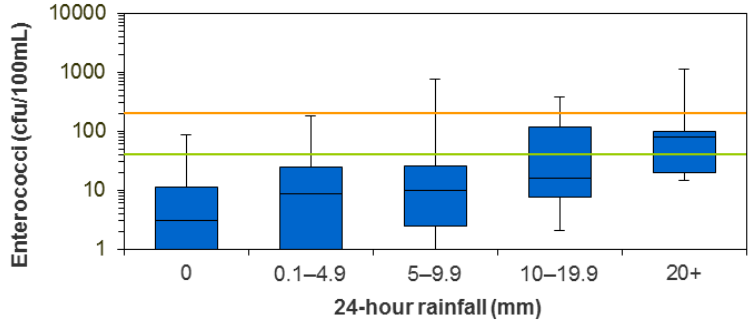
Microbial Assessment: **B**

Monitoring period for 2014–15 result is November 2012 to May 2015.

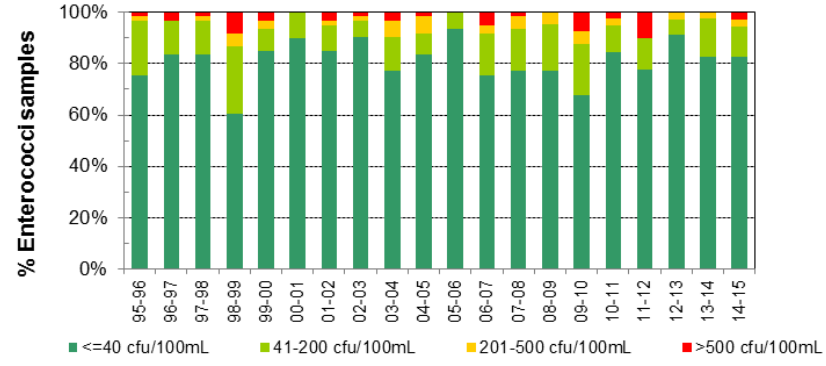


Response to rainfall

Rainfall from Malabar WWTP rain gauge



Trends in enterococci data through time



Congwong Bay

Beach Suitability Grade: VG

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

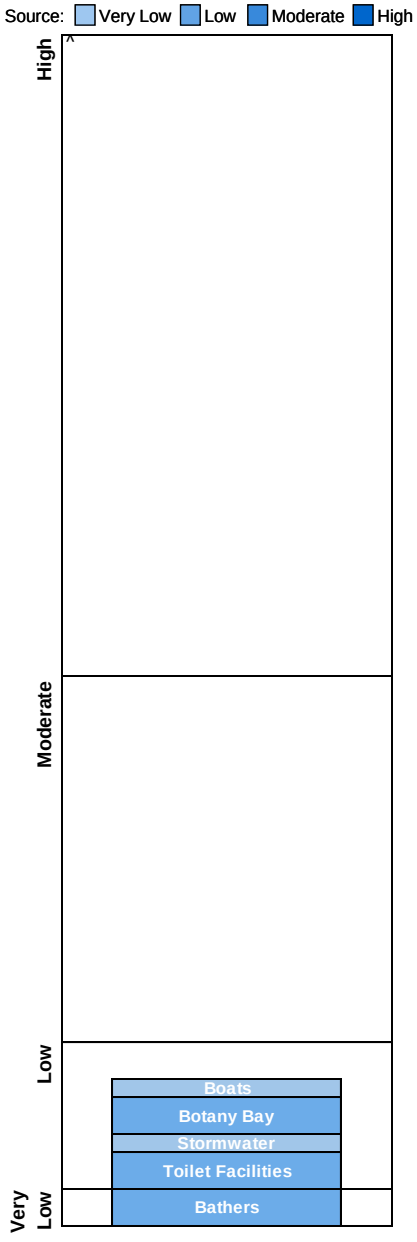
Congwong Bay is near the mouth of Botany Bay and is backed by the Botany Bay National Park. The beach is approximately 150 metres long and the swimming area is not netted.

The Beach Suitability Grade of Very Good indicates that 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, often exceeding the safe swimming limit in response to 10 mm of rainfall or more.

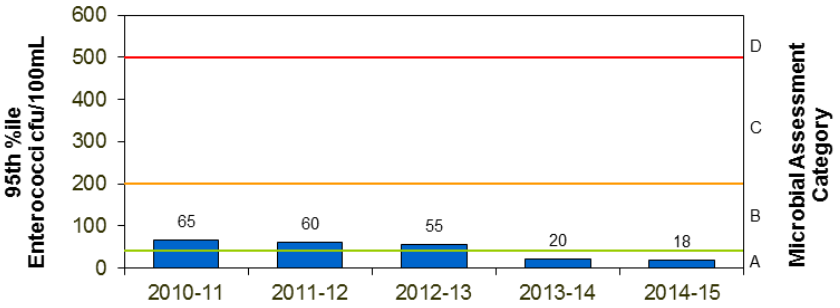
The site has been monitored since 1994.

Sanitary Inspection: **Low**



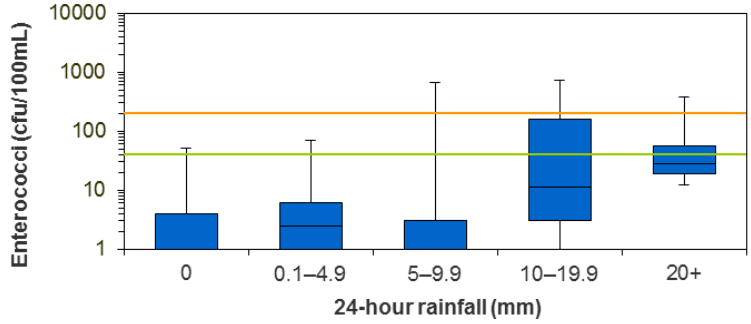
Microbial Assessment: **A**

Monitoring period for 2014–15 result is November 2012 to May 2015.

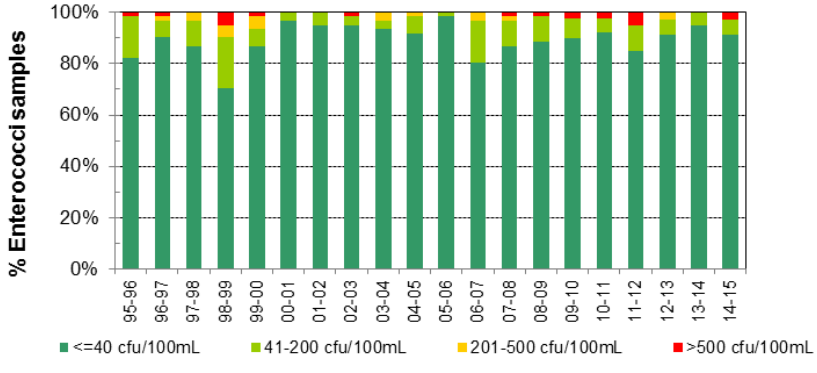


Response to rainfall

Rainfall from Malabar WWTP rain gauge



Trends in enterococci data through time



Jibbon Beach

Beach Suitability Grade: VG

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

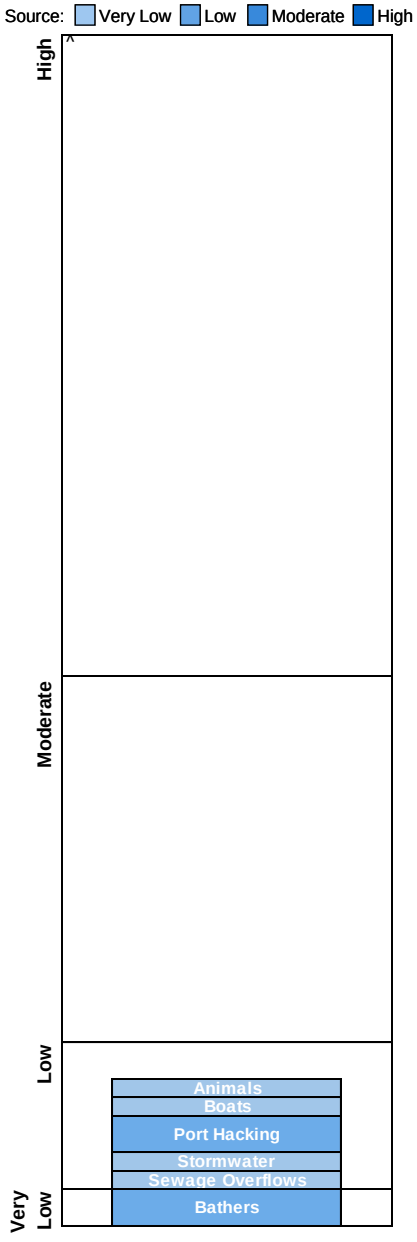
Jibbon Beach is located at the entrance to Port Hacking. The beach is backed by the Royal National Park and accessed from Bundeena. The water is deep, making it a popular boating destination. Beach conditions are safest in the eastern corner.

The Beach Suitability Grade of Very Good indicates that 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 slightly with rainfall, but rarely exceeded the safe swimming limit.

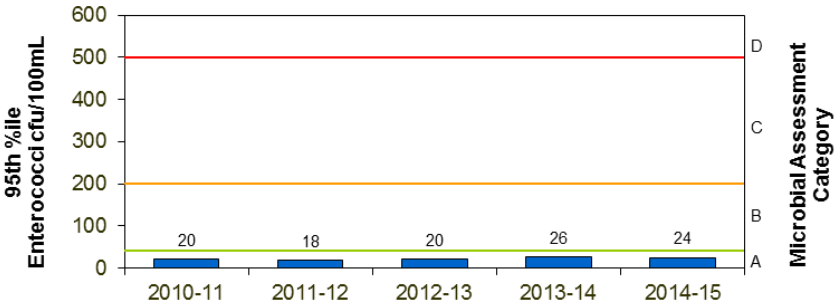
The site has been monitored since 1999.

Sanitary Inspection: **Low**



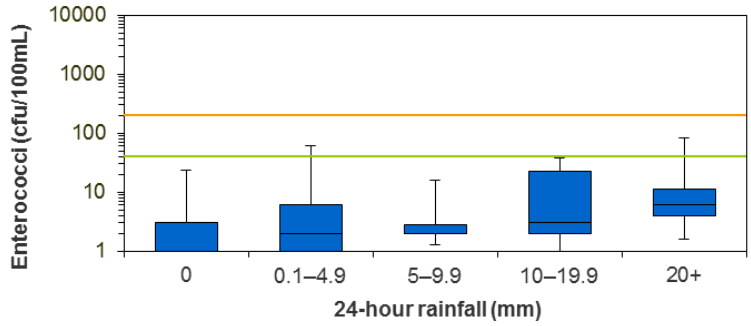
Microbial Assessment: **A**

Monitoring period for 2014–15 result is November 2012 to May 2015.

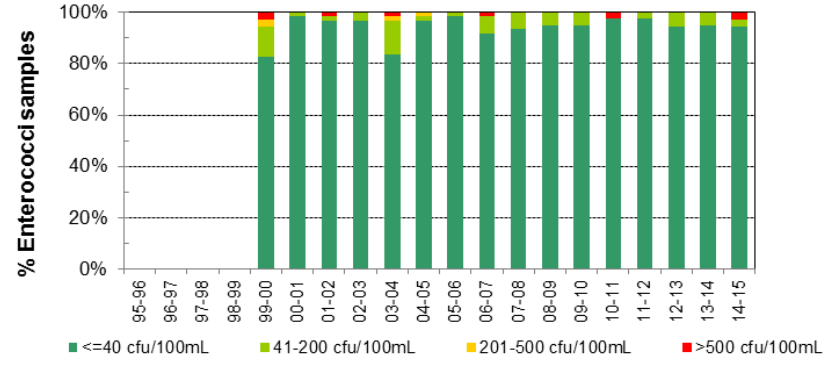


Response to rainfall

Rainfall from South Cronulla rain gauge



Trends in enterococci data through time



Horderns Beach

Beach Suitability Grade: G

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

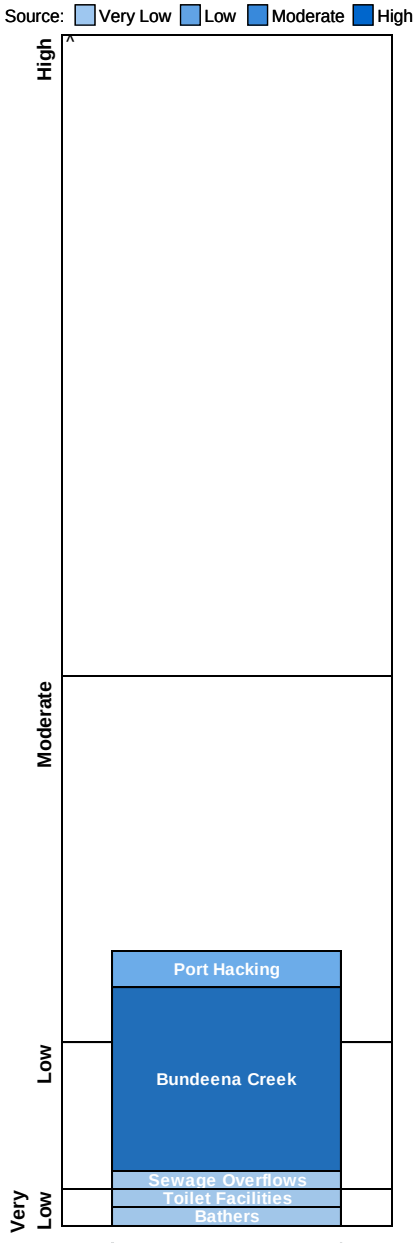
Horderns Beach is located on the southern shore of Port Hacking and is backed by the town of Bundeena. The Cronulla–Bundeena wharf is located at the eastern end of the beach.

The Beach Suitability Grade of Good indicates that the water quality is safe for swimming most of the time but can be susceptible to pollution after heavy rain, from a number of potential sources of faecal contamination including creek discharge.

The response to rainfall graph indicates that enterococci levels increased with increasing rainfall, regularly exceeding the safe swimming limit after 10 mm of rainfall or more and occasionally after little or no rain.

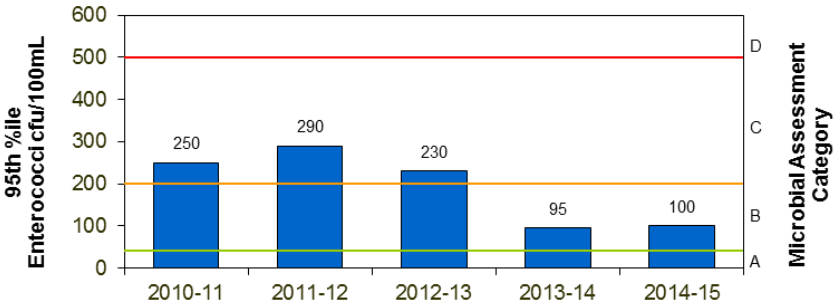
The site has been monitored since 1999.

Sanitary Inspection: **Moderate**



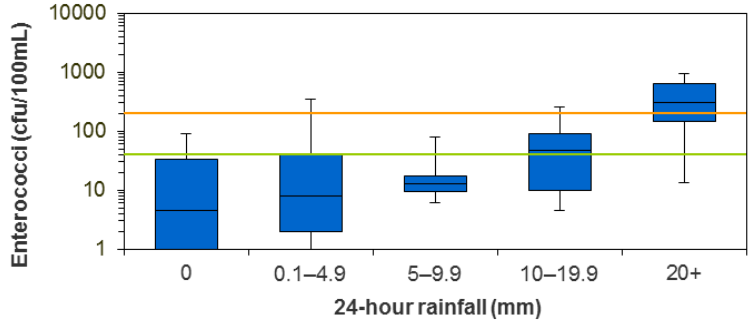
Microbial Assessment: **B**

Monitoring period for 2014–15 result is November 2012 to May 2015.

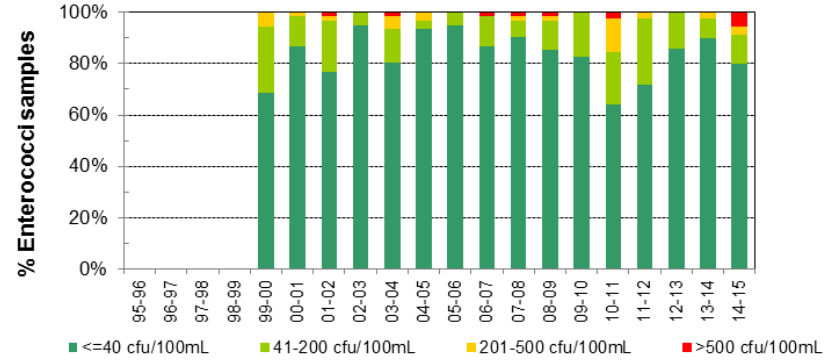


Response to rainfall

Rainfall from South Cronulla rain gauge



Trends in enterococci data through time



Gymea Bay Baths

Beach Suitability Grade: F

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

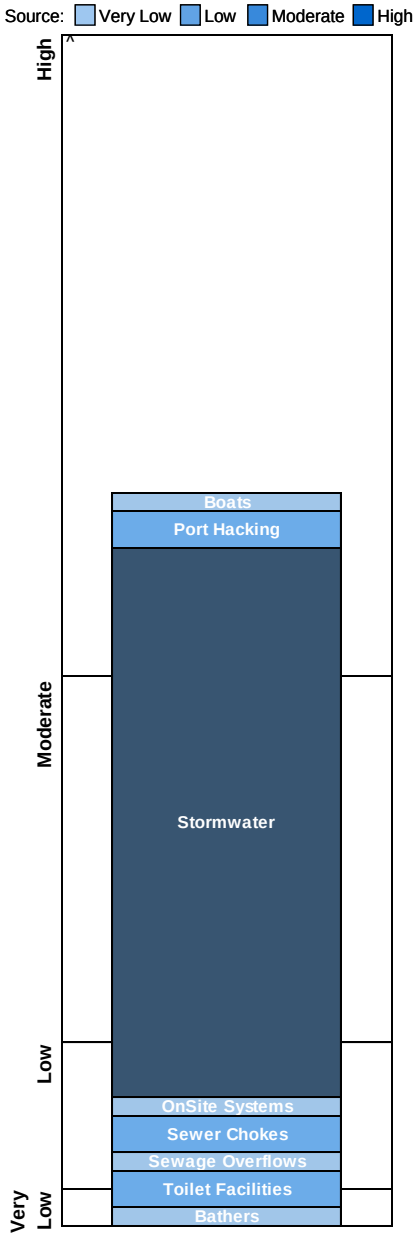
Gymea Bay Baths are an enclosed tidal swimming area backed by a narrow sandy beach in the upper reaches of Port Hacking. Two small recreation reserves lead to the beach.

The Beach Suitability Grade of Fair indicates that microbial water quality is occasionally influenced by faecal pollution, usually triggered by rainfall, with 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 low levels of rainfall, and frequently after 10 mm or more of rain.

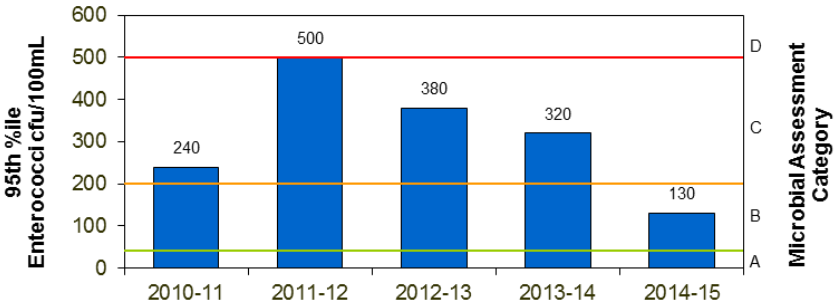
The site has been monitored since 1999.

Sanitary Inspection: **High**



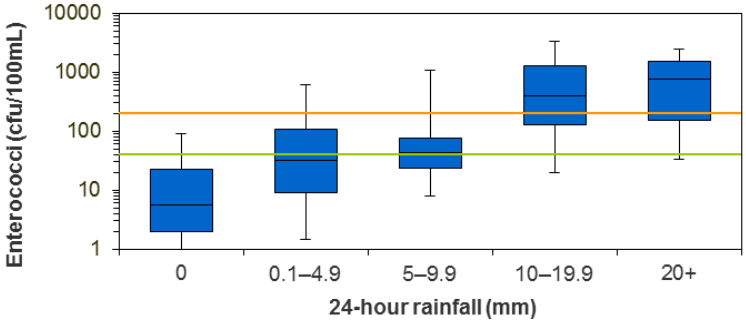
Microbial Assessment: **B**

Monitoring period for 2014–15 result is November 2012 to May 2015.

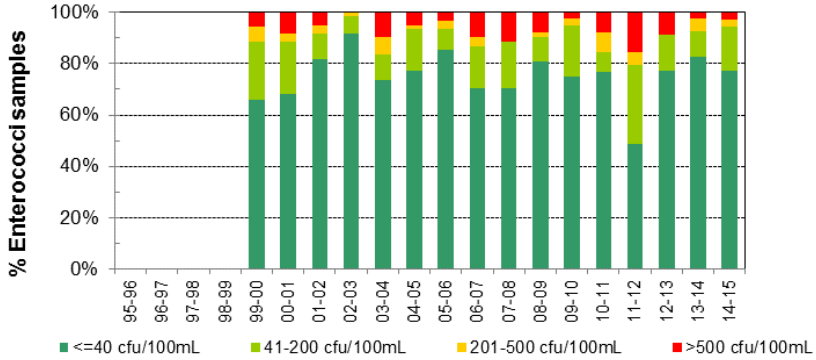


Response to rainfall

Rainfall from Caringbah rain gauge

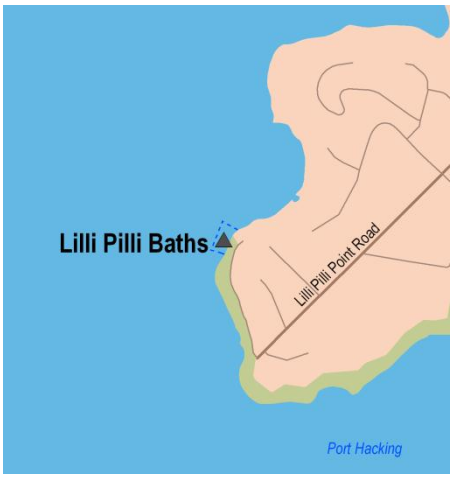


Trends in enterococci data through time



Lilli Pilli Baths

Beach Suitability Grade: G



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

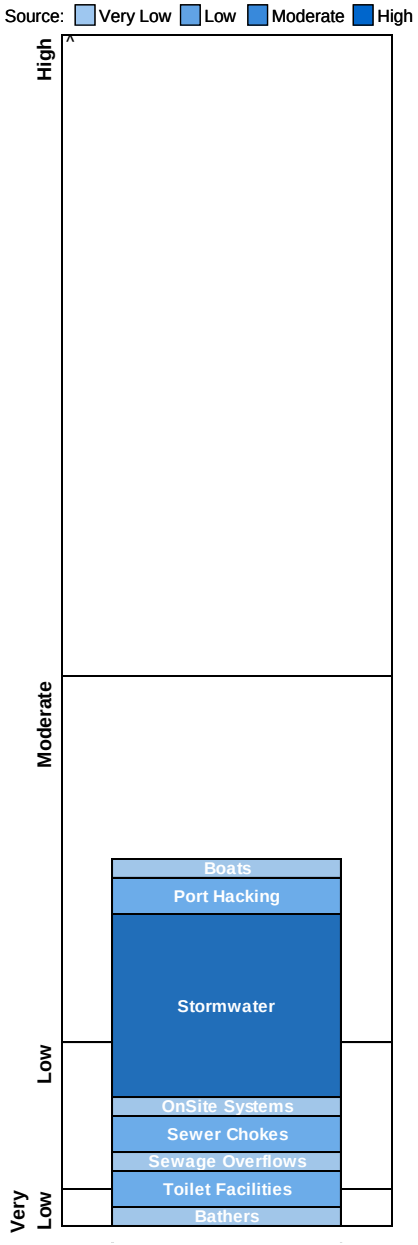
Lilli Pilli Baths is a tidal swimming area on the western side of Lilli Pilli Point in the middle reaches of Port Hacking. The pool is netted and is backed by a narrow strip of recreation reserve.

The Beach Suitability Grade of Good indicates that microbial water quality is suitable for swimming most of the time but the water may be susceptible to pollution after heavy rain because of 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 after 5 mm of rainfall or more.

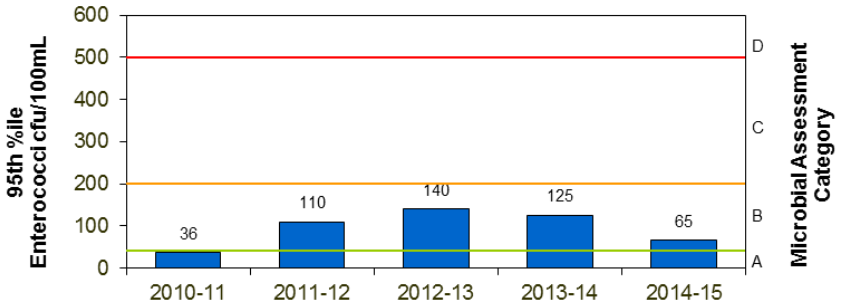
The site has been monitored since 1999.

Sanitary Inspection: **Moderate**



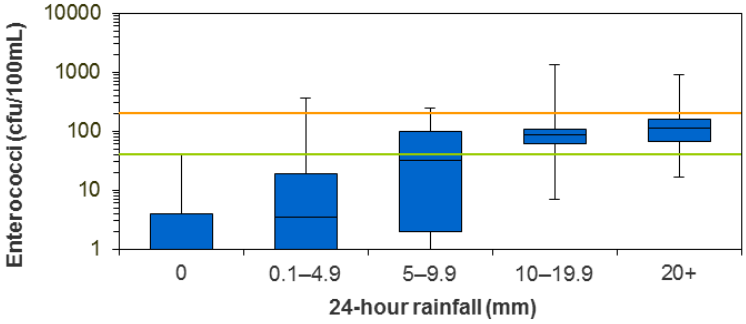
Microbial Assessment: **B**

Monitoring period for 2014–15 result is November 2012 to May 2015.

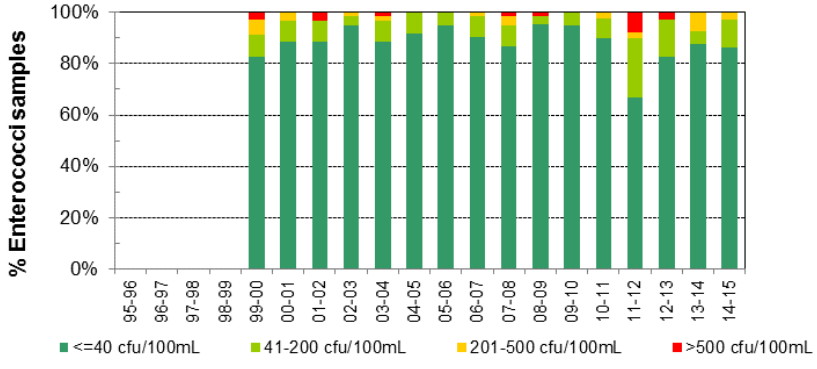


Response to rainfall

Rainfall from Caringbah rain gauge

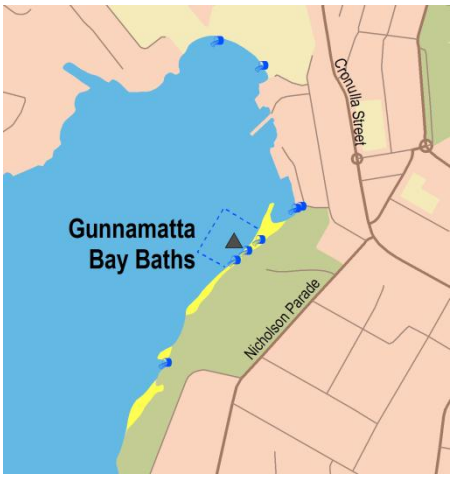


Trends in enterococci data through time



Gunnamatta Bay Baths

Beach Suitability Grade: G



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

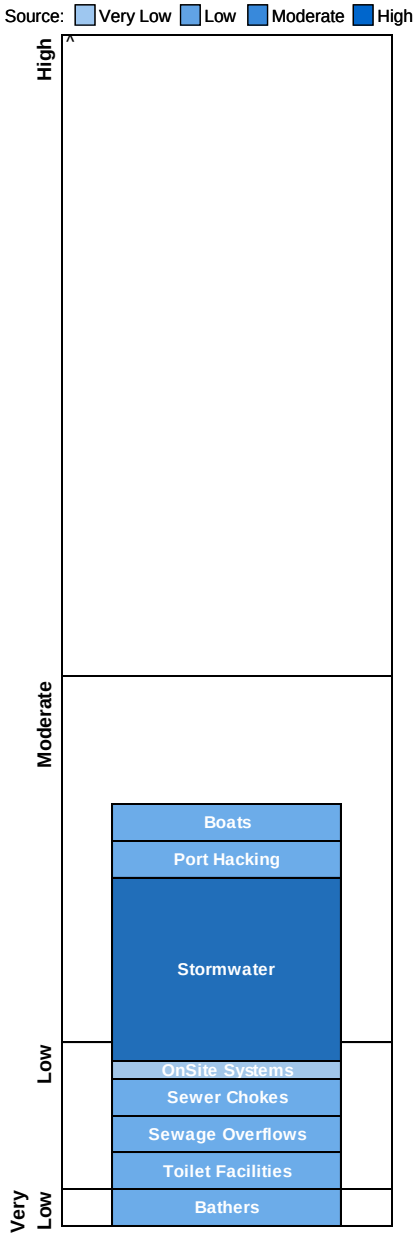
Gunnamatta Bay Baths are an enclosed tidal swimming area located in Gunnamatta Bay. The baths are backed by a narrow sandy beach and a large reserve with picnic facilities.

The Beach Suitability Grade of Good indicates that microbial water quality is generally suitable for swimming, but the water can be susceptible to pollution from a number of 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 5 mm of rainfall or more, and occasionally after light rainfall.

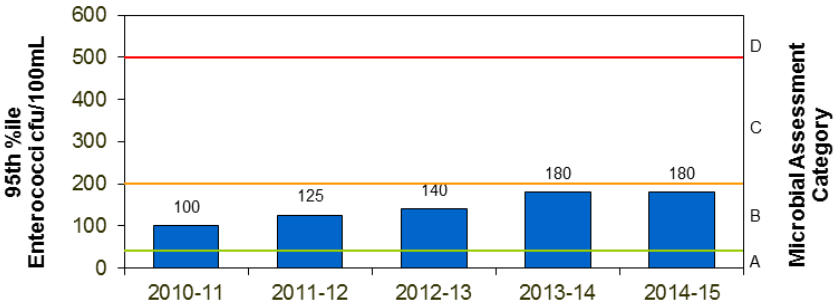
The site has been monitored since 1994. Microbial water quality has improved since 2000–2001 due to sewage overflow abatement works in the catchment.

Sanitary Inspection: **Moderate**



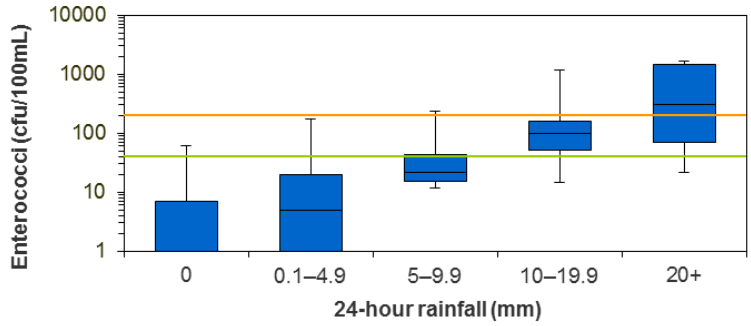
Microbial Assessment: **B**

Monitoring period for 2014–15 result is November 2012 to May 2015.

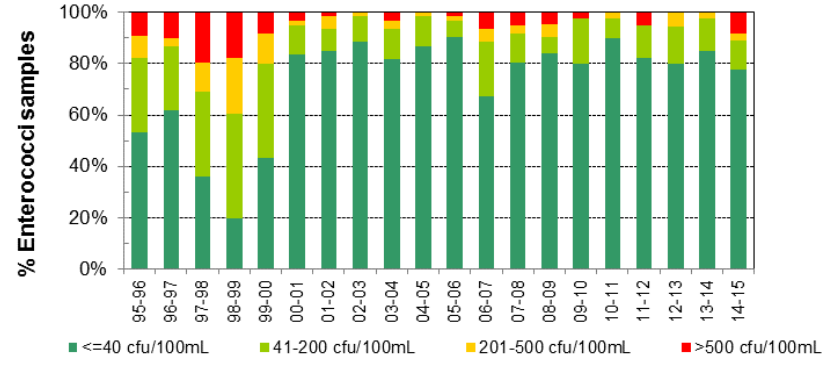


Response to rainfall

Rainfall from South Cronulla rain gauge



Trends in enterococci data through time



State of the Beaches
HOW TO READ THIS REPORT

Beach Suitability Grades

Beach Suitability Grades provide an assessment of the suitability of a swimming location for recreation over time and are based on a combination of sanitary inspection (identification and rating of potential pollution sources at a beach) and microbial assessment (water quality measurements gathered over previous years). There are five grades ranging from Very Good to Very Poor:

VG Very Good

Location has generally excellent microbial water quality and very few potential sources of faecal pollution. Water is considered suitable for swimming almost all of the time.

G Good

Location has generally good microbial water quality and water is considered suitable for swimming most of the time. Swimming should be avoided during and for up to one day following heavy rain at ocean beaches and up to three days at estuarine sites.

F Fair

Microbial water quality is generally suitable for swimming, but because of the presence of significant sources of faecal contamination, extra care should be taken to avoid swimming during and for up to three days following rainfall or if there are signs of pollution such as discoloured water or odour or debris in the water.

P Poor

Location is susceptible to faecal pollution and microbial water quality is not always suitable for swimming. During dry weather conditions, ensure that the swimming location is free of signs of pollution, such as discoloured water, odour or debris in the water, and avoid swimming at all times during and for up to three days following rainfall.

VP Very Poor

Location is very susceptible to faecal pollution and microbial water quality may often be unsuitable for swimming. It is generally recommended to avoid swimming at these sites.

Some of the Beach Suitability Grades in this report are provisional, as the information required for the analysis is incomplete due to limited bacterial data or limited information on potential pollution sources in a beach catchment.

Beach Suitability Grades are determined by using the following matrix:

The guidelines

The National Health and Medical Research Council's *Guidelines for managing risks in recreational water*[1] were adopted for use in NSW in May 2009. These guidelines have been adopted in all Australian states and territories and are supported by guidance notes developed by the Department of Health Western Australia[2].

[1]NHMRC (2008), *Guidelines for managing risks in recreational water*, National Health and Medical Research Council, Australian Government Publishing Service, Canberra, ACT.

[2]Department of Health, Western Australia (2007), *Microbial water quality of recreational water guidance notes in support of chapter 5 of the National Health and Medical Research Council guidelines for managing risks in recreational water, 2006*, Department of Health, Western Australia and The University of Western Australia, October 2007. [Available at www.public.health.wa.gov.au/3/1287/2/publications.pm. Accessed on 30/07/15]

Enterococci

The national guidelines advocate the use of enterococci as the single preferred faecal indicator in marine waters. These bacteria are excreted in faeces and are rarely present in unpolluted waters. Enterococci have shown a clear dose–response relationship to disease outcomes in marine waters in the northern hemisphere. In accordance with the guidelines, Beachwatch tests for enterococci only. The enterococci density in water samples is analysed in the laboratory using method AS/NZS 4276.9:2007[3].

Enterococci are measured in colony forming units per 100 mL of sample (cfu/100mL).

[3]AS/NZS 4276.9:2007, Water microbiology Method 9: Enterococci – Membrane filtration method (ISO 7899-2:2000, MOD), Standards Australia International Ltd, Sydney, and Standards New Zealand, Wellington.

Matrix used to determine Beach Suitability Grades

		Microbial Assessment Category (MAC)			
		A	**B**	**C**	**D**
Sanitary Inspection Category	**Very Low**	Very Good	Very Good	Follow Up	Follow Up
	Low	Very Good	Good	Follow Up	Follow Up
	Moderate	Good	Good	Poor	Poor
	High	Good	Fair	Poor	Very Poor
	Very High	Follow Up	Fair	Poor	Very Poor

Microbial Assessment Category (MAC)

There are four Microbial Assessment Categories (A to D) and these are determined from the 95th percentile of an enterococci dataset of at least 100 data points. Each MAC is associated with a risk of illness determined from epidemiological studies. The risks of illness shown below are not those associated with a single data point but are the overall risk of illness associated with an enterococci dataset with that 95th percentile[4].

Category	Enterococci (cfu/100mL)	Illness risk*
A	≤40	GI illness risk: <1% AFR illness risk: <0.3%
B	41–200	GI illness risk: 1–5% AFR illness risk: 0.3–1.9%
C	201–500	GI illness risk: >5–10% AFR illness risk: >1.9–3.9%
D	>500	GI illness risk: >10% AFR illness risk: >3.9%

* GI = gastrointestinal; AFR = acute fever and rash

Sanitary Inspection Category (SIC)

The aim of a sanitary inspection is to identify all sources of faecal contamination that could affect a swimming location and assess the risk to public health posed by these sources. It is an assessment of the likelihood of bacterial contamination from identified pollution sources and should, to some degree, correlate with the bacterial water quality results obtained from sampling.

Through the sanitary inspection process[5], beaches are categorised to reflect the likelihood of faecal contamination. There are five categories: Very Low, Low, Moderate, High and Very High.

Calculating the MAC

The 95th percentile is a useful statistic for summarising the distribution of enterococci data at a site. It embodies elements of both the location of the distribution (how high/low the enterococci counts are) and the scale of the distribution (how variable the enterococci counts are).

The 95th percentile values for each of the four Microbial Assessment Categories were determined by the World Health Organization using enterococci data collected from swimming locations across Europe. These values will represent different probabilities of illness if the distribution of enterococci data from swimming locations in NSW differs from the European distribution.

In recognition of this issue, Dr Richard Lugg (Department of Health, Western Australia) has developed a Microsoft® Excel tool for calculating a modified 95th percentile that takes into account the distribution of data. This tool has been used to calculate the 95th percentile values presented in this report and has been adopted for use by other state governments in Australia.

The tool can be downloaded from: www.public.health.wa.gov.au/3/1287/2/publications.pm under Forms and Templates [accessed 30/07/15].

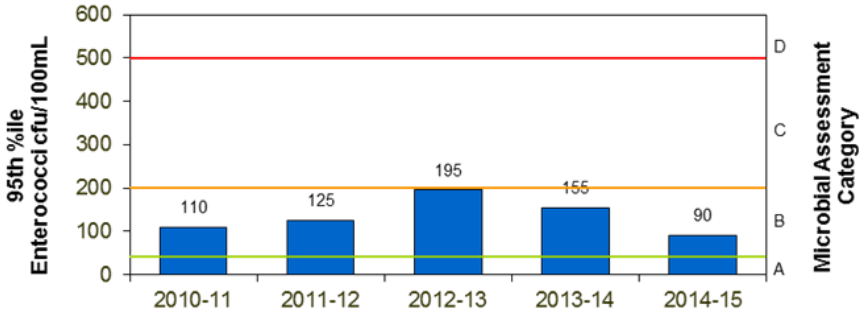
[4] Wyer, MD, Kay, D, Fleisher, JM, Salmon, RL, Jones F, Godfree, AF, Jackson G and Rogers, A (1999), 'An experimental health related classification for marine waters', *Water Research* 33(3):715–722.

[5] Office of Environment and Heritage 2013, *Sanitary Inspections*, Office of Environment and Heritage, Sydney, NSW, viewed 25 May 2015, www.environment.nsw.gov.au/beach/sanitaryinspections.htm.

Explanation of graphs and charts on beach pages

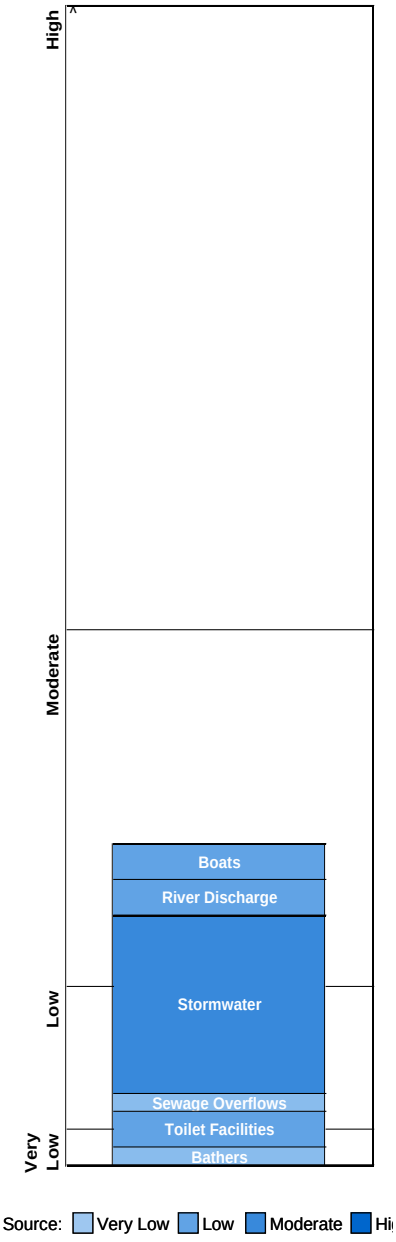
Microbial Assessment Category (MAC) chart

On each beach page, the MACs for the last five years are displayed on a simple bar chart. The bar is labelled with the 95th percentile value for each year and the thresholds dividing the A, B, C and D categories are marked for reference.



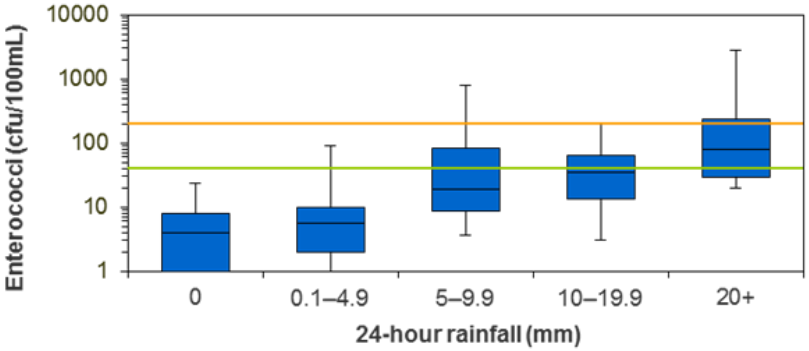
Sanitary Inspection Category (SIC) chart

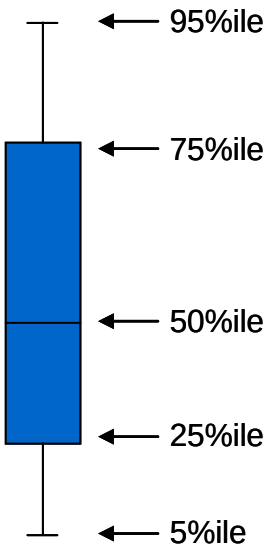
The results of the sanitary inspection for each swimming location are presented in a vertical bar chart, such as the one to the right. The graph shows the likelihood that each identified pollution source will contribute to faecal contamination at a swimming site, as indicated by the size and colour of the components of the bar, with the sum of these contributions being the overall likelihood, or Sanitary Inspection Category.



Response to rainfall plots

Trends in enterococci levels in response to rainfall are shown using a box plot (see below). For reference, enterococci levels of 40 cfu/100 mL and 200 cfu/100 mL are indicated with a green and orange line, respectively. The 40 cfu/100 mL level is referred to as the 'safe swimming limit'. The enterococci data were obtained from the last five years of monitoring. Rainfall data were obtained from rain gauges situated close to the sample site and are 24 hour totals to 9:00 am on the day of sampling. If there are fewer than five enterococci data points in a rainfall category, individual data points are presented instead of a box plot. At sites where many results are below the detection limit (1 cfu/100 mL), only the upper portion of the box plots will be visible.



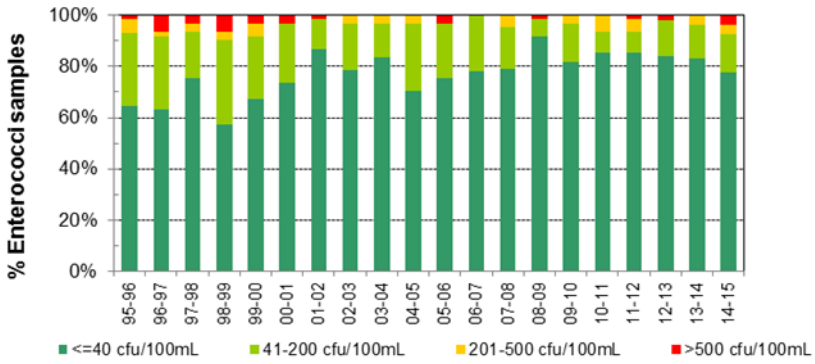


Each part of the box plot represents a significant percentile value of the sample population:

- 5% of the samples lie below the bottom whisker
- 25% of the samples lie below the bottom of the box
- half the samples are on each side of the middle line of the box (median or 50%ile)
- 75% of the samples lie below the top of the box
- 95% of the samples lie below the top whisker.

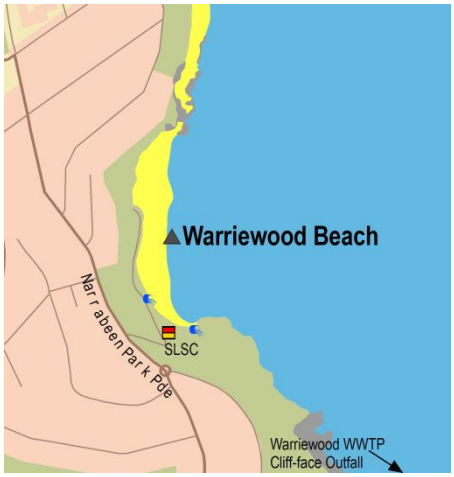
Historical enterococci data graphs

Trends in enterococci levels through time are presented for each swimming location as a bar graph. Each year's bar is colour coded to show the percentage of enterococci results up to 40 cfu/100 mL, between 41 and 200 cfu/100 mL, between 201 and 500 cfu/100 mL and greater than 500 cfu/100 mL. These categories reflect the Microbial Assessment Category thresholds and are coloured on the graph by dark green, light green, amber and red respectively.



Explanation of maps

A map of individual swimming locations is presented on each beach page. The scale of the maps is 1:15,000. Each map shows the location of the sampling site, land use and features such as surf lifesaving clubs. Potential pollution sources such as stormwater drains, sewage pumping stations, wastewater treatment plants, lagoons, rivers and creeks, are shown where accurate data is held.



Key to maps

- Sampling site
- Surf lifesaving club
- Wastewater treatment plant
- Storm sewage treatment plant
- Sewage pumping station
- Stormwater drain
- Water
- Baths
- National park
- Other park/reserve
- Built-up area
- Sand
- Land
- Roads
- Rock/cliff/reef
- Baths – netted area
- Breakwater/wharf