



## Beachwatch

# State of the beaches 2023–24

Statewide summary and how to read this report

Department of Climate Change,  
Energy, the Environment and Water



## Acknowledgement of Country

Department of Climate Change, Energy, the Environment and Water acknowledges the Traditional Custodians of the lands where we work and live.

We pay our respects to Elders past, present and emerging.

This resource may contain images or names of deceased persons in photographs or historical content.

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Artist and designer Nikita Ridgeway from Aboriginal design agency Boss Lady Creative Designs created the People and Community symbol.

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Recreational water quality has been monitored in New South Wales by the Department of Climate Change, Energy, the Environment and Water's Beachwatch Program since 1989, and in partnership with coastal councils since 2002 under the Beachwatch Partnership Program. This report summarises the performance of 218 swimming sites along the NSW coast in 2023–2024, providing a long-term assessment of how suitable a site is for swimming. Monitored sites include ocean beaches, estuarine areas, lake, lagoon and freshwater swimming sites and ocean baths.

In 2023–2024 swimming sites in New South Wales performed well with 72% of monitored swimming sites graded as Good or Very Good. Of these, 95% of the monitored ocean beaches were graded as Good or Very Good, meaning these sites were suitable for swimming for most or almost all of the time. While this is a good result, it is a slight decline in performance from the previous year and reflects the wet months experienced in many coastal areas, including the above average rainfall in April, and significant rainfall events. Many estuarine, lake, lagoon and freshwater swimming sites did not perform as well as ocean beaches, being more susceptible to impacts from wet weather conditions.

# The Beachwatch programs



Sampling in Sydney Harbour

Photo:

Beachwatch/DCCEEW

Hunter Water Corporation and Sydney Water monitor ocean beaches in the Hunter and Illawarra regions respectively.

## Beachwatch

The Beachwatch Program was established in 1989 to monitor Sydney's ocean beaches and was expanded to ocean beaches in the Hunter and Illawarra regions in 1996.

Monitoring of estuarine beaches commenced in 1994, with the addition of Sydney Harbour, Botany Bay and lower Georges River to the program. Pittwater was added in 1996 and most sites in Port Hacking were added in 1999.

## Beachwatch Partnership Program

The Beachwatch Partnership Program was established in 2002 and included 9 local councils monitoring 86 swimming sites along the NSW coast during 2023–2024:

- Ballina Shire Council
- Richmond Valley Council
- Bellingen Shire Council
- Central Coast Council
- Blue Mountains Council
- Wollongong City Council
- Kiama Municipal Council
- Shoalhaven City Council
- Eurobodalla Shire Council.

In 2022, Beachwatch Partnership Program expanded state-wide to support NSW councils to deliver water quality monitoring to more swim sites across New South Wales including inland and regional areas.

The water quality sampling and laboratory analysis are fully funded by each local council. The Department of Climate Change, Energy, the Environment and Water (the department) provides quality assurance support and assistance with community reporting.

## Beach pollution forecasts

Beachwatch issues daily pollution forecasts to enable beach goers to make informed decisions about where and when to swim. The forecasts are

available from 6:00 am and updated during the day if conditions change. They cover swimming sites in the Sydney, Hunter, Central Coast and Illawarra regions.

Beach pollution forecasts can be accessed via the Beachwatch website, email subscription, X (formerly Twitter) and Facebook.



Sampling sites and areas monitored in New South Wales under the Beachwatch programs

# 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 5 grades ranging from Very Good to Very Poor:

### 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

### 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 3 days at estuarine sites

### 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 3 days following rainfall or if there are signs of pollution such as discoloured water or odour or debris in the water

Some 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 the catchment.

### **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 3 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 almost all of the time.

## Follow Up

Sometimes a location's sanitary inspection and water quality data produce incongruent results. These locations are classified as 'Follow Up'. Further assessment will be required to obtain the necessary data to provide a definite classification in accordance with national guidelines.

### **The guidelines**

The National Health and Medical Research Council's guidelines for managing risks in recreational water (NHMRC 2008) were adopted for use in New South Wales 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 (WA Department of Health 2007).

## Enterococci

**The national guidelines advocate the use of enterococci as the single preferred faecal indicator in recreational 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 (Standards Australia 2007).

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

Beach Suitability Grades are determined by using the following matrix:

		Microbial Assessment Category			
		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




\* A Follow up grade occurs when sanitary inspection and water quality data produce potentially incongruent results; further assessment will be required.

Using the Beach Suitability Grade classification matrix, sites assigned a moderate Sanitary Inspection Category can only be rated as Good or Poor, with no option of Fair grades. This can create the impression of a large change in water quality when in fact there need only be a slight increase in bacterial counts to push it over the threshold, with no significant increase in the risk to public health.

## Explanation of tables

The report contains tables listing all monitored swimming sites including site type, beach grade and change in grade from the previous year.

The following symbols are used to show the change in beach grade from the previous year:

-  Stable
-  Improved
-  Declined

A provisional grade indicates the assessment is based on limited data collected during the assessment period and should not be compared to the beach grade from the previous year.

## Rainfall impacts

Rainfall is the major driver of pollution to recreational waters, generating stormwater runoff and triggering untreated 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 2023–2024 are based on water quality data collected over the last 2–4 years.

Rainfall over this period has been diverse:

- 2020–2021: variable rainfall with significant wet weather events, including record wet months
- 2021–2022: extended periods of wet weather, including the wettest summer since 2012, record wet months and significant flooding events
- 2022–2023: variable rainfall, with some very wet months over winter and spring, including the wettest July on record in many coastal areas
- 2023–2024: extended periods of average to below average rainfall, with some isolated wet months.

See the section on **How to read this report** on page 4 for an explanation of the Beach Suitability Grades.

Monthly rainfall totals along the NSW coast were average to below average during winter and early spring 2023. The isolated wet months mostly occurred in summer and mid-autumn:

- The North Coast and Mid-North Coast recorded rainfall above the long-term monthly averages in January and April 2024.
- Well above average rainfall totals were recorded in November 2023, and February and April 2024 in the Hunter and Central Coast regions.
- April 2024 was the wettest month in Sydney region, particularly in the north.
- In the Illawarra and South Coast regions, November and December 2023 and April 2024 were the wettest months, recording well above average rainfall.

Several significant wet weather events occurred during the reporting year. Notably, a significant wet weather event in early April 2024 triggered localised flooding and

impacted recreational water quality, particularly in the Central Coast, Sydney and Illawarra regions. Rainfall gauges in these regions recorded their highest April daily rainfall, and highest April total rainfall for many years with more than 2–3 times the long-term monthly average.

See the section on **Quality assurance** on page 37 for an explanation and results of the quality assurance program.

A quality assurance program ensures the information collected and reported by Beachwatch and our partners is accurate and reliable.

### **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 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.

# State of the beaches statewide summary 2023– 2024



Queenscliff Beach

Photo:

Beachwatch/DCCEEW

## Monitoring water quality for swimming in New South Wales

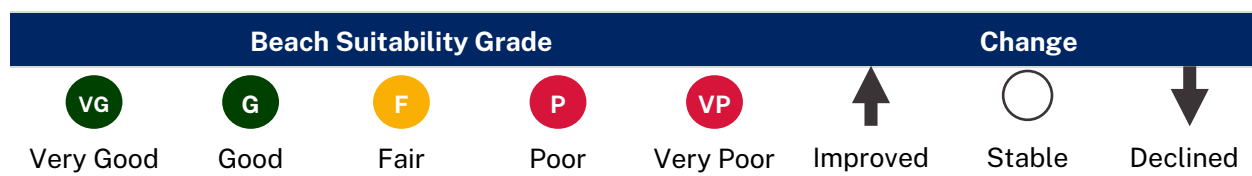
The water quality of beaches and other swimming locations is monitored under the NSW Government’s Beachwatch programs to provide the community with accurate information on the cleanliness of the water and to enable individuals to make informed decisions about where and when to swim. Routine assessment 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 New South Wales 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 (2–4 years’ worth of data depending on the sampling frequency) and a risk assessment of potential pollution sources.

In 2023–2024 Beachwatch and our partners monitored 218 swimming locations in NSW. Results are summarised by region and compared with the previous year’s results in the following tables. This year, 72% of all monitored swimming sites were graded as Good or Very Good and 95% of the monitored ocean beaches were graded as Good or Very Good.













**Beach Suitability Grades for North Coast region**

Swimming site	Site type	Beach Suitability Grade	Change
<b>Ballina Shire Council</b>			
Seven Mile Beach	Ocean beach	VG	<input type="radio"/>
Lake Ainsworth North	Lake/Lagoon	P	<input type="radio"/>
Lake Ainsworth East	Lake/Lagoon	P	<input type="radio"/>
Lake Ainsworth South	Lake/Lagoon	G	<input type="radio"/>
Lake Ainsworth West	Lake/Lagoon	P	<input type="radio"/>
Shelly Beach	Ocean beach	VG	<input type="radio"/>
Lighthouse Beach	Ocean beach	VG	<input type="radio"/>
Shaws Bay North	Estuarine	P	<input type="radio"/>
Shaws Bay East	Estuarine	P	↓
Shaws Bay East Arm	Estuarine	G	<input type="radio"/>
Shaws Bay East Beach	Estuarine	G	<input type="radio"/>
Shaws Bay West	Estuarine	P	<input type="radio"/>
The Serpentine	Estuarine	G	<input type="radio"/>
Missingham Beach	Estuarine	P <sup>^</sup>	<input type="radio"/>
<b>Richmond Valley Council</b>			
Airforce Beach	Ocean beach	G	<input type="radio"/>
Main Beach	Ocean beach	G	<input type="radio"/>
Shark Bay	Ocean beach	VG	<input type="radio"/>
Evans River	Estuarine	P	<input type="radio"/>
Elm Street Bridge North (Evans River)	Estuarine	P	<input type="radio"/>



^ Provisional: Information required for the analysis is incomplete due to limited bacterial data or limited information on potential pollution sources in the catchment.

**Beach Suitability Grades for Mid-North Coast region**

Swimming site	Site type	Beach Suitability Grade	Change
<b>Bellingen Shire Council</b>			
Arthur Keough Reserve (Never Never River)	Freshwater	 ^	
Lavenders Bridge (Bellinger River)	Estuarine	 ^	
Dalhousie Creek	Lagoon	Follow Up ^	
Hungry Head Beach	Ocean beach	 ^	
Urunga Lido (Kalang River)	Estuarine	 ^	
Mylestom Baths (Bellinger River)	Estuarine	Follow Up ^	
North Beach	Ocean beach	 ^	


Beach Suitability Grade					Change		
							
Very Good	Good	Fair	Poor	Very Poor	Improved	Stable	Declined

^ Provisional: Information required for the analysis is incomplete due to limited bacterial data or limited information on potential pollution sources in the catchment.

Follow Up: Sanitary inspection and water-quality data produce potentially incongruent results; further assessment will be required.



















**Beach Suitability Grades for Hunter region**





Swimming site	Site type	Beach Suitability Grade	Change
<b>Port Stephens Council</b>			
Zenith Beach	Ocean beach	VG	<input type="radio"/>
Box Beach	Ocean beach	VG	<input type="radio"/>
Fingal Beach	Ocean beach	VG	<input type="radio"/>
One Mile Beach	Ocean beach	VG	<input type="radio"/>
<b>City of Newcastle Council</b>			
Stockton Beach	Ocean beach	VG	<input type="radio"/>
Nobbys Beach	Ocean beach	VG	<input type="radio"/>
Newcastle Beach	Ocean beach	VG	<input type="radio"/>
Bar Beach	Ocean beach	VG	<input type="radio"/>
Merewether Beach	Ocean beach	VG	<input type="radio"/>
Burwood North Beach	Ocean beach	VG	<input type="radio"/>
Burwood South Beach	Ocean beach	VG	<input type="radio"/>
<b>Lake Macquarie City Council</b>			
Glenrock Lagoon Beach	Ocean beach	VG	<input type="radio"/>
Dudley Beach	Ocean beach	VG	<input type="radio"/>
Redhead Beach	Ocean beach	VG	<input type="radio"/>
Blacksmiths Beach	Ocean beach	VG	<input type="radio"/>
Swansea Heads Little Beach	Ocean beach	G	<input type="radio"/>
Caves Beach	Ocean beach	VG	<input type="radio"/>

Beach Suitability Grade					Change		
							
Very Good	Good	Fair	Poor	Very Poor	Improved	Stable	Declined

**Beach Suitability Grades for Central Coast region**











































Swimming site	Site type	Beach Suitability Grade	Change
<b>Central Coast Council</b>			
Lakes Beach	Ocean beach	VG	↑
Cabbage Tree Bay Rockpool	Ocean baths	G	○
Soldiers Beach	Ocean beach	VG	↑
North Entrance Beach	Ocean beach	VG	○
The Entrance Beach	Ocean beach	G	○
The Entrance Ocean Baths	Ocean baths	G	○
Toowoan Bay	Ocean beach	G	○
Shelly Beach	Ocean beach	G	○
Gwandalan	Lake/Lagoon	P	○
Summerland Point Baths	Lake/Lagoon	P	○
Chain Valley Bay	Lake/Lagoon	P	○
Mannering Park Baths	Lake/Lagoon	P	○
Lake Munmorah Baths	Lake/Lagoon	P	○
Canton Beach	Lake/Lagoon	P	○
Wamberal Beach	Ocean beach	G	○
Wamberal Lagoon	Lagoon	P	○
Terrigal Beach	Ocean beach	G	↑
Terrigal Lagoon	Lagoon	P	○
North Avoca Beach	Ocean beach	G	○
Avoca Beach	Ocean beach	G	○
Avoca Lagoon	Lagoon	P	○
Copacabana Beach	Ocean beach	G	○
Cockrone Lagoon	Lagoon	P	○














































Swimming site	Site type	Beach Suitability Grade	Change
<b>Central Coast Council (continued)</b>			
MacMasters Beach	Ocean beach		
Killcare Beach	Ocean beach		
Ocean Beach	Ocean beach		
Umina Beach	Ocean beach		
Pearl Beach Rockpool	Ocean baths		
Davistown Baths	Estuarine		
Pretty Beach Baths	Estuarine		
Woy Woy Baths	Estuarine		
Yattalunga Baths	Estuarine		











Beach Suitability Grade					Change		
							
Very Good	Good	Fair	Poor	Very Poor	Improved	Stable	Declined





























**Beach Suitability Grades for Sydney region**







Swimming site	Site type	Beach Suitability Grade	Change
<b>Northern Sydney – Ocean beaches</b>			
Palm Beach	Ocean beach	VG	○
Whale Beach	Ocean beach	VG	○
Avalon Beach	Ocean beach	VG	○
Bilgola Beach	Ocean beach	G	○
Newport Beach	Ocean beach	VG	↑
Bungan Beach	Ocean beach	VG	↑
Mona Vale Beach	Ocean beach	VG	↑
Warriewood Beach	Ocean beach	G	○
Turimetta Beach	Ocean beach	G	○
North Narrabeen Beach	Ocean beach	G	○
Narrabeen Lagoon (Birdwood Park)	Lagoon	P	○
Bilarong Reserve	Lagoon	P	○
Collaroy Beach	Ocean beach	G	○
Long Reef Beach	Ocean beach	G	○
Dee Why Beach	Ocean beach	G	○
North Curl Curl Beach	Ocean beach	G	○
South Curl Curl Beach	Ocean beach	G	○
Freshwater Beach	Ocean beach	G	○
Queenscliff Beach	Ocean beach	G	○
North Steyne Beach	Ocean beach	G	○
South Steyne Beach	Ocean beach	G	○
Shelly Beach	Ocean beach	P	↓

Swimming site	Site type	Beach Suitability Grade	Change
<b>Northern Sydney – Pittwater</b>			
Barrenjoey Beach	Estuarine		
Paradise Beach Baths	Estuarine		
Clareville Beach	Estuarine		
Taylor's Point Baths	Estuarine		
Bayview Baths	Estuarine		
Elvina Bay	Estuarine		
North Scotland Island	Estuarine		
South Scotland Island	Estuarine		
The Basin	Estuarine		
Great Mackerel Beach	Estuarine		
<b>Central Sydney – Ocean beaches</b>			
Bondi Beach	Ocean beach		
Tamarama Beach	Ocean beach		
Bronte Beach	Ocean beach		
Clovelly Beach	Ocean beach		
Gordons Bay	Ocean beach		
Coogee Beach	Ocean beach		
Maroubra Beach	Ocean beach		
South Maroubra Beach	Ocean beach		
South Maroubra Rockpool	Ocean baths		
Malabar Beach	Ocean beach		
Little Bay Beach	Ocean beach		

Swimming site	Site type	Beach Suitability Grade	Change
<b>Central Sydney – Sydney Harbour</b>			
Camp Cove	Estuarine		
Watsons Bay	Estuarine		
Parsley Bay	Estuarine		
Nielsen Park	Estuarine		
Rose Bay Beach	Estuarine		
Murray Rose Pool	Estuarine		
Dawn Fraser Pool	Estuarine		
Chiswick Baths	Estuarine		
Cabarita Beach	Estuarine		
Woolwich Baths	Estuarine		
Tambourine Bay	Estuarine		
Woodford Bay	Estuarine		
Greenwich Baths	Estuarine		
Hayes St Beach	Estuarine		
Clifton Gardens	Estuarine		
Balmoral Baths	Estuarine		
Edwards Beach	Estuarine		
Chinamans Beach	Estuarine		
Northbridge Baths	Estuarine		
Davidson Reserve	Estuarine		
Gurney Crescent Baths	Estuarine		
Clontarf Pool	Estuarine		
Forty Baskets Pool	Estuarine		

Swimming site	Site type	Beach Suitability Grade	Change
<b>Central Sydney – Sydney Harbour (continued)</b>			
Fairlight Beach	Estuarine		
Manly Cove	Estuarine		
Little Manly Cove	Estuarine		
<b>Southern Sydney – Ocean beaches</b>			
Boat Harbour	Ocean beach		
Greenhills Beach	Ocean beach		
Wanda Beach	Ocean beach		
Elouera Beach	Ocean beach		
North Cronulla Beach	Ocean beach		
South Cronulla Beach	Ocean beach		
Shelly Beach	Ocean beach		
Oak Park	Ocean beach		
<b>Southern Sydney – Botany Bay and lower Georges River</b>			
Silver Beach	Estuarine		
Como Baths	Estuarine		
Jew Fish Bay Baths	Estuarine		
Oatley Bay Baths	Estuarine		
Carss Point Baths	Estuarine		
Sandringham Baths	Estuarine		
Dolls Point Baths	Estuarine		
Ramsgate Baths	Estuarine		
Monterey Baths	Estuarine		
Brighton-Le-Sands Baths	Estuarine		

Swimming site	Site type	Beach Suitability Grade	Change
Kyeemagh Baths	Estuarine		
<b>Southern Sydney – Botany Bay and lower Georges River (continued)</b>			
Foreshores Beach	Estuarine		
Yarra Bay	Estuarine		
Frenchmans Bay	Estuarine		
Congwong Bay	Estuarine		
<b>Southern Sydney – Port Hacking</b>			
Jibbon Beach	Estuarine		
Horderns Beach	Estuarine		
GyMEA Bay Baths	Estuarine		
Lilli Pilli Baths	Estuarine		
Gunnamatta Bay Baths	Estuarine		
<b>Western Sydney – Blue Mountains Council</b>			
Megalong Creek	Freshwater		
Yosemite Creek – Minnehaha Falls	Freshwater		
Wentworth Falls Lake – Jetty	Freshwater		
Wentworth Falls Lake – Beach	Freshwater		

Beach Suitability Grade					Change		
							
Very Good	Good	Fair	Poor	Very Poor	Improved	Stable	Declined

## Beach Suitability Grades for Illawarra region

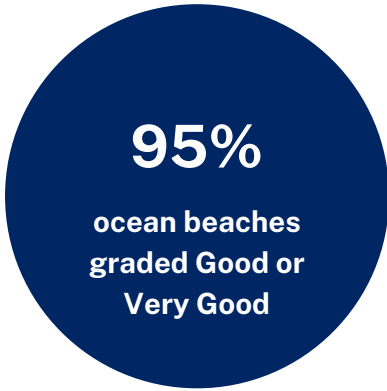
Swimming site	Site type	Beach Suitability Grade	Change
<b>Wollongong City Council</b>			
Stanwell Park Beach	Ocean beach	VG	
Coledale Beach	Ocean beach	VG	
Austinmer Beach	Ocean beach	VG	
Thirroul Beach	Ocean beach	G	
Bulli Beach	Ocean beach	G	
Woonona Beach	Ocean beach	VG	
Bellambi Beach	Ocean beach	G	
Corrimal Beach	Ocean beach	G	
North Wollongong Beach	Ocean beach	G	
Wollongong City Beach	Ocean beach	VG	
Coniston Beach	Ocean beach	VG	
Fishermans Beach	Ocean beach	VG	
Port Kembla Beach	Ocean beach	G	
<b>Shellharbour City Council</b>			
Entrance Lagoon Beach	Lake/Lagoon	P	
Warilla Beach	Ocean beach	VG	
Shellharbour Beach	Ocean beach	VG	
<b>Kiama Municipal Council</b>			
Boyd's Jones Beach	Ocean beach	VG	
Bombo Beach	Ocean beach	VG	
Surf Beach Kiama	Ocean beach	G	
Werri Beach	Ocean beach	VG	
Seven Mile Beach (Gerroa)	Ocean beach	G	



## Beach Suitability Grades for South Coast region

Swimming site	Site type	Beach Suitability Grade	Change
<b>Shoalhaven City Council</b>			
Shoalhaven Heads Beach	Ocean beach	VG	<input type="radio"/>
Tilbury Cove	Ocean beach	VG	<input type="radio"/>
Warrain Beach	Ocean beach	VG	<input type="radio"/>
Collingwood Beach	Ocean beach	VG	<input type="radio"/>
Cudmirrah Beach	Ocean beach	VG	<input type="radio"/>
Mollymook Beach	Ocean beach	VG	<input type="radio"/>
Rennies Beach	Ocean beach	VG	<input type="radio"/>
Racecourse Beach	Ocean beach	VG	<input type="radio"/>
Bawley Point Beach	Ocean beach	VG	<input type="radio"/>
Merry Beach	Ocean beach	VG	<input type="radio"/>
<b>Eurobodalla Shire Council</b>			
Cookies Beach	Ocean beach	VG	<input type="radio"/>
Caseys Beach	Ocean beach	G	<input type="radio"/>
Surf Beach	Ocean beach	P	<input type="radio"/>
Malua Bay Beach	Ocean beach	VG	<input type="radio"/>
Broulee Beach	Ocean beach	VG	↑
South Broulee (Bengello) Beach	Ocean beach	G	↓
Shelley Beach (Moruya Heads)	Ocean beach	G	<input type="radio"/>
Tuross Main Beach	Ocean beach	G	<input type="radio"/>
Brou Beach	Ocean beach	VG	<input type="radio"/>
Wagonga Inlet	Estuarine	G	<input type="radio"/>
Narooma Main Beach	Ocean beach	G	<input type="radio"/>





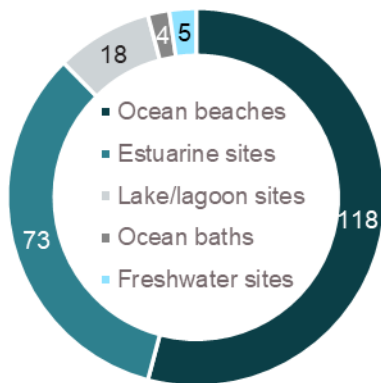
## Overall beach performance for 2023–2024

In 2023–2024, 72% of monitored swimming sites in New South Wales were graded as Very Good or Good, indicating they were suitable for swimming for most or almost all of the time, a slight decline in overall performance from the previous year when 73% of swimming sites were graded as Very Good or Good.

### Percentage of sites graded as Very Good or Good

	2021–2022	2022–2023	2023–2024	Trend
<b>Overall</b>	<b>80%</b> <b>(214 sites)</b>	<b>73%</b> <b>(225 sites)</b>	<b>72%</b> <b>(218 sites)</b>	
Ocean beaches	94% (123 sites)	96% (123 sites)	95% (118 sites)	
Estuarine sites	68% (69 sites)	56% (75 sites)	53% (73 sites)	
Lake/lagoon sites	24% (17 sites)	6% (18 sites)	6% (18 sites)	
Ocean baths	100% (5 sites)	100% (4 sites)	100% (4 sites)	
Freshwater sites	–	0% (5 sites)	0% (5 sites)	

During 2023–2024, 218 swimming sites were monitored including ocean beaches, estuarine areas, lake, lagoon and freshwater swimming sites and ocean baths.



**Site types monitored in New South Wales by Beachwatch and partnership councils**

Changes in the percentage of sites graded as Very Good or Good reflect changes in water quality over time and may also be influenced by changes in the number of sites monitored each year. In 2022 Beachwatch expanded state-wide to include inland waterways and freshwater swimming sites in the Beachwatch Partnership monitoring program.

Beach Suitability Grades at 15 swimming sites improved in 2023–2024. These sites included 12 ocean beaches upgraded from Good to Very Good, 2 ocean beaches upgraded from Poor to Good and one estuarine swimming site upgraded from Poor to Good. Beach Suitability Grades at 10 swimming sites were downgraded from the previous year. While 2 ocean beaches and 1 estuarine swimming site were downgraded from Very Good to Good, 3 ocean beaches and 4 estuarine swimming sites crossed the threshold from Good to Poor. Two Beach Suitability Grades continued to be graded as Follow Up. Further assessment will be required to obtain definite classifications in accordance with national guidelines.

While overall results are good, many lake/lagoon, estuarine and freshwater swimming locations did not perform as well as ocean beaches, primarily due to lower levels of flushing increasing the time needed to disperse and dilute pollution inputs. As ocean beaches, estuarine beaches, lake/lagoon and freshwater swimming sites and ocean baths have very different responses to rainfall-related impacts, the results for each type of swimming area are discussed separately.

### Ocean beaches



**Beach Suitability Grades for monitored ocean beaches in New South Wales**

The open ocean beaches of New South Wales had excellent water quality in 2023–2024 with 95% of 118 monitored ocean beaches graded as Very Good or Good. This indicates they were suitable for swimming most or almost all of the time. This performance is a slight decline on the 2022–2023 result, when 96% of 123 ocean beaches were graded as Very Good or Good.

The impacts of rainfall on water quality are least apparent at ocean beaches with tidal flushing rapidly dispersing and diluting pollution inputs.

Twelve ocean beaches were upgraded to Very Good from Good in 2023–2024:

- Lakes Beach and Soldiers Beach on the Central Coast
- Newport Beach, Bungan Beach, Mona Vale Beach and South Maroubra Beach in Sydney
- Coniston Beach, Warilla Beach, Boyds Jones Beach, Bombo Beach, Werri Beach in the Illawarra
- Broulee Beach on the South Coast.

Two ocean beaches were upgraded to Good from Poor in 2023–2024:

- Hungry Head Beach on the Mid-North Coast
- Terrigal Beach on the Central Coast.

Six ocean beaches were graded as Poor in 2023–2024:

- Shelly Beach (Manly), Bronte Beach, Coogee Beach, Malabar Beach and Boat Harbour in Sydney
- Surf Beach on the South Coast.

Shelly Beach (Manly), Bronte Beach and Boat Harbour were downgraded to Poor from Good in the previous year. Water quality at these sites is mostly suitable for swimming during dry weather conditions, but enterococci levels increase following rainfall, exceeding the safe swimming limit following moderate to heavy rain.

Coogee Beach and Malabar Beach continued to be graded Poor in 2023–2024. Water quality at these sites is mostly suitable for swimming during dry weather conditions, but enterococci levels increase following rainfall. Microbial water quality can be impacted at these beaches by several potential sources of faecal contamination including stormwater. Malabar Beach is located at the end of a long narrow bay and takes longer to recover from stormwater events than surrounding areas. Lower levels of flushing increase the time needed to disperse and dilute pollution inputs, with elevated bacteria levels often recorded up to 2 days after rainfall.

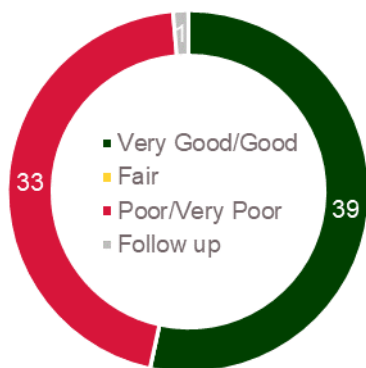
The NSW Government has previously invested \$2.5 million for the diversion of stormwater from Coogee Beach to improve water quality and the marine environment. The Coogee Beach Stormwater Quality

Working Group has made substantial progress on the detailed design of the stormwater solution. A comprehensive implementation plan will be presented to council for review and consideration in 2025.

Surf Beach continued to be graded as Poor in 2023–2024. Elevated bacterial levels were often recorded during dry weather conditions and increased following rainfall. Microbial water quality at this beach has improved slightly this year, however it had been declining for several years prior to this result. Eurobodalla Shire Council engaged a consultant to undertake a water quality investigation to identify the source of microbial contamination contributing to poor water quality at Surf Beach. The investigation identified multiple potential sources of contamination including domestic dog faeces entering waterways, discharge from Batemans Bay Sewage Treatment Plant (STP) during overflow events, STP outfall contamination via tidal patterns and failure or leakage of onsite sewer management systems (OSSM) upstream of Surf Beach. Council will be undertaking recommended actions, including a responsible dog waste disposal education program and an audit of all OSSMs in the catchment to reduce any potential contamination from these sources.

As a general precaution swimming should be avoided at ocean beaches during and for up to one day after rainfall, or if there are signs of stormwater pollution such as discoloured water, flowing stormwater drains or floating debris.

### Estuarine beaches



**Beach Suitability Grades for monitored estuarine beaches in New South Wales**

Thirty-nine (53%) of the 73 estuarine swimming sites were graded as Very Good or Good in 2023–2024. This is a slight decline in performance from the previous year when 56% of the 75 estuarine swimming sites were graded as Very Good or Good. While water quality at these sites was suitable for swimming most of the time, it was occasionally impacted by stormwater pollution following rainfall. These estuarine swimming sites are generally located in the well-flushed sections of the estuaries or had few potential sources of faecal contamination.

Woy Woy Baths improved to Good from Poor in the previous year. Microbial water quality at this site has shown gradual improvement over the last 3 years, however remains close to the threshold between Good and Poor grades.

Thirty-one estuarine beaches were graded as Poor in 2023–2024, with 27 sites continuing to be graded as Poor, and four sites downgraded from Good in the previous year:

- Shaws Bay North, Shaws Bay East, Shaws Bay West, Missingham Beach, Evans River and Elm Street Bridge North (Evans River), on the North Coast
- Urunga Lido in Kalang River and Lavenders Bridge in Bellinger River on the Mid-North Coast
- Davistown Baths, Pretty Beach Baths and Yattalunga Baths in Brisbane Water on the Central Coast
- Bayview Baths in Pittwater, Rose Bay Beach, Murray Rose Pool, Woodford Bay, Tambourine Bay, Woolwich Baths, Gurney Crescent Baths, Northbridge Baths and Davidson Reserve in Sydney Harbour, Jew Fish Bay Baths, Como Baths, Oatley Bay Baths, Carss Point Baths, Dolls Point Baths, Ramsgate Baths, Brighton-Le-Sands Baths, Kyeemagh Baths, Yarra Bay and Frenchmans Bay in Botany Bay and lower Georges River, and Gunnamatta Bay Baths in Port Hacking in Sydney.

Water quality at these swimming sites was often suitable for swimming during dry weather conditions, with elevated bacterial levels recorded following rainfall. These sites were typically located in less well-flushed sections of the estuaries or had more significant pollution sources.

The poor grades are provisional for Missingham Beach on the North Coast and Lavenders Bridge and Urunga Lido on the Mid-North Coast with further monitoring required to enable a complete classification.

Shaws Bay East on the North Coast, Murray Rose Pool and Woodford Bay in Sydney Harbour, and Ramsgate Baths in Botany Bay were downgraded to Poor from Good in the previous year, due to a decline in microbial water quality.

Two estuarine beaches continued to be graded as Very Poor in 2023–2024: Foreshores Beach in Botany Bay and Gymea Bay Baths in Port Hacking in Sydney. Water quality at these sites is significantly impacted by faecal contamination during and following rainfall, and occasionally during dry weather.

Foreshores Beach is very susceptible to faecal contamination from the sewage overflows that periodically discharge into Mill Stream. Sydney Water has placed permanent signage to advise the public to avoid swimming 3 days after rainfall due to the risk from sewage overflows that may impact water quality at this site.

Microbial water quality at Gymea Bay Baths has shown trends of declining microbial assessments over the last 5 years. This site is susceptible to faecal contamination with many potential sources including stormwater, sewer chokes and from elsewhere within Port Hacking.

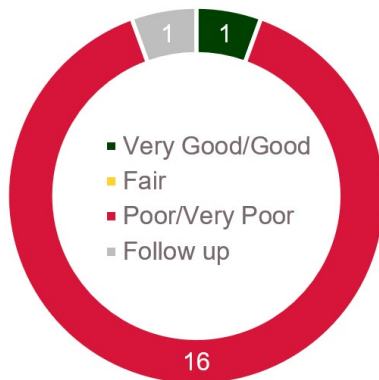
One estuarine beach, Mylestom Baths on the Mid-North Coast, was graded as Follow Up in 2023–2024. This grade is provisional due to limited bacterial data. Water quality was generally suitable for swimming in dry weather conditions but was impacted by stormwater pollution following rainfall.

An assessment of the potential pollution sources (known as the sanitary inspection) at Mylestom Baths indicates low risk, but microbial water quality assessment data indicate times of poor-quality water, which suggests there are sources of diffuse pollution that have not been identified. This swimming site is in a well-flushed section of the estuary, however the large catchment upstream has many potential sources of faecal contamination. Follow up is needed with further assessment required to assign a definite Beach Suitability Grade.

Estuarine sites are generally not as well flushed as ocean beaches, and so the time for pollution to disperse and dilute is longer. Pollution inputs are retained at some swimming sites when they are located in the upper reaches away from the main channels. As a precaution, avoid swimming in estuaries during and for up to 3 days

following rainfall, or if there are signs of pollution such as discoloured water, flowing stormwater drains or floating debris.

### Lake/lagoon swimming sites



**Beach Suitability Grades for monitored lake/lagoon swimming sites in New South Wales**

One (6%) of the 18 lake and lagoon swimming sites continued to be graded as Good in 2023–2024. This is a similar performance to the previous year.

The Good grade was recorded at Lake Ainsworth South on the North Coast. Water quality at this site was mostly suitable for swimming during dry weather, with elevated bacterial levels recorded following rainfall.

Sixteen lake and lagoon swimming sites continued to be graded as Poor in 2023–2024:

- Lake Ainsworth North, Lake Ainsworth East and Lake Ainsworth West on the North Coast
- 10 sites on the Central Coast: Gwandalan, Chain Valley Bay, Summerland Point Baths and Mannering Park Baths in Lake Macquarie; Lake Munmorah Baths in Lake Munmorah; Canton Beach in Tuggerah Lakes and 4 coastal lagoons at Wamberal, Terrigal, Avoca and Cockrone
- Birdwood Park and Bilarong Reserve in Narrabeen Lagoon in Sydney
- Entrance Lagoon Beach in Lake Illawarra in the Illawarra.

Microbial water quality at most of these sites was often elevated during dry weather conditions, and bacterial levels continued to increase following rainfall. These sites are susceptible to the impacts of wet weather during and for up to 3 days after rain.

In 2019, Ballina Shire Council investigated the poor water quality at Lake Ainsworth, with preliminary results showing the main contributor to elevated bacteria levels is avian (bird) sources.

Central Coast Council has been investigating poor water quality at Canton Beach and the 4 coastal lagoons since

2019, and the findings are assisting to detect and resolve water quality issues in these catchments.

Dalhousie Creek on the Mid-North Coast was the only lagoon site graded as Follow Up in 2023-24. This grade was due to incongruent results from the sanitary inspection and microbial water quality. While this grade is provisional, microbial water quality was mostly suitable for swimming during dry weather conditions, with elevated bacterial levels recorded following rainfall.

An assessment of the potential pollution sources (known as the sanitary inspection) at Dalhousie Creek on the Mid-North Coast indicates low risk, but microbial water quality assessment data indicate times of poor-quality water, which suggests there are sources of diffuse pollution that have not been identified. Follow up is needed with further assessment required to assign a definite Beach Suitability Grade.

The water quality at lake/lagoon swimming sites often depends on how close the swimming area is to the ocean and whether the entrance is open to the ocean. When the entrance is open and the site is near that opening, the site can be well flushed by clean ocean water, and water quality is often of a high standard. If the site is not near the entrance, or the entrance is closed, pollution inputs are retained, and the water quality can be affected by contamination from stormwater runoff to the lake/lagoon.

As a general precaution, it is recommended that swimming at lake and lagoon swimming sites be avoided during and for up to 3 days after rainfall or if there are signs of stormwater pollution such as discoloured water or floating debris.

## Freshwater swimming sites



**Beach Suitability Grades for monitored freshwater swimming sites in New South Wales**

All 5 freshwater swimming sites were graded as Poor or Very Poor in 2023–2024.

Four freshwater swimming sites continued to be graded as Poor in 2023–2024:

- Arthur Keough Reserve in the Never Never River on the Mid-North Coast
- Megalong Creek, Wentworth Falls Lake Jetty and Wentworth Falls Lake Beach in the Blue Mountains in Western Sydney.

Microbial water quality at these sites was not always suitable for swimming. These sites are susceptible to pollution particularly after rainfall, and often during dry weather conditions, and have several sources of faecal contamination including upstream sources, stormwater, onsite systems, sewer chokes and animals.

A high proportion of the samples collected at Blue Mountains swimming sites for the 2023–2024 assessment period were collected during wet weather conditions, contributing to the Poor grades.

The Beach Suitability Grade for Arthur Keough Reserve on the Mid-North Coast is provisional with incomplete data available for the microbial assessment. Further monitoring is required to obtain the necessary data to provide a definite classification.

Bellingen Shire Council is investigating the source of poor water quality, including testing 4 tributaries to the Never Never River to find sources of diffuse pollution that have not been identified. Further investigation will help address issues of concern and explore potential management solutions.

One freshwater swimming site continued to be graded as Very Poor in 2023–2024:

- Yosemite Creek – Minnehaha Falls in the Blue Mountains in Western Sydney.

Water quality at this site is very susceptible to faecal pollution and may often be unsuitable for swimming. Several potential sources of faecal contamination have been identified in the sanitary inspection, including stormwater, sewer chokes and impacts from upstream sources in Yosemite Creek

Low levels of flushing in shallow pools and freshwater creeks can increase the time needed to disperse and dilute pollution inputs, taking longer to recover from stormwater events.

As a general precaution swimming should be avoided during and for up to 3 days in freshwater creeks and shallow pools, or if there are signs of stormwater pollution such as discoloured water or floating debris.



**Beach Suitability Grades for monitored ocean baths in New South Wales**

## Ocean baths

All 4 ocean baths continued to be graded as Good in 2023–2024:

- Cabbage Tree Bay Rockpool, The Entrance Ocean Baths and Pearl Beach Rockpool on the Central Coast
- South Maroubra Rockpool in Sydney.

Microbial water quality at the ocean baths was mostly suitable for swimming after little or no rain, with elevated bacterial levels recorded following higher levels of rainfall.

The water quality at ocean baths often depends on the flushing regime. While The Entrance Ocean Baths is regularly cleaned by council, other ocean baths are flushed irregularly, relying on the natural exchange of ocean water over the rocks and pool walls. It is recommended that swimming be avoided during and for up to one day after rainfall, or if there are signs of pollution such as discoloured water or floating debris.

# Quality assurance



Water sample collection

Photo:

Beachwatch/DCCEEW

## The quality assurance program

To ensure that data reported by Beachwatch is accurate and reliable, quality assurance is included in all parts of the program:

- field sampling (equipment preparation, sample collection, sample storage and sample transport)
- laboratory analysis
- data management
- community reporting.

### Beachwatch reporting system

In August 2023 Beachwatch launched a new reporting system to streamline, integrate and automate data capture to support real-time reporting of water quality information. The system consists of multiple applications including a modern user-friendly website, Salesforce platform including a partner portal, MuleSoft and database, with stringent quality controls built-in, enhancing quality assurance for the program.

## Field sampling

Hunter Water, Sydney Water and Beachwatch collect samples throughout the year and are audited quarterly. Councils in the Beachwatch Partnership Program usually sample for part or all of the swimming season (October to April) and are audited once during this period. There were 20 field audits completed during the 2023–2024 sampling season.

Audits include an assessment of field officer performance according to established Beachwatch Programs sampling protocols, including aseptic sampling techniques, sample collection, sample storage and documentation of field observations. These protocols are based on internationally recognised methods for the collection of water samples in recreational bathing areas (APHA 1998).

## **Beachwatch Program**

Sample collection by Beachwatch, Hunter Water and Sydney Water complied well with established sampling protocols, with a compliance of 100%. One Beachwatch audit was missed during the 2023–2024 reporting year, however history of compliance has been very high and so there are no concerns on the competency of field sampling.

## **Beachwatch partners**

Sample collection by Hunter Water and Sydney Water complied well with established sampling protocols, with a compliance of 100%.

Councils in the Beachwatch Partnership Program achieved an overall compliance of 98% with Beachwatch sampling protocols. During 2 council audits it was identified that samples may not have been stored at the correct temperature. Subsequently, the councils have implemented quality control measures, including monitoring the esky temperature, and using additional ice/ice bricks and esky bags to ensure samples are kept at the required temperature for storage and transportation.

### **Who samples where?**

#### **Beachwatch**

Collects samples at 97 ocean and harbour beaches in Sydney.

#### **Hunter Water**

Collects samples at 17 ocean beaches in Port Stephens, Newcastle and Lake Macquarie.

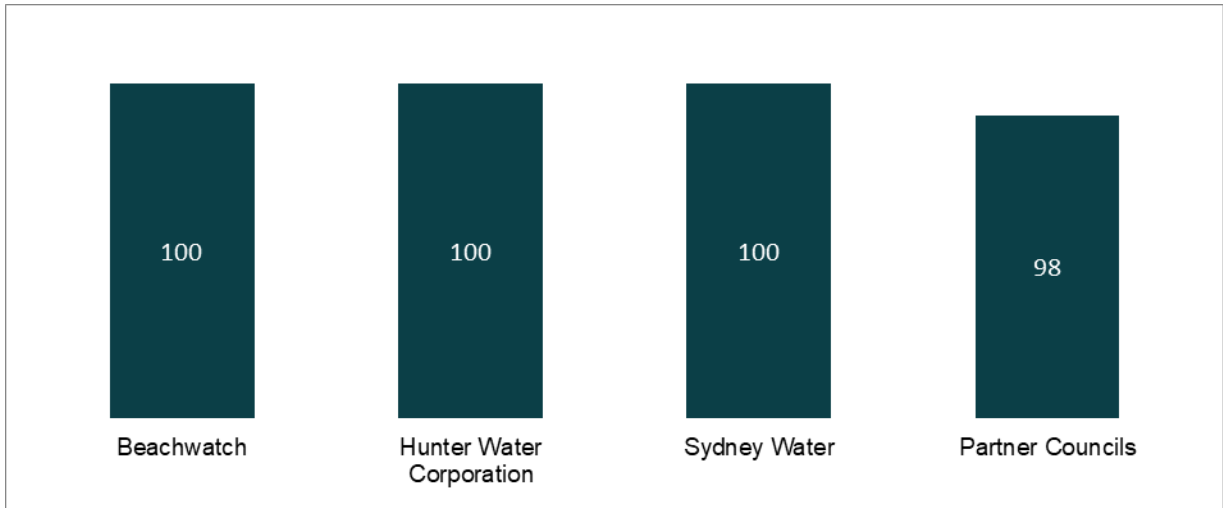
#### **Sydney Water**

Collects samples at 18 ocean beaches in Wollongong, Shellharbour and Kiama.

#### **Partner councils**

Ballina Shire Council, Richmond Valley Council, Bellingen Shire Council, Blue Mountains Council,

Central Coast Council, Wollongong City Council, Kiama Municipal Council, Shoalhaven City Council and Eurobodalla Shire Council collect samples at 86 popular swimming locations in their respective local government areas.



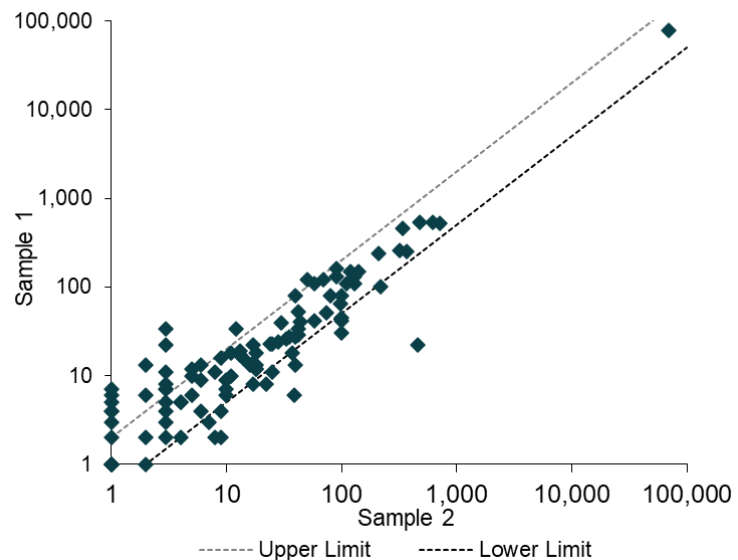
**Percentage compliance with Beachwatch sampling protocols in 2023–2024**

## Laboratory analysis

### Beachwatch program

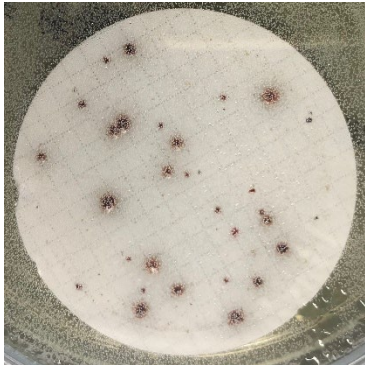
To assess the reliability of laboratory data, Beachwatch sends duplicate water samples to our contracted microbiological laboratory, which is accredited by the National Association of Testing Authorities (NATA). Duplicate samples are collected from the same site at the same time and the laboratory is unaware that the samples are collected from a single location. The results are expected to be similar.

Due to the inherent variability of bacterial levels in environmental samples, duplicate results that are within 0.3 log-units of each other (equivalent to a halving or doubling of density on a linear scale) are considered to be acceptable. Most duplicate samples were within the acceptable limits, with only 21% of the 122 enterococci results outside this range. Of the 21%, the majority were at very low bacterial densities that were below the safe swimming limit.



**Distribution of duplicate enterococci (cfu/100 mL) results for the contracted laboratory, May 2023 to April 2024**

## Beachwatch partners



Confirmed colonies of enterococci on plate  
Photo: Silliker Australia

Water samples for Hunter and Illawarra beaches were tested at Hunter Water and Sydney Water laboratories respectively. These are NATA accredited laboratories that comply with strict assessments.

Council laboratories in the Beachwatch Partnership Program are required to undertake proficiency testing to determine the reliability of data. In 2023–2024, most laboratories were NATA accredited or participated in regular proficiency testing programs to demonstrate competence in enterococci analysis.

Water samples for Bellingen Shire Council, Blue Mountains Council, Wollongong City Council, Kiama Municipal Council, Shoalhaven City Council and Eurobodalla Shire Council were tested by NATA accredited laboratories that comply with strict assessments.

The proficiency testing for Central Coast councils' laboratories was conducted by IFM Quality Services Pty Ltd. IFM Quality Services despatches samples in freeze dried form that require reconstitution prior to testing. The councils' laboratories underwent regular proficiency testing during October 2023 to April 2024 and recorded good results with enterococci counts reported within defined limits. Confidence can be placed in the accuracy of data from these laboratories. The Ballina and Richmond Valley laboratory did not undertake proficiency testing in 2023–2024.

## Data management

**Quality assurance procedures for data management were enhanced in the new reporting system, ensuring rigorous protocols are followed as part of the Beachwatch Program.**

Water quality data for monitored swim sites in the Beachwatch Program are entered by Beachwatch and our partners into the Beachwatch reporting system via the Salesforce platform, including the partner portal.

Water quality data for the Illawarra beaches are regularly forwarded electronically to Beachwatch from the Sydney Water laboratory for the Beachwatch team to upload to the reporting system. Sydney Water provide their data using the template compatible with the Beachwatch reporting system to minimise handling of data and data entry error.

Some of the quality controls incorporated into the new reporting system for data management include:

- all field observations and water quality data are entered by the responsible person, reducing opportunity for data entry error, and manual handling by another user
- all field observations and water quality data go through a series of quality checks, ensuring data is double-checked by the user, data entry is cross-checked by another user and cannot be changed after quality checks are completed
- reporting system has built-in requirements including validation rules and mandatory fields, ensuring data is not duplicated, and necessary fields are completed with acceptable values and format
- reporting system requires a user account with specific permissions, restricting which users can and cannot enter, change and approve data
- reporting system can ingest data using fixed templates when needed, to minimise manual data entry and reduce data entry error.

## Download data

Beachwatch data is available online on the Beachwatch 'Water quality data' webpage.

Once water quality data is approved through the quality checks, the data is automatically synced to the Beachwatch secure database, and automatically updates data available on the Beachwatch website. The results can be viewed and downloaded from the website.

## Community reporting

### Subscribe

Daily beach pollution forecast emails are available from the Beachwatch 'Subscribe' webpage

Providing the community with current beach water quality information is a core function of the Beachwatch programs, so reporting has been incorporated into the quality assurance program. This enables Beachwatch to measure the accuracy and reliability of our service. When necessary, this information is used to improve the reporting process.

### Beachwatch website

The new Beachwatch website was launched in August 2023, as part of the Beachwatch reporting system. The reporting system streamlines, integrates and automates data capture to support real-time reporting of water quality information, including water quality forecasts and latest star ratings.

There are 2 main types of Beachwatch reporting: water quality forecasts and star ratings reports.

### Water quality forecasts

Water quality forecasts provide advice to assist beach users on deciding when and where to swim. The forecasts are generated twice daily and report on the likelihood of bacterial contamination at swimming sites in the Hunter, Central Coast, Sydney and Illawarra regions. This information can be accessed by the public through the Beachwatch website and is reported on X (formerly Twitter) and Facebook. The information is also sent by email to subscribers.

The water quality forecasts are based on telemetered rainfall data and any reported pollution incidents that could affect swim site water quality. The forecasts include a prediction of the likelihood of pollution at ocean beaches and estuarine swimming areas, as well as daily weather, tides and coastal conditions, based on forecasts provided by the Australian Bureau of Meteorology. Forecasts are updated throughout the day if conditions change, using information provided by the Bureau of

Meteorology, local councils, lifeguards, the Environment Protection Authority or Sydney Water.

#### *Accuracy of water quality forecast predictions*

The daily water quality forecast scenarios are analysed against bacterial data to validate the models and track the accuracy of predictions. During 2023–2024, 93% of overall predictions were correct; a similar result to the previous reporting year. The Hunter and Illawarra beaches forecasts were the most accurate with 97% of scenarios correctly predicted. Central Coast and Sydney beaches had high accuracy, with 93% of scenarios correctly predicted.

During extreme wet weather and flooding events, pollution advisories were extended despite microbial water quality returning to levels suitable for swimming, to account for other hazards such as debris and murky water, which posed a risk to recreational activities.

When the accuracy of the pollution predictions for a swimming site declines, the prediction models are reassessed and adjusted to incorporate the changes in water quality. Regular tracking of the accuracy of pollution scenarios ensures a high level of overall accuracy is maintained.

#### *Reliability of water quality forecasts*

Water quality forecasts are generated automatically twice daily and require integration with several data sources, including the Bureau of Meteorology, Sydney Water and Manly Hydraulics Laboratory, and applications for reporting on the Beachwatch website. Forecast subscription emails are sent to subscribers each morning.

The water quality forecasts are monitored daily to ensure any issues are identified and rectified as soon as possible to avoid any disruption to the water quality forecasts produced. In the event a water quality forecast cannot be updated for more than 24 hours, the forecast for a swim site will display 'Forecast not available'.

- The reliability of the water quality forecasts is measured by the number of times a water quality

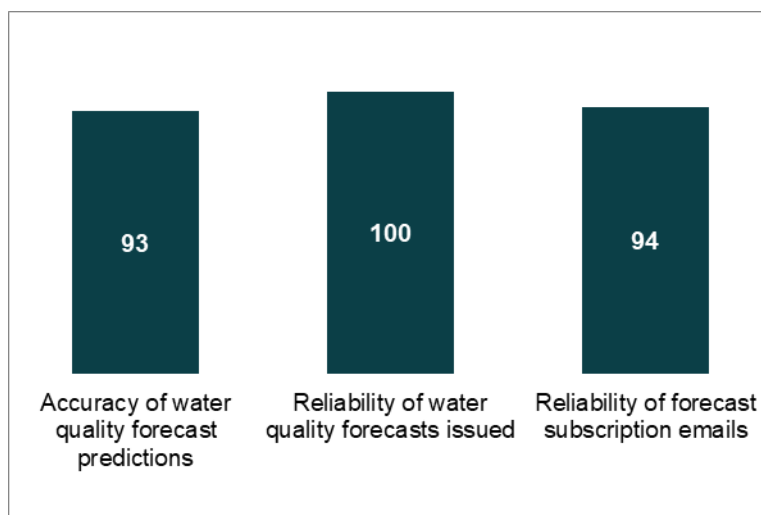
forecast was produced versus the total number of times a forecast is expected, to ensure the information provided is current and reliable.

- The reliability of the forecast subscription emails is measured by the number of subscription emails sent on time.

Between August 2023 and April 2024 (since the new reporting system has been live), 99.67% of the automated morning and afternoon forecasts (87,680 predictions) were successfully calculated for 160 swim sites. There were 285 occasions (0.33% of automatically generated forecasts) where a forecast was not available. Most of these were caused by technical issues, including unavailable rainfall data and loss of connectivity to data sources. This is a good result given the launch of a complex reporting system with many systems and work flows.

In 2023–2024, 94.3% of forecast emails were sent on time to subscribers. There were 18 times when daily emails were either not sent, or not sent on time due to technical issues or human error. Since the launch of the new reporting system in August 2023, the forecast emails service has been enhanced, including the automation of subscription emails, and ability for users to manage and refine their subscription preferences. The breakdown of compliance performance for forecast reports on the Beachwatch website and by email is shown below.

Beachwatch's water quality forecasting service is monitored every day by the Beachwatch team. Any issues impacting our service are raised and followed up promptly with the appropriate support team and stakeholders, and are stored in an electronic database.



### Percentage compliance with beach pollution forecast reporting protocols in 2023–2024

### Star ratings reports



Beach warning signs  
Photo:  
Beachwatch/DCCEEW

The star ratings reports provide an indication of recent bacterial water quality, based on NHMRC (2008) guidelines, with one star indicating poor water quality, through to a 4-star rating indicating excellent water quality. The latest result is generated for each swim site based on the number of bacteria (*enterococci*) in the most recent water sample. Ratings are published automatically on the Beachwatch website for each monitored swim site once the data has passed through the quality assurance procedure, and are uploaded to the Beachwatch database.

Most star ratings are updated weekly throughout the year for swimming sites in the Sydney, Hunter and Illawarra regions and during the summer season for regional partner councils, where the frequency of sampling is reduced during winter when sites are not regularly used. All historical enterococci water quality data is available on the Beachwatch website.

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## More information

- [About star ratings for beach water quality](#)
- [Beachwatch NSW on X \(formerly Twitter\)](#)
- [Beachwatch NSW on Facebook](#)
- [Beachwatch webpage](#)
- [Water quality data download](#)
- [Sanitary inspection of beaches](#)
- [Subscribe to daily pollution forecast emails](#)
- [WA Government environmental water publications](#)



## Beachwatch

# State of the beaches 2023–24

North Coast region

Department of Climate Change,  
Energy, the Environment and Water



## Acknowledgement of Country

Department of Climate Change, Energy, the Environment and Water acknowledges the Traditional Custodians of the lands where we work and live.

We pay our respects to Elders past, present and emerging.

This resource may contain images or names of deceased persons in photographs or historical content.

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Artist and designer Nikita Ridgeway from Aboriginal design agency Boss Lady Creative Designs created the People and Community symbol.

Cover photo: Shelly Beach, Ballina. Beachwatch/DCCEEW

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Recreational water quality has been monitored in the North Coast region since 2002 by Ballina Shire Council and Richmond Valley Council under the Department of Climate Change, Energy, the Environment and Water's Beachwatch Partnership Program. This report summarises the performance of 19 swimming sites on the north coast of New South Wales, providing a long-term assessment of how suitable a site is for swimming. Monitored sites include ocean beaches, estuarine areas in Shaws Bay, North Creek and Evans River, and swimming sites in Lake Ainsworth.

In 2023–2024, 53% of swimming sites in the North Coast region were graded as Good or Very Good, including all ocean beaches. These sites were suitable for swimming for most or almost all of the time. The overall decline from the previous year largely reflects the wet weather conditions and flooding events impacting the region in recent years. Despite some Poor grades, the majority of monitored sites were still suitable for swimming during dry weather.

In general, freshwater and estuarine swimming sites do not perform as well as ocean beaches due to lower levels of flushing, increasing the time needed to disperse and dilute pollution inputs, taking longer to recover from stormwater events.

# North Coast region summary 2023–2024

## Monitoring water quality for swimming in New South Wales



Airforce Beach

Photo:  
Beachwatch/DCCEEW

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 New South Wales 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 (2–4 years’ worth of data depending on the sampling frequency) and a risk assessment of potential pollution sources.

See the section on **Quality assurance** in the Statewide Summary for results of the quality assurance program.

Recreational water quality has been monitored in the North Coast region by Ballina Shire Council since 2002 and Richmond Valley Council since 2006.

A **quality assurance** program ensures the information collected and reported by Beachwatch and its partners is accurate and reliable.

The Beach Suitability Grade provided for one monitored site in Ballina Shire is provisional and subject to change. **Provisional classifications** are provided where the data available for the microbial assessment, the sanitary inspection or both are

incomplete. Further monitoring is required to obtain the necessary data to provide a definite classification in accordance with national guidelines.

During 2023–2024, 19 swimming sites were monitored including ocean beaches, estuarine areas in Shaws Bay, North Creek and Evans River, and swimming sites in Lake Ainsworth.

## Rainfall impacts

Rainfall is the major driver of pollution to recreational waters, generating stormwater runoff and triggering untreated 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 2023–2024 are based on water quality data collected over the last 2–4 years.

Rainfall over this period has been diverse:

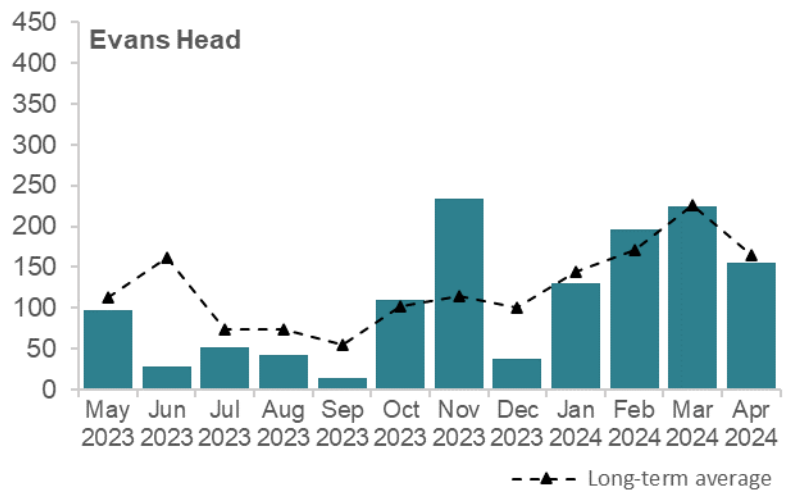
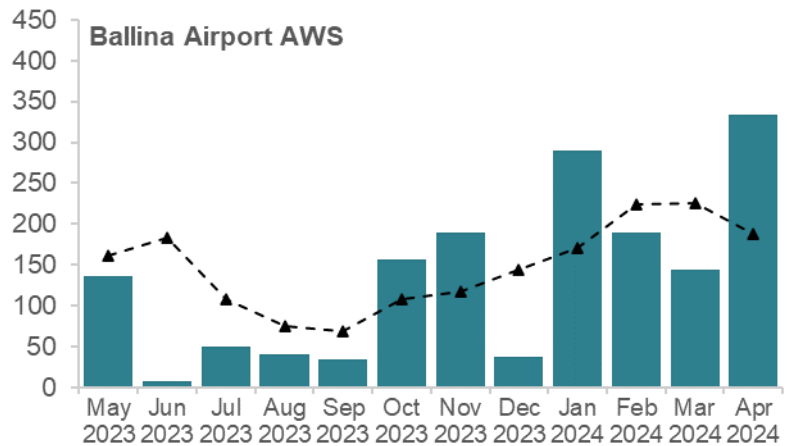
- 2020–2021: rainfall was average to below average except for a very wet summer
- 2021–2022: average to well above average rainfall in spring and a very wet summer, and significant flood events
- 2022–2023: below average rainfall with some very wet months and a dry summer
- 2023–2024: above average rainfall in spring and some wet months.

See the section on **How to read this report** on page 35 for an explanation of the graphs, tables and Beach Suitability Grades.

Rainfall on the North Coast was below the long-term monthly averages from May to September 2023. Above average rainfall was recorded across the region during spring 2023 due to heavy rainfall in October and November.

While rainfall was well below average in December 2023, above average monthly rainfall totals were recorded in January and April 2024 at Ballina.

**North Coast region rainfall**



**Algal blooms**



Blue-green algal bloom present in the water  
 Photo: Rachael Jenner/  
 Ballina Shire Council

Water NSW and Ballina Shire Council reported the occurrence of freshwater blue-green algal blooms due to *Microcystis aeruginosa* impacting Lake Ainsworth from September to December 2023 and in January and April 2024. Further caution alerts were issued for Lake Ainsworth in May 2023 due to the presence of surface scum with water users advised to avoid impacted areas.

Water NSW also issued a caution alert in November 2023 for *Trichodesmium* sp. impacting Lighthouse Beach in Ballina.

While freshwater and marine algae occur naturally, there were times of heightened risk to recreational users due to rapid increases in abundance causing blooms.

The appearance of **algae** is sometimes mistaken for **sewage contamination** due to a strong odour and thick green scum or discolouration in the water caused by the blooms.

Algae advisories were issued on the Ballina Shire Council, Beachwatch and Water NSW websites, as well as onsite signage during blooms.

### **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 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 North Coast region

Swimming site	Site type	Beach Suitability Grade	Change
<b>Ballina Shire Council</b>			
Seven Mile Beach	Ocean beach	VG	<input type="radio"/>
Lake Ainsworth North	Lake/Lagoon	P	<input type="radio"/>
Lake Ainsworth East	Lake/Lagoon	P	<input type="radio"/>
Lake Ainsworth South	Lake/Lagoon	G	<input type="radio"/>
Lake Ainsworth West	Lake/Lagoon	P	<input type="radio"/>
Shelly Beach	Ocean beach	VG	<input type="radio"/>
Lighthouse Beach	Ocean beach	VG	<input type="radio"/>
Shaws Bay North	Estuarine	P	<input type="radio"/>
Shaws Bay East	Estuarine	P	↓
Shaws Bay East Arm	Estuarine	G	<input type="radio"/>
Shaws Bay East Beach	Estuarine	G	<input type="radio"/>
Shaws Bay West	Estuarine	P	<input type="radio"/>
The Serpentine	Estuarine	G	<input type="radio"/>
Missingham Beach	Estuarine	P <sup>^</sup>	<input type="radio"/>
<b>Richmond Valley Council</b>			
Airforce Beach	Ocean beach	G	<input type="radio"/>
Main Beach	Ocean beach	G	<input type="radio"/>
Shark Bay	Ocean beach	VG	<input type="radio"/>
Evans River	Estuarine	P	<input type="radio"/>
Elm Street Bridge North (Evans River)	Estuarine	P	<input type="radio"/>

Beach Suitability Grade					Change		
							
Very Good	Good	Fair	Poor	Very Poor	Improved	Stable	Declined

^ Provisional: Information required for the analysis is incomplete due to limited bacterial data or limited information on potential pollution sources in the catchment.

# Ballina Shire Council



## Overall results

Seven of the 14 swimming sites were graded as Very Good or Good in 2023–2024, a slight decline in performance to the previous year.

### Percentage of sites graded as Very Good or Good

	2021–2022	2022–2023	2023–2024	Trend
Ocean beaches (3 sites)	100%	100%	100%	
Estuarine sites (7 sites)	67%	57%	43%	
Lake/lagoon sites (4 sites)	50%	25%	25%	

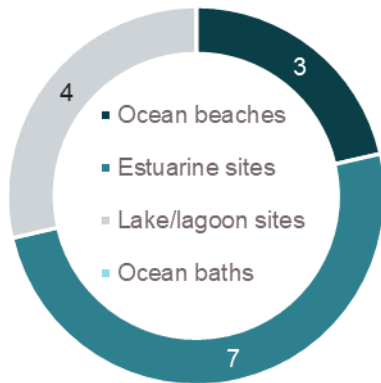
Fourteen swimming sites were monitored by Ballina Shire Council. Samples were collected weekly between November and February and sampling and laboratory analysis was fully funded by the council.

See the section on **How to read this report** on page 35 for an explanation of the graphs, tables and Beach Suitability Grades.

### Best beaches

Seven Mile Beach, Shelly Beach and Lighthouse Beach.

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



**Site types in Ballina Shire Council**

Swimming sites monitored in the Ballina region include ocean beaches, estuarine areas in Shaws Bay and North Creek and lake/lagoon swimming sites in Lake Ainsworth, with each site type having a different response to rainfall-related impacts.

Estuarine and lake/lagoon swimming sites generally did not perform as well as ocean beaches, due to lower levels of flushing increasing the time needed to disperse and dilute pollution inputs, taking longer to recover from stormwater events.

As a general precaution swimming should be avoided during and for at least one day after heavy rain at ocean beaches, and for up to 3 days in estuarine areas, or if there are signs of stormwater pollution such as discoloured water or floating debris.

### Ocean beaches



**Beach Suitability Grades for Ballina Shire Council ocean beaches**

Seven Mile Beach, Shelly Beach and Lighthouse Beach continued to be graded as Very Good in 2023–2024. These beaches had excellent water quality and were suitable for swimming almost all of the time.

## Estuarine beaches



**Beach Suitability Grades for Ballina Shire Council estuarine beaches**

Three of the 7 estuarine swimming locations were graded as Good in 2023–2024: Shaws Bay East Arm, Shaws Bay East Beach and The Serpentine. Water quality at these sites was frequently suitable for swimming in dry weather, with 96% or greater of dry weather samples within the safe swimming limit.

Four estuarine swimming sites were graded as Poor in 2023–2024: Shaws Bay North, Shaws Bay East, Shaws Bay West and Missingham Beach. Shaws Bay East was downgraded from Good in the previous year due a decline in microbial water quality. The Poor grade for Missingham Beach is provisional as the assessment is based on limited bacterial data.

While these sites were mostly suitable for swimming during dry weather, elevated bacterial levels were often recorded following light rainfall and regularly after heavy rainfall. Water quality at these sites can be impacted by upstream sources and can take longer to recover due to lower levels of flushing.

The water quality results were influenced by wet weather impacts, with a higher proportion of samples collected at these sites during wet weather conditions compared to the 2022–2023 assessment period.

It is recommended that swimming should be avoided during and for up to 3 days following rainfall at estuarine swimming sites, or if there are signs of pollution such as discoloured water or floating debris.

## Lake/lagoon swimming sites



**Beach Suitability Grades for Ballina Shire Council lake/lagoon swimming sites**

Lake Ainsworth South continued to be graded as Good in 2023–2024. This site was mostly suitable for swimming during dry weather, with 84% of dry weather samples within the safe swimming limit. Elevated enterococci levels were frequently recorded at this site after heavy rainfall.

Lake Ainsworth North, Lake Ainsworth East and Lake Ainsworth West were graded as Poor in 2023–2024, a result consistent with previous years. Elevated bacteria levels were recorded at these lake swimming sites during dry and wet weather conditions. Despite the poor grades, between 66% and 78% of dry weather samples were within the safe swimming limit. These sites may be impacted by a number of significant potential sources of faecal contamination, including stormwater, and have low levels of flushing.

Microbial assessment categories decline slightly for Lake Ainsworth swim sites due to wet weather impacts, with a higher proportion of samples collected at these sites during wet weather conditions compared to the 2022–2023 assessment period.

More information about Ballina Shire Council's **Healthy Waterways** and **Coastal Management Programs** is available on council's website.

During 2019, council investigated the source of microbial contamination by testing additional samples for faecal sterols at sites within Lake Ainsworth. The results found that the main contributors to elevated bacteria levels are from avian (bird) sources.

It is recommended that swimming should be avoided during and for up to 3 days following rainfall or if there are signs of stormwater pollution such as discoloured water or floating debris.



**Sampling sites and Beach Suitability Grades in Ballina Shire Council**

# Seven Mile Beach

Beach grade: **VG**



Seven Mile Beach extends for over 8 km and is patrolled over the summer period.

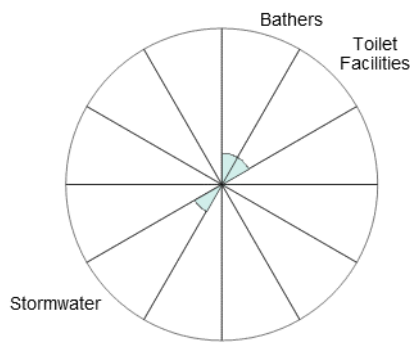
The Beach Suitability Grade of Very Good indicates microbial water quality is considered suitable for swimming almost all the time, with few potential sources of faecal contamination.

Enterococci levels increased slightly with increasing rainfall but remained below the safe swimming limit across all rainfall categories.

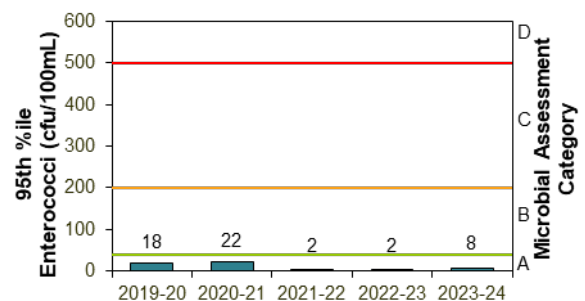
See ‘How to read this report’ for key to map. The site has been monitored since 2002.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Nov 2019 to Feb 2024	100%	98	Stable

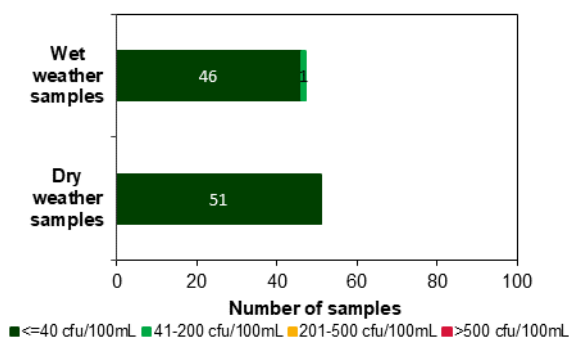
### Sanitary inspection: Low



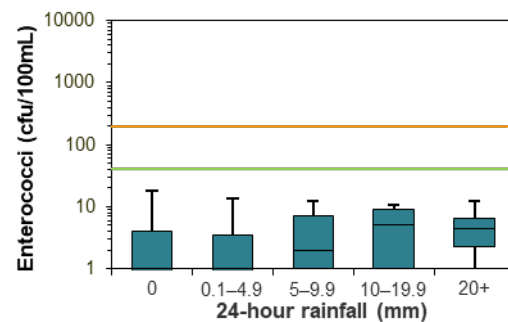
### Microbial Assessment Category: A



### Dry and wet weather water quality

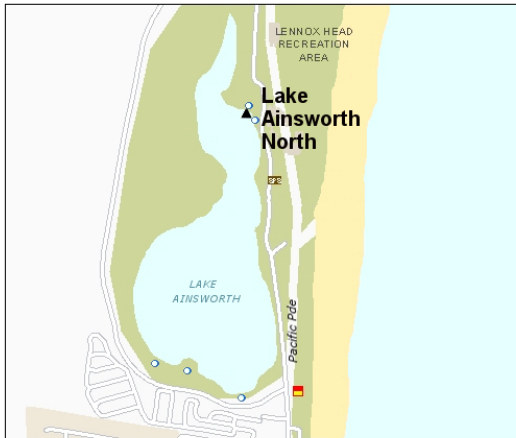


### Water quality in response to rainfall



# Lake Ainsworth North

Beach grade: **P**



Lake Ainsworth North is located at the northern end of Lake Ainsworth.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with potential faecal contamination from stormwater and elsewhere within the lake.

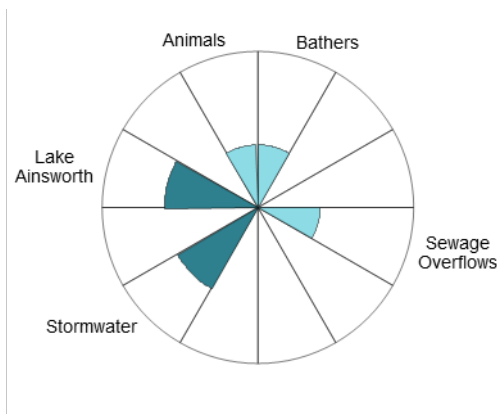
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and regularly after 5 mm or more of rainfall.

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

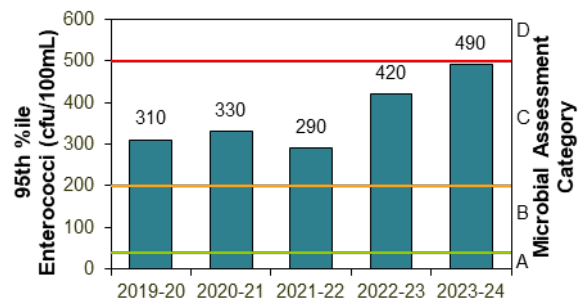
The site has been monitored since 2016.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Lake/Lagoon	Jun 2019 to Feb 2024	78%	99	Stable

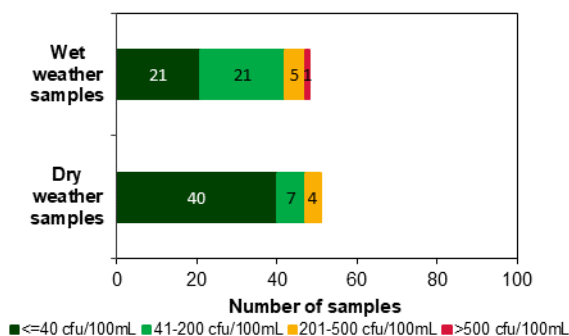
## Sanitary inspection: Moderate



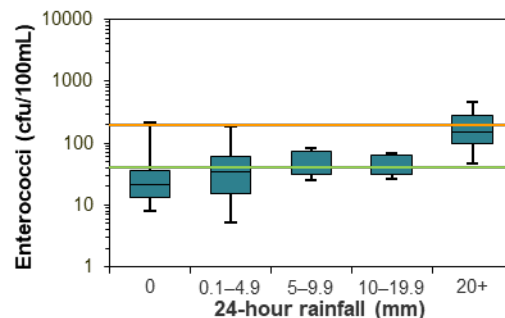
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Lake Ainsworth East

Beach grade: P



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

Lake Ainsworth East is located on the eastern shore of Lake Ainsworth, a coastal freshwater lake.

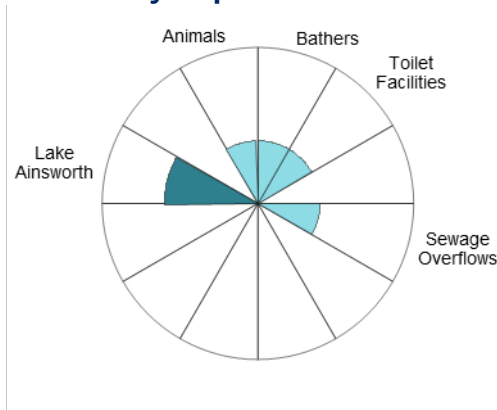
The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with potential faecal contamination from stormwater and elsewhere within the lake.

Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and often after 5 mm or more of rainfall.

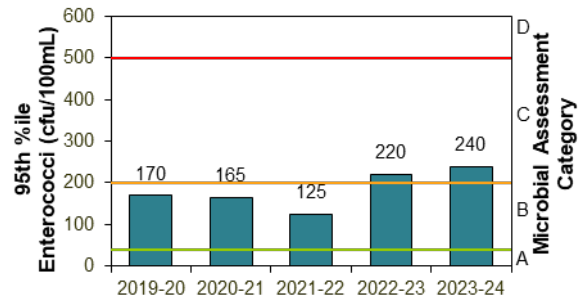
The site was monitored from 2002 until 2009, and since 2012.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Lake/Lagoon	Nov 2019 to Feb 2024	76%	97	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

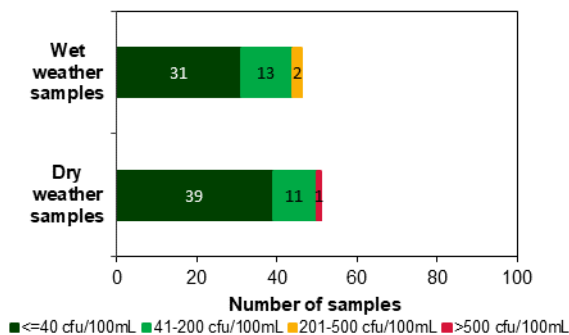
### Sanitary inspection: Moderate



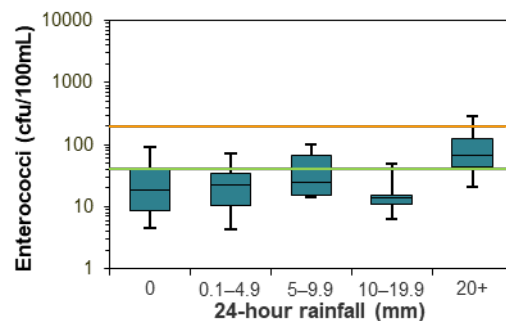
### Microbial Assessment Category: C



### Dry and wet weather water quality



### Water quality in response to rainfall



# Lake Ainsworth South

Beach grade: **G**



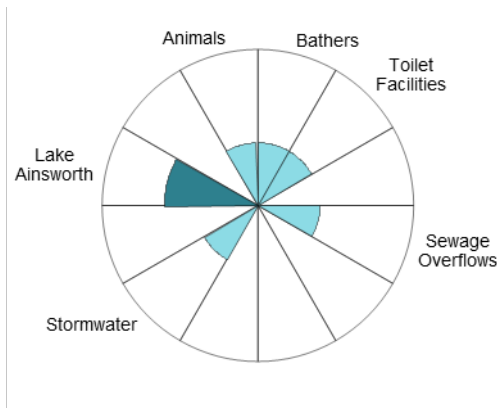
Lake Ainsworth South is located on the southern shore of Lake Ainsworth, a coastal freshwater lake. The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination including from elsewhere within the lake. Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and often after 5 mm or more.

See ‘How to read this report’ for key to map.

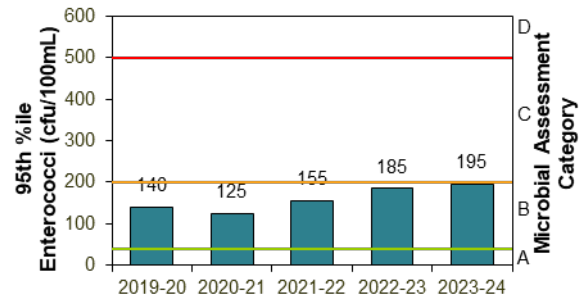
The site was monitored from 2002 until 2009, and since 2012.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Lake/Lagoon	Jun 2019 to Feb 2024	84%	99	Stable

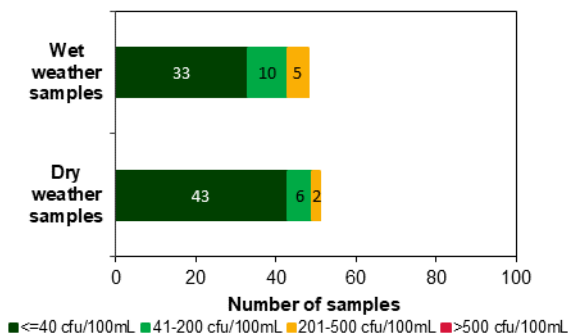
## Sanitary inspection: Moderate



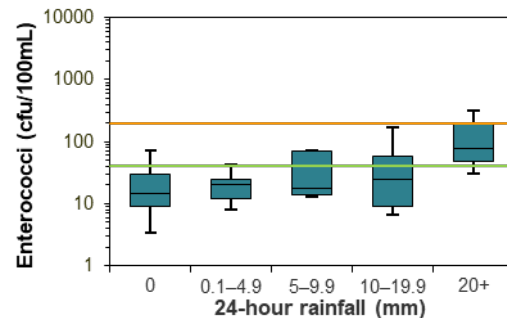
## Microbial Assessment Category: B



## Dry and wet weather water quality

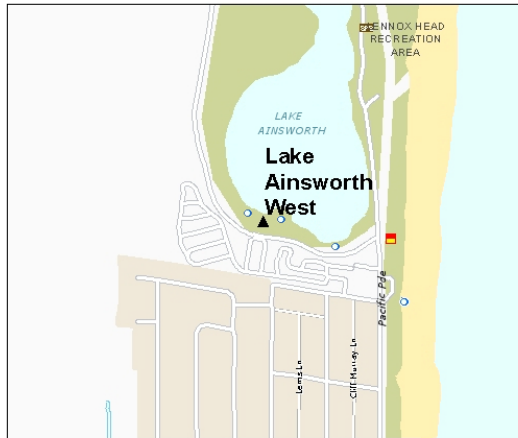


## Water quality in response to rainfall



# Lake Ainsworth West

Beach grade: P



Lake Ainsworth West is located on the western shore of Lake Ainsworth, a coastal freshwater lake.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and often during dry weather conditions, with potential faecal contamination from elsewhere within the lake.

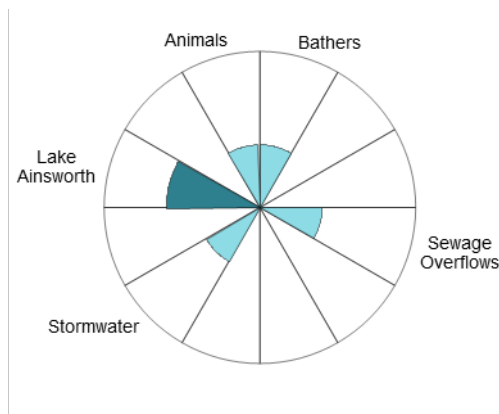
Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after no rain, and regularly after 5 mm or more of rain.

See ‘How to read this report’ for key to map.

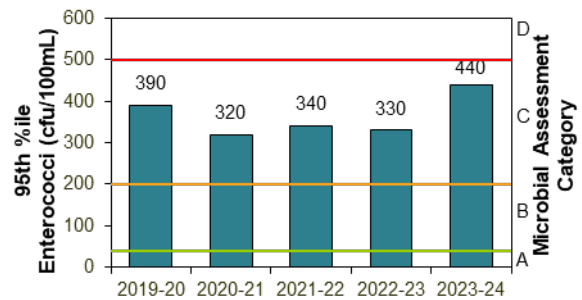
The site has been monitored since 2002.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Lake/Lagoon	Jun 2019 to Feb 2024	66%	98	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

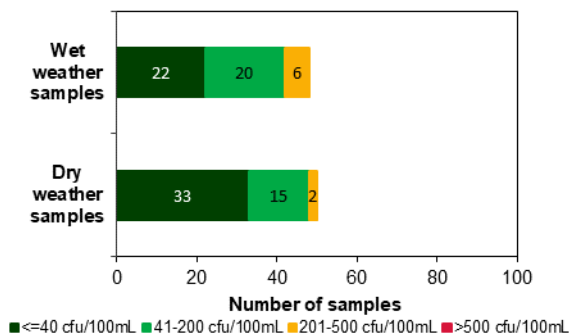
## Sanitary inspection: Moderate



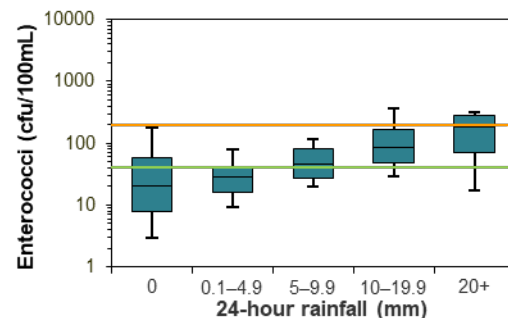
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Shelly Beach

Beach grade: **VG**



Shelly Beach is a 700 m long beach located between Black Head and Richmond River Lighthouse, and is patrolled during holiday periods.

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

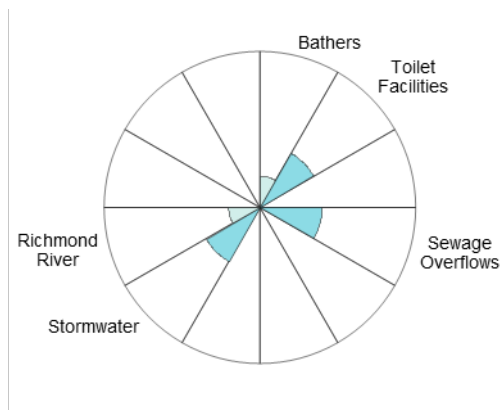
Enterococci levels increased slightly with increasing rainfall, but usually remained below the safe swimming limit across all rainfall categories.

The site has been monitored since 2002.

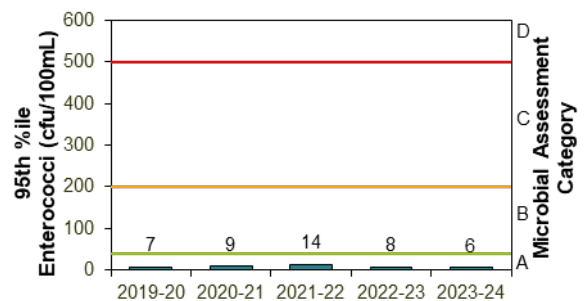
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Nov 2019 to Feb 2024	100%	98	Stable

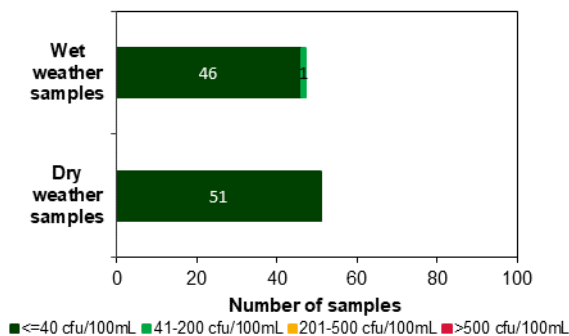
### Sanitary inspection: Low



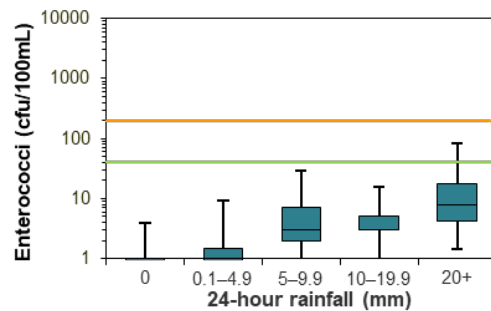
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Lighthouse Beach

Beach grade: **VG**



Lighthouse Beach is situated north of the sea wall at the mouth of the Richmond River and is patrolled during holiday periods.

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

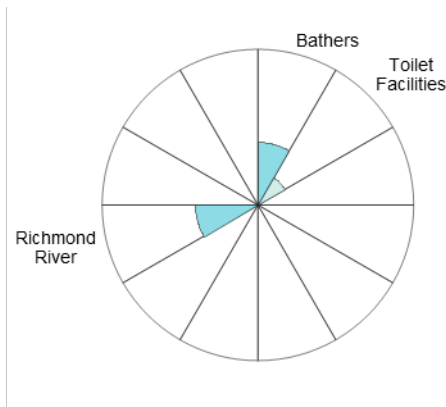
Enterococci levels increased slightly with increasing rainfall, but usually remained below the safe swimming limit across all rainfall categories.

See ‘How to read this report’ for key to map.

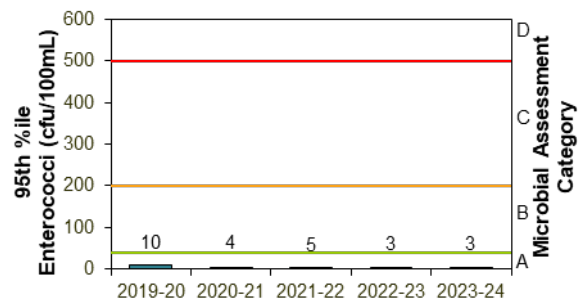
The site was monitored from 2002 until 2003, and since 2009.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Nov 2019 to Feb 2024	100%	98	Stable

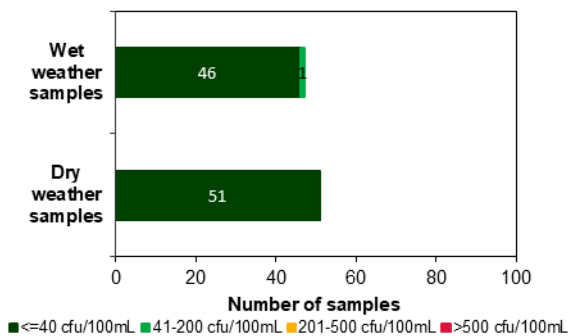
### Sanitary inspection: Low



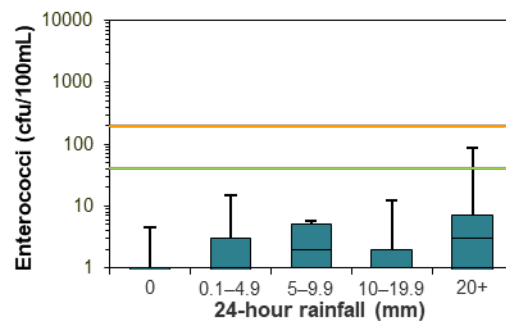
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Shaws Bay North

Beach grade: P



Shaws Bay North is located on the northern side of Shaws Bay, an inlet near the mouth of the Richmond River.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and often during dry weather conditions, with potential faecal contamination from within the lake.

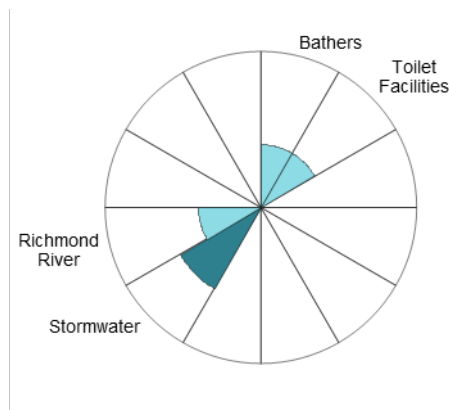
Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after little or no rain, and usually after 10 mm or more.

The site was monitored from 2002 until 2009, and since 2012.

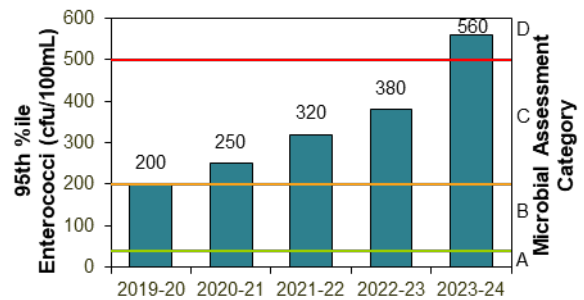
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status	
Estuarine	Nov 2019 to Feb 2024	67%	89	Stable	<span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

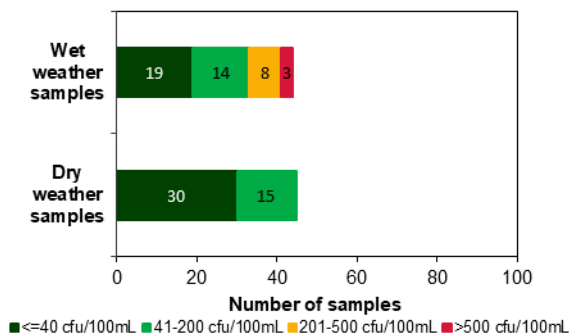
## Sanitary inspection: Moderate



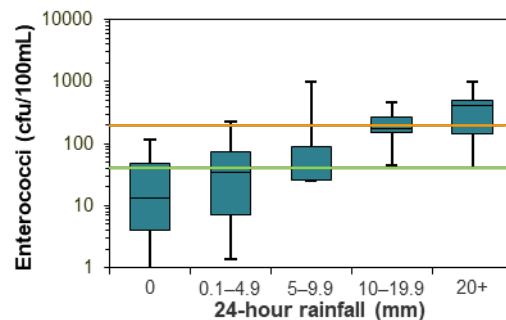
## Microbial Assessment Category: D



## Dry and wet weather water quality

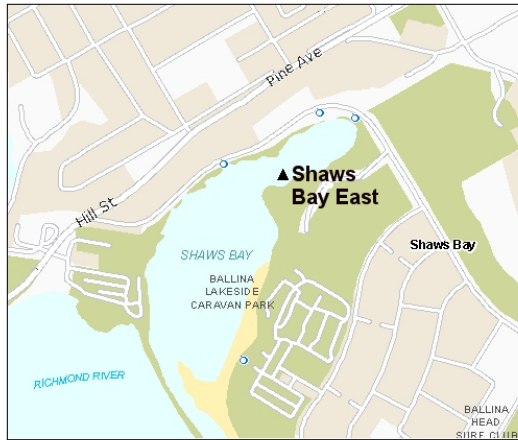


## Water quality in response to rainfall



# Shaws Bay East

Beach grade: P



Shaws Bay East is located on the eastern side of Shaws Bay, an inlet near the mouth of the Richmond River.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and often during dry weather conditions, with potential faecal contamination from stormwater.

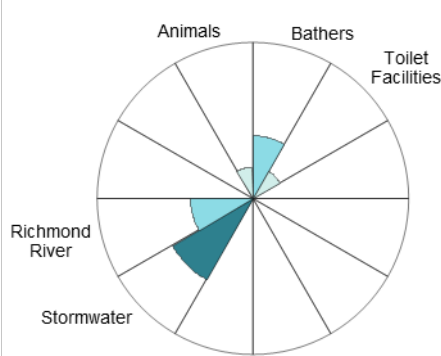
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and frequently after 10 mm or more.

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

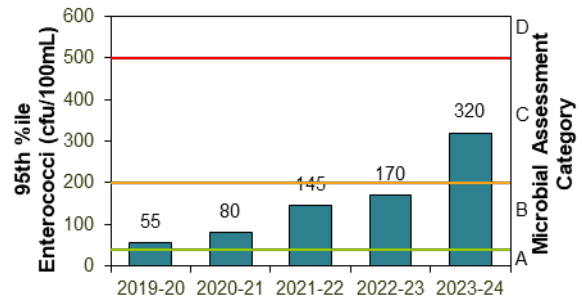
The site has been monitored since 2002.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Nov 2019 to Feb 2024	76%	89	Declined

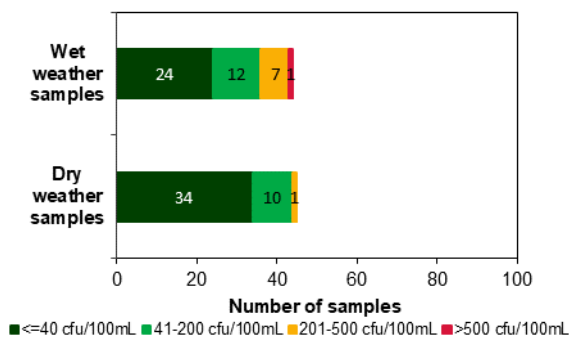
### Sanitary inspection: Moderate



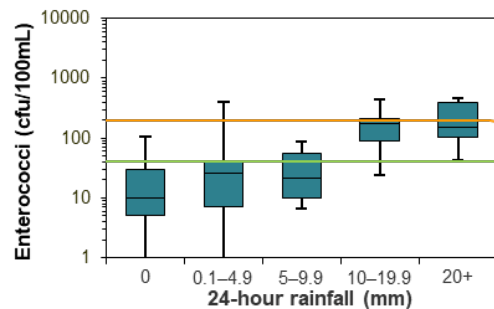
### Microbial Assessment Category: C



### Dry and wet weather water quality



### Water quality in response to rainfall



# Shaws Bay East Arm

Beach grade: **G**



See ‘How to read this report’ for key to map.

Shaws Bay East Arm is a sandy beach located on the southern side of Shaws Bay, an inlet near the mouth of the Richmond River.

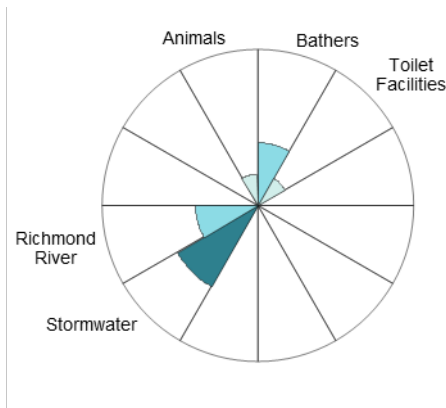
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but can be susceptible to pollution after rain, with several potential sources of faecal contamination including stormwater.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and often after 10 mm or more.

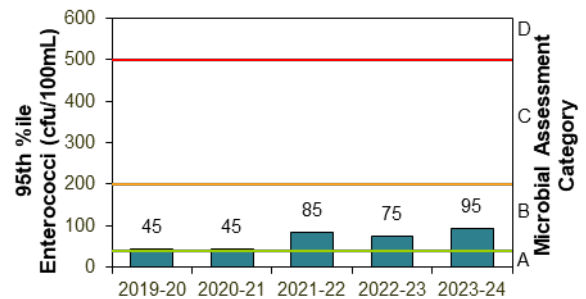
The site has been monitored since 2014.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Nov 2019 to Feb 2024	96%	97	Stable

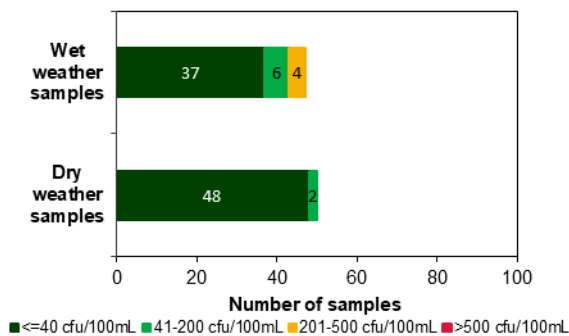
## Sanitary inspection: Moderate



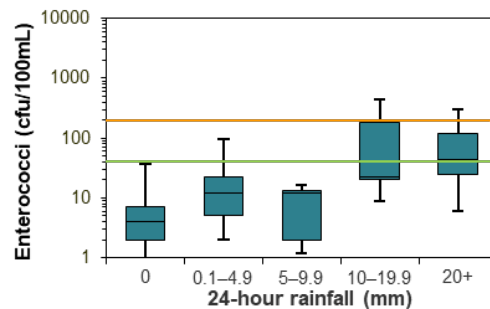
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Shaws Bay East Beach

Beach grade: **G**



Shaws Bay East Beach is a sandy beach located on the eastern side of Shaws Bay, an inlet near the mouth of the Richmond River.

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

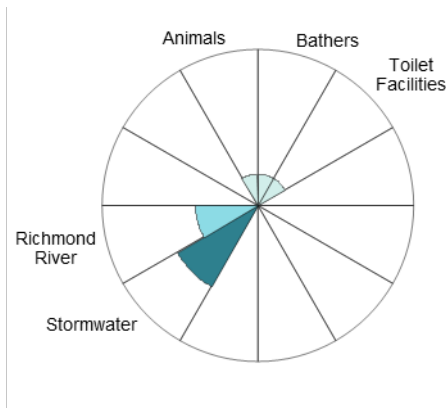
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and frequently after 10 mm or more.

The site has been monitored since 2014.

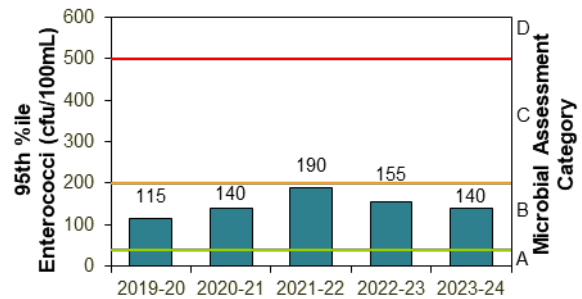
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Nov 2019 to Feb 2024	98%	89	Stable

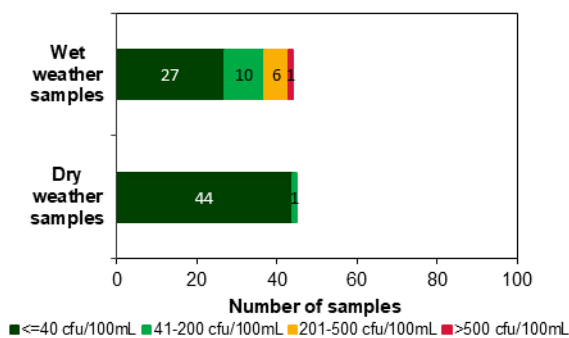
### Sanitary inspection: Moderate



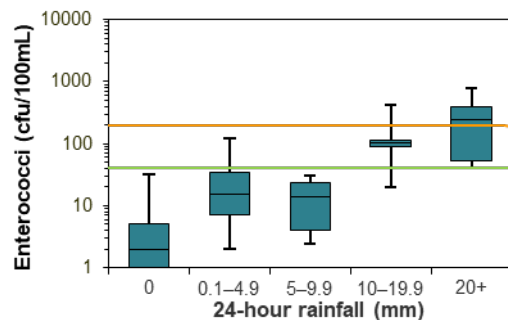
### Microbial Assessment Category: B



### Dry and wet weather water quality



### Water quality in response to rainfall



# Shaws Bay West

Beach grade: P



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

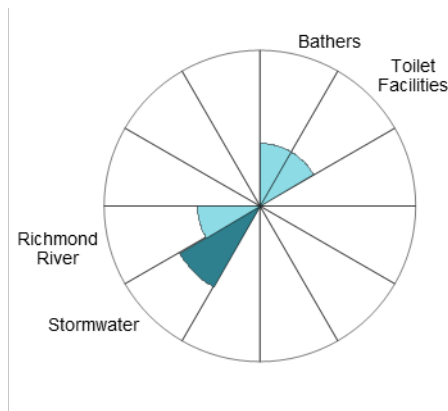
Shaws Bay West is located on the western side of Shaws Bay, an inlet near the mouth of the Richmond River.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with potential faecal contamination from stormwater and elsewhere within the lake.

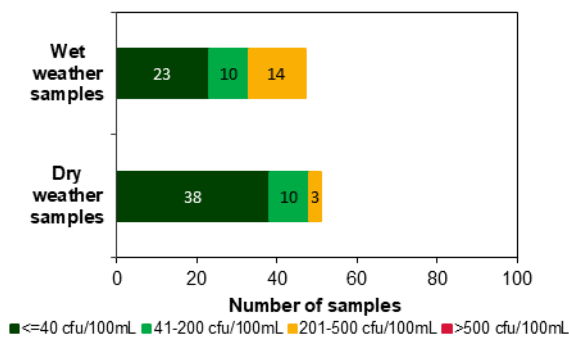
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and often after rain. The site was monitored from 2002 until 2009, and since 2012.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Nov 2019 to Feb 2024	75%	98	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

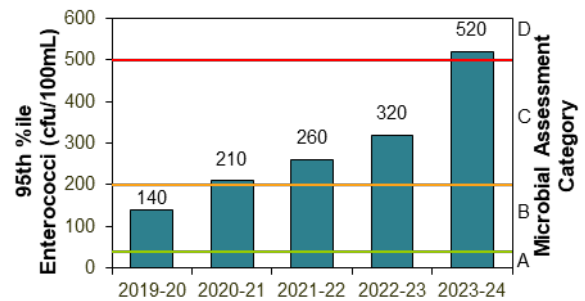
## Sanitary inspection: Moderate



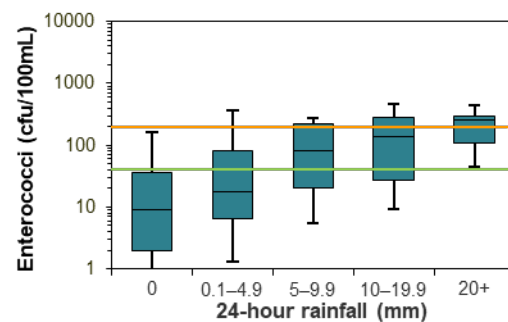
## Dry and wet weather water quality



## Microbial Assessment Category: D



## Water quality in response to rainfall



# The Serpentine

Beach grade: **G**



The Serpentine is adjacent to Missingham Bridge in North Creek, a tributary of the Richmond River.

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

Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after 5 mm or more of rain, and often after 10 mm or more.

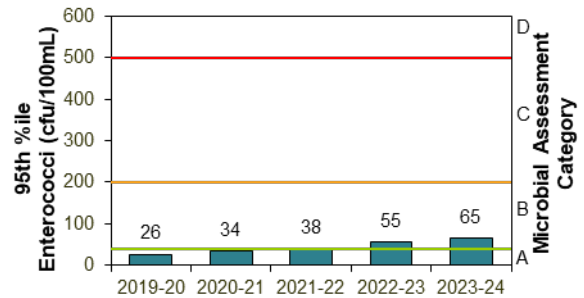
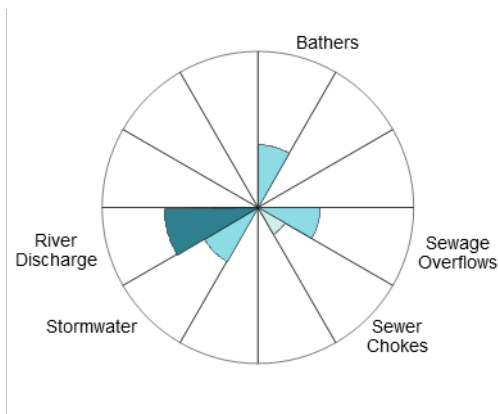
See ‘How to read this report’ for key to map.

This site has been monitored since 2002.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Nov 2019 to Feb 2024	96%	98	Stable

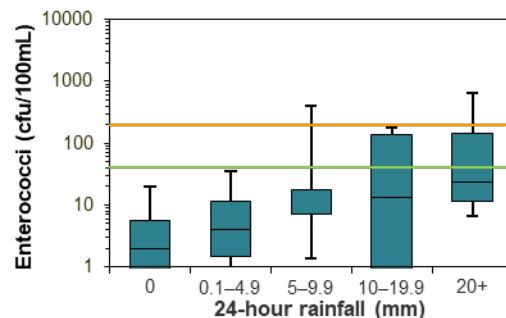
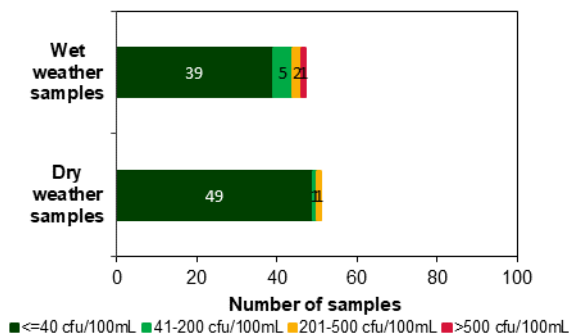
## Sanitary inspection: Moderate

## Microbial Assessment Category: B



## Dry and wet weather water quality

## Water quality in response to rainfall



# Missingham Beach

Beach grade: P



Missingham Beach is a sandy beach located on the northern side of the Richmond River, adjacent to Missingham Park.

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

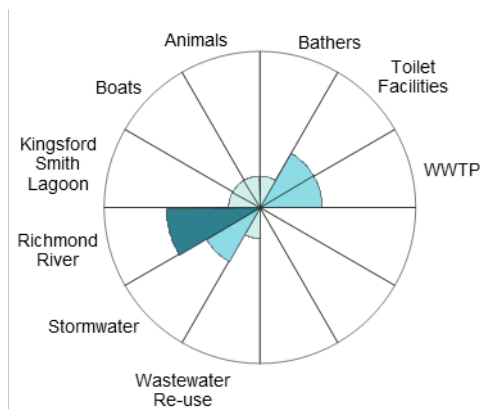
Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after little or no rain.

This site has been monitored since 2022.

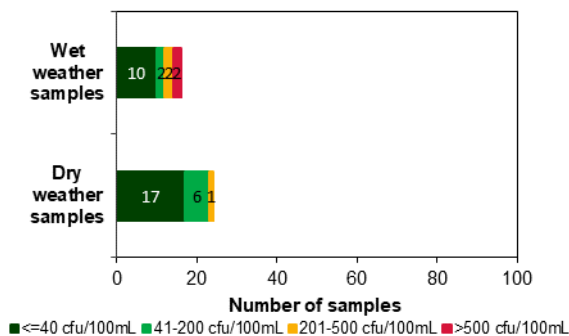
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Nov 2022 to Feb 2024	71%	40	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

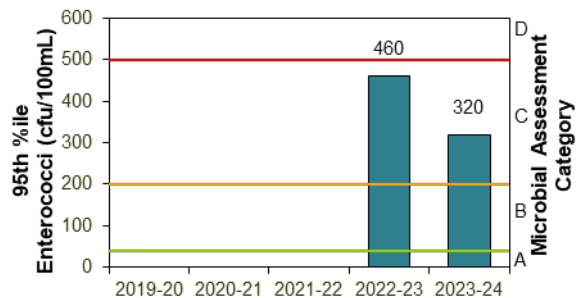
## Sanitary inspection: Moderate



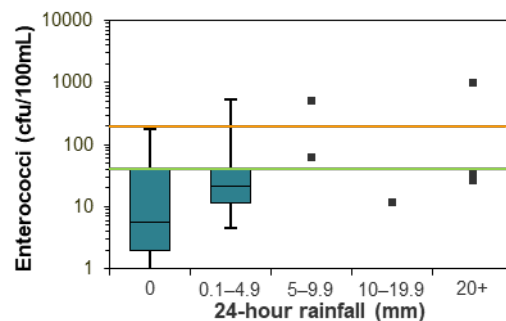
## Dry and wet weather water quality



## Microbial Assessment Category: C



## Water quality in response to rainfall



# Richmond Valley Council

## Overall results



Three of the 5 swimming sites were graded as Very Good or Good in 2023–2024. This is a similar performance to the previous year.

### Percentage of sites graded as Very Good or Good

	2021–2022	2022–2023	2023–2024	Trend
Ocean beaches (3 sites)	100%	100%	100%	
Estuarine sites (2 sites)	50%	0%	0%	

Five swimming sites were monitored by Richmond Valley Council. All sampling and laboratory analysis was fully funded by the council. The 3 ocean beaches and Elm Street Bridge North were sampled weekly from October to March. Evans River is sampled weekly throughout the year.

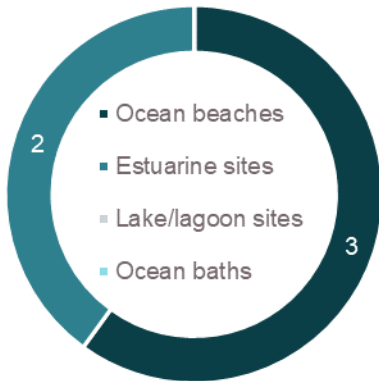
See the section on **How to read this report** on page 35 for an explanation of the graphs, tables and Beach Suitability Grades.

### Best beaches

Shark Bay.

This site had excellent water quality and was suitable for swimming almost all of the time.

Swimming sites monitored in the Richmond Valley Council region include ocean beaches and estuarine areas in Evans River, with each site type having a different response to rainfall-related impacts.



**Site types in Richmond Valley Council**

Estuarine swimming sites generally did not perform as well as ocean beaches, due to lower levels of flushing to disperse and dilute pollution inputs, taking longer to recover from stormwater events.

As a general precaution swimming should be avoided during and for at least one day after heavy rain at ocean beaches, and for up to 3 days in estuarine areas, or if there are signs of stormwater pollution such as discoloured water or floating debris.



**Beach Suitability Grades for Richmond Valley Council ocean beaches**

### Ocean beaches

Shark Bay was graded as Very Good in 2023–2024. Water quality at this beach has been consistently excellent for many years and is suitable for swimming almost all of the time.

Airforce Beach and Main Beach continued to be graded as Good in 2023–2024, a similar result to previous years. While water quality at these beaches was suitable for swimming most of the time, elevated enterococci results were occasionally recorded in dry and wet weather conditions.



**Beach Suitability Grades for Richmond Valley Council estuarine beaches**

### Estuarine beaches

Evans River and Elm Street Bridge North continued to be graded as Poor in 2023–2024. Elevated bacterial levels were recorded in dry weather and were regularly elevated during and following moderate to heavy rainfall. Despite this, water quality was mostly suitable for swimming during dry weather, with 69% and 75% of dry weather samples within the safe swimming limit at Evans River and Elm Street Bridge respectively.

Water quality results at the Evans River swim sites were heavily influenced by wet weather impacts, with close to

half of the samples in this year's assessment period collected during wet weather conditions.

It is recommended that swimming should be avoided during and for up to 3 days following rainfall or if there are signs of stormwater pollution such as discoloured water or floating debris.



**Sampling sites and Beach Suitability Grades in Richmond Valley Council**

# Airforce Beach

Beach grade: **G**



Airforce Beach is located on a 31 km stretch of beach and is not patrolled by lifeguards.

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

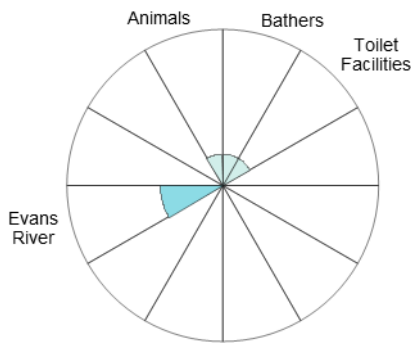
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and often after 10 mm or more of rain.

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

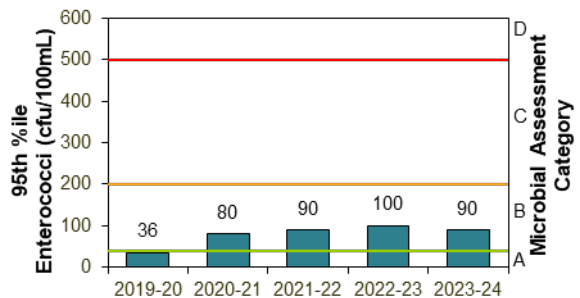
The site has been monitored since 2006.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Jun 2020 to Mar 2024	87%	100	Stable

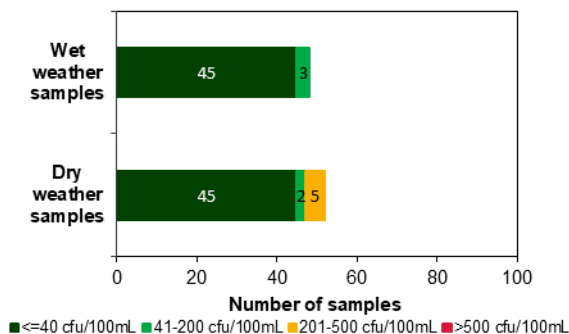
## Sanitary inspection: Low



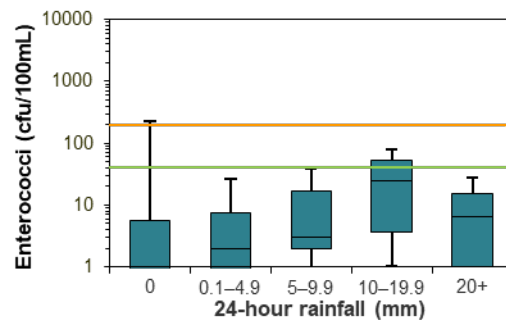
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Main Beach

Beach grade: **G**



Main Beach is located at the southern end of a 31 km stretch of beach and is patrolled during holiday periods.

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

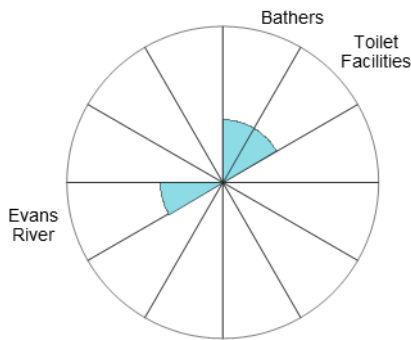
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and after 10 mm or more of rain.

The site has been monitored since 2006.

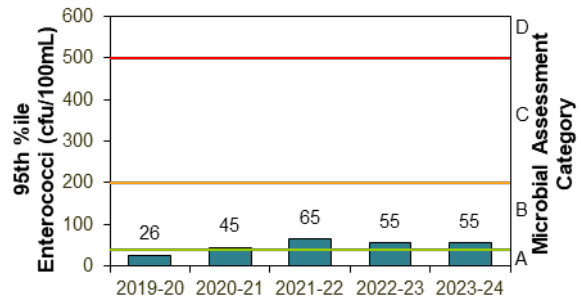
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Jun 2020 to Mar 2024	90%	100	Stable

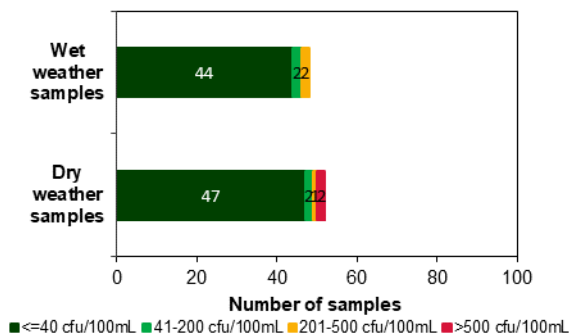
## Sanitary inspection: Low



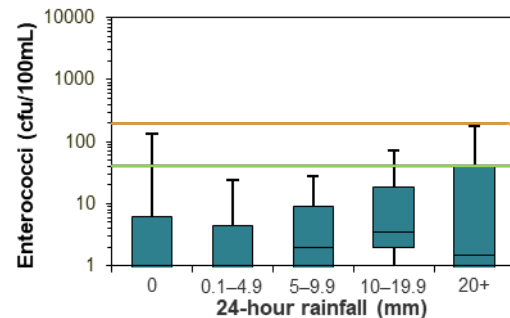
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Shark Bay

Beach grade: **VG**



Shark Bay is a small beach located between the southern entrance wall to the Evans River and the cliffs below Razorback Lookout and is not patrolled by lifeguards.

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

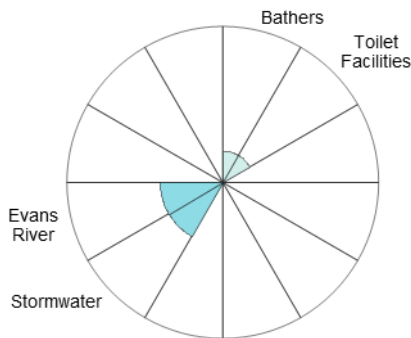
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after no rain and in response to rainfall.

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

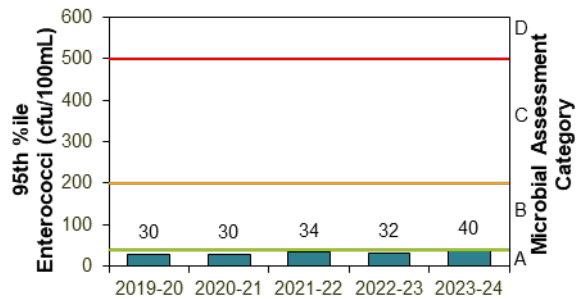
The site has been monitored since 2006.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Mar 2020 to Mar 2024	92%	100	Stable

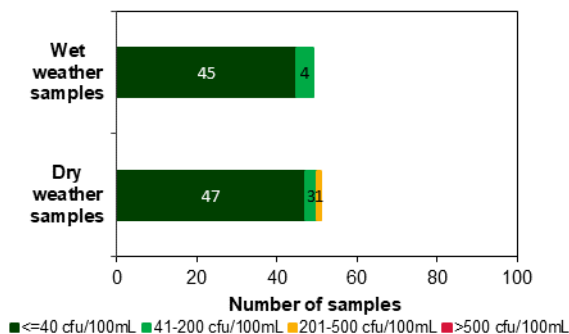
### Sanitary inspection: Low



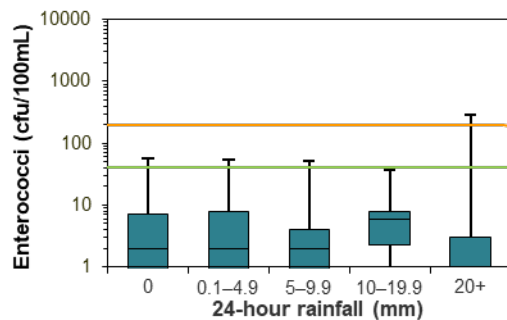
### Microbial Assessment Category: A



### Dry and wet weather water quality

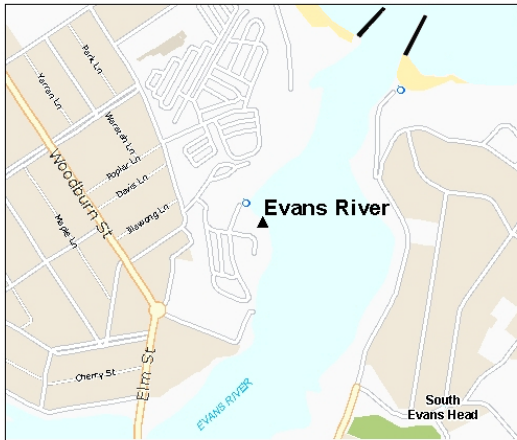


### Water quality in response to rainfall



# Evans River

Beach grade: P



Evans River sampling site is located upstream of the river mouth and near the caravan park.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with potential faecal contamination from upstream river sources and stormwater.

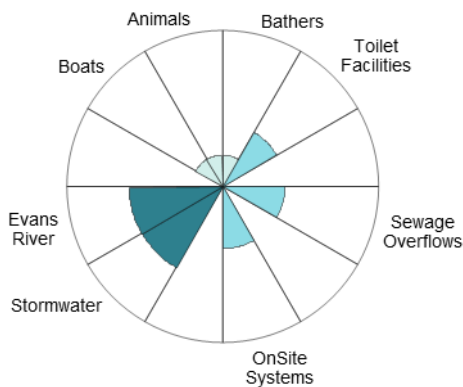
Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after no rain, and regularly in response to rain.

The site has been monitored since 2006.

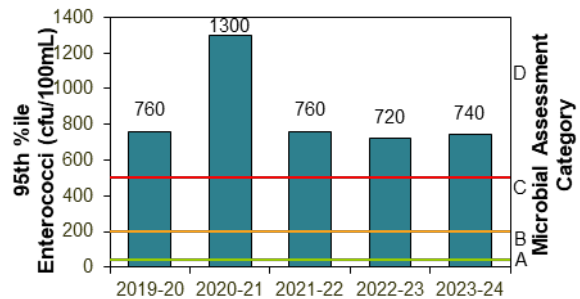
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	May 2022 to Apr 2024	69%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

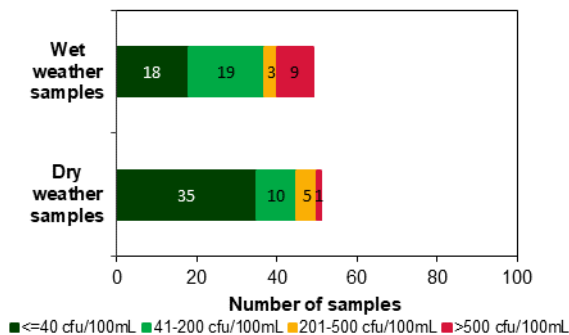
### Sanitary inspection: Moderate



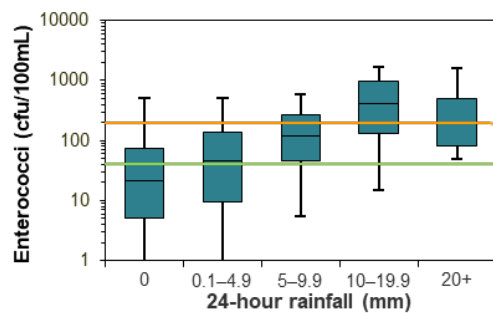
### Microbial Assessment Category: D



### Dry and wet weather water quality

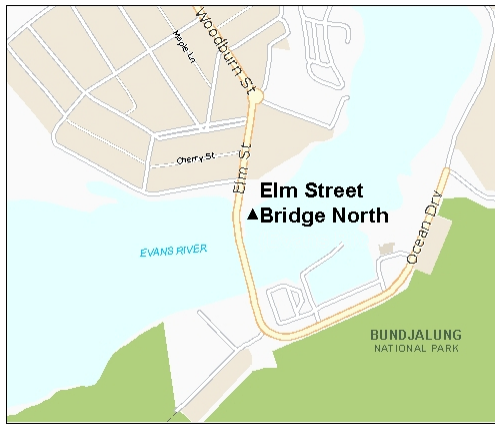


### Water quality in response to rainfall



# Elm Street Bridge North

Beach grade: P



Elm Street Bridge North (Evans River) is located on the eastern side of Elm Street Bridge in the Evans River.

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

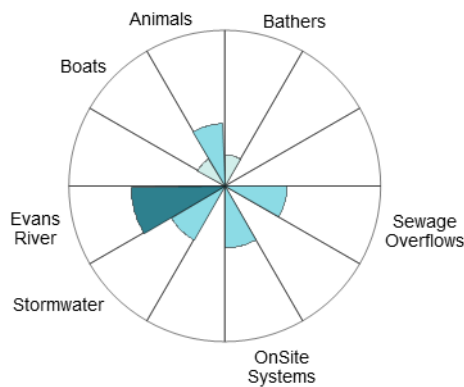
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and often in response to rain.

The site has been monitored since 2015.

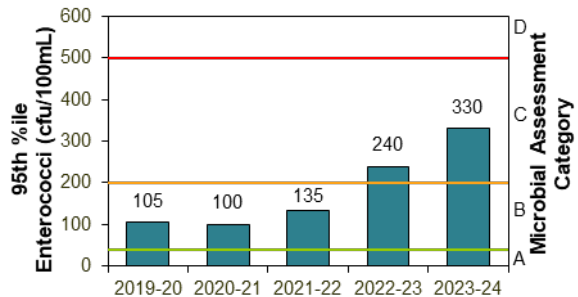
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Oct 2020 to Mar 2024	75%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

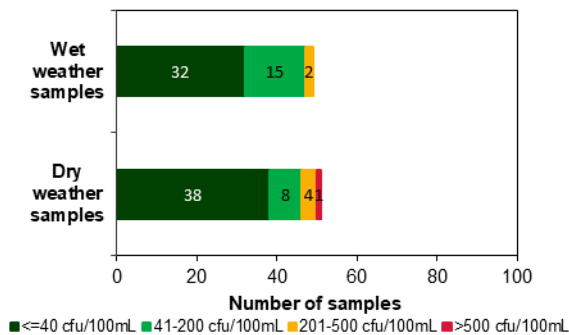
## Sanitary inspection: Moderate



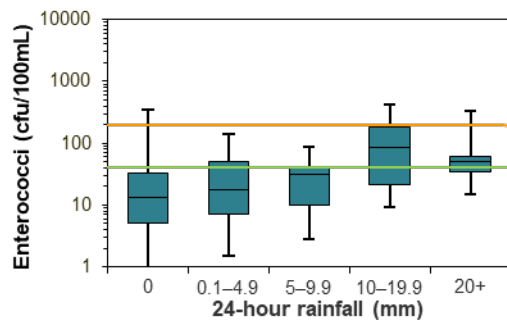
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# 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 5 grades ranging from Very Good to Very Poor:

### 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

### 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 3 days at estuarine sites

### 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 3 days following rainfall or if there are signs of pollution such as discoloured water or odour or debris in the water

Some 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 the catchment.

### **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 3 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 almost all of the time.

## Follow Up

Sometimes a location's sanitary inspection and water quality data produce incongruent results. These locations are classified as 'Follow Up'. Further assessment will be required to obtain the necessary data to provide a definite classification in accordance with national guidelines.

### **The guidelines**

The National Health and Medical Research Council's guidelines for managing risks in recreational water (NHMRC 2008) were adopted for use in New South Wales 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 (WA Department of Health 2007).

## Enterococci

**The national guidelines advocate the use of enterococci as the single preferred faecal indicator in recreational 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 (Standards Australia 2007).

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

Beach Suitability Grades are determined by using the following matrix:

		Microbial Assessment Category			
		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

\* Follow up occurs when sanitary inspection and water quality data produce potentially incongruent results; further assessment will be required.

Using the Beach Suitability Grade classification matrix, sites assigned a moderate Sanitary Inspection Category can only be rated as Good or Poor, with no option of Fair grades. This can create the impression of a large change in water quality when in fact there need only be a slight increase in bacterial counts to push it over the threshold, with no significant increase in the risk to public health.

### Microbial Assessment Category (MAC)

There are 4 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 (Wyer et al. 1999).

### Risk of illness associated with Microbial Assessment Categories

Category	Enterococci (cfu/100 mL)	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 illness; AFR = acute fever and rash

### 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 4 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 New South Wales 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. The WA Department of Health recommends a minimum of 65 samples, collected from a particular site over 5 consecutive years, to provide sufficient confidence and reliability in the 95th percentile data output. 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 the WA Government's 'Environmental waters publications' webpage, under *Forms and templates*.

## Sanitary Inspection Category (SIC)

More information about the **sanitary inspection** process is available in the Beachwatch Protocol for assessment and management of microbial risks in recreational waters, found on the department's website.

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.

The main sources of faecal contamination considered in the sanitary inspection are: bathers, toilet facilities, wastewater treatment plants (WWTPs), sewage overflows, sewer chokes, onsite systems, wastewater re-use, stormwater, river discharge, lagoons, boats and animals.

Rivers, lakes and estuaries themselves can be potential sources of faecal contamination to sites located in these waterbodies, with contaminated water from upstream or surrounding areas impacting water quality at the swimming location. This source is captured in river discharge or lagoon category, and shown as the waterbody in the sanitary inspection charts.

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



Stormwater drain flow

Photo:

Beachwatch/DCCEEW

Stormwater in urban areas often contains sewage from leakages, overflows or sewer chokes when the sewerage system fails.

Sewage overflows can occur in wet weather when the network has exceeded capacity due to rainwater entering the system. The mix of sewage and rainwater discharges from designated overflow points and drains to waterways, usually via the stormwater system. Overflows from the sewerage system can also occur in dry weather due to mechanical failure or power outage.

Sewer chokes occur due to blockages in the pipes usually due to tree roots, oil, grease or debris. This causes sewage to back up and escape via sewer inspection points, designed overflow structures or cracks in the pipes, then drain to waterways, usually via the stormwater system.

## Explanation of tables

Each region contains tables listing all monitored swimming sites including site type, beach grade and change in grade from the previous year.

The following symbols are used to show the change in beach grade from the previous year:



Stable



Improved



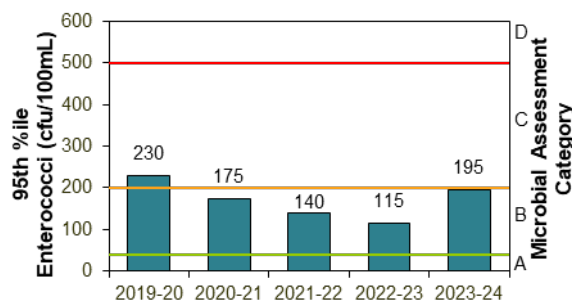
Declined

A provisional grade indicates the assessment is based on limited data collected during the assessment period and should not be compared to the beach grade from the previous year.

## Explanation of graphs, charts, and information bars on beach pages

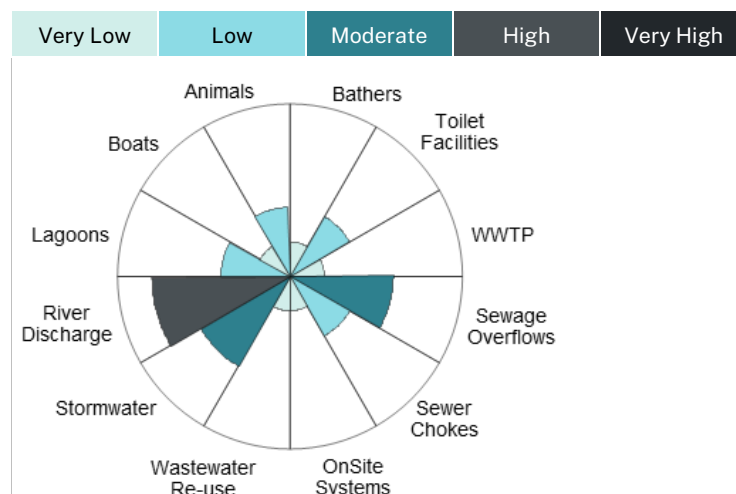
### Microbial Assessment Category (MAC) chart

On each beach page, the MACs for the last 5 years are displayed on a simple bar chart. The MAC for the current year is based on enterococci data collected during the assessment period. The bars are labelled with the 95th percentile value for each year and the thresholds dividing the A, B, C and D categories are marked in green, amber and red for reference.



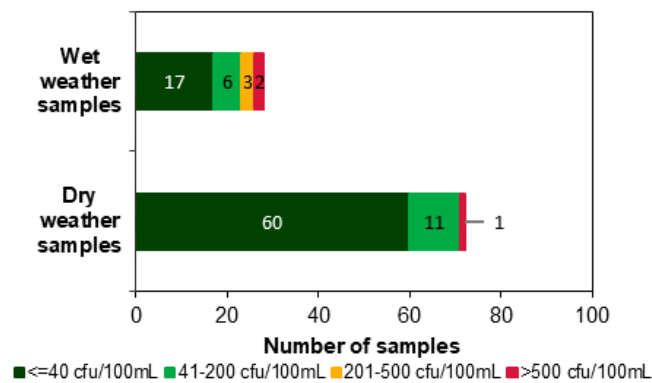
### Sanitary Inspection Category (SIC) chart

The results of the sanitary inspection for each swimming location are presented in a radar pie chart. The chart 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 segment, ranging from very low (lightest colour) to very high (darkest colour) as shown below. The sum of these contributions is the overall likelihood, or Sanitary Inspection Category.



## Wet and dry weather water quality chart

Enterococci levels in wet and dry weather conditions are presented for each swimming location as a bar graph. All data collected during the assessment period is included in the analysis. Dry weather is defined as no rainfall recorded in the previous 24 hours. Each bar is colour coded to show the number 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 as dark green, light green, amber and red respectively.

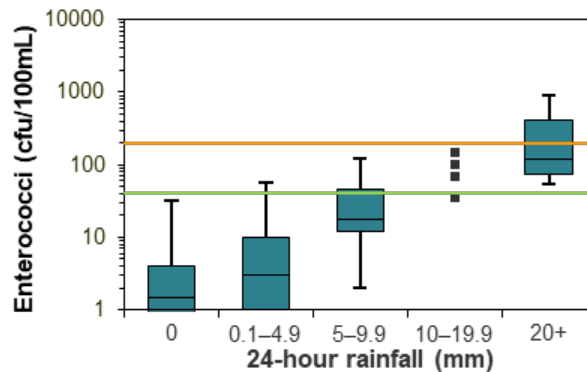


It is expected that swimming sites with lower levels of flushing will show some elevated bacterial results in dry weather samples (no rainfall in the previous 24 hours) due to the longer time needed to recover from a rainfall event. At some estuarine and lake/lagoon swimming locations the impacts of stormwater pollution on beach water quality may be detected up to 3 days after rainfall.

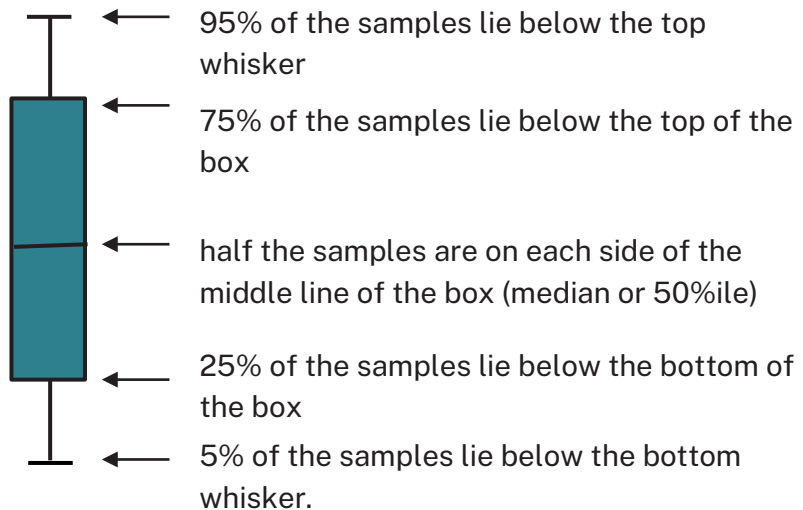
## Water quality in response to rainfall

Trends in enterococci levels in response to rainfall are shown using a box plot. 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 5 years of monitoring. Rainfall data were obtained from rain gauges situated close to the sample site and are 24-hour totals to 9 am on the day of sampling. If there are fewer than 5 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:



## Information bars

Information bars on each beach page provide a summary of details about the swimming site.
















The **assessment period** shows the timeframe in which the water samples were collected. The NHMRC guidelines state beach grades should be determined from the most recent 100 water quality results collected within a 5-year period. The assessment period varies between sites depending on sampling frequency.

Dry weather samples suitable for swimming (**dry weather swimmability**) shows the percentage of water samples with enterococci levels below 40 cfu/100 mL. Dry weather is defined as no rainfall in the previous 24 hours.

Swimming sites with lower levels of flushing often have a lower percentage of dry weather samples within the safe swimming limit due to the impacts of rainfall detected up to 3 days after the event.

## Explanation of maps

A map of individual swimming locations is presented on each beach page. The scale of the maps is 1:10,000. 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 Life Saving Club
	Wastewater Treatment Plant
	Sewage Pumping Station
	Sewage Overflow
	Stormwater Drain
	Water
	Baths
	National Park/Reserve/ Other Park
	Built-up Area
	Sand
	Roads
	Major Roads
	Baths – Netted Area
	Breakwater/Wharf

## References

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

Standards Australia (2007) *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.

WA Department of Health (2007), *Microbial 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, [ww2.health.wa.gov.au/Articles/A\\_E/Environmental-waters-publications](http://ww2.health.wa.gov.au/Articles/A_E/Environmental-waters-publications), accessed 23/06/23.

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.

## More information

- [Beachwatch webpage](#)
- [Coastal management program progress](#)
- [Sanitary inspection of beaches](#)
- [WA Government environmental water publications](#)
- [Ballina Shire Council's Healthy Waterways program](#)
- [Ballina Shire Council Coast and Estuary Management](#)
- [Richmond Valley Council Beachwatch program](#)



## Beachwatch

# State of the beaches 2023–24

Mid-North Coast region

Department of Climate Change,  
Energy, the Environment and Water



## Acknowledgement of Country

Department of Climate Change, Energy, the Environment and Water acknowledges the Traditional Custodians of the lands where we work and live.

We pay our respects to Elders past, present and emerging.

This resource may contain images or names of deceased persons in photographs or historical content.

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Artist and designer Nikita Ridgeway from Aboriginal design agency Boss Lady Creative Designs created the People and Community symbol.

Cover photo: Hungry Head Beach, Bellingen. Beachwatch/DCCEEW

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Recreational water quality has been monitored in the Mid-North Coast region since 2022 by Bellingen Shire Council under the Department of Climate Change, Energy, the Environment and Water's Beachwatch Partnership Program. This report summarises the performance of 7 sites on the Mid-North Coast of New South Wales, providing an assessment of how suitable a site is for swimming. Monitored sites include ocean beaches, estuarine areas in Bellingen River and Kalang River, a lagoon, and a freshwater site in Never Never River.

In 2023–2024, 29% of swimming sites in the Mid-North Coast region were graded as Good, including the 2 ocean beaches. These sites were suitable for swimming for most of the time. The Beach Suitability Grades are provisional due to incomplete data available for the microbial assessment, the sanitary inspection or both. Further monitoring is required to obtain a definite classification in accordance with national guidelines.

However, this assessment provides an indication of sites with greater potential for swimming, and sites where water quality is more susceptible to faecal contamination. In general, freshwater and estuarine swimming sites do not perform as well as ocean beaches, due to lower levels of flushing increasing the time needed to disperse and dilute pollution inputs, taking longer to recover from stormwater events.

## Mid-North Coast region summary 2023–2024



Lavenders Bridge

Photo:

Beachwatch/DCCEEW

### Monitoring water quality for swimming in New South Wales

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 New South Wales 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 (2–4 years’ worth of data depending on the sampling frequency) and a risk assessment of potential pollution sources.

See the section on **Quality assurance** in the Statewide Summary for results of the quality assurance program.

Recreational water quality has been monitored in the Mid-North Coast region by Bellingen Shire Council since 2022.

A **quality assurance** program ensures the information collected and reported by Beachwatch and its partners is accurate and reliable.

The Beach Suitability Grades provided for monitored sites in Bellingen Shire are provisional and subject to change. **Provisional classifications** are provided where the data available for the microbial assessment, the sanitary inspection or both are

incomplete. Further monitoring is required to obtain the necessary data to provide a definite classification in accordance with national guidelines.

During 2023–2024, 7 swimming sites were monitored including ocean beaches, estuarine areas in Bellinger River and Kalang River, and a freshwater site in Never Never River.

## Rainfall impacts

Rainfall is the major driver of pollution to recreational waters, generating stormwater runoff and triggering untreated 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.

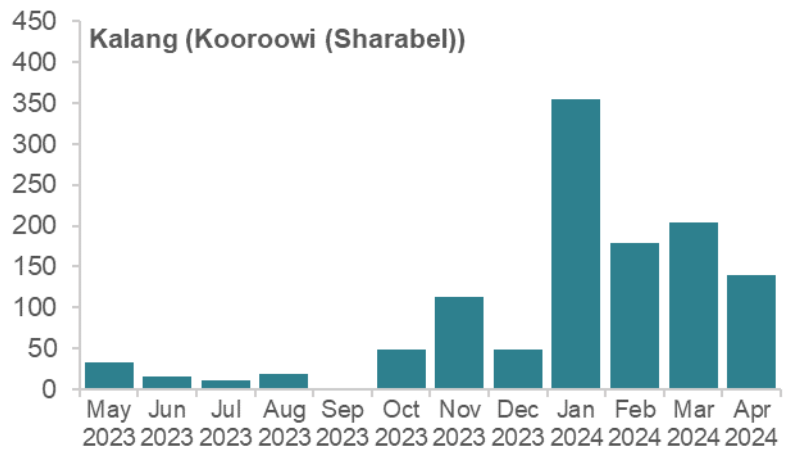
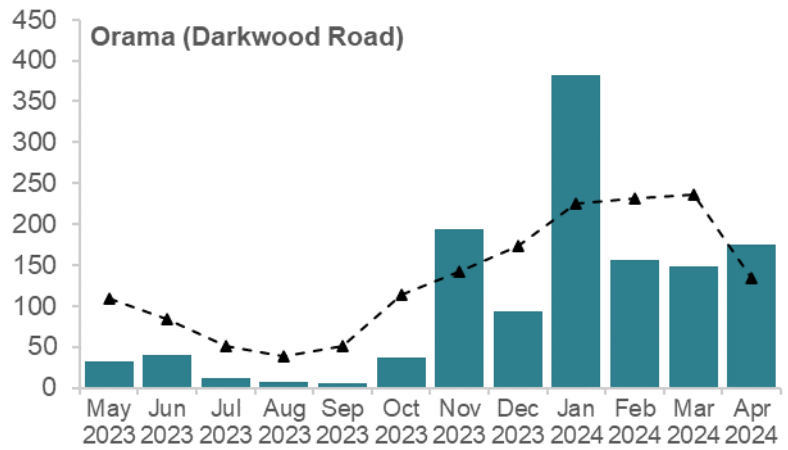
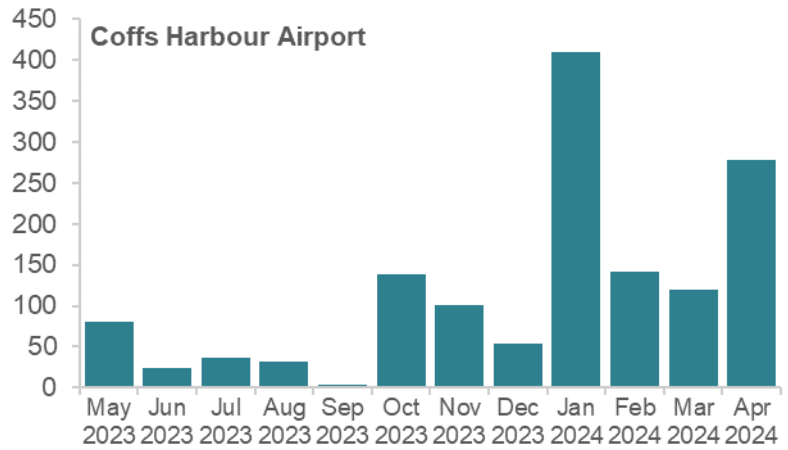
The Beach Suitability Grades for 2023–2024 are based on water quality data collected over the last 2–4 years (since September 2022). Rainfall over this period has been diverse:

- 2022–2023: below average, with lengthy dry periods during November, and some isolated wet weather events. Drier than average conditions in spring continued in summer and autumn
- 2023–2024: below average rainfall and isolated wet months in summer and autumn.

Rainfall on the Mid-North Coast was below the long-term monthly averages from May to September 2023. Monthly rainfall totals were much higher than the previous 6 months across the region between October 2023 and April 2024, with January 2024 notably wet. Coffs Harbour recorded more than two and half times the long-term January average rainfall.

See the section on **How to read this report** on page 19 for an explanation of the graphs, tables and Beach Suitability Grades.

**Mid-North Coast region rainfall**



--▲-- Long-term average













## **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 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 Mid-North Coast region**

Swimming site	Site type	Beach Suitability Grade	Change
<b>Bellingen Shire Council</b>			
Arthur Keough Reserve (Never Never River)	Freshwater	 ^	
Lavenders Bridge (Bellinger River)	Estuarine	 ^	
Dalhousie Creek	Lagoon	Follow Up ^	
Hungry Head Beach	Ocean beach	 ^	
Urunga Lido (Kalang River)	Estuarine	 ^	
Mylestom Baths (Bellinger River)	Estuarine	Follow Up ^	
North Beach	Ocean beach	 ^	

Beach Suitability Grade					Change		
							
Very Good	Good	Fair	Poor	Very Poor	Improved	Stable	Declined

^ Provisional: Information required for the analysis is incomplete due to limited bacterial data or limited information on potential pollution sources in the catchment.

Follow Up: Sanitary inspection and water-quality data produce potentially incongruent results; further assessment will be required.

# Bellingen Shire Council



## Overall results

Two of the 7 sites were graded as Very Good or Good in 2023–2024, and 2 of the 7 sites could not be graded and follow up is required. However, the grades for all monitored sites are provisional with incomplete data available for the microbial assessment, the sanitary inspection or both.

While further monitoring is required to obtain the necessary data to provide a definite classification, this assessment provides an indication of sites with greater potential for safe swimming, and sites where water quality is more susceptible to faecal contamination.

Bellingen Shire Council has monitored these swim sites since 2022.

### Percentage of sites graded as Very Good or Good

	2021– 2022	2022– 2023	2023– 2024	Trend
Ocean beaches (2 sites)	–	50%	<b>100%</b>	
Estuarine (3 sites)	–	0%	<b>0%</b>	
Lagoon (1 site)	–	0%	<b>0%</b>	
Freshwater (1 site)	–	0%	<b>0%</b>	

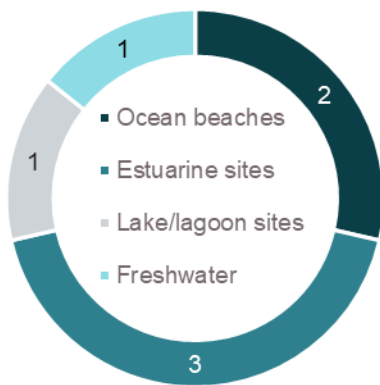
Seven sites were monitored by Bellingen Shire Council. Samples were collected weekly between September and April and sampling and laboratory analysis was fully funded by the council.

See the section on **How to read this report** on page 19 for an explanation of the graphs, tables and Beach Suitability Grades.

### Best beaches

Hungry Head Beach and North Beach.

These sites had good water quality and were suitable for swimming most of the time.



Site types in Bellinghen Shire Council

Swimming sites monitored in the Bellinghen region include ocean beaches, estuarine areas in Bellinger River and Kalang River, a lagoon, and a freshwater site in Never Never River, with each site type having a different response to rainfall-related impacts.

Estuarine, lagoon and freshwater swimming sites generally did not perform as well as ocean beaches, due to lower levels of flushing increasing the time needed to disperse and dilute pollution inputs, taking longer to recover from stormwater events.

As a general precaution swimming should be avoided during and for at least one day after heavy rain at ocean beaches, and for up to 3 days in lagoons, rivers and estuarine areas, or if there are signs of stormwater pollution such as discoloured water or floating debris.

### Ocean beaches

Hungry Head Beach and North Beach were graded as Good in 2023–2024. Hungry Head Beach improved to Good from Poor in the previous year. Water quality at these beaches was suitable for swimming most of the time, with 83% and 94% of dry weather samples within the safe swimming limit at Hungry Head Beach and North Beach respectively.



Beach Suitability Grades for Bellinghen Shire Council ocean beaches

The Beach Suitability Grades for these sites are provisional due to limited bacterial data. It is recommended that swimming should be avoided during and for up to one day after rainfall at ocean beaches or if there are signs of stormwater pollution such as

discoloured water, flowing drains or outflow from creeks or lagoons, due to the possibility of pollution.

## Estuarine sites



**Beach Suitability Grades for Bellingen Shire Council estuarine sites**

Lavenders Bridge and Urunga Lido were graded as Poor in 2023–2024, similar to the previous year. These grades are provisional and subject to change as the assessment is based on limited bacterial data. Despite the Poor grades, microbial water quality at these sites has shown trends of improved microbial assessments from the previous year.

Mylestom Baths was graded as Follow Up in 2023–2024, due to incongruent results from the sanitary inspection and microbial water quality. Water quality at this site was generally suitable for swimming in dry weather conditions, with 76% of dry weather samples within the safe swimming limit, but was impacted by stormwater pollution following rainfall.

The sanitary inspection at Mylestom Baths indicates low risk, but microbial water quality assessment data indicate times of poor quality water, which suggests that there are sources of diffuse pollution that have not been identified. This swimming site is in a well flushed section of the estuary however the large catchment upstream has many potential sources of faecal contamination. Follow up is needed with further assessment required to assign a definite Beach Suitability Grade.

In this case, specific studies demonstrating the relative levels of human and nonhuman contamination may be appropriate. Confirmation that contamination is primarily from nonhuman sources may allow reclassification to a more favourable level, but care will be needed because the risk will depend on the type of nonhuman pollution and because the nonhuman source may still be a source of important pathogens.

It is recommended that swimming at estuarine sites should be avoided during and for up to 3 days following rainfall, or if there are signs of pollution such as discoloured water or floating debris.

## Lagoon sites



**Beach Suitability Grades for Bellingen Shire Council lagoon site**

Dalhousie Creek was graded as Follow Up in 2023–2024, due to incongruent results from the sanitary inspection and microbial water quality. While this grade is provisional, microbial water quality was mostly suitable for swimming during dry weather conditions, with 74% of dry weather samples within the safe swimming limit. Elevated bacterial levels increased with increasing rainfall, and frequently exceeded the safe swimming limit after moderate rainfall.

Dalhousie Creek is in a small lagoon with an intermittently closed/open entrance. The lagoon entrance was open several times during the assessment period. Coastal lagoons can have low levels of flushing, and so pollution inputs can accumulate at these sites when they are not open to the ocean, taking longer to recover from stormwater events.

The sanitary inspection at Dalhousie Creek indicates low risk, but microbial water quality assessment data indicate times of poor quality water, which suggests there are sources of diffuse pollution that have not been identified. Follow up is needed with further assessment required to assign a definite Beach Suitability Grade.

In this case, specific studies demonstrating the relative levels of human and nonhuman contamination may be appropriate. Confirmation that contamination is primarily from nonhuman sources may allow reclassification to a more favourable level, but care will be needed because the risk will depend on the type of nonhuman pollution and because the nonhuman source may still be a source of important pathogens.

It is recommended that swimming should be avoided during and for up to 3 days following rainfall, particularly if the lagoon entrance is closed, or if there are signs of pollution such as discoloured water or floating debris.

## Freshwater sites



**Beach Suitability Grades for Bellingen Shire Council freshwater site**

Arthur Keough Reserve was graded as Poor in 2023–2024, similar to the previous year. This grade is provisional and subject to change as data available for the microbial assessment is incomplete.

Microbial water quality was frequently elevated during dry weather conditions and after rainfall. The swim site is known to have low flows, higher water temperatures and high visitation.

Bellingen Shire Council is investigating the source of poor water quality, including testing 4 tributaries to the Never Never River to find sources of diffuse pollution that have not been identified. Further investigation will help address issues of concern and explore potential management solutions.

Information about Bellingen Shire Council's **Water Quality Management Plan** is available on council's website.

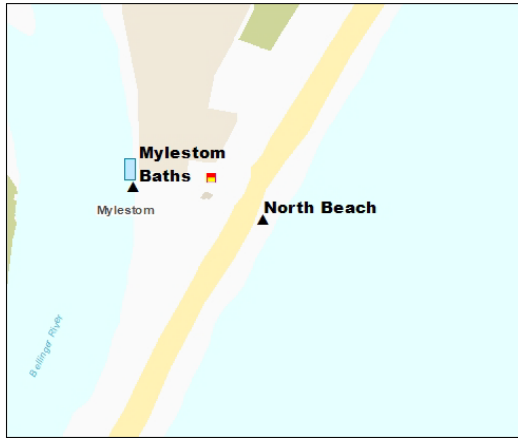
It is recommended that swimming should be avoided during and for up to 3 days following rainfall, or if there are signs of pollution such as discoloured water or floating debris.



**Sampling sites and Beach Suitability Grades in Bellingen Shire Council**

# North Beach

Beach grade: **G**



North Beach is an open ocean beach, along a pristine stretch of coastline. The beach features powerful surf breaks and is patrolled during school holidays and weekends between October and April.

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

Enterococci levels had little response to rainfall and mostly remained below the safe swimming limit across all rainfall categories.

The site has been monitored since 2022.

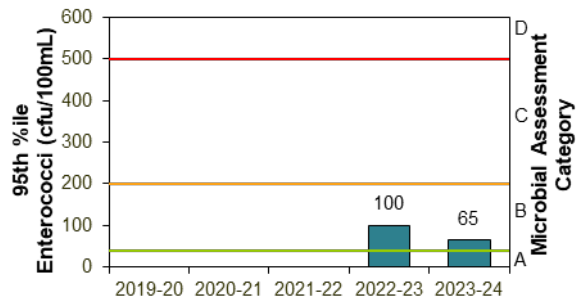
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	94%	56	Stable

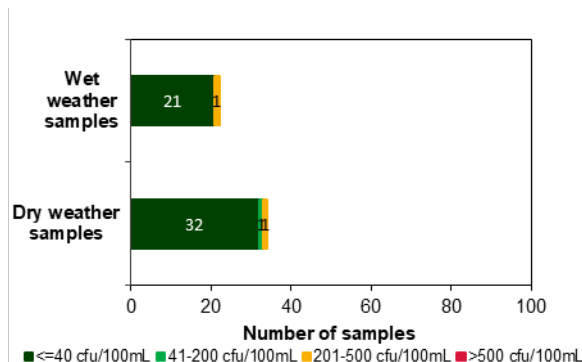
### Sanitary inspection: Low



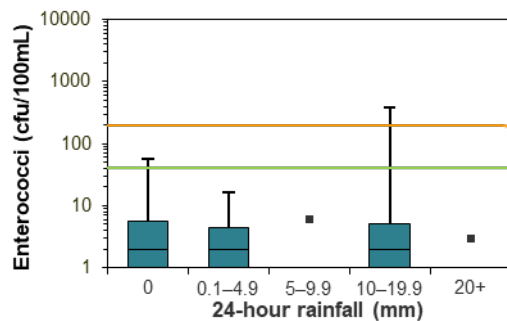
### Microbial Assessment Category: B



### Dry and wet weather water quality



### Water quality in response to rainfall



# Hungry Head Beach

Beach grade: **G**<sup>A</sup>




Hungry Head Beach extends 2 km south from Hungry Head. The entrance to Dalhousie Creek is located at the northern end of the beach.

The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time, with potential faecal contamination from Dalhousie Creek when the lagoon entrance is open.

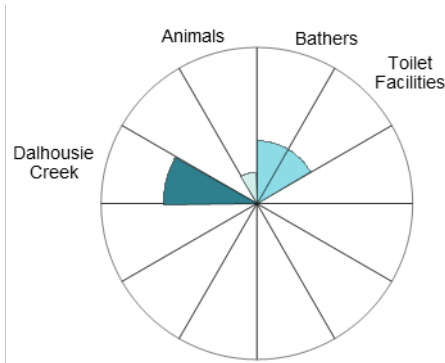
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain.

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

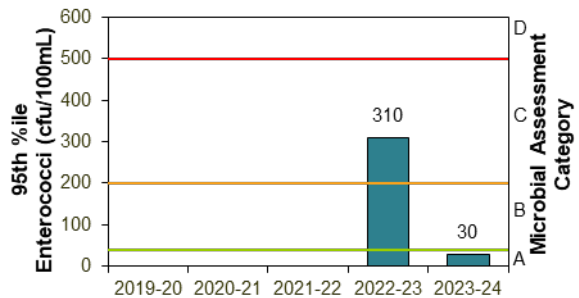
The site has been monitored since 2022.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	83%	57	Improved 

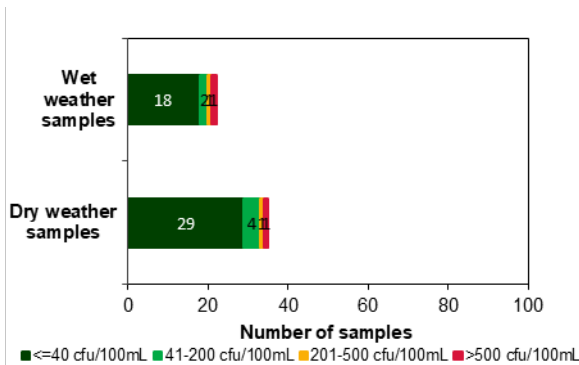
## Sanitary inspection: Moderate



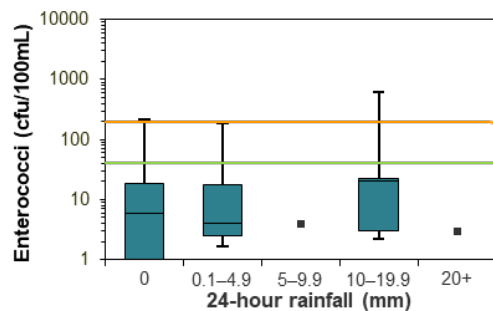
## Microbial Assessment Category: A



## Dry and wet weather water quality

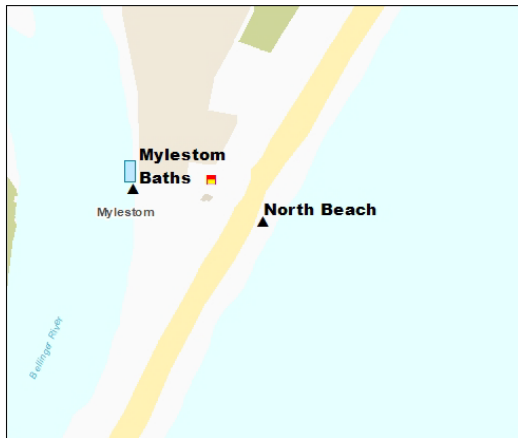


## Water quality in response to rainfall



# Mylestom Baths

**Beach grade:** Follow Up



Mylestom Baths is a protected swimming area in the Bellinger River. The enclosed area offers a calm environment for leisurely swims, while the surrounding parklands provide space for picnics and relaxation.

The Beach Suitability Grade of Follow Up indicates sanitary inspection and water quality data produce potentially incongruent results, and further assessment will be required. The large catchment area upstream of the baths has many potential sources of faecal contamination.

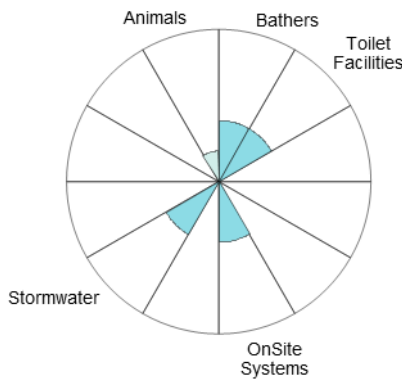
See ‘How to read this report’ for key to map.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and often after rain.

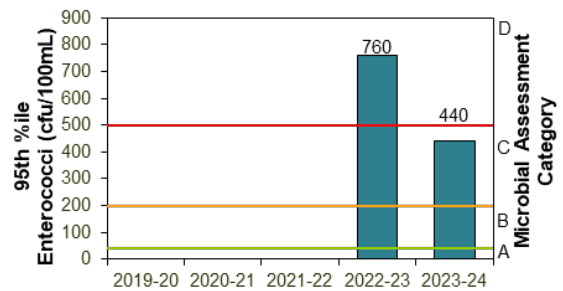
The site has been monitored since 2022.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Sep 2022 to Apr 2024	76%	61	Stable

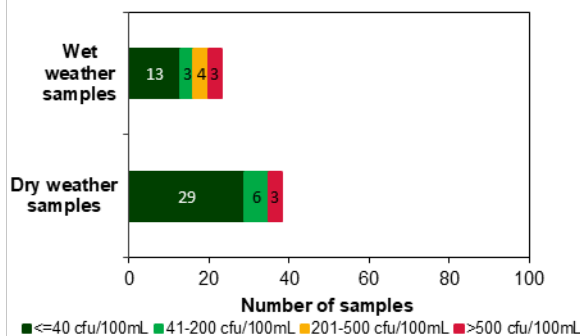
## Sanitary inspection: Low



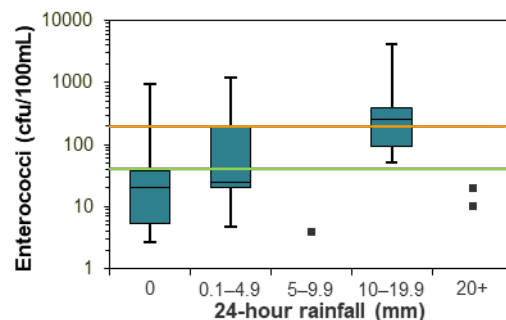
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Urunga Lido

Beach grade: P<sup>A</sup>



Urunga Lido is a sandy beach with calm waters located in the Kalang River Estuary. The beach is backed by a holiday park and features a recently upgraded boardwalk.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall, with potential contamination from Urunga Lagoon and river discharge.

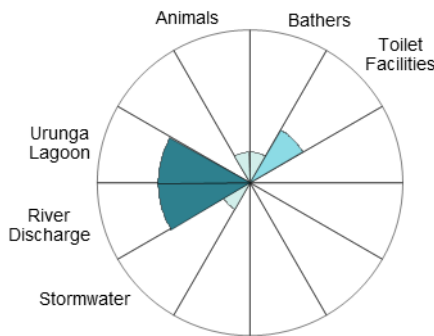
Enterococci levels increased slightly with increasing rainfall, often exceeding the safe swimming limit in dry and wet weather conditions.

The site has been monitored since 2022.

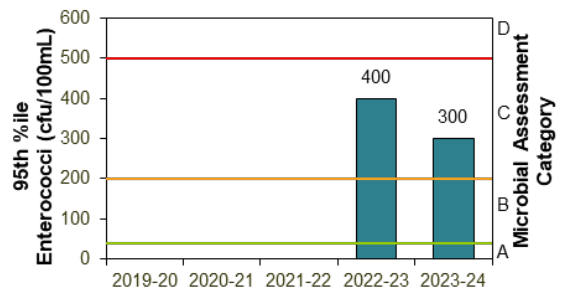
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Sep 2022 to Apr 2024	71%	58	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

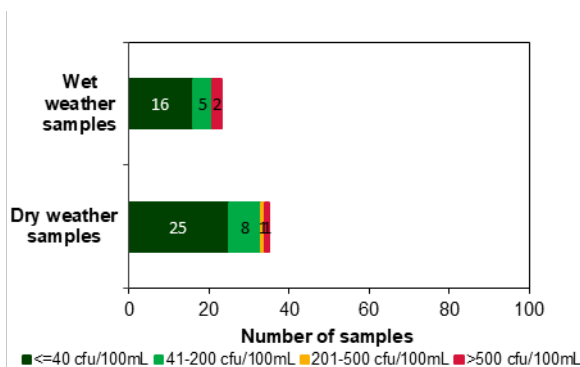
## Sanitary inspection: Moderate



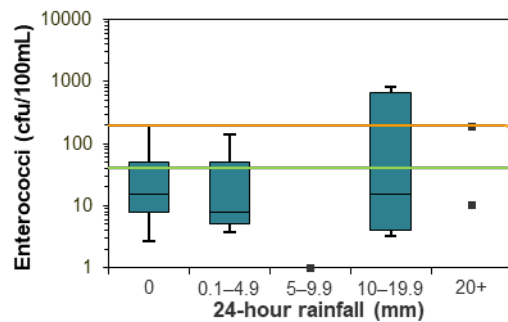
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Dalhousie Creek

**Beach grade:** Follow Up



See ‘How to read this report’ for key to map.

Dalhousie Creek is located in a small coastal lagoon with an intermittently closed/open entrance which lies just to the south of Hungry Head.

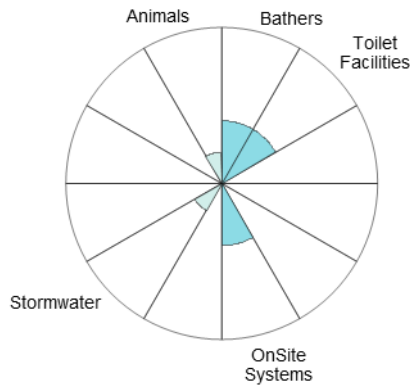
The Beach Suitability Grade of Follow Up indicates sanitary inspection and water quality data produce potentially incongruent results, and further assessment will be required.

Enterococci levels generally increased with increasing rainfall, often exceeding the safe swimming limit after little or no rain and frequently after 10 mm or more of rainfall.

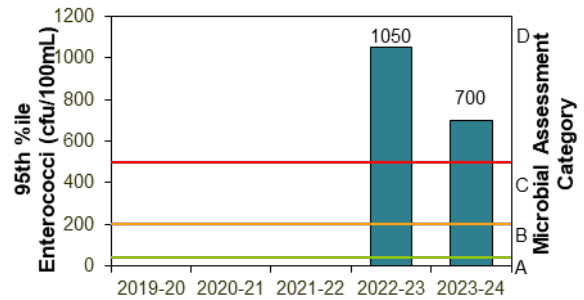
The site has been monitored since 2022.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Lagoon	Sep 2022 to Apr 2024	74%	58	Stable

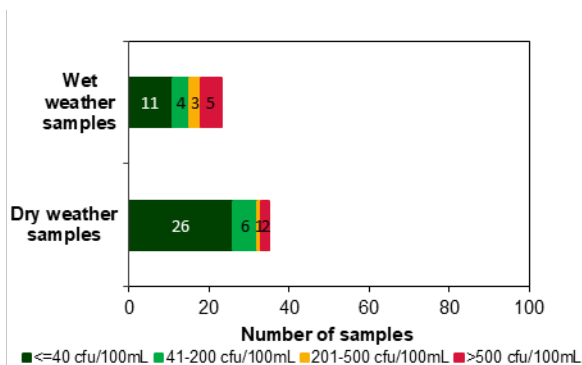
## Sanitary inspection: Low



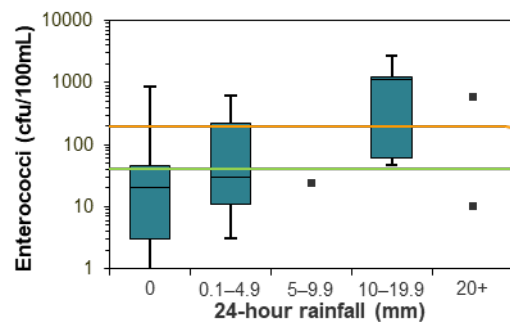
## Microbial Assessment Category: D



## Dry and wet weather water quality



## Water quality in response to rainfall



# Lavenders Bridge

Beach grade: P<sup>A</sup>



Lavenders Bridge is a riverside beach in the Bellingher River in the centre of Bellingen.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with potential faecal contamination from upstream sources in Bellingher River and bathers.

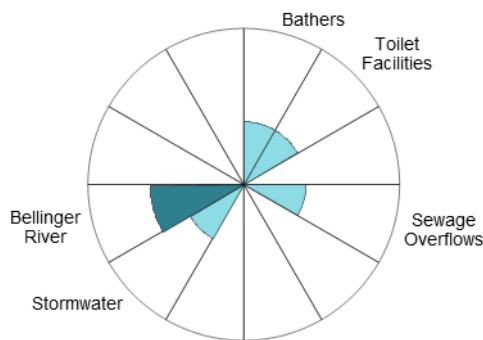
Enterococci levels increased with increasing rainfall, regularly exceeding the safe swimming limit across all rainfall categories.

The site has been monitored since 2022.

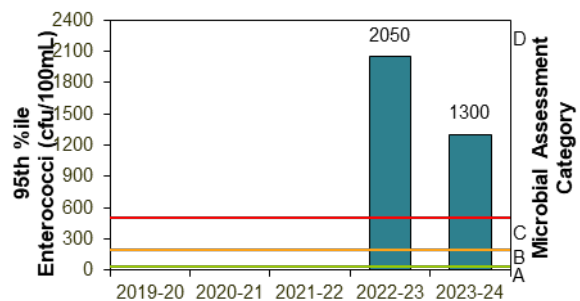
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Sep 2022 to Apr 2024	40%	59	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

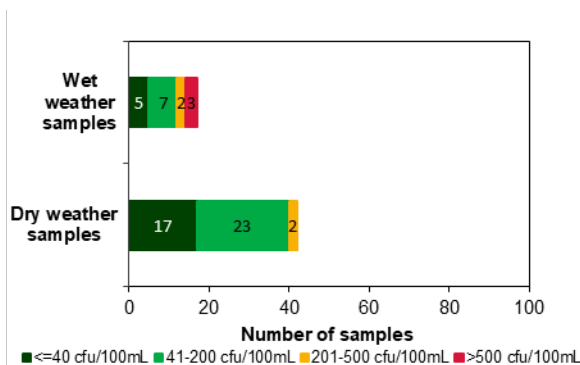
## Sanitary inspection: Moderate



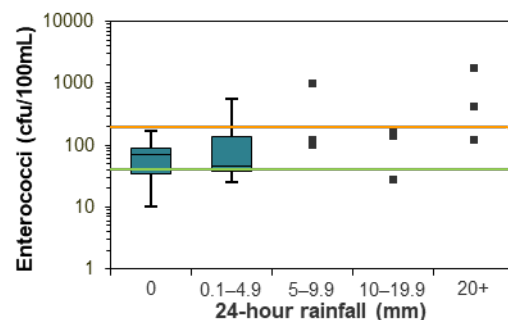
## Microbial Assessment Category: D



## Dry and wet weather water quality



## Water quality in response to rainfall



# Arthur Keough Reserve

Beach grade: P<sup>^</sup>



Arthur Keough Reserve is a riverside picnic spot offering space for recreation and relaxation along the Never Never River.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with potential faecal contamination from bathers and onsite systems.

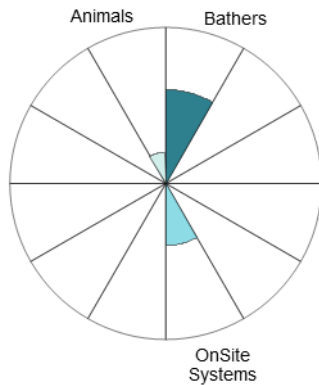
Enterococci levels increased with increasing rainfall, frequently exceeding the safe swimming limit across all rainfall categories.

The site has been monitored since 2022.

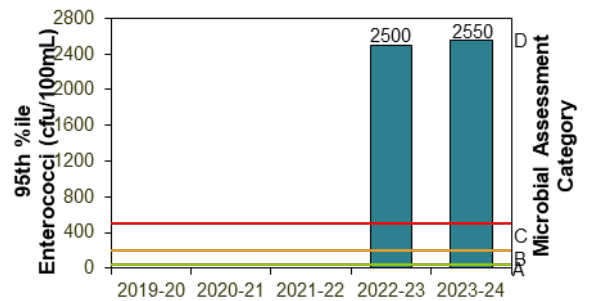
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Freshwater	Sep 2022 to Apr 2024	19%	59	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

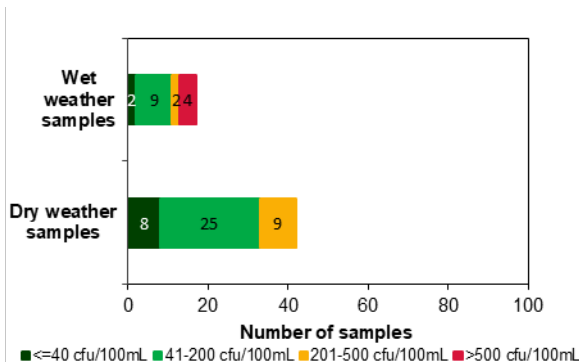
## Sanitary inspection: Moderate



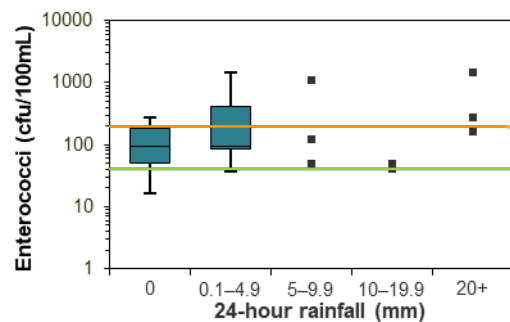
## Microbial Assessment Category: D



## Dry and wet weather water quality



## Water quality in response to rainfall



# 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 5 grades ranging from Very Good to Very Poor:

### 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

### 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 3 days at estuarine sites

### 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 3 days following rainfall or if there are signs of pollution such as discoloured water or odour or debris in the water

Some 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 the catchment.

### **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 3 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 almost all of the time.

## Follow Up

Sometimes a location's sanitary inspection and water quality data produce incongruent results. These locations are classified as 'Follow Up'. Further assessment will be required to obtain the necessary data to provide a definite classification in accordance with national guidelines.

### **The guidelines**

The National Health and Medical Research Council's guidelines for managing risks in recreational water (NHMRC 2008) were adopted for use in New South Wales 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 (WA Department of Health 2007).

## Enterococci

**The national guidelines advocate the use of enterococci as the single preferred faecal indicator in recreational 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 (Standards Australia 2007).

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

Beach Suitability Grades are determined by using the following matrix:

		Microbial Assessment Category			
		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

\* Follow up occurs when sanitary inspection and water quality data produce potentially incongruent results; further assessment will be required.

Using the Beach Suitability Grade classification matrix, sites assigned a moderate Sanitary Inspection Category can only be rated as Good or Poor, with no option of Fair grades. This can create the impression of a large change in water quality when in fact there need only be a slight increase in bacterial counts to push it over the threshold, with no significant increase in the risk to public health.

### Microbial Assessment Category (MAC)

There are 4 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 (Wyer et al. 1999).

### Risk of illness associated with Microbial Assessment Categories

Category	Enterococci (cfu/100 mL)	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 illness; AFR = acute fever and rash

### 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 4 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 New South Wales 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. The WA Department of Health recommends a minimum of 65 samples, collected from a particular site over 5 consecutive years, to provide sufficient confidence and reliability in the 95th percentile data output. 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 the WA Government's 'Environmental waters publications' webpage, under *Forms and templates*.

## Sanitary Inspection Category (SIC)

More information about the **sanitary inspection** process is available in the Beachwatch Protocol for assessment and management of microbial risks in recreational waters, found on the department's website.

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.

The main sources of faecal contamination considered in the sanitary inspection are: bathers, toilet facilities, wastewater treatment plants (WWTPs), sewage overflows, sewer chokes, onsite systems, wastewater re-use, stormwater, river discharge, lagoons, boats and animals.

Rivers, lakes and estuaries themselves can be potential sources of faecal contamination to sites located in these waterbodies, with contaminated water from upstream or surrounding areas impacting water quality at the swimming location. This source is captured in river discharge or lagoon category, and shown as the waterbody in the sanitary inspection charts.

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



Stormwater drain flow

Photo:

Beachwatch/DCCEEW

Stormwater in urban areas often contains sewage from leakages, overflows or sewer chokes when the sewerage system fails.

Sewage overflows can occur in wet weather when the network has exceeded capacity due to rainwater entering the system. The mix of sewage and rainwater discharges from designated overflow points and drains to waterways, usually via the stormwater system. Overflows from the sewerage system can also occur in dry weather due to mechanical failure or power outage.

Sewer chokes occur due to blockages in the pipes usually due to tree roots, oil, grease or debris. This causes sewage to back up and escape via sewer inspection points, designed overflow structures or cracks in the pipes, then drain to waterways, usually via the stormwater system.

## Explanation of tables

Each region contains tables listing all monitored swimming sites including site type, beach grade and change in grade from the previous year.

The following symbols are used to show the change in beach grade from the previous year:



Stable



Improved



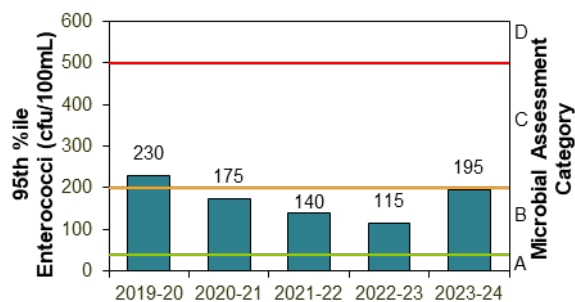
Declined

A provisional grade indicates the assessment is based on limited data collected during the assessment period and should not be compared to the beach grade from the previous year.

## Explanation of graphs, charts, and information bars on beach pages

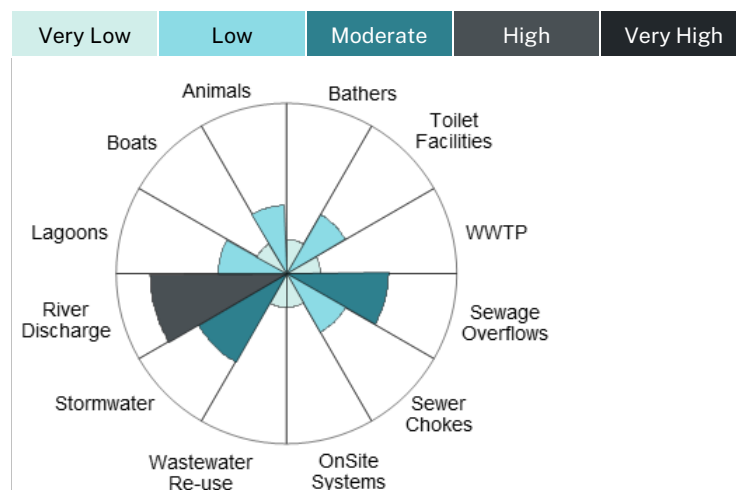
### Microbial Assessment Category (MAC) chart

On each beach page, the MACs for the last 5 years are displayed on a simple bar chart. The MAC for the current year is based on enterococci data collected during the assessment period. The bars are labelled with the 95th percentile value for each year and the thresholds dividing the A, B, C and D categories are marked in green, amber and red for reference.



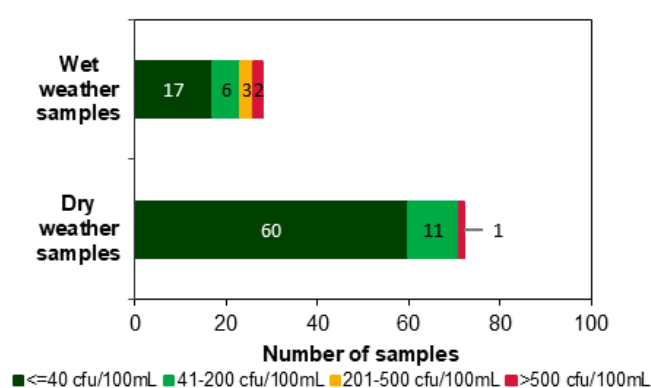
### Sanitary Inspection Category (SIC) chart

The results of the sanitary inspection for each swimming location are presented in a radar pie chart. The chart 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 segment, ranging from very low (lightest colour) to very high (darkest colour) as shown below. The sum of these contributions is the overall likelihood, or Sanitary Inspection Category.



## Wet and dry weather water quality chart

Enterococci levels in wet and dry weather conditions are presented for each swimming location as a bar graph. All data collected during the assessment period is included in the analysis. Dry weather is defined as no rainfall recorded in the previous 24 hours. Each bar is colour coded to show the number 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 as dark green, light green, amber and red respectively.

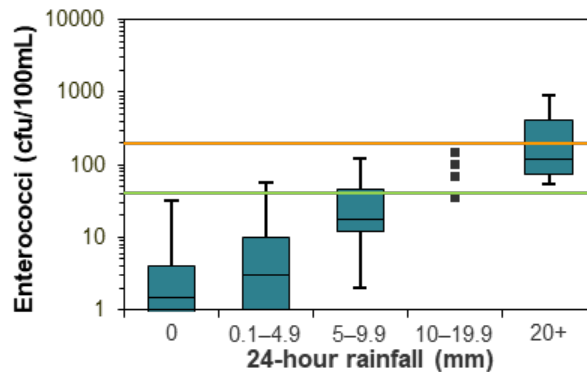


It is expected that swimming sites with lower levels of flushing will show some elevated bacterial results in dry weather samples (no rainfall in the previous 24 hours) due to the longer time needed to recover from a rainfall event. At some estuarine and lake/lagoon swimming locations the impacts of stormwater pollution on beach water quality may be detected up to 3 days after rainfall.

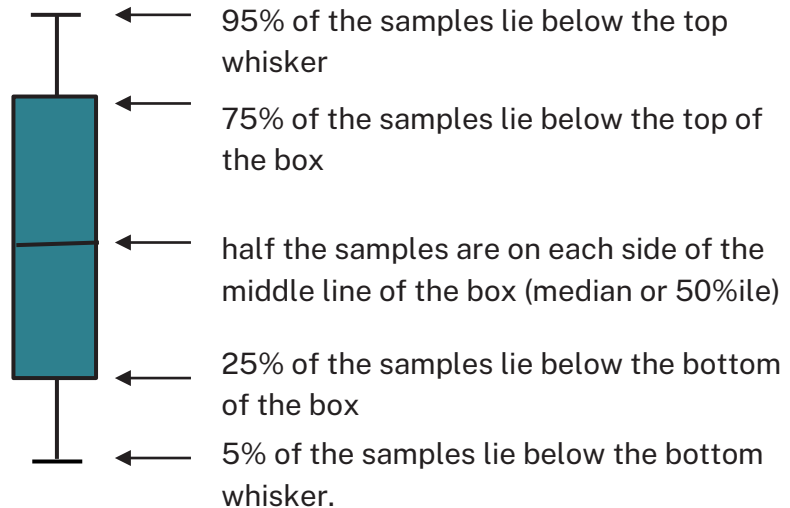
## Water quality in response to rainfall

Trends in enterococci levels in response to rainfall are shown using a box plot. 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 5 years of monitoring. Rainfall data were obtained from rain gauges situated close to the sample site and are 24-hour totals to 9 am on the day of sampling. If there are fewer than 5 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:



### Information bars

Information bars on each beach page provide a summary of details about the swimming site.
















The **assessment period** shows the timeframe in which the water samples were collected. The NHMRC guidelines state beach grades should be determined from the most recent 100 water quality results collected within a 5-year period. The assessment period varies between sites depending on sampling frequency.

Dry weather samples suitable for swimming (**dry weather swimmability**) shows the percentage of water samples with enterococci levels below 40 cfu/100 mL. Dry weather is defined as no rainfall in the previous 24 hours.

Swimming sites with lower levels of flushing often have a lower percentage of dry weather samples within the safe swimming limit due to the impacts of rainfall detected up to 3 days after the event.

## Explanation of maps

A map of individual swimming locations is presented on each beach page. The scale of the maps is 1:10,000. 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 Life Saving Club
	Wastewater Treatment Plant
	Sewage Pumping Station
	Sewage Overflow
	Stormwater Drain
	Water
	Baths
	National Park/Reserve/ Other Park
	Built-up Area
	Sand
	Roads
	Major Roads
	Baths – Netted Area
	Breakwater/Wharf

## References

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

Standards Australia (2007) *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.

WA Department of Health (2007), *Microbial 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, [ww2.health.wa.gov.au/Articles/A\\_E/Environmental-waters-publications](http://ww2.health.wa.gov.au/Articles/A_E/Environmental-waters-publications), accessed 10/07/23.

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.

## More information

- [Beachwatch webpage](#)
- [Coastal management program progress](#)
- [Sanitary inspection of beaches](#)
- [WA Government environmental water publications](#)
- [Bellingen Shire Council's Water Quality Management Plan](#)



## Beachwatch

# State of the beaches 2023–24

Hunter region

Department of Climate Change,  
Energy, the Environment and Water



## Acknowledgement of Country

Department of Climate Change, Energy, the Environment and Water acknowledges the Traditional Custodians of the lands where we work and live.

We pay our respects to Elders past, present and emerging.

This resource may contain images or names of deceased persons in photographs or historical content.

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Artist and designer Nikita Ridgeway from Aboriginal design agency Boss Lady Creative Designs created the People and Community symbol.

Cover photo: Zenith Beach, Port Stephens. Beachwatch/DCCEEW

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Recreational water quality has been monitored in the Hunter region since 1996 by Hunter Water Corporation, with some sites monitored as a requirement of Environment Protection Licences. This report summarises the performance of 17 ocean beaches in the Hunter region of New South Wales, providing a long-term assessment of how suitable a site is for swimming.

In 2023–2024, 100% of swimming sites in the Hunter region were graded as Good or Very Good. These sites were suitable for swimming for most or almost all of the time. This is an excellent result, similar in performance to the previous year.

# Hunter region summary

## 2023–2024

### Monitoring water quality for swimming in New South Wales



Merewether Beach

Photo:  
Beachwatch/DCCEEW

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 New South Wales 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 (2–4 years’ worth of data depending on the sampling frequency) and a risk assessment of potential pollution sources.

See the section on **Quality assurance** in the Statewide Summary for results of the quality assurance program.

Recreational water quality has been monitored in the Hunter region by Hunter Water Corporation since 1996.

A **quality assurance** program ensures the information collected and reported by Beachwatch and its partners is accurate and reliable.

## Rainfall impacts

During 2023–2024, 17 ocean beaches were monitored in the Hunter region.

Rainfall is the major driver of pollution to recreational waters, generating stormwater runoff and triggering untreated 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.

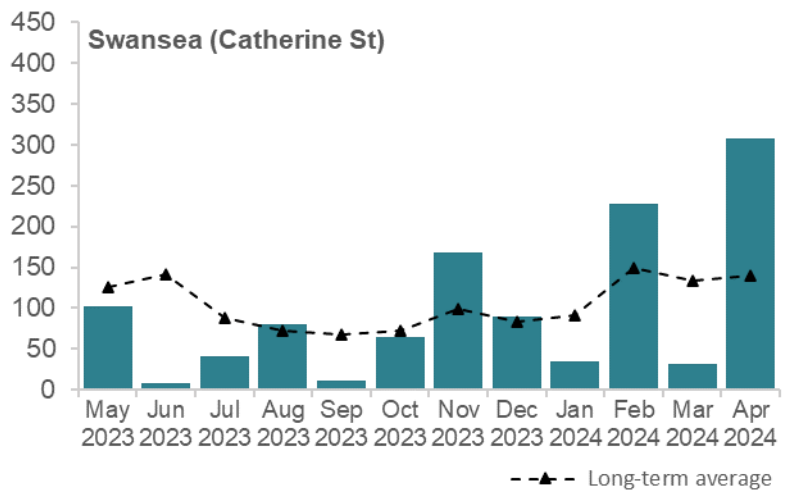
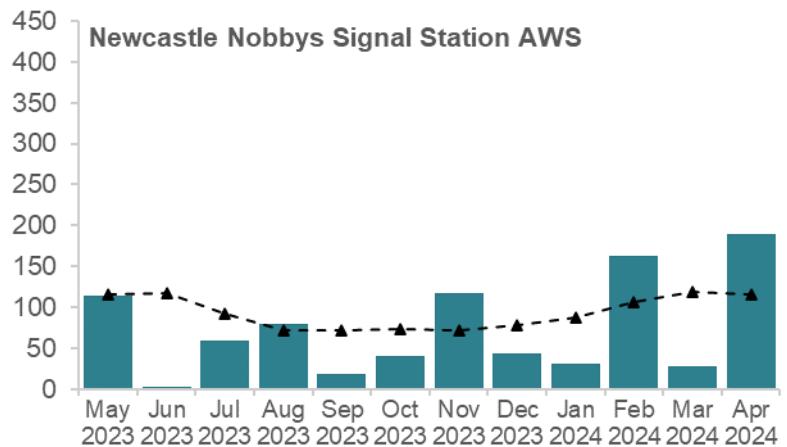
The Beach Suitability Grades for 2023–2024 are based on water quality data collected over the last 2–4 years. Rainfall over this period has been diverse:

- 2020–2021: variable rainfall with some very wet months
- 2021–2022: average to below average rainfall, except for some wet months, including a very wet March and associated flooding
- 2022–2023: prolonged dry weather periods broken by heavy rainfall at times, and a very wet July
- 2023–2024: average to below average rainfall and isolated wet months.

See the section on **How to read this report** on page 32 for an explanation of the graphs, tables and Beach Suitability Grades.

Rainfall in the Hunter region was average to below average from May to October 2023. Relatively low rainfall conditions followed through summer and autumn, except for some above average rainfall in November 2023 and February and April 2024. Swansea recorded its highest April daily rainfall of 114 mm on 6 April, due to the combination of a deep coastal trough and low pressure system.

### Hunter region rainfall



Beachwatch issues daily **beach pollution forecasts** to enable beach goers to make informed decisions about where and when to swim.

Pollution forecasts for the Hunter beaches can be accessed via the Beachwatch website, email subscription, X (formerly Twitter) and Facebook.

### 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 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 Hunter region**

Swimming site	Site type	Beach Suitability Grade	Change
<b>Port Stephens Council</b>			
Zenith Beach	Ocean beach	VG	<input type="radio"/>
Box Beach	Ocean beach	VG	<input type="radio"/>
Fingal Beach	Ocean beach	VG	<input type="radio"/>
One Mile Beach	Ocean beach	VG	<input type="radio"/>
<b>City of Newcastle Council</b>			
Stockton Beach	Ocean beach	VG	<input type="radio"/>
Nobbys Beach	Ocean beach	VG	<input type="radio"/>
Newcastle Beach	Ocean beach	VG	<input type="radio"/>
Bar Beach	Ocean beach	VG	<input type="radio"/>
Merewether Beach	Ocean beach	VG	<input type="radio"/>
Burwood North Beach	Ocean beach	VG	<input type="radio"/>
Burwood South Beach	Ocean beach	VG	<input type="radio"/>
<b>Lake Macquarie City Council</b>			
Glenrock Lagoon Beach	Ocean beach	VG	<input type="radio"/>
Dudley Beach	Ocean beach	VG	<input type="radio"/>
Redhead Beach	Ocean beach	VG	<input type="radio"/>
Blacksmiths Beach	Ocean beach	VG	<input type="radio"/>
Swansea Heads Little Beach	Ocean beach	G	<input type="radio"/>
Caves Beach	Ocean beach	VG	<input type="radio"/>

Beach Suitability Grade					Change		
							
Very Good	Good	Fair	Poor	Very Poor	Improved	Stable	Declined

# Port Stephens Council

## Overall results



All 4 swimming sites were graded as Very Good in 2023–2024. This is an excellent result, and similar to previous years.

### Percentage of sites graded as Very Good or Good

	2021– 2022	2022– 2023	2023– 2024	Trend
Ocean beaches (4 sites)	100%	100%	<b>100%</b>	—————

Four swimming sites were monitored in the Port Stephens local government area. All locations were monitored by Hunter Water Corporation, with some sites monitored as a requirement of Environment Protection Licences. Samples were collected every sixth day throughout the year.

See the section on **How to read this report** on page 32 for an explanation of the graphs, tables and Beach Suitability Grades.

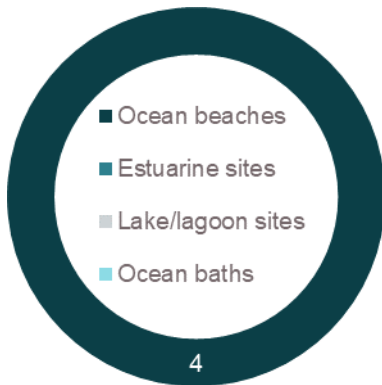
### Best beaches

Zenith Beach, Box Beach, Fingal Beach and One Mile Beach.

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

Ocean beaches were the only site type monitored in the Port Stephens region.

As a general precaution swimming should be avoided during and for at least one day after heavy rain at ocean beaches, or if there are signs of stormwater pollution such as discoloured water or floating debris.



**Site types in Port Stephens Council**

### Ocean beaches

All 4 ocean beaches were graded as Very Good in 2023–2024: Zenith Beach, Box Beach, Fingal Beach and One Mile Beach. Water quality at these sites has continued to be excellent and was suitable for swimming almost all of the time.



**Beach Suitability Grades for Port Stephens Council ocean beaches**

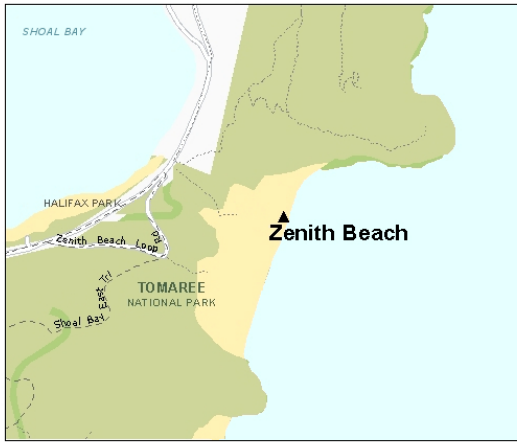
Swimming should be avoided for one day after rainfall at ocean beaches, or if signs of pollution are present such as discoloured water or flowing stormwater drains.



**Sampling sites and Beach Suitability Grades in Port Stephens Council**

# Zenith Beach

Beach grade: **VG**



Zenith Beach is 400 m long and is within Tomaree National Park. The beach is not patrolled by lifeguards.

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

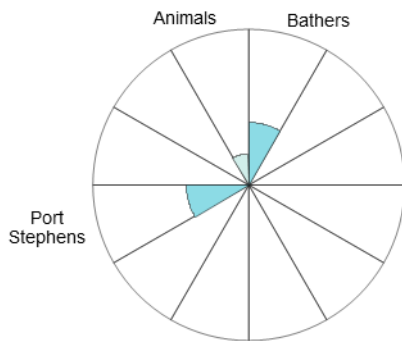
Enterococci levels had little response to rainfall and generally remained below the safe swimming limit across most rainfall categories.

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

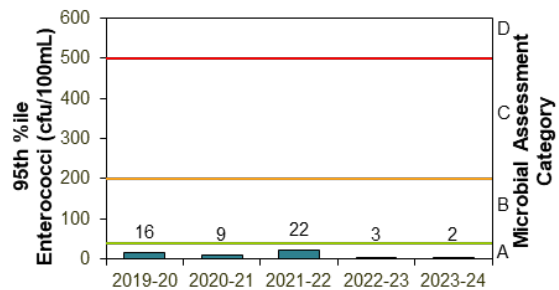
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	100%	100	Stable

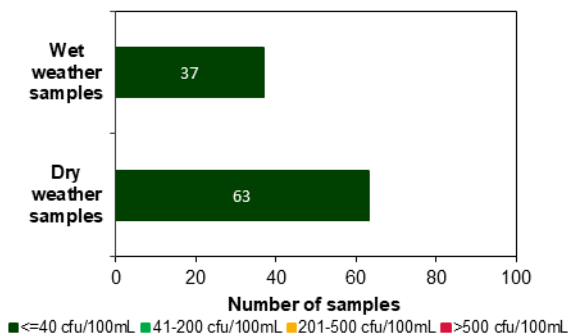
## Sanitary inspection: Low



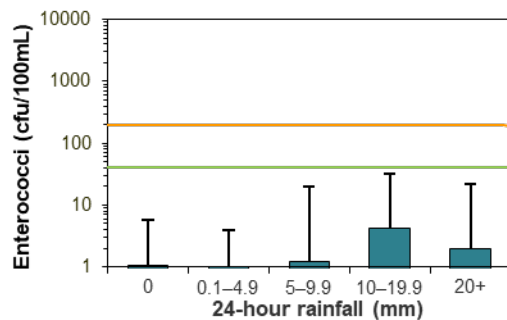
## Microbial Assessment Category: A



## Dry and wet weather water quality

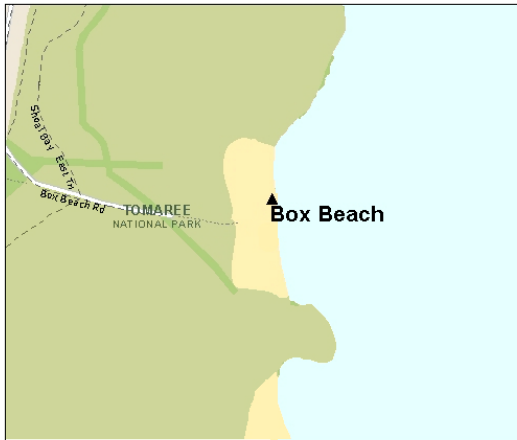


## Water quality in response to rainfall



# Box Beach

Beach grade: **VG**



Box Beach is 350 m long and within Tomaree National Park. The beach is not patrolled by lifeguards.

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

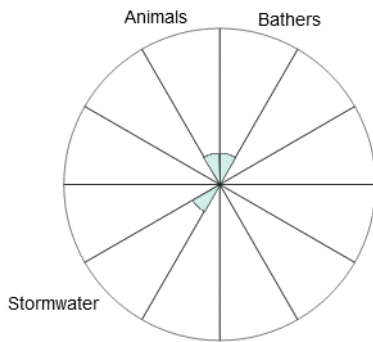
Enterococci levels had very little response to rainfall and generally remained below the safe swimming limit across most rainfall categories.

See ‘How to read this report’ for key to map.

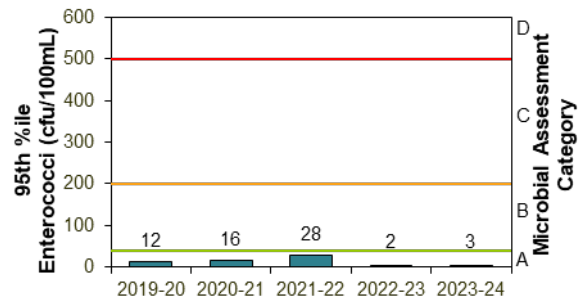
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	100%	100	Stable

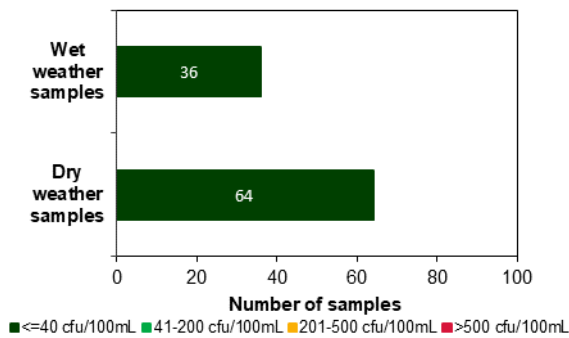
### Sanitary inspection: Low



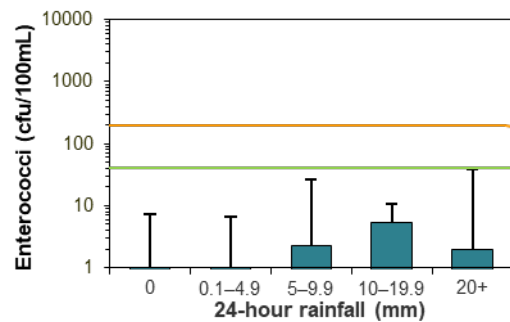
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Fingal Beach

Beach grade: **VG**



Fingal Beach is approximately 2.7 km long and within Fingal Bay. The beach is patrolled from September to April.

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

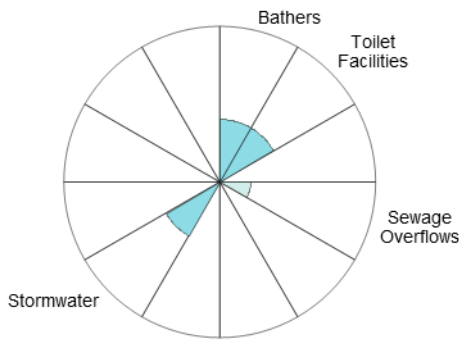
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after 5 mm or more of rain.

See ‘How to read this report’ for key to map.

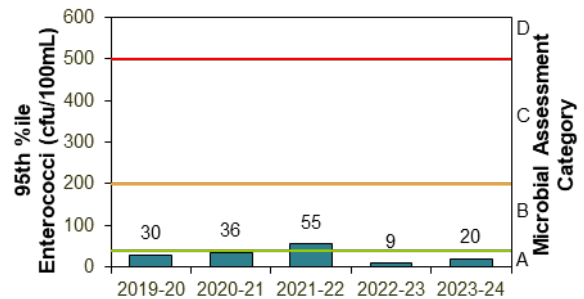
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	98%	100	Stable

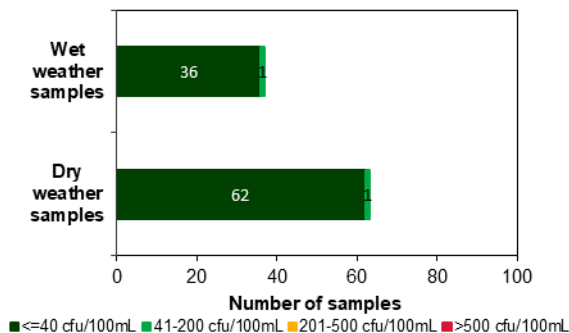
### Sanitary inspection: Low



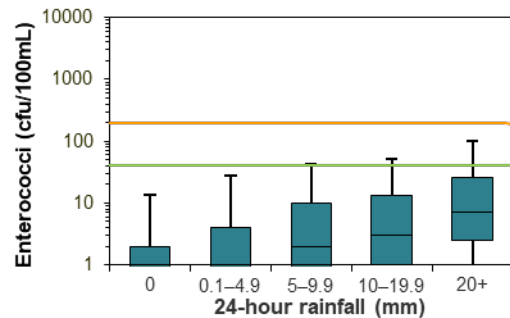
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# One Mile Beach

Beach grade: **VG**



This 1.3 km stretch of beach is at the southern end of Anna Bay and is patrolled from September to April.

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

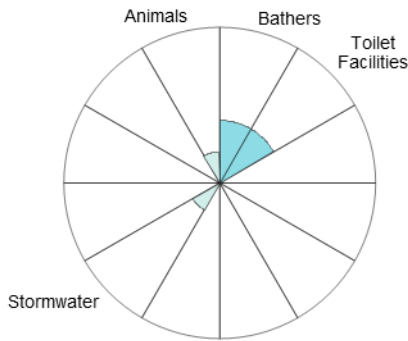
Enterococci levels increased slightly with increasing rainfall, but generally remained below the safe swimming limit across all rainfall categories.

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

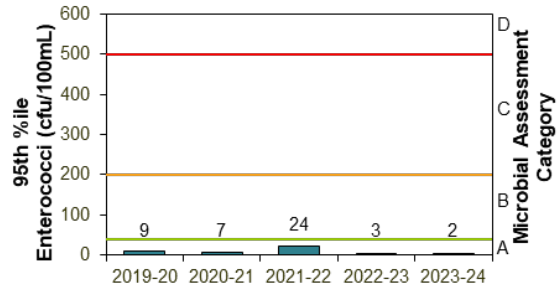
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	100%	100	Stable

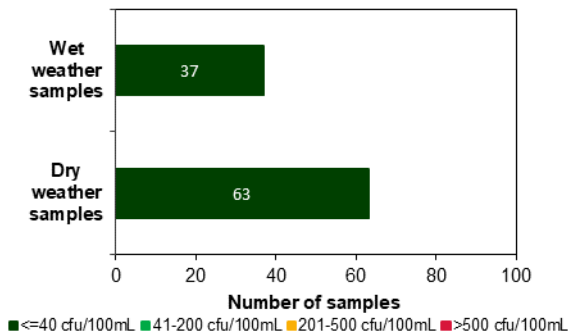
### Sanitary inspection: Low



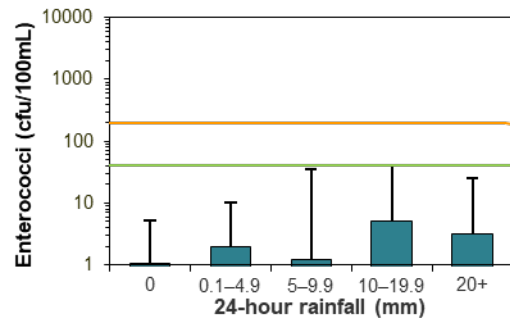
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# City of Newcastle Council

## Overall results



All 7 swimming sites were graded as Very Good in 2023–2024. Excellent results have also been recorded in previous years.

### Percentage of sites graded as Very Good or Good

	2021– 2022	2022– 2023	2023– 2024	Trend
Ocean beaches (7 sites)	100%	100%	<b>100%</b>	—

Seven swimming sites were monitored in the Newcastle local government area. All locations were monitored by Hunter Water Corporation, with some sites monitored as a requirement of Environment Protection Licences. Samples were collected every sixth day throughout the year and every third day during the swimming season at 4 sites.

See the section on **How to read this report** on page 32 for an explanation of the graphs, tables and Beach Suitability Grades.

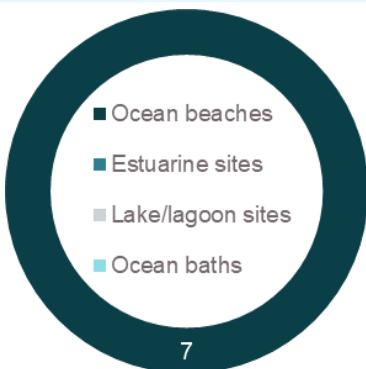
### Best beaches

Stockton Beach, Nobbys Beach, Newcastle Beach, Bar Beach, Merewether Beach, Burwood North Beach and Burwood South Beach.

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

Ocean beaches were the only site type monitored in the Newcastle region.

As a general precaution swimming should be avoided during and for at least one day after heavy rain at ocean beaches, or if there are signs of stormwater pollution such as discoloured water or floating debris.



Site types in City of Newcastle Council

## Ocean beaches



**Beach Suitability Grades for  
City of Newcastle Council  
ocean beaches**

All 7 ocean beaches continued to be graded as Very Good in 2023–2024: Stockton Beach, Nobbys Beach, Newcastle Beach, Bar Beach, Merewether Beach, Burwood North Beach and Burwood South Beach. Water quality at these sites was suitable for swimming almost all of the time and has been of a high standard for many years.

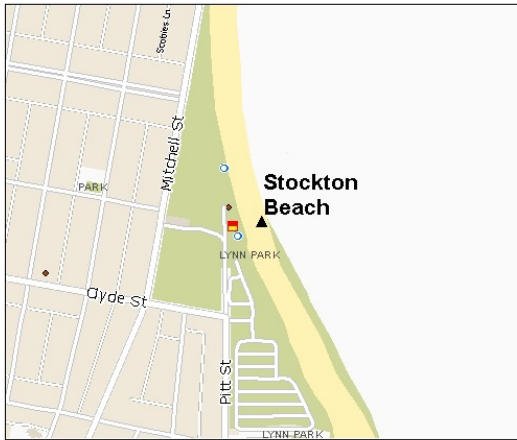
Swimming should be avoided for one day after rainfall at ocean beaches, or if signs of pollution are present such as discoloured water or flowing stormwater drains.



Sampling sites and Beach Suitability Grades in City of Newcastle Council

# Stockton Beach

Beach grade: **VG**



Stockton Beach is at the southern end of a 32 km stretch of beach and is patrolled from September to April.

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

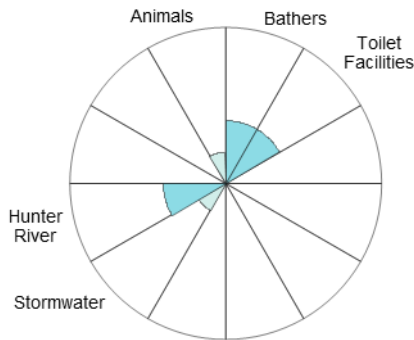
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and often after 20 mm or more of rainfall.

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

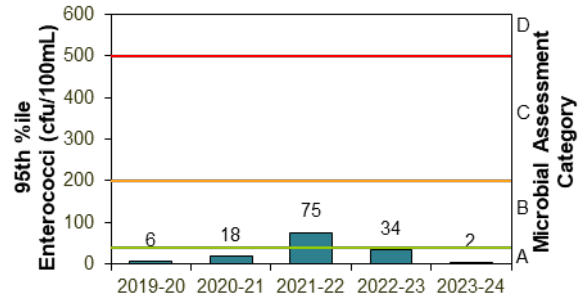
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	100%	100	Stable

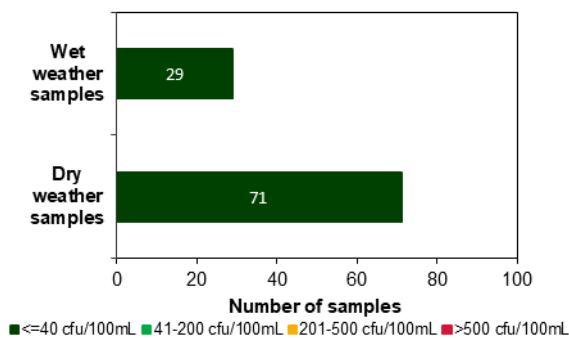
### Sanitary inspection: Low



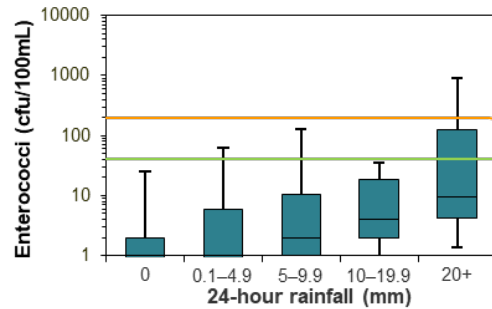
### Microbial Assessment Category: A



### Dry and wet weather water quality

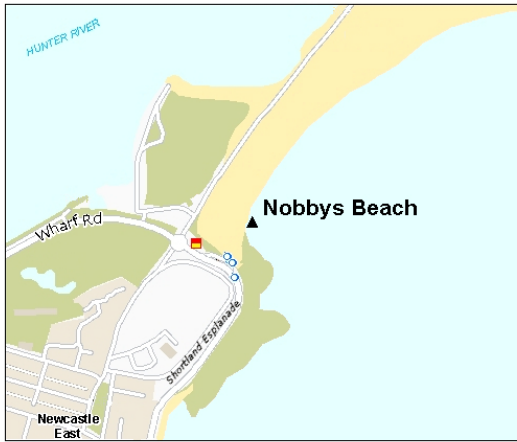


### Water quality in response to rainfall



# Nobbys Beach

Beach grade: **VG**



Nobbys Beach is 1 km long and is patrolled year round.

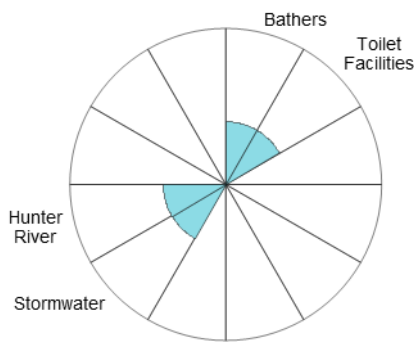
The Beach Suitability Grade of Very Good indicates microbial water quality is considered suitable for swimming almost all of the time, with few potential sources of faecal contamination.

Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after 20 mm or more of rain.

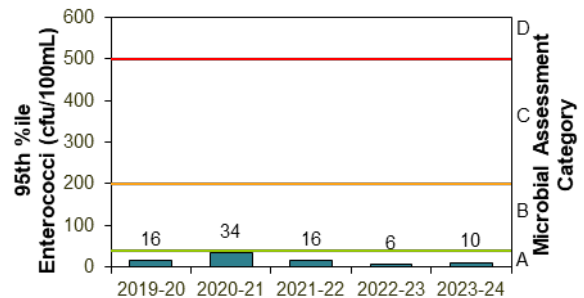
See ‘How to read this report’ for key to map. The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status	
Ocean beach	Sep 2022 to Apr 2024	100%	100	Stable	○

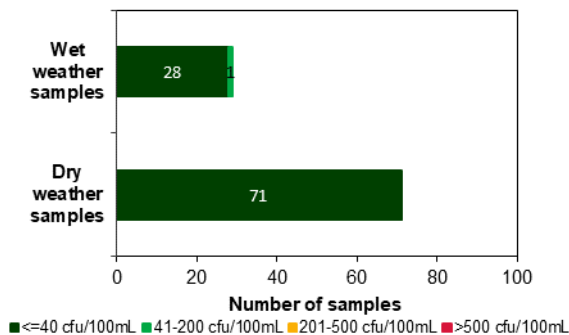
### Sanitary inspection: Low



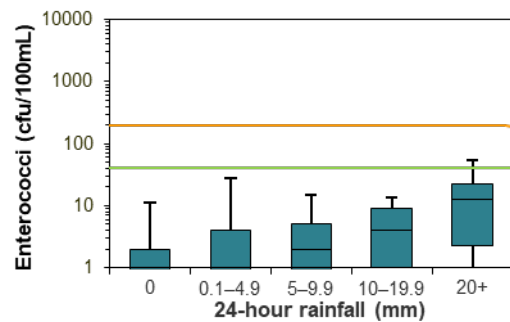
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Newcastle Beach

Beach grade: **VG**



Newcastle Beach is approximately 650 m long and is patrolled from September to April.

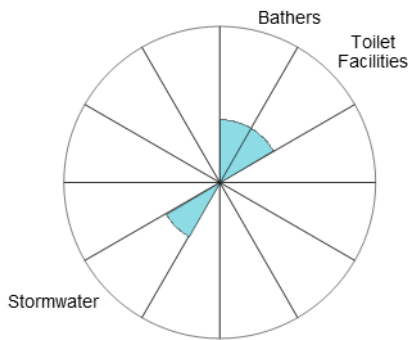
The Beach Suitability Grade of Very Good indicates microbial water quality is considered suitable for swimming almost all of the time, with few potential sources of faecal contamination.

Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after 20 mm or more of rain.

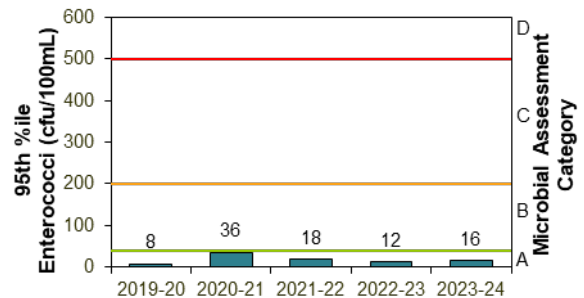
See ‘How to read this report’ for key to map. The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	100%	100	Stable

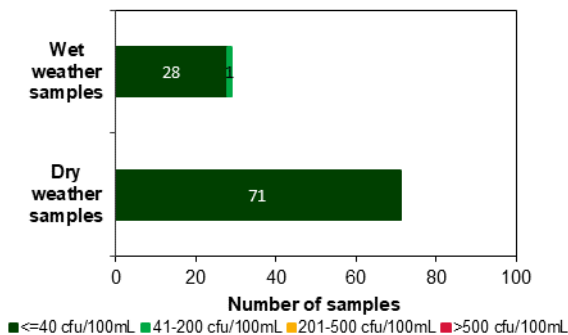
### Sanitary inspection: Low



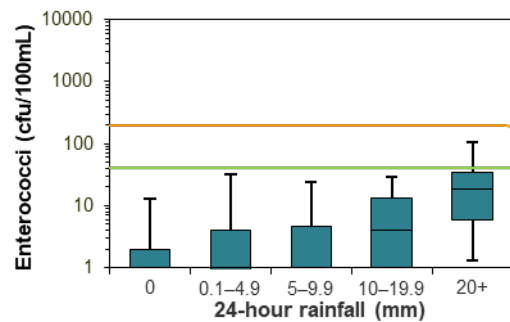
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Bar Beach

Beach grade: **VG**



Bar Beach is approximately 500 m long and is patrolled all year round.

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

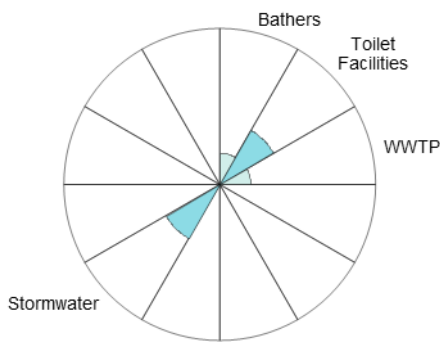
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit in response to 5 mm or more of rain, and often after 20 mm or more.

See ‘How to read this report’ for key to map.

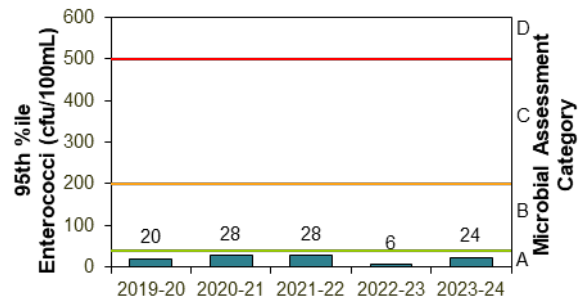
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Mar 2023 to Apr 2024	100%	100	Stable

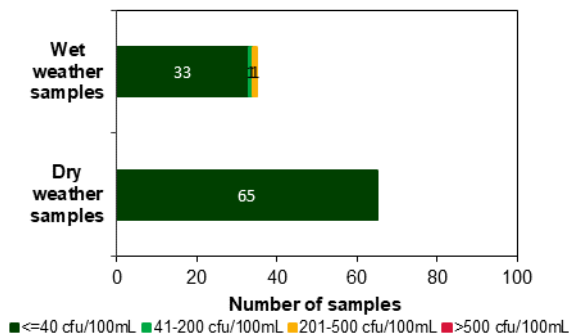
### Sanitary inspection: Low



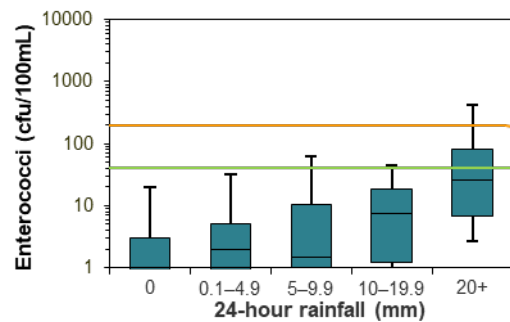
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Merewether Beach

Beach grade: **VG**



Merewether Beach is at the southern end of a 900 m stretch of beach and is patrolled year round.

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

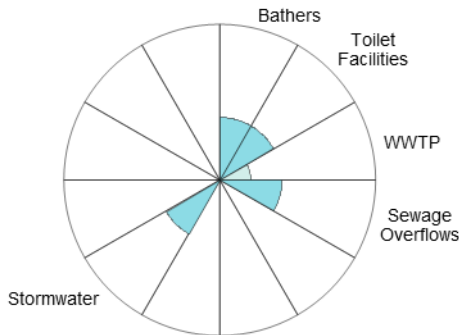
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after 10 mm of rain, and often after 20 mm or more.

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

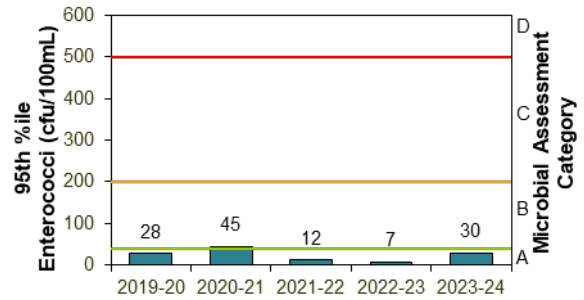
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Mar 2023 to Apr 2024	99%	100	Stable

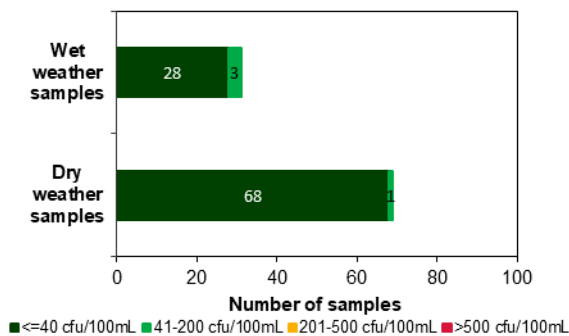
### Sanitary inspection: Low



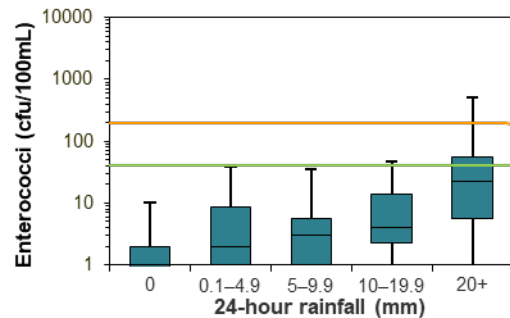
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Burwood North Beach

Beach grade: **VG**



Burwood North Beach is at the northern end of an 800 m stretch of beach and is not patrolled by lifeguards.

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

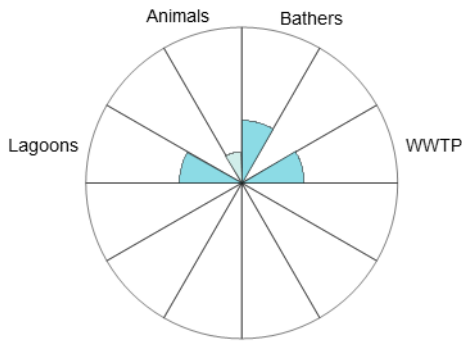
Enterococci levels increased slightly with increasing rainfall, often exceeding the safe swimming limit in response to 20 mm or more of rain.

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

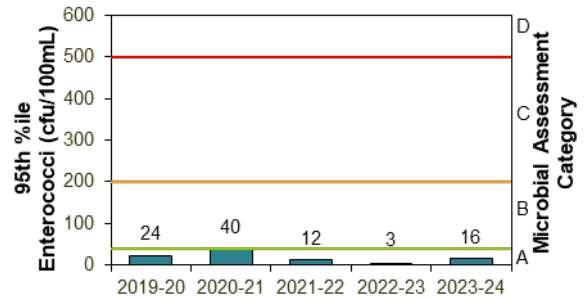
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Mar 2023 to Apr 2024	100%	100	Stable

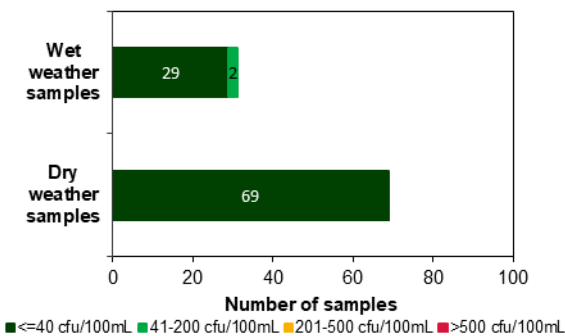
### Sanitary inspection: Low



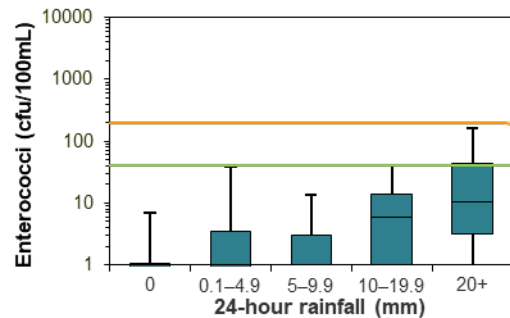
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Burwood South Beach

Beach grade: **VG**



Burwood South Beach is located at the southern end of an 800 m stretch of beach and is not patrolled by lifeguards.

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

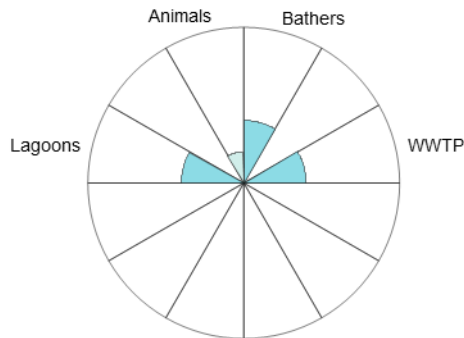
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit in response to light rain, and often after 20 mm or more of rain.

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

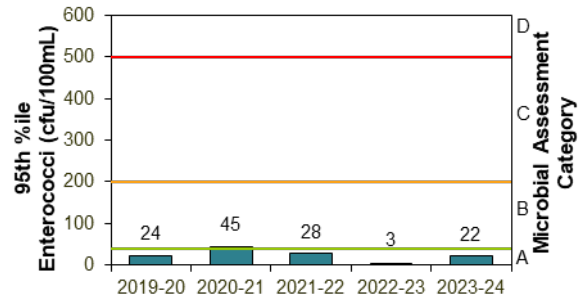
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Apr 2023 to Apr 2024	100%	100	Stable

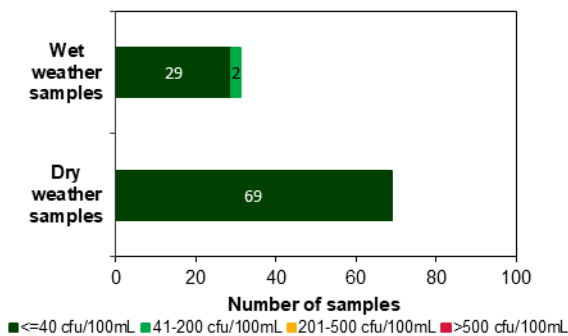
### Sanitary inspection: Low



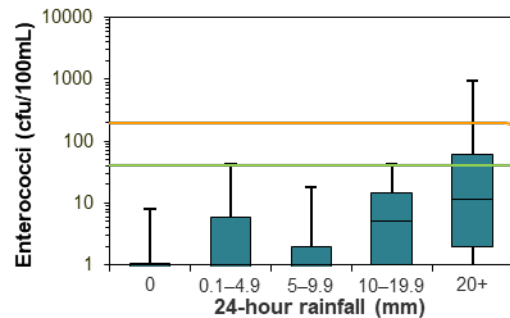
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Lake Macquarie City Council

## Overall results



All 6 swimming sites were graded as Very Good or Good in 2023–2024. This is an excellent result and consistent with previous years.

### Percentage of sites graded as Very Good or Good

	2021– 2022	2022– 2023	2023– 2024	Trend
Ocean beaches (6 sites)	100%	100%	<b>100%</b>	—

Six swimming sites were monitored in the Lake Macquarie local government area. All locations were monitored by Hunter Water Corporation, with some sites monitored as a requirement of Environment Protection Licences. Samples were collected every sixth day throughout the year.

See the section on **How to read this report** on page 32 for an explanation of the graphs, tables and Beach Suitability Grades.

### Best beaches

Glenrock Lagoon Beach, Dudley Beach, Redhead Beach, Blacksmiths Beach and Caves Beach.

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

Ocean beaches were the only site type monitored in the Lake Macquarie region.

As a general precaution swimming should be avoided during and for at least one day after heavy rain at ocean beaches, or if there are signs of stormwater pollution such as discoloured water or floating debris.



Site types in Lake Macquarie City Council

## Ocean beaches



**Beach Suitability Grades for Lake Macquarie City Council ocean beaches**

Five of the 6 ocean beaches were graded as Very Good in 2023–2024: Glenrock Lagoon Beach, Dudley Beach, Redhead Beach, Blacksmiths Beach and Caves Beach. This is a similar result to the previous year. Water quality at these beaches is suitable for swimming almost all of the time.

Swansea Heads Little Beach continued to be graded Good in 2023–2024, consistent with the previous year. While the water quality was mostly suitable for swimming during dry weather conditions, with 89% of dry weather samples within the safe swimming limit, elevated levels often exceeded the safe swimming limit following light rainfall.

Microbial water quality has generally been more elevated at Swansea Heads Little Beach in comparison to nearby beaches for the last 5 years. This beach is located at the entrance to Lake Macquarie in a 100 m long bay bordered by a rock platform and breakwall, which may reduce flushing and dilution of contaminants compared to other nearby open ocean beaches.

Swimming should be avoided for one day after rainfall at ocean beaches, or if signs of pollution are present such as discoloured water or flowing stormwater drains.



Sampling sites and Beach Suitability Grades in Lake Macquarie City Council

# Glenrock Lagoon Beach

**Beach grade:** VG



Glenrock Lagoon Beach is 300 m long and is located at the southern end of Burwood Beach. The beach is not patrolled by lifeguards.

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

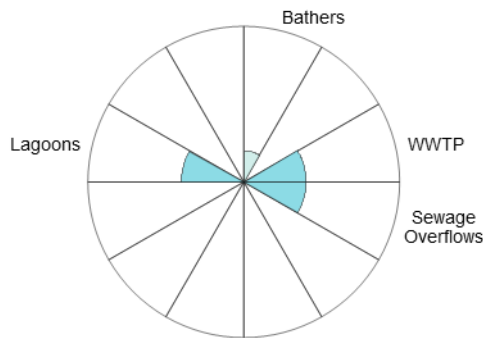
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and after 20 mm or more of rain.

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

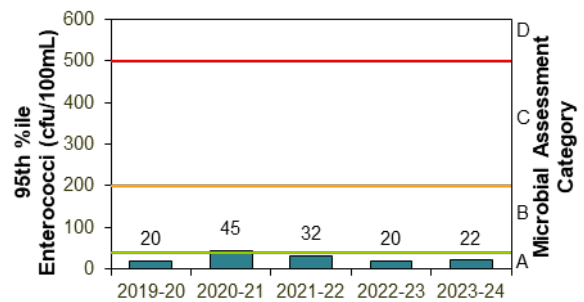
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status	
Ocean beach	Sep 2022 to Apr 2024	100%	100	Stable	○

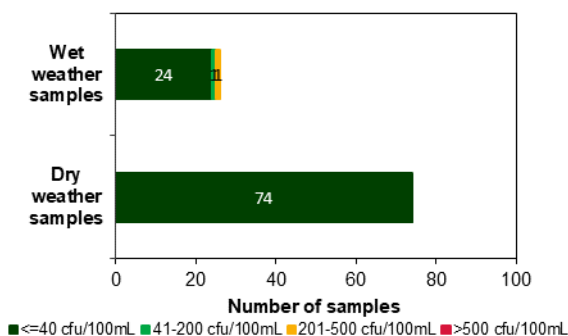
## Sanitary inspection: Low



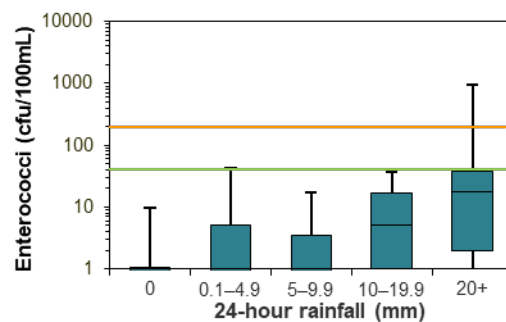
## Microbial Assessment Category: A



## Dry and wet weather water quality

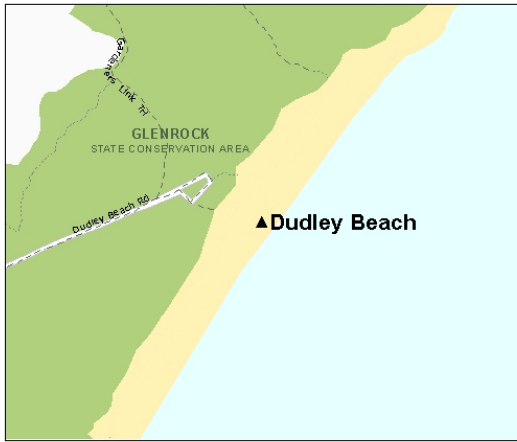


## Water quality in response to rainfall



# Dudley Beach

Beach grade: **VG**



Dudley Beach is 1 km long and is not patrolled by lifeguards.

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

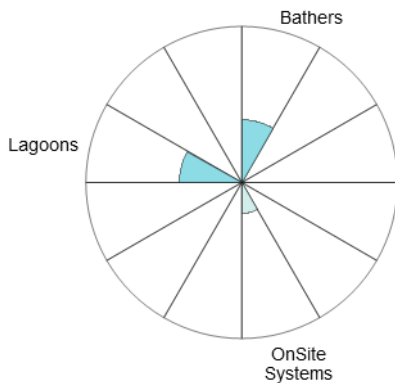
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit in response to 20 mm or more of rain.

See ‘How to read this report’ for key to map.

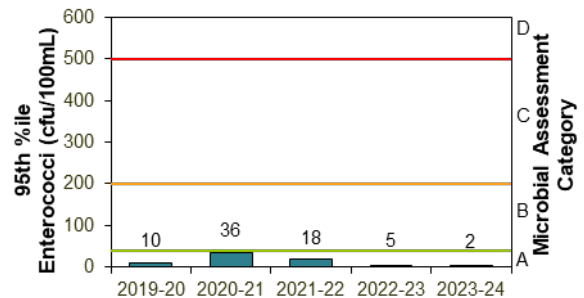
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	100%	100	Stable

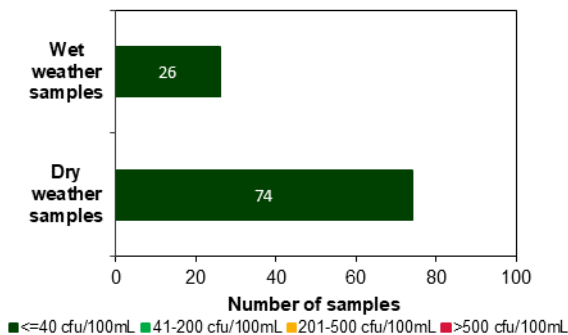
### Sanitary inspection: Low



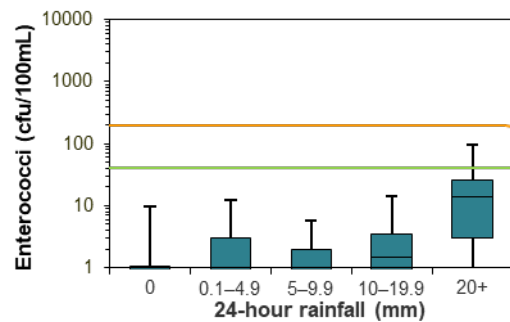
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Redhead Beach

Beach grade: **VG**



Redhead Beach is located at the northern end of a 10 km stretch of beach and is patrolled between September and April.

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

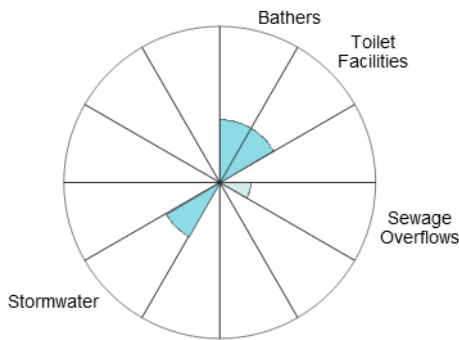
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after 10 mm or more of rain.

See ‘How to read this report’ for key to map.

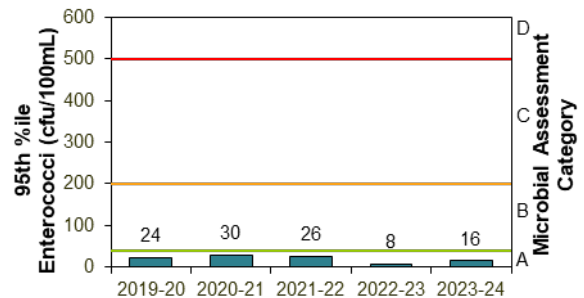
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	100%	100	Stable

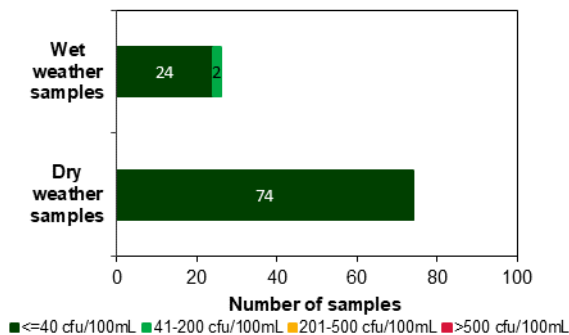
### Sanitary inspection: Low



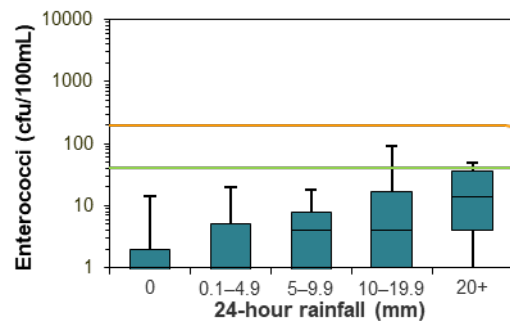
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Blacksmiths Beach

Beach grade: **VG**



Blacksmiths Beach is at the southern end of a 10 km stretch of beach and is patrolled between September and April.

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

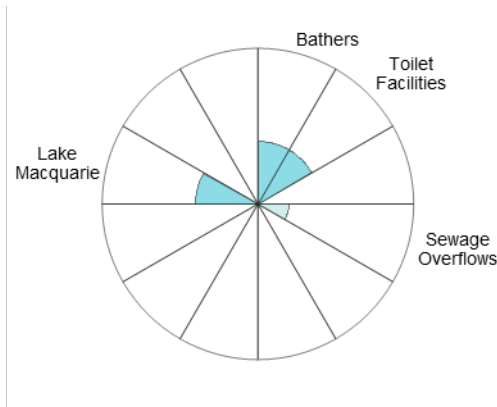
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit in response to 20 mm or more of rain.

See ‘How to read this report’ for key to map.

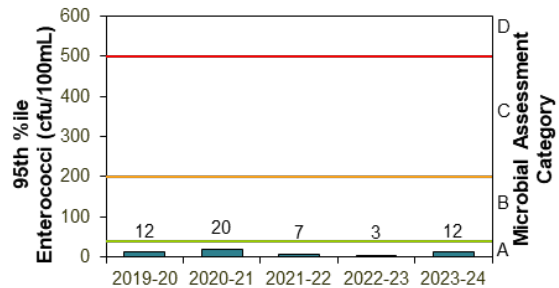
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	100%	100	Stable

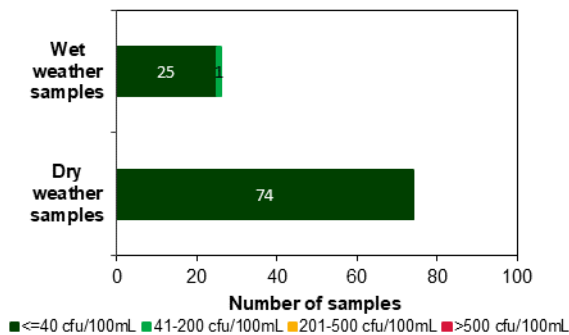
## Sanitary inspection: Low



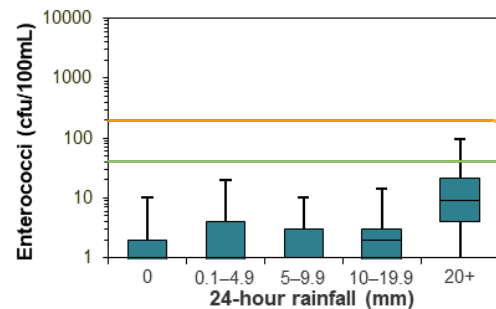
## Microbial Assessment Category: A



## Dry and wet weather water quality

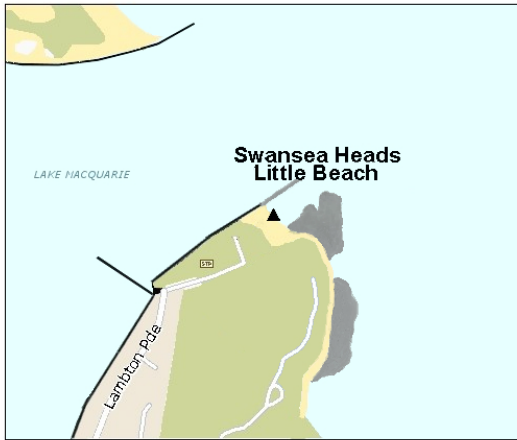


## Water quality in response to rainfall



# Swansea Heads Little Beach

Beach grade: **G**



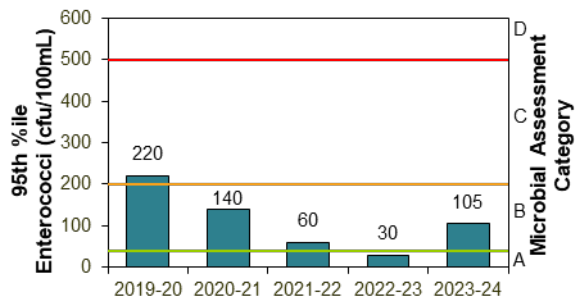
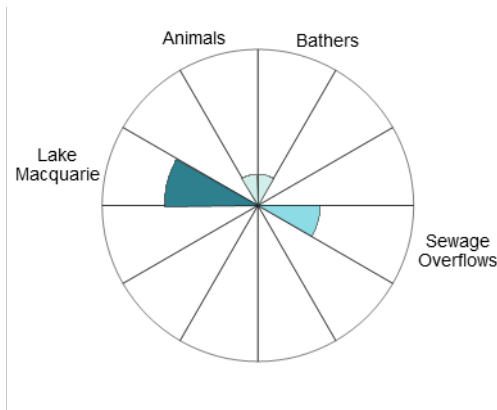
See 'How to read this report' for key to map.

Swansea Heads Little Beach is 60 m long and located on the southern side of the entrance to Lake Macquarie. The beach is patrolled from September to April. The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but can be susceptible to pollution after heavy rain, with several potential sources of faecal contamination including outflow from Lake Macquarie. Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit across all rainfall categories. The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	89%	100	Stable

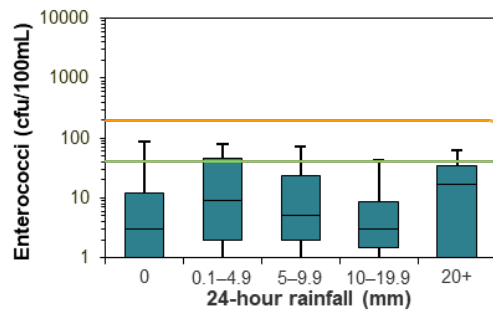
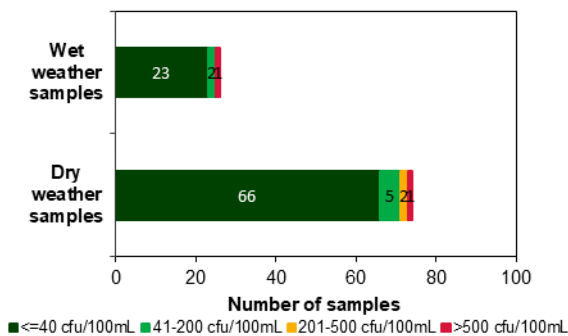
## Sanitary inspection: Moderate

## Microbial Assessment Category: B



## Dry and wet weather water quality

## Water quality in response to rainfall



# Caves Beach

**Beach grade:** VG



Caves Beach is located at the southern end of a 1.8 km beach and is patrolled between September and April.

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

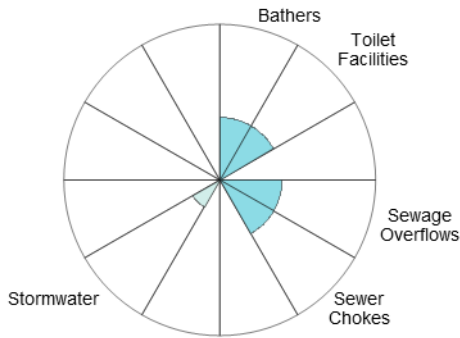
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after 20 mm or more of rain.

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

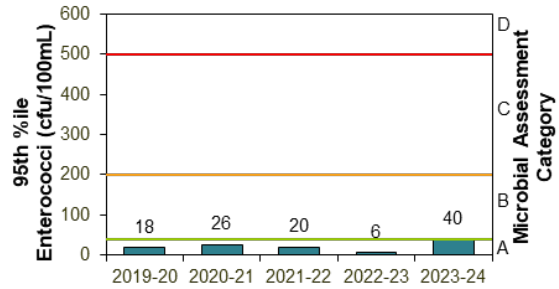
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	97%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

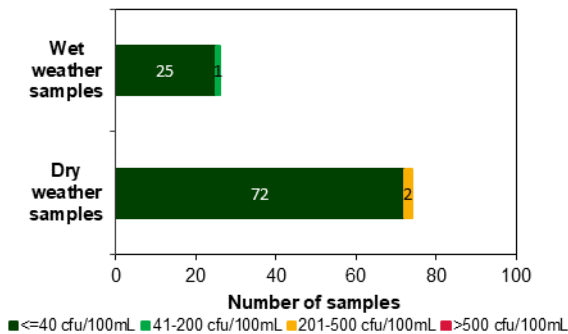
### Sanitary inspection: Low



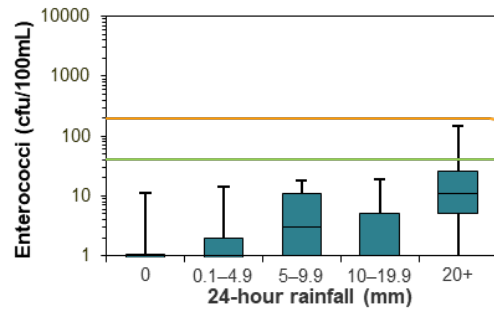
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# 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 5 grades ranging from Very Good to Very Poor:

### 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

### 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 3 days at estuarine sites

### 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 3 days following rainfall or if there are signs of pollution such as discoloured water or odour or debris in the water

Some 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 the catchment.

### **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 3 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 almost all of the time.

## Follow Up

Sometimes a location's sanitary inspection and water quality data produce incongruent results. These locations are classified as 'Follow Up'. Further assessment will be required to obtain the necessary data to provide a definite classification in accordance with national guidelines.

### **The guidelines**

The National Health and Medical Research Council's guidelines for managing risks in recreational water (NHMRC 2008) were adopted for use in New South Wales 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 (WA Department of Health 2007).

## Enterococci

**The national guidelines advocate the use of enterococci as the single preferred faecal indicator in recreational 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 (Standards Australia 2007).

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

Beach Suitability Grades are determined by using the following matrix:

		Microbial Assessment Category			
		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

\* Follow up occurs when sanitary inspection and water quality data produce potentially incongruent results; further assessment will be required.

Using the Beach Suitability Grade classification matrix, sites assigned a moderate Sanitary Inspection Category can only be rated as Good or Poor, with no option of Fair grades. This can create the impression of a large change in water quality when in fact there need only be a slight increase in bacterial counts to push it over the threshold, with no significant increase in the risk to public health.

### Microbial Assessment Category (MAC)

There are 4 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 (Wyer et al. 1999).

### Risk of illness associated with Microbial Assessment Categories

Category	Enterococci (cfu/100 mL)	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 illness; AFR = acute fever and rash

### 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 4 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 New South Wales 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. The WA Department of Health recommends a minimum of 65 samples, collected from a particular site over 5 consecutive years, to provide sufficient confidence and reliability in the 95th percentile data output. 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 the WA Government's 'Environmental waters publications' webpage, under *Forms and templates*.

## Sanitary Inspection Category (SIC)

More information about the **sanitary inspection** process is available in the Beachwatch Protocol for assessment and management of microbial risks in recreational waters, found on the department's website.

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.

The main sources of faecal contamination considered in the sanitary inspection are: bathers, toilet facilities, wastewater treatment plants (WWTPs), sewage overflows, sewer chokes, onsite systems, wastewater re-use, stormwater, river discharge, lagoons, boats and animals.

Rivers, lakes and estuaries themselves can be potential sources of faecal contamination to sites located in these waterbodies, with contaminated water from upstream or surrounding areas impacting water quality at the swimming location. This source is captured in river discharge or lagoon category, and shown as the waterbody in the sanitary inspection charts.

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



Stormwater drain flow

Photo:

Beachwatch/DCCEEW

Stormwater in urban areas often contains sewage from leakages, overflows or sewer chokes when the sewerage system fails.

Sewage overflows can occur in wet weather when the network has exceeded capacity due to rainwater entering the system. The mix of sewage and rainwater discharges from designated overflow points and drains to waterways, usually via the stormwater system. Overflows from the sewerage system can also occur in dry weather due to mechanical failure or power outage.

Sewer chokes occur due to blockages in the pipes usually due to tree roots, oil, grease or debris. This causes sewage to back up and escape via sewer inspection points, designed overflow structures or cracks in the pipes, then drain to waterways, usually via the stormwater system.

## Explanation of tables

Each region contains tables listing all monitored swimming sites including site type, beach grade and change in grade from the previous year.

The following symbols are used to show the change in beach grade from the previous year:



Stable



Improved



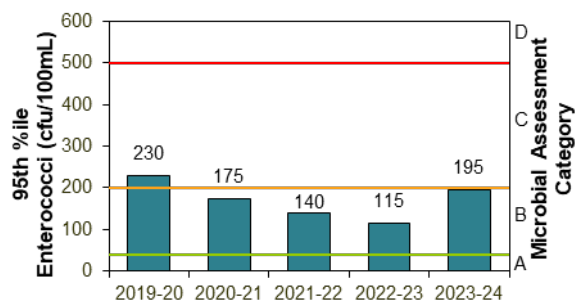
Declined

A provisional grade indicates the assessment is based on limited data collected during the assessment period and should not be compared to the beach grade from the previous year.

## Explanation of graphs, charts, and information bars on beach pages

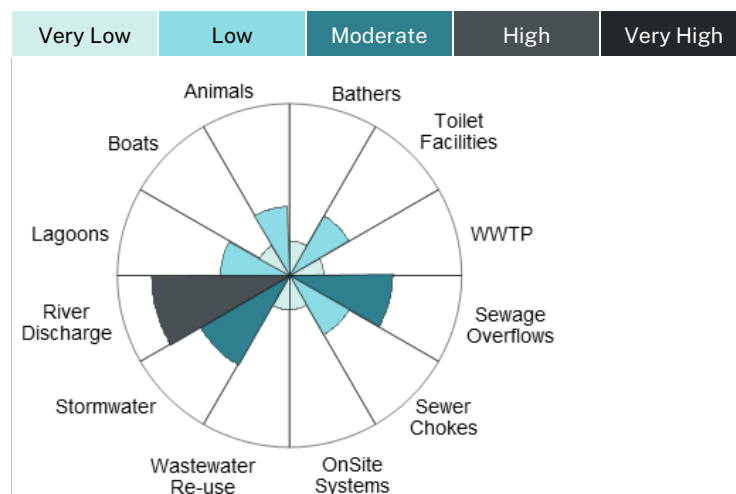
### Microbial Assessment Category (MAC) chart

On each beach page, the MACs for the last 5 years are displayed on a simple bar chart. The MAC for the current year is based on enterococci data collected during the assessment period. The bars are labelled with the 95th percentile value for each year and the thresholds dividing the A, B, C and D categories are marked in green, amber and red for reference.



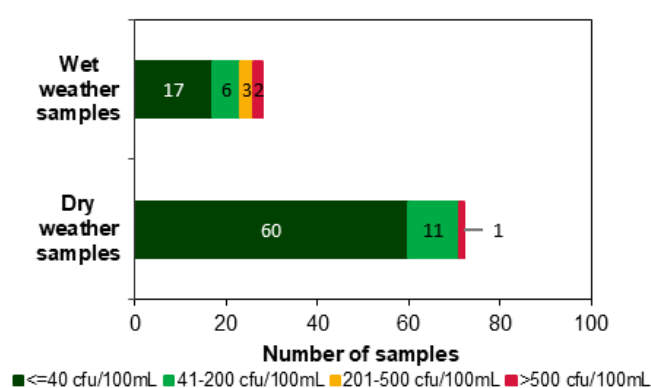
### Sanitary Inspection Category (SIC) chart

The results of the sanitary inspection for each swimming location are presented in a radar pie chart. The chart 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 segment, ranging from very low (lightest colour) to very high (darkest colour) as shown below. The sum of these contributions is the overall likelihood, or Sanitary Inspection Category.



## Wet and dry weather water quality chart

Enterococci levels in wet and dry weather conditions are presented for each swimming location as a bar graph. All data collected during the assessment period is included in the analysis. Dry weather is defined as no rainfall recorded in the previous 24 hours. Each bar is colour coded to show the number 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 as dark green, light green, amber and red respectively.

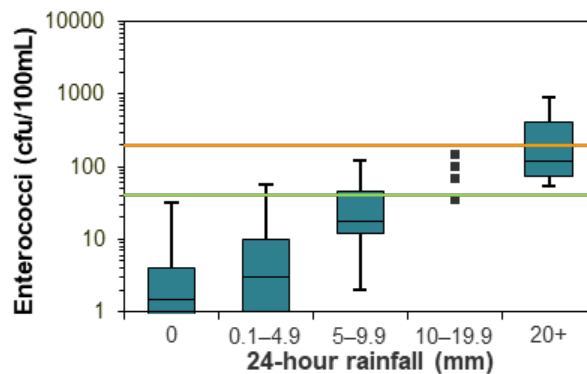


It is expected that swimming sites with lower levels of flushing will show some elevated bacterial results in dry weather samples (no rainfall in the previous 24 hours) due to the longer time needed to recover from a rainfall event. At some estuarine and lake/lagoon swimming locations the impacts of stormwater pollution on beach water quality may be detected up to 3 days after rainfall.

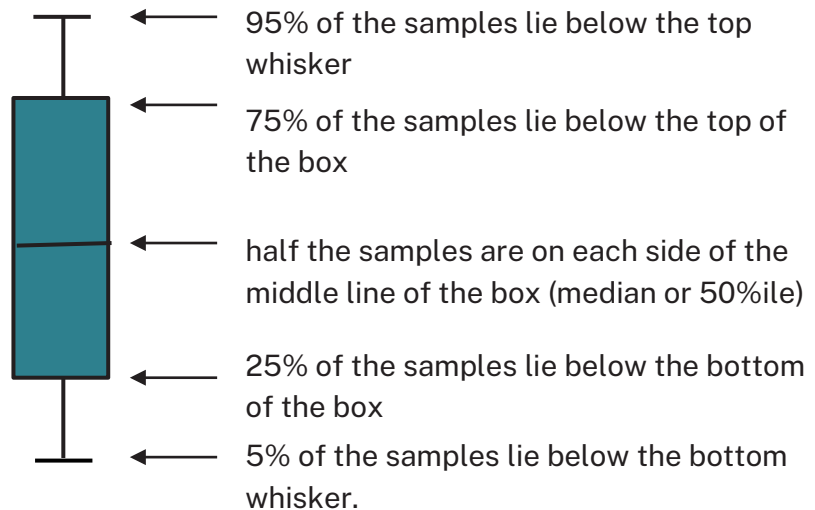
## Water quality in response to rainfall

Trends in enterococci levels in response to rainfall are shown using a box plot. 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 5 years of monitoring. Rainfall data were obtained from rain gauges situated close to the sample site and are 24-hour totals to 9 am on the day of sampling. If there are fewer than 5 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:



## Information bars

Information bars on each beach page provide a summary of details about the swimming site.
















The **assessment period** shows the timeframe in which the water samples were collected. The NHMRC guidelines state beach grades should be determined from the most recent 100 water quality results collected within a 5-year period. The assessment period varies between sites depending on sampling frequency.

Dry weather samples suitable for swimming (**dry weather swimmability**) shows the percentage of water samples with enterococci levels below 40 cfu/100 mL. Dry weather is defined as no rainfall in the previous 24 hours.

Swimming sites with lower levels of flushing often have a lower percentage of dry weather samples within the safe swimming limit due to the impacts of rainfall detected up to 3 days after the event.

## Explanation of maps

A map of individual swimming locations is presented on each beach page. The scale of the maps is 1:10,000. 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 Life Saving Club
	Wastewater Treatment Plant
	Sewage Pumping Station
	Sewage Overflow
	Stormwater Drain
	Water
	Baths
	National Park/Reserve/ Other Park
	Built-up Area
	Sand
	Roads
	Major Roads
	Baths – Netted Area
	Breakwater/Wharf

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

Standards Australia (2007) *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.

WA Department of Health (2007), *Microbial 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, [ww2.health.wa.gov.au/Articles/A\\_E/Environmental-waters-publications](http://ww2.health.wa.gov.au/Articles/A_E/Environmental-waters-publications), accessed 23/06/22.

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.

## More information

- [Beachwatch NSW on X \(formerly Twitter\)](#)
- [Beachwatch NSW on Facebook](#)
- [Beachwatch webpage](#)
- [Coastal management program progress](#)
- [Sanitary inspection of beaches](#)
- [Subscribe to daily pollution forecast emails](#)
- [WA Government environmental water publications](#)
- [Hunter Water projects](#)
- [Port Stephens Council Coastal Management Program](#)
- [City of Newcastle Coastal Management and Planning](#)
- [Lake Macquarie City Council Coastal Management Program](#)



## Beachwatch

# State of the beaches 2023–24

Central Coast region

Department of Climate Change,  
Energy, the Environment and Water



## Acknowledgement of Country

Department of Climate Change, Energy, the Environment and Water acknowledges the Traditional Custodians of the lands where we work and live.

We pay our respects to Elders past, present and emerging.

This resource may contain images or names of deceased persons in photographs or historical content.

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Artist and designer Nikita Ridgeway from Aboriginal design agency Boss Lady Creative Designs created the People and Community symbol.

Cover photo: Avoca Beach, Central Coast. Beachwatch/DCCEEW

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Recreational water quality has been monitored in the Central Coast region since 2002 by Central Coast Council under the Department of Climate Change, Energy, the Environment and Water's Beachwatch Partnership Program. This report summarises the performance of 32 swimming sites on the Central Coast of New South Wales, providing a long-term assessment of how suitable a site is for swimming. Monitored sites included ocean beaches, ocean baths, estuarine areas in Brisbane Water, designated swimming areas in Lake Macquarie, Lake Munmorah and Tuggerah Lake, and 4 coastal lagoons.

In 2023–2024, 59% of swimming sites in the Central Coast region were graded as Very Good or Good, including 15 ocean beaches, an estuarine beach and 3 ocean baths. These sites were suitable for swimming for most or almost all of the time. This is an improvement in performance on the previous year and reflects the mostly average to below average rainfall conditions over the year. Despite some Poor grades, the majority of monitored sites were still suitable for swimming during dry weather. The Central Coast region has a large proportion of lake/lagoon and estuarine swimming locations, which have been most susceptible to impacts from wet weather conditions.



Killcare Beach

Photo:

Beachwatch/DCCEEW

# Central Coast region summary 2023–2024

## Monitoring water quality for swimming in New South Wales

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 New South Wales 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 (2–4 years’ worth of data depending on the sampling frequency) and a risk assessment of potential pollution sources.

See the section on **Quality assurance** in the Statewide Summary for results of the quality assurance program.

Recreational water quality has been monitored in the Central Coast region by Central Coast Council since its amalgamation in 2016. Prior to 2016, swimming sites were monitored by Wyong Shire Council from 2002 and by Gosford City Council from 2004.

A **quality assurance** program ensures the information collected and reported by Beachwatch and its partners is accurate and reliable.

## Rainfall impacts

During 2023–2024, 32 swimming sites were monitored including ocean beaches, ocean baths, estuarine areas in Brisbane Water, designated swimming areas in Lake Macquarie, Lake Munmorah and Tuggerah Lake and 4 coastal lagoons.

Rainfall is the major driver of pollution to recreational waters, generating stormwater runoff and triggering untreated 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 2023–2024 are based on water quality data collected over the last 2–4 years.

Rainfall over this period has been diverse:

- 2020–2021: variable rainfall with some very wet months over summer and early autumn
- 2021–2022: varied rainfall, with extreme wet weather conditions over summer and early autumn, and flooding impacts
- 2022–2023: varied rainfall, with some very wet months over winter and spring, including the wettest July on record
- 2023–2024: mostly average to below average rainfall, except for some isolated wet months.

Rainfall on the Central Coast was average to below average for the 2023–2024 reporting year, except for some isolated wet months. Well above average rainfall was recorded across the region in November 2023 and February and April 2024.

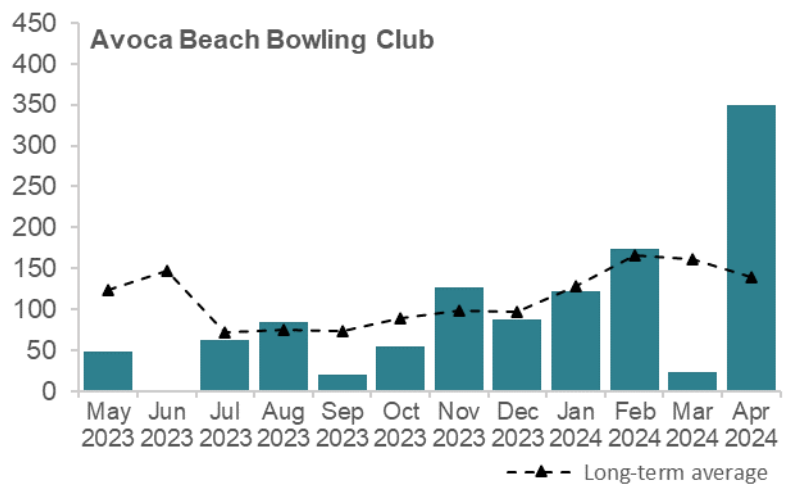
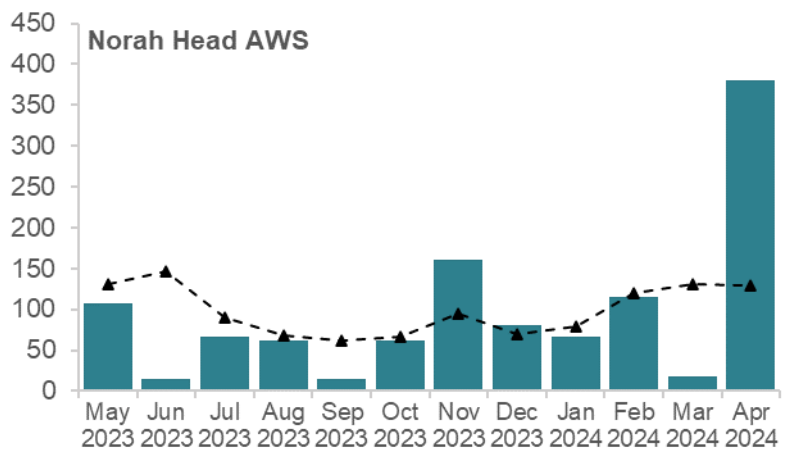
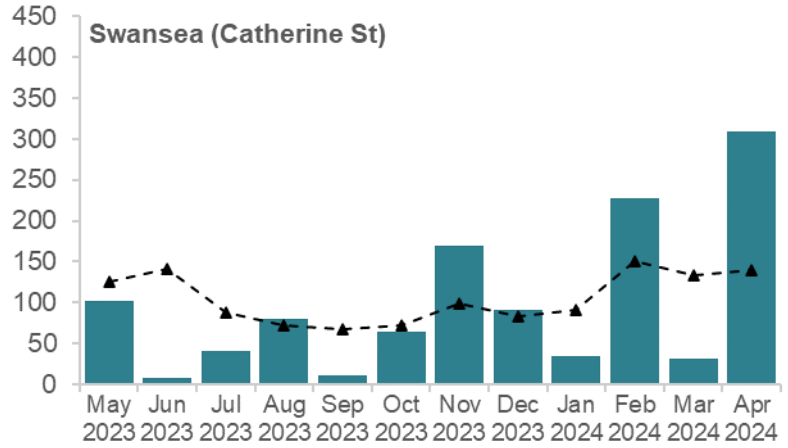
April 2024 was notably wet, with Norah Head recording its highest April daily rainfall of 120.8 mm on 20 April, and its highest April total rainfall in 25 years at 381 mm, almost 3 times the long-term monthly average. Similarly, Swansea recorded its highest April daily rainfall of 114 mm on 6 April.

Monitoring by Central Coast Council showed the significant wet weather and associated flooding in early April 2024 had made microbial water quality unsuitable for swimming. The most affected areas were in estuaries, lakes and lagoons, which have a lower level of flushing and took longer to recover from the stormwater inputs than the ocean beaches. The water quality at some ocean beaches located near the open lagoons, river or lakes

See the section on **How to read this report** on page 49 for an explanation of the graphs, tables and Beach Suitability Grades.

were also impacted by stormwater and floodwaters discharging from these sources.

**Central Coast region rainfall**



## Marine algal blooms



Marine algal bloom present in the water

Photo: Chad Weston/  
NPWS, DCCEEW

Water NSW issued a caution alert for Lake Macquarie for *Noctiluca* sp., in October 2023 near Summerland Point Gwandalan and Chain Valley Bay boat ramps in Lake Macquarie. Water NSW also reported a marine red algae bloom from *Gonyaulax polygramma* in May 2023, and marine blooms in December 2023 that may have impacted beaches in the Central Coast region.

Algae advisories were issued on the Beachwatch and Water NSW websites, as well as onsite signage during blooms.

The appearance of **marine algae** is sometimes mistaken for **sewage contamination** or **oil slicks**, due to a strong odour and red or brown discolouration in the water caused by the blooms.

As a precaution, direct contact with algae should be avoided as it can cause skin and eye irritations. The marine algal blooms dissipated with changes in tide and wind conditions.

Beachwatch issues daily **beach pollution forecasts** to enable beach goers to make informed decisions about where and when to swim.

Pollution forecasts for the Central Coast beaches can be accessed via the Beachwatch website, email subscription, X (formerly Twitter) and Facebook.

### 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 microorganisms) 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 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 Central Coast region

Swimming site	Site type	Beach Suitability Grade	Change
<b>Central Coast Council</b>			
Lakes Beach	Ocean beach	VG	↑
Cabbage Tree Bay Rockpool	Ocean baths	G	○
Soldiers Beach	Ocean beach	VG	↑
North Entrance Beach	Ocean beach	VG	○
The Entrance Beach	Ocean beach	G	○
The Entrance Ocean Baths	Ocean baths	G	○
Toowoan Bay	Ocean beach	G	○
Shelly Beach	Ocean beach	G	○
Gwandalan	Lake/Lagoon	P	○
Summerland Point Baths	Lake/Lagoon	P	○
Chain Valley Bay	Lake/Lagoon	P	○
Mannering Park Baths	Lake/Lagoon	P	○
Lake Munmorah Baths	Lake/Lagoon	P	○
Canton Beach	Lake/Lagoon	P	○
Wamberal Beach	Ocean beach	G	○
Wamberal Lagoon	Lagoon	P	○
Terrigal Beach	Ocean beach	G	↑
Terrigal Lagoon	Lagoon	P	○
North Avoca Beach	Ocean beach	G	○
Avoca Beach	Ocean beach	G	○
Avoca Lagoon	Lagoon	P	○
Copacabana Beach	Ocean beach	G	○
Cockrone Lagoon	Lagoon	P	○

NSW State of the beaches 2023–2024

Swimming site	Site type	Beach Suitability Grade	Change
<b>Central Coast Council (continued)</b>			
MacMasters Beach	Ocean beach		
Killcare Beach	Ocean beach		
Ocean Beach	Ocean beach		
Umina Beach	Ocean beach		
Pearl Beach Rockpool	Ocean baths		
Davistown Baths	Estuarine		
Pretty Beach Baths	Estuarine		
Woy Woy Baths	Estuarine		
Yattalunga Baths	Estuarine		

Beach Suitability Grade					Change		
							
Very Good	Good	Fair	Poor	Very Poor	Improved	Stable	Declined

# Central Coast Council

## Overall results



Nineteen of the 32 swimming sites were graded as Very Good or Good in 2023–2024, which is an improvement on the previous year. The overall performance is influenced by a large proportion of monitored swimming sites being in lagoons and estuaries, where the impacts of rainfall are more apparent, with reduced dilution and flushing of pollution inputs.

### Percentage of sites graded as Very Good or Good

	2021– 2022	2022– 2023	2023– 2024	Trend
Ocean beaches (15 sites)	87%	93%	100%	
Estuarine sites (4 sites)	0%	0%	25%	
Lake/ lagoon sites (10 sites)	10%	0%	0%	
Ocean baths (3 sites)	100%	100%	100%	

See the section on **How to read this report** on page 49 for an explanation of the graphs, tables and Beach Suitability Grades.

Thirty-two swimming sites were monitored by Central Coast Council. All sampling and laboratory analysis was conducted and fully funded by the council. All sites are sampled weekly between October and April and monthly from May to September.

### Best beaches

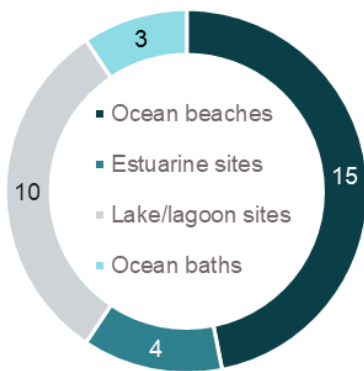
Lakes Beach, Soldiers Beach and North Entrance Beach

This site had excellent water quality and was suitable for swimming almost all of the time.

Swimming sites monitored in the Central Coast region include ocean beaches, estuarine areas in Brisbane Water, lake swimming sites in Lake Macquarie, Lake Munmorah and Tuggerah Lakes, coastal lagoons at Wamberal, Terrigal, Avoca and Cockrone, and ocean baths at The Entrance, Cabbage Tree Bay and Pearl Beach, with each site type having a different response to rainfall-related impacts.

In general, estuarine, lake and lagoon swimming sites did not perform as well as ocean beaches and ocean baths, due to lower levels of flushing increasing the time needed to disperse and dilute pollution inputs, taking longer to recover from stormwater events.

As a general precaution swimming should be avoided during and for at least one day after heavy rain at ocean beaches, and for up to 3 days in estuarine areas, or if there are signs of stormwater pollution such as discoloured water or floating debris.



Site types in Central Coast region

### Ocean beaches

Lakes Beach, Soldiers Beach and North Entrance Beach were graded as Very Good in 2023–2024. While the grade for North Entrance Beach was consistent with the previous year, Lakes Beach and Soldiers Beach grades improved from Good in the previous year due to improved microbial water quality. Water quality at these sites was suitable for swimming almost all of the time.



Beach Suitability Grades for Central Coast ocean beaches

Twelve of the 15 ocean beaches were graded as Good: The Entrance Beach, Toowoona Bay, Shelly Beach, Wamberal Beach, Terrigal Beach, North Avoca Beach, Avoca Beach, Copacabana Beach, MacMasters Beach, Killcare Beach, Ocean Beach and Umina Beach. Water quality at these

sites is suitable for swimming most of the time but can be susceptible to pollution following rainfall.

Terrigal Beach was upgraded to Good from Poor in the previous year. Despite a higher proportion of samples collected during wet weather conditions in this year’s assessment period compared to the 2022–2023 assessment period, overall microbial water quality has shown improvement.

More information about Central Coast Council’s audit of sewer and stormwater networks and remediation works is available on council’s website.

During 2019–2020 Central Coast Council, the then Department of Planning, Industry and Environment and the University of Technology Sydney (UTS) investigated the scale and extent of elevated bacterial levels at Terrigal Beach. Council is using the findings from the investigation to detect and resolve water quality issues in the catchment. In 2019, Central Coast Council instigated a widespread audit of the sewer and stormwater network. This involved extensive in field and laboratory analysis to determine the pollution source, CCTV inspection of over 50 km of sewer pipes in the Terrigal Beach and Lagoon catchments, the relining and upgrading of over 32 km of pipes, and smoke and dye testing to identify illegal connections.

It is recommended that swimming be avoided during and for up to one day after rainfall at ocean beaches or if there are signs of stormwater pollution such as discoloured water, flowing drains or outflow from lagoons, due to the possibility of pollution.

### Estuarine beaches



**Beach Suitability Grades for Central Coast estuarine beaches**

Woy Woy Baths was graded as Good in 2023–2024, an improvement from Poor in the previous year. Water quality at this site was suitable for swimming most of the time, with 84% of dry weather samples within the safe swimming limit. Microbial water quality at this site has shown gradual improvement over the last 3 years, however remains close to the threshold between Good and Poor grades.

Three estuarine swimming sites in Brisbane Water continued to be graded as Poor in 2023–2024: Davistown Baths, Pretty Beach Baths and Yattalunga Baths. This

result is consistent with previous years. Despite the Poor grades, microbial water quality at these sites has shown trends of improved microbial assessments in the last 3–4 years.

Microbial water quality at Yattalunga Baths was mostly suitable for swimming during dry weather conditions, with 78% of samples within the safe swimming limit when no rain had fallen in the previous 24 hours. Elevated enterococci levels were often recorded following light rainfall, and increased in response to increasing rain.

Microbial water quality at Davistown Baths and Pretty Beach Baths was often elevated during dry weather conditions. At these sites, the bacterial levels continued to increase significantly in response to increasing rainfall, with bacterial levels regularly exceeding the safe swimming limit after light to moderate rain.

The estuarine beaches may be impacted by several significant potential sources of faecal contamination including stormwater and other sources within Brisbane Water, and have low levels of flushing.

Swimming at the estuarine beaches is not recommended during and for up to 3 days following rainfall or if there are any signs of stormwater such as discoloured water or floating debris.

### Lake/lagoon swimming sites

Summerland Point Baths, Gwandalan, Chain Valley Bay, Mannering Park Baths, Lake Munmorah Baths and Canton Beach were graded as Poor in 2023–2024, consistent with the previous year.

Microbial water quality at Summerland Point Baths was mostly suitable for swimming during dry weather conditions, with 85% of samples within the safe swimming limit when no rain had fallen in the previous 24 hours. Elevated enterococci levels increased in response to rainfall, and were often recorded following light to moderate rainfall. Despite the Poor grade, the microbial water quality is close to the threshold between Good and Poor grades.



**Beach Suitability Grades for Central Coast lake/lagoon swimming sites**

Gwandalan, Chain Valley Bay, Mannering Park Baths, Lake Munmorah Baths and Canton Beach continued to be graded as Poor in 2023–2024, a similar result to the previous years. Elevated enterococci levels were often recorded after light rainfall and continued to increase with increasing rainfall at these sites.

Microbial water quality was often suitable for swimming during dry weather conditions at Mannering Park Baths, Lake Munmorah Baths and Canton Beach, with between 59% and 73% of samples within the safe swimming limit when no rain had fallen in the previous 24 hours, and occasionally suitable for swimming during dry weather conditions at Gwandalan and Chain Valley Bay with 48% and 46% of samples within the safe swimming limit when no rain had fallen in the previous 24 hours.

Despite the Poor grades, Canton Beach has shown trends of improved microbial assessments in last 4 years with management actions improving water quality at this site. Central Coast Council has been undertaking studies in microbial source tracking and enterococci loads in sediment at Canton Beach to better understand the sources of elevated enterococci levels periodically recorded at the swim site.

The impact of rainfall-related pollution is more apparent at these sites with low levels of flushing and slower dilution to disperse pollution inputs. Swimming should be avoided during and for at least 3 days after rainfall.

The 4 lagoons were graded as Poor in 2023–2024: Wamberal Lagoon, Terrigal Lagoon, Avoca Lagoon and Cockrone Lagoon, consistent with previous years. However, the microbial assessment for the 4 lagoon sites has improved from the previous years' assessments. Microbial water quality at these sites was often elevated in dry weather conditions, and regularly exceeded the safe swimming limit following light to moderate rainfall. While microbial water quality increased significantly with increasing rainfall at all 4 lagoon swimming sites, bacteria levels at Terrigal and Avoca lagoons were generally more elevated than levels measured at Wamberal and Cockrone lagoons.

Sampling is undertaken near the lagoon mouths, and showed bacterial levels increased significantly with increasing rainfall. Swimming should be avoided during and for at least 3 days after rainfall, or if there are any signs of pollution such as discoloured water, odours or floating debris.

During 2019–2020, Central Coast Council, the then Department of Planning, Industry and Environment and UTS investigated the scale and extent of elevated bacterial levels at the 4 lagoons, and the source of microbial contamination. Council is using the findings from these investigations to detect and resolve water quality issues in these catchments. As part of Central Coast Council’s sewerage infrastructure program, and the Terrigal Lagoon Pollution Reduction Program, council has recently relined sewer mains in the Terrigal Lagoon and Avoca Lagoon catchments to reduce sewage overflows reaching the environment.

Pollution inputs can accumulate in coastal lagoons due to very low levels of flushing. While pollution is usually diluted when the lagoon entrance is open to the ocean, the outflow can impact the microbial water quality at nearby beaches.



**Beach Suitability Grades for Central Coast ocean baths**

## Ocean baths

Cabbage Tree Bay Rockpool, The Entrance Ocean Baths and Pearl Beach Rockpool continued to be graded as Good in 2023–2024, consistent with previous years. Water quality at these sites was suitable for swimming most of the time but can be impacted by pollution following rain.

The Entrance Ocean Baths was frequently suitable for swimming during dry weather conditions with 100% of dry weather samples within the safe swimming limit. Elevated enterococci were occasionally recorded following heavy rain.

Cabbage Tree Bay Rockpool and Pearl Beach Rockpool were mostly suitable for swimming after little or no rain, with elevated levels of enterococci often recorded following moderate to heavy rainfall.

The Entrance Ocean Baths are cleaned regularly year round by council, while Cabbage Tree Bay Rockpool and Pearl Beach Rockpool are flushed irregularly and are dependent on the natural exchange of ocean water over the rocks and pool walls. It is recommended that swimming be avoided during and for up to one day after rainfall, or if there are signs of pollution such as discoloured water or floating debris.



Sampling sites and Beach Suitability Grades in Central Coast Council (northern)



Sampling sites and Beach Suitability Grades in Central Coast Council (southern)

# Lakes Beach

Beach grade: **VG**



Lakes Beach is at the southern end of an 8 km stretch of beach. The beach is patrolled during summer.

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

Enterococci levels increased slightly with increasing rainfall, often exceeding the safe swimming limit after 10 mm or more of rain.

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

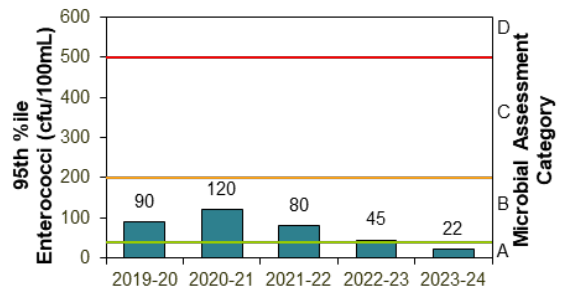
The site has been monitored since 2002.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Mar 2021 to Apr 2024	98%	100	Improved

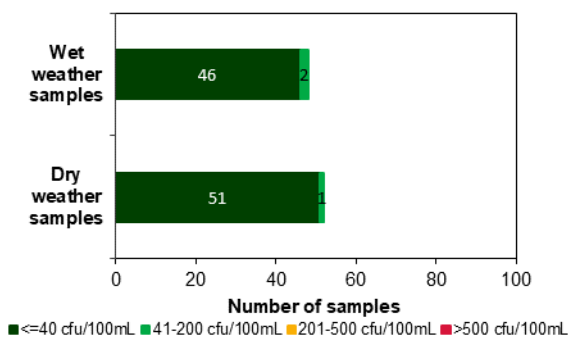
### Sanitary inspection: Low



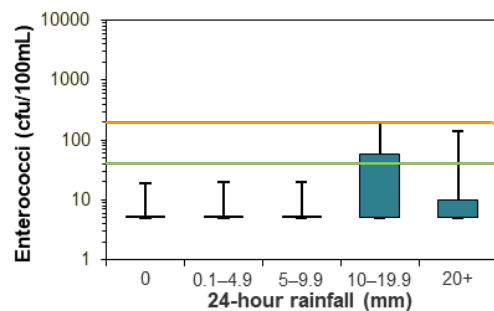
### Microbial Assessment Category: A



### Dry and wet weather water quality

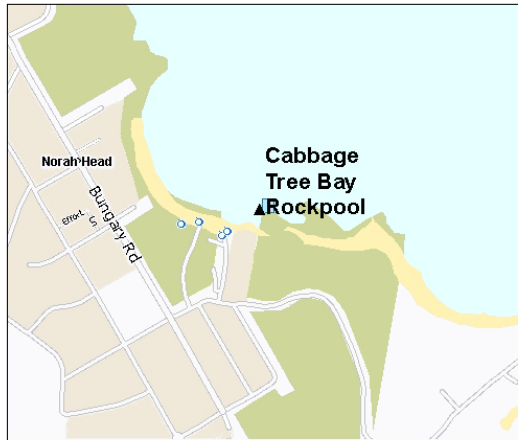


### Water quality in response to rainfall



# Cabbage Tree Bay Rockpool

Beach grade: **G**

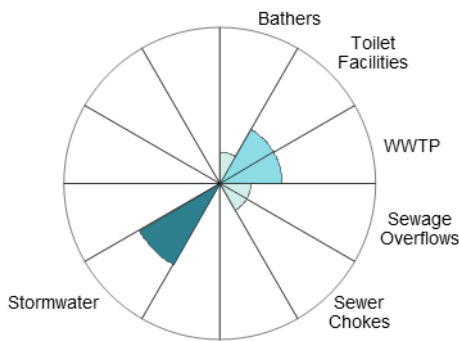


See ‘How to read this report’ for key to map.

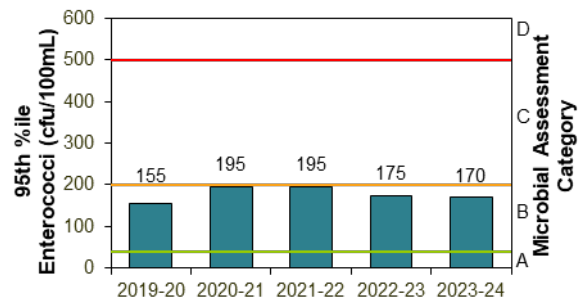
Cabbage Tree Bay Rockpool is located within a sheltered bay of Cabbage Tree Harbour, Norah Head and is naturally flushed by the ocean. The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination. Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 10 mm or more. The site was monitored from 2002 until 2005, and since 2017.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean baths	Mar 2021 to Apr 2024	81%	100	Stable

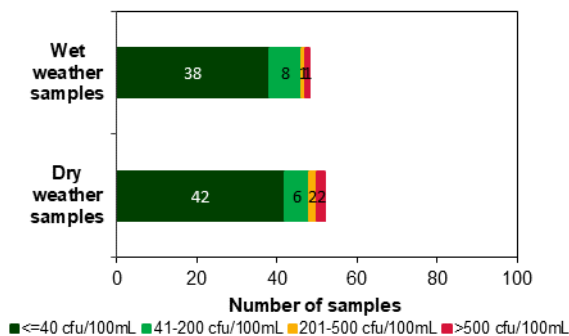
## Sanitary inspection: Moderate



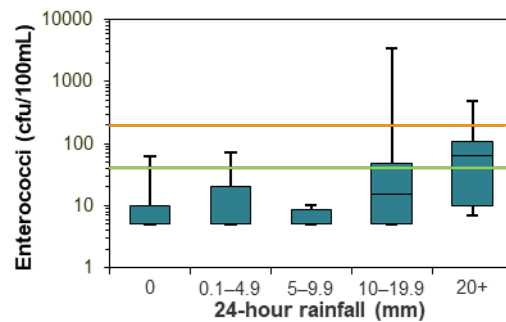
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Soldiers Beach

Beach grade: **VG**




Soldiers Beach is a popular beach surrounded by reserve and is patrolled over summer.

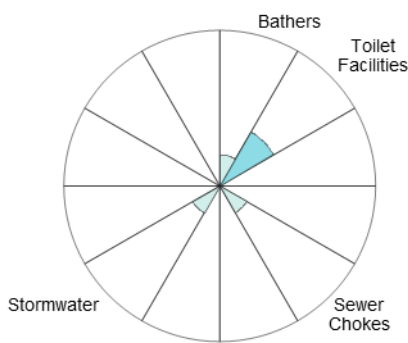
The Beach Suitability Grade of Very Good indicates microbial water quality is considered suitable for swimming almost all of the time, with few potential sources of faecal contamination.

Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after 10 mm or more of rain.

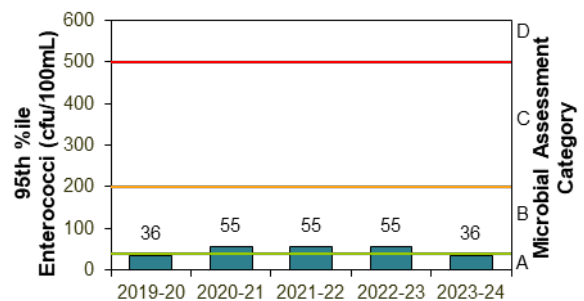
See ‘How to read this report’ for key to map. The site has been monitored since 2002.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Mar 2021 to Apr 2024	96%	100	Improved 

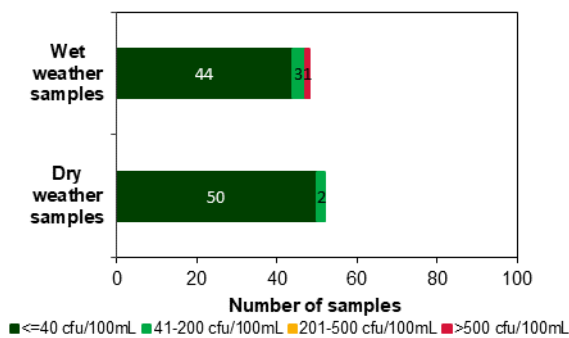
## Sanitary inspection: Low



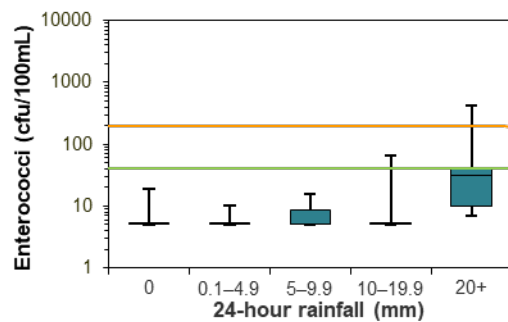
## Microbial Assessment Category: A



## Dry and wet weather water quality

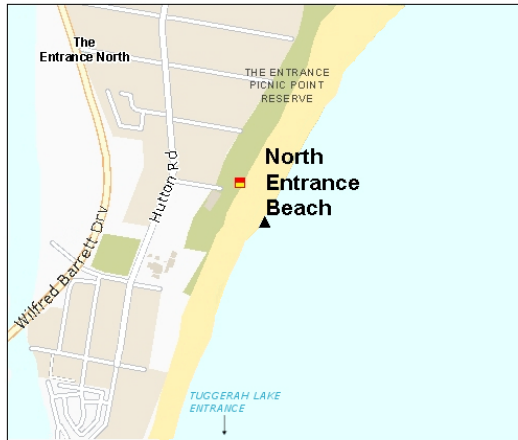


## Water quality in response to rainfall



# North Entrance Beach

**Beach grade:** VG



North Entrance Beach is located to the north of the entrance to Tuggerah Lake, and is patrolled over summer.

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

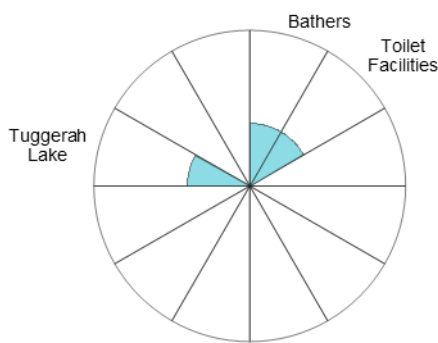
Enterococci levels had little response to rainfall and generally remained below the safe swimming limit.

See ‘How to read this report’ for key to map.

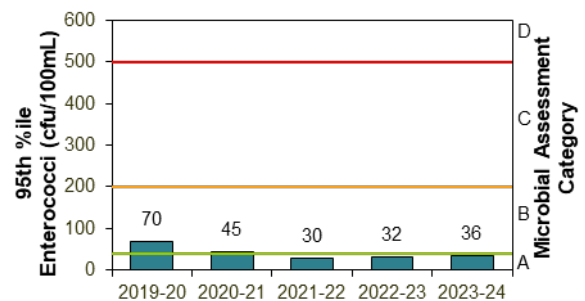
The site has been monitored since 2002.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Mar 2021 to Apr 2024	92%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

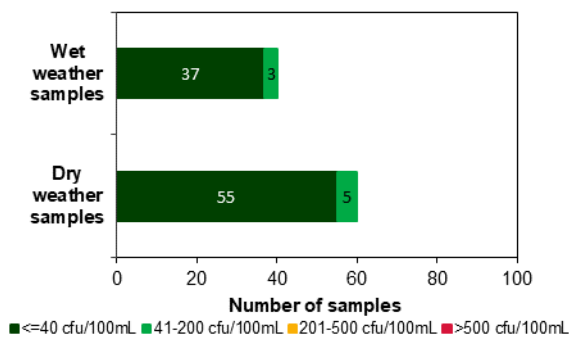
### Sanitary inspection: Low



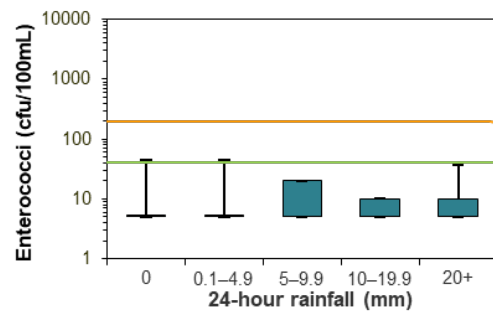
### Microbial Assessment Category: A



### Dry and wet weather water quality

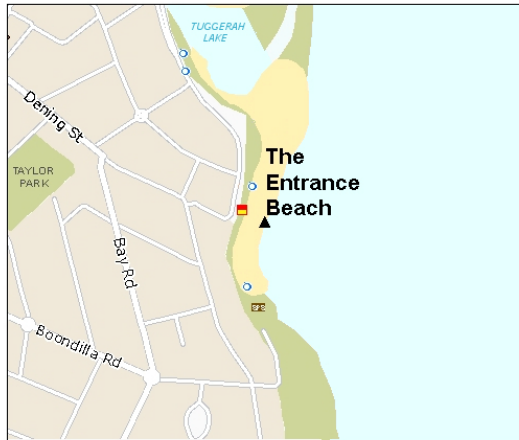


### Water quality in response to rainfall



# The Entrance Beach

Beach grade: **G**



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

The Entrance Beach is located to the south of the entrance to Tuggerah Lake and is patrolled over summer.

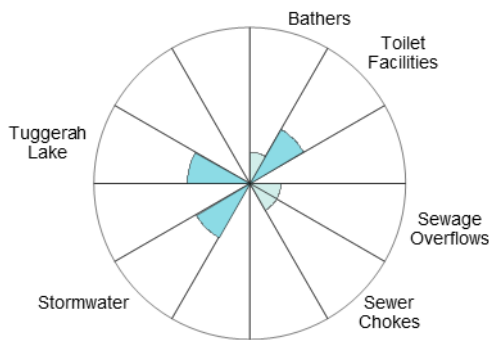
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but can be susceptible to pollution after rain, with several potential sources of minor faecal contamination.

Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and often after 20 mm or more of rain.

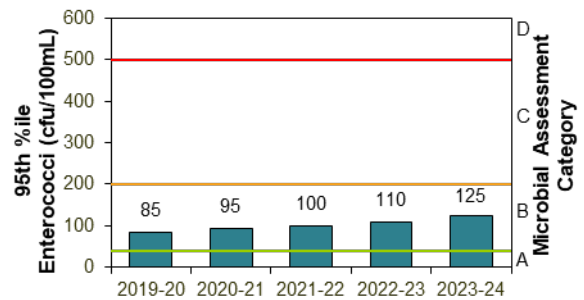
The site has been monitored since 2002.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Mar 2021 to Apr 2024	92%	100	Stable

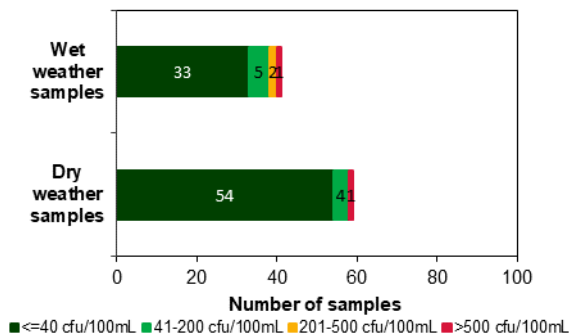
## Sanitary inspection: Low



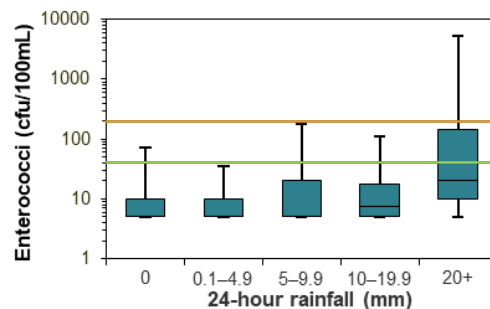
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# The Entrance Ocean Baths

Beach grade: **G**



The Entrance Ocean Baths include a 50 m concrete pool and 2 smaller wading pools located at the southern end of The Entrance Beach, and are patrolled over summer.

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

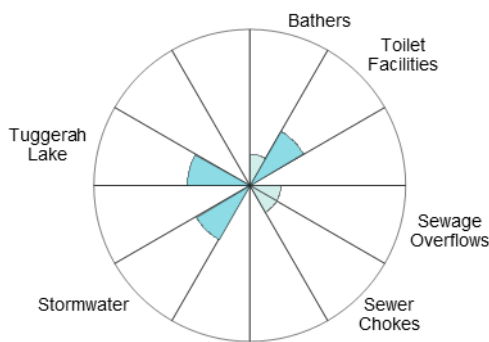
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after 5 mm or more of rain.

The site has been monitored since 2017.

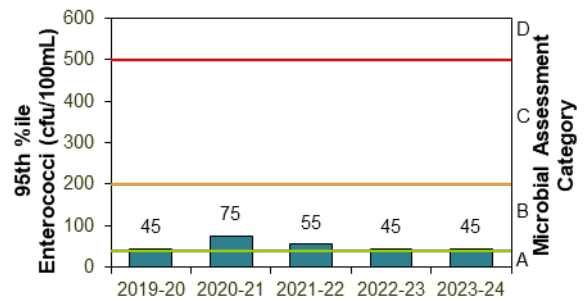
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean baths	Dec 2020 to Apr 2024	100%	100	Stable

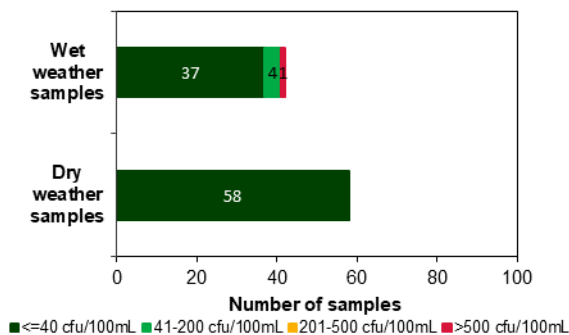
## Sanitary inspection: Low



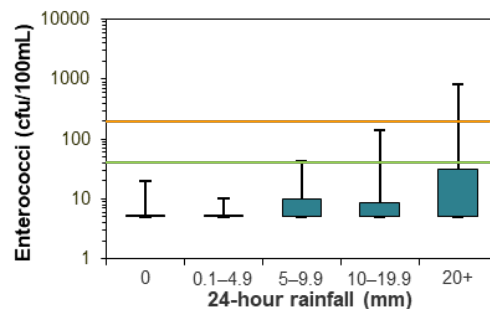
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Toowoan Bay

Beach grade: **G**



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

Toowoan Bay is a relatively calm ocean beach protected by headlands and a tombola. The beach is patrolled during summer.

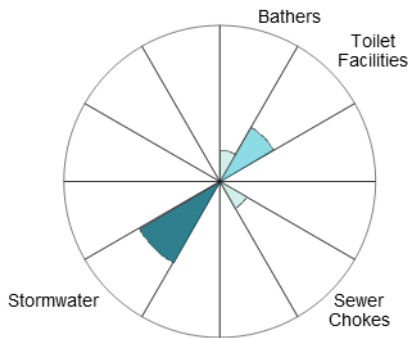
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but can be susceptible to pollution after rain, with several potential sources of faecal contamination.

Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain and regularly after 20 mm or more of rain.

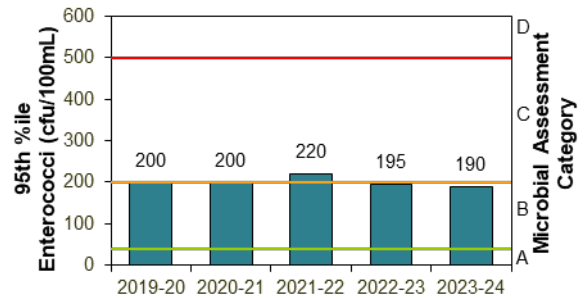
The site has been monitored since 2002.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Mar 2021 to Apr 2024	81%	100	Stable

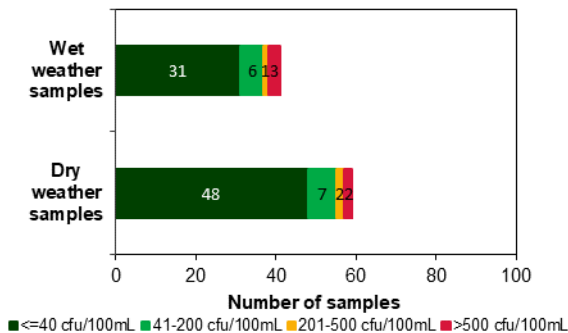
## Sanitary inspection: Moderate



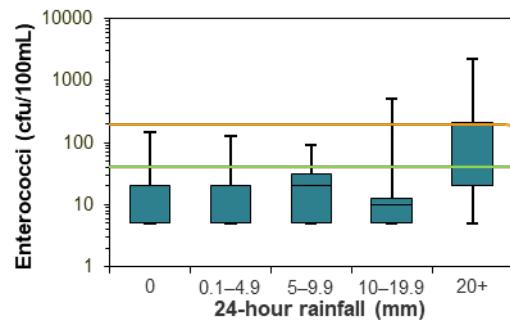
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Shelly Beach

Beach grade: **G**



Shelly Beach is a popular patrolled beach, backed by a high dune system and golf course.

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

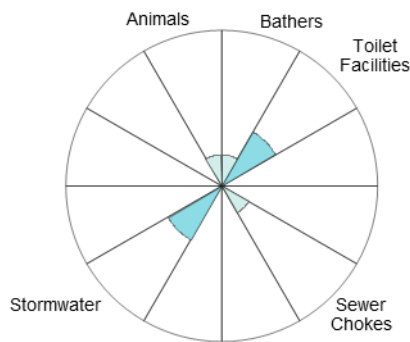
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit in response to little or no rain, and often after 20 mm or more of rain.

The site has been monitored since 2002.

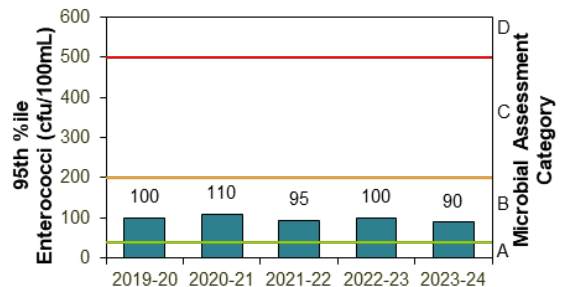
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Mar 2021 to Apr 2024	90%	100	Stable

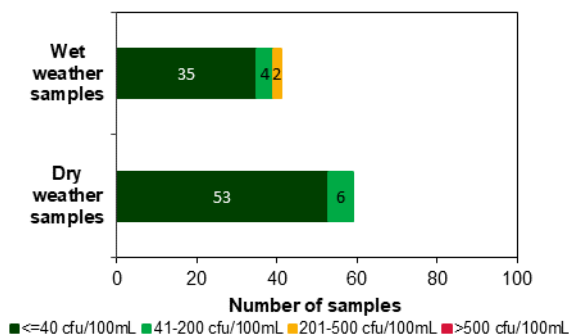
## Sanitary inspection: Low



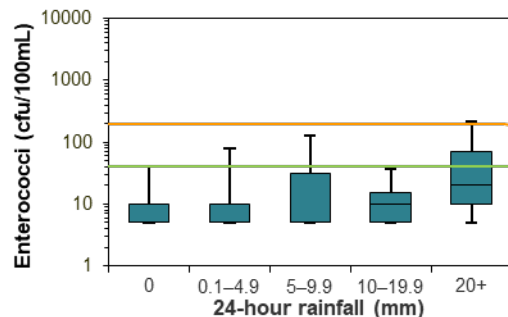
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Gwandalan

Beach grade: P



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

Gwandalan is a netted swimming enclosure within Crangan Bay in southern Lake Macquarie.

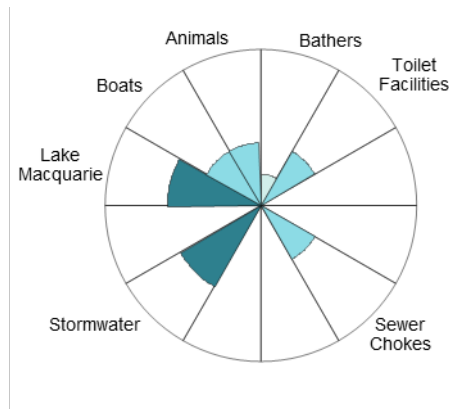
The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including stormwater and sources from elsewhere within the lake.

Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit in response to no rain, and regularly after rainfall.

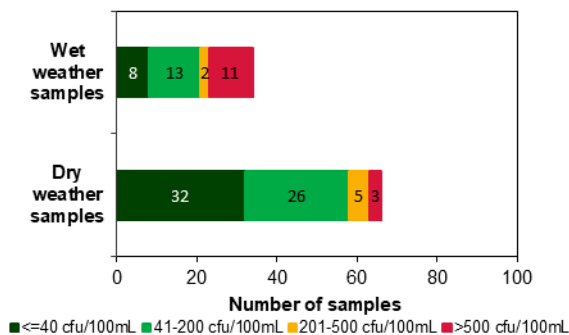
The site has been monitored since 2002.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Lake/Lagoon	Mar 2021 to Apr 2024	48%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

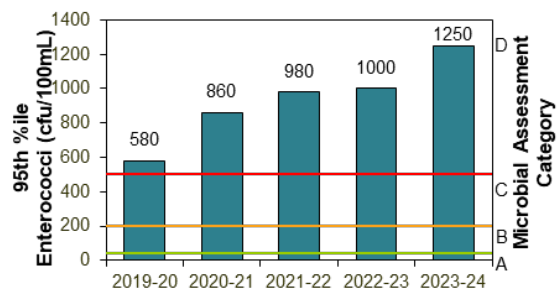
## Sanitary inspection: Moderate



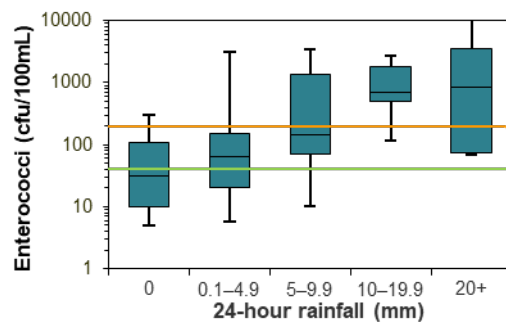
Dry and wet weather water quality



## Microbial Assessment Category: D

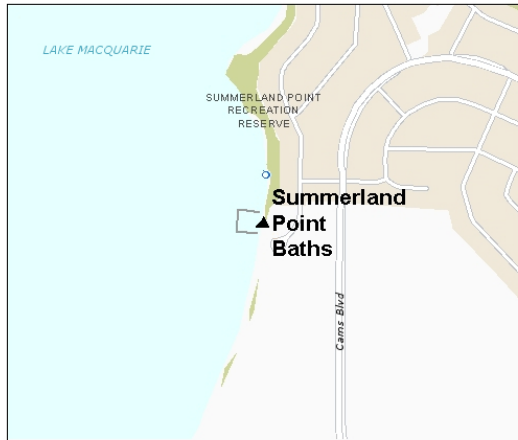


Water quality in response to rainfall



# Summerland Point Baths

Beach grade: P



See ‘How to read this report’ for key to map.

Summerland Point Baths is a netted swimming area located at the southern end of Lake Macquarie.

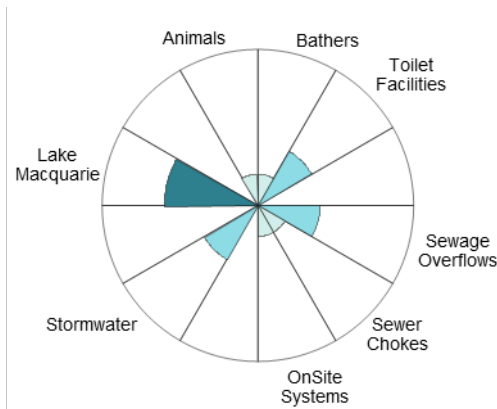
The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to pollution, particularly after rain and occasionally in dry weather, with several potential sources of faecal contamination including sources from elsewhere within the lake.

Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit in response to little or no rain, and often after 5 mm or more.

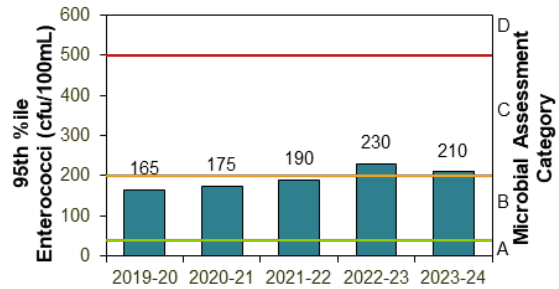
The site has been monitored since 2017.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Lake/Lagoon	Mar 2021 to Apr 2024	85%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

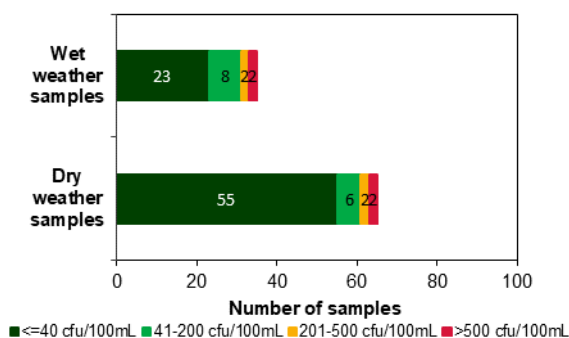
## Sanitary inspection: Moderate



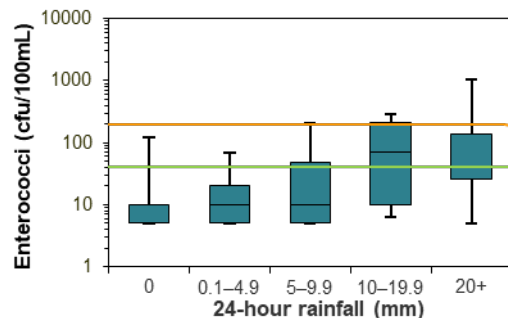
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Chain Valley Bay

Beach grade: P



Chain Valley Bay is an enclosed swimming area located at the southern end of Lake Macquarie. The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions from several potential sources of faecal contamination including stormwater and from elsewhere within the lake.

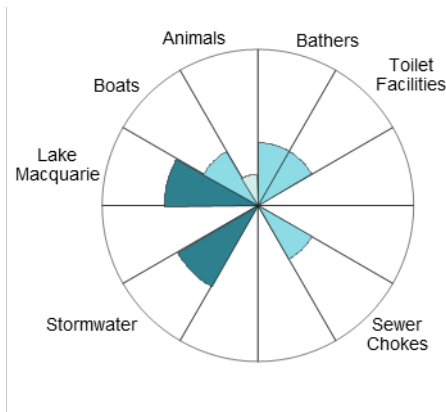
Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit in response to little or no rain, and regularly after 20 mm or more.

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

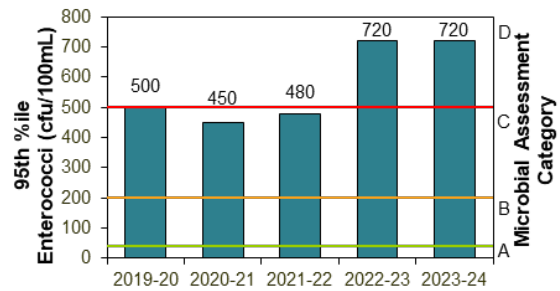
The site has been monitored since 2002.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Lake/Lagoon	Apr 2021 to Apr 2024	46%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

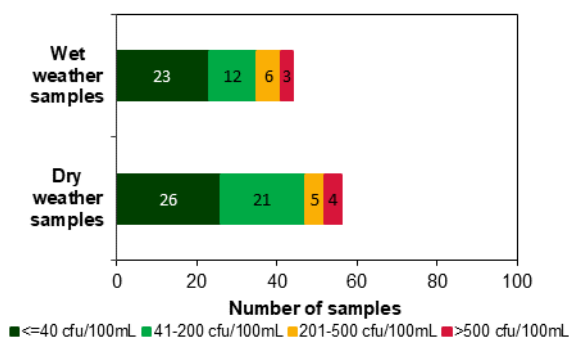
### Sanitary inspection: Moderate



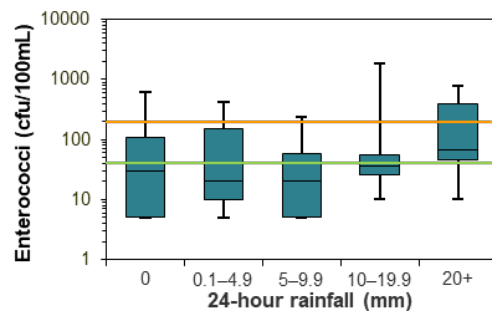
### Microbial Assessment Category: D



### Dry and wet weather water quality



### Water quality in response to rainfall



# Manning Park Baths

Beach grade: P



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

Manning Park Baths is a netted swimming area located at Vales Point at the southern end of Lake Macquarie.

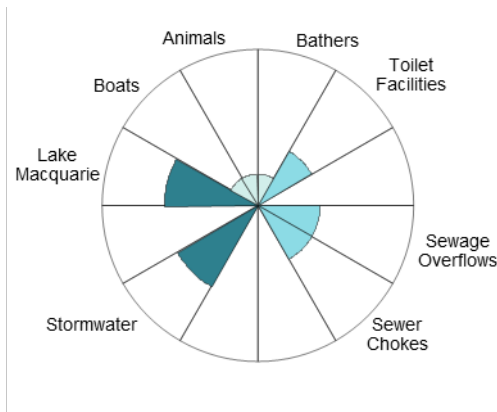
The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including stormwater and from elsewhere within the lake.

Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after little or no rain, and regularly after rain.

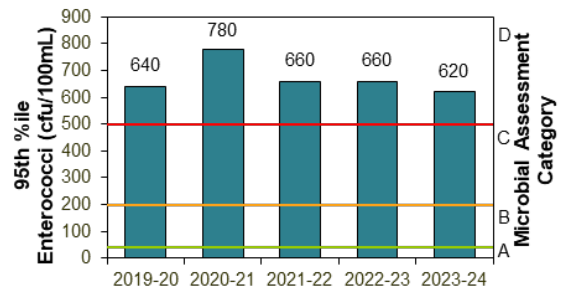
The site has been monitored since 2017.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Lake/Lagoon	Mar 2021 to Apr 2024	59%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

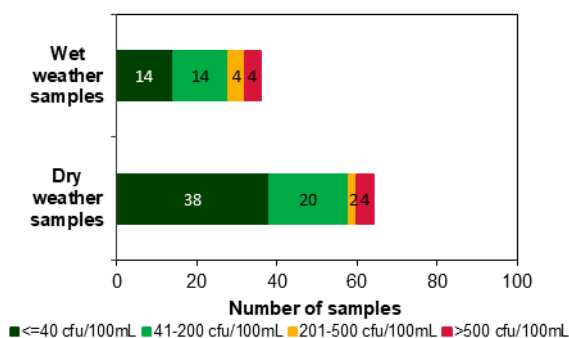
### Sanitary inspection: Moderate



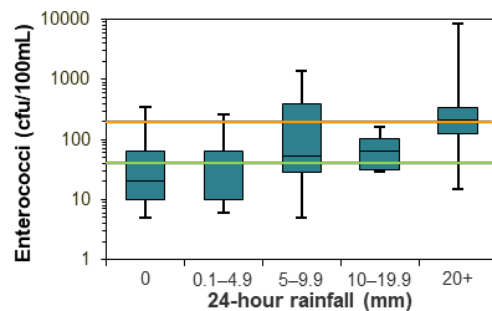
### Microbial Assessment Category: D



### Dry and wet weather water quality



### Water quality in response to rainfall



# Lake Munmorah Baths

Beach grade: P



Lake Munmorah Baths is an enclosed swimming area in the north of Lake Munmorah.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including stormwater and from elsewhere within the lake.

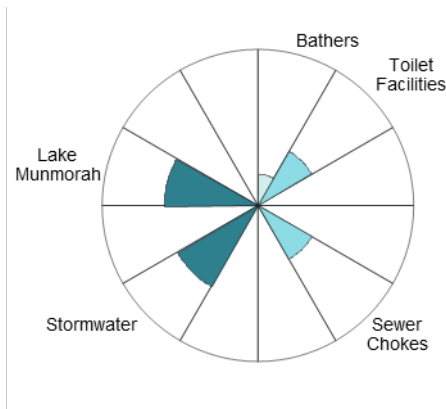
Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after little or no rain and regularly after 5 mm or more of rain.

See ‘How to read this report’ for key to map.

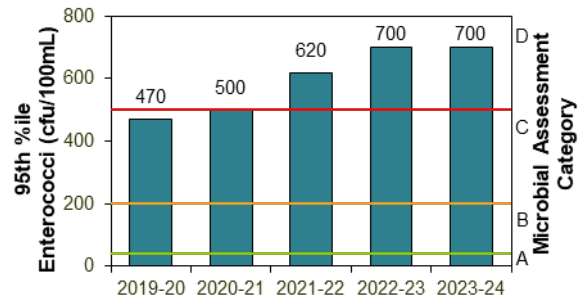
The site has been monitored since 2010.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Lake/Lagoon	Mar 2021 to Apr 2024	73%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

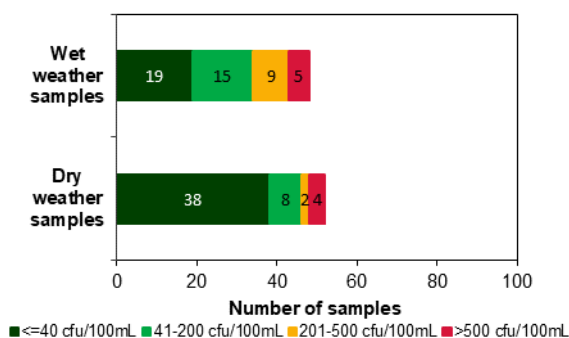
### Sanitary inspection: Moderate



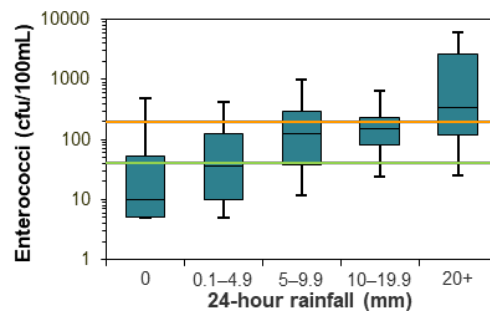
### Microbial Assessment Category: D



### Dry and wet weather water quality



### Water quality in response to rainfall



# Canton Beach

Beach grade: P



Canton Beach is within Tuggerah Lake and is backed by a narrow reserve and picnic area.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including stormwater and from elsewhere within the lake.

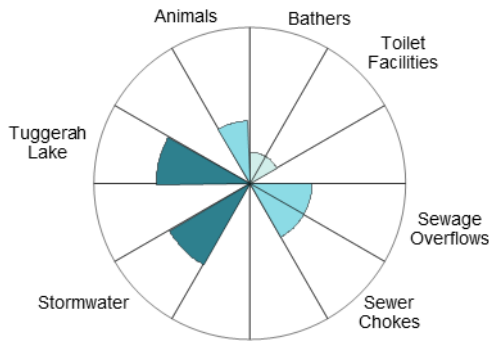
Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after no rain, and regularly after rain.

See ‘How to read this report’ for key to map.

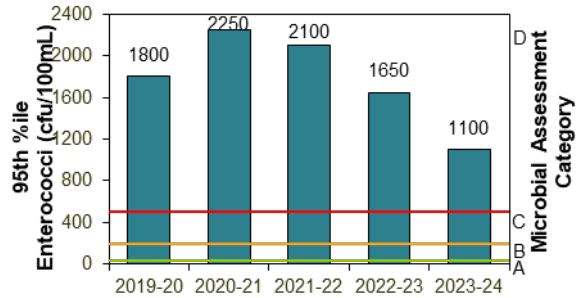
The site has been monitored since 2002.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Lake/Lagoon	Mar 2021 to Apr 2024	66%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

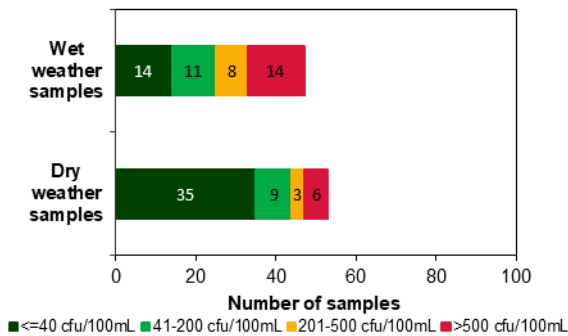
### Sanitary inspection: Moderate



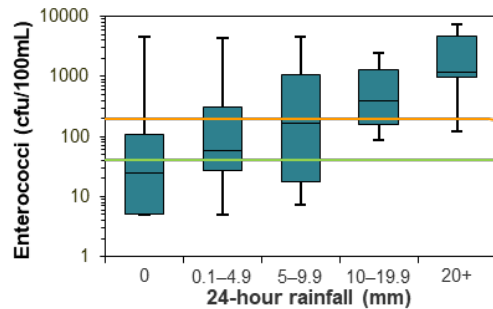
### Microbial Assessment Category: D



### Dry and wet weather water quality



### Water quality in response to rainfall



# Wamberal Beach

Beach grade: **G**



Wamberal Beach is a long open beach backed by a lagoon and is patrolled over summer.

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

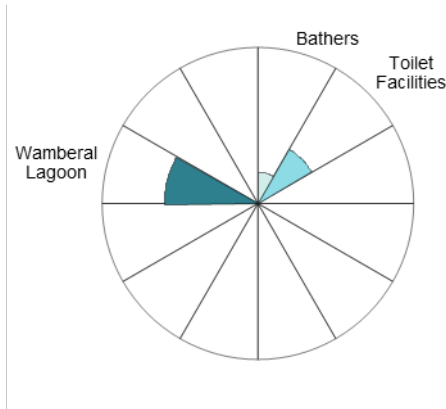
Enterococci levels increased slightly with increasing rainfall, regularly exceeding the safe swimming limit after 20 mm or more of rain.

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

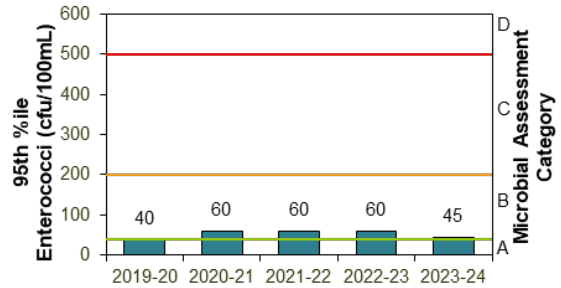
The site has been monitored since 2004.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Mar 2021 to Apr 2024	95%	100	Stable

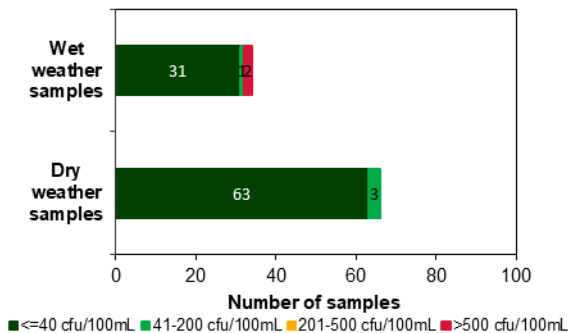
### Sanitary inspection: Moderate



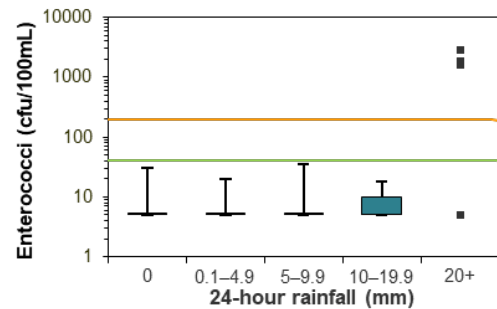
### Microbial Assessment Category: B



### Dry and wet weather water quality



### Water quality in response to rainfall



# Wamberal Lagoon

Beach grade: P



Wamberal Lagoon is intermittently open to the ocean toward the southern end of Wamberal Beach.

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

Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after no rain and regularly after 10 mm or more of rain.

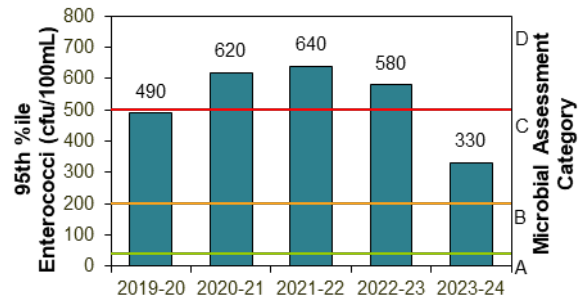
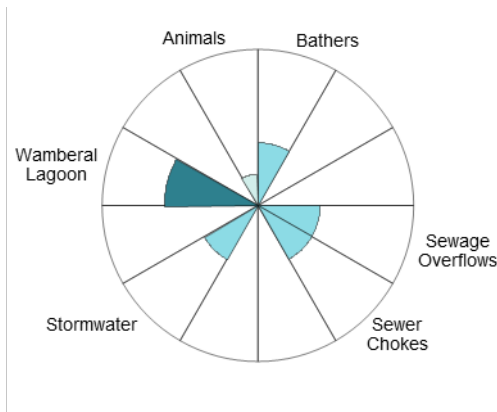
See ‘How to read this report’ for key to map.

The site has been monitored since 2004.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Lagoon	Mar 2021 to Apr 2024	74%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

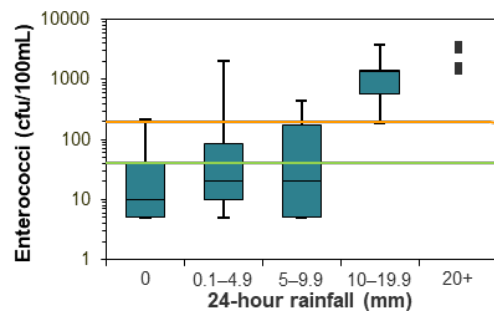
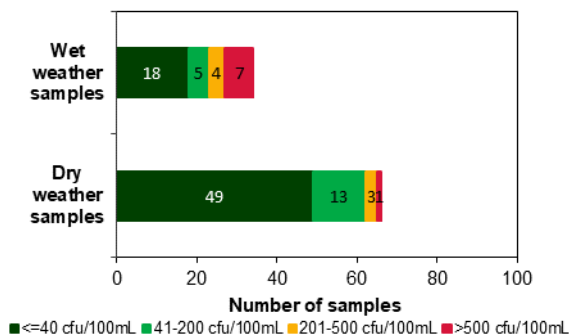
### Sanitary inspection: Moderate

Microbial Assessment Category: C



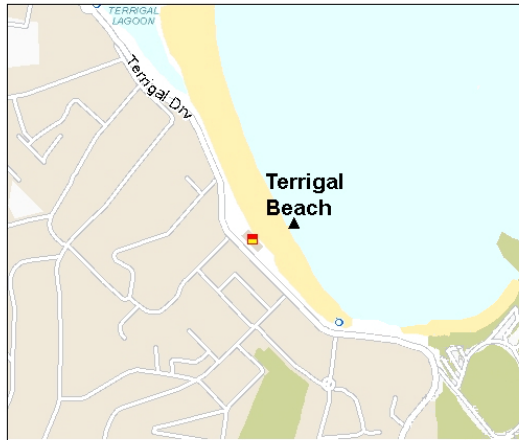
### Dry and wet weather water quality

### Water quality in response to rainfall



# Terrigal Beach

Beach grade: **G**



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

Terrigal Beach is a very popular north-east facing beach and is patrolled during the warmer months.

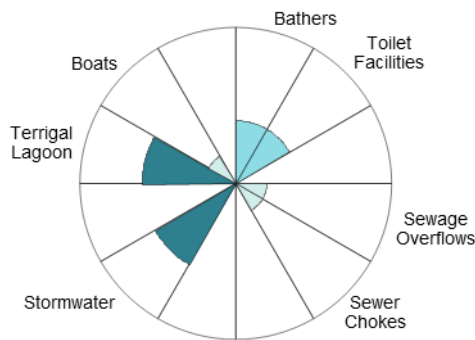
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with potential sources of faecal contamination including discharge from Terrigal Lagoon.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 5 mm or more.

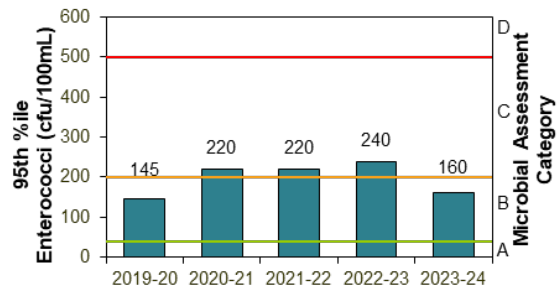
The site has been monitored since 2006.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Mar 2021 to Apr 2024	86%	100	Improved

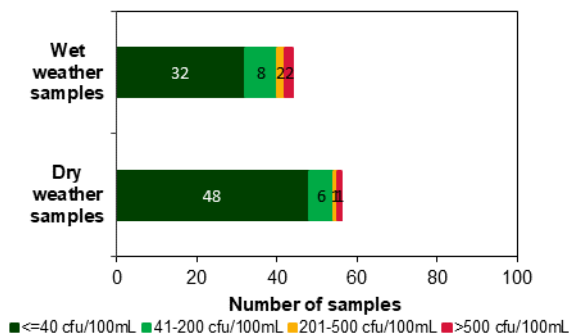
## Sanitary inspection: Moderate



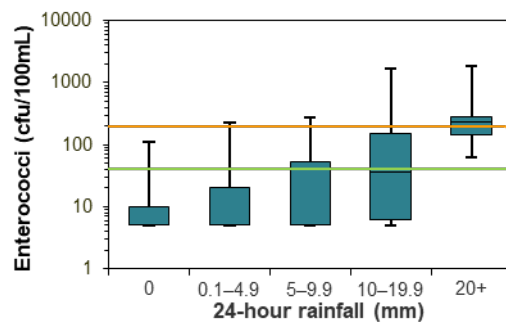
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Terrigal Lagoon

Beach grade: P



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

Terrigal Lagoon is intermittently open to the ocean to the north of Terrigal Beach.

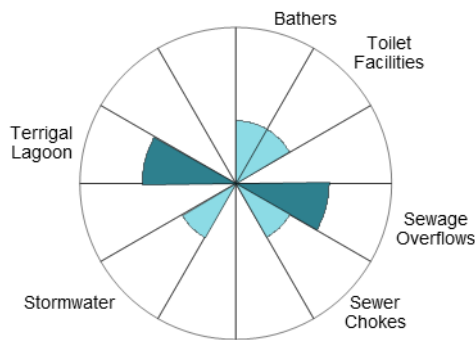
The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including sewage overflows and from elsewhere within the lagoon.

Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after no rain, and regularly after rain.

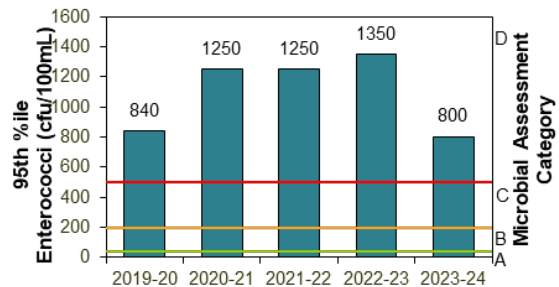
The site has been monitored since 2004.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Lagoon	Mar 2021 to Apr 2024	65%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

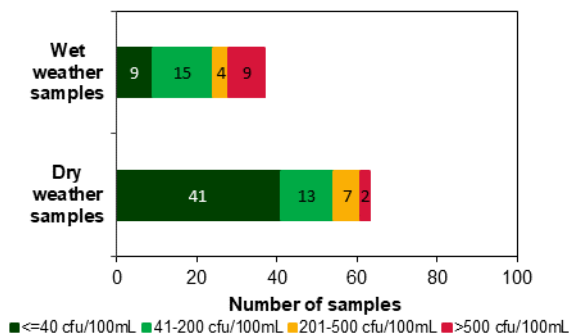
## Sanitary inspection: Moderate



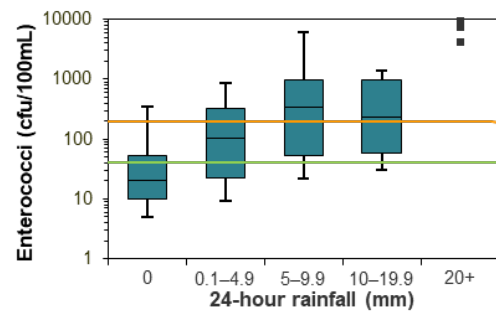
## Microbial Assessment Category: D



## Dry and wet weather water quality



## Water quality in response to rainfall



# North Avoca Beach

Beach grade: **G**



North Avoca Beach is at the northern end of the beach and is patrolled during the summer swimming season.

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

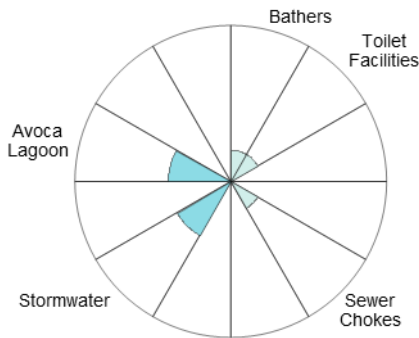
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after 5 mm or more of rain, and regularly after 20 mm or more.

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

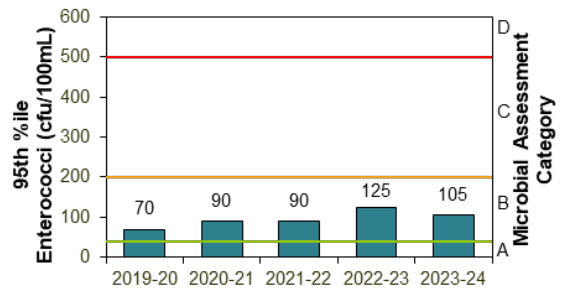
The site has been monitored since 2007.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Mar 2021 to Apr 2024	95%	100	Stable

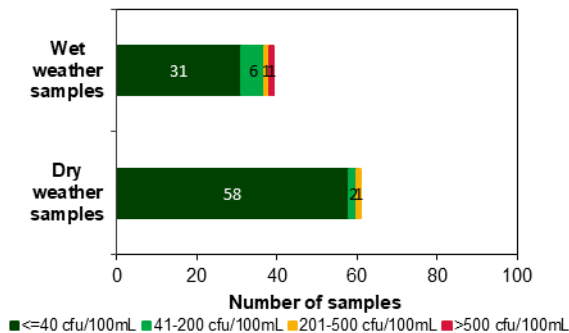
### Sanitary inspection: Low



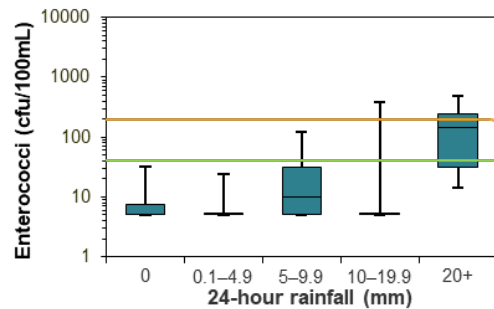
### Microbial Assessment Category: B



### Dry and wet weather water quality

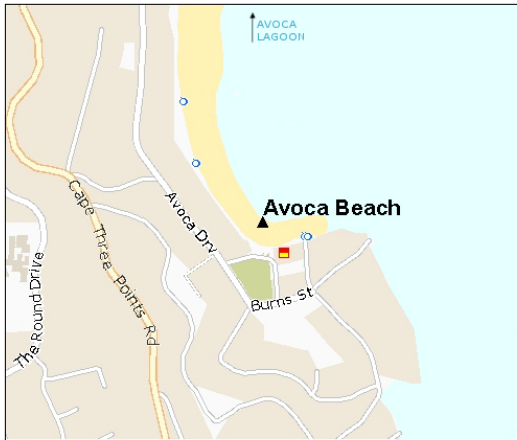


### Water quality in response to rainfall



# Avoca Beach

**Beach grade:** G



Avoca Beach is in the southern corner of the beach and is patrolled during summer.

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

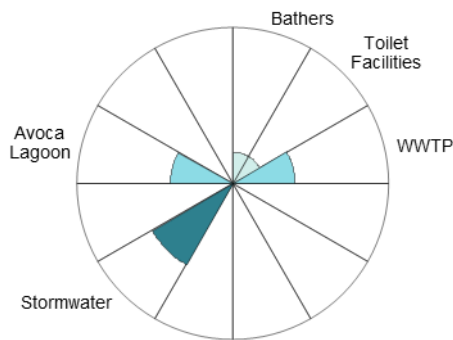
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit in response 5 mm of rain, and regularly after 10 mm or more.

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

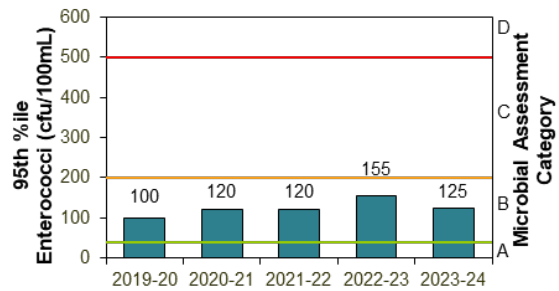
The site has been monitored since 2006.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Mar 2021 to Apr 2024	92%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

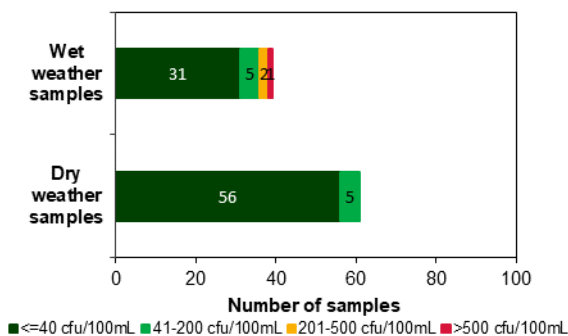
### Sanitary inspection: Moderate



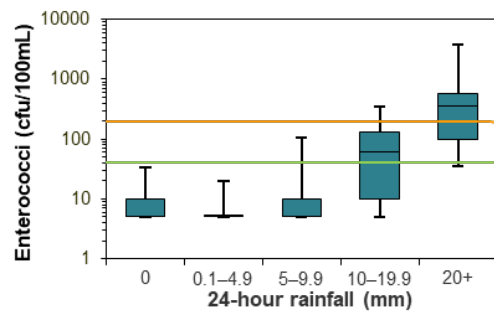
### Microbial Assessment Category: B



### Dry and wet weather water quality



### Water quality in response to rainfall



# Avoca Lagoon

Beach grade: P



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

Avoca Lagoon is intermittently open to the ocean and located to the north of Avoca Beach.

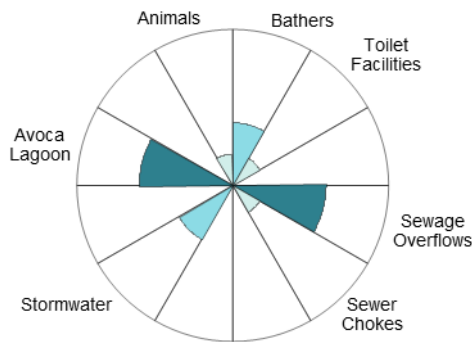
The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and often during dry weather conditions, with several potential sources of faecal contamination including sewage overflows and from elsewhere within the lagoon.

Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after no rain, and regularly after rainfall.

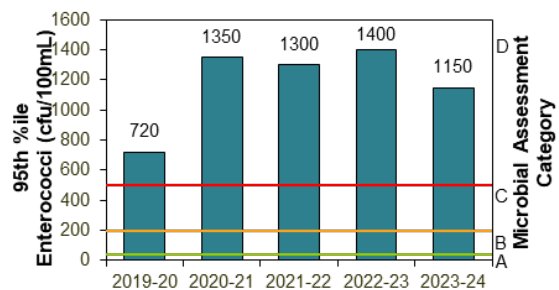
The site has been monitored since 2004.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Lagoon	Mar 2021 to Apr 2024	50%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

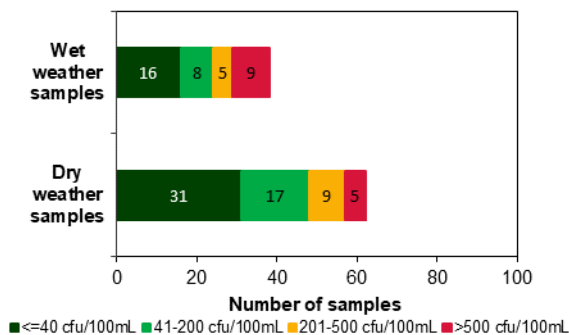
## Sanitary inspection: Moderate



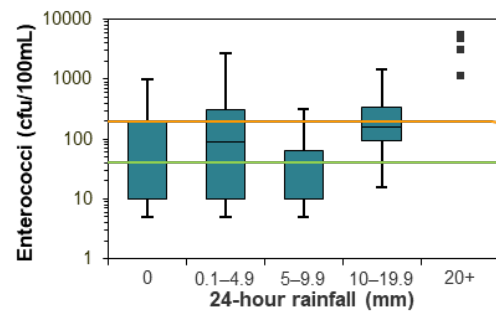
## Microbial Assessment Category: D



## Dry and wet weather water quality



## Water quality in response to rainfall



# Copacabana Beach

Beach grade: **G**



See ‘How to read this report’ for key to map.

Copacabana Beach is at the northern end of a 1 km stretch of beach and is patrolled during the summer swimming season.

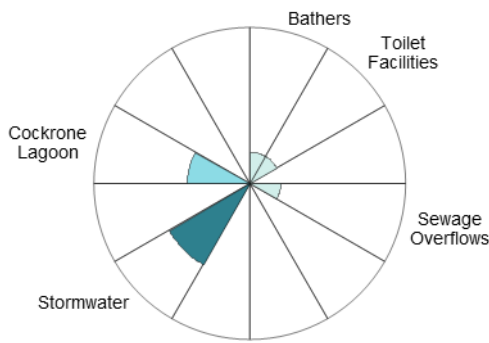
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination including stormwater.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and often after 10 mm or more.

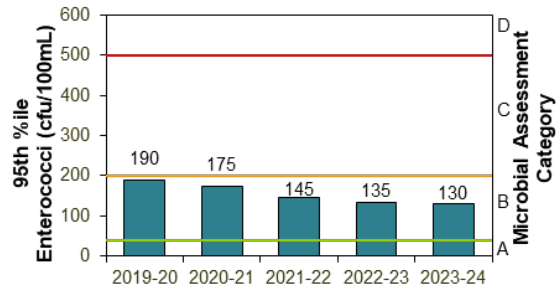
The site has been monitored since 2006.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Mar 2021 to Apr 2024	95%	100	Stable

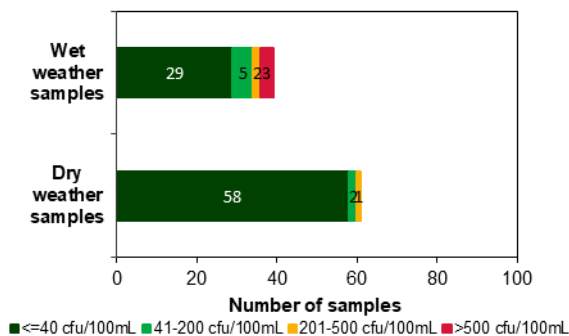
## Sanitary inspection: Moderate



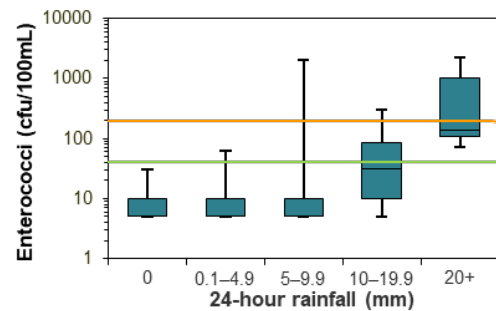
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Cockrone Lagoon

Beach grade: P



Cockrone Lagoon is intermittently open to the ocean and is located between Copacabana and MacMasters beaches.

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

Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after little or no rain and frequently after 5 mm or more of rain.

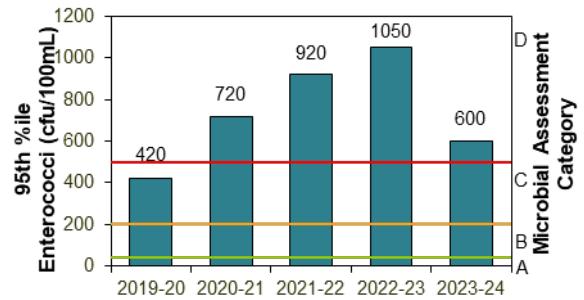
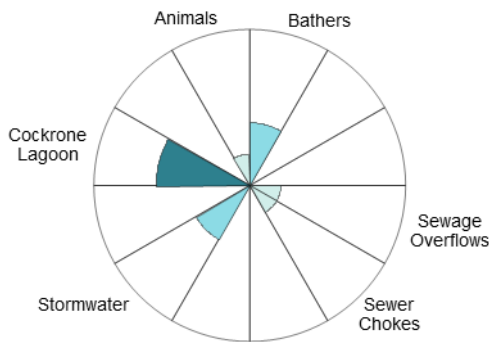
See ‘How to read this report’ for key to map.

The site has been monitored since 2004.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Lagoon	Mar 2021 to Apr 2024	55%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

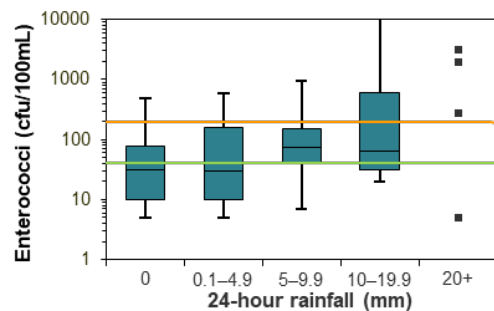
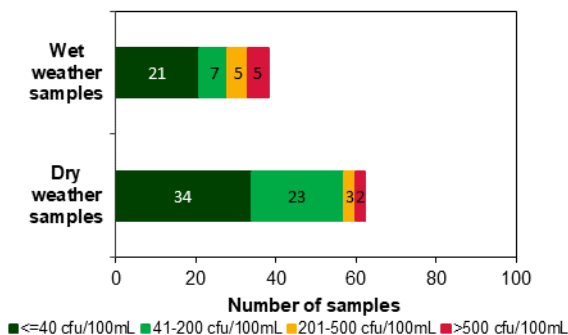
## Sanitary inspection: Moderate

## Microbial Assessment Category: D



## Dry and wet weather water quality

## Water quality in response to rainfall



# MacMasters Beach

Beach grade: **G**



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

MacMasters Beach is at the southern end of a 1 km stretch of beach and is patrolled during the warmer months.

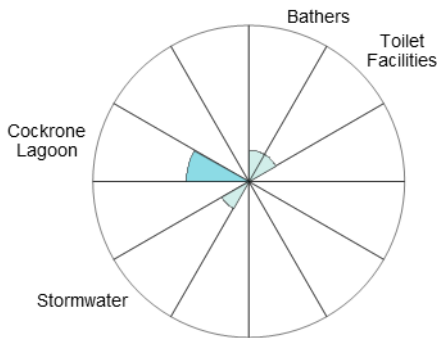
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination.

Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and regularly after 20 mm or more.

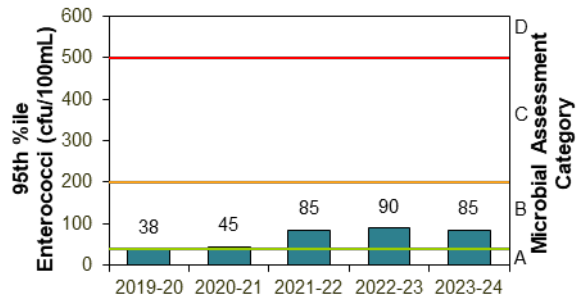
The site has been monitored since 2006.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Mar 2021 to Apr 2024	92%	100	Stable

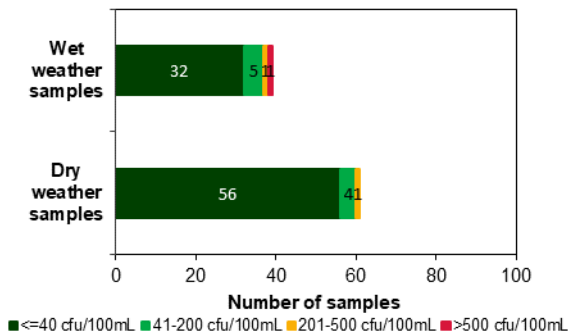
### Sanitary inspection: Low



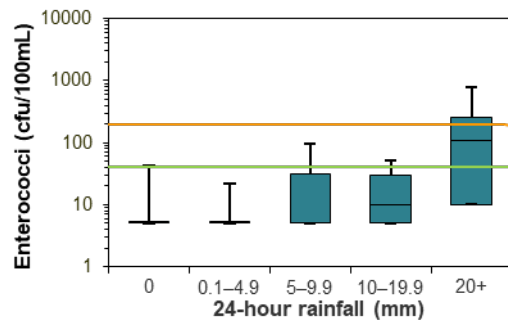
### Microbial Assessment Category: B



### Dry and wet weather water quality



### Water quality in response to rainfall



# Killcare Beach

Beach grade: **G**



Killcare Beach is a south facing beach backed by vegetated dunes. It is patrolled over the summer swimming season.

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

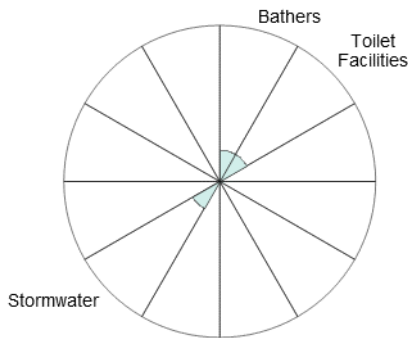
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after 5 mm of rain, and often after 20 mm or more.

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

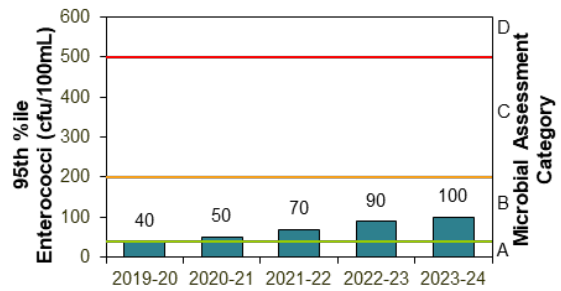
The site has been monitored since 2006.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Mar 2021 to Apr 2024	94%	100	Stable

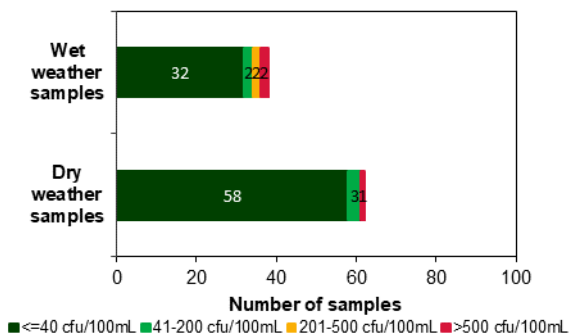
## Sanitary inspection: Low



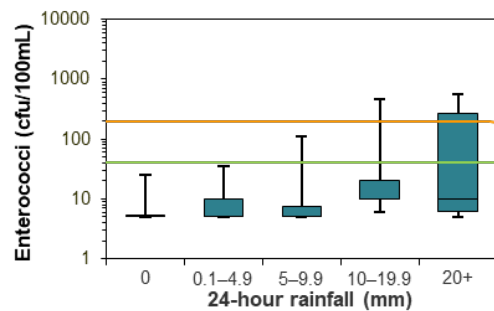
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Ocean Beach

Beach grade: **G**



See ‘How to read this report’ for key to map.

Ocean Beach is in Broken Bay near the entrance to Brisbane Water. The beach is patrolled during the summer swimming season.

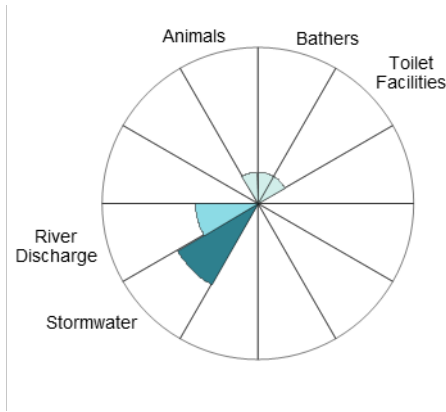
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination including stormwater.

Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and frequently after 10 mm or more.

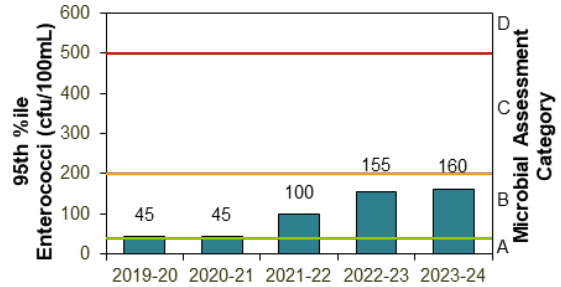
The site has been monitored since 2011.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Mar 2021 to Apr 2024	93%	100	Stable

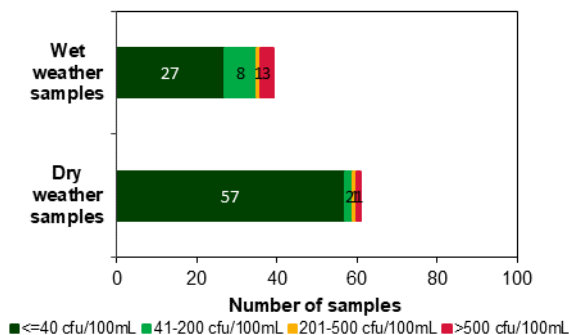
## Sanitary inspection: Moderate



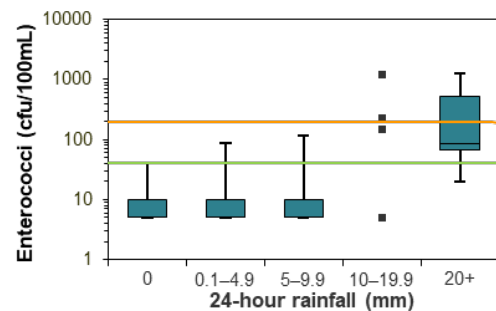
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Umina Beach

Beach grade: **G**



Umina Beach is in Broken Bay near the entrance to Brisbane Water. The beach is patrolled during the summer swimming season.

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

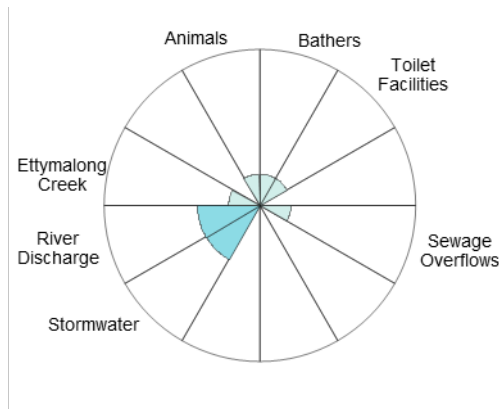
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and often after 10 mm or more.

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

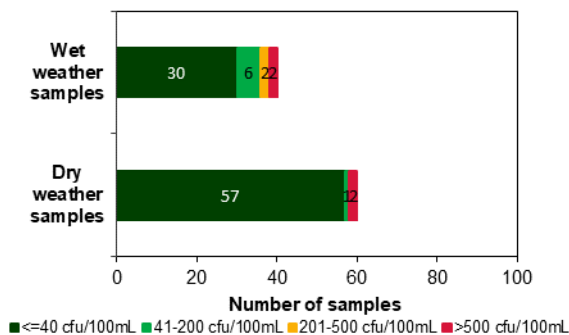
The site has been monitored since 2004.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Mar 2021 to Apr 2024	95%	100	Stable

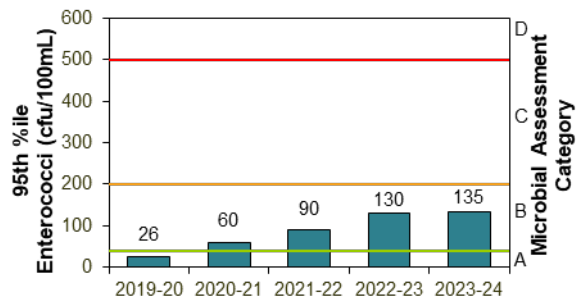
## Sanitary inspection: Low



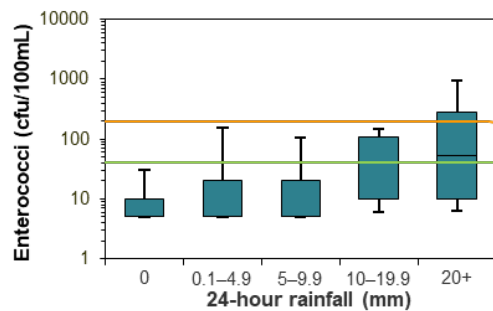
Dry and wet weather water quality



## Microbial Assessment Category: B

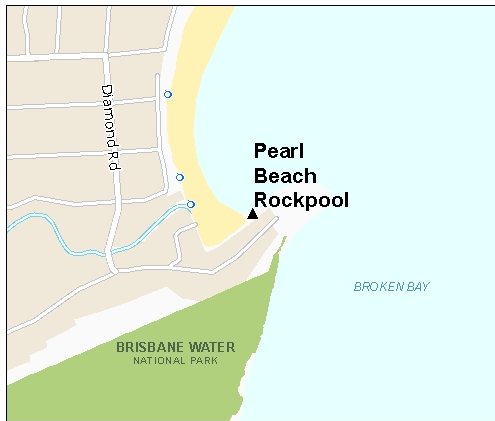


Water quality in response to rainfall



# Pearl Beach Rockpool

Beach grade: **G**



Pearl Beach Rockpool is a constructed ocean pool at the southern end of Pearl Beach.

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

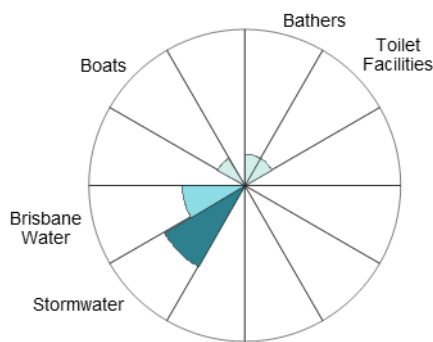
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit in response to little or no rain, and regularly after 10 mm or more.

The site has been monitored since 2004.

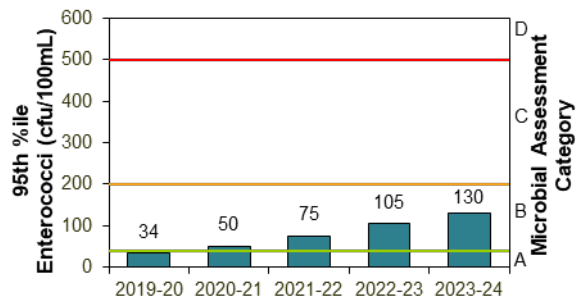
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean baths	Feb 2021 to Apr 2024	91%	100	Stable

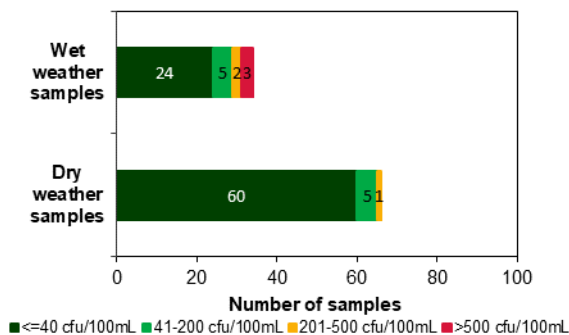
## Sanitary inspection: Moderate



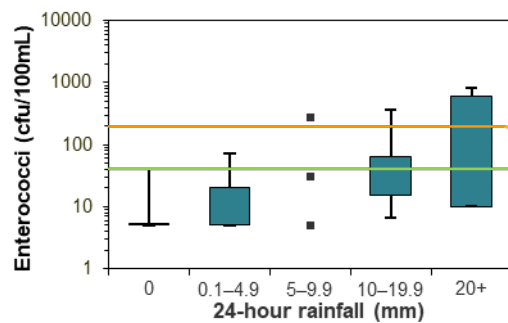
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Davistown Baths

Beach grade: P



The Davistown Baths are a netted swimming enclosure in the channel between Brisbane Water and the Kincumber Broadwater.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including stormwater and from elsewhere within Brisbane Water.

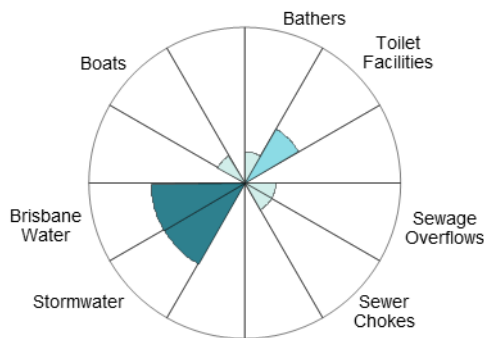
Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after no rain, and regularly after rain.

The site has been monitored since 2004.

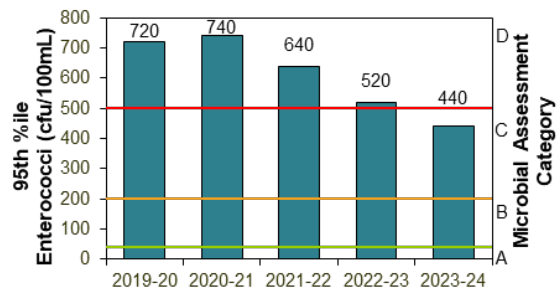
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Mar 2021 to Apr 2024	63%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

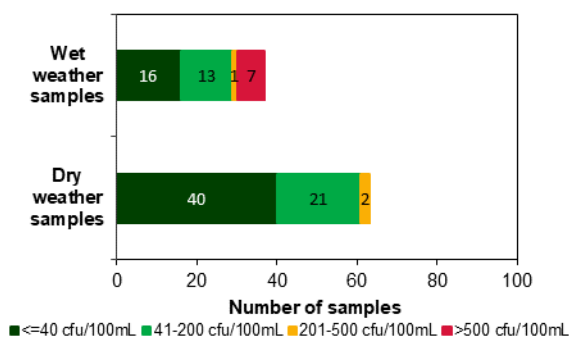
## Sanitary inspection: Moderate



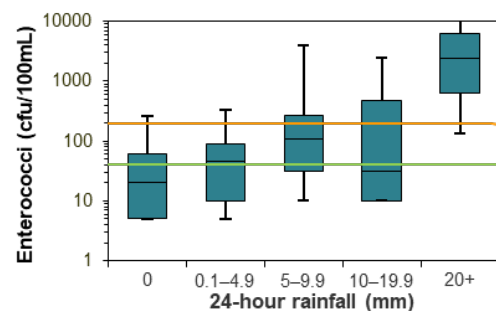
## Microbial Assessment Category: C



## Dry and wet weather water quality

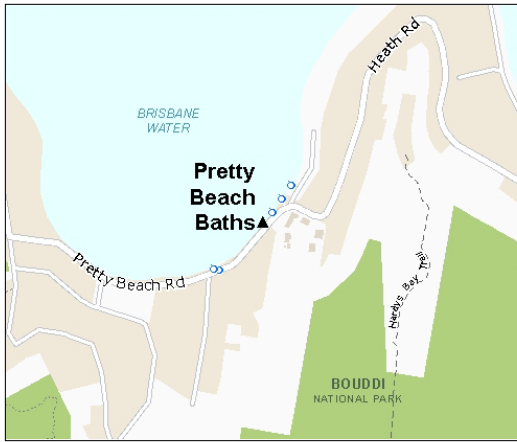


## Water quality in response to rainfall



# Pretty Beach Baths

Beach grade: P



See ‘How to read this report’ for key to map.

Pretty Beach Baths is a netted swimming enclosure in Brisbane Water near the entrance to Broken Bay.

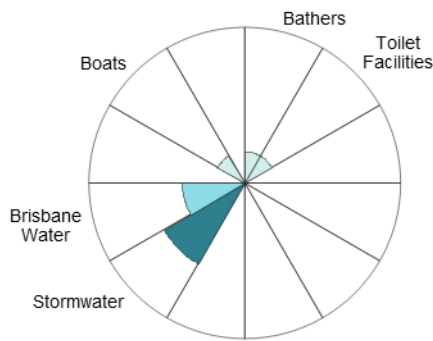
The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including stormwater.

Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit in response to little or no rain, and regularly after 5 mm or more.

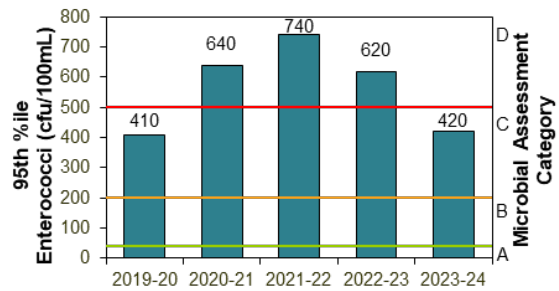
The site has been monitored since 2004.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Mar 2021 to Apr 2024	76%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

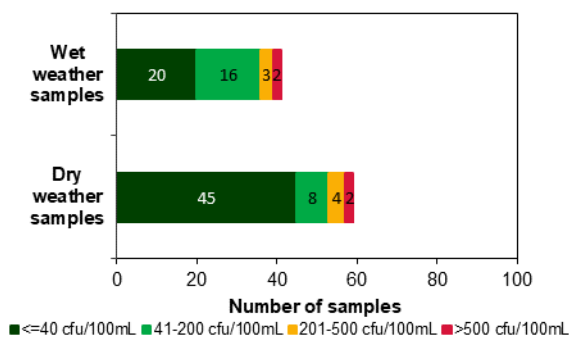
## Sanitary inspection: Moderate



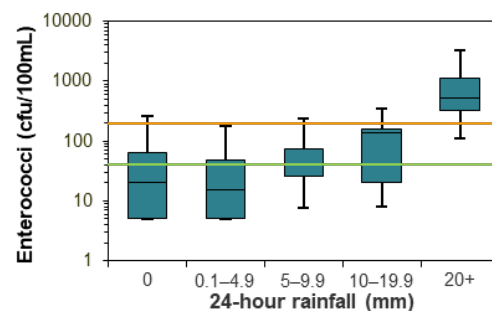
## Microbial Assessment Category: C



## Dry and wet weather water quality

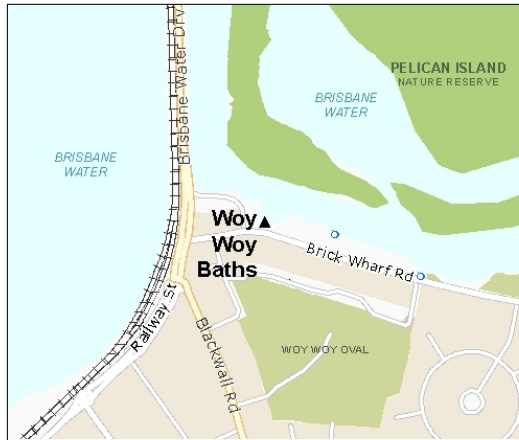


## Water quality in response to rainfall



# Woy Woy Baths

Beach grade: **G**



Woy Woy Baths is a netted swimming area located in Woy Woy channel in Brisbane Water.

The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination including stormwater and from elsewhere within Brisbane Water.

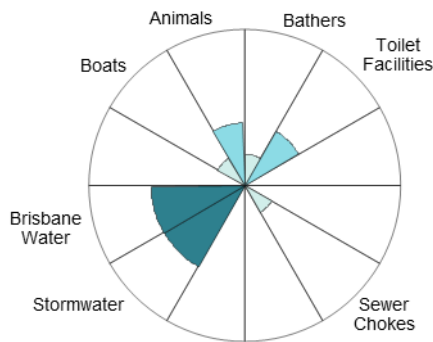
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and often after rain.

The site has been monitored since 2004.

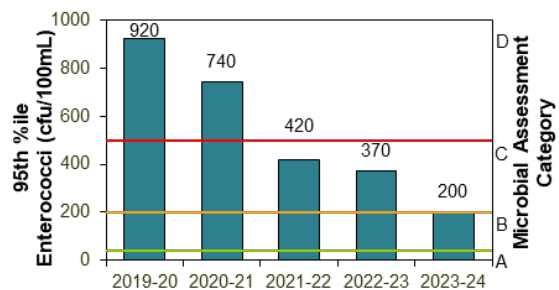
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Mar 2021 to Apr 2024	84%	100	Improved 

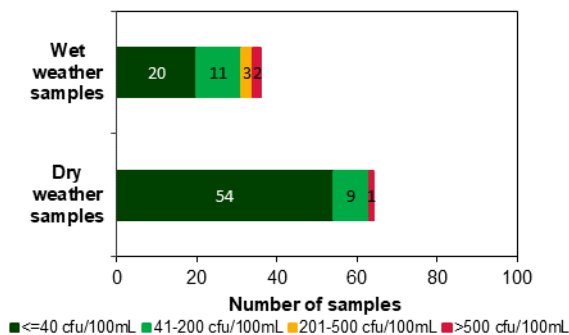
## Sanitary inspection: Moderate



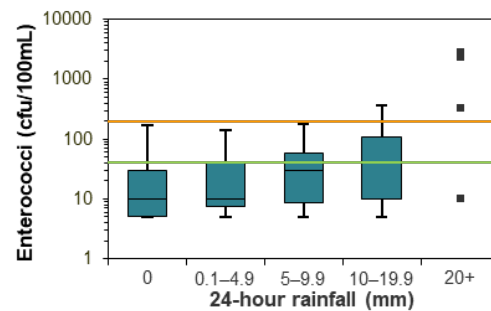
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Yattalunga Baths

Beach grade: P



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

Yattalunga Baths is a netted swimming enclosure located in the upper reaches of Brisbane Water.

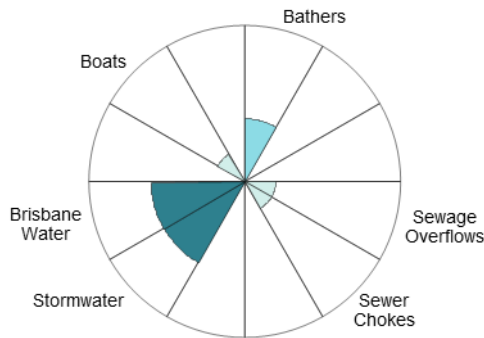
The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including stormwater and from elsewhere within Brisbane Water.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and often after rain.

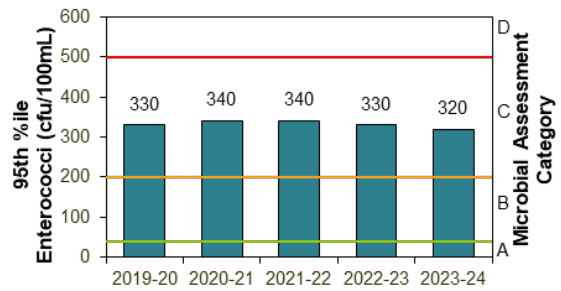
The site has been monitored since 2004.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Mar 2021 to Apr 2024	78%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

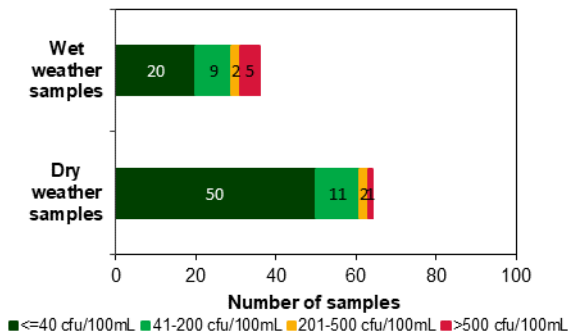
## Sanitary inspection: Moderate



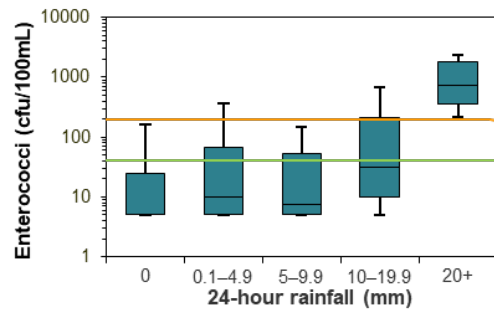
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# 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 5 grades ranging from Very Good to Very Poor:

### 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

### 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 3 days at estuarine sites

### 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 3 days following rainfall or if there are signs of pollution such as discoloured water or odour or debris in the water

Some 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 the catchment.

### **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 3 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 almost all of the time.

## Follow Up

Sometimes a location's sanitary inspection and water quality data produce incongruent results. These locations are classified as 'Follow Up'. Further assessment will be required to obtain the necessary data to provide a definite classification in accordance with national guidelines.

### **The guidelines**

The National Health and Medical Research Council's guidelines for managing risks in recreational water (NHMRC 2008) were adopted for use in New South Wales 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 (WA Department of Health 2007).

## Enterococci

**The national guidelines advocate the use of enterococci as the single preferred faecal indicator in recreational 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 (Standards Australia 2007).

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

Beach Suitability Grades are determined by using the following matrix:

		Microbial Assessment Category			
		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

\* Follow up occurs when sanitary inspection and water quality data produce potentially incongruent results; further assessment will be required.

Using the Beach Suitability Grade classification matrix, sites assigned a moderate Sanitary Inspection Category can only be rated as Good or Poor, with no option of Fair grades. This can create the impression of a large change in water quality when in fact there need only be a slight increase in bacterial counts to push it over the threshold, with no significant increase in the risk to public health.

### Microbial Assessment Category (MAC)

There are 4 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 (Wyer et al. 1999).

### Risk of illness associated with Microbial Assessment Categories

Category	Enterococci (cfu/100 mL)	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 illness; AFR = acute fever and rash

### 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 4 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 New South Wales 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. The WA Department of Health recommends a minimum of 65 samples, collected from a particular site over 5 consecutive years, to provide sufficient confidence and reliability in the 95th percentile data output. 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 the WA Government's 'Environmental waters publications' webpage, under *Forms and templates*.

## Sanitary Inspection Category (SIC)

More information about the **sanitary inspection** process is available in the Beachwatch Protocol for assessment and management of microbial risks in recreational waters, found on the department's website.

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.

The main sources of faecal contamination considered in the sanitary inspection are: bathers, toilet facilities, wastewater treatment plants (WWTPs), sewage overflows, sewer chokes, onsite systems, wastewater re-use, stormwater, river discharge, lagoons, boats and animals.

Rivers, lakes and estuaries themselves can be potential sources of faecal contamination to sites located in these waterbodies, with contaminated water from upstream or surrounding areas impacting water quality at the swimming location. This source is captured in river discharge or lagoon category, and shown as the waterbody in the sanitary inspection charts.

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



Stormwater drain flow

Photo:

Beachwatch/DCCEEW

Stormwater in urban areas often contains sewage from leakages, overflows or sewer chokes when the sewerage system fails.

Sewage overflows can occur in wet weather when the network has exceeded capacity due to rainwater entering the system. The mix of sewage and rainwater discharges from designated overflow points and drains to waterways, usually via the stormwater system. Overflows from the sewerage system can also occur in dry weather due to mechanical failure or power outage.

Sewer chokes occur due to blockages in the pipes usually due to tree roots, oil, grease or debris. This causes sewage to back up and escape via sewer inspection points, designed overflow structures or cracks in the pipes, then drain to waterways, usually via the stormwater system.

## Explanation of tables

Each region contains tables listing all monitored swimming sites including site type, beach grade and change in grade from the previous year.

The following symbols are used to show the change in beach grade from the previous year:



Stable



Improved



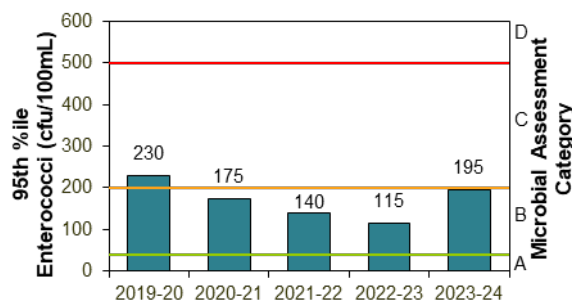
Declined

A provisional grade indicates the assessment is based on limited data collected during the assessment period and should not be compared to the beach grade from the previous year.

## Explanation of graphs, charts, and information bars on beach pages

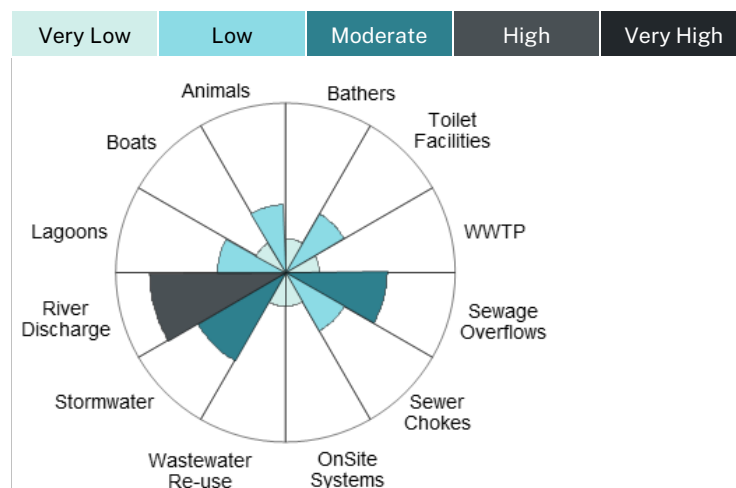
### Microbial Assessment Category (MAC) chart

On each beach page, the MACs for the last 5 years are displayed on a simple bar chart. The MAC for the current year is based on enterococci data collected during the assessment period. The bars are labelled with the 95th percentile value for each year and the thresholds dividing the A, B, C and D categories are marked in green, amber and red for reference.



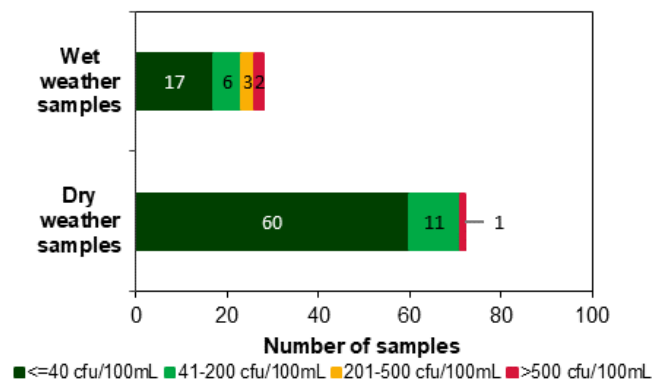
### Sanitary Inspection Category (SIC) chart

The results of the sanitary inspection for each swimming location are presented in a radar pie chart. The chart 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 segment, ranging from very low (lightest colour) to very high (darkest colour) as shown below. The sum of these contributions is the overall likelihood, or Sanitary Inspection Category.



## Wet and dry weather water quality chart

Enterococci levels in wet and dry weather conditions are presented for each swimming location as a bar graph. All data collected during the assessment period is included in the analysis. Dry weather is defined as no rainfall recorded in the previous 24 hours. Each bar is colour coded to show the number 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 as dark green, light green, amber and red respectively.

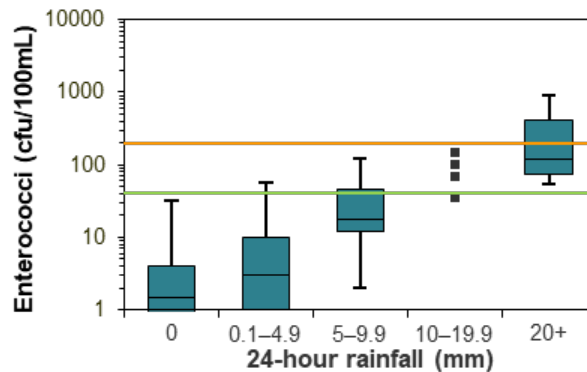


It is expected that swimming sites with lower levels of flushing will show some elevated bacterial results in dry weather samples (no rainfall in the previous 24 hours) due to the longer time needed to recover from a rainfall event. At some estuarine and lake/lagoon swimming locations the impacts of stormwater pollution on beach water quality may be detected up to 3 days after rainfall.

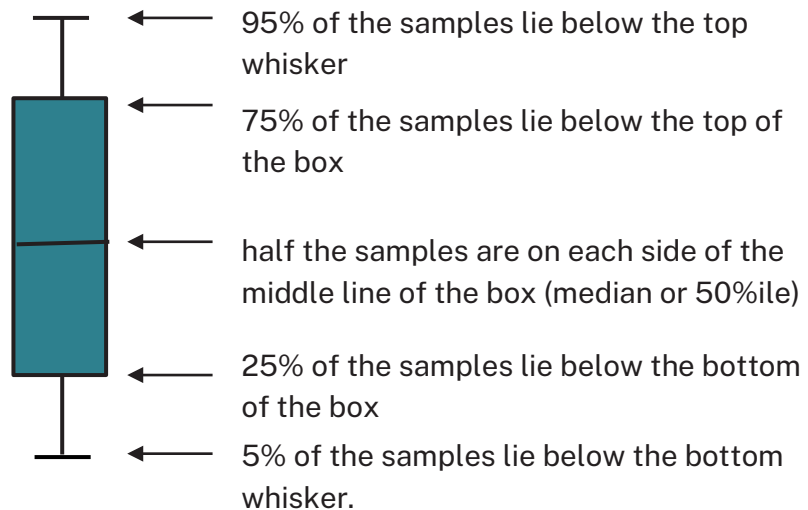
## Water quality in response to rainfall

Trends in enterococci levels in response to rainfall are shown using a box plot. 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 5 years of monitoring. Rainfall data were obtained from rain gauges situated close to the sample site and are 24-hour totals to 9 am on the day of sampling. If there are fewer than 5 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:



## Information bars

Information bars on each beach page provide a summary of details about the swimming site.
















The **assessment period** shows the timeframe in which the water samples were collected. The NHMRC guidelines state beach grades should be determined from the most recent 100 water quality results collected within a 5-year period. The assessment period varies between sites depending on sampling frequency.

Dry weather samples suitable for swimming (**dry weather swimmability**) shows the percentage of water samples with enterococci levels below 40 cfu/100 mL. Dry weather is defined as no rainfall in the previous 24 hours.

Swimming sites with lower levels of flushing often have a lower percentage of dry weather samples within the safe swimming limit due to the impacts of rainfall detected up to 3 days after the event.

## Explanation of maps

A map of individual swimming locations is presented on each beach page. The scale of the maps is 1:10,000. 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 Life Saving Club
	Wastewater Treatment Plant
	Sewage Pumping Station
	Sewage Overflow
	Stormwater Drain
	Water
	Baths
	National Park/Reserve/ Other Park
	Built-up Area
	Sand
	Roads
	Major Roads
	Baths – Netted Area
	Breakwater/Wharf

## References

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

Standards Australia (2007) *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.

WA Department of Health (2007), *Microbial 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, [ww2.health.wa.gov.au/Articles/A\\_E/Environmental-waters-publications](http://ww2.health.wa.gov.au/Articles/A_E/Environmental-waters-publications), accessed 23/06/23.

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.

## More information

- [Beachwatch NSW on X \(formerly Twitter\)](#)
- [Beachwatch NSW on Facebook](#)
- [Beachwatch webpage](#)
- [Coastal management program progress](#)
- [Sanitary inspection of beaches](#)
- [Subscribe to daily pollution forecast emails](#)
- [Towards Safer Swimming: Terrigal Beach and Haven](#)
- [Tuggerah Lakes Water Quality](#)
- [WA Government environmental water publications](#)
- [Central Coast Council's audit of sewer and stormwater network and remediation works](#)



## Beachwatch

# State of the beaches 2023–24

Sydney region

Department of Climate Change,  
Energy, the Environment and Water



## Acknowledgement of Country

Department of Climate Change, Energy, the Environment and Water acknowledges the Traditional Custodians of the lands where we work and live.

We pay our respects to Elders past, present and emerging.

This resource may contain images or names of deceased persons in photographs or historical content.



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Artist and designer Nikita Ridgeway from Aboriginal design agency Boss Lady Creative Designs created the People and Community symbol.

Cover photo: Tamarama Beach, Sydney. Beachwatch/DCCEEW

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Recreational water quality has been monitored in the Sydney region since 1989 by the Department of Climate Change, Energy, the Environment and Water's Beachwatch program and since 2022 by Blue Mountains City Council under the Beachwatch Partnership Program. This report summarises the performance of 101 swimming sites in the Sydney region, providing a long-term assessment of how suitable a site is for swimming. Monitored sites include ocean beaches, a lagoon, a rockpool, estuarine sites in Pittwater, Sydney Harbour, Botany Bay, lower Georges River and Port Hacking and freshwater creeks in the Blue Mountains.

In 2023–2024, 67% of swimming sites in the Sydney region were graded as Good or Very Good, including 33 ocean beaches. These sites were suitable for swimming for most or almost all of the time. This is a decline in overall performance from the previous year, and reflects the wet weather impacts, including significant rainfall and flooding in April. Despite some Poor grades, the majority of monitored sites were still suitable for swimming during dry weather. The Sydney region has a large proportion of lagoon and estuarine swimming locations, which have been most susceptible to impacts from significant rain events.

# Sydney region summary

## 2023–2024



Turimetta Beach

Photo:  
Beachwatch/DCCEEW

### Monitoring water quality for swimming in New South Wales

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 New South Wales 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 (2–4 years’ worth of data depending on the sampling frequency) and a risk assessment of potential pollution sources.

See the section on **Quality assurance** in the Statewide Summary for results of the quality assurance program.

Recreational water quality has been monitored in the Sydney region by the Department of Climate Change, Energy, the Environment and Water’s Beachwatch program since 1989 and Blue Mountains City Council since 2022 under the Beachwatch Partnership Program.

A **quality assurance** program ensures the information collected and reported by Beachwatch is accurate and reliable.

During 2023–2024, 101 swimming sites were monitored including ocean beaches, a lagoon, a rockpool, estuarine sites in Pittwater, Sydney Harbour, Botany Bay, lower Georges River and Port Hacking, and freshwater sites in the Blue Mountains.

See the section on **How to read this report** on page 134 for an explanation of the graphs, tables and Beach Suitability Grades.

## Rainfall impacts

Rainfall is the major driver of pollution to recreational waters, generating stormwater runoff and triggering untreated 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 2023–2024 are based on water quality data collected over the last 2–4 years.

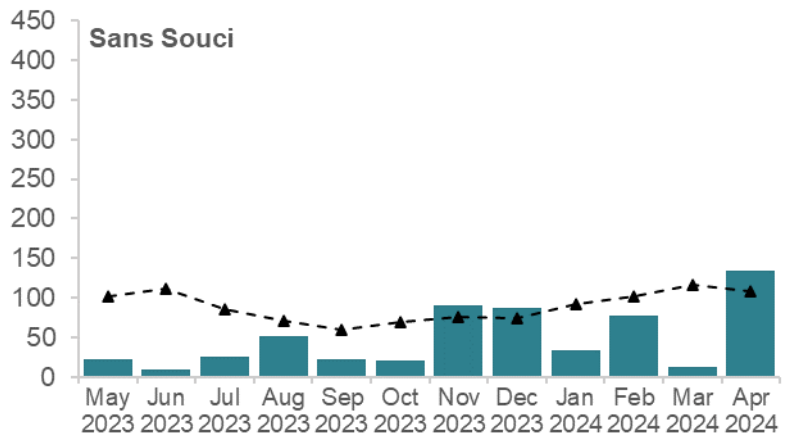
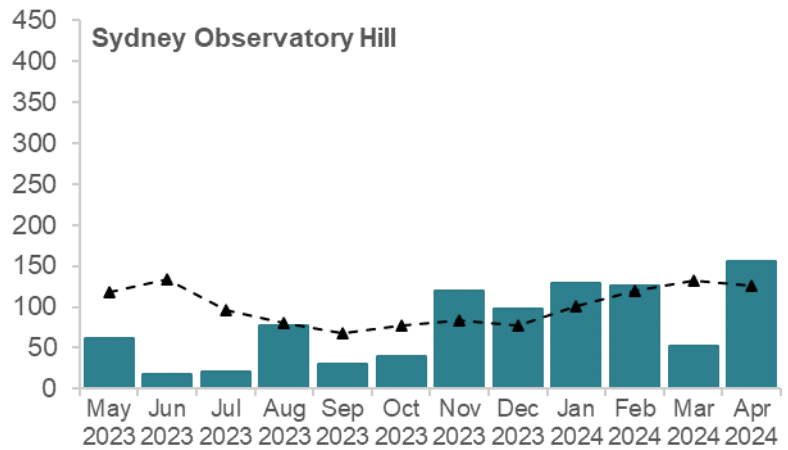
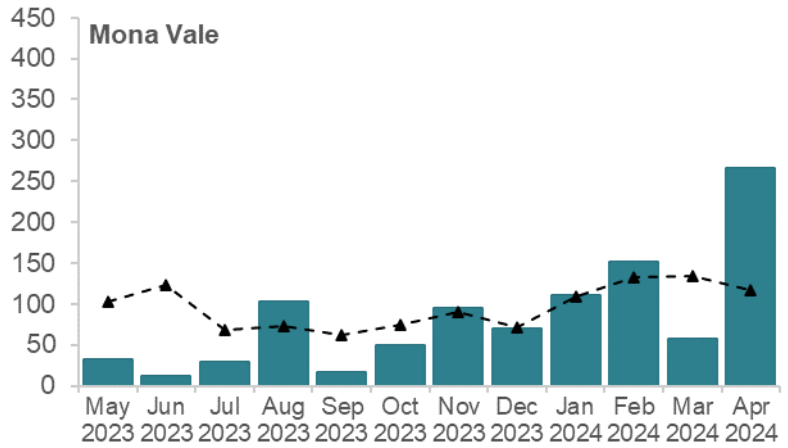
Rainfall over this period has been diverse:

- 2020–2021: variable rainfall with some very wet months over summer and early autumn
- 2021–2022: varied rainfall, with extreme wet weather conditions over summer and early autumn, and significant flooding
- 2022–2023: varied rainfall, with some very wet months over winter and spring, including the wettest July on record
- 2023–2024: average to below average rainfall, and a wet April 2024, particularly in the north.

Rainfall in the Sydney region was generally average to below average for the 2023–2024 reporting year. While rainfall in winter and spring 2023 was well below the long-term average, rainfall in summer and early autumn returned to average conditions. Above average rainfall fell in April, but was wetter in northern Sydney than other areas. Mona Vale recorded its highest April daily rainfall of 140.2 mm on 6 April, and highest April total rainfall in 34 years with more than double the long-term monthly average of 265.6 mm.

Significant rainfall in early April triggered localised flooding and made microbial water quality unsuitable for swimming at some sites. The most affected areas were in estuaries and lagoons, which have a lower level of flushing and took longer to recover from the stormwater inputs than the ocean beaches. The water quality at some ocean beaches located near open lagoons or rivers was also impacted by stormwater and floodwaters discharging from these sources.

**Sydney region rainfall**



--▲-- Long-term average

## Marine algal blooms



Marine algal bloom present in the water

Photo: Chad Weston/  
NPWS, DCCEEW

Water NSW reported several occurrences of marine algal blooms of *Noctiluca scintillans* in Port Hacking and Five Dock Bay during July and October 2023. Marine algae advisories were issued on the Beachwatch and Water NSW websites.

The appearance of **marine algae** is sometimes mistaken for **sewage contamination** or **oil slicks**, due to a strong odour and red or brown discolouration in the water caused by the blooms.

As a precaution, direct contact with algae should be avoided as it can cause skin and eye irritations. The marine algal blooms dissipated with changes in tide and wind conditions.

Beachwatch issues daily **beach pollution forecasts** to enable beach goers to make informed decisions about where and when to swim.

Pollution forecasts for the Sydney region can be accessed via the Beachwatch website, email subscription, X (formerly Twitter) and Facebook.

### 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 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

Swimming site	Site type	Beach Suitability Grade	Change
<b>Northern Sydney – Ocean beaches</b>			
Palm Beach	Ocean beach	VG	○
Whale Beach	Ocean beach	VG	○
Avalon Beach	Ocean beach	VG	○
Bilgola Beach	Ocean beach	G	○
Newport Beach	Ocean beach	VG	↑
Bungan Beach	Ocean beach	VG	↑
Mona Vale Beach	Ocean beach	VG	↑
Warriewood Beach	Ocean beach	G	○
Turimetta Beach	Ocean beach	G	○
North Narrabeen Beach	Ocean beach	G	○
Narrabeen Lagoon (Birdwood Park)	Lagoon	P	○
Bilarong Reserve	Lagoon	P	○
Collaroy Beach	Ocean beach	G	○
Long Reef Beach	Ocean beach	G	○
Dee Why Beach	Ocean beach	G	○
North Curl Curl Beach	Ocean beach	G	○
South Curl Curl Beach	Ocean beach	G	○
Freshwater Beach	Ocean beach	G	○
Queenscliff Beach	Ocean beach	G	○
North Steyne Beach	Ocean beach	G	○
South Steyne Beach	Ocean beach	G	○
Shelly Beach	Ocean beach	P	↓

Swimming site	Site type	Beach Suitability Grade	Change
<b>Northern Sydney – Pittwater</b>			
Barrenjoey Beach	Estuarine		
Paradise Beach Baths	Estuarine		
Clareville Beach	Estuarine		
Taylor's Point Baths	Estuarine		
Bayview Baths	Estuarine		
Elvina Bay	Estuarine		
North Scotland Island	Estuarine		
South Scotland Island	Estuarine		
The Basin	Estuarine		
Great Mackerel Beach	Estuarine		
<b>Central Sydney – Ocean beaches</b>			
Bondi Beach	Ocean beach		
Tamarama Beach	Ocean beach		
Bronte Beach	Ocean beach		
Clovelly Beach	Ocean beach		
Gordons Bay	Ocean beach		
Coogee Beach	Ocean beach		
Maroubra Beach	Ocean beach		
South Maroubra Beach	Ocean beach		
South Maroubra Rockpool	Ocean baths		
Malabar Beach	Ocean beach		
Little Bay Beach	Ocean beach		

Swimming site	Site type	Beach Suitability Grade	Change
<b>Central Sydney – Sydney Harbour</b>			
Camp Cove	Estuarine		
Watsons Bay	Estuarine		
Parsley Bay	Estuarine		
Nielsen Park	Estuarine		
Rose Bay Beach	Estuarine		
Murray Rose Pool	Estuarine		
Dawn Fraser Pool	Estuarine		
Chiswick Baths	Estuarine		
Cabarita Beach	Estuarine		
Woolwich Baths	Estuarine		
Tambourine Bay	Estuarine		
Woodford Bay	Estuarine		
Greenwich Baths	Estuarine		
Hayes St Beach	Estuarine		
Clifton Gardens	Estuarine		
Balmoral Baths	Estuarine		
Edwards Beach	Estuarine		
Chinamans Beach	Estuarine		
Northbridge Baths	Estuarine		
Davidson Reserve	Estuarine		
Gurney Crescent Baths	Estuarine		
Clontarf Pool	Estuarine		
Forty Baskets Pool	Estuarine		

Swimming site	Site type	Beach Suitability Grade	Change
<b>Central Sydney – Sydney Harbour (continued)</b>			
Fairlight Beach	Estuarine		
Manly Cove	Estuarine		
Little Manly Cove	Estuarine		
<b>Southern Sydney – Ocean beaches</b>			
Boat Harbour	Ocean beach		
Greenhills Beach	Ocean beach		
Wanda Beach	Ocean beach		
Elouera Beach	Ocean beach		
North Cronulla Beach	Ocean beach		
South Cronulla Beach	Ocean beach		
Shelly Beach	Ocean beach		
Oak Park	Ocean beach		
<b>Southern Sydney – Botany Bay and lower Georges River</b>			
Silver Beach	Estuarine		
Como Baths	Estuarine		
Jew Fish Bay Baths	Estuarine		
Oatley Bay Baths	Estuarine		
Carss Point Baths	Estuarine		
Sandringham Baths	Estuarine		
Dolls Point Baths	Estuarine		
Ramsgate Baths	Estuarine		
Monterey Baths	Estuarine		
Brighton-Le-Sands Baths	Estuarine		

Swimming site	Site type	Beach Suitability Grade	Change
Kyeemagh Baths	Estuarine		
<b>Southern Sydney – Botany Bay and lower Georges River (continued)</b>			
Foreshores Beach	Estuarine		
Yarra Bay	Estuarine		
Frenchmans Bay	Estuarine		
Congwong Bay	Estuarine		
<b>Southern Sydney – Port Hacking</b>			
Jibbon Beach	Estuarine		
Horderns Beach	Estuarine		
GyMEA Bay Baths	Estuarine		
Lilli Pilli Baths	Estuarine		
Gunnamatta Bay Baths	Estuarine		
<b>Western Sydney – Blue Mountains Council</b>			
Megalong Creek	Freshwater		
Yosemite Creek – Minnehaha Falls	Freshwater		
Wentworth Falls Lake – Jetty	Freshwater		
Wentworth Falls Lake – Beach	Freshwater		

Beach Suitability Grade					Change		
							
Very Good	Good	Fair	Poor	Very Poor	Improved	Stable	Declined

# Northern Sydney (Pittwater to Manly)



## Overall results

Twenty-eight of the 32 swimming sites were graded as Very Good or Good in 2023–2024. This is a very good result despite the slight decline in performance from the previous year.

### Percentage of sites graded as Very Good or Good

	2021–2022	2022–2023	2023–2024	Trend
Ocean beaches (20 sites)	100%	100%	<b>95%</b>	
Estuarine sites (10 sites)	90%	90%	<b>90%</b>	
Lake/lagoon sites (2 sites)	0%	0%	<b>0%</b>	

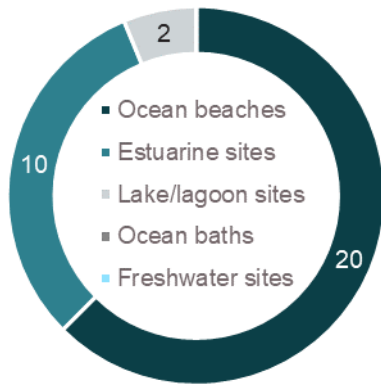
Beachwatch samples the ocean beaches and Narrabeen Lagoon every sixth day throughout the year, and estuarine beaches every sixth day between October and April, and monthly from May to September.

See the section on **How to read this report** on page 134 for an explanation of the graphs, tables and Beach Suitability Grades.

### Best beaches

Palm Beach, Whale Beach, Avalon Beach, Newport Beach, Bungan Beach, Mona Vale Beach and The Basin.

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



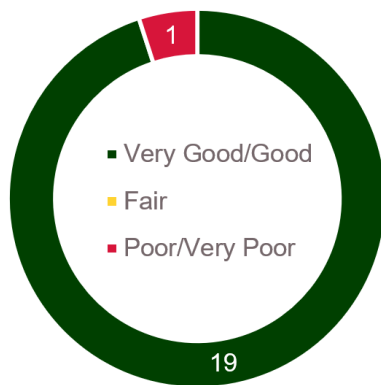
Site types in Northern Sydney region

Swimming sites monitored in the Northern Sydney region include ocean beaches, estuarine areas in Pittwater and lagoon sites in Narrabeen Lagoon, with each site type having a different response to rainfall-related impacts.

Estuarine and lagoon swimming sites did not perform as well as ocean beaches due to lower levels of flushing, which increase the time needed to disperse and dilute pollution inputs, taking longer to recover from stormwater events.

As a general precaution swimming should be avoided during and for at least one day after heavy rain at ocean beaches, and for up to 3 days in estuarine and lagoon areas, or if there are signs of stormwater pollution such as discoloured water or floating debris.

Swimming is not recommended at ocean beaches located near lagoon entrances if the lagoon is open, due to the possibility of pollution from the outflow.



Beach Suitability Grades for Northern Sydney ocean beaches

## Ocean beaches

Nineteen of the 20 ocean beaches were graded as Very Good or Good in 2023–2024.

Palm Beach, Whale Beach, Avalon Beach, Newport Beach, Bungan Beach and Mona Vale 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. Newport Beach, Bungan Beach and Mona Vale Beach were upgraded to Very Good from Good, due to improved microbial water quality.

Bilgola Beach, Warriewood Beach, Turimetta Beach, North Narrabeen Beach, Collaroy Beach, Long Reef Beach, Dee Why Beach, North Curl Curl Beach, South Curl Curl Beach, Freshwater Beach, Queenscliff Beach, North Steyne Beach and South Steyne Beach were graded as Good in 2023–2024. Water quality was frequently suitable for swimming during dry weather conditions, with elevated levels of enterococci recorded following heavy rainfall.

Shelly Beach was downgraded to Poor in 2023–2024, due to a decline in microbial water quality. Water quality at

this site has shown trends of declining microbial assessments over the last 6 years, and has crossed the threshold from Good to Poor. Despite this, 88% of samples collected during dry weather conditions were within the safe swimming limit.

It is recommended that swimming be avoided at ocean beaches during and for up to one day following rainfall, or if there are signs of pollution such as discoloured water, flowing drains or floating debris.



**Beach Suitability Grades for Northern Sydney estuarine beaches**

## Estuarine beaches

Nine of the 10 estuarine swimming sites in Pittwater were graded as Very Good or Good in 2023–2024.

The Basin was graded as Very Good. This site had excellent water quality and was suitable for swimming almost all of the time.

Barrenjoey Beach, Paradise Beach Baths, Clareville Beach, Taylors Point Baths, North Scotland Island, South Scotland Island, Elvina Bay and Great Mackerel Beach were graded as Good in 2023–2024. Great Mackerel Beach was downgraded to Good from Very Good in the previous year due to declined microbial water quality. Water quality at these sites was suitable for swimming most of the time, with elevated levels of enterococci mostly recorded following rainfall. Bacterial levels were occasionally elevated at Barrenjoey Beach during dry weather conditions.

Bayview Baths was graded as Poor, a consistent result with previous years. Elevated enterococci levels were occasionally recorded during dry weather conditions, and regularly after moderate to heavy rainfall. Water quality at this site can take longer to recover from stormwater events than at other Pittwater swimming sites due to lower levels of flushing.

## Lake/lagoon swimming sites



**Beach Suitability Grades for Northern Sydney lake/lagoon swimming sites**

The 2 swimming sites in Narrabeen Lagoon, Birdwood Park and Bilarong Reserve, continued to be graded as Poor in 2023–2024, as in previous years.

Water quality at Birdwood Park and Bilarong Reserve was often suitable for swimming during dry weather, with 76% and 58% of dry weather samples within the safe swimming limit, respectively. However, enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after little or no rainfall, and frequently after moderate to heavy rainfall.

Birdwood Park is located at the entrance to the lagoon and water quality at this site is influenced by wet weather events and whether the lagoon is open to the ocean. Discharge from Narrabeen Lagoon is a significant source of faecal contamination.

Bilarong Reserve in Narrabeen Lagoon retains pollution inputs because it is located away from the lagoon entrance and is not well flushed by clean ocean water. A significant source of faecal contamination is stormwater runoff to the lagoon.

The amount of time the lagoon is open or closed influences water quality at Birdwood Park and Bilarong Reserve lagoon sites. During periods of entrance closure, water quality is likely to decline as pollution inputs are not as readily dissipated or flushed. The lagoon entrance will open and close naturally depending on how much rainfall has occurred and how much sand has accumulated in the mouth. When there are very large accumulations of sand, the entrance will often close and stay closed until the sand is removed by Northern Beaches Council. Historically this process happens every 4–5 years, with the last sand clearance operation being completed in December 2021. With the adoption of the Narrabeen Lagoon Entrance Management Strategy in September 2022, council will be trialling more frequent but smaller sand clearance operations (every 2–3 years rather than 4–5 years).



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



Sampling sites and Beach Suitability Grades in Pittwater

# Palm Beach

Beach grade: **VG**



Palm Beach is 2.3 km long, with rock baths in the southern corner. Lifeguards patrol the beach from September to April.

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

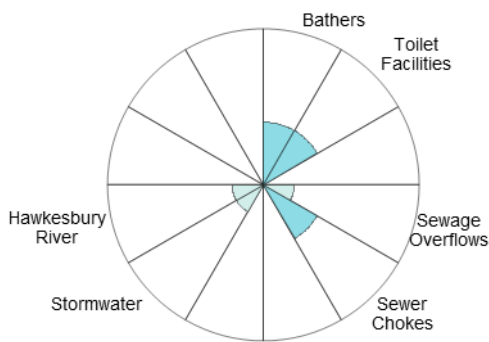
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after 10 mm or more of rain, and often after 20 mm or more.

See ‘How to read this report’ for key to map.

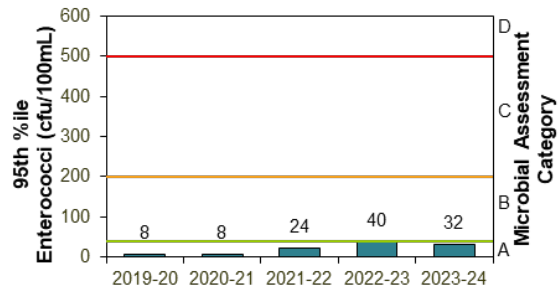
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	97%	100	Stable

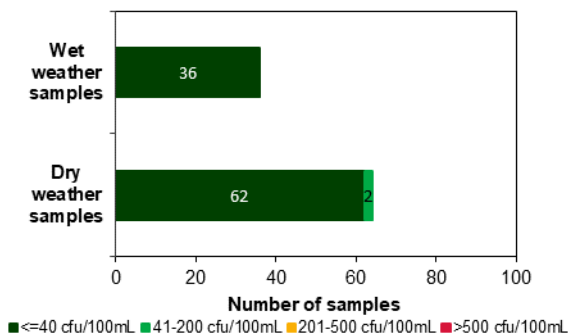
## Sanitary inspection: Low



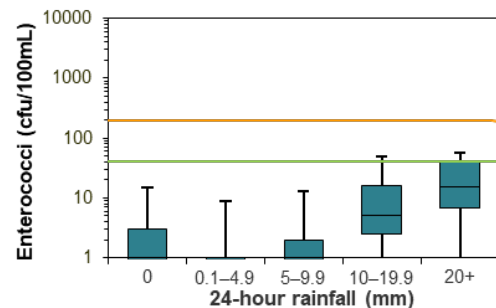
## Microbial Assessment Category: A



## Dry and wet weather water quality



## Water quality in response to rainfall



# Whale Beach

Beach grade: **VG**



Whale Beach is 600 m long, with rock baths at the southern rock platform. Lifeguards patrol the beach from September to April.

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

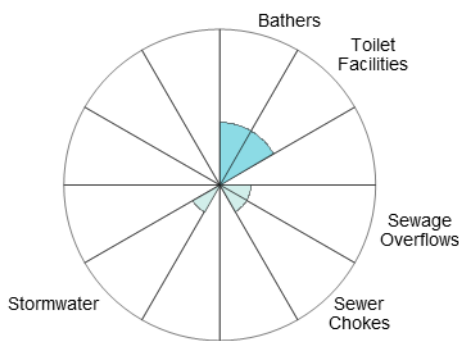
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after 10 mm or more of rain.

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

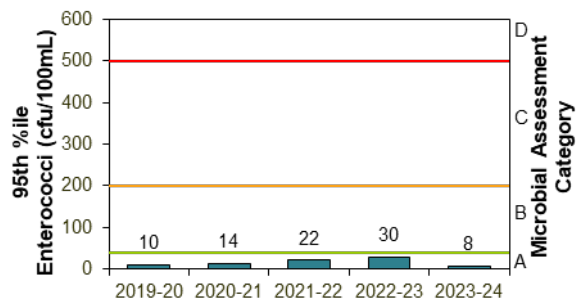
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status	
Ocean beach	Aug 2022 to Apr 2024	100%	100	Stable	○

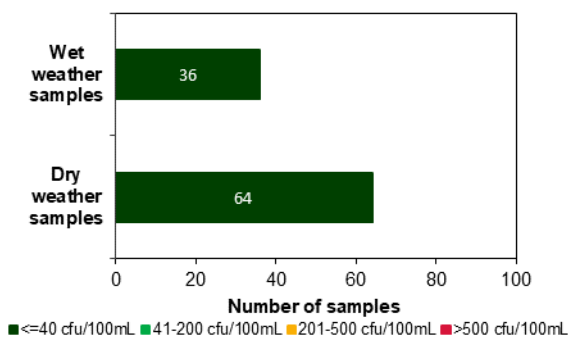
### Sanitary inspection: Low



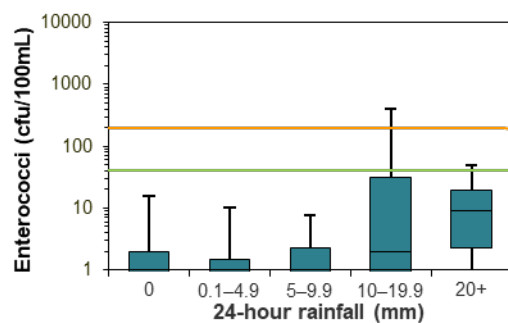
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Avalon Beach

Beach grade: **VG**



Avalon Beach is 500 m long and backed by a park and picnic area. Lifeguards patrol the beach from September to April.

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

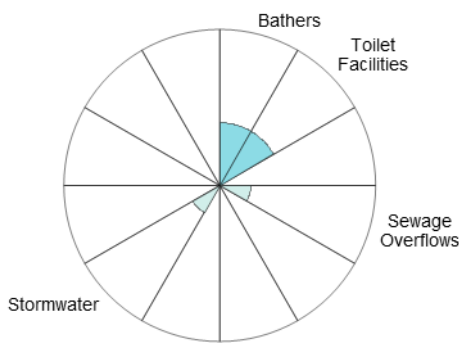
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit in response to 20 mm or more of rain.

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

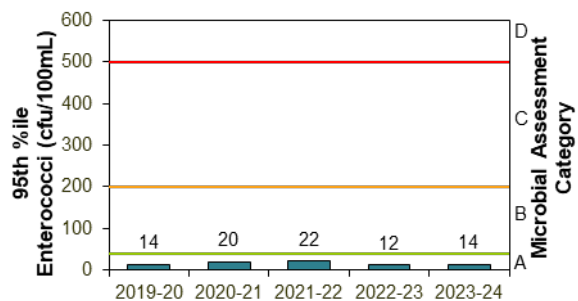
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	100%	100	Stable

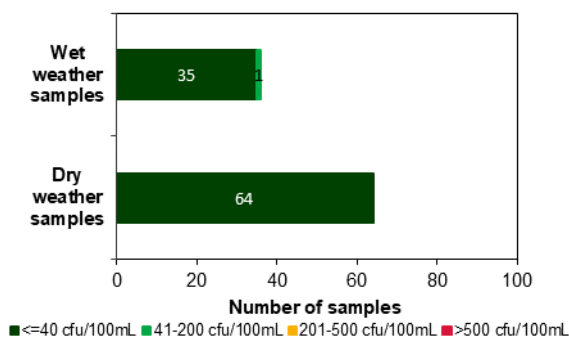
## Sanitary inspection: Low



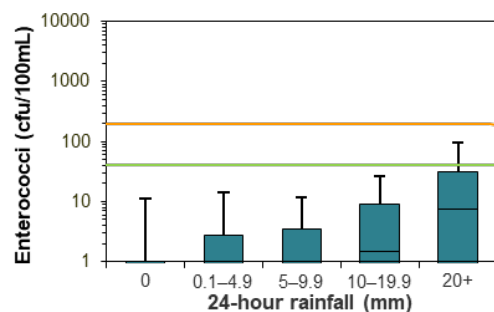
## Microbial Assessment Category: A



## Dry and wet weather water quality



## Water quality in response to rainfall



# Bilgola Beach

Beach grade: **G**



Bilgola Beach is 500 m long, with rock baths at the southern end. Lifeguards patrol the beach from September to April.

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

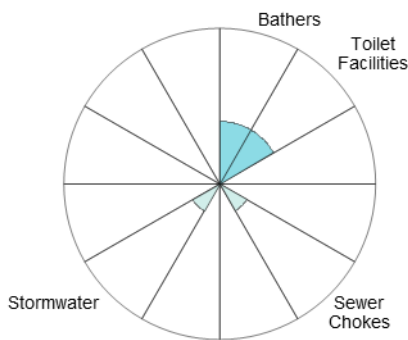
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after rain.

See ‘How to read this report’ for key to map.

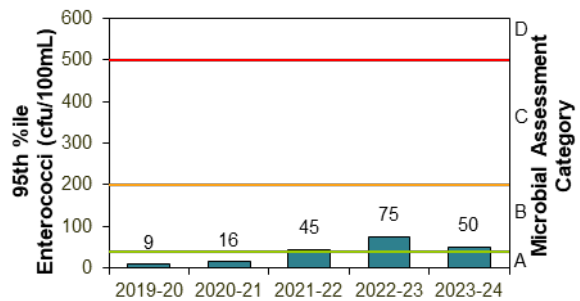
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	97%	100	Stable

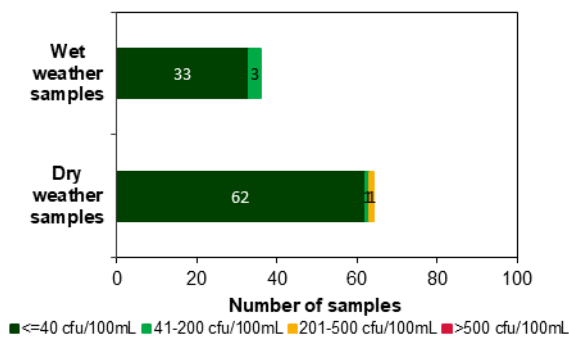
### Sanitary inspection: Low



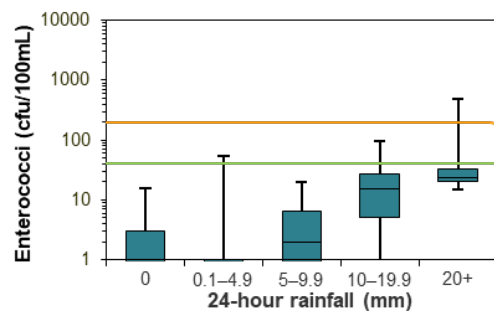
### Microbial Assessment Category: B



### Dry and wet weather water quality

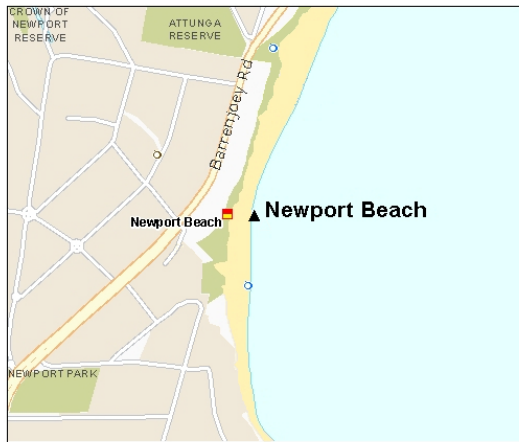


### Water quality in response to rainfall



# Newport Beach

Beach grade: **VG**




Newport Beach is an open, east facing beach around 1.3 km long. Lifeguards patrol the beach from September to April.

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

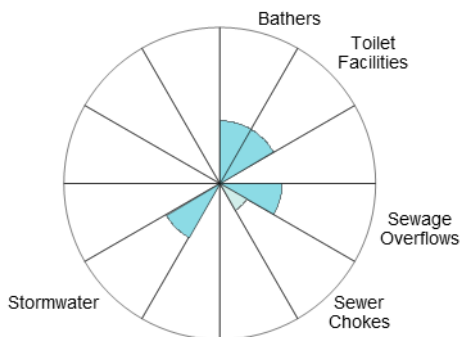
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after rain.

See ‘How to read this report’ for key to map.

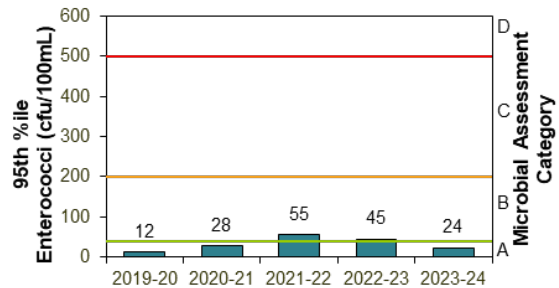
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	98%	100	Improved 

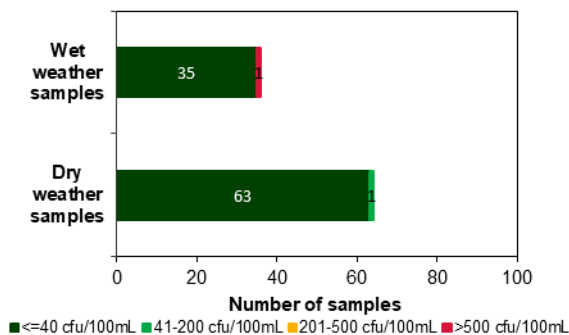
## Sanitary inspection: Low



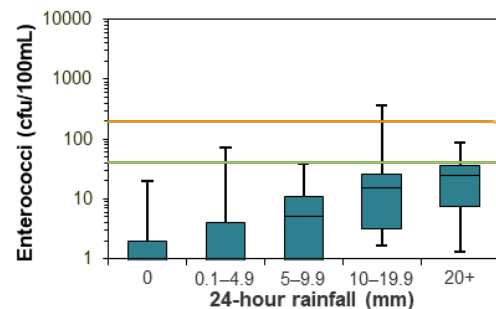
## Microbial Assessment Category: A



## Dry and wet weather water quality



## Water quality in response to rainfall



# Bungan Beach

Beach grade: **VG**



Bungan Beach is 600 m long and backed by a steep escarpment. Lifeguards patrol the beach from late December to the end of January.

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

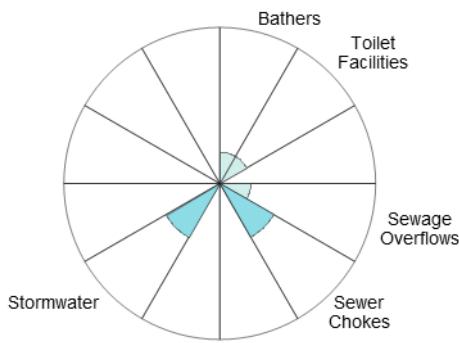
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit in response to light rain.

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

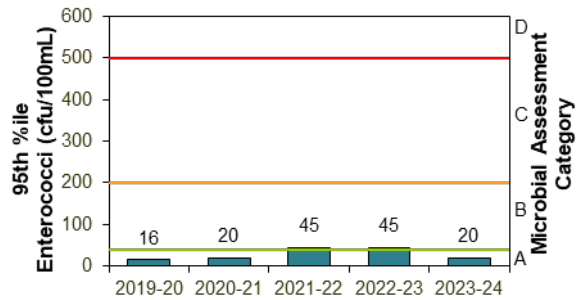
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	99%	100	Improved

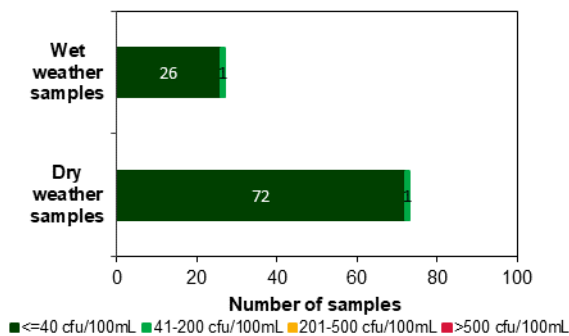
### Sanitary inspection: Low



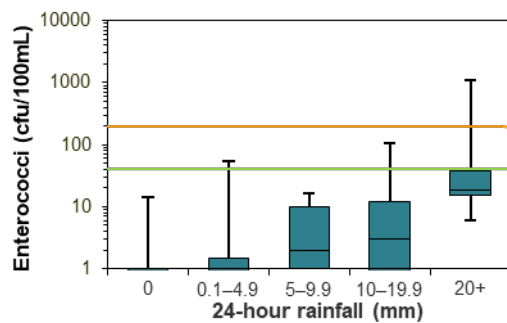
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Mona Vale Beach

Beach grade: **VG**



Mona Vale Beach is 1 km long. Lifeguards patrol the beach from September to April.

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

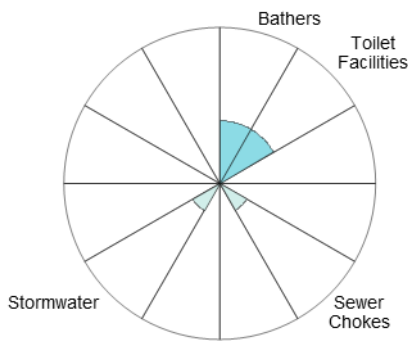
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and often after 20 mm or more.

See ‘How to read this report’ for key to map.

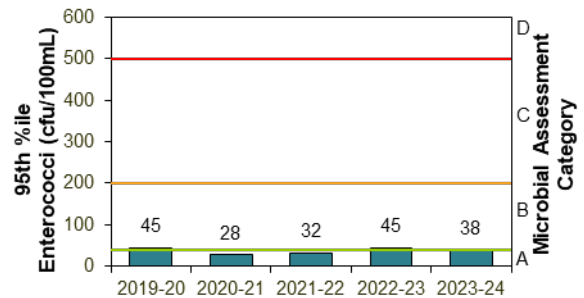
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	99%	100	Improved

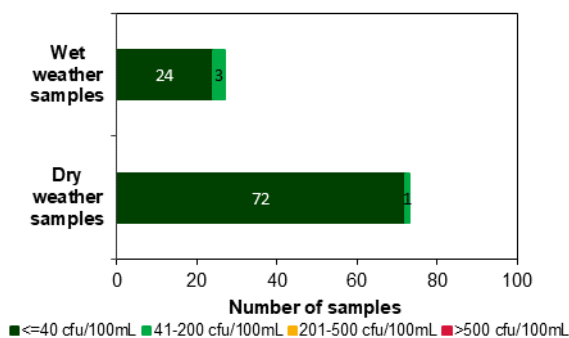
### Sanitary inspection: Low



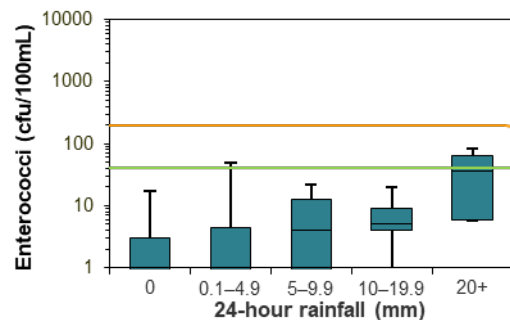
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Warriewood Beach

Beach grade: **G**



Warriewood Beach is 500 m long and located below a steep bluff. The beach is patrolled during holiday periods.

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

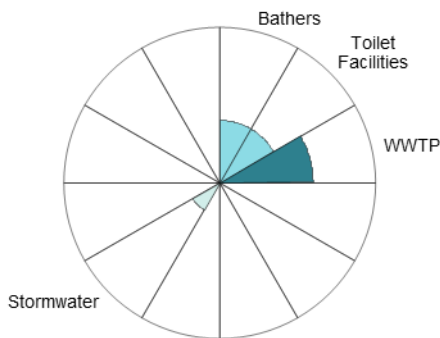
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after 5 mm or more of rain, and regularly after 20 mm or more.

The site has been monitored since 1989.

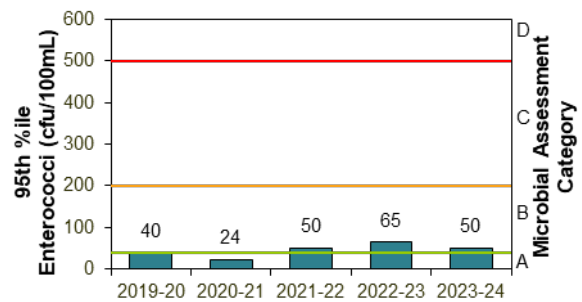
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	99%	100	Stable

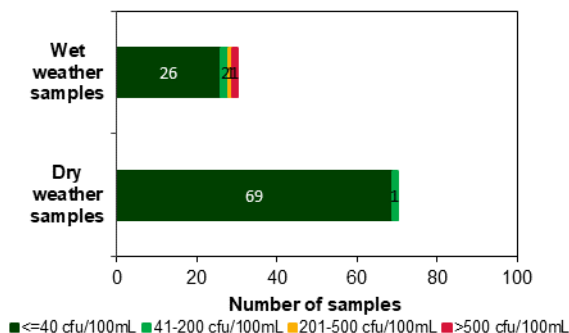
## Sanitary inspection: Moderate



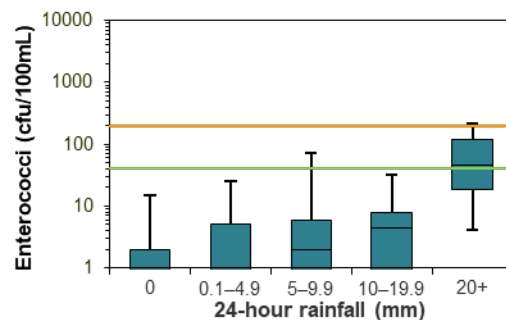
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Turimetta Beach

Beach grade: **G**



Turimetta Beach is 350 m long and is backed by steep bluffs. This beach is not patrolled by lifeguards.

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

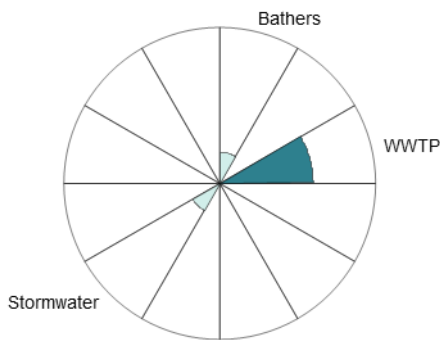
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and regularly after 20 mm or more.

The site has been monitored since 1994.

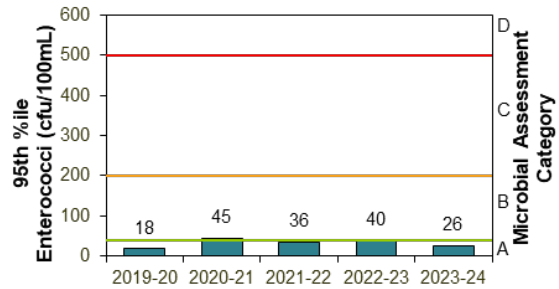
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	97%	100	Stable

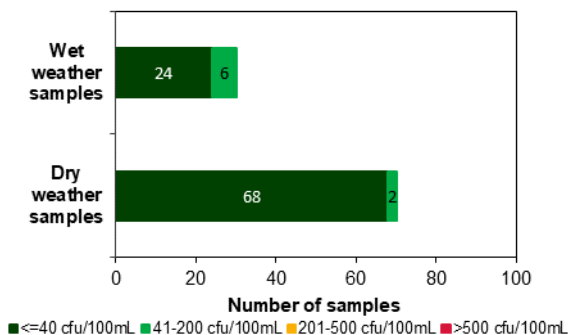
## Sanitary inspection: Moderate



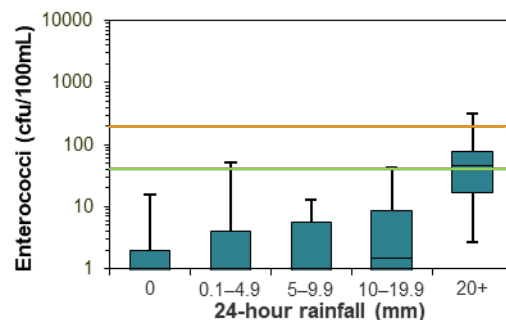
## Microbial Assessment Category: A



## Dry and wet weather water quality



## Water quality in response to rainfall



# North Narrabeen Beach

Beach 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 km long beach and is patrolled from September to April.

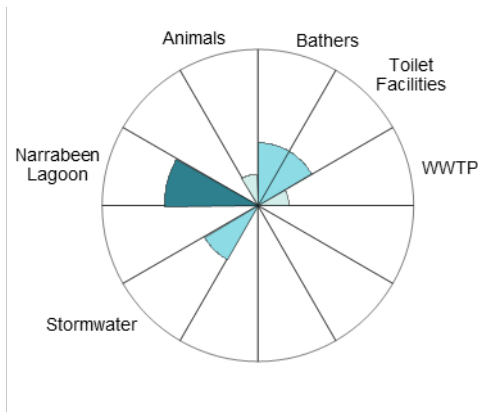
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination including discharge from Narrabeen Lagoon.

Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and regularly after 20 mm or more.

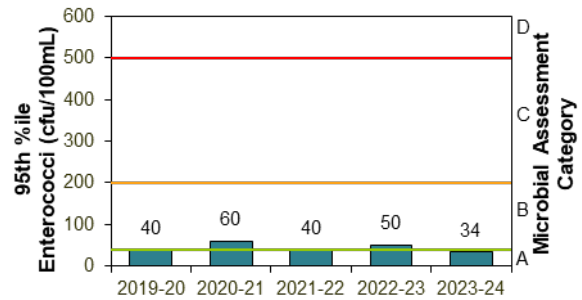
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	97%	100	Stable

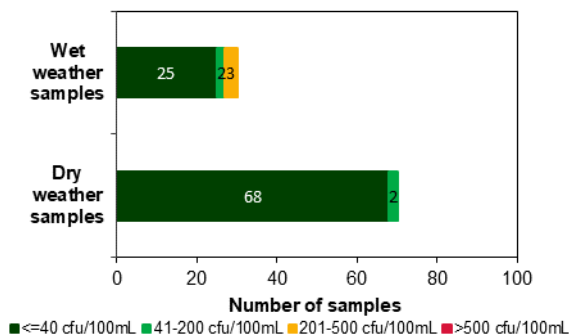
## Sanitary inspection: Moderate



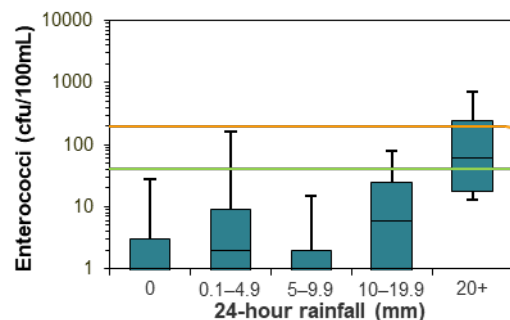
## Microbial Assessment Category: A



## Dry and wet weather water quality



## Water quality in response to rainfall



# Narrabeen Lagoon (Birdwood Park)

Beach grade: P



See ‘How to read this report’ for key to map.

The Birdwood Park swimming site is a sandy beach on the southern side of the entrance to Narrabeen Lagoon. The lagoon entrance has been periodically open and closed at times.

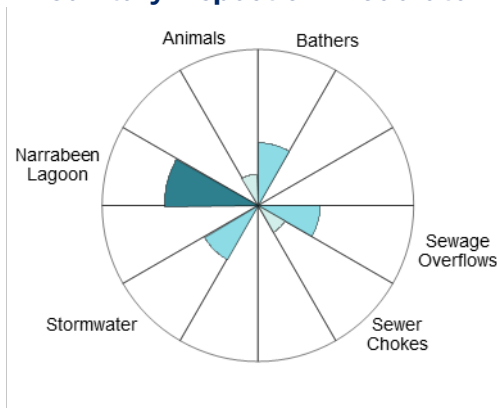
The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including from elsewhere within the lagoon.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and often after rain.

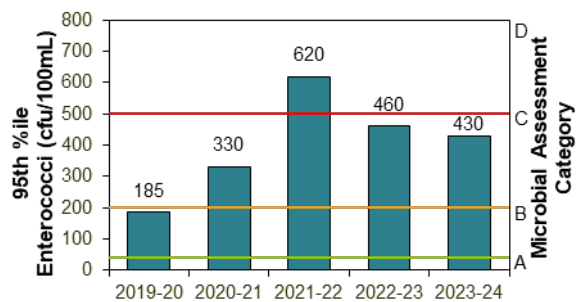
The site has been monitored since 2004.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Lagoon	Aug 2022 to Apr 2024	76%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

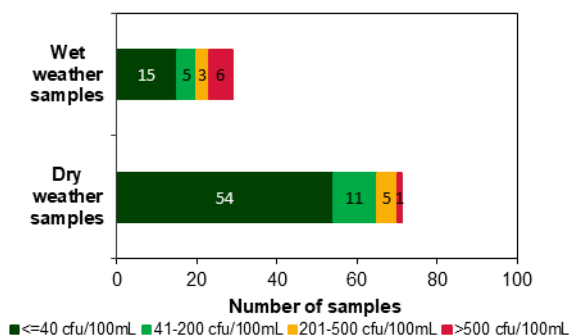
### Sanitary inspection: Moderate



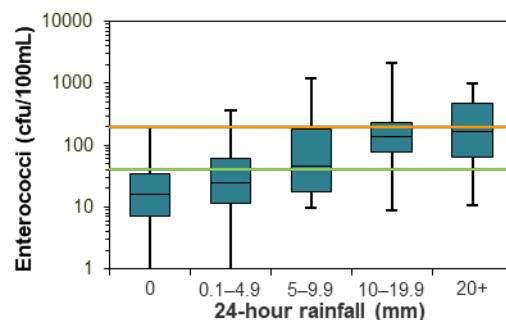
### Microbial Assessment Category: C



### Dry and wet weather water quality



### Water quality in response to rainfall



# Bilarong Reserve

Beach grade: P



Bilarong Reserve is located on the northern shoreline of Narrabeen Lagoon.

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

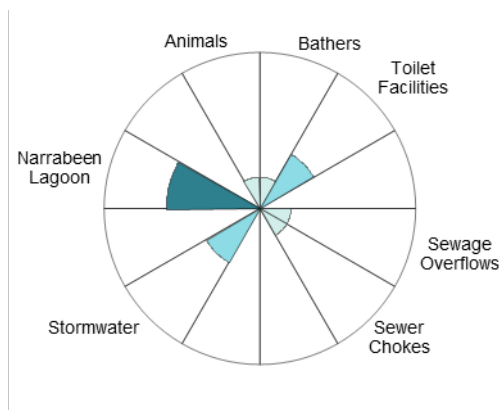
Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit in response to little or no rain, and regularly after 5 mm or more of rain.

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

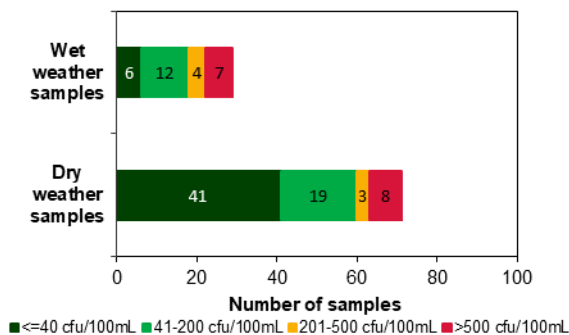
The site has been monitored since 2014.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Lagoon	Aug 2022 to Apr 2024	58%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

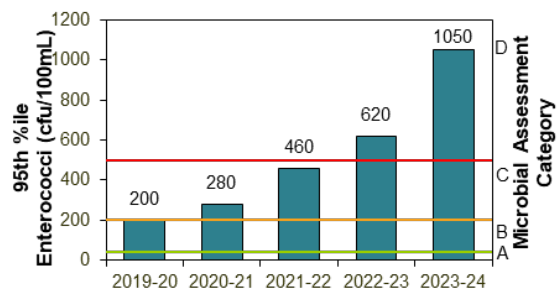
## Sanitary inspection: Moderate



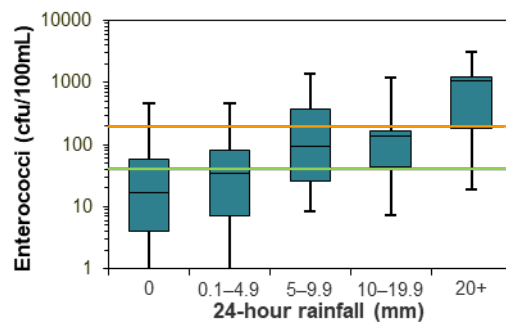
Dry and wet weather water quality



## Microbial Assessment Category: D

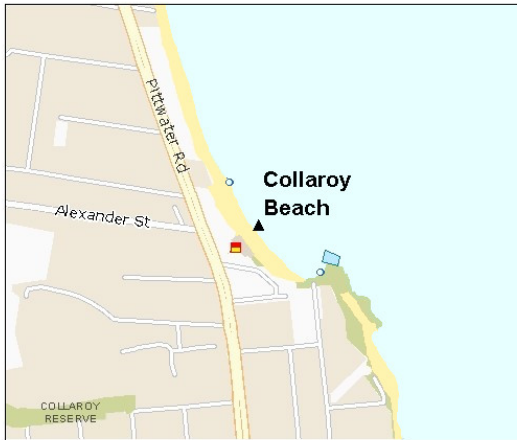


Water quality in response to rainfall



# Collaroy Beach

Beach grade: **G**



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

Collaroy Beach is backed by a park and picnic area. Lifeguards patrol the beach from September to April.

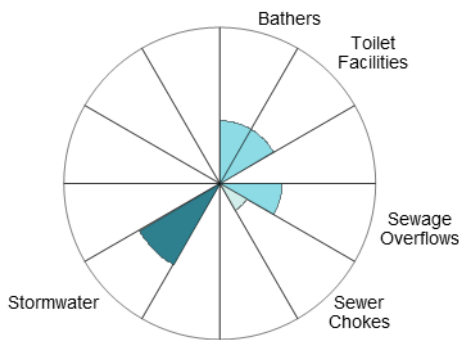
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination including stormwater.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and often after 10 mm or more of rain.

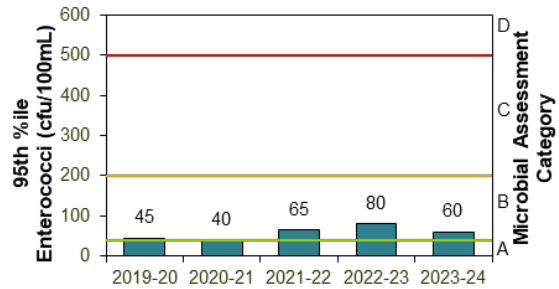
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	96%	100	Stable

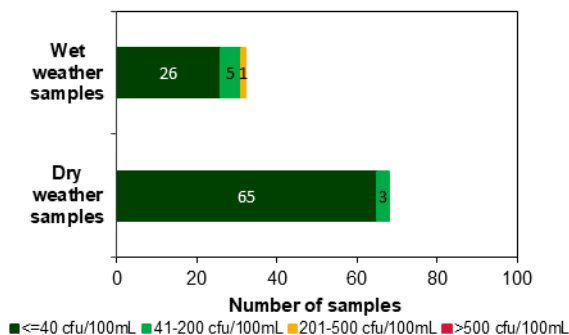
## Sanitary inspection: Moderate



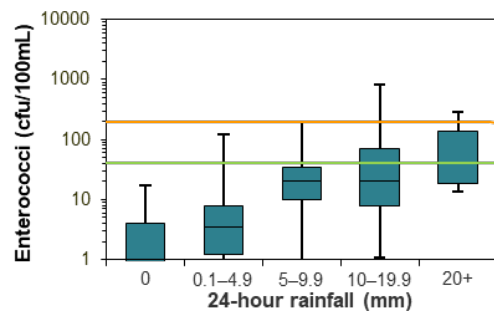
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Long Reef Beach

Beach grade: **G**



Long Reef Beach is located near the entrance of Dee Why Lagoon. Lifeguards patrol the beach from September to April.

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

Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after 5 mm or more of rain, and regularly after 20 mm or more.

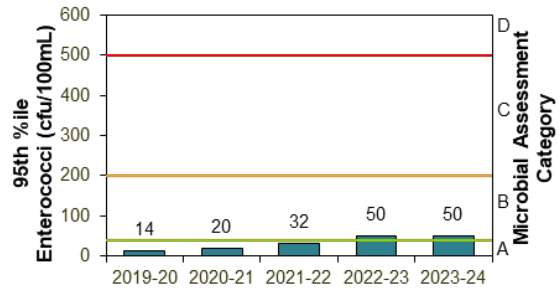
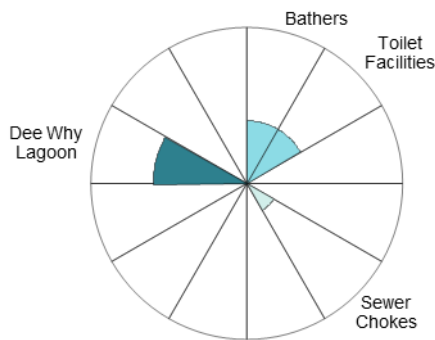
The site has been monitored since 1989.

See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	96%	100	Stable

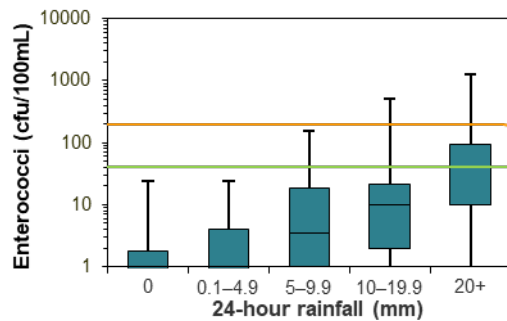
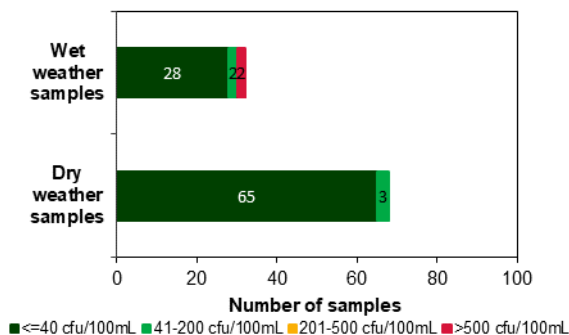
## Sanitary inspection: Moderate

Microbial Assessment Category: B



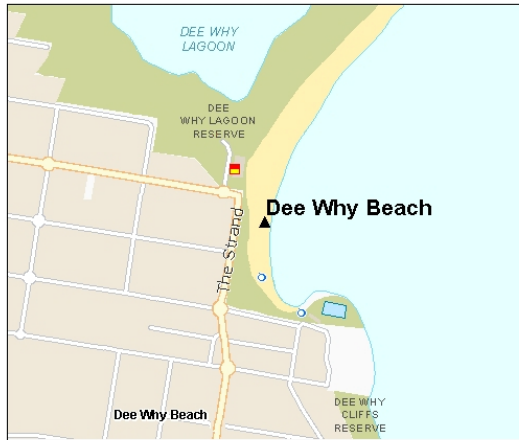
## Dry and wet weather water quality

## Water quality in response to rainfall



# Dee Why Beach

Beach grade: **G**



Dee Why Beach is located at the southern end of the stretch of beach and is patrolled by lifeguards from late August to May.

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

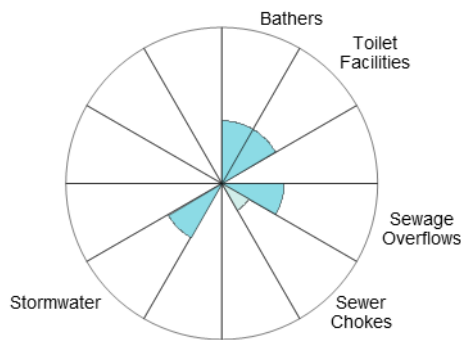
Enterococci levels generally increased with increasing rainfall, often exceeding the safe swimming limit in response to 10 mm or more of rain, and regularly after 20 mm or more.

See ‘How to read this report’ for key to map.

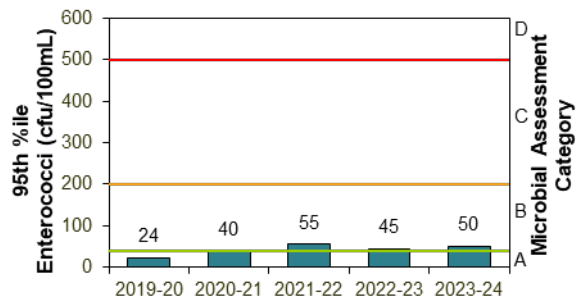
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	94%	100	Stable

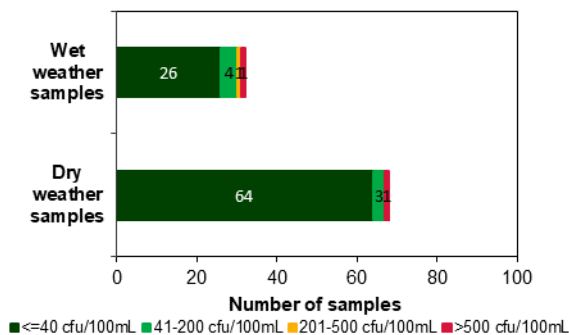
## Sanitary inspection: Low



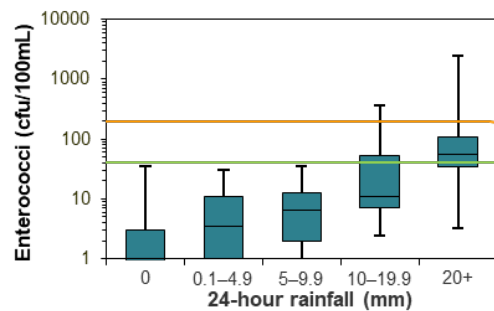
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# North Curl Curl Beach

Beach grade: **G**



North Curl Curl Beach is located near the entrance to Curl Curl Lagoon. Lifeguards patrol the beach from September to April.

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

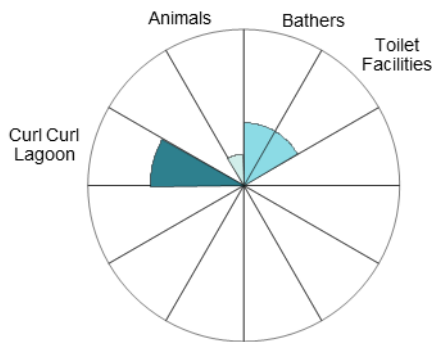
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after 5 mm or more of rain, and frequently after 20 mm or more.

The site has been monitored since 1989.

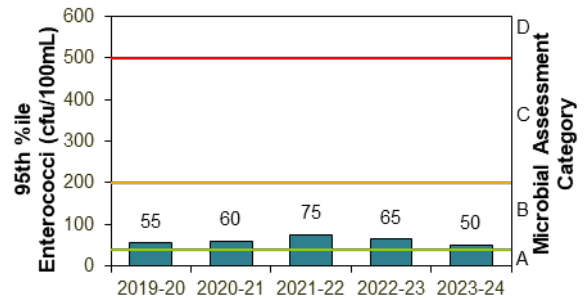
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	94%	100	Stable

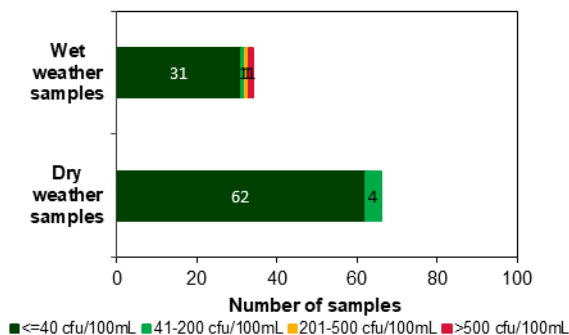
## Sanitary inspection: Moderate



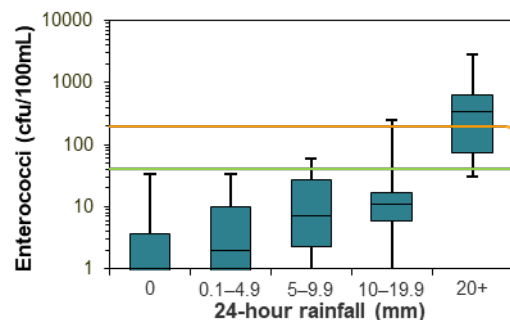
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# South Curl Curl Beach

Beach grade: **G**



South Curl Curl Beach is at the southern end of Curl Curl Beach and is patrolled by lifeguards from September to April.

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

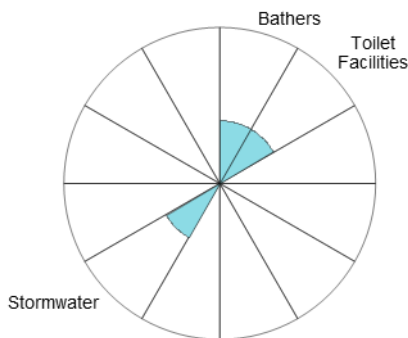
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit in response to 5 mm or more of rain, and regularly after 20 mm or more.

The site has been monitored since 1989.

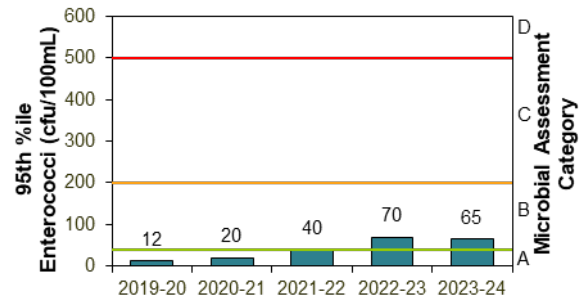
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	95%	100	Stable

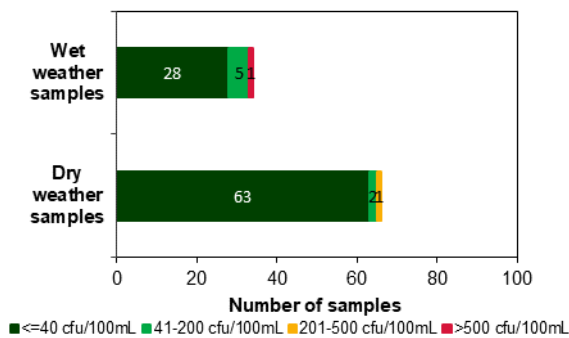
### Sanitary inspection: Low



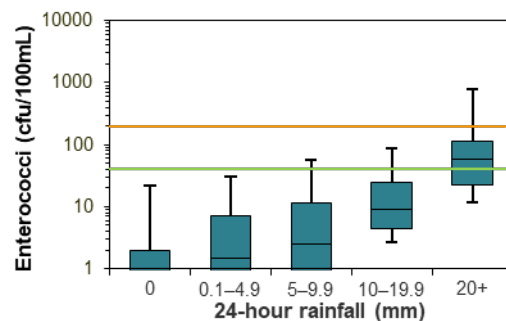
### Microbial Assessment Category: B



### Dry and wet weather water quality



### Water quality in response to rainfall



# Freshwater Beach

Beach grade: **G**



Freshwater Beach is approximately 350 m long and is patrolled by lifeguards from late August to May.

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

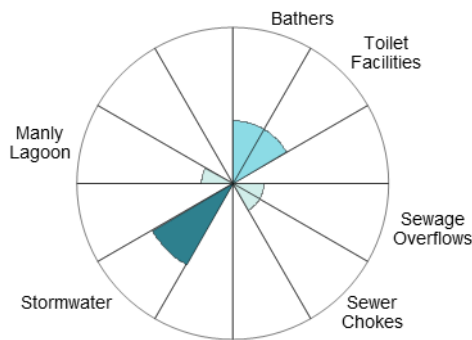
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and regularly after 20 mm or more.

The site has been monitored since 1989.

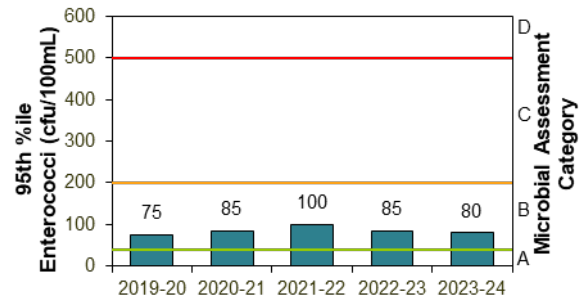
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	95%	100	Stable

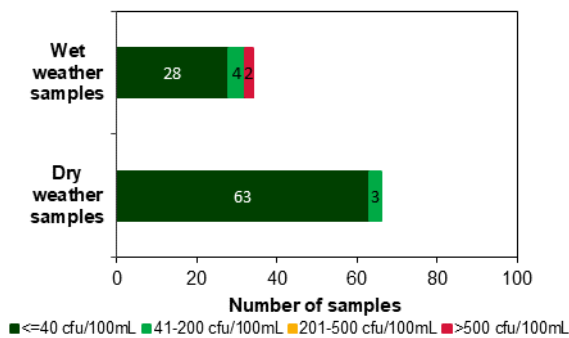
## Sanitary inspection: Moderate



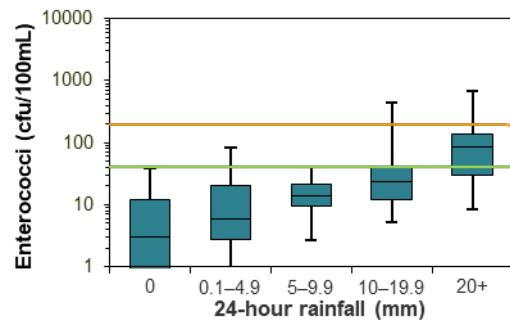
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Queenscliff Beach

Beach grade: **G**



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

Queenscliff Beach is located at the northern end of Manly Beach. Lifeguards patrol the beach from September to April.

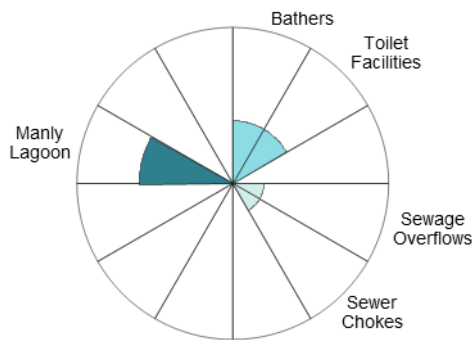
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination, including discharge from Manly Lagoon.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and often after 10 mm or more.

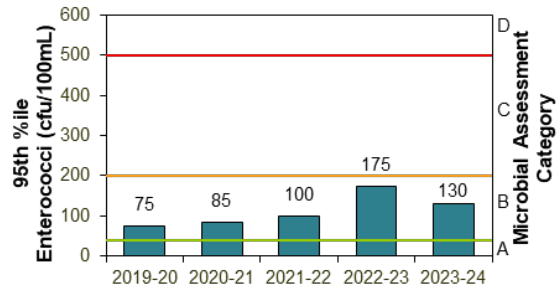
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	94%	100	Stable

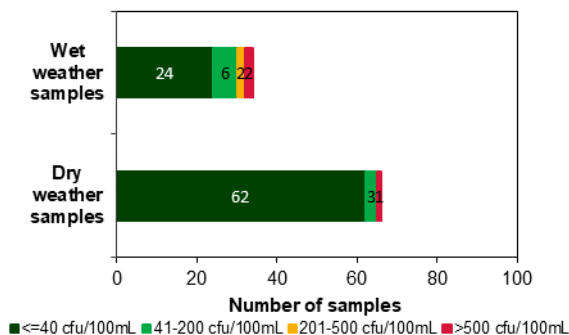
## Sanitary inspection: Moderate



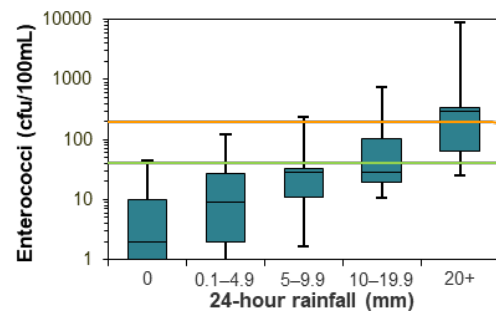
## Microbial Assessment Category: B



## Dry and wet weather water quality

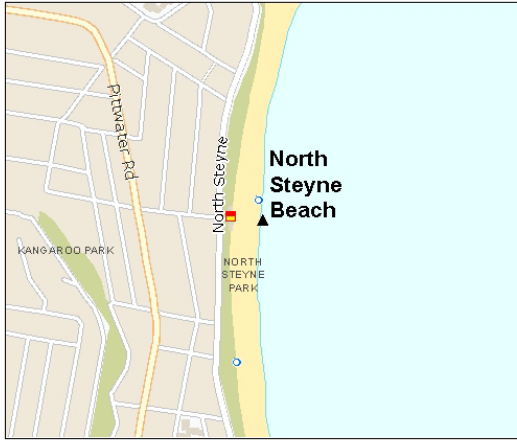


## Water quality in response to rainfall



# North Steyne Beach

**Beach grade:** G



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

North Steyne Beach is the middle section of Manly Beach. Lifeguards patrol the beach from September to April.

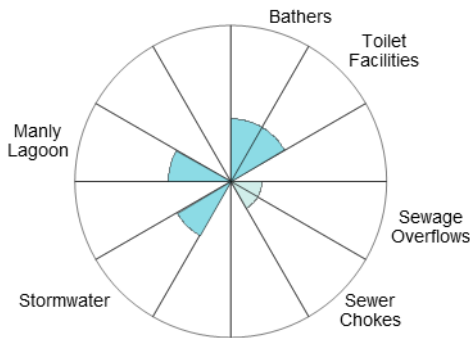
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination including stormwater and discharge from Manly Lagoon.

Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and regularly after 20 mm or more.

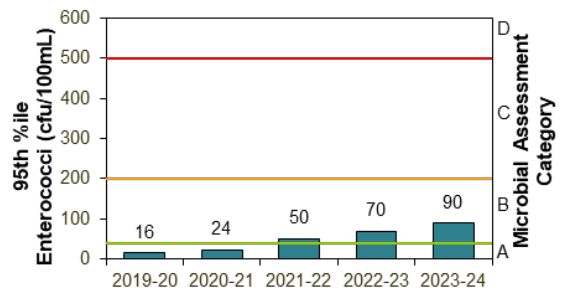
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	97%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

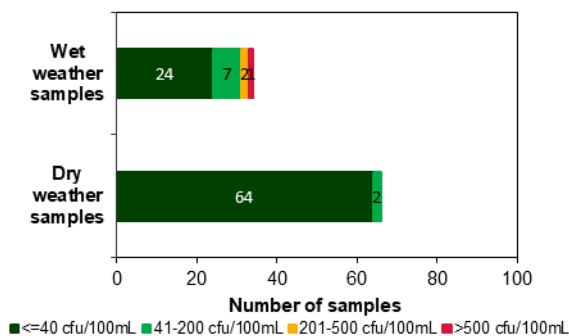
## Sanitary inspection: Moderate



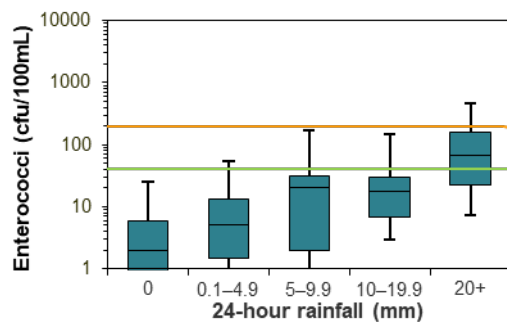
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# South Steyne Beach

Beach grade: **G**



See ‘How to read this report’ for key to map.

South Steyne Beach is at the southern end of Manly Beach. Lifeguards patrol the beach year round.

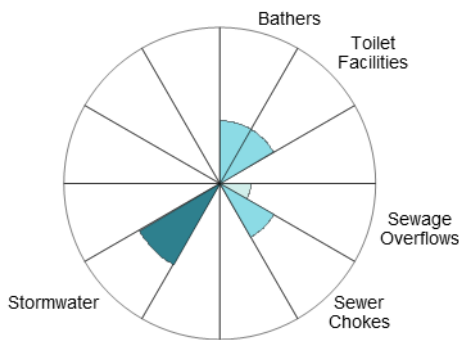
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination including stormwater.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and often after 10 mm or more.

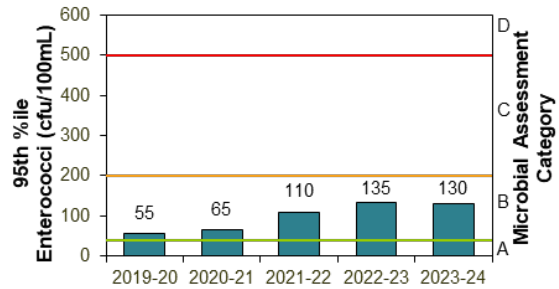
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	91%	100	Stable

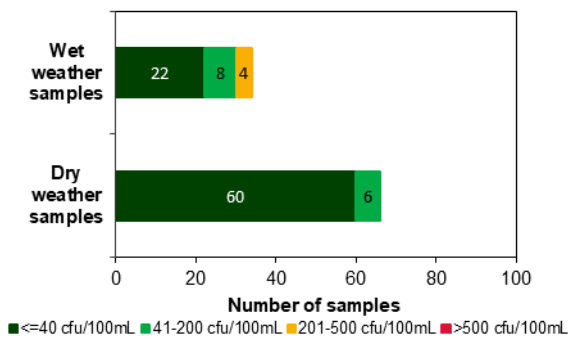
## Sanitary inspection: Moderate



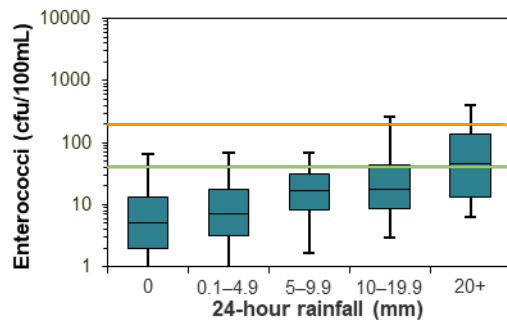
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Shelly Beach

Beach grade: P



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

Shelly Beach is backed by a picnic area and reserve and is not patrolled by lifeguards.

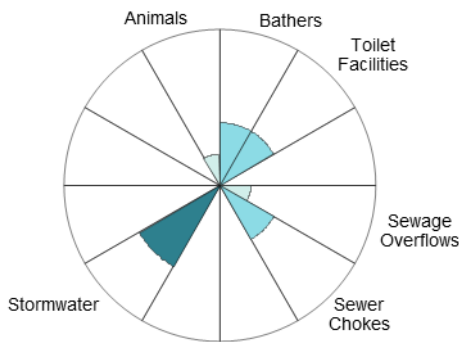
The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including stormwater.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 5 mm or more.

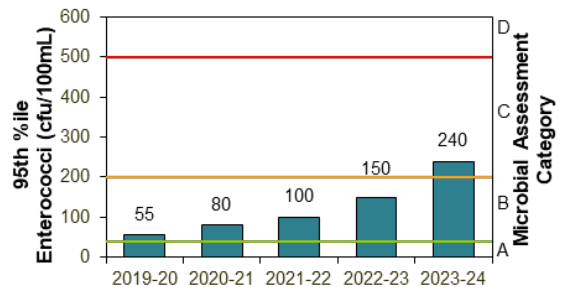
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	88%	100	Declined

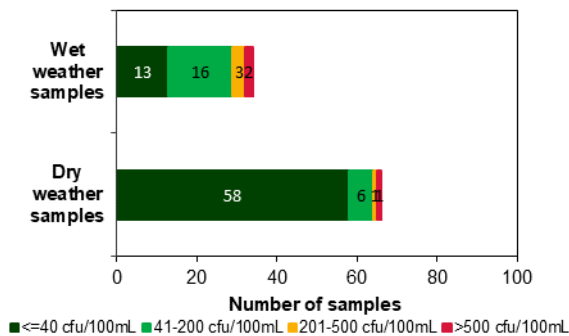
## Sanitary inspection: Moderate



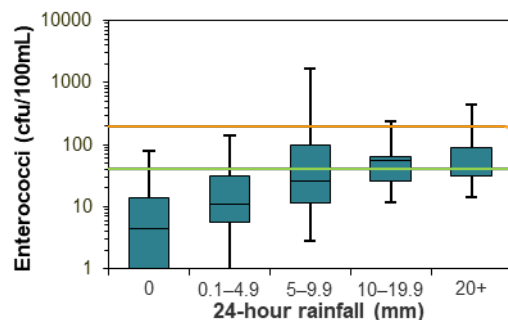
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Barrenjoey Beach

Beach grade: **G**



Barrenjoey Beach is approximately 1.5 km long and located on the north-eastern foreshore of Pittwater.

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

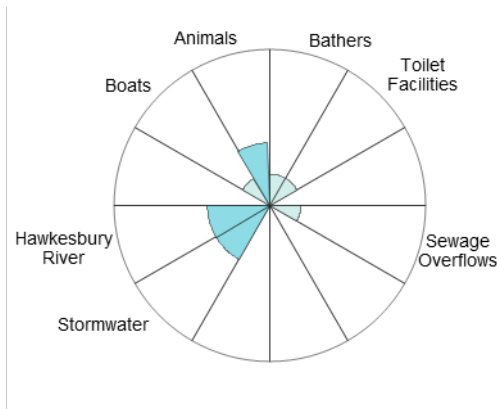
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 10 mm or more.

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

The site has been monitored since 1996.

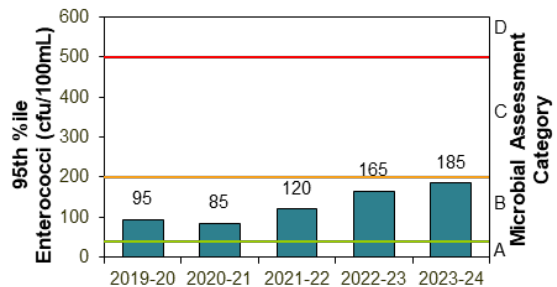
Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	81%	100	Stable

## Sanitary inspection: Moderate

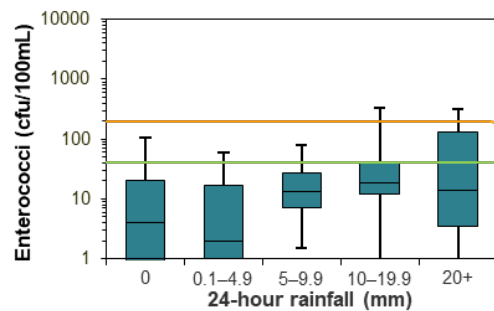
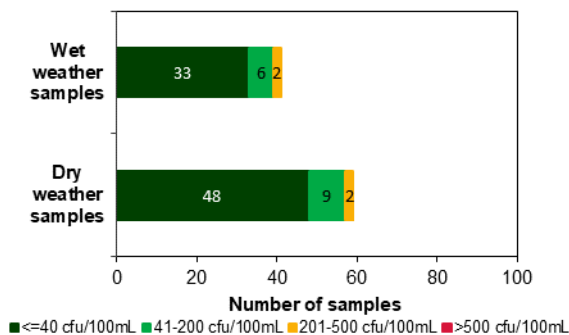


Dry and wet weather water quality

## Microbial Assessment Category: B



Water quality in response to rainfall



# Paradise Beach Baths

Beach grade: **G**



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

Paradise Beach Baths is a 30 by 20 m netted swimming enclosure on the eastern foreshore of Pittwater.

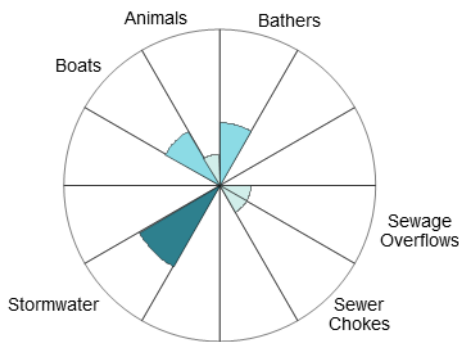
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination including stormwater.

Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and often after 10 mm or more.

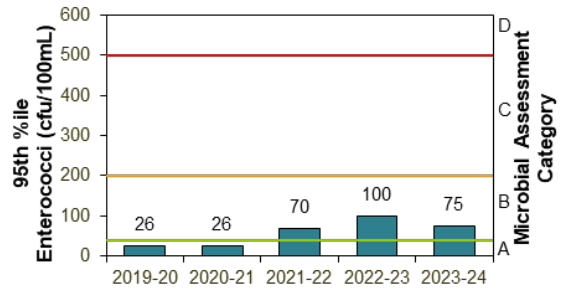
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	95%	100	Stable

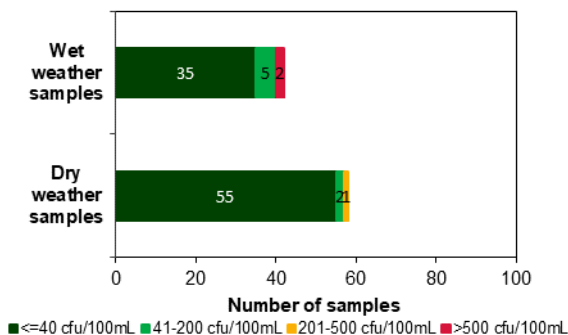
## Sanitary inspection: Moderate



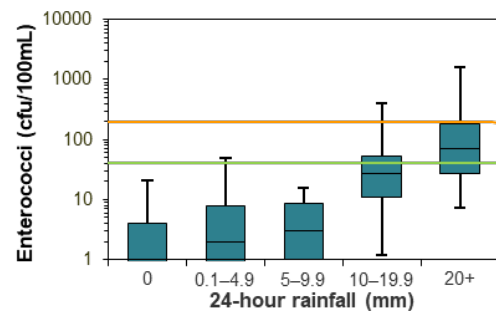
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Clareville Beach

Beach grade: **G**



Clareville Beach is a narrow 250 m long beach located on the eastern foreshore of Pittwater. The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination including stormwater.

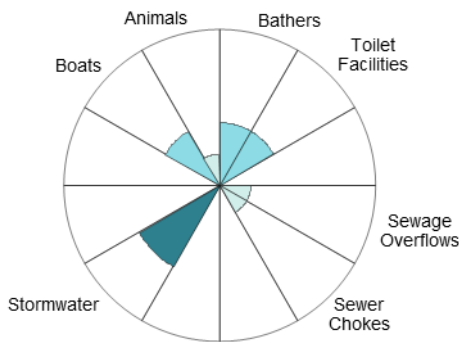
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and often after 10 mm or more.

See ‘How to read this report’ for key to map.

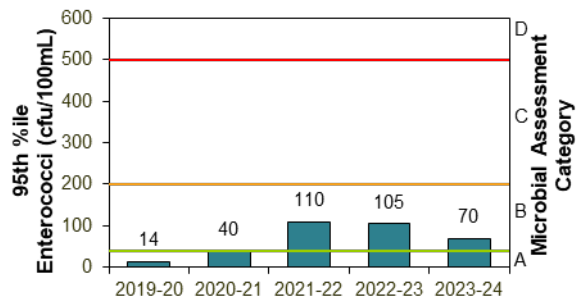
The site has been monitored since 1995.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	98%	100	Stable

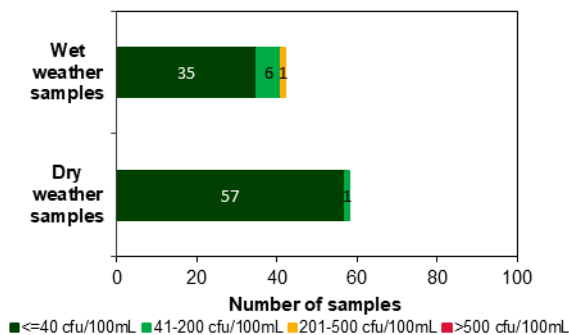
## Sanitary inspection: Moderate



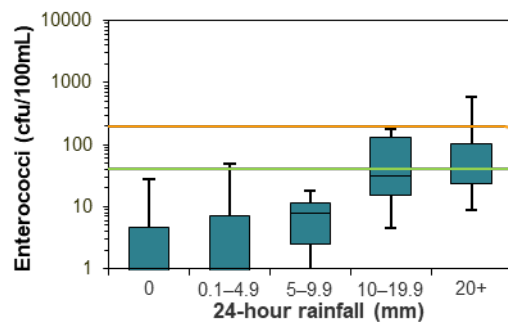
## Microbial Assessment Category: B



## Dry and wet weather water quality

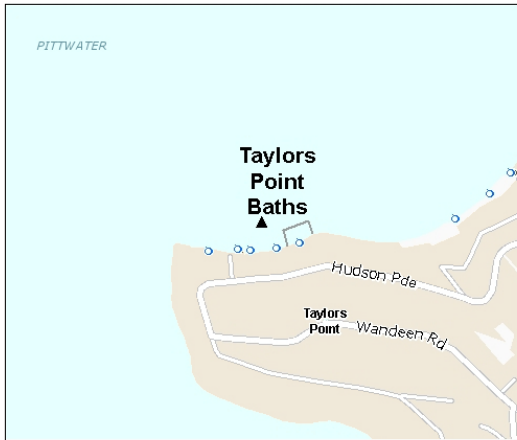


## Water quality in response to rainfall



# Taylor's Point Baths

Beach grade: **G**



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

Taylor's Point Baths is a 15 by 20 m netted swimming enclosure on the eastern foreshore of Pittwater.

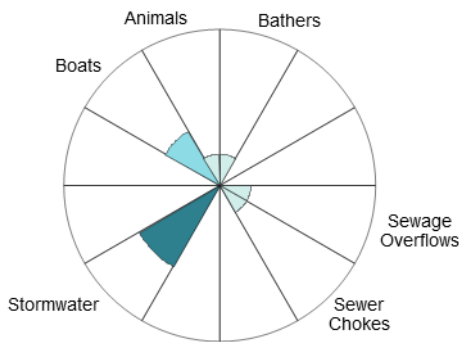
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination including stormwater.

Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after 10 mm or more of rain, and often after 20 mm or more.

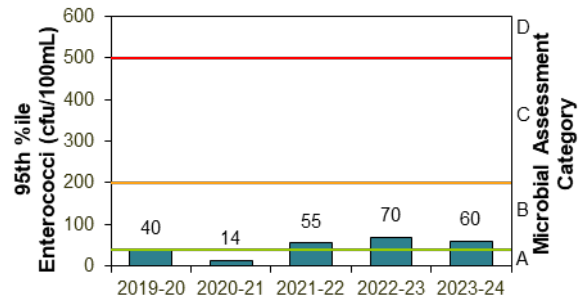
The site has been monitored since 2010.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	97%	100	Stable

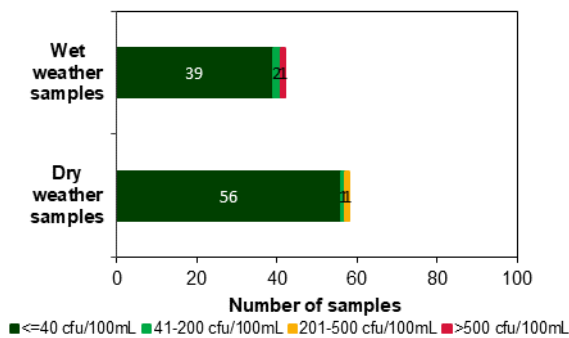
## Sanitary inspection: Moderate



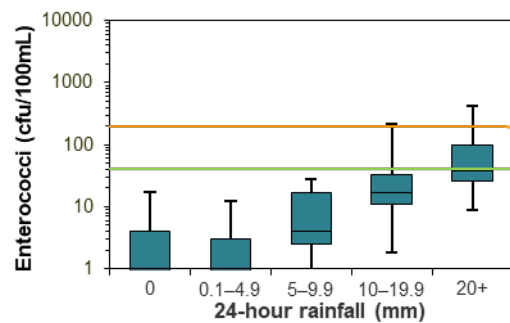
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Bayview Baths

Beach grade: P



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

Bayview Baths is a 20 by 40 m swimming enclosure on the southern foreshore of Pittwater.

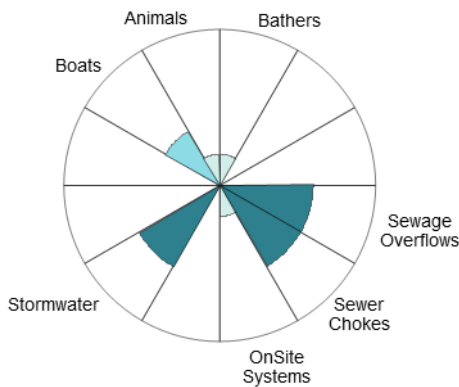
The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including stormwater and sewage overflows.

Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and regularly after 10 mm or more.

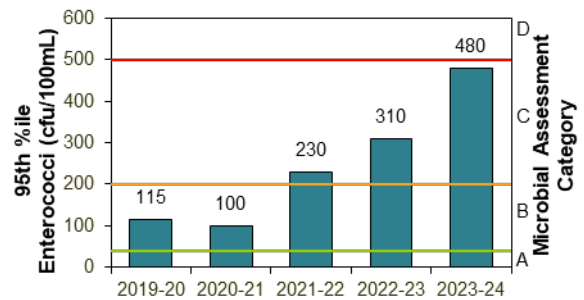
The site has been monitored since 1995.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	69%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

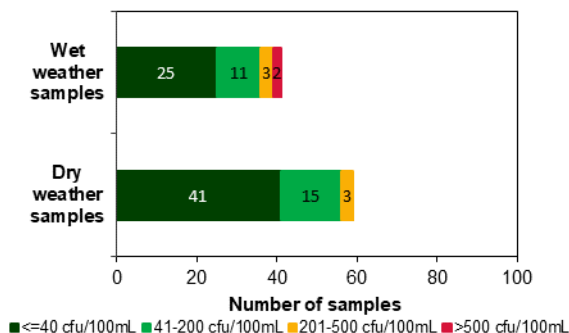
## Sanitary inspection: High



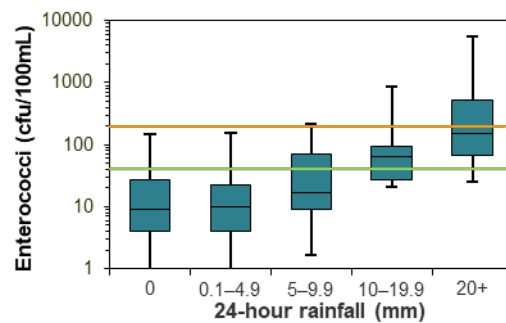
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Elvina Bay

Beach grade: **G**



Elvina Bay is located on the south-western foreshore of Pittwater. The swimming area is not netted.

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

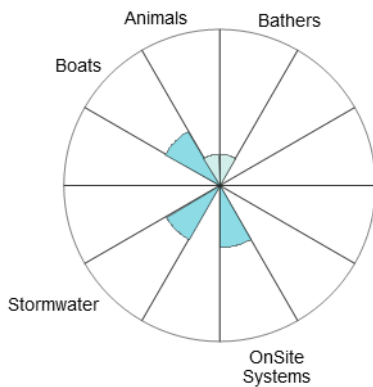
Enterococci levels generally increased with increasing rainfall, regularly exceeding the safe swimming limit after 10 mm or more of rain.

The site has been monitored since 1995.

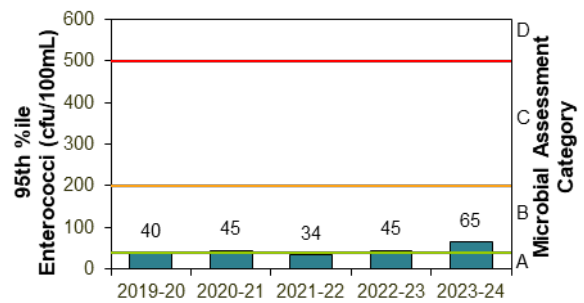
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	95%	100	Stable

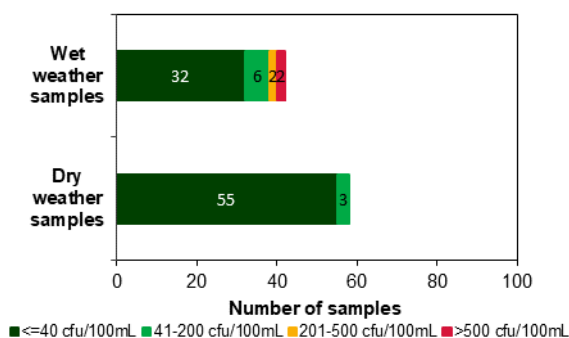
### Sanitary inspection: Low



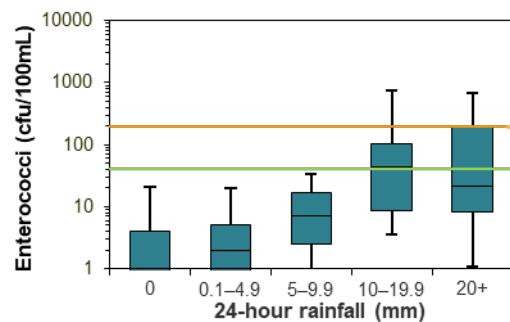
### Microbial Assessment Category: B



### Dry and wet weather water quality



### Water quality in response to rainfall



# North Scotland Island

Beach grade: **G**



See ‘How to read this report’ for key to map.

The North Scotland Island swimming site is a 15 by 50 m netted enclosure located on the north side of Scotland Island in Pittwater.

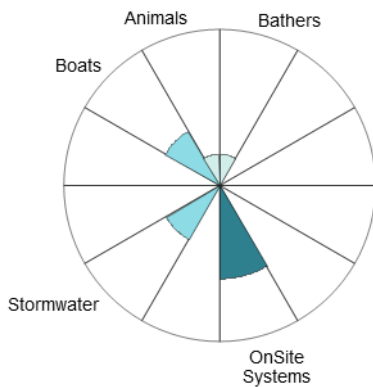
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination including onsite systems.

Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after 10 mm or more of rain, and often after 20 mm or more.

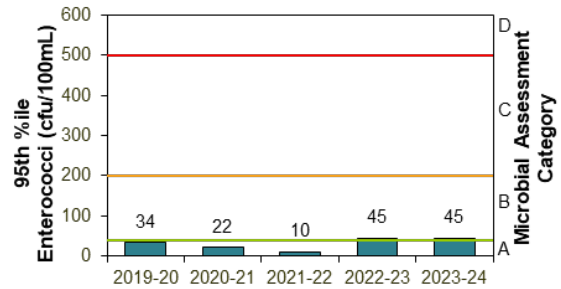
The site has been monitored since 1995.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2023	98%	100	Stable

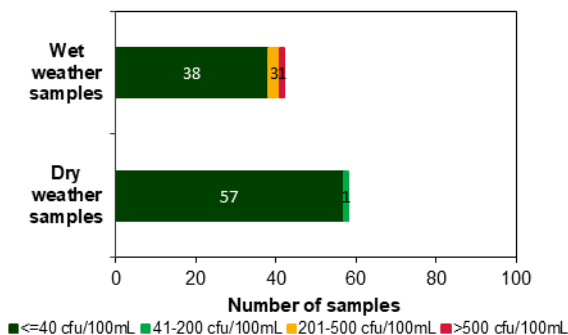
## Sanitary inspection: Moderate



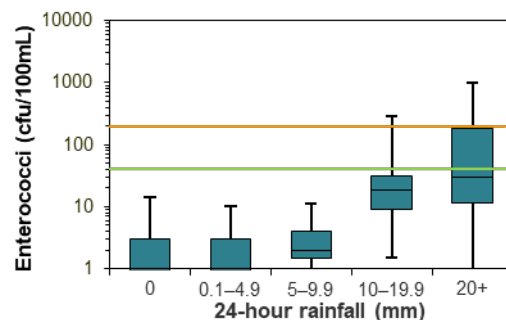
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# South Scotland Island

Beach grade: **G**



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 microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination including onsite systems.

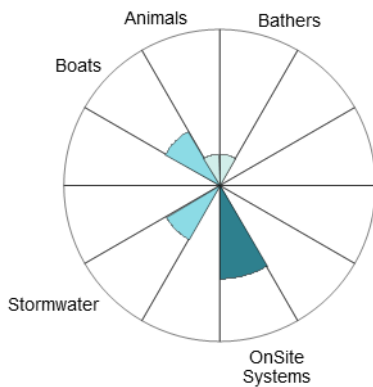
Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after 10 mm or more of rain.

The site has been monitored since 1996.

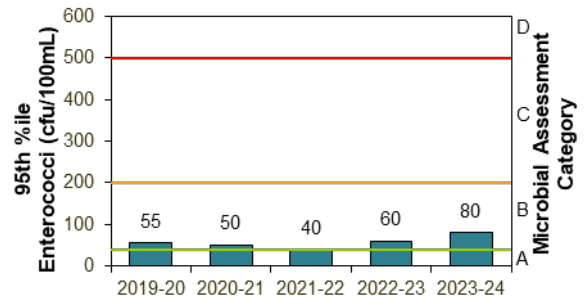
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	97%	100	Stable

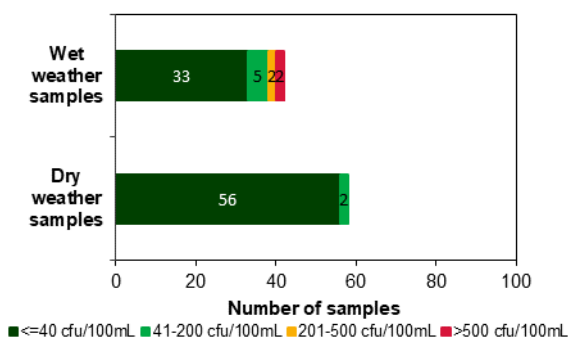
## Sanitary inspection: Moderate



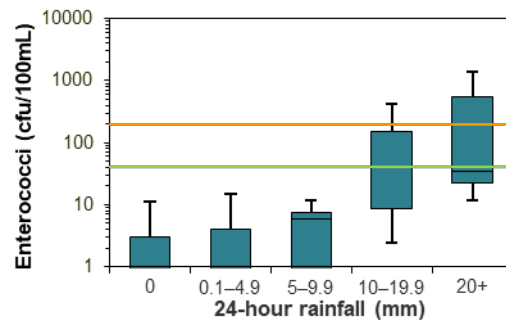
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# The Basin

Beach grade: **VG**



The Basin is a 500 m sandy beach on the western side of Pittwater, backed by Ku-ring-gai Chase National Park.

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

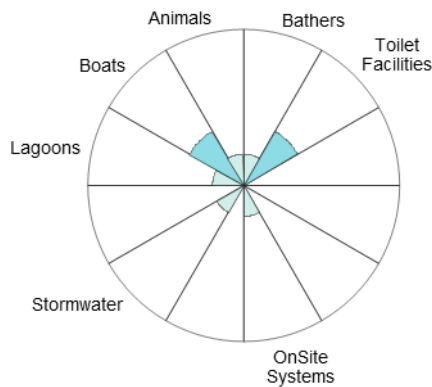
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit in response to 10 mm or more of rain, and often after 20 mm or more.

See ‘How to read this report’ for key to map.

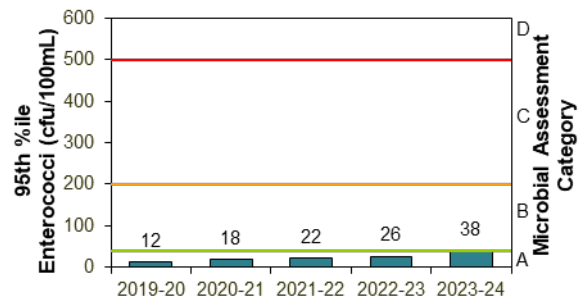
The site has been monitored since 1999.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	95%	100	Stable

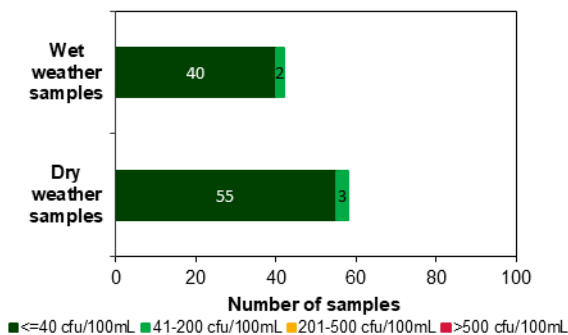
## Sanitary inspection: Low



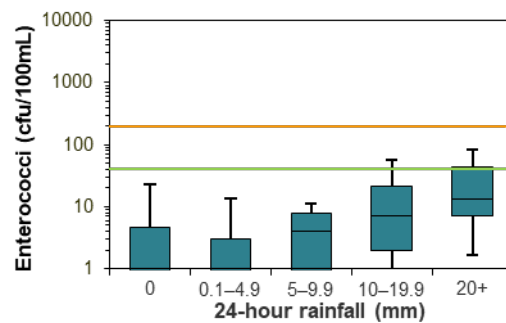
## Microbial Assessment Category: A



## Dry and wet weather water quality



## Water quality in response to rainfall



# Great Mackerel Beach

Beach grade: **G**



Great Mackerel Beach is a 500 m long sandy beach on the north-western side of Pittwater.

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

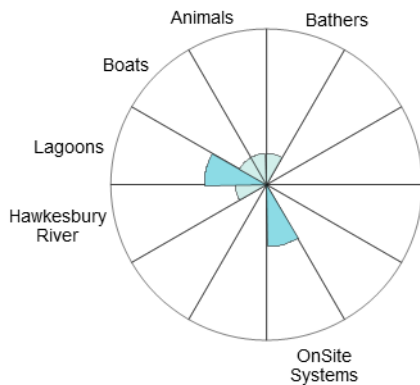
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit in response to 10 mm or more of rain, and often after 20 mm or more.

The site has been monitored since 1999.

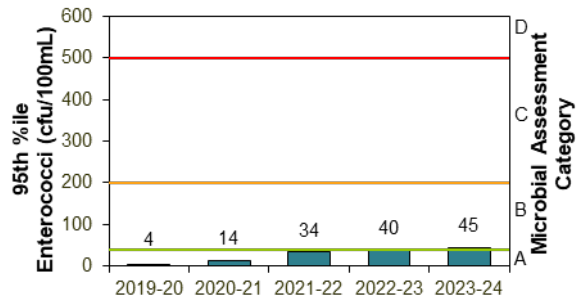
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	97%	100	Declined

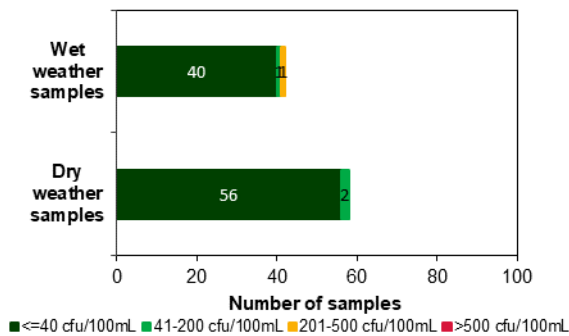
### Sanitary inspection: Low



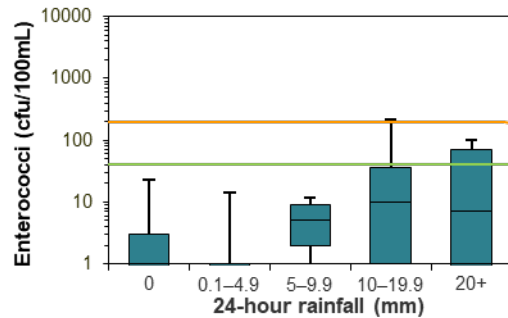
### Microbial Assessment Category: B



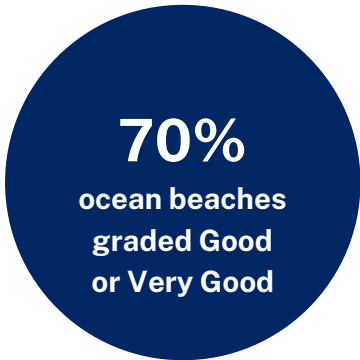
### Dry and wet weather water quality



### Water quality in response to rainfall



# Central Sydney (Bondi to Little Bay & Sydney Harbour)



## Overall results

Twenty-six of the 37 swimming sites were graded as Very Good or Good in 2023–2024, a slight decline in performance from the previous year.

### Percentage of sites graded as Very Good or Good

	2021–2022	2022–2023	2023–2024	Trend
Ocean beaches (10 sites)	90%	80%	<b>70%</b>	
Estuarine sites (26 sites)	81%	77%	<b>69%</b>	
Ocean baths (1 site)	100%	100%	<b>100%</b>	

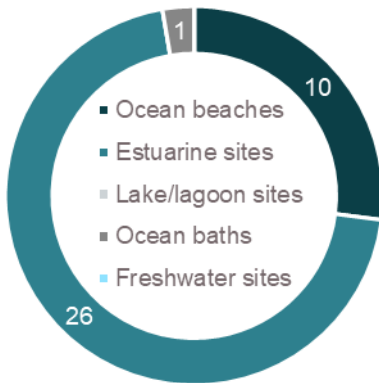
Beachwatch samples the ocean beaches every sixth day throughout the year, and the estuarine beaches every sixth day between October and April, and monthly from May to September.

See the section on **How to read this report** on page 134 for an explanation of the graphs, tables and Beach Suitability Grades.

### Best beaches

Bondi Beach, Tamarama Beach, Clovelly Beach, Gordons Bay, Maroubra Beach, South Maroubra Beach and Little Bay Beach.

These sites had good water quality and were suitable for swimming most of the time.



Site types in Central Sydney region

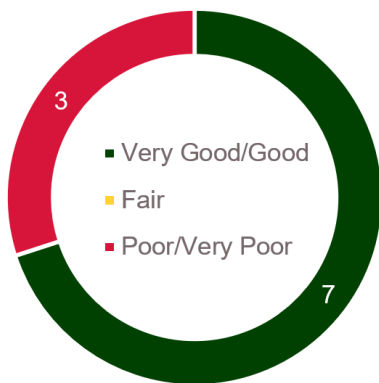
Swimming sites monitored in the Central Sydney region include ocean beaches, ocean baths, and estuarine areas in Sydney Harbour and lower Parramatta River, with each site type having a different response to rainfall-related impacts.

Estuarine swimming sites did not perform as well as ocean beaches due to lower levels of flushing, which increase the time needed to disperse and dilute pollution inputs, taking longer to recover from stormwater events.

As a general precaution swimming should be avoided during and for at least one day after heavy rain at ocean beaches, and for up to 3 days at harbour beaches, or if there are signs of stormwater pollution such as discoloured water or floating debris.

### Ocean beaches

Seven of the 10 ocean beaches were graded as Very Good or Good in 2023–2024.



Beach Suitability Grades for Central Sydney ocean beaches

South Maroubra Beach was upgraded to Very Good from Good in the previous year due to improved microbial water quality. Water quality at this site was suitable for swimming almost all of the time.

Bondi Beach, Tamarama Beach, Clovelly Beach, Gordons Bay, Maroubra Beach and Little Bay Beach were graded as Good, consistent with the previous year. These sites were frequently suitable for swimming during dry weather conditions with between 91% and 96% of dry weather samples within the safe swimming limit. Elevated enterococci levels were often recorded following moderate to heavy rainfall.

Bronte Beach, Coogee Beach and Malabar Beach were graded as Poor in 2023–2024. Bronte Beach was downgraded to Poor from Good in the previous year and has shown trends of declining microbial assessments over several years, only just exceeding the threshold this year. Microbial water quality at these sites is mostly suitable for swimming during dry weather conditions, with between 82% and 89% of dry weather samples within the safe swimming limit. However, enterococci levels increase

following rainfall, regularly exceeding the safe swimming limit after moderate rainfall.

Microbial water quality at these beaches can be impacted by several potential sources of faecal contamination including stormwater. Malabar Beach is located at the end of a long narrow bay and takes longer to recover from stormwater events than surrounding areas. Lower levels of flushing increase the time needed to disperse and dilute pollution inputs, with elevated bacteria levels often recorded up to 2 days after rainfall.

It is recommended that swimming be avoided at ocean beaches during and for up to one day following rainfall, or if there are signs of pollution such as discoloured water, flowing drains or floating debris.

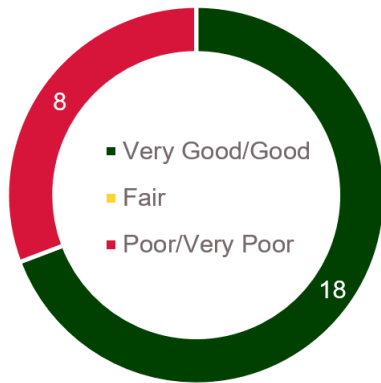
The Coogee Beach Stormwater Quality Working Group was established in 2017 to improve water quality at Coogee Beach. The group consists of representatives from the community, Sydney Water, Beachwatch, council staff and the State Member for Coogee. In August 2017, the working group put recommendations to council to investigate the feasibility of diverting more stormwater from the beach, and the development of a community education and marketing campaign to better inform the local community about stormwater and its impact on local beaches.

In May 2022, with funding from the then NSW Department of Planning and Environment, a consultant was appointed and met with the Coogee Beach Stormwater Quality Working Group to investigate and design (including water harvesting assessment) a solution for stormwater diversion at Coogee Beach.

The Coogee Beach Stormwater Quality Working Group have made substantial progress on the detailed design of the stormwater solution design endorsed by the working group in June 2023. The group are seeking alternative funding sources, exploring potential staging strategies, and evaluating the long-term operational costs associated with the project. A comprehensive implementation plan will be presented to council for review and consideration.

Additionally, the group will consider and discuss proposals to enhance stormwater harvesting methods, furthering efforts to safeguard water quality at Coogee Beach.

### Estuarine beaches



**Beach Suitability Grades for Central Sydney estuarine beaches**

Eighteen of the 26 estuarine swimming sites in Sydney Harbour were graded as Good in 2023–2024: Nielsen Park, Camp Cove, Watsons Bay, Parsley Bay, Dawn Fraser Pool, Chiswick Baths, Cabarita Beach, Greenwich Baths, Hayes St Beach, Clifton Gardens, Balmoral Baths, Edwards Beach, Chinamans Beach, Clontarf Pool, Forty Baskets Pool, Fairlight Beach, Manly Cove and Little Manly Cove. These sites had mostly good water quality, although enterococci levels increased following rainfall.

Eight estuarine swimming sites in Sydney Harbour were graded as Poor in 2023–2024: Rose Bay Beach, Murray Rose Pool, Woodford Bay, Tambourine Bay, Woolwich Baths, Northbridge Baths, Gurney Crescent Baths and Davidson Reserve. Water quality at these swimming sites was mostly suitable for swimming during dry weather conditions, with elevated bacterial levels recorded following rainfall.

Woodford Bay in the lower Lane Cove River and Murray Rose Pool in Port Jackson were downgraded to Poor from Good due to a decline in microbial water quality. Microbial water quality at these sites has shown trends of declining microbial assessments over the last 4–6 years and has crossed the threshold from Good to Poor. Despite this, Woodford Bay and Murray Rose Pool were frequently suitable for swimming during dry weather conditions, with 88% and 92% of dry weather samples within the safe swimming limit, respectively. However, enterococci levels increase following rainfall. These sites are more susceptible to wet weather impacts and have several significant sources of faecal contamination including upstream sources and stormwater.

Estuarine sites are not as well flushed as ocean beaches, and so can take longer to recover from stormwater events. As a precaution, swimming should be avoided at Sydney Harbour swimming sites during and for up to 3

days following rainfall or if there are signs of pollution such as discoloured water, flowing stormwater drains or floating debris.



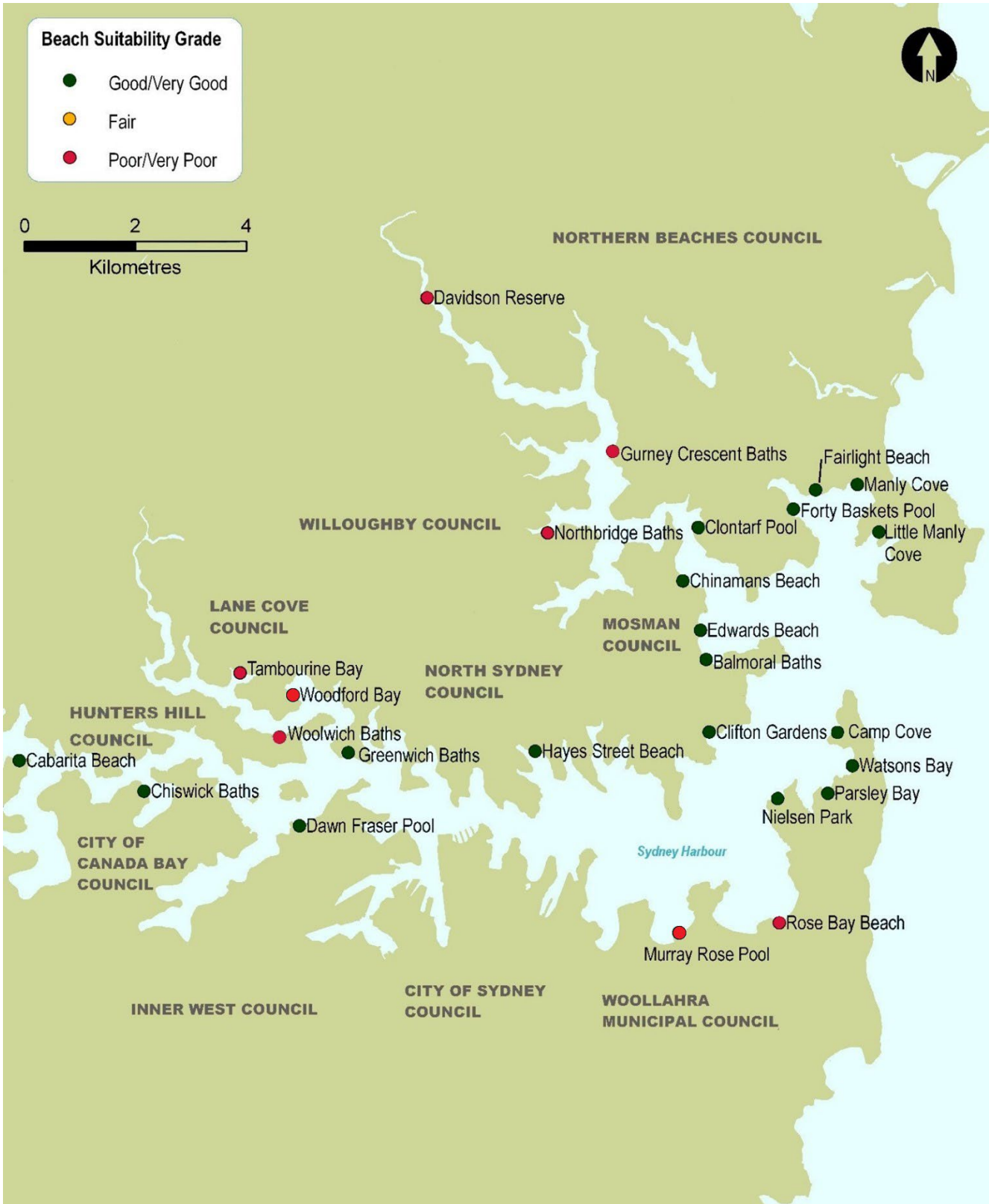
**Beach Suitability Grades for Central Sydney ocean baths**

## Ocean baths

South Maroubra Rockpool continued to be graded as Good in 2023–2024 as in previous years. Water quality is frequently suitable for swimming during dry weather conditions, with 85% of dry weather samples within the safe swimming limit. Enterococci levels increased with increasing rainfall. Swimming should be avoided during and for up to one day following rainfall, or if there are any signs of pollution such as the stormwater drain discharging to the site, discoloured water or floating debris.



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



Sampling sites and Beach Suitability Grades in Sydney Harbour

# Bondi Beach

Beach grade: **G**



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

Bondi Beach is 800 m long and backed by a promenade, carpark and parklands, and lifeguards patrol the beach year round.

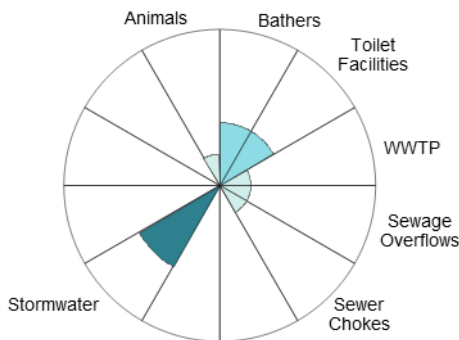
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination including stormwater.

Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and often after 10 mm or more.

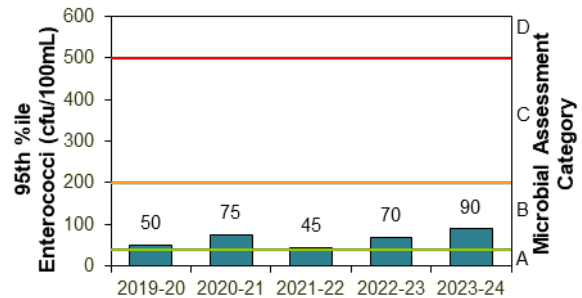
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	92%	100	Stable

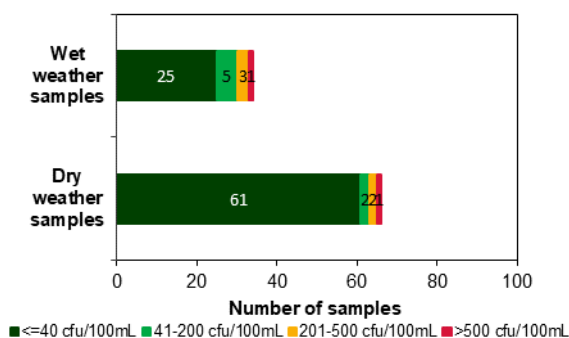
## Sanitary inspection: Moderate



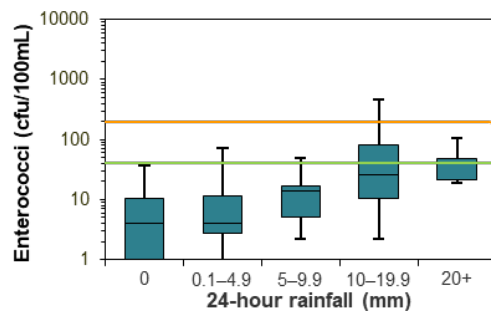
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Tamarama Beach

**Beach grade:** G



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

Tamarama Beach is approximately 80 m long and lifeguards patrol the beach from late September to April.

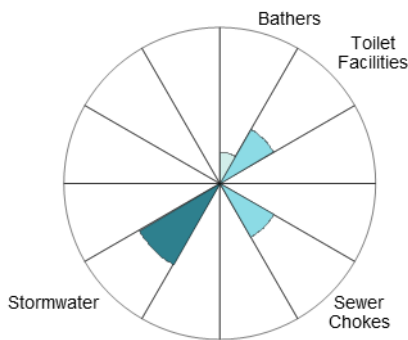
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination including stormwater.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and often after 10 mm or more.

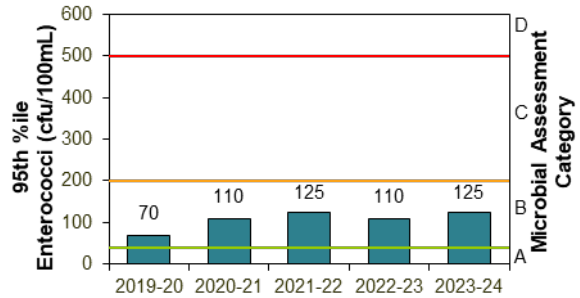
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	96%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

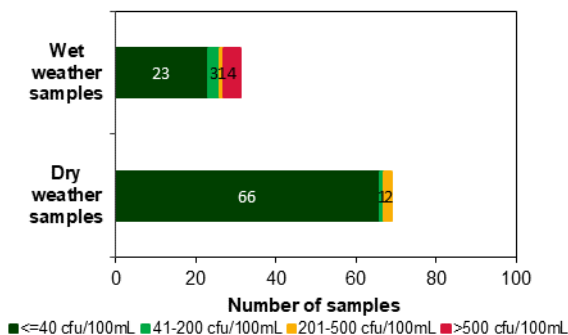
## Sanitary inspection: Moderate



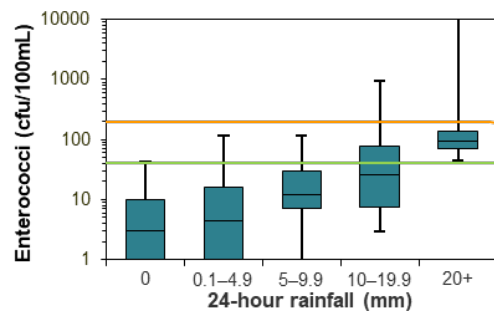
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Bronte Beach

**Beach grade:** P



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

Bronte Beach is 250 m long and backed by a large park and picnic area. Lifeguards patrol the beach from September to May.

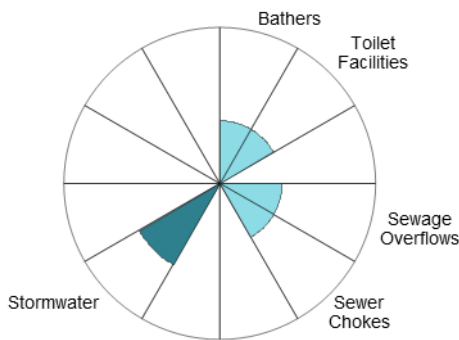
The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including stormwater.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and regularly after 10 mm or more.

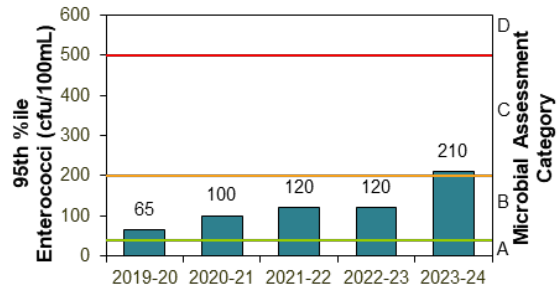
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	89%	100	Declined

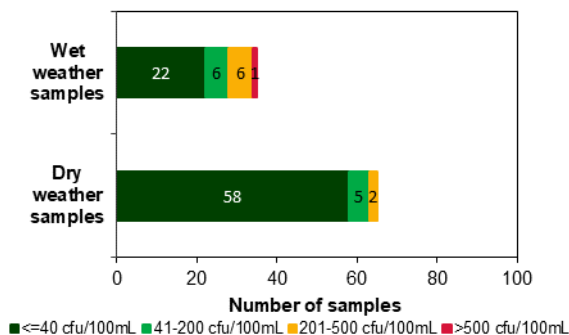
## Sanitary inspection: Moderate



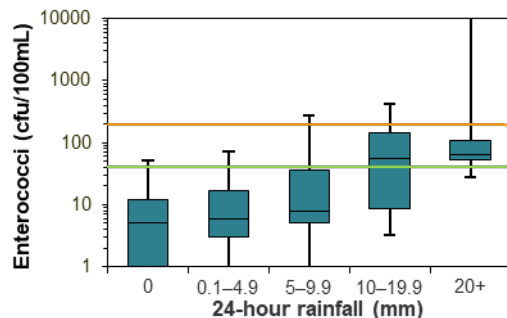
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Clovelly Beach

**Beach grade:** G



Clovelly Beach is at the end of a long and narrow bay and is protected from ocean swells, and is patrolled from late September to April.

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

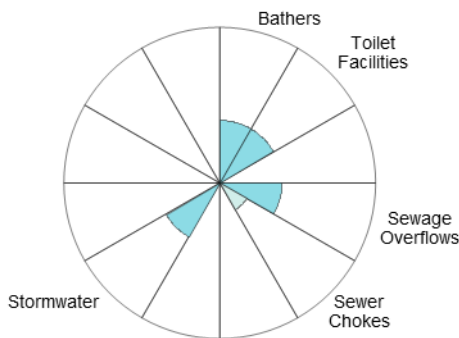
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and often after 20 mm or more.

The site has been monitored since 1989.

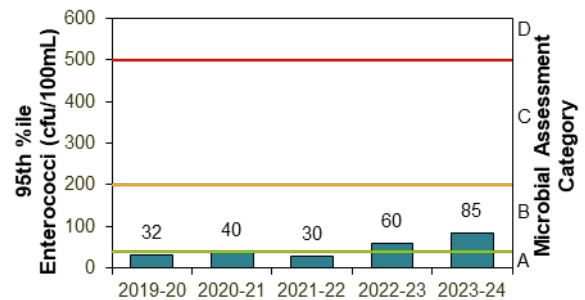
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	91%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

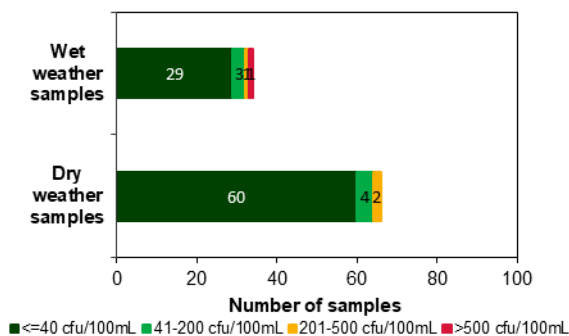
## Sanitary inspection: Low



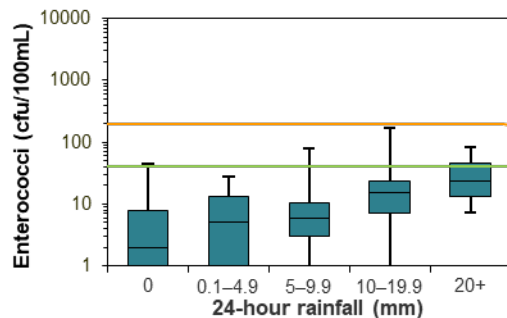
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Gordons Bay

Beach 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 is not patrolled by lifeguards.

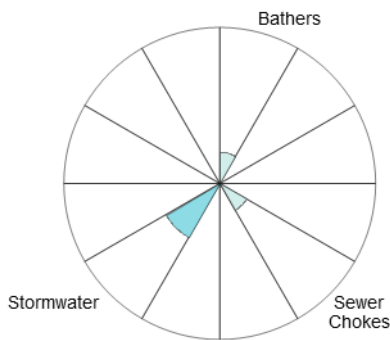
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination.

Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after 5 mm or more, and often after 10 mm or more.

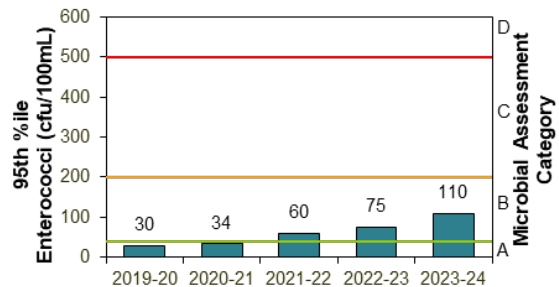
The site has been monitored since 2013.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	94%	100	Stable

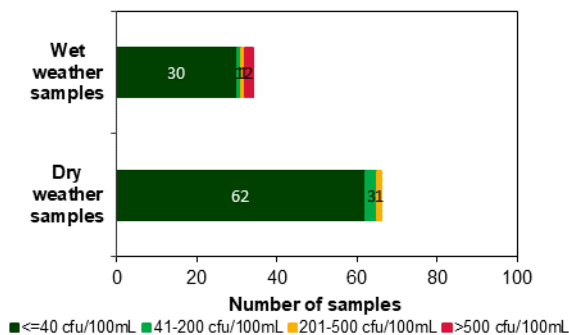
## Sanitary inspection: Low



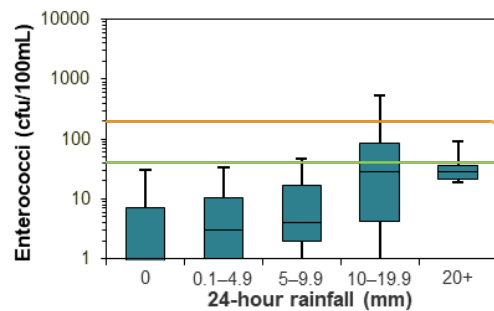
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Coogee Beach

**Beach grade:** P



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

Coogee Beach is 400 m long and is backed by a promenade and parklands and is patrolled by lifeguards all year round.

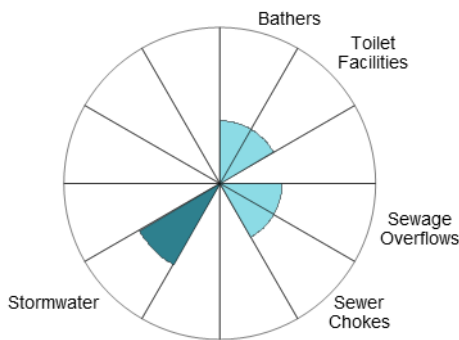
The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including stormwater.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and regularly after 10 mm or more.

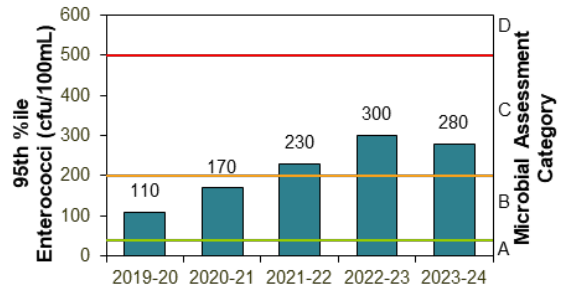
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	82%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

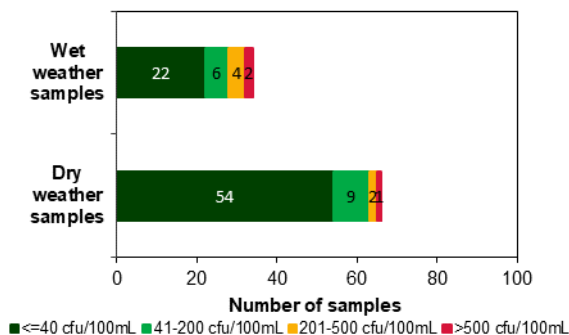
## Sanitary inspection: Moderate



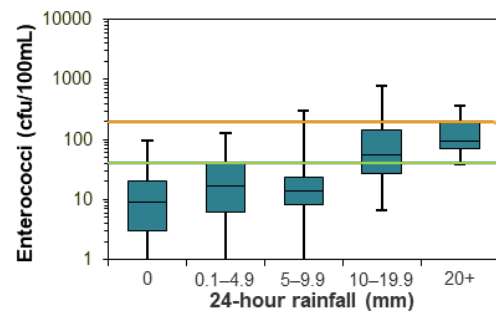
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Maroubra Beach

Beach grade: **G**



Maroubra Beach is 1 km long and lifeguards patrol the beach all year round.

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

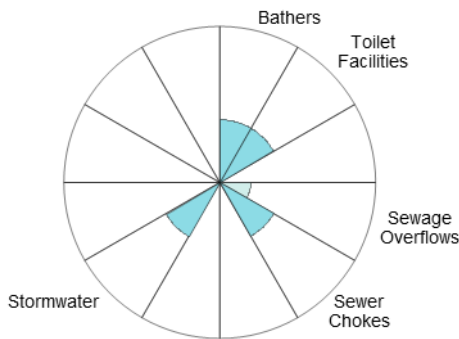
Enterococci levels generally increased with increasing rainfall, often exceeding the safe swimming limit after 5 mm or more of rain.

The site has been monitored since 1989.

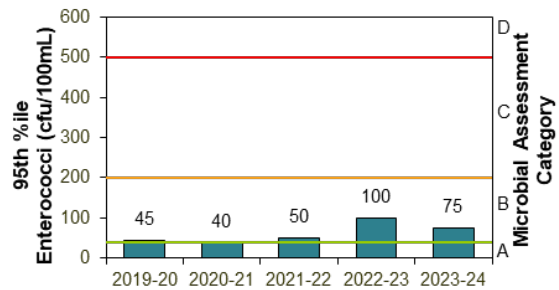
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	95%	100	Stable

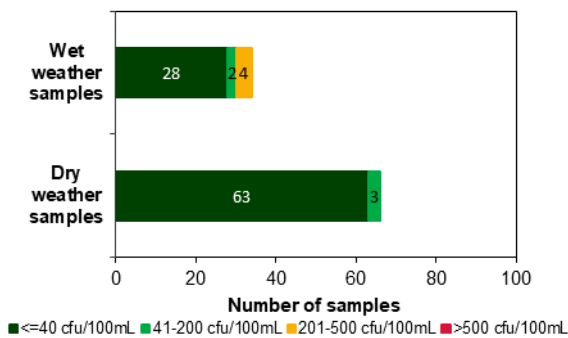
### Sanitary inspection: Low



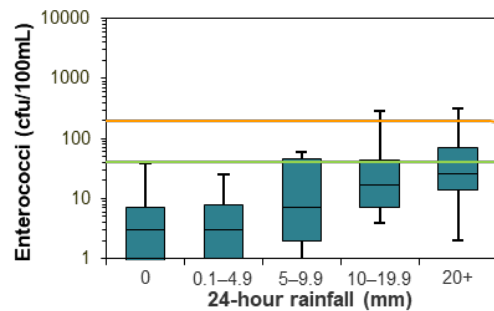
### Microbial Assessment Category: B



### Dry and wet weather water quality



### Water quality in response to rainfall



# South Maroubra Beach

Beach grade: **VG**




South Maroubra Beach is located at the southern end of Maroubra Beach and lifeguards patrol the beach all year round.

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

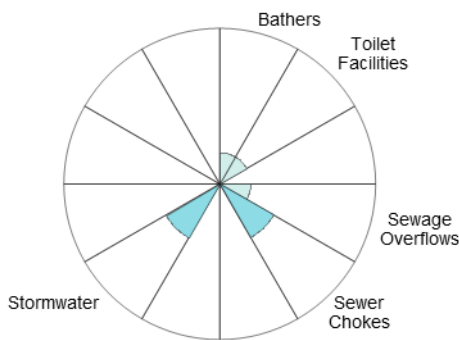
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after 5 mm or more of rain, and often after 10 mm or more.

See ‘How to read this report’ for key to map.

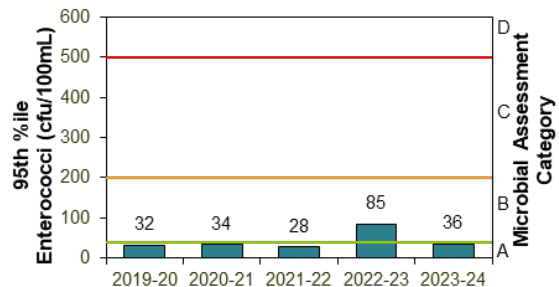
The site has been monitored since 2012.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	95%	100	Improved 

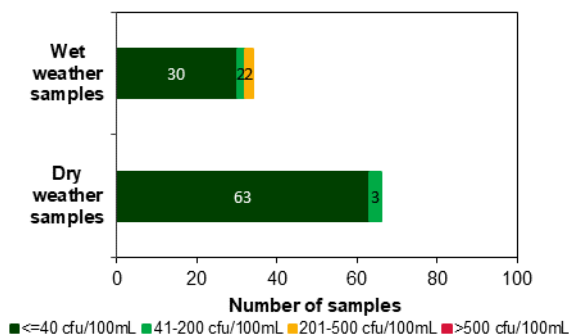
### Sanitary inspection: Low



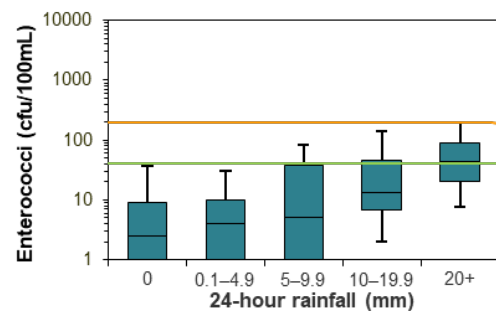
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# South Maroubra Rockpool

**Beach grade:** G



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

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

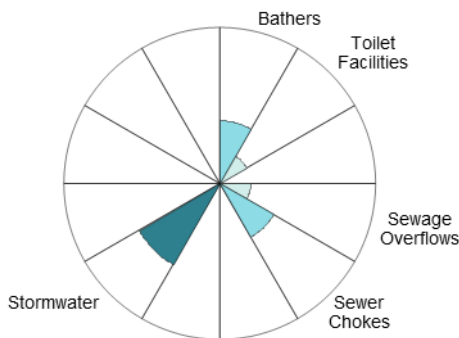
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination including stormwater.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 5 mm or more.

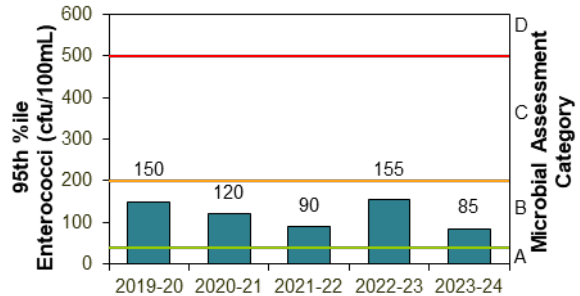
The site has been monitored since 2012.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean baths	Sep 2022 to Apr 2024	85%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

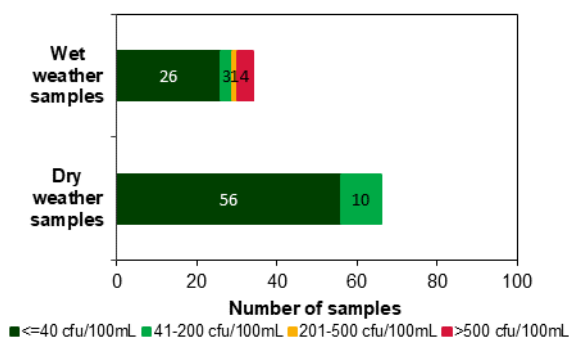
### Sanitary inspection: Moderate



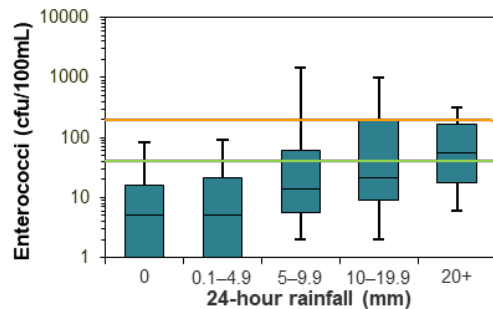
### Microbial Assessment Category: B



### Dry and wet weather water quality

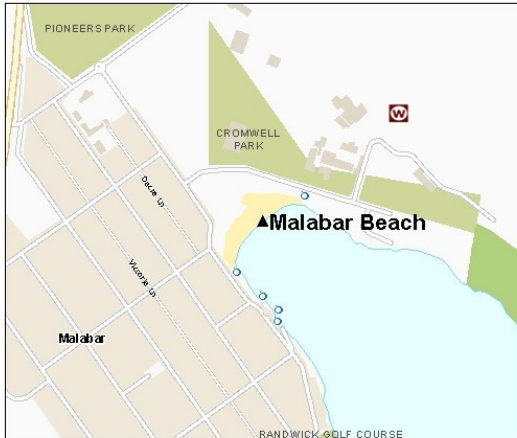


### Water quality in response to rainfall



# Malabar Beach

**Beach grade:** P



Malabar Beach is 150 m long and located at the end of a long, narrow bay and is not patrolled by lifeguards.

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

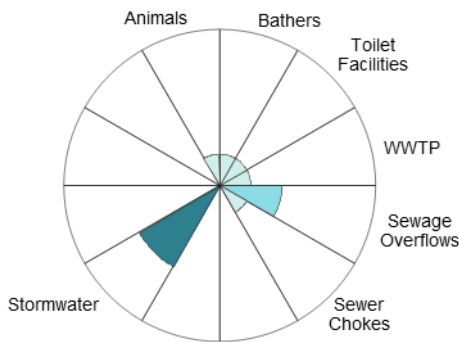
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 5 mm or more.

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

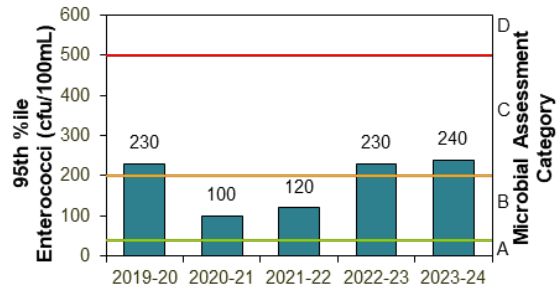
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	85%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

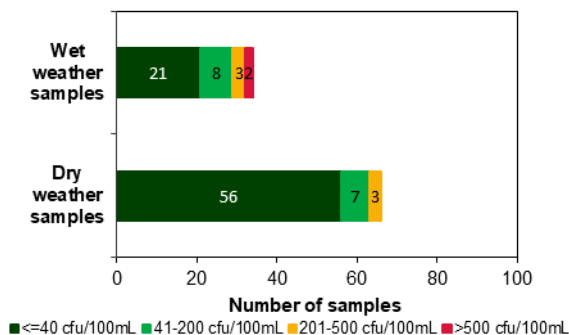
## Sanitary inspection: Moderate



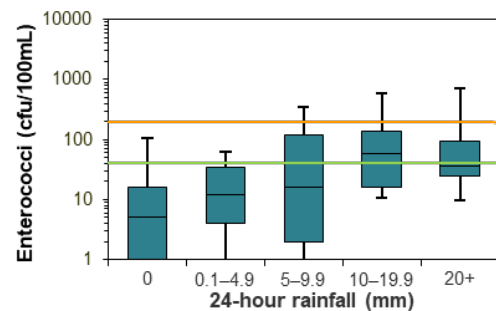
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Little Bay Beach

**Beach grade:** G



Little Bay Beach is a small, crescent-shaped beach bounded by rocky headlands to the north and south and is not patrolled.

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

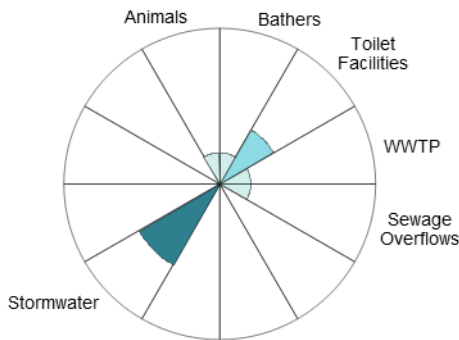
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 5 mm or more.

The site was monitored from 1989 until 1995, and since 2006.

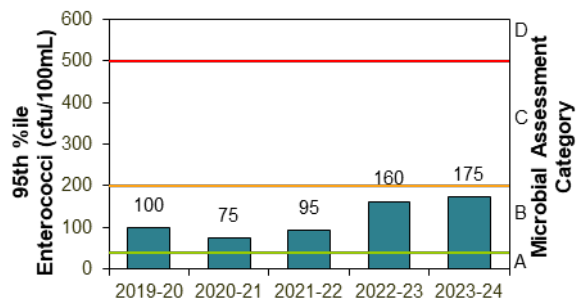
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Jul 2022 to Apr 2024	91%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

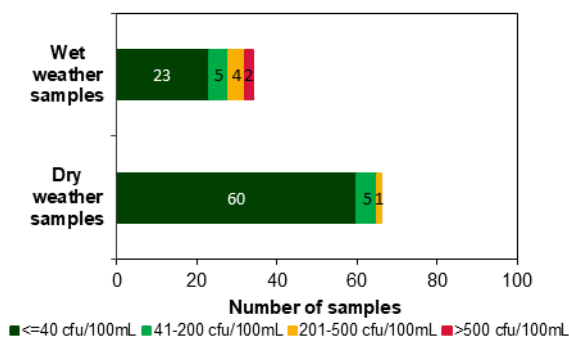
## Sanitary inspection: Moderate



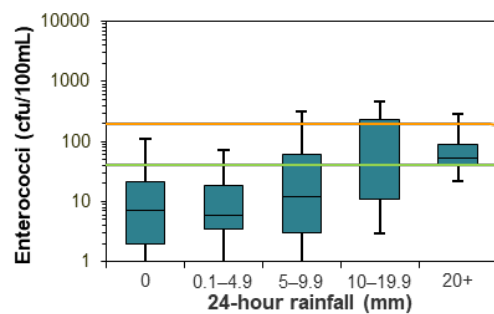
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Camp Cove

Beach grade: **G**



The Camp Cove swimming area is not netted and is backed by a narrow stretch of beach. Lifeguards patrol this swimming site during the summer period.

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

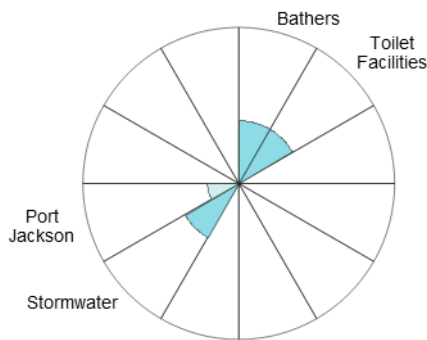
Enterococci levels increased slightly with increasing rainfall, often exceeding the safe swimming limit after 5 mm or more of rain.

The site was monitored since 2015.

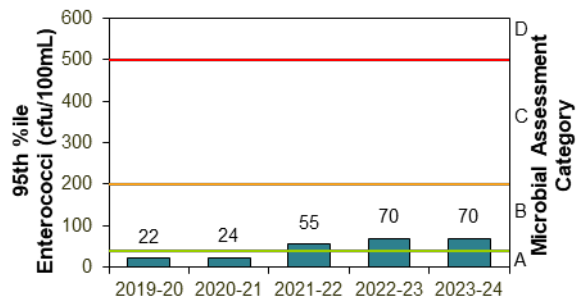
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	96%	100	Stable

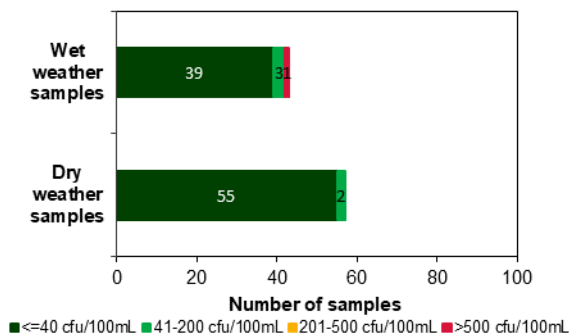
### Sanitary inspection: Low



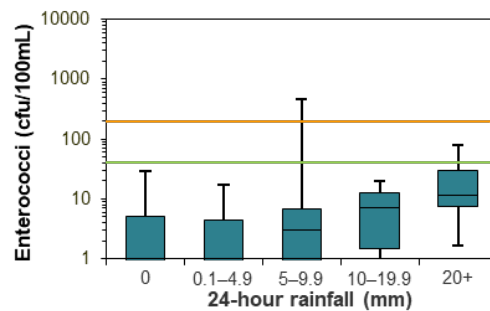
### Microbial Assessment Category: B



### Dry and wet weather water quality



### Water quality in response to rainfall



# Watsons Bay

**Beach grade:** G



The swimming site is a 20 by 40 m enclosed tidal swimming area with a narrow sandy beach and is backed by parklands with picnic facilities.

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

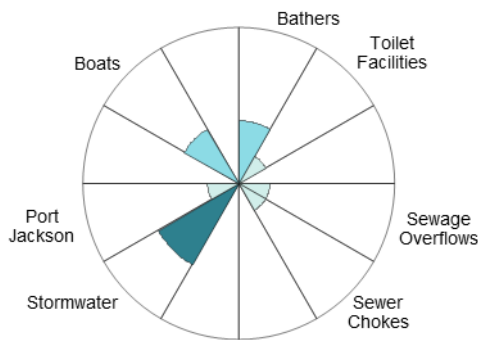
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and often after 10 mm or more.

The site has been monitored since 1994.

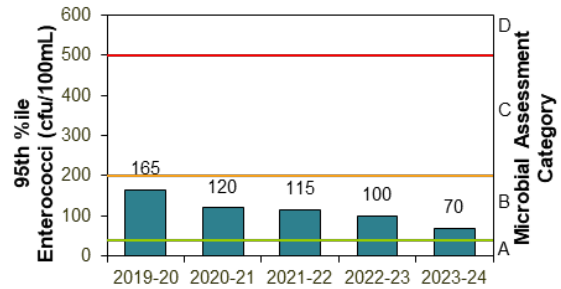
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	96%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

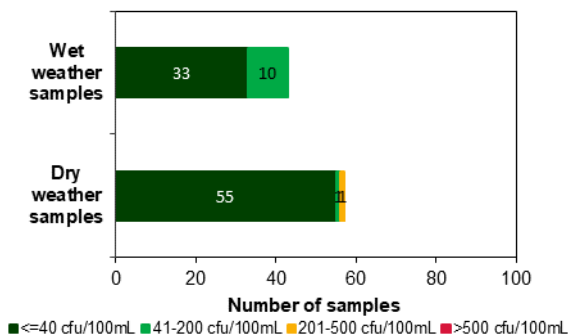
## Sanitary inspection: Moderate



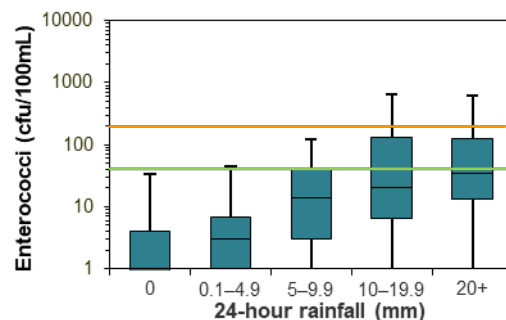
## Microbial Assessment Category: B



## Dry and wet weather water quality

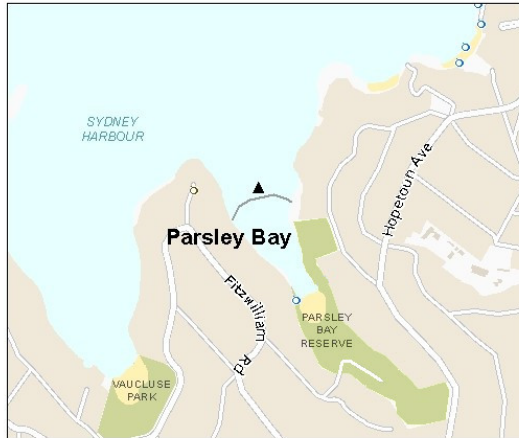


## Water quality in response to rainfall



# Parsley Bay

**Beach grade:** G



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

The swimming site is a netted swimming area backed by a sandy beach and reserve with picnic facilities and a playground.

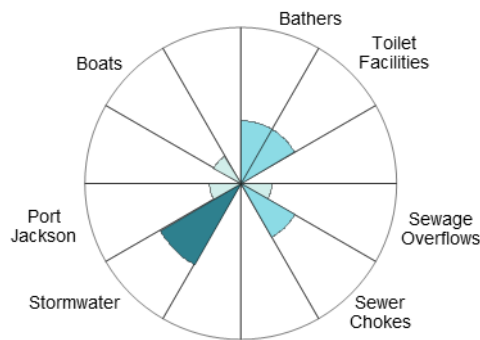
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination including stormwater.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and regularly after 5 mm or more.

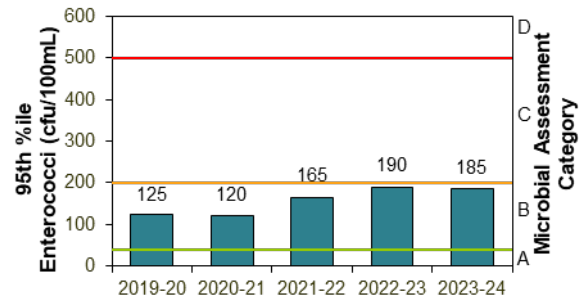
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	93%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

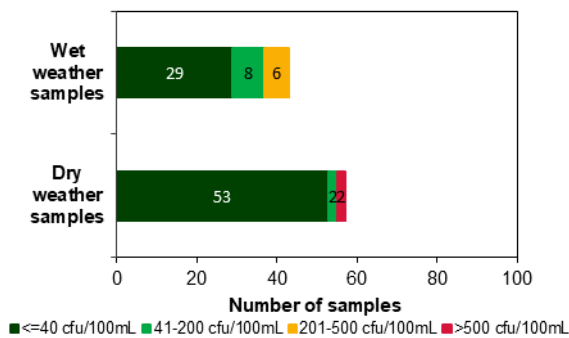
## Sanitary inspection: Moderate



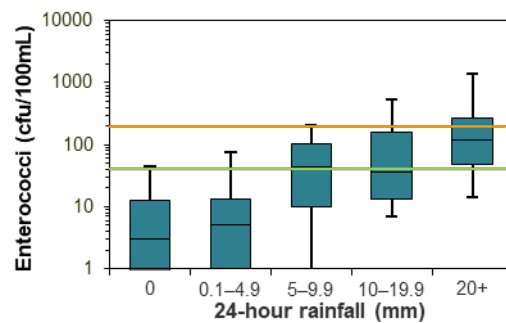
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Nielsen Park

Beach grade: **G**



See ‘How to read this report’ for key to map.

Nielsen Park swimming area is approximately 150 m long and is netted from October to April. It is backed by a sandy beach and Sydney Harbour National Park. The site was closed during 2023–2024 due to construction.

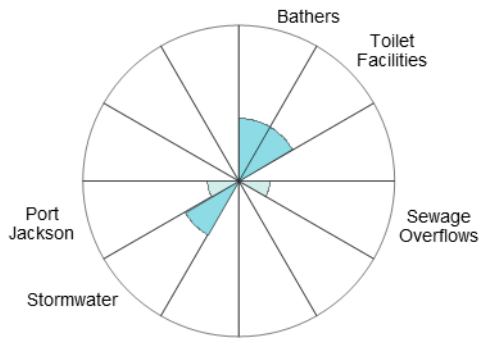
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of minor faecal contamination.

Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after rainfall.

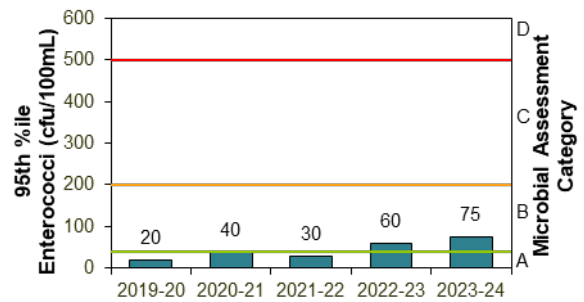
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	100%	100	Stable

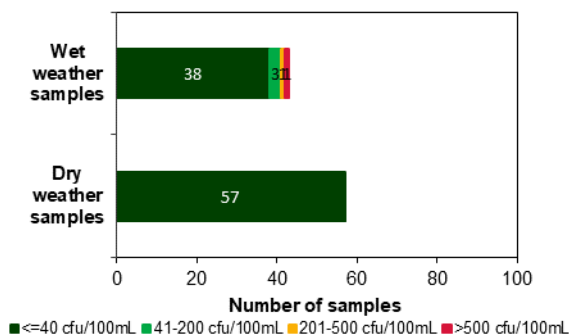
## Sanitary inspection: Low



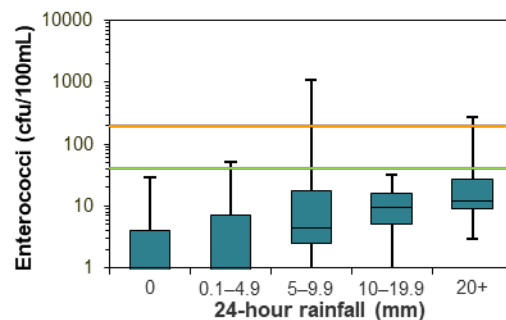
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Rose Bay Beach

Beach grade: P



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

Rose Bay Beach is approximately 500 m long and the swimming area is not netted.

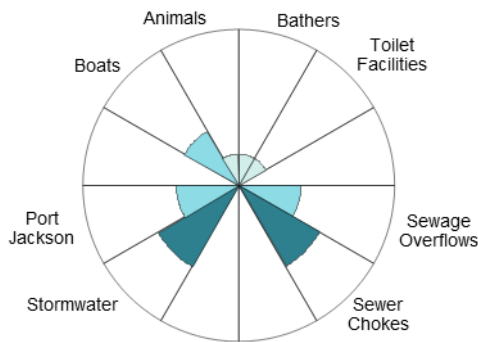
The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including stormwater and sewer chokes.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 5 mm or more.

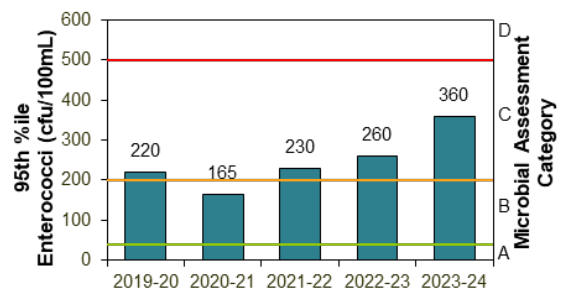
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	80%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

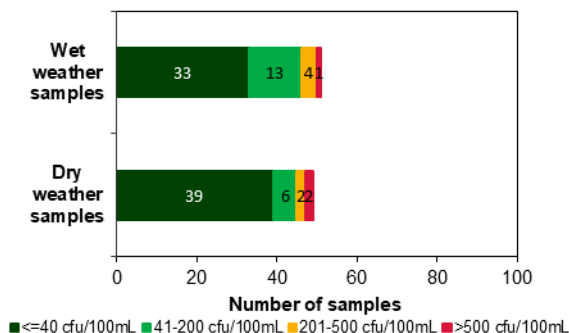
## Sanitary inspection: Moderate



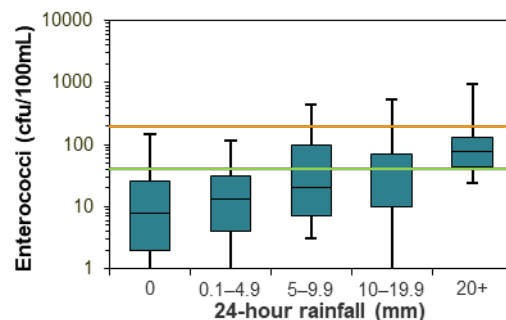
## Microbial Assessment Category: C



## Dry and wet weather water quality

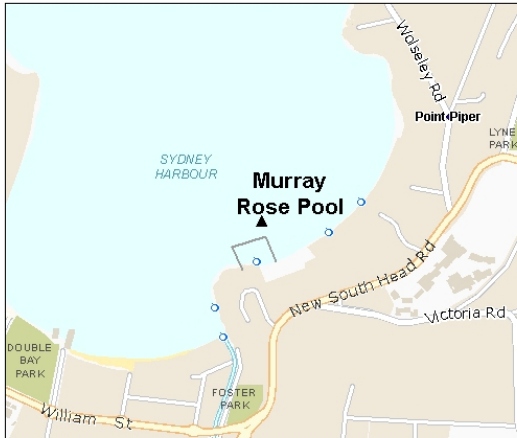


## Water quality in response to rainfall



# Murray Rose Pool

**Beach grade:** P



Murray Rose Pool (formerly Redleaf Pool) is a netted swimming enclosure in Double Bay, at the end of Seven Shillings Beach.

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

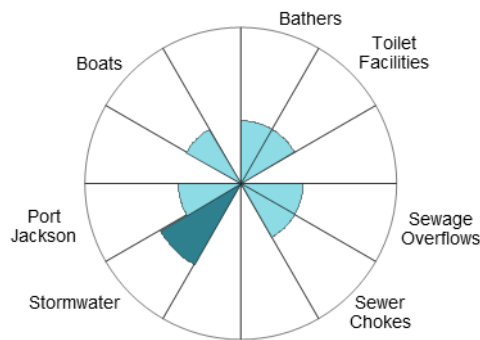
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain and often after 5 mm or more.

The site has been monitored since 1994.

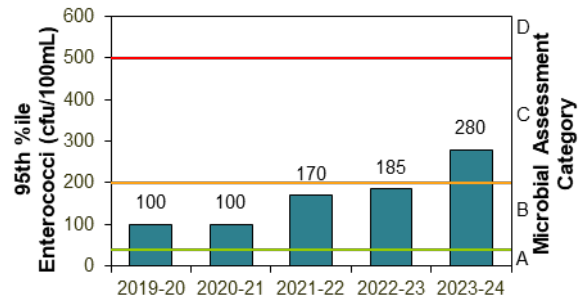
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	92%	100	Declined

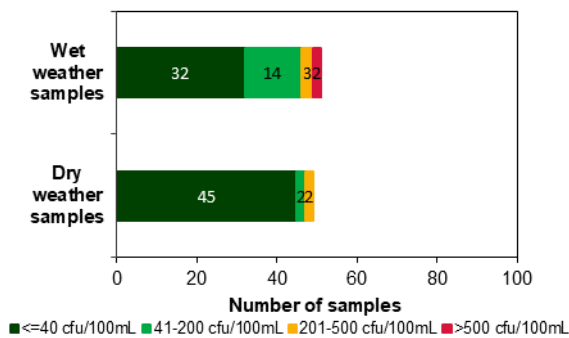
## Sanitary inspection: Moderate



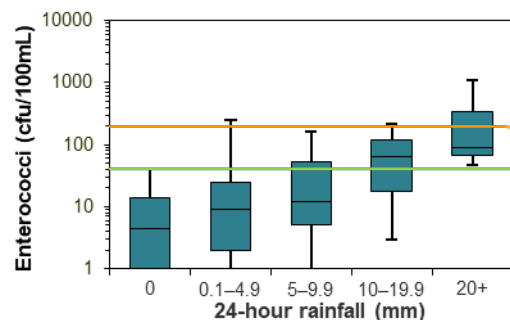
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Dawn Fraser Pool

**Beach grade:** G



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

Dawn Fraser Pool is an enclosed swimming area located in the Parramatta River and is open between October and April each year.

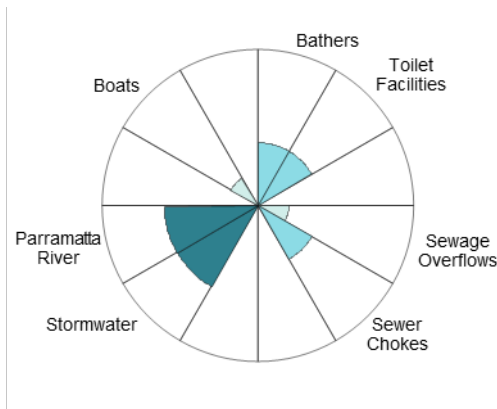
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but can be susceptible to pollution after rain, with several potential sources of faecal contamination including upstream sources in the Parramatta River.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 5 mm or more.

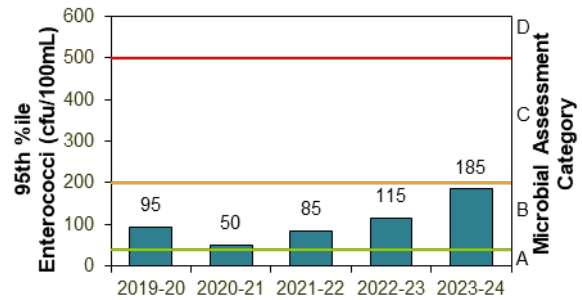
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	88%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

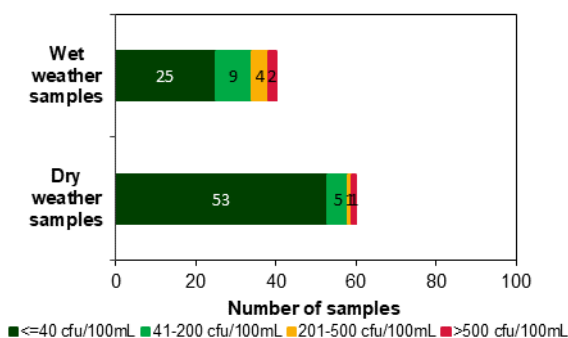
## Sanitary inspection: Moderate



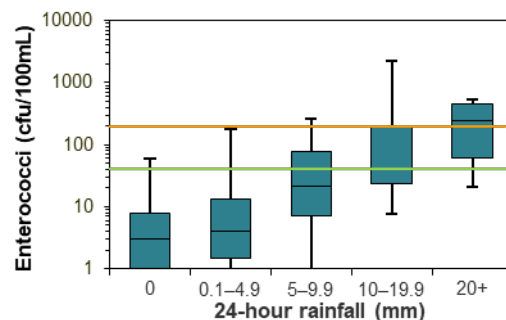
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Chiswick Baths

**Beach grade:** G



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

Chiswick Baths is a netted swimming enclosure in Five Dock Bay and is backed by a narrow sandy beach and a park.

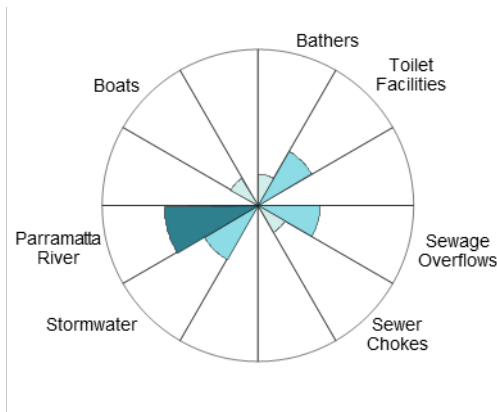
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but can be susceptible to pollution after rain, with several potential sources of faecal contamination including upstream sources in the Parramatta River.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after no little or no rain, and often after 5 mm or more.

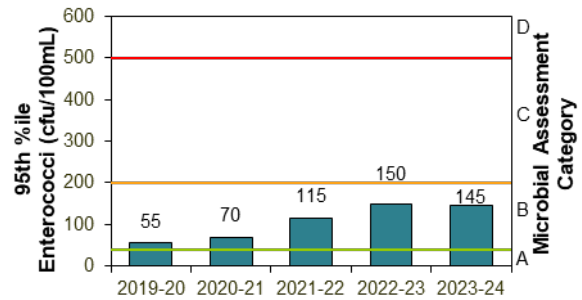
The site has been monitored since 1999.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	86%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

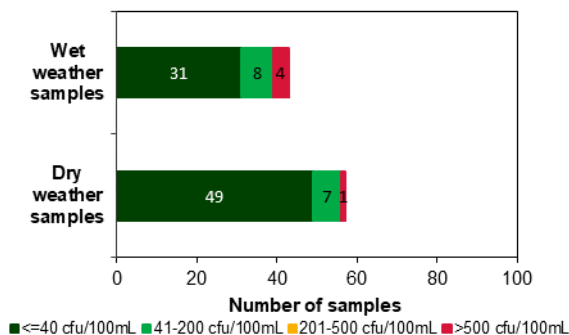
## Sanitary inspection: Moderate



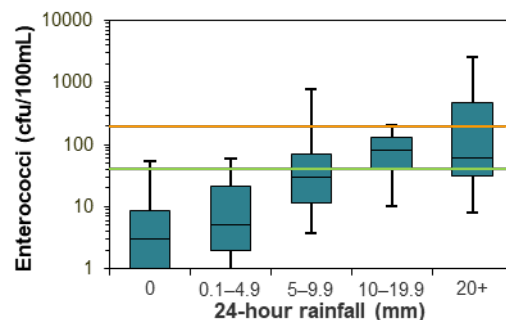
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Cabarita Beach

Beach grade: **G**



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

Cabarita Beach is a 120 m long sandy beach and is backed by parklands.

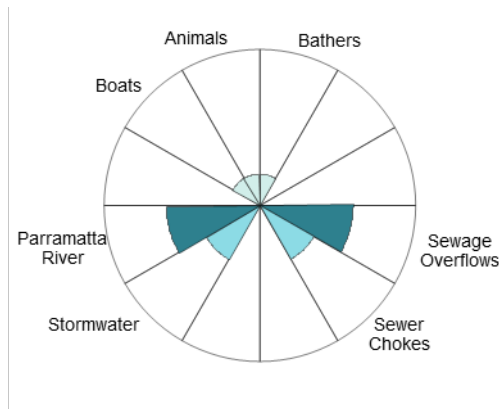
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but can be susceptible to pollution after rain, with potential faecal contamination from sewage overflows and upstream sources in the Parramatta River.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit in response to little or no rain, and often after 5 mm or more.

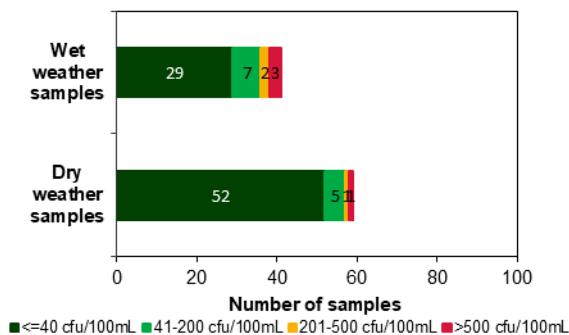
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	88%	100	Stable

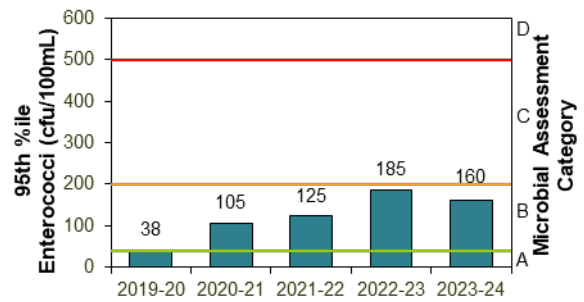
## Sanitary inspection: Moderate



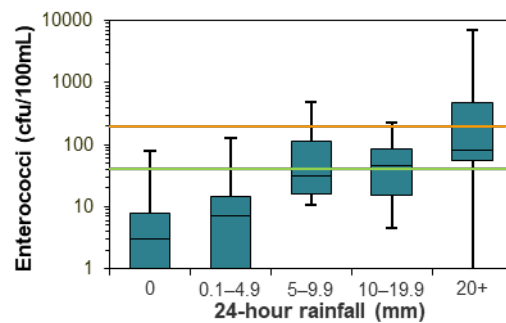
Dry and wet weather water quality



## Microbial Assessment Category: B



Water quality in response to rainfall



# Woolwich Baths

**Beach grade:** P



Woolwich Baths is a 20 by 30 m netted swimming area in the lower Lane Cove River with a narrow sandy beach.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with potential faecal contamination including stormwater and upstream river sources.

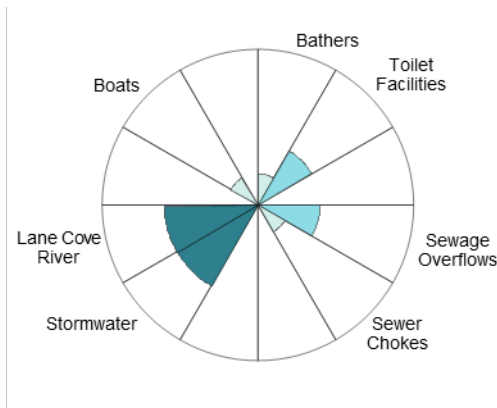
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 5 mm or more.

The site has been monitored since 1994.

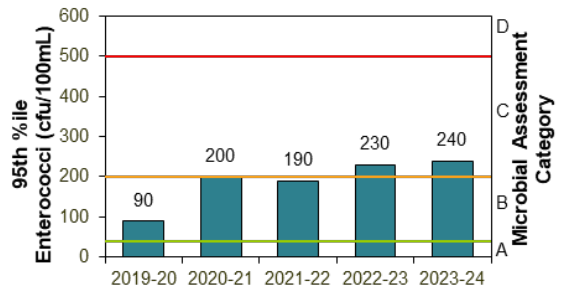
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	77%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

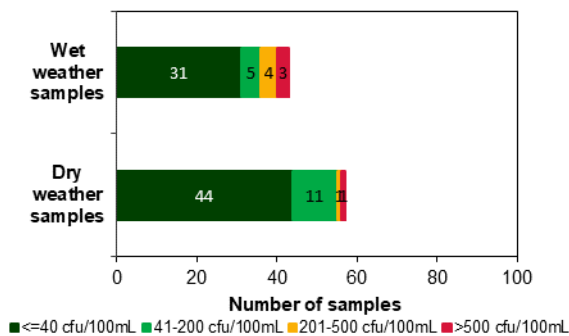
## Sanitary inspection: Moderate



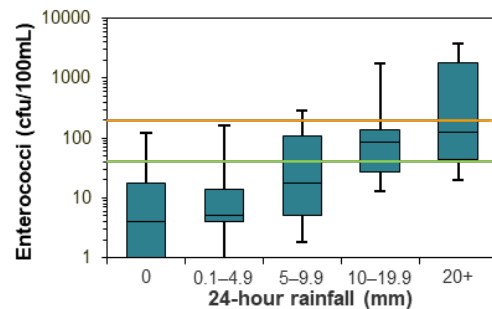
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Tambourine Bay

**Beach grade:** P



Tambourine Bay is in the lower Lane Cove River. The swimming enclosure has been removed and access to the water is limited.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with potential faecal contamination including stormwater and upstream river sources.

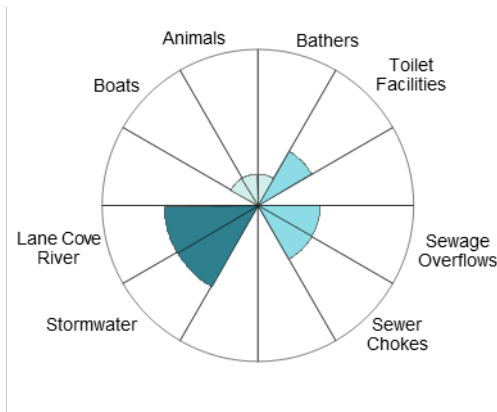
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and regularly after 5 mm or more.

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

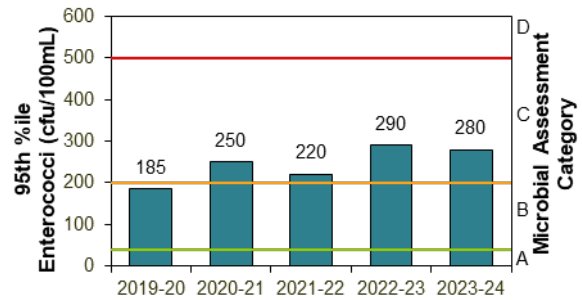
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	84%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

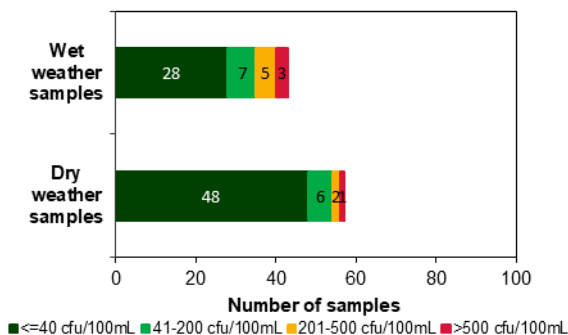
## Sanitary inspection: Moderate



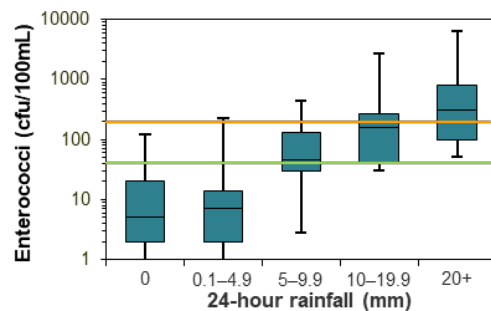
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Woodford Bay

**Beach grade:** P



This site is a 20 by 25 m swimming enclosure on the western side of Woodford Bay in the lower Lane Cove River.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with potential faecal contamination including discharge from upstream river sources.

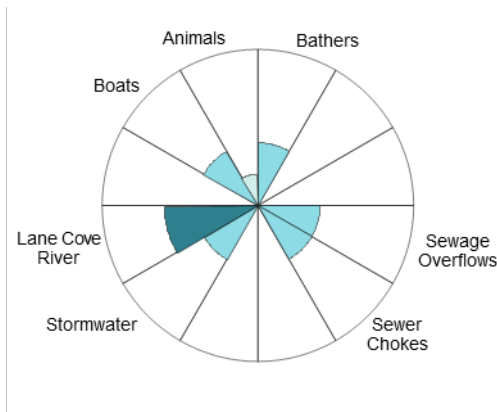
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and regularly after 10 mm or more.

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

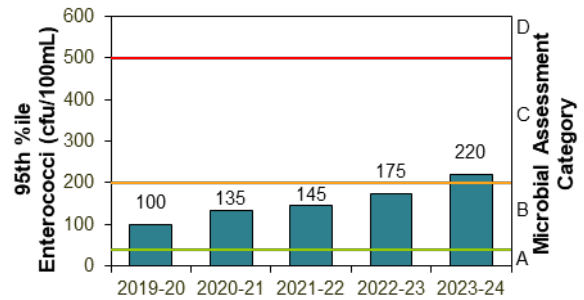
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	88%	100	Declined

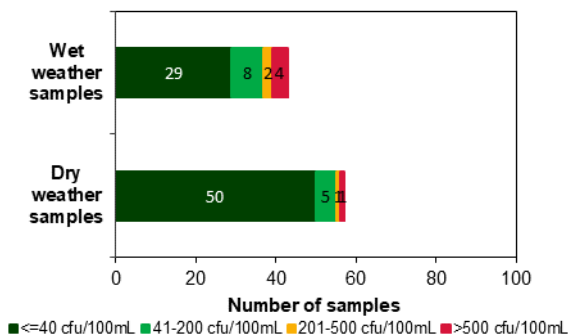
## Sanitary inspection: Moderate



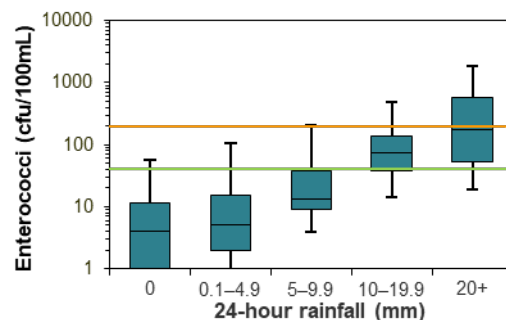
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Greenwich Baths

Beach grade: **G**



Greenwich Baths is a 40 m long netted swimming area backed by a sandy beach and is open during the swimming season.

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

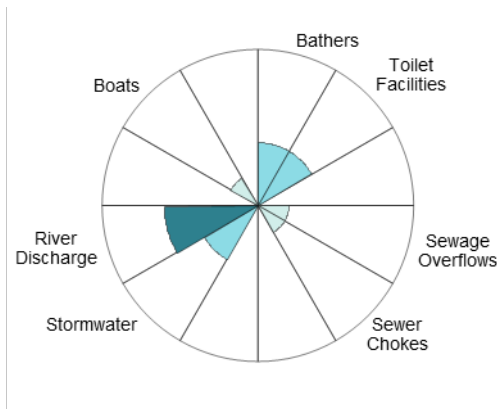
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 5 mm or more.

The site has been monitored since 1994.

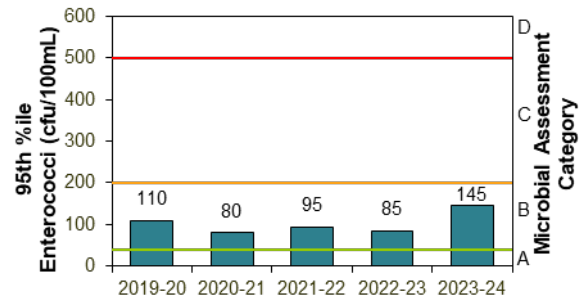
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	84%	100	Stable

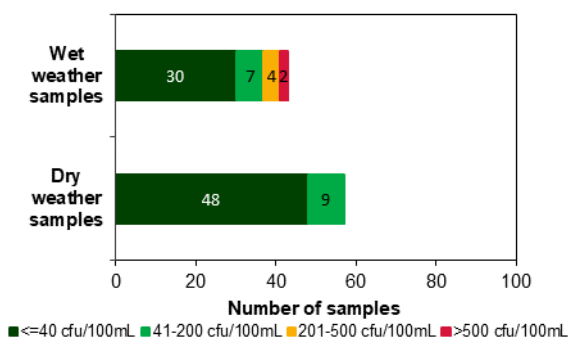
## Sanitary inspection: Moderate



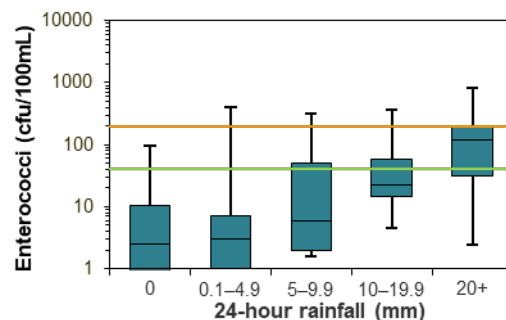
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Hayes Street Beach

**Beach grade:** G



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

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

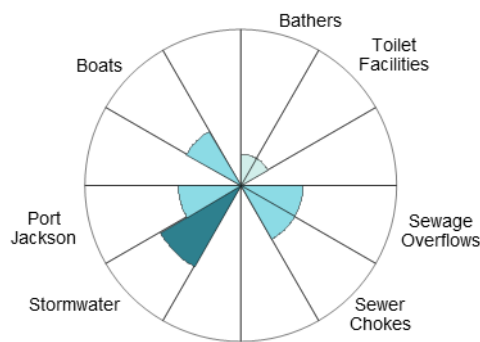
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination including stormwater.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 5 mm or more.

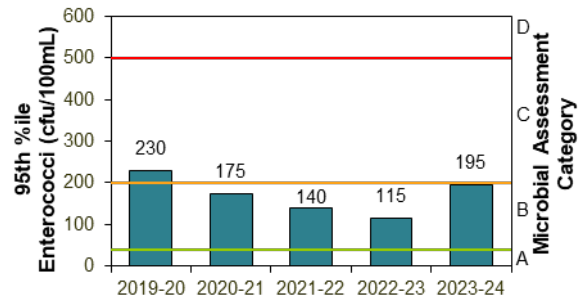
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	81%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

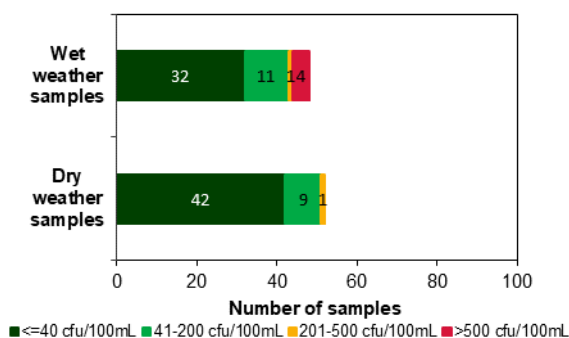
## Sanitary inspection: Moderate



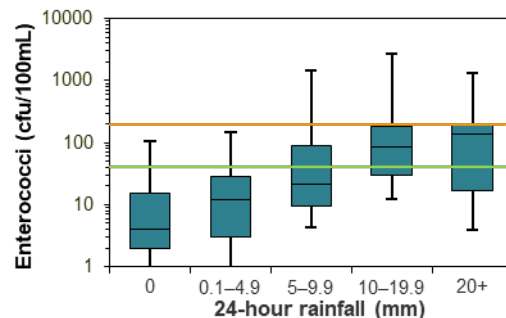
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Clifton Gardens

**Beach 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 m long beach in Chowder Bay and is backed by Sydney Harbour National Park and a park.

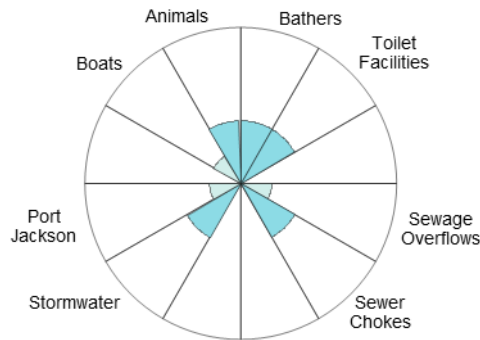
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of minor faecal contamination.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and regularly after 10 mm or more.

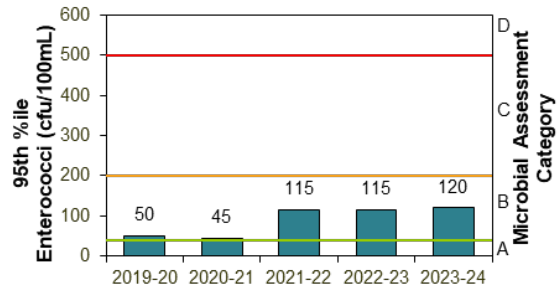
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Nov 2021 to Apr 2024	90%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

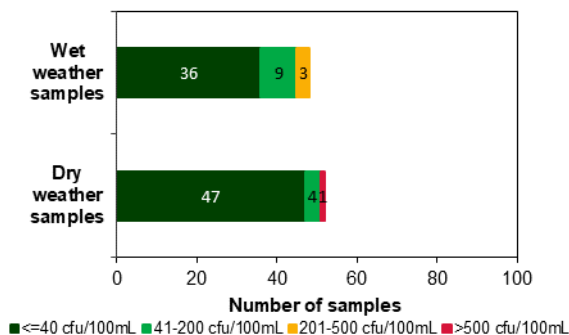
### Sanitary inspection: Moderate



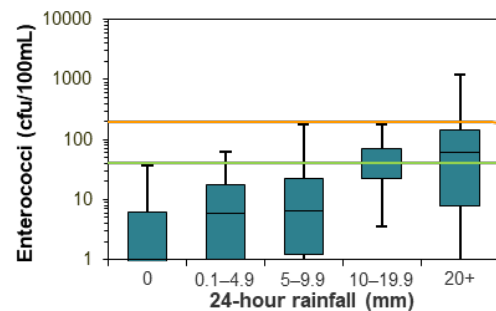
### Microbial Assessment Category: B



### Dry and wet weather water quality

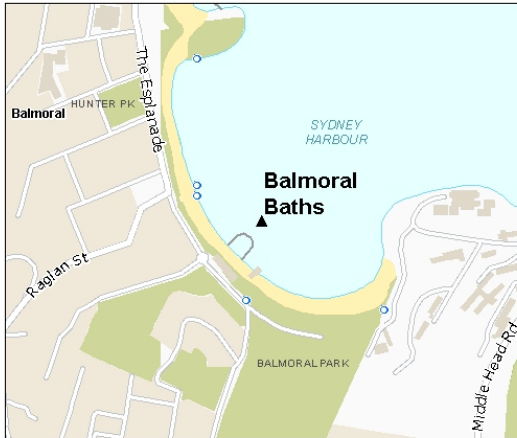


### Water quality in response to rainfall



# Balmoral Baths

**Beach grade:** G



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

Balmoral Baths is a netted swimming area at the eastern end of Balmoral Beach and is backed by a park.

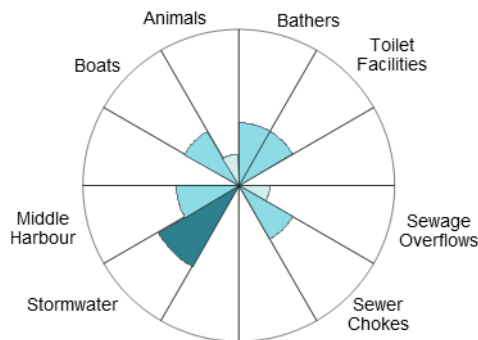
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination including stormwater.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and often after 5 mm or more.

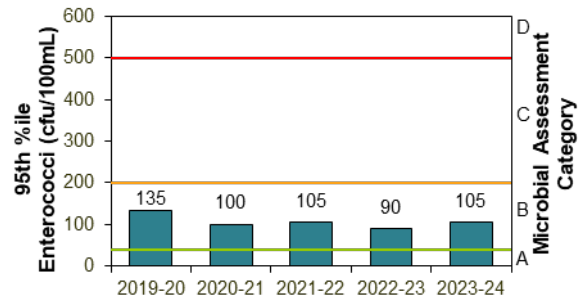
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	96%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

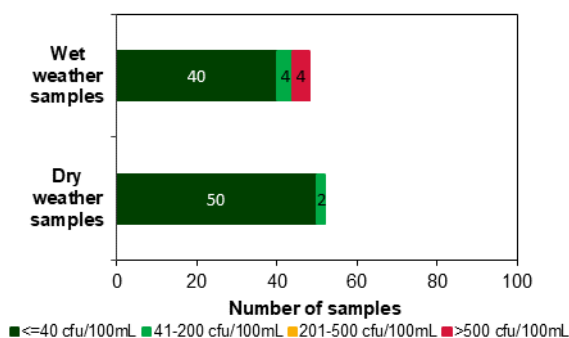
## Sanitary inspection: Moderate



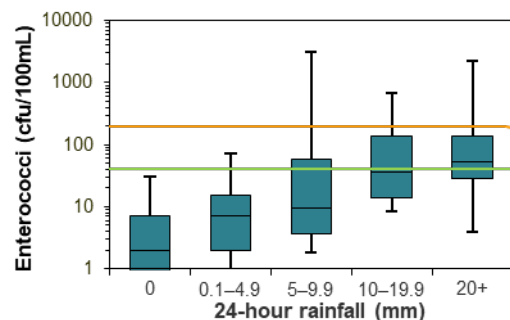
## Microbial Assessment Category: B



## Dry and wet weather water quality

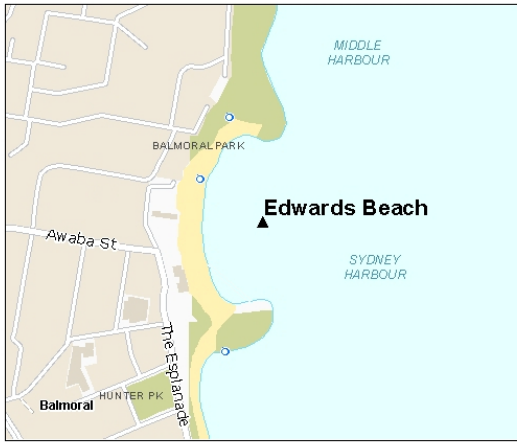


## Water quality in response to rainfall



# Edwards Beach

Beach grade: **G**



Edwards Beach is a popular swimming area backed by a walking track, park and café facilities.

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

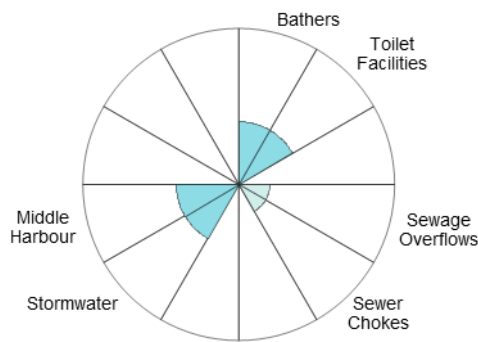
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after 5 mm or more of rain, and often after 10 mm or more.

See ‘How to read this report’ for key to map.

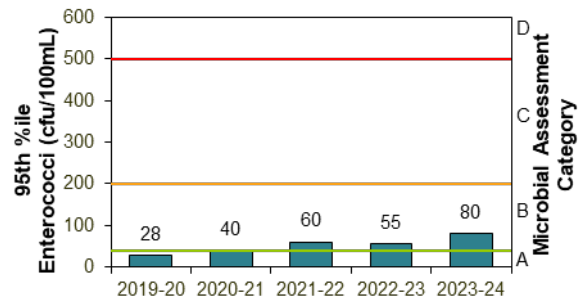
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	94%	100	Stable

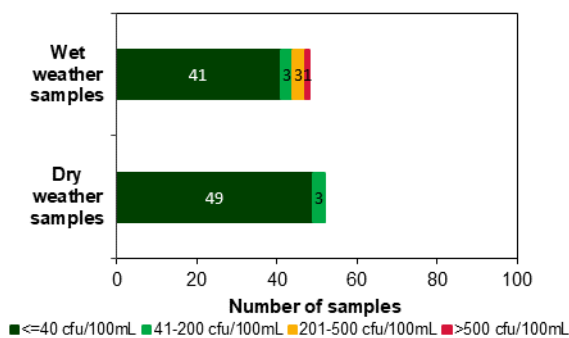
## Sanitary inspection: Moderate



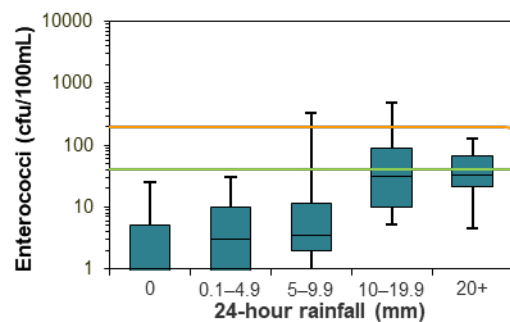
## Microbial Assessment Category: B



## Dry and wet weather water quality

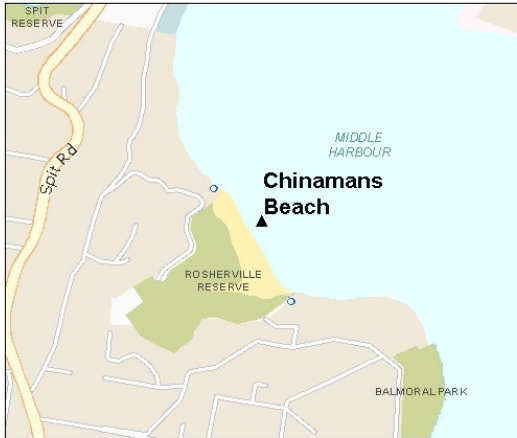


## Water quality in response to rainfall



# Chinamans Beach

**Beach grade:** G



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

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

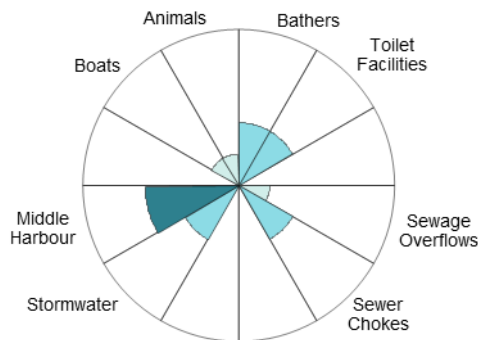
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and often after 10 mm or more.

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

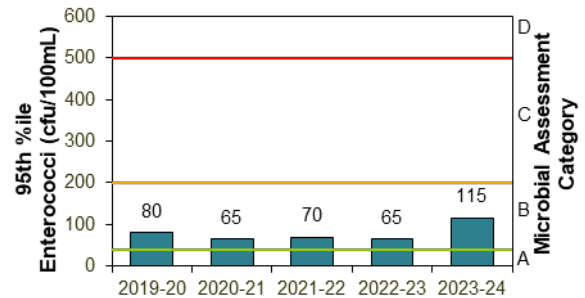
The site has been monitored since 1998.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	87%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

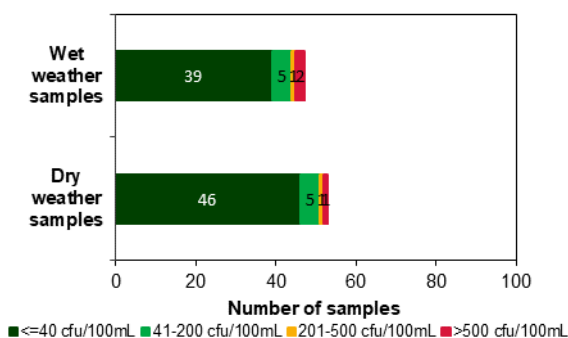
## Sanitary inspection: Moderate



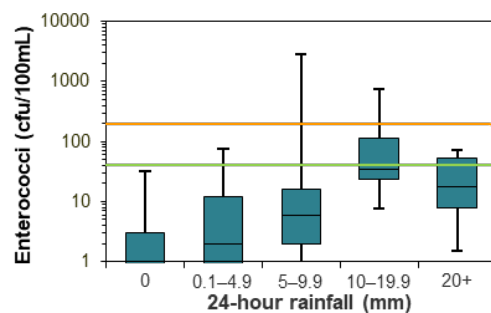
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Northbridge Baths

**Beach grade:** P



Northbridge Baths is a 30 by 65 m enclosed swimming area in Sailors Bay, Middle Harbour and is open year-round.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including stormwater and upstream sources in Middle Harbour.

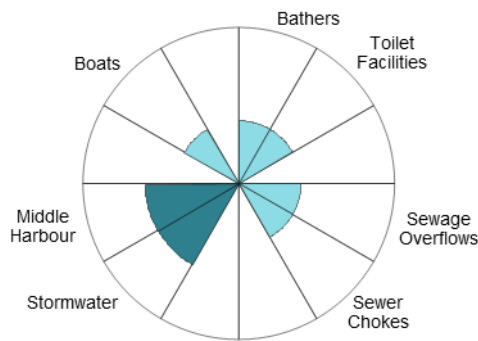
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 5 mm or more.

The site has been monitored since 1994.

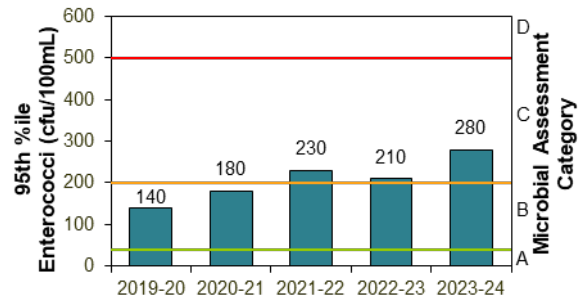
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	86%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

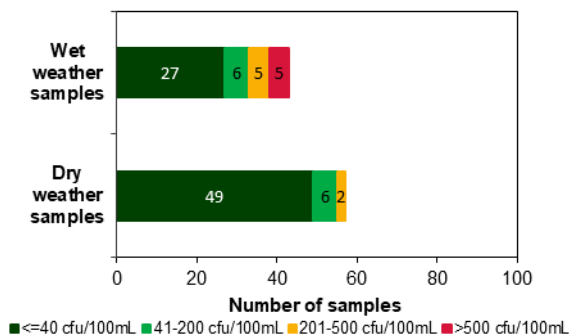
## Sanitary inspection: High



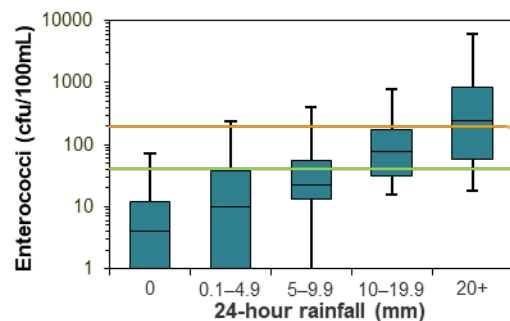
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Davidson Reserve

**Beach grade:** P



Davidson Reserve is a 25 m long swimming area situated in Middle Harbour and is backed by Garigal National Park and picnic area. The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including sewage overflows and upstream sources in Middle Harbour.

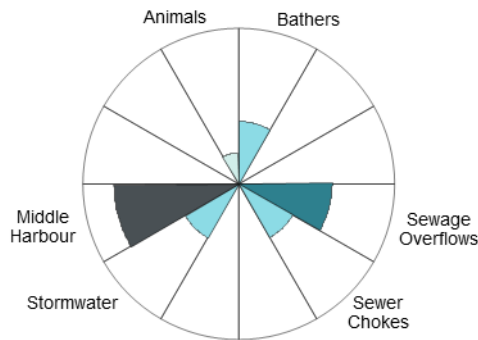
See ‘How to read this report’ for key to map.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain and regularly after 5 mm or more.

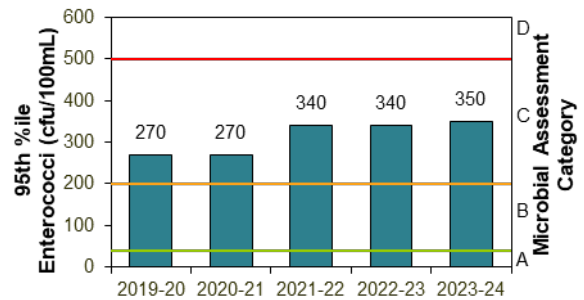
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	89%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

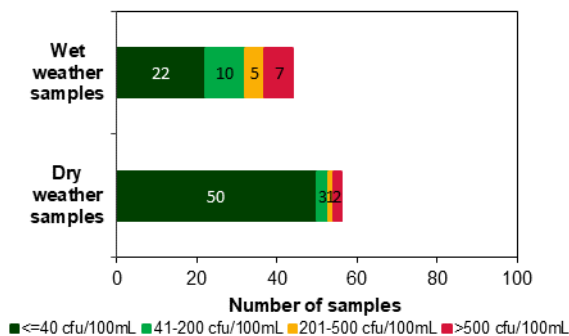
## Sanitary inspection: High



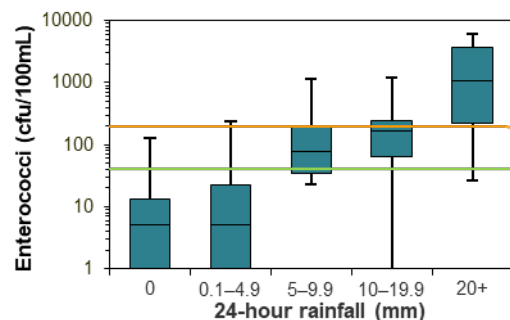
## Microbial Assessment Category: C



## Dry and wet weather water quality

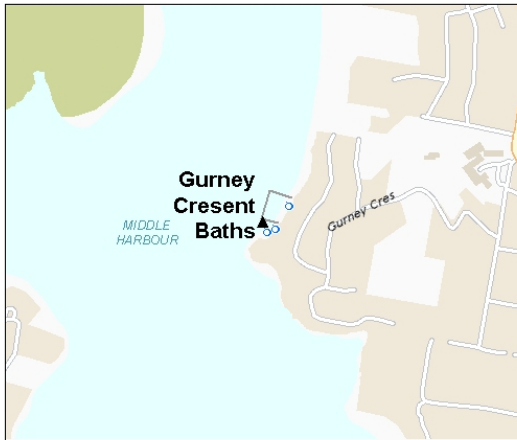


## Water quality in response to rainfall



# Gurney Crescent Baths

Beach grade: **P**



See ‘How to read this report’ for key to map.

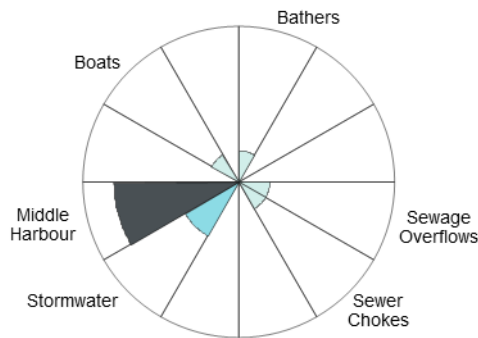
Gurney Crescent Baths is a 20 m square netted swimming area located at Pickering Point in Middle Harbour.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including upstream sources in Middle Harbour. Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and regularly after 5 mm or more.

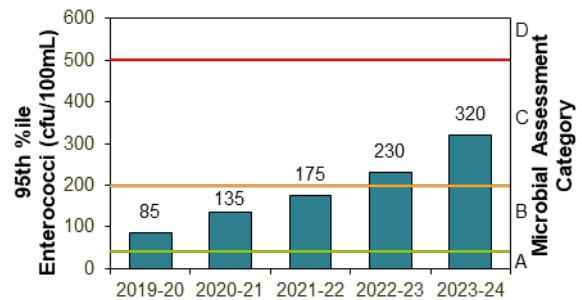
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	89%	100	Stable

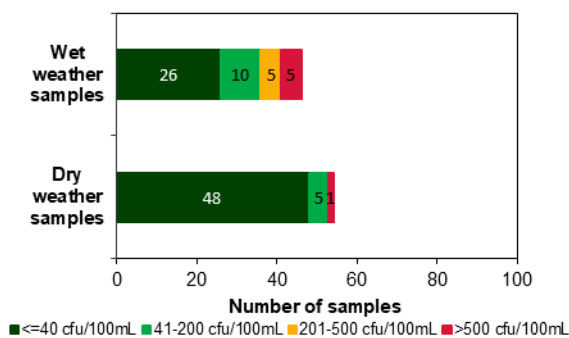
## Sanitary inspection: High



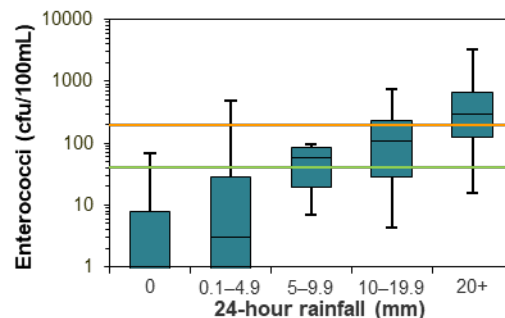
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Clontarf Pool

**Beach grade:** G



Clontarf Pool is a small netted swimming area in Middle Harbour backed by a narrow sandy beach and a park.

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

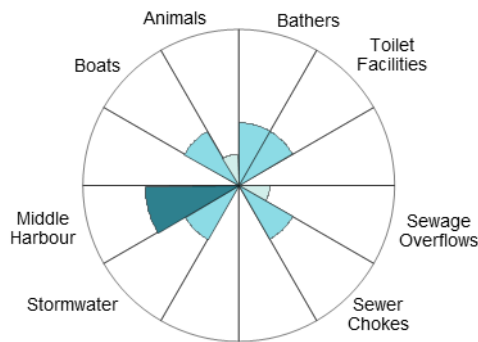
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 10 mm or more.

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

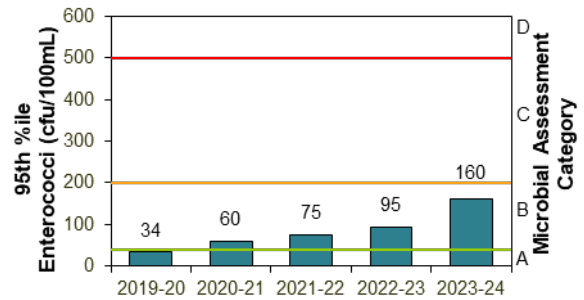
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	85%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

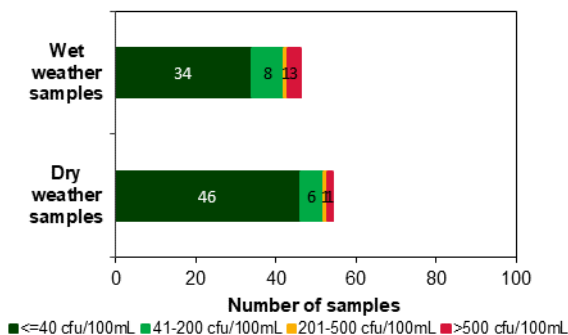
## Sanitary inspection: Moderate



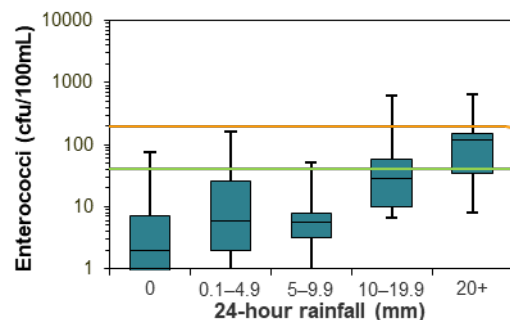
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Forty Baskets Pool

Beach grade: G



Forty Baskets Pool is a 20 by 40 m netted swimming area at the northern end of Forty Baskets Beach in North Harbour.

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

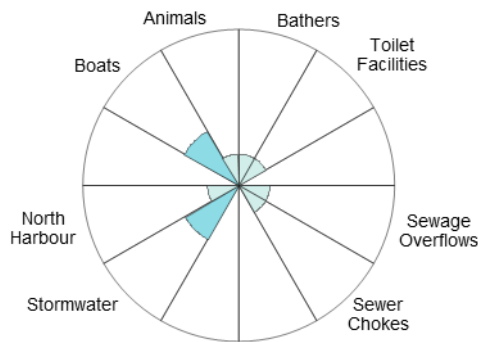
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after rain, and regularly after 20 mm or more.

See ‘How to read this report’ for key to map.

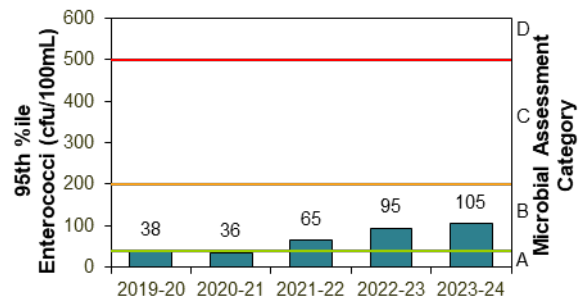
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	94%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

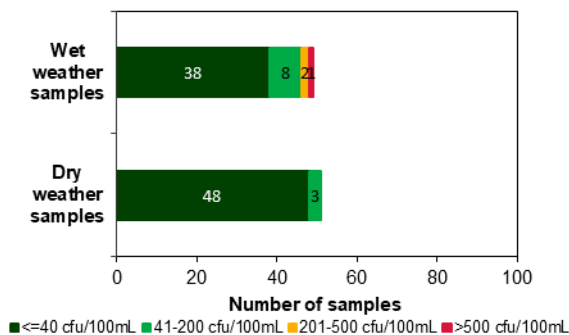
## Sanitary inspection: Moderate



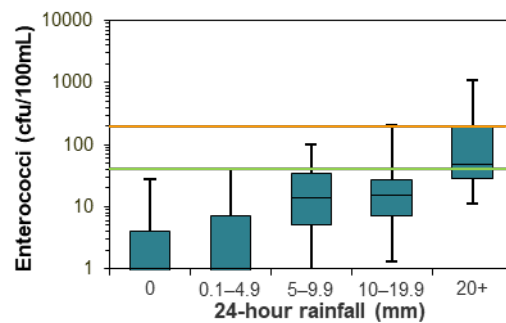
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Fairlight Beach

**Beach grade:** G



Fairlight Beach is a narrow beach located in North Harbour. A 25 m pool filled with water from the harbour is adjacent to the beach.

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

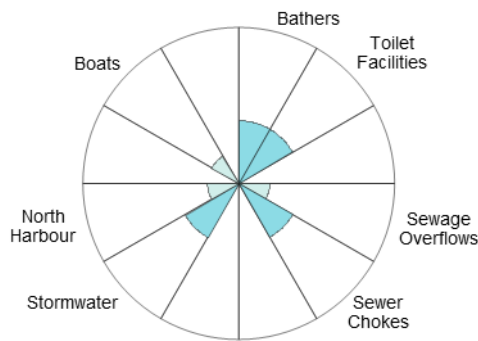
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after 5 mm or more of rain, and often after 20 mm or more.

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

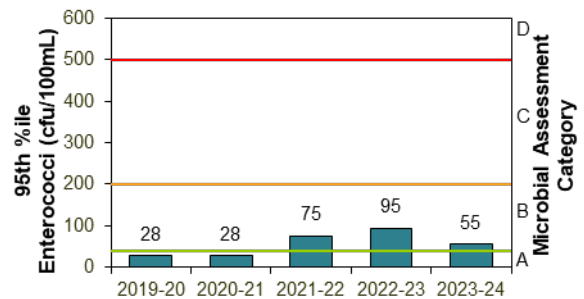
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	98%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

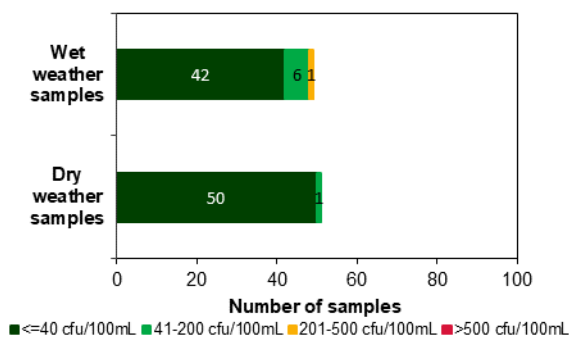
## Sanitary inspection: Moderate



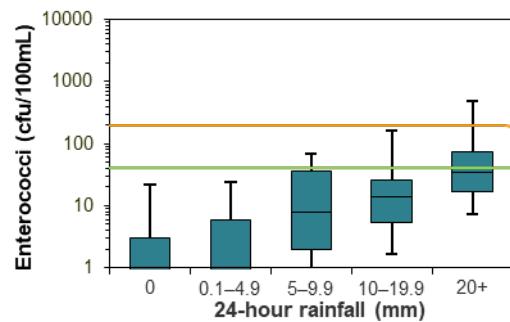
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Manly Cove

Beach grade: **G**



Manly Cove is a netted swimming enclosure at the centre of the 250 m long beach, adjacent to the Manly Ferry Terminal.

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

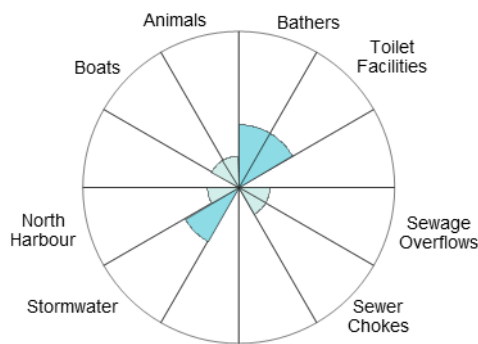
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and regularly after 20 mm or more.

See ‘How to read this report’ for key to map.

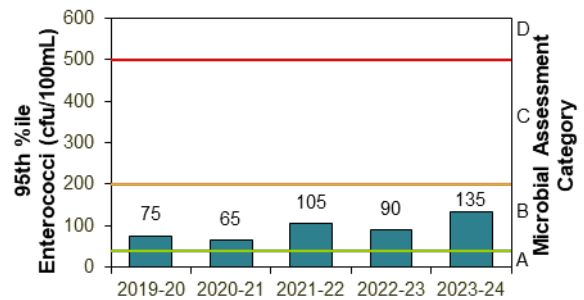
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	96%	100	Stable

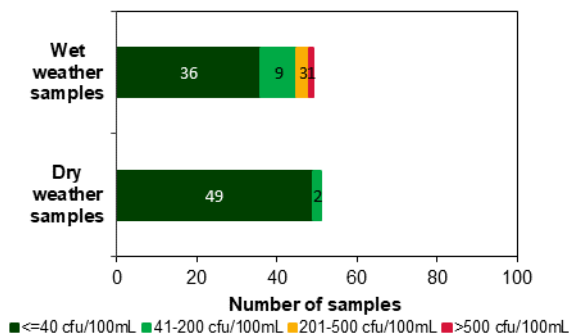
## Sanitary inspection: Moderate



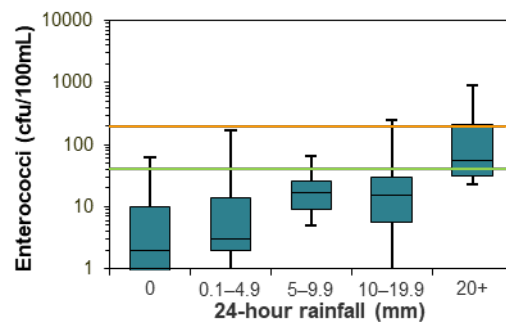
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Little Manly Cove

Beach grade: **G**



The 30 m square swimming enclosure is at the eastern end of the sandy beach in Little Manly Cove.

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

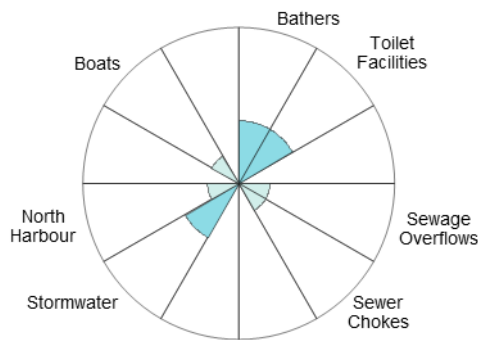
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 5 mm or more.

See ‘How to read this report’ for key to map.

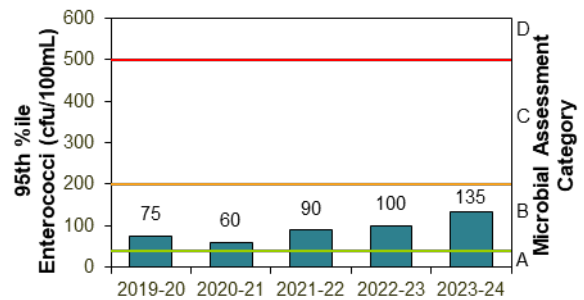
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	94%	100	Stable

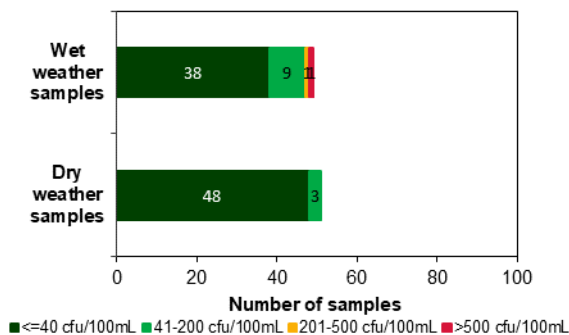
## Sanitary inspection: Moderate



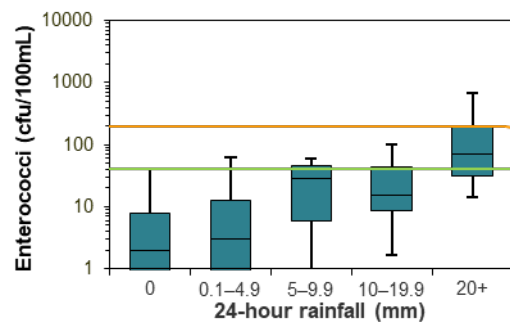
## Microbial Assessment Category: B



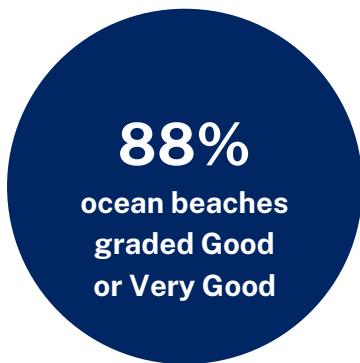
## Dry and wet weather water quality



## Water quality in response to rainfall



# Southern Sydney (Sutherland beaches, lower Georges River, Botany Bay & Port Hacking)



## Overall results

Fourteen of the 28 swimming sites were graded as Very Good or Good in 2023–2024. This is a decline in performance from the previous year.

### Percentage of sites graded as Very Good or Good

	2021– 2022	2022– 2023	2023– 2024	Trend
Ocean beaches (8 sites)	100%	100%	<b>88%</b>	
Estuarine sites (20 sites)	55%	40%	<b>35%</b>	

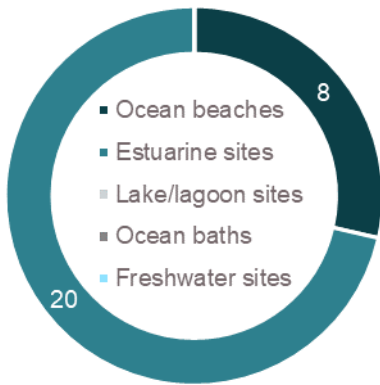
Beachwatch samples the ocean beaches every sixth day throughout the year, and estuarine beaches every sixth day between October and April, and monthly from May to September.

See the section on **How to read this report** on page 134 for an explanation of the graphs, tables and Beach Suitability Grades.

### Best beaches

Greenhills Beach, Wanda Beach, Elouera Beach, North Cronulla Beach and Oak Park.

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



**Site types in Southern Sydney region**

Swimming sites monitored in the Southern Sydney region include ocean beaches and estuarine areas in Botany Bay, lower Georges River and Port Hacking, with each site type having a different response to rainfall-related impacts.

Estuarine swimming sites did not perform as well as ocean beaches due to lower levels of flushing, which increases the time needed to disperse and dilute pollution inputs, taking longer to recover from stormwater events.

As a general precaution swimming should be avoided during and for at least one day after heavy rain at ocean beaches, and for up to 3 days in estuarine areas, or if there are signs of stormwater pollution such as discoloured water or floating debris.

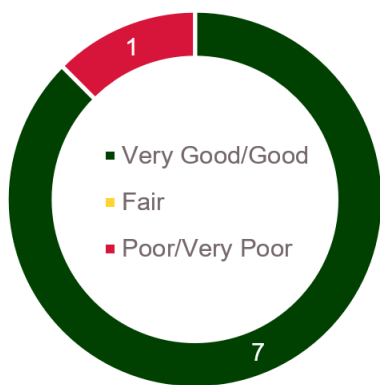
### Ocean beaches

Seven of the 8 Southern Sydney ocean beaches were graded as Very Good or Good in 2023–2024.

Greenhills Beach, Wanda Beach, Elouera Beach, North Cronulla Beach and Oak Park were graded as Very Good. Water quality at these sites has been consistently excellent for many years and is suitable for swimming almost all of the time.

South Cronulla Beach and Shelly Beach were graded Good. Shelly Beach declined from Very Good in the previous year. Water quality at these sites is suitable for swimming most of the time, but can be susceptible to pollution. South Cronulla Beach occasionally recorded elevated enterococci levels during dry weather or after light rainfall, and both beaches often recorded elevated enterococci levels following heavy rainfall.

Boat Harbour was graded as Poor in 2023–2024, downgraded from Good in the previous year. Water quality at Boat Harbour is often susceptible to faecal contamination following moderate to heavy rainfall, and occasionally during dry weather. Despite this, water quality was mostly suitable for swimming during dry weather conditions, with 78% of dry weather samples within the safe swimming limit. Microbial water quality at this site has shown trends of declining microbial

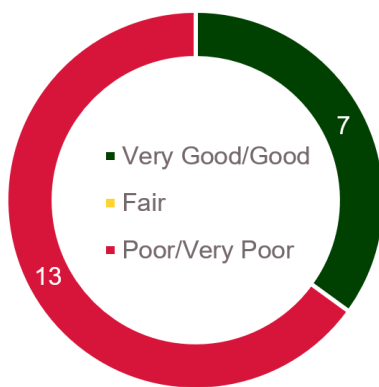


**Beach Suitability Grades for Southern Sydney ocean beaches**

assessments over recent years and has generally been more elevated than nearby ocean beaches. This ocean beach may take longer to recover following rainfall as the site is partially enclosed compared to open ocean beaches.

It is recommended that swimming be avoided at ocean beaches during and for up to one day following rainfall, or if there are signs of pollution such as discoloured water, flowing drains or floating debris.

### Estuarine beaches



**Beach Suitability Grades for Southern Sydney estuarine beaches**

Seven of the 20 estuarine sites were graded as Good in 2023–2024: Silver Beach, Sandringham Baths, Monterey Baths, Congwong Bay, Jibbon Beach, Horderns Beach and Lilli Pilli Baths. Water quality at these sites was suitable for swimming most of the time, with elevated levels of enterococci mostly recorded following rainfall.

Microbial water quality at most Southern Sydney estuarine sites has shown strong trends of declining microbial assessments over the last 5 years. Several sites graded Good in this year’s assessment are nearing the threshold between Good and Poor grades.

Eleven estuarine swimming sites were graded as Poor in 2023–2024: Como Baths, Jew Fish Bay Baths, Oatley Bay Baths and Carss Point Baths in the lower Georges River, Dolls Point Baths, Ramsgate Baths, Brighton-Le-Sands Baths, Kyeemagh Baths, Yarra Bay and Frenchmans Bay in Botany Bay, and Gunnamatta Bay Baths in Port Hacking. Microbial water quality at these sites was mostly suitable for swimming during dry weather conditions, with between 53% and 83% of dry weather samples within the safe swimming limit. However, bacterial levels increased significantly with increasing rainfall. These sites can be susceptible to wet weather impacts and have several sources of faecal contamination including upstream sources, stormwater and sewage overflows and chokes.

Ramsgate Baths was downgraded from Good in the previous year. This site has shown trends of declining microbial assessments over the last 6 years and has crossed the threshold from Good to Poor.

Foreshores Beach and Gymea Bay Baths continued to be graded as Very Poor in 2023–2024. Water quality at these sites is significantly impacted by faecal contamination during and following rainfall, and occasionally during dry weather.

Foreshores Beach is very susceptible to faecal contamination from the sewage overflows that periodically discharge into Mill Stream. Sydney Water has placed permanent signage to advise the public to avoid swimming 3 days after rainfall due to the risk from sewage overflows, which may impact water quality at this site.

Microbial water quality at Gymea Bay Baths has shown trends of declining microbial assessments over the last 5 years. This site is susceptible to faecal contamination with many potential sources including stormwater, sewer chokes and from elsewhere within Port Hacking.

Swimming should be avoided during and for up to 3 days following light rainfall at all estuarine swimming sites, or if there are signs of pollution such as discoloured water, odours or floating debris.



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



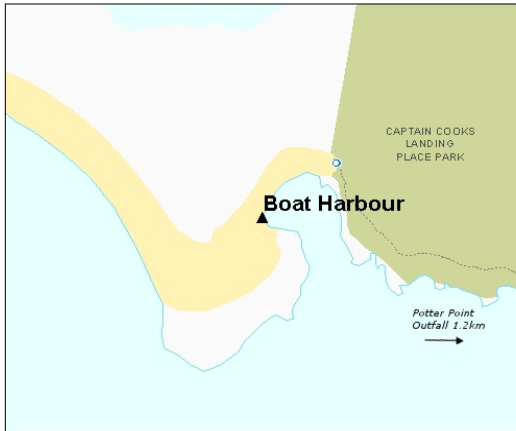
Sampling sites and Beach Suitability Grades in Botany Bay and lower Georges River



Sampling sites and Beach Suitability Grades in Port Hacking

# Boat Harbour

**Beach grade:** P



See ‘How to read this report’ for key to map.

Boat Harbour is a 150 m long unpatrolled private beach at the northern end of Bate Bay.

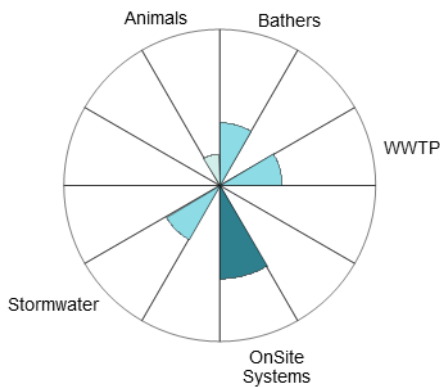
The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including stormwater and onsite sewer systems behind the beach.

Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 10 mm or more.

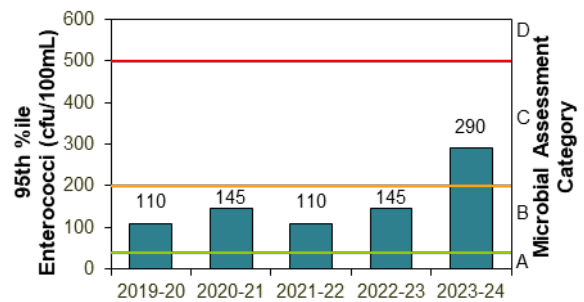
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	78%	100	Declined

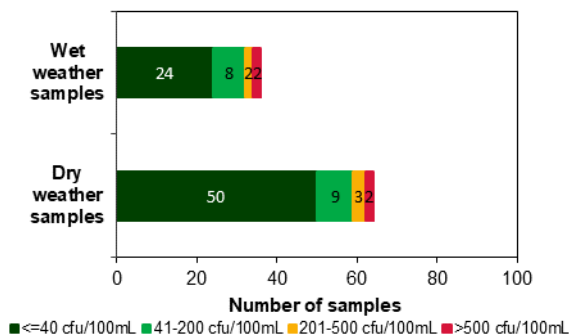
## Sanitary inspection: Moderate



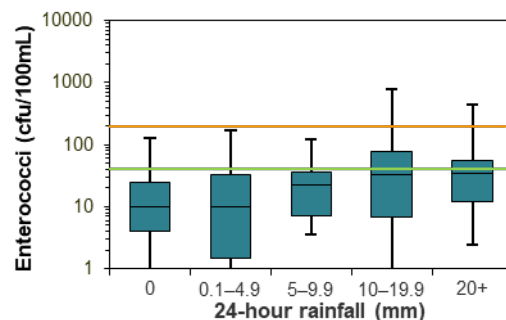
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Greenhills Beach

Beach grade: **VG**



Greenhills Beach is 3 km long and situated at the northern end of Bate Bay. The beach is not patrolled.

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

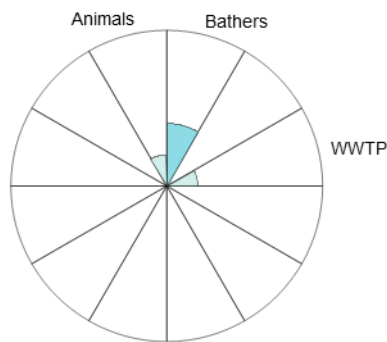
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after no rain and after 20 mm or more of rain.

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

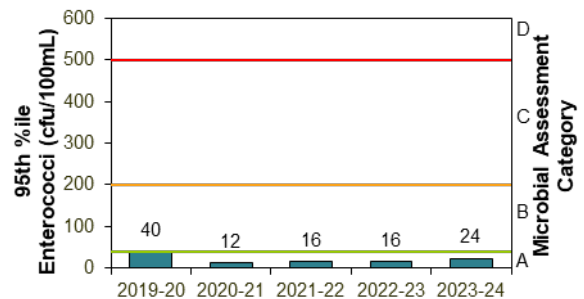
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Jul 2022 to Apr 2024	91%	100	Stable

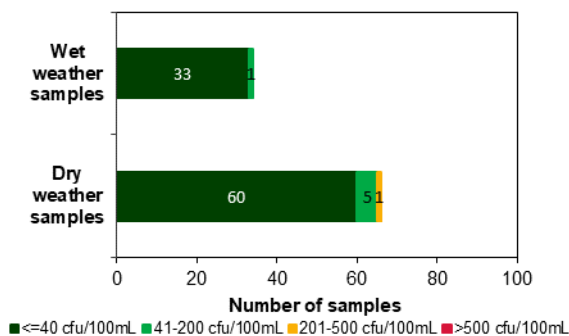
## Sanitary inspection: Low



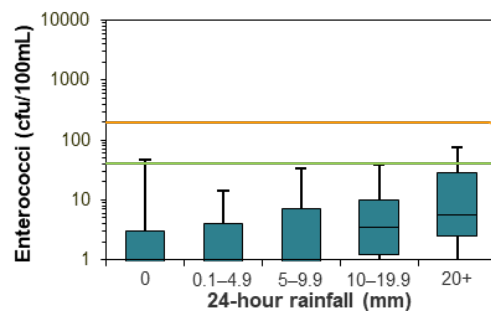
## Microbial Assessment Category: A



## Dry and wet weather water quality



## Water quality in response to rainfall



# Wanda Beach

Beach grade: **VG**



Wanda, Elouera and North Cronulla beaches form a 1.5 km stretch of beach towards the southern end of Bate Bay. Lifeguards patrol from October to April.

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

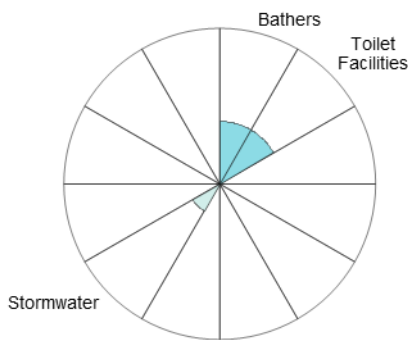
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after 10 mm or more of rain.

The site has been monitored since 1989.

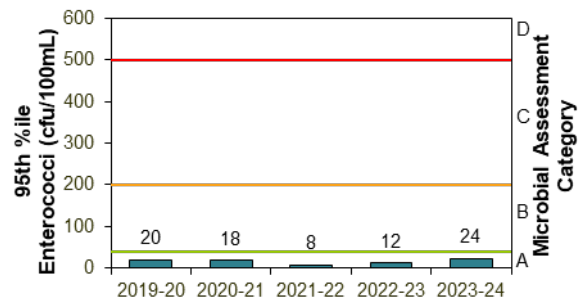
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	97%	100	Stable

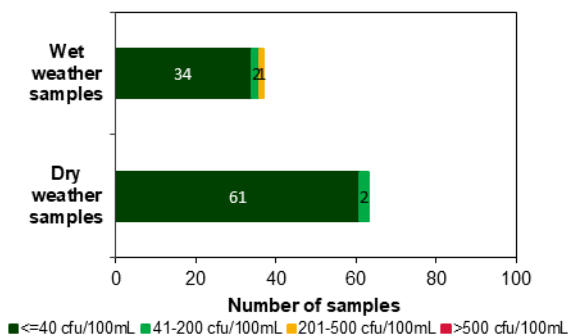
### Sanitary inspection: Low



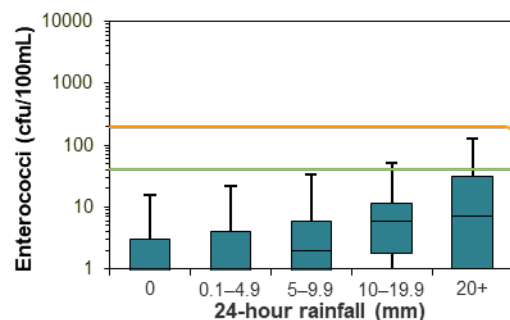
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Elouera Beach

Beach grade: **VG**



Wanda, Elouera and North Cronulla beaches form a 1.5 km stretch of beach towards the southern end of Bate Bay. Lifeguards patrol the beach from October to April.

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

Enterococci levels increased slightly with increasing rainfall, but generally remained below the safe swimming limit across all rainfall categories.

See ‘How to read this report’ for key to map.

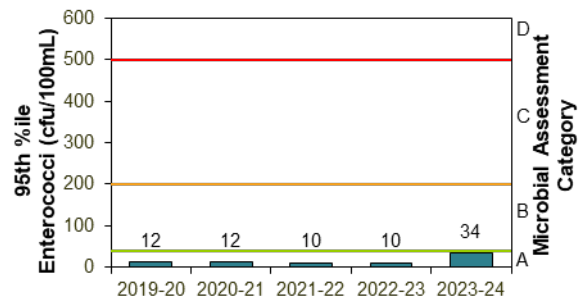
The site has been monitored since 1989

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	92%	100	Stable

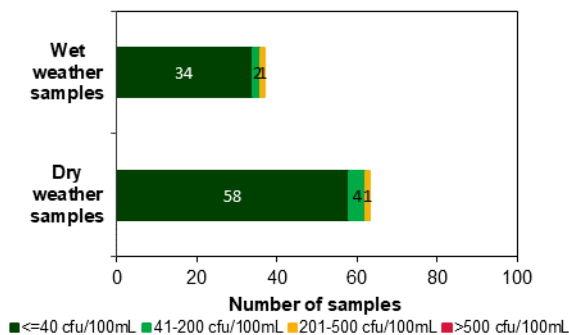
### Sanitary inspection: Low



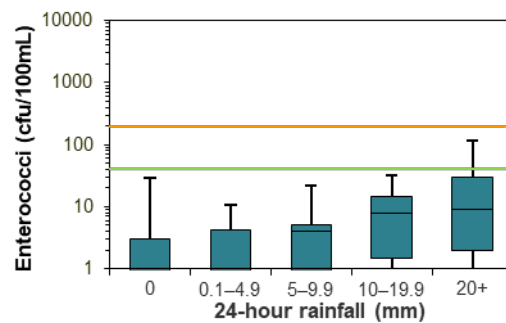
### Microbial Assessment Category: A



### Dry and wet weather water quality

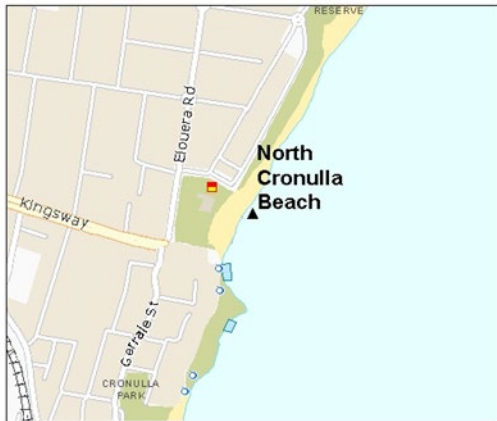


### Water quality in response to rainfall



# North Cronulla Beach

Beach grade: **VG**



North Cronulla Beach is at the southern end of a 1.5 km stretch of beach in Bate Bay. Lifeguards patrol the beach all year round.

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

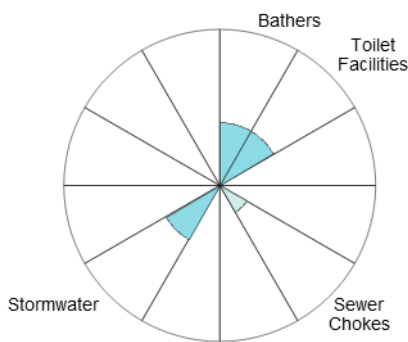
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and often after 20 mm or more of rain.

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

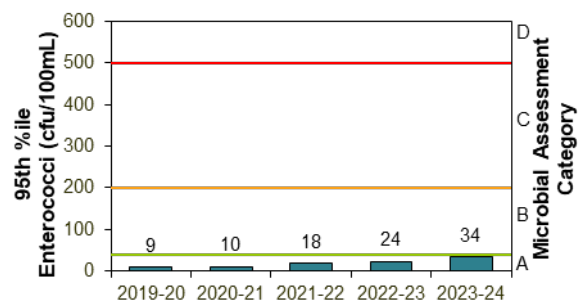
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status	
Ocean beach	Aug 2022 to Apr 2024	98%	100	Stable	○

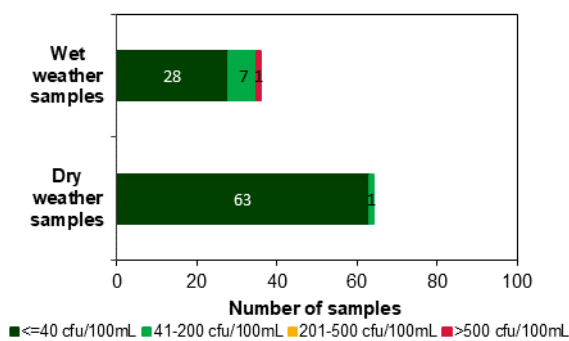
### Sanitary inspection: Low



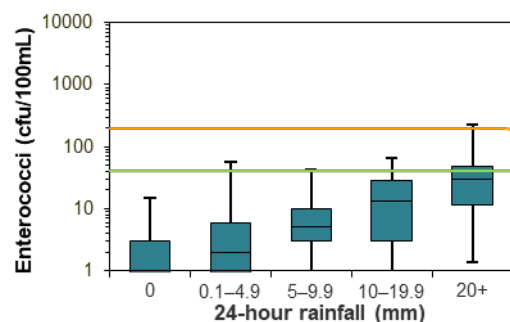
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# South Cronulla Beach

Beach grade: **G**



See ‘How to read this report’ for key to map.

South Cronulla beach is 300 m long and situated at the southern end of Bate Bay. Lifeguards patrol the beach all year round.

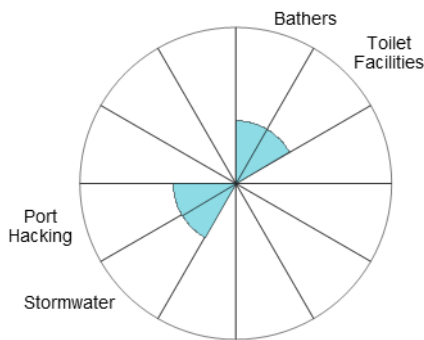
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination.

Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming after light rain, and often after 10 mm or more of rain.

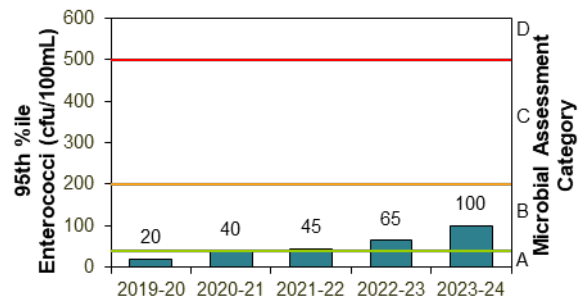
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	92%	100	Stable

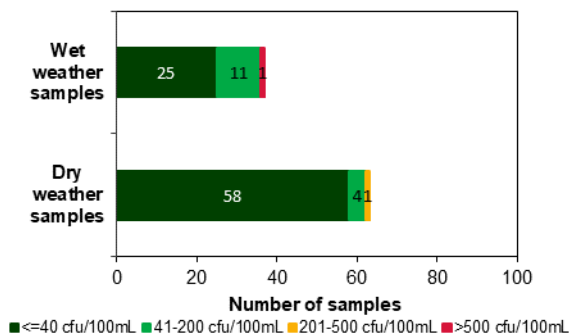
### Sanitary inspection: Low



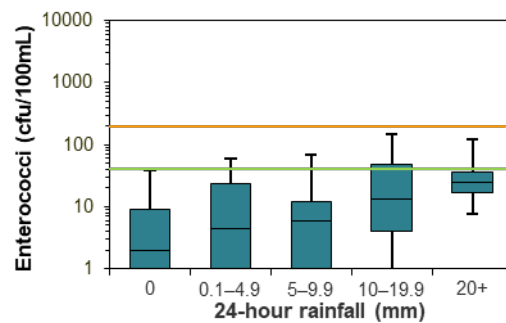
### Microbial Assessment Category: B



### Dry and wet weather water quality



### Water quality in response to rainfall



# Shelly Beach

**Beach grade:** G



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

Shelly beach is 50 m long and is not patrolled by lifeguards. The adjacent ocean pool is the most suitable area for swimming.

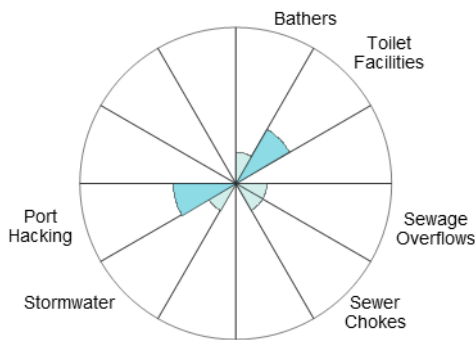
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination.

Enterococci levels increased slightly with increasing rainfall, often exceeding the safe swimming limit in response to 20 mm or more of rain.

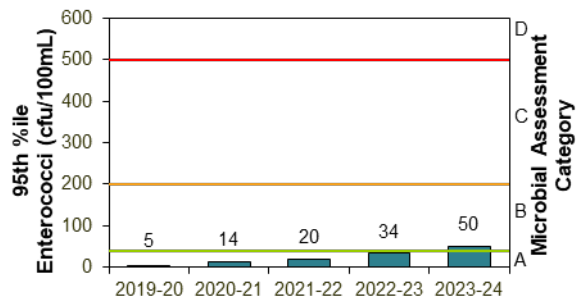
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Sep 2022 to Apr 2024	98%	100	Declined

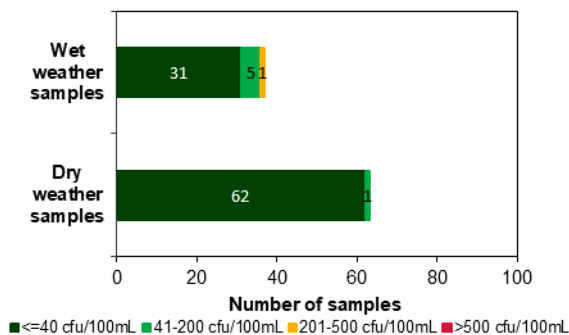
## Sanitary inspection: Low



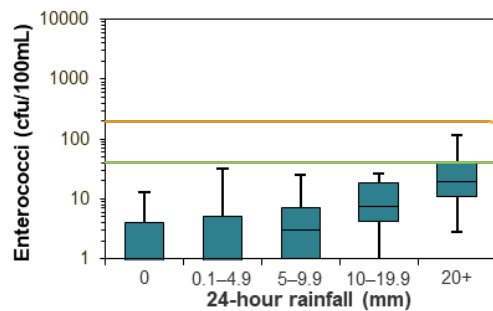
## Microbial Assessment Category: B



## Dry and wet weather water quality

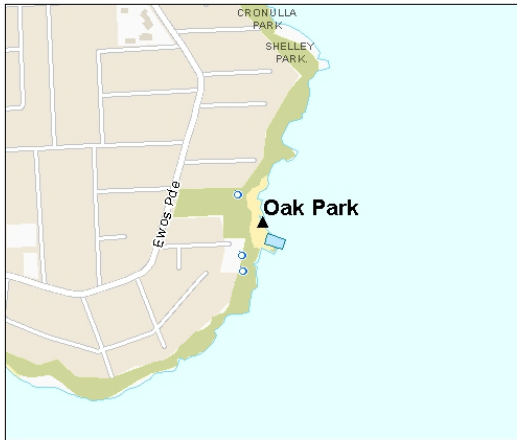


## Water quality in response to rainfall



# Oak Park

Beach grade: **VG**



Oak Park beach is 15 m long, with the most suitable area for swimming adjacent to the ocean pool. Lifeguards do not patrol the swimming area.

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

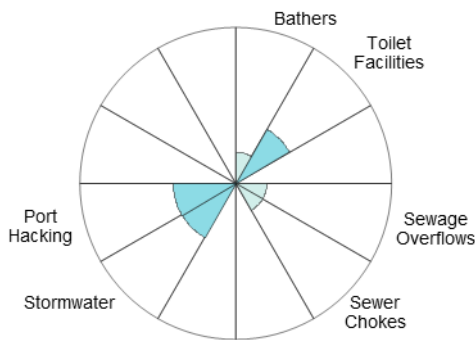
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit in response to 20 mm or more of rain.

See ‘How to read this report’ for key to map.

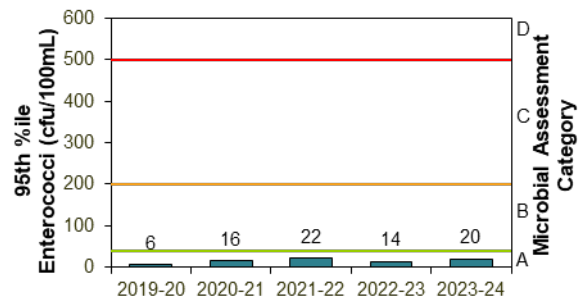
The site has been monitored since 1989.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	98%	100	Stable

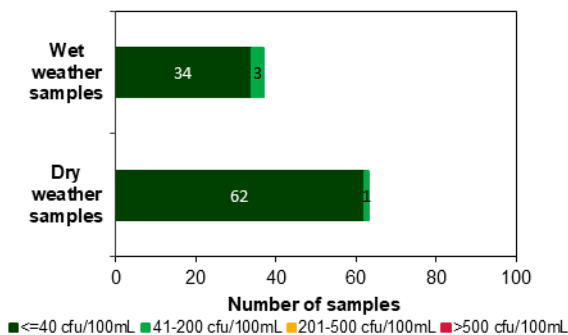
## Sanitary inspection: Low



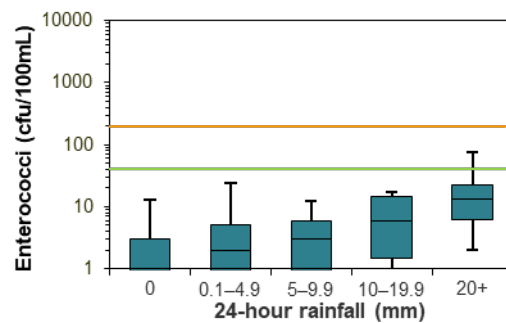
## Microbial Assessment Category: A



## Dry and wet weather water quality



## Water quality in response to rainfall



# Silver Beach

**Beach grade:** G



Silver Beach is a netted swimming area at the centre of a 2.8 km long beach on the southern shore of Botany Bay.

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

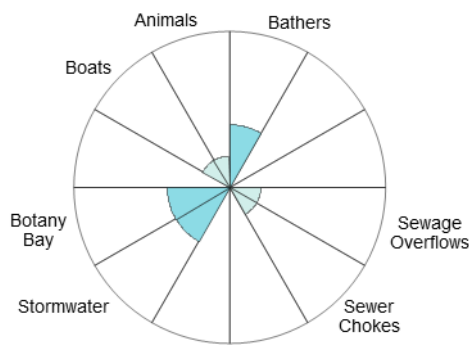
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and often after 20 mm or more.

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

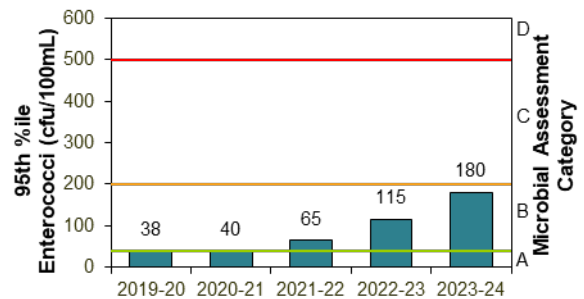
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Nov 2021 to Apr 2024	73%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

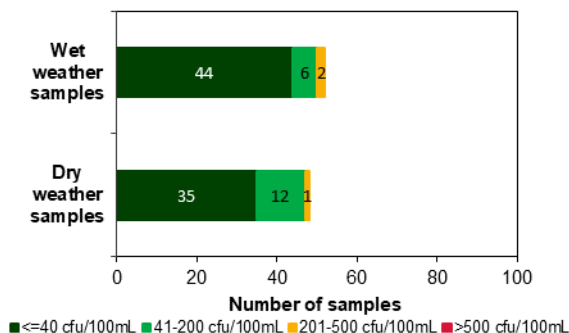
## Sanitary inspection: Moderate



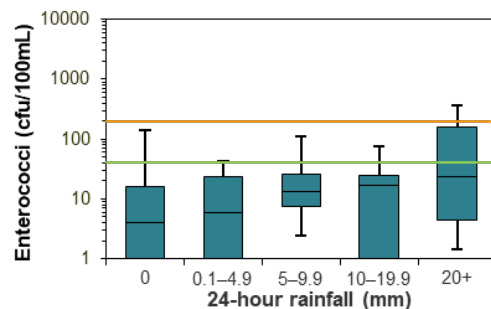
## Microbial Assessment Category: B



## Dry and wet weather water quality

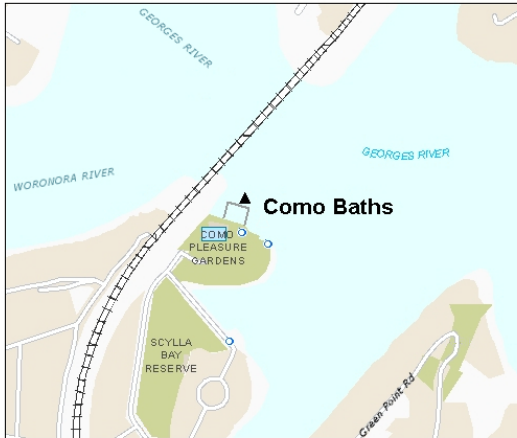


## Water quality in response to rainfall



# Como Baths

**Beach grade:** P



Como Baths is approximately 25 m wide and backed by a narrow sandy beach in the lower Georges River.

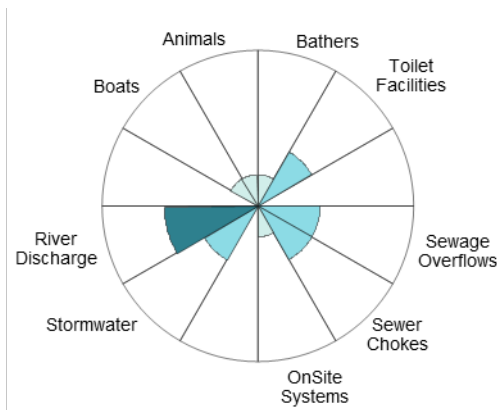
The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including upstream sources in the Georges River. Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit in response to no rain, and often after 5 mm or more.

The site has been monitored since 1994.

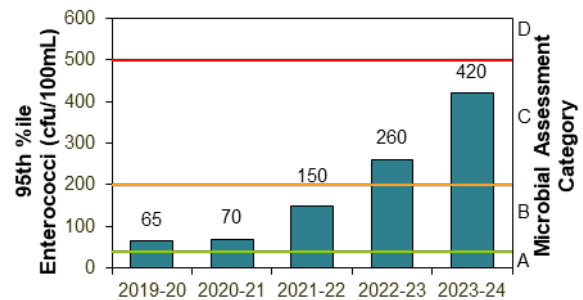
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Nov 2021 to Apr 2024	75%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

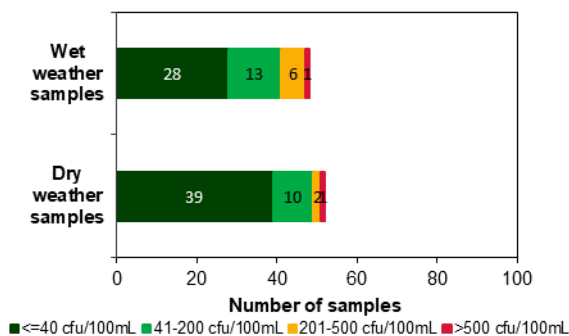
## Sanitary inspection: Moderate



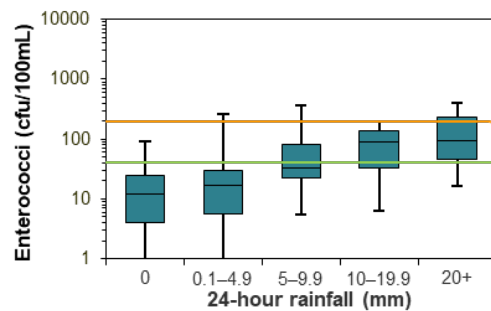
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Jew Fish Bay Baths

**Beach grade:** P



Jew Fish Bay Baths is a 200 m long netted swimming area located in Jew Fish Bay in the lower Georges River.

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

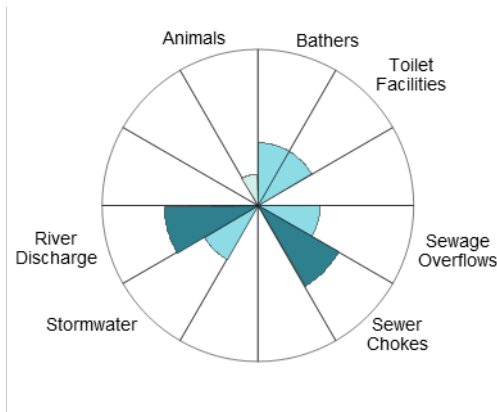
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 5 mm or more.

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

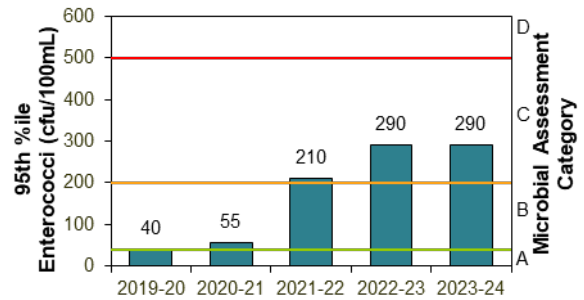
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Nov 2021 to Apr 2024	76%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

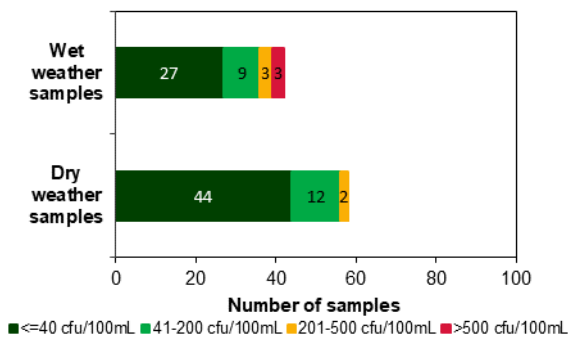
## Sanitary inspection: Moderate



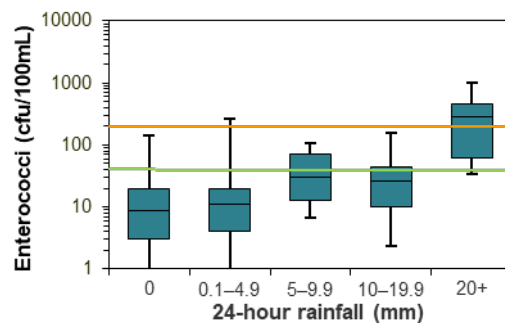
## Microbial Assessment Category: C



## Dry and wet weather water quality

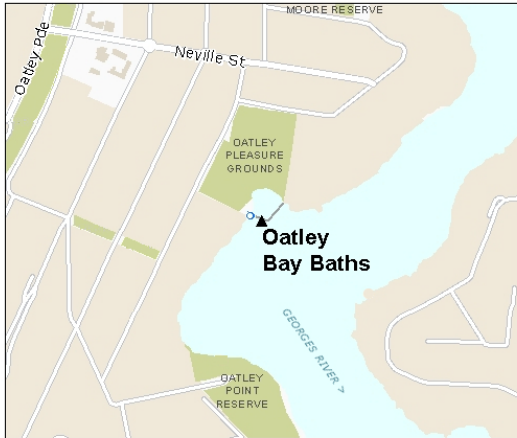


## Water quality in response to rainfall



# Oatley Bay Baths

**Beach grade:** P



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

Oatley Bay Baths is a netted swimming area located on the western shore of Oatley Bay in the lower Georges River.

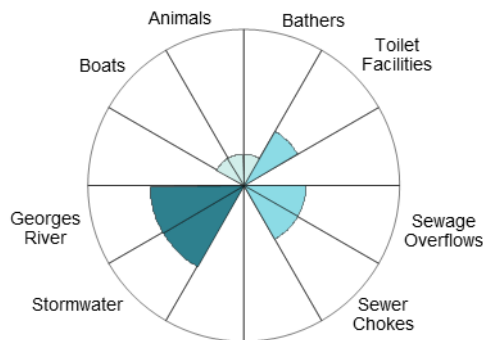
The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including upstream sources in the Georges River and stormwater.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and often after light rain.

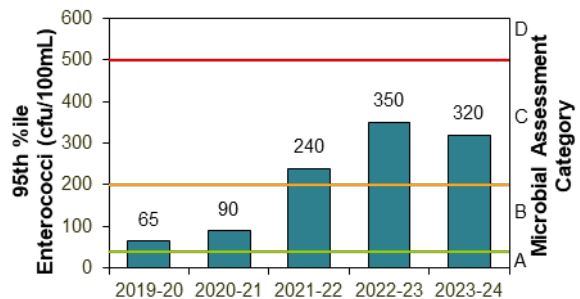
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	80%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

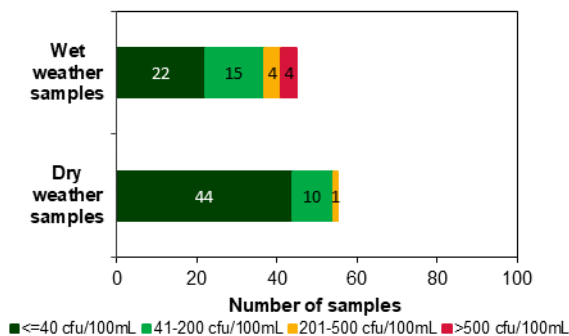
## Sanitary inspection: Moderate



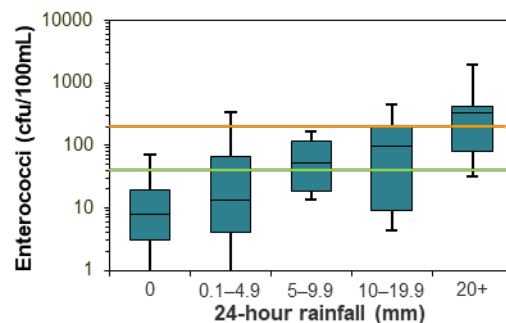
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Carss Point Baths

Beach grade: P



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

Carss Point Baths is a netted swimming enclosure on the western shore of Kogarah Bay in the lower Georges River.

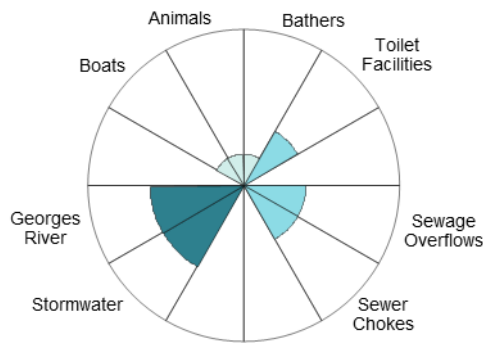
The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including upstream sources in the Georges River and stormwater.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and often after light rain.

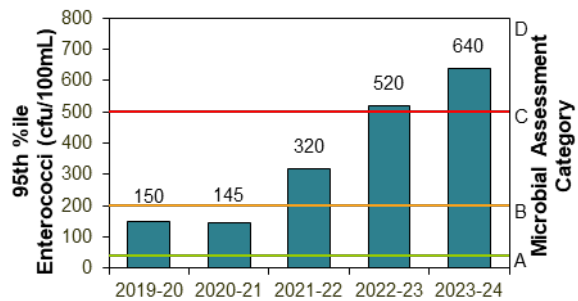
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	63%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

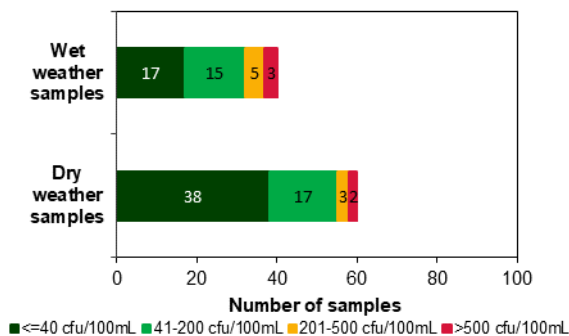
## Sanitary inspection: Moderate



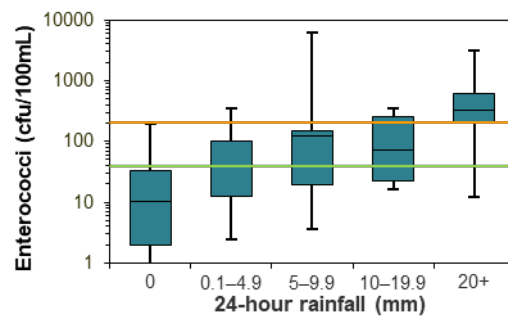
## Microbial Assessment Category: D



## Dry and wet weather water quality



## Water quality in response to rainfall



# Sandringham Baths

Beach grade: **G**



Sandringham Baths is a netted swimming area near the mouth of the Georges River and is backed by a small beach.

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

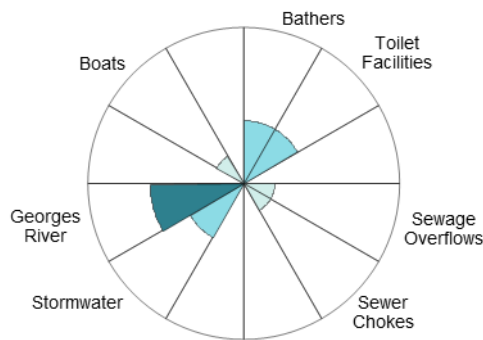
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 10 mm or more.

The site has been monitored since 1994.

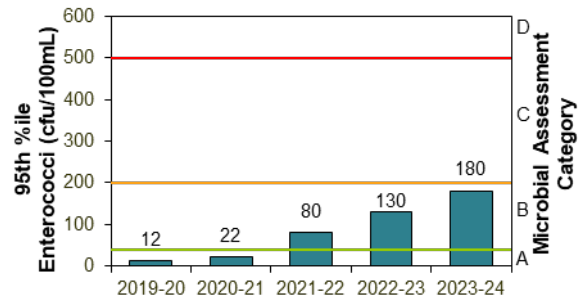
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	88%	100	Stable

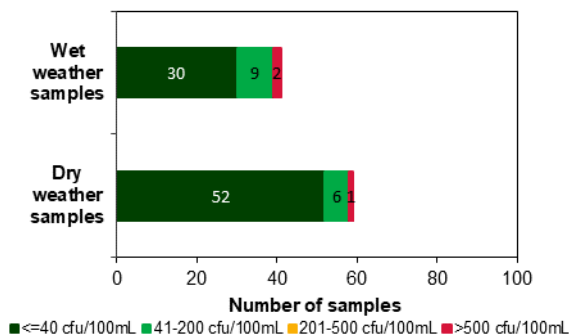
## Sanitary inspection: Moderate



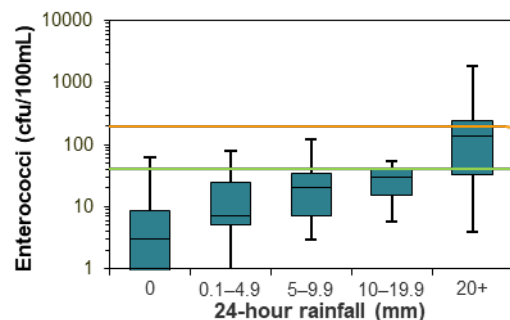
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Dolls Point Baths

Beach grade: **P**



Dolls Point Baths is a netted swimming area with a sandy beach at the southern end of Lady Robinsons Beach in Botany Bay.

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

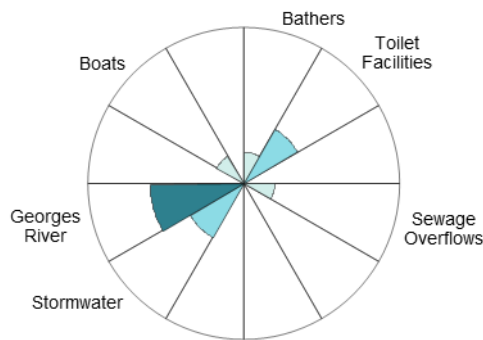
Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after little or no rain, and regularly after 5 mm or more.

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

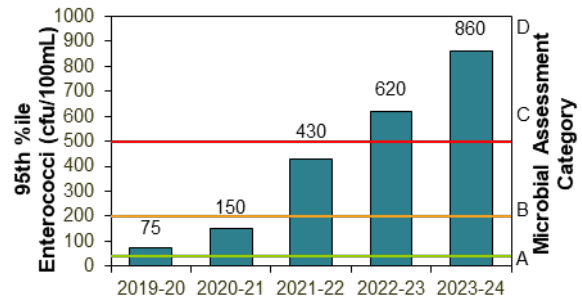
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	55%	100	Stable

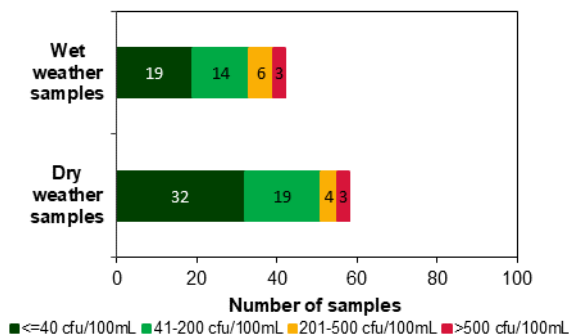
## Sanitary inspection: Moderate



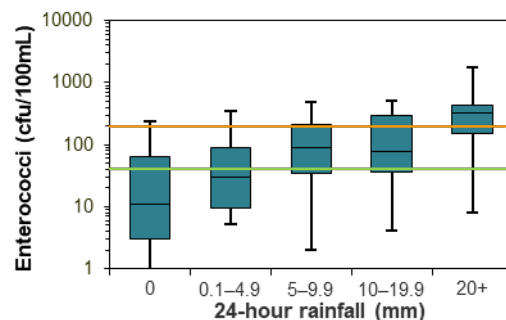
## Microbial Assessment Category: D



## Dry and wet weather water quality



## Water quality in response to rainfall



# Ramsgate Baths

**Beach grade:** P



Ramsgate Baths is a netted swimming enclosure with a sandy beach near the southern end of Lady Robinsons Beach in Botany Bay.

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

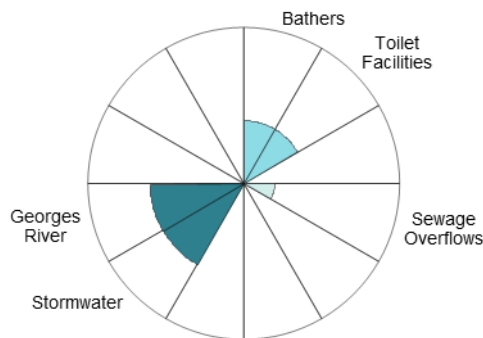
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 5 mm or more.

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

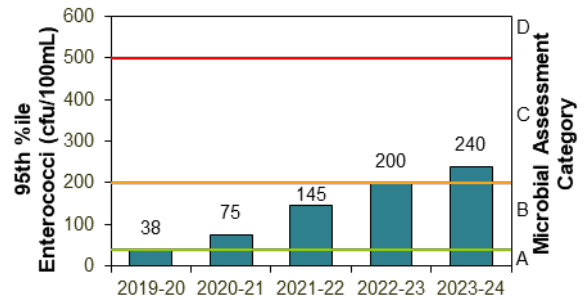
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	83%	100	Declined

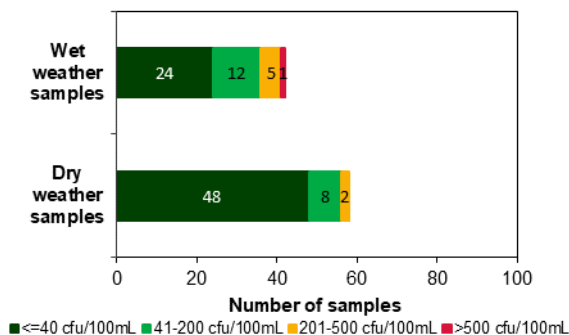
## Sanitary inspection: Moderate



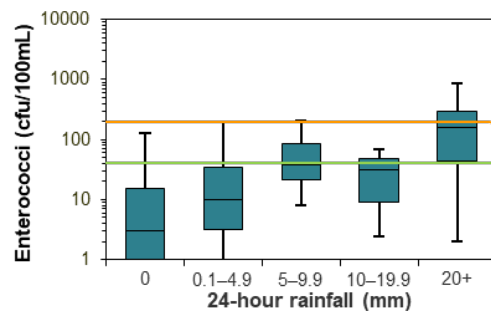
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Monterey Baths

**Beach grade:** G



Monterey Baths is a netted swimming area with a sandy beach located toward the southern end of Lady Robinsons Beach.

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

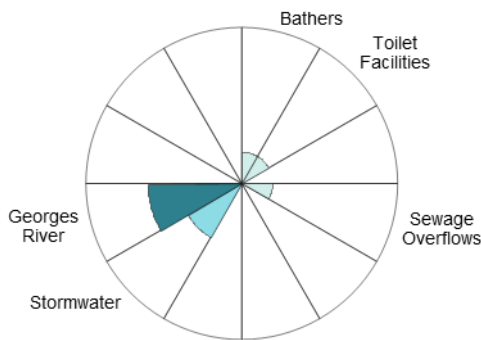
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 5 mm or more.

The site has been monitored since 1994.

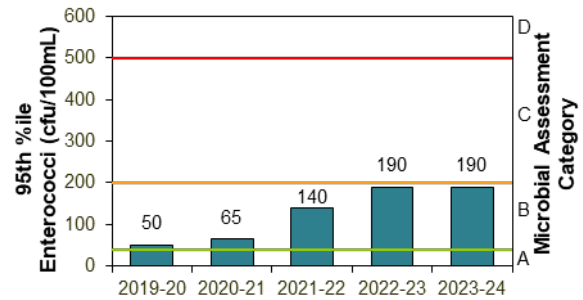
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	86%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

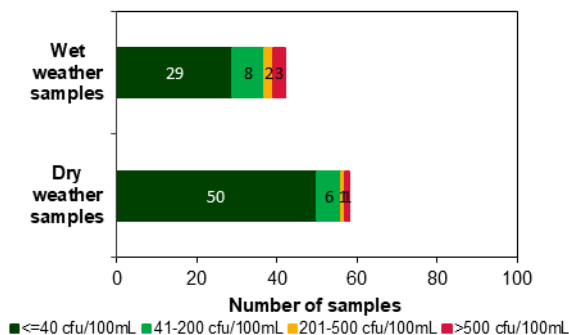
## Sanitary inspection: Moderate



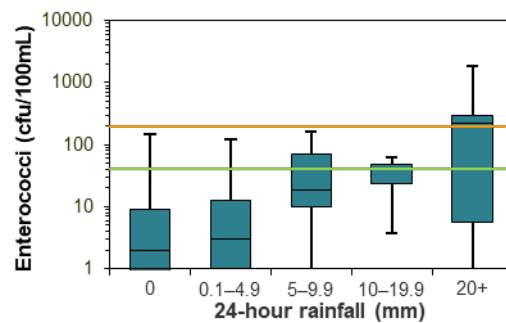
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Brighton-Le-Sands Baths

**Beach grade:** P



Brighton-Le-Sands Baths is a netted swimming area at the centre of Lady Robinsons Beach in Botany Bay and is backed by a sandy beach. The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including sewage overflows and river discharge. Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and regularly after 5 mm or more.

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

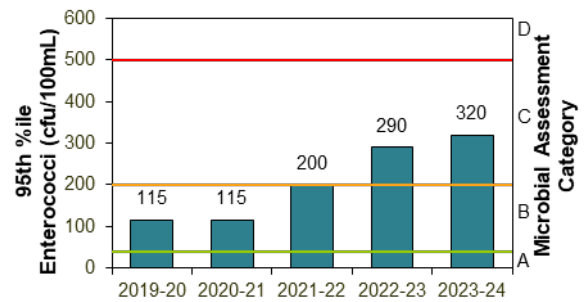
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	81%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

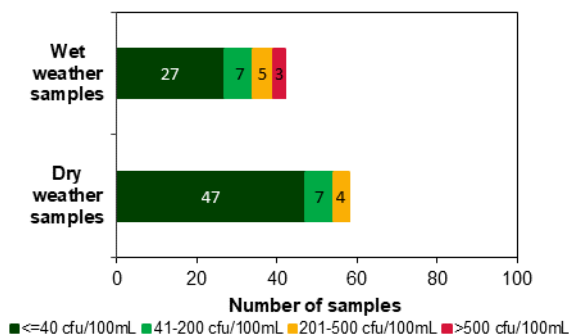
## Sanitary inspection: Moderate



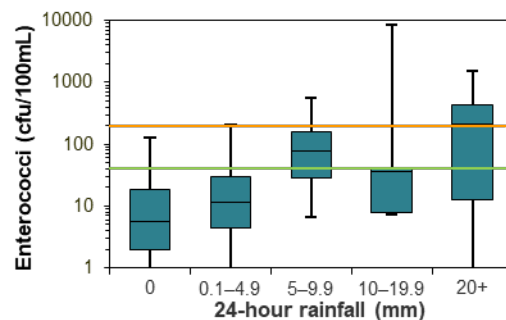
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Kyeemagh Baths

**Beach grade:** P



Kyeemagh Baths is a netted swimming area with a sandy beach at the northern end of Lady Robinsons Beach, near the Cooks River mouth. The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including the discharge from the Cooks River and sewage overflows.

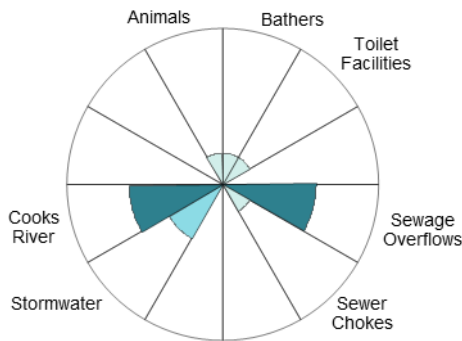
See ‘How to read this report’ for key to map.

Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after little or no rain, and regularly after 5 mm or more.

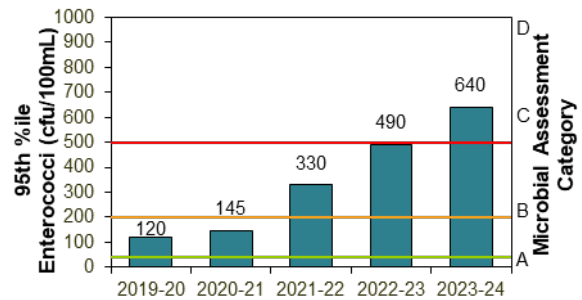
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	53%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

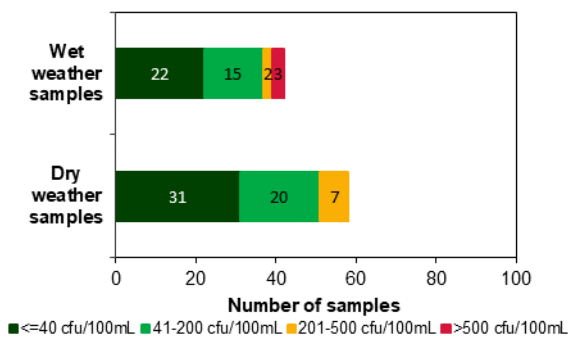
## Sanitary inspection: Moderate



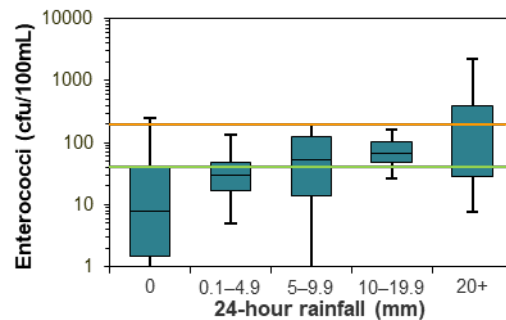
## Microbial Assessment Category: D



## Dry and wet weather water quality



## Water quality in response to rainfall



# Foreshores Beach

**Beach grade:** VP



Foreshores Beach is an unnetted sandy beach in Botany Bay. It is located near a boat ramp, and is adjacent to the Sydney Airport runway and Port Botany.

The Beach Suitability Grade of Very Poor indicates microbial water quality is very susceptible to faecal pollution with many potential sources of faecal contamination including stormwater and sewage overflows that discharge into Mill Stream.

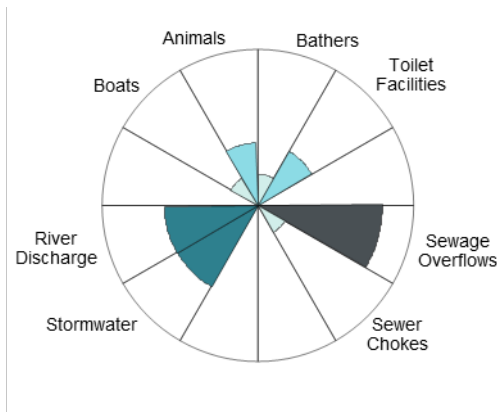
Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after little or no rain, and regularly after 5 mm or more.

See ‘How to read this report’ for key to map.

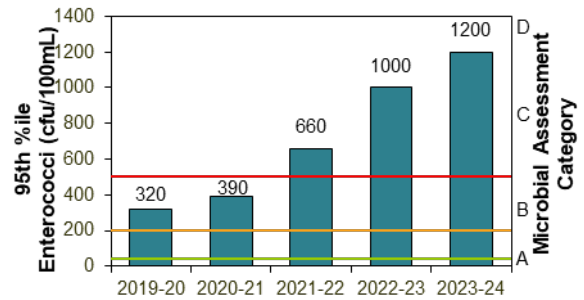
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	60%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

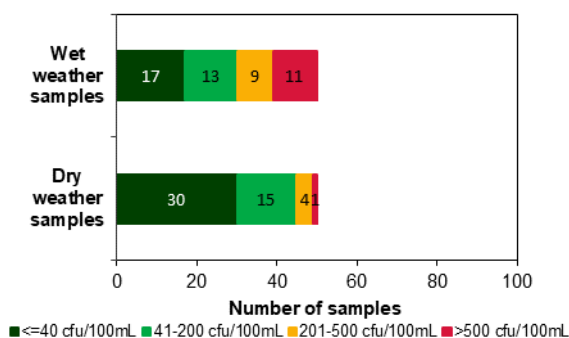
## Sanitary inspection: High



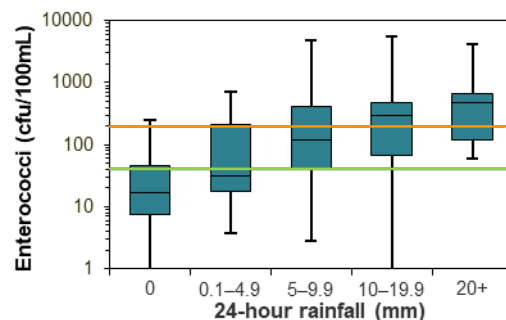
## Microbial Assessment Category: D



## Dry and wet weather water quality



## Water quality in response to rainfall



# Yarra Bay

**Beach grade:** P



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

Yarra Bay is a 750 m long sandy beach in Botany Bay. The swimming area is not netted and has a rock groyne at the southern end.

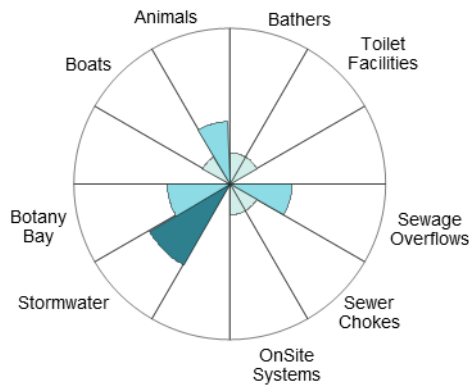
The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including stormwater that ponds in the middle of the beach.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 5 mm or more.

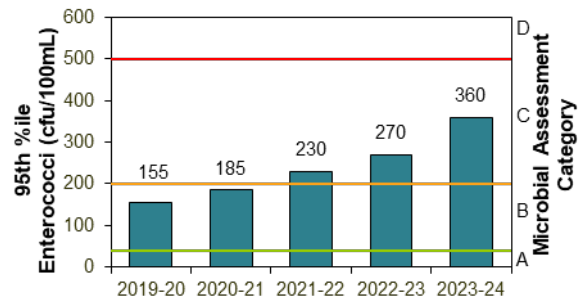
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	80%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

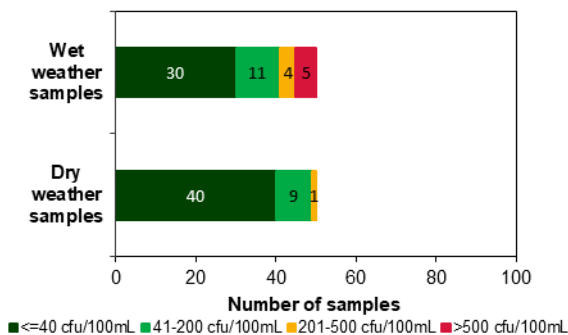
## Sanitary inspection: Moderate



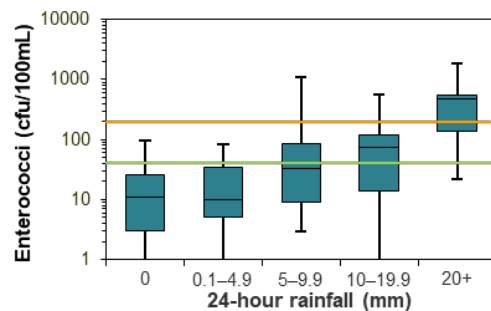
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Frenchmans Bay

**Beach grade:** P



Frenchmans Bay is a 500 m long sandy beach in Botany Bay. The swimming area is not netted.

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

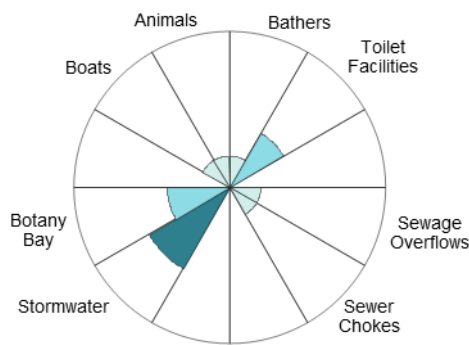
Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after little or no rain, and regularly after 5 mm or more.

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

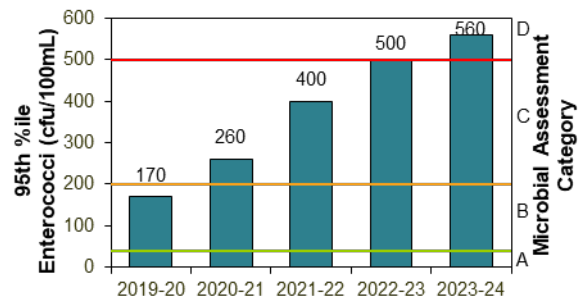
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Dec 2021 to Apr 2024	64%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

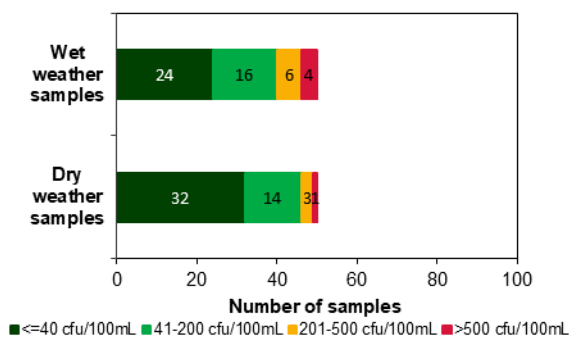
## Sanitary inspection: Moderate



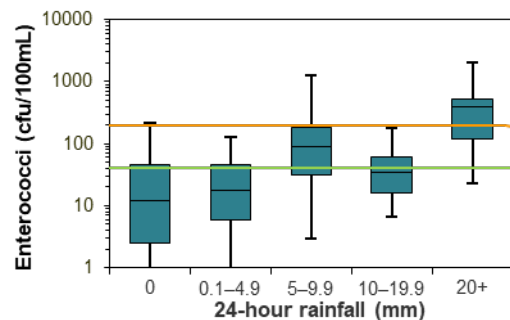
## Microbial Assessment Category: D



## Dry and wet weather water quality



## Water quality in response to rainfall



# Congwong Bay

**Beach grade:** G



Congwong Bay is a 150 m long beach near the mouth of Botany Bay. The swimming area is not netted.

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

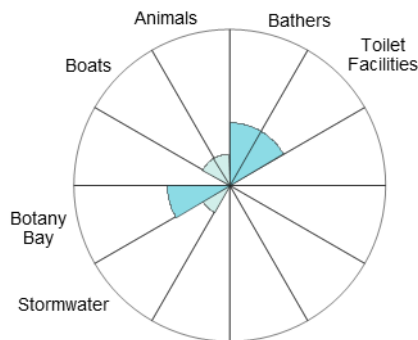
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 10 mm or more.

See ‘How to read this report’ for key to map.

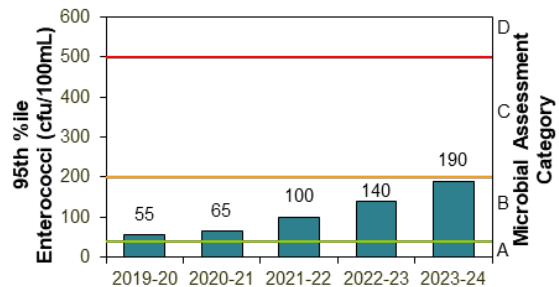
The site has been monitored since 1994.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Feb 2022 to Apr 2024	92%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

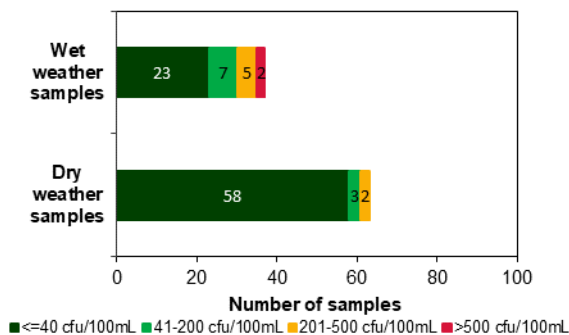
### Sanitary inspection: Low



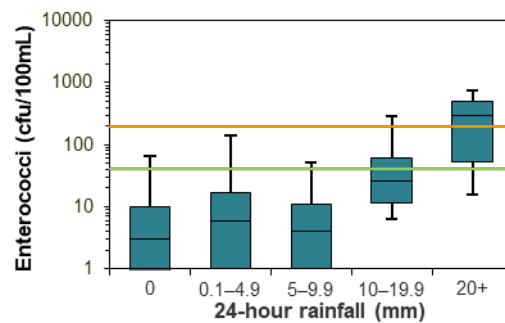
### Microbial Assessment Category: B



### Dry and wet weather water quality



### Water quality in response to rainfall



# Jibbon Beach

Beach grade: **G**



Jibbon Beach is located at the entrance to Port Hacking. The beach is backed by the Royal National Park and accessed from Bundeena.

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

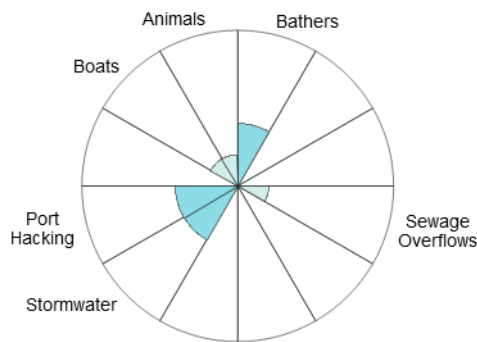
Enterococci levels increased slightly with rainfall, occasionally exceeding the safe swimming limit after light rain, and often after 10 mm or more.

The site has been monitored since 1999.

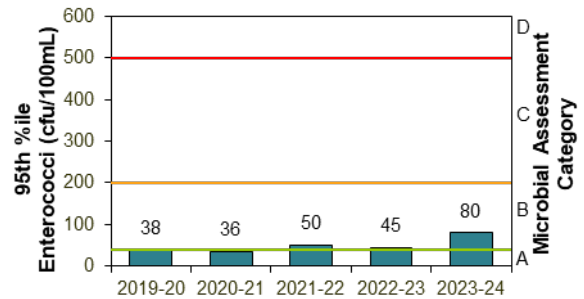
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Oct 2021 to Apr 2024	96%	100	Stable

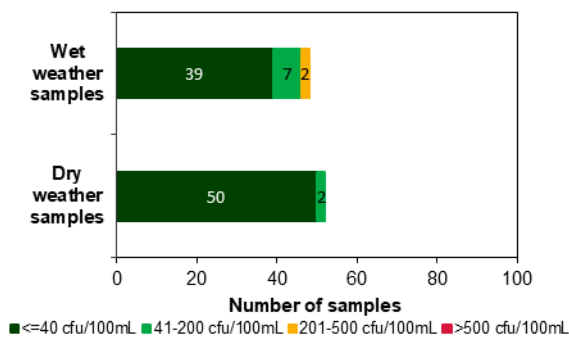
## Sanitary inspection: Low



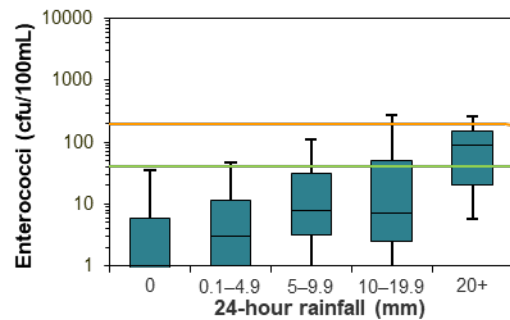
## Microbial Assessment Category: B



## Dry and wet weather water quality

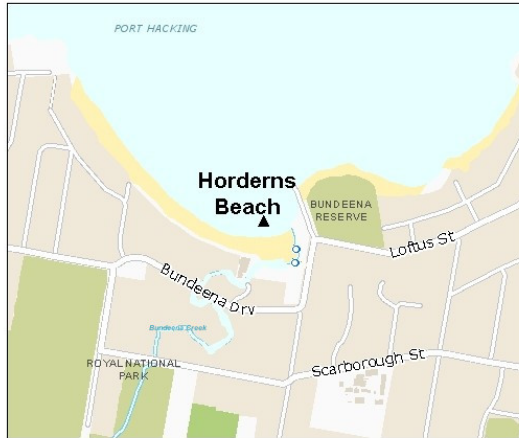


## Water quality in response to rainfall



# Horderns Beach

**Beach grade:** G



Horderns Beach is located on the southern shore of Port Hacking and is backed by the town of Bundeena.

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

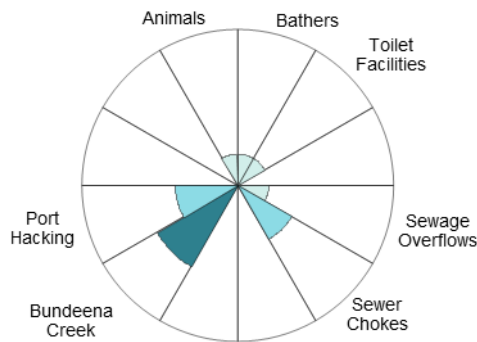
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and regularly after 20 mm or more.

The site has been monitored since 1999.

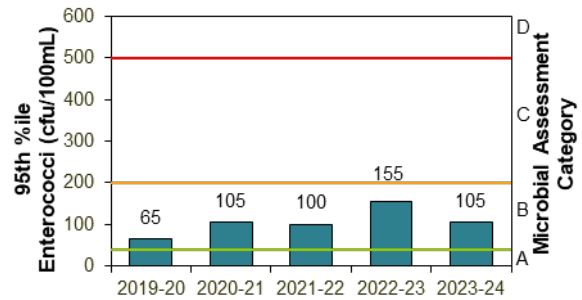
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Nov 2021 to Apr 2024	90%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

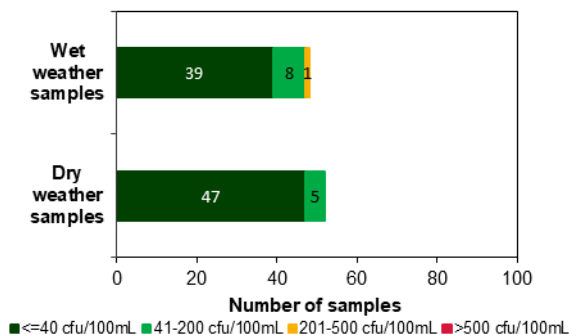
## Sanitary inspection: Moderate



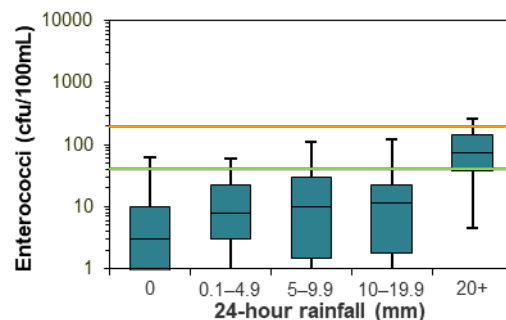
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Gymea Bay Baths

**Beach grade:** VP



Gymea Bay Baths is an enclosed tidal swimming area backed by a narrow sandy beach in the upper reaches of Port Hacking.

The Beach Suitability Grade of Very Poor indicates microbial water quality is very susceptible to faecal pollution with many potential sources of faecal contamination including stormwater.

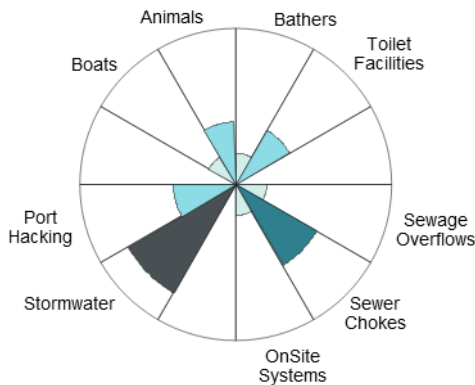
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain, and regularly after rainfall.

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

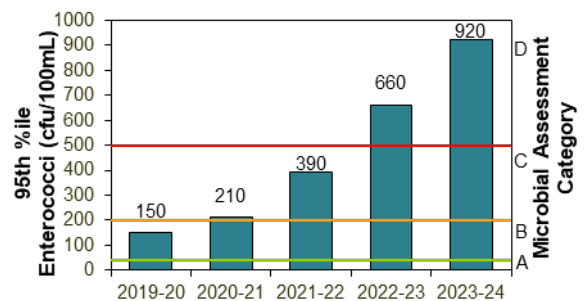
The site has been monitored since 1999.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Nov 2021 to Apr 2024	75%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

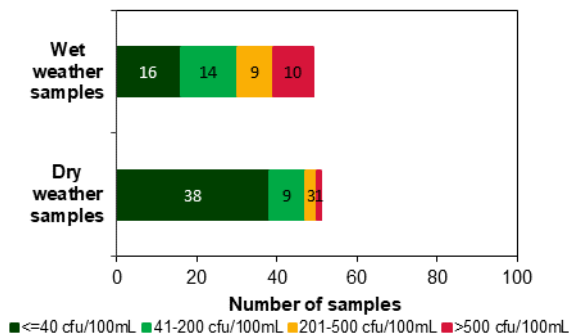
### Sanitary inspection: High



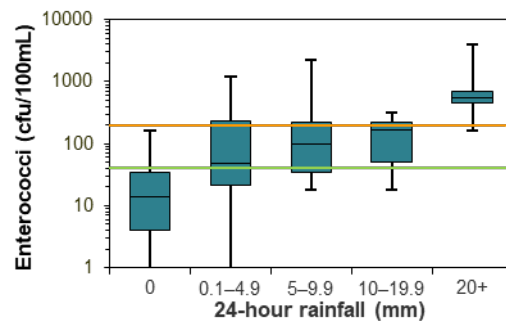
### Microbial Assessment Category: D



### Dry and wet weather water quality



### Water quality in response to rainfall



# Lilli Pilli Baths

Beach grade: **G**



Lilli Pilli Baths is a netted tidal swimming area on the western side of Lilli Pilli Point in Port Hacking.

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

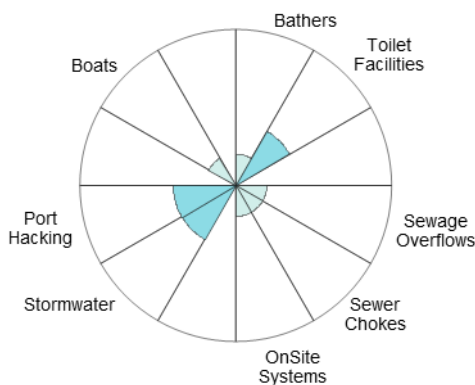
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 5 mm or more.

See ‘How to read this report’ for key to map.

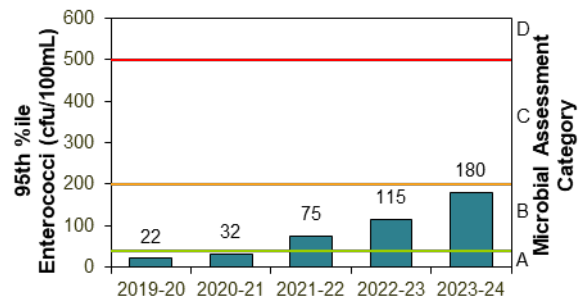
The site has been monitored since 1999.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Nov 2021 to Apr 2024	86%	100	Stable

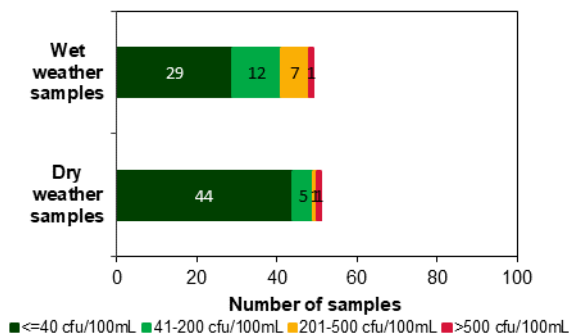
## Sanitary inspection: Moderate



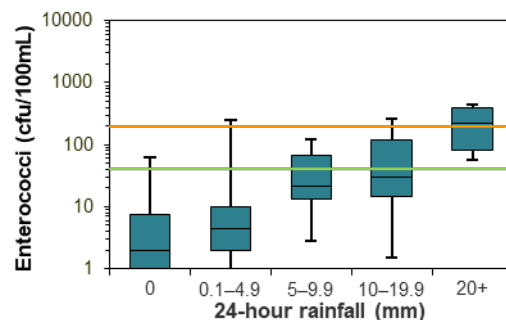
## Microbial Assessment Category: B



## Dry and wet weather water quality

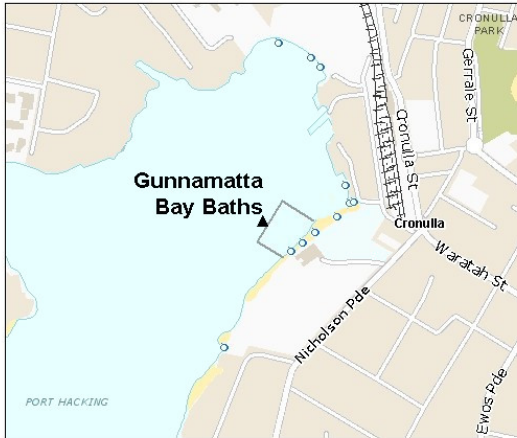


## Water quality in response to rainfall



# Gunnamatta Bay Baths

**Beach grade:** P



Gunnamatta Bay Baths is a netted tidal swimming area in the lower reaches of Port Hacking and is backed by a narrow beach.

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

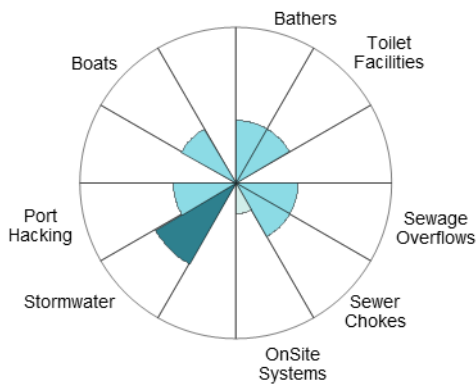
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and regularly after 5 mm or more.

The site has been monitored since 1994.

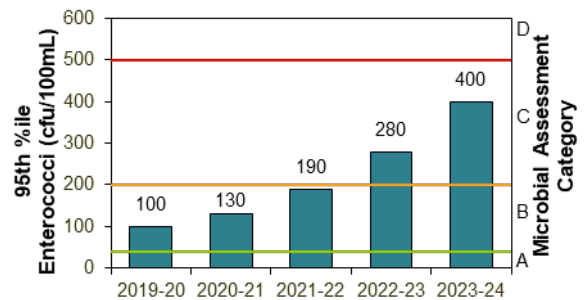
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Nov 2021 to Apr 2024	76%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

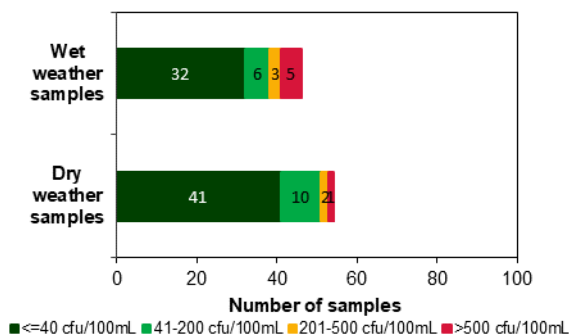
## Sanitary inspection: Moderate



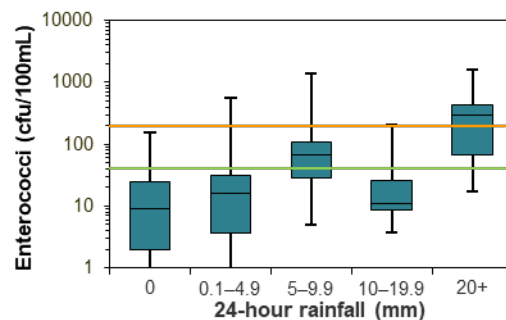
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Western Sydney (Blue Mountains)



Minnehaha Falls

Photo:  
Beachwatch/DCCEEW

## Overall results

No monitored swimming sites were graded as Very Good or Good in 2023–2024. Monitoring at these sites under the Beachwatch Partnership Program commenced in November 2022. Blue Mountains City Council previously monitored these swimming sites since 2002.

### Percentage of sites graded as Very Good or Good

	2021–2022	2022–2023	2023–2024	Trend
Freshwater (4 sites)	25%	0%	0%	

Four swimming sites were monitored by Blue Mountains City Council. Samples were collected weekly between November and March and sampling and laboratory analysis was fully funded by the council.

See the section on **How to read this report** on page 134 for an explanation of the graphs, tables and Beach Suitability Grades.

Swimming sites monitored in the Western Sydney region include freshwater sites in Wentworth Falls Lake, and pools in Yosemite Creek and Megalong Creek in the Blue Mountains.

Low levels of flushing in lakes and freshwater creeks can increase the time needed to disperse and dilute pollution inputs, taking longer to recover from stormwater events.

As a general precaution swimming should be avoided during and for up to 3 days in freshwater creeks and lakes, or if there are signs of stormwater pollution such as discoloured water or floating debris.



Site types in Western Sydney

## Freshwater swim sites



**Beach Suitability Grades for Western Sydney**

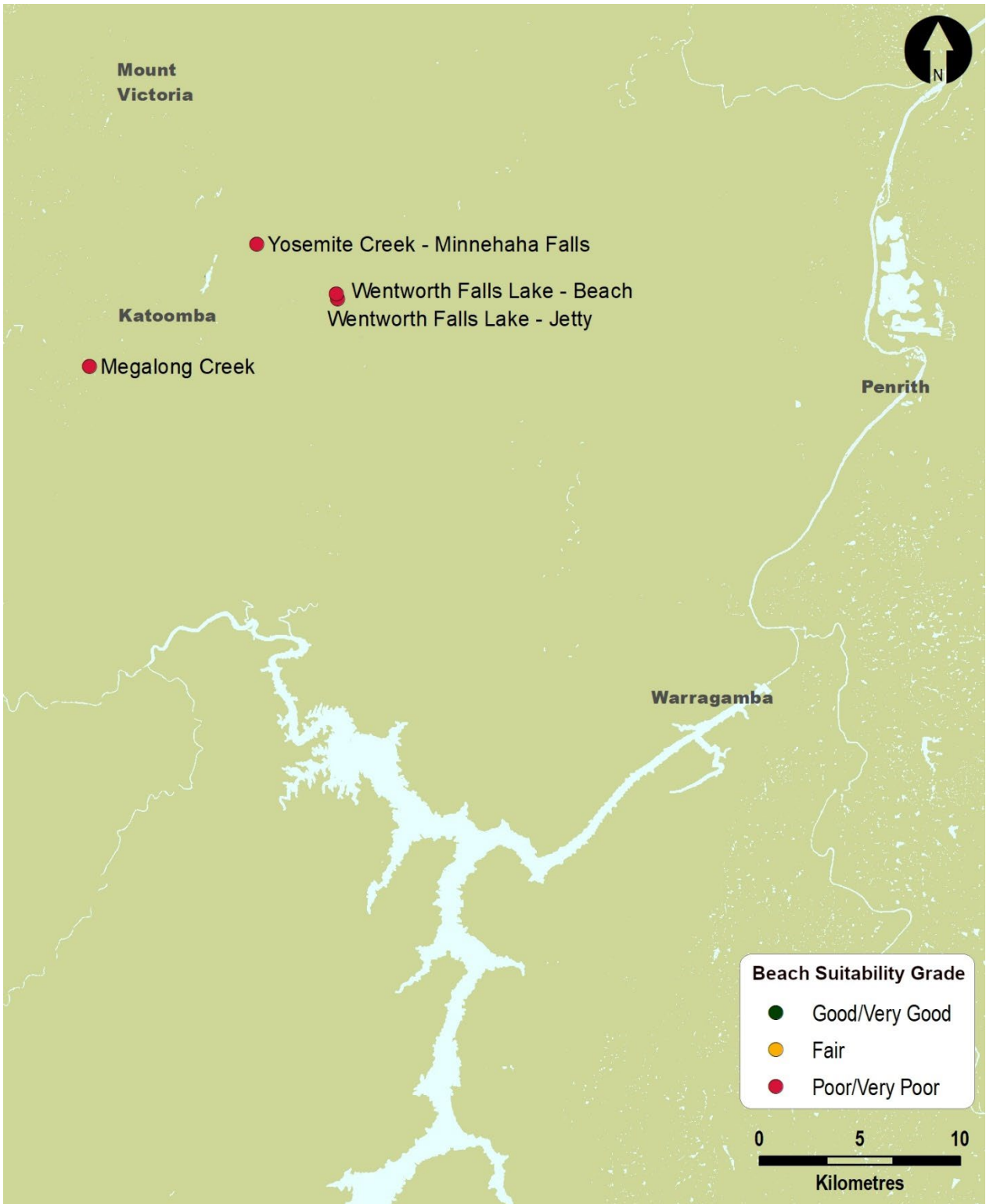
All 4 Western Sydney freshwater sites were graded as Poor or Very Poor in 2023–2024.

Megalong Creek, Wentworth Falls Lake – Jetty and Wentworth Falls Lake – Beach were graded as Poor, consistent with the previous year. Microbial water quality at these sites was not always suitable for swimming. These sites are susceptible to pollution particularly after rainfall, and often during dry weather conditions, and have several sources of faecal contamination including upstream sources, stormwater, sewer chokes and animals.

Yosemite Creek – Minnehaha Falls continued to be graded as Very Poor in 2023–2024. Water quality at this site is very susceptible to faecal pollution and may often be unsuitable for swimming. Despite this, 59% of samples collected during dry weather conditions were within the safe swimming limit. Several potential sources of faecal contamination have been identified in the sanitary inspection, including stormwater, sewer chokes and impacts from upstream sources in Yosemite Creek. Small shallow pools can take longer to recover from stormwater events with low levels of flushing increasing the time needed to disperse and dilute pollution events.

The 2023-2024 assessment period includes a high proportion of samples collected during wet weather conditions, contributing to the Poor grades.

Swimming should be avoided during and for up to 3 days following light rainfall at all freshwater swimming sites, or if there are signs of pollution such as discoloured water, odours or floating debris.



**Sampling sites and Beach Suitability Grades in Western Sydney (Blue Mountains)**

# Megalong Creek

Beach grade:



Megalong Creek swim site is a group of pools along a 150 m stretch of Megalong Creek, adjacent to Old Ford Camping Reserve.

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

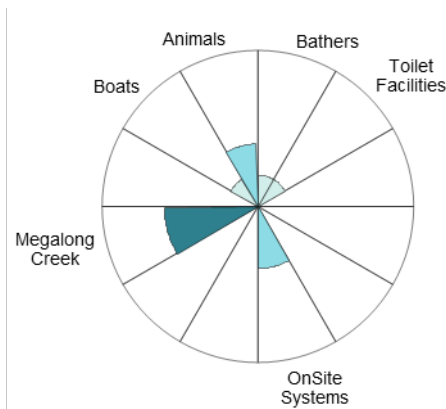
Enterococci levels increased with increasing rainfall, regularly exceeding the safe swimming limit after little or no rain, and frequently after 5 mm or more.

The site has been monitored since 2003.

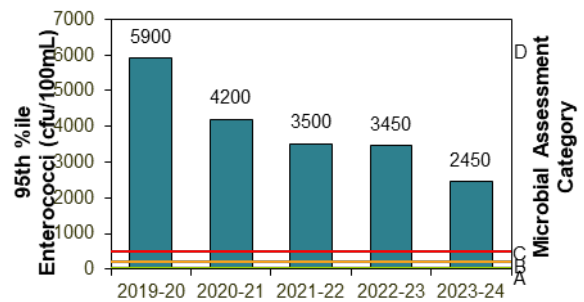
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Freshwater	Oct 2019 to Mar 2024	33%	83	Stable

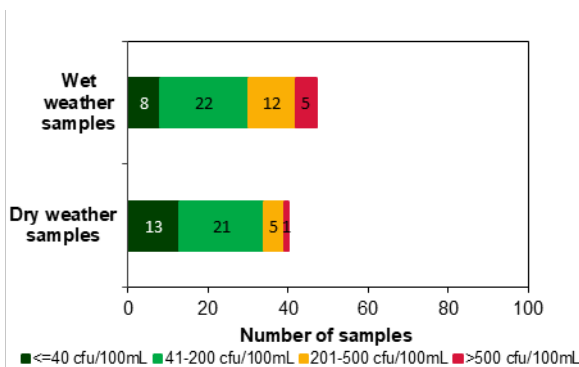
## Sanitary inspection: Moderate



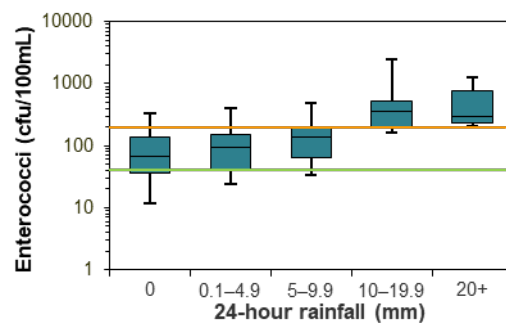
## Microbial Assessment Category: D



## Dry and wet weather water quality

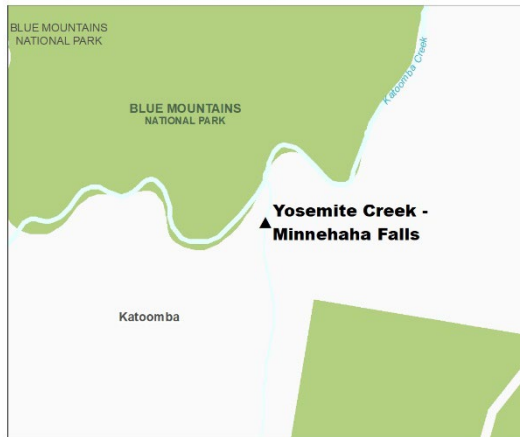


## Water quality in response to rainfall



# Yosemite Creek – Minnehaha Falls

Beach grade: VP



Yosemite Creek – Minnehaha Falls swim site is a deep pool at the base of Minnehaha Falls, at the edge of the Blue Mountains National Park.

The Beach Suitability Grade of Very Poor indicates microbial water quality is very susceptible to faecal pollution with many potential sources of faecal contamination including upstream sources in Yosemite Creek and stormwater.

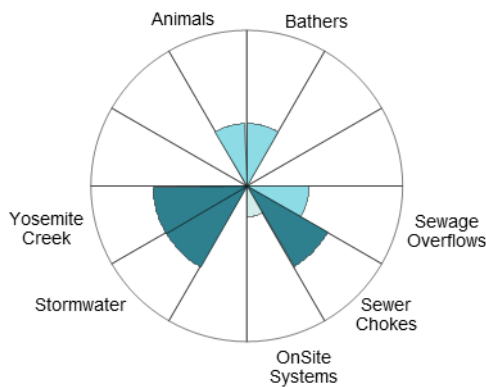
Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after no rain, and regularly after rainfall.

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

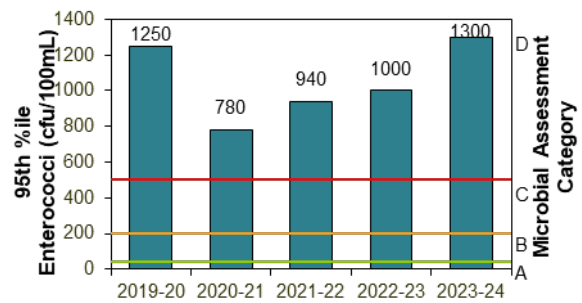
The site has been monitored since 2011.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Freshwater	Oct 2019 to Mar 2024	59%	69	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

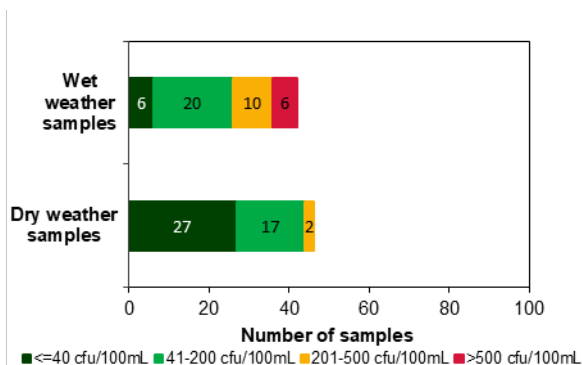
### Sanitary inspection: High



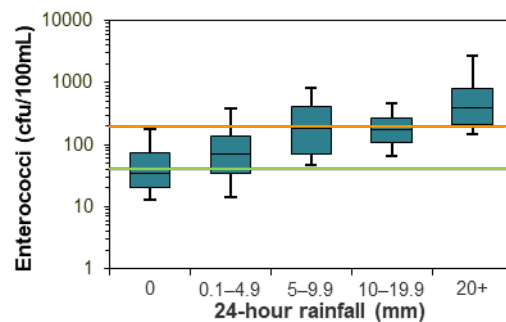
### Microbial Assessment Category: D



### Dry and wet weather water quality

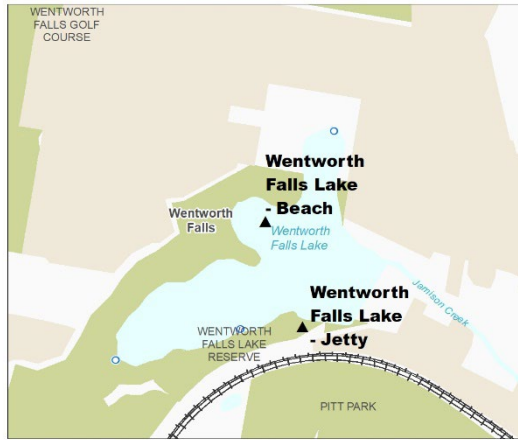


### Water quality in response to rainfall



# Wentworth Falls Lake – Jetty

Beach grade:



Wentworth Falls Lake – Jetty swim site is located adjacent to a small jetty and is a broad shallow area on the south-eastern shore of Wentworth Falls Lake, next to a playground and reserve.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with potential faecal contamination from stormwater and animals.

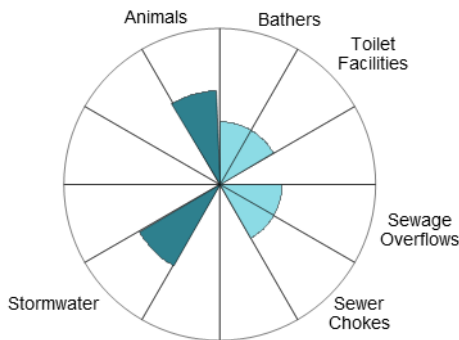
Enterococci levels increased with increasing rainfall, regularly exceeding the safe swimming limit after little or no rain, and usually after 10 mm or more.

The site has been monitored since 2002.

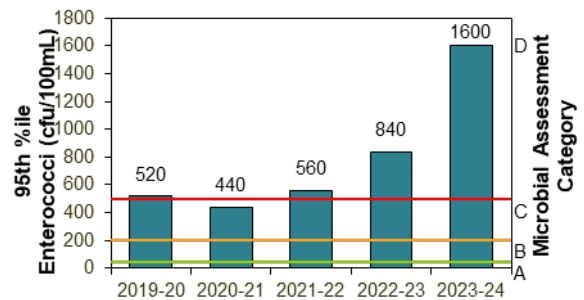
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Freshwater	Oct 2019 to Mar 2024	43%	89	Stable

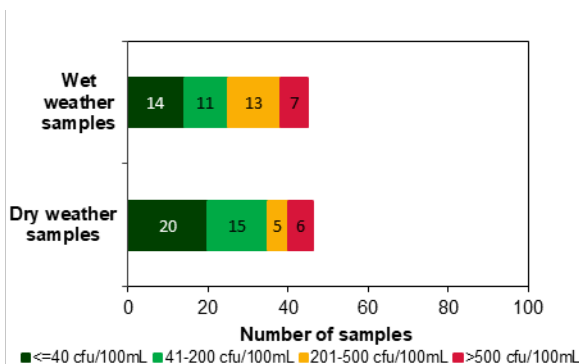
## Sanitary inspection: Moderate



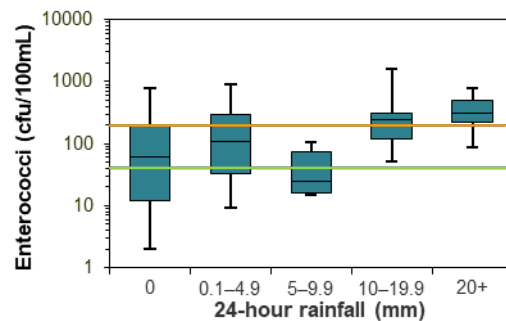
## Microbial Assessment Category: D



## Dry and wet weather water quality

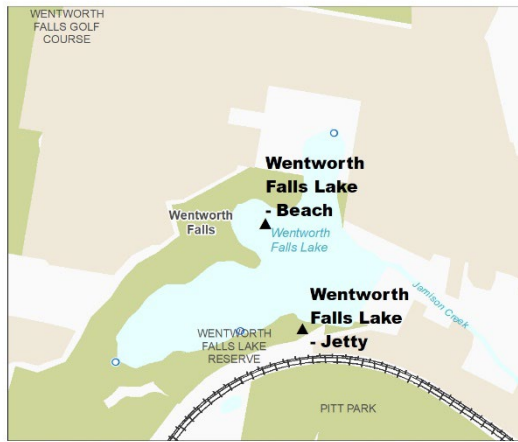


## Water quality in response to rainfall



# Wentworth Falls Lake – Beach

**Beach grade:** P



Wentworth Falls Lake – Beach swim site is located near an area of hanging swamp (an endangered ecological community). Access is along a small trail through adjoining bushland.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with potential faecal contamination from stormwater and animals.

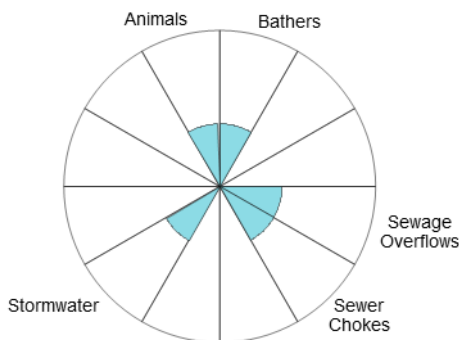
Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after no rain and regularly after light rain.

The site has been monitored since 2005.

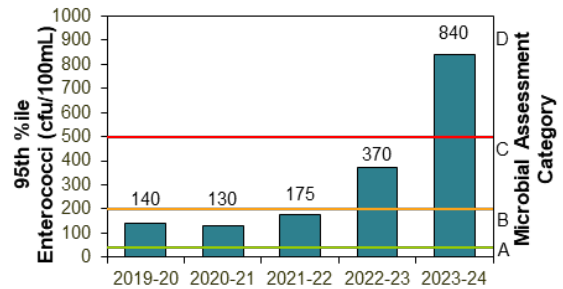
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Freshwater	Oct 2019 to Mar 2024	57%	87	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

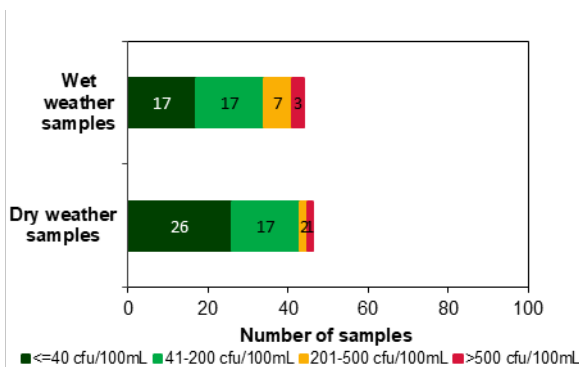
### Sanitary inspection: Moderate



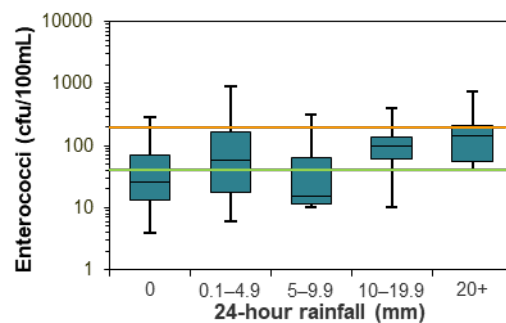
### Microbial Assessment Category: D



### Dry and wet weather water quality



### Water quality in response to rainfall



# 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 5 grades ranging from Very Good to Very Poor:

### 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

### 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 3 days at estuarine sites

### 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 3 days following rainfall or if there are signs of pollution such as discoloured water or odour or debris in the water

Some 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 the catchment.

### **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 3 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 almost all of the time.

## Follow Up

Sometimes a location's sanitary inspection and water quality data produce incongruent results. These locations are classified as 'Follow Up'. Further assessment will be required to obtain the necessary data to provide a definite classification in accordance with national guidelines.

### **The guidelines**

The National Health and Medical Research Council's guidelines for managing risks in recreational water (NHMRC 2008) were adopted for use in New South Wales 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 (WA Department of Health 2007).

## Enterococci

**The national guidelines advocate the use of enterococci as the single preferred faecal indicator in recreational 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 (Standards Australia 2007).

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

Beach Suitability Grades are determined by using the following matrix:

		Microbial Assessment Category			
		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

\* Follow up occurs when sanitary inspection and water quality data produce potentially incongruent results; further assessment will be required.

Using the Beach Suitability Grade classification matrix, sites assigned a moderate Sanitary Inspection Category can only be rated as Good or Poor, with no option of Fair grades. This can create the impression of a large change in water quality when in fact there need only be a slight increase in bacterial counts to push it over the threshold, with no significant increase in the risk to public health.

### Microbial Assessment Category (MAC)

There are 4 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 (Wyer et al. 1999).

### Risk of illness associated with Microbial Assessment Categories

Category	Enterococci (cfu/100 mL)	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 illness; AFR = acute fever and rash

### 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 4 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 New South Wales 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. The WA Department of Health recommends a minimum of 65 samples, collected from a particular site over 5 consecutive years, to provide sufficient confidence and reliability in the 95th percentile data output. 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 the WA Government's 'Environmental waters publications' webpage, under *Forms and templates*.

## Sanitary Inspection Category (SIC)

More information about the **sanitary inspection** process is available in the Beachwatch Protocol for assessment and management of microbial risks in recreational waters, found on the department's website.

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.

The main sources of faecal contamination considered in the sanitary inspection are: bathers, toilet facilities, wastewater treatment plants (WWTPs), sewage overflows, sewer chokes, onsite systems, wastewater re-use, stormwater, river discharge, lagoons, boats and animals.

Rivers, lakes and estuaries themselves can be potential sources of faecal contamination to sites located in these waterbodies, with contaminated water from upstream or surrounding areas impacting water quality at the swimming location. This source is captured in river discharge or lagoon category, and shown as the waterbody in the sanitary inspection charts.

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



Stormwater drain flow

Photo:

Beachwatch/DCCEEW

Stormwater in urban areas often contains sewage from leakages, overflows or sewer chokes when the sewerage system fails.

Sewage overflows can occur in wet weather when the network has exceeded capacity due to rainwater entering the system. The mix of sewage and rainwater discharges from designated overflow points and drains to waterways, usually via the stormwater system. Overflows from the sewerage system can also occur in dry weather due to mechanical failure or power outage.

Sewer chokes occur due to blockages in the pipes usually due to tree roots, oil, grease or debris. This causes sewage to back up and escape via sewer inspection points, designed overflow structures or cracks in the pipes, then drain to waterways, usually via the stormwater system.

## Explanation of tables

Each region contains tables listing all monitored swimming sites including site type, beach grade and change in grade from the previous year.

The following symbols are used to show the change in beach grade from the previous year:



Stable



Improved



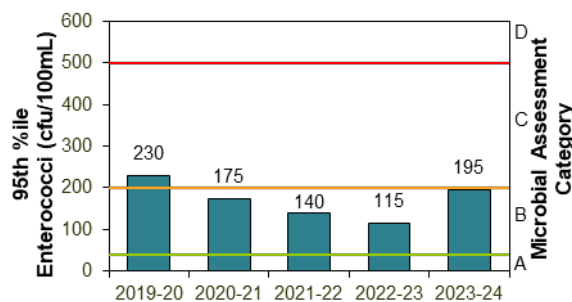
Declined

A provisional grade indicates the assessment is based on limited data collected during the assessment period and should not be compared to the beach grade from the previous year.

## Explanation of graphs, charts, and information bars on beach pages

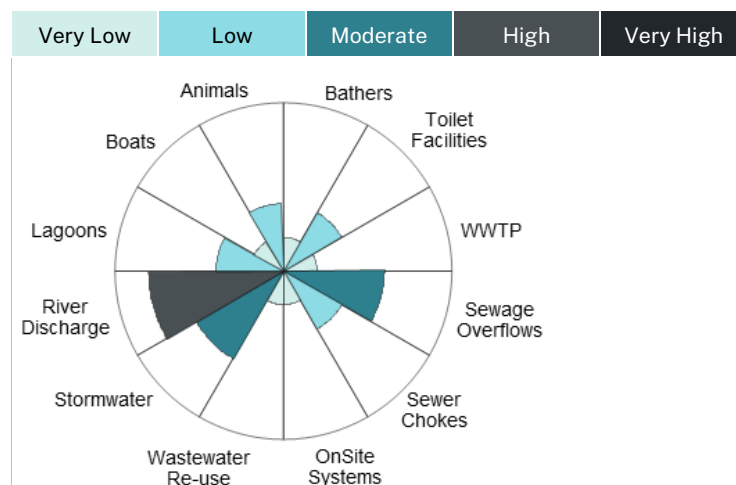
### Microbial Assessment Category (MAC) chart

On each beach page, the MACs for the last 5 years are displayed on a simple bar chart. The MAC for the current year is based on enterococci data collected during the assessment period. The bars are labelled with the 95th percentile value for each year and the thresholds dividing the A, B, C and D categories are marked in green, amber and red for reference.



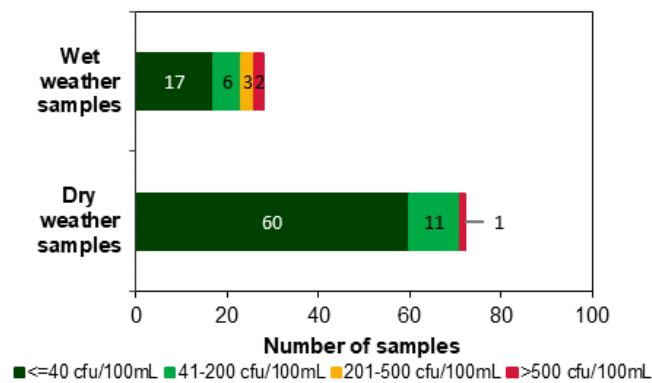
### Sanitary Inspection Category (SIC) chart

The results of the sanitary inspection for each swimming location are presented in a radar pie chart. The chart 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 segment, ranging from very low (lightest colour) to very high (darkest colour) as shown below. The sum of these contributions is the overall likelihood, or Sanitary Inspection Category.



## Wet and dry weather water quality chart

Enterococci levels in wet and dry weather conditions are presented for each swimming location as a bar graph. All data collected during the assessment period is included in the analysis. Dry weather is defined as no rainfall recorded in the previous 24 hours. Each bar is colour coded to show the number 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 as dark green, light green, amber and red respectively.

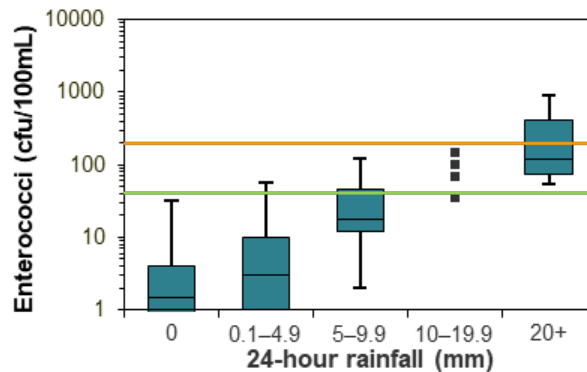


It is expected that swimming sites with lower levels of flushing will show some elevated bacterial results in dry weather samples (no rainfall in the previous 24 hours) due to the longer time needed to recover from a rainfall event. At some estuarine and lake/lagoon swimming locations the impacts of stormwater pollution on beach water quality may be detected up to 3 days after rainfall.

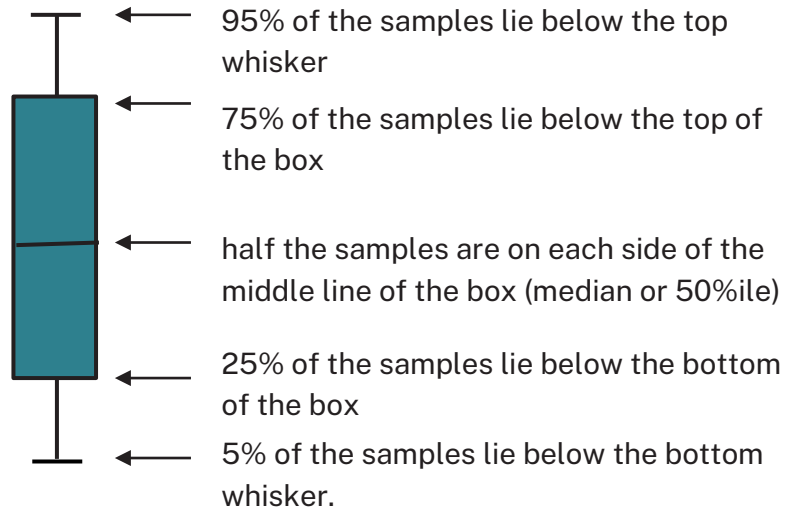
## Water quality in response to rainfall

Trends in enterococci levels in response to rainfall are shown using a box plot. 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 5 years of monitoring. Rainfall data were obtained from rain gauges situated close to the sample site and are 24-hour totals to 9 am on the day of sampling. If there are fewer than 5 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:



### Information bars

Information bars on each beach page provide a summary of details about the swimming site.
















The **assessment period** shows the timeframe in which the water samples were collected. The NHMRC guidelines state beach grades should be determined from the most recent 100 water quality results collected within a 5-year period. The assessment period varies between sites depending on sampling frequency.

Dry weather samples suitable for swimming (**dry weather swimmability**) shows the percentage of water samples with enterococci levels below 40 cfu/100 mL. Dry weather is defined as no rainfall in the previous 24 hours.

Swimming sites with lower levels of flushing often have a lower percentage of dry weather samples within the safe swimming limit due to the impacts of rainfall detected up to 3 days after the event.

## Explanation of maps

A map of individual swimming locations is presented on each beach page. The scale of the maps is 1:10,000. 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 Life Saving Club
	Wastewater Treatment Plant
	Sewage Pumping Station
	Sewage Overflow
	Stormwater Drain
	Water
	Baths
	National Park/Reserve/ Other Park
	Built-up Area
	Sand
	Roads
	Major Roads
	Baths – Netted Area
	Breakwater/Wharf

## References

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Standards Australia (2007) *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.

WA Department of Health (2007), *Microbial 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, [ww2.health.wa.gov.au/Articles/A\\_E/Environmental-waters-publications](http://ww2.health.wa.gov.au/Articles/A_E/Environmental-waters-publications), accessed 23/06/22.

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.

## More information

- [Beachwatch NSW on X \(formerly Twitter\)](#)
- [Beachwatch NSW on Facebook](#)
- [Beachwatch webpage](#)
- [Coastal management program progress](#)
- [Sanitary inspection of beaches](#)
- [Subscribe to daily pollution forecast emails](#)
- [Towards Safer Swimming: Rose Bay](#)
- [WA Government environmental water publications](#)



## Beachwatch

# State of the beaches 2023–24

Illawarra region

Department of Climate Change,  
Energy, the Environment and Water



## Acknowledgement of Country

Department of Climate Change, Energy, the Environment and Water acknowledges the Traditional Custodians of the lands where we work and live.

We pay our respects to Elders past, present and emerging.

This resource may contain images or names of deceased persons in photographs or historical content.

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Artist and designer Nikita Ridgeway from Aboriginal design agency Boss Lady Creative Designs created the People and Community symbol.

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Recreational water quality has been monitored in the Illawarra region since 1996 by Sydney Water, and by Wollongong City Council and Kiama Municipal Council under the Department of Climate Change, Energy, the Environment and Water's Beachwatch Partnership Program. This report summarises the performance of 21 swimming sites in the Illawarra region of New South Wales, providing a long-term assessment of how suitable a site is for swimming. Monitored sites include ocean beaches and a designated swimming site in Lake Illawarra.

In 2023–2024, 95% of swimming sites in the Illawarra region were graded as Good or Very Good. These sites were suitable for swimming for most or almost all of the time. This is an excellent result, and a similar performance to previous years.

# Illawarra region summary 2023–2024



Surf Beach Kiama

Photo:  
Beachwatch/DCCEEW

## Monitoring water quality for swimming in New South Wales

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 New South Wales 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 (2–4 years’ worth of data depending on the sampling frequency) and a risk assessment of potential pollution sources.

See the section on **Quality assurance** in the Statewide Summary for results of the quality assurance program.

Recreational water quality has been monitored in the Illawarra region by Sydney Water since 1996, and Wollongong City Council and Kiama Municipal Council since 2011.

A **quality assurance** program ensures the information collected and reported by Beachwatch and its partners is accurate and reliable.

## Rainfall impacts

During 2023–2024, 21 swimming sites were monitored including ocean beaches and a designated swimming site in Lake Illawarra.

Rainfall is the major driver of pollution to recreational waters, generating stormwater runoff and triggering untreated 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 2023–2024 are based on water quality data collected over the last 2–4 years.

Rainfall over this period has been diverse:

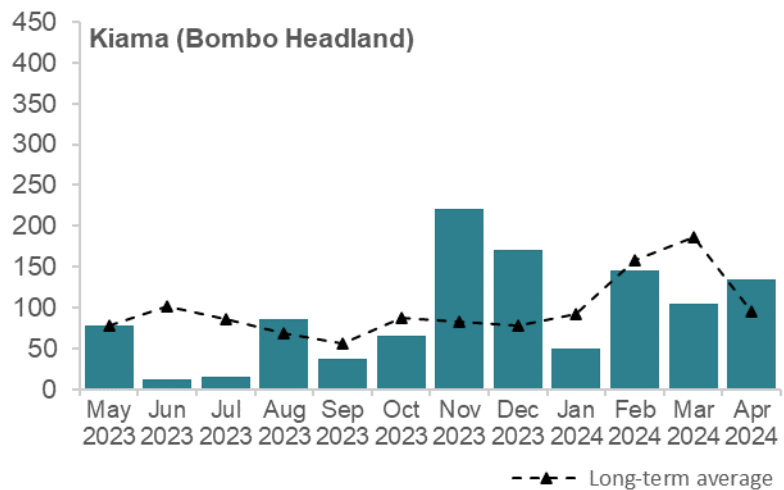
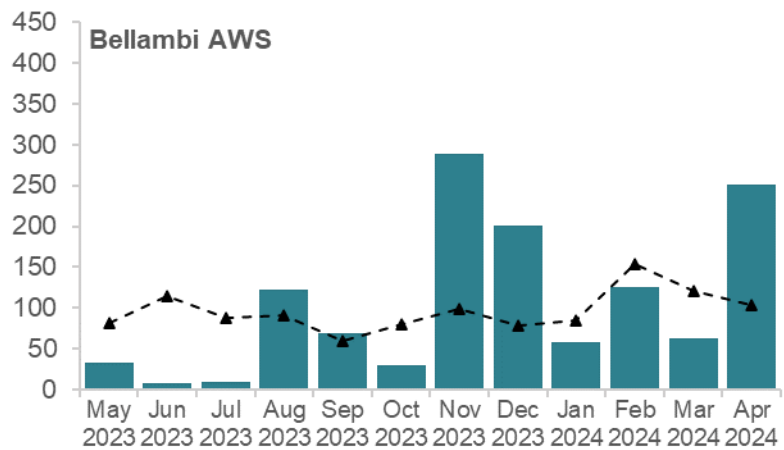
- 2020–2021: variable rainfall with some wet months
- 2021–2022: a very wet summer and autumn, including significant wet weather and flooding events
- 2022–2023: a very wet winter and spring, and some significant rainfall events associated with storms during summer
- 2023–2024: mostly average to below average rainfall, except for some isolated wet months.

See the section on **How to read this report** on page 38 for an explanation of the graphs, tables and Beach Suitability Grades.

Rainfall on the Illawarra Coast was mostly average to below average for the 2023–2024 reporting year, except for some isolated wet months. Well above average rainfall fell in November and December 2023 and April 2024 across the region.

November and December 2023 were notably wet. Bellambi recorded its highest November daily rainfall of 154.8 mm on 5 November, its record highest November total rainfall of 289.2 mm, and its record highest December total rainfall of 200.8 mm. Similarly, Bellambi recorded its highest April daily rainfall of 194.8 mm on 6 April.

### Illawarra region rainfall



Marine algal bloom present in the water

Photo: Chad Weston/NPWS, DCCEEW

### Algal blooms

Water NSW reported a caution alert for a marine algae bloom, *Trichodesmium* sp., in December 2023 at Belmore Basin in Wollongong. Marine algae advisories were issued on the Water NSW website.

The appearance of **marine algae** is sometimes mistaken for **sewage contamination** or **oil slicks**, due to a strong odour and red or brown discolouration in the water caused by the blooms.

As a precaution, direct contact with algae should be avoided as it can cause skin and eye irritations. The

marine algal blooms dissipated with changes in tide and wind conditions.

Beachwatch issues daily **beach pollution forecasts** to enable beach goers to make informed decisions about where and when to swim.

Pollution forecasts for the Illawarra beaches can be accessed via the Beachwatch website, email subscription, X (formerly Twitter) and Facebook.

## 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 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 Illawarra region

Swimming site	Site type	Beach Suitability Grade	Change
<b>Wollongong City Council</b>			
Stanwell Park Beach	Ocean beach	VG	
Coledale Beach	Ocean beach	VG	
Austinmer Beach	Ocean beach	VG	
Thirroul Beach	Ocean beach	G	
Bulli Beach	Ocean beach	G	
Woonona Beach	Ocean beach	VG	
Bellambi Beach	Ocean beach	G	
Corrimal Beach	Ocean beach	G	
North Wollongong Beach	Ocean beach	G	
Wollongong City Beach	Ocean beach	VG	
Coniston Beach	Ocean beach	VG	
Fishermans Beach	Ocean beach	VG	
Port Kembla Beach	Ocean beach	G	
<b>Shellharbour City Council</b>			
Entrance Lagoon Beach	Lake/Lagoon	P	
Warilla Beach	Ocean beach	VG	
Shellharbour Beach	Ocean beach	VG	
<b>Kiama Municipal Council</b>			
Boyd's Jones Beach	Ocean beach	VG	
Bombo Beach	Ocean beach	VG	
Surf Beach Kiama	Ocean beach	G	
Werri Beach	Ocean beach	VG	
Seven Mile Beach (Gerroa)	Ocean beach	G	



# Wollongong City Council

## Overall results



All 13 swimming sites were graded as Very Good or Good in 2023–2024. Excellent results have been recorded for many years.

### Percentage of sites graded as Very Good or Good

	2021– 2022	2022– 2023	2023– 2024	Trend
Ocean beaches (13 sites)	100%	100%	<b>100%</b>	—————

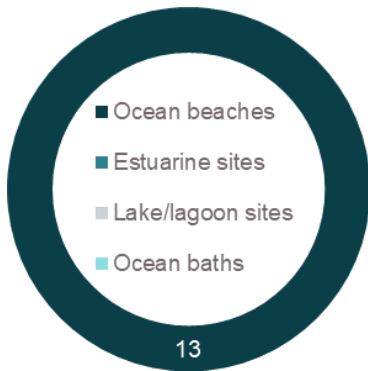
Eleven locations were monitored by Sydney Water. Samples were collected every sixth day throughout the year at 9 locations, and 2 locations were monitored every sixth day between October and April. Two locations were monitored by Wollongong City Council. Samples were collected every sixth day (excluding weekends) between October and April and sampling and laboratory analysis was fully funded by the council.

See the section on **How to read this report** on page 38 for an explanation of the graphs, tables and Beach Suitability Grades.

### Best beaches

Stanwell Park Beach, Coledale Beach, Austinmer Beach, Woonona Beach, Coniston Beach, Wollongong City Beach and Fishermans Beach.

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



**Site types in Wollongong City Council**

Ocean beaches were the only site type monitored in the Wollongong region.

As a general precaution swimming should be avoided during and for at least one day after heavy rain at ocean beaches, or if there are signs of stormwater pollution such as discoloured water or floating debris.



**Beach Suitability Grades for Wollongong City Council ocean beaches**

## Ocean beaches

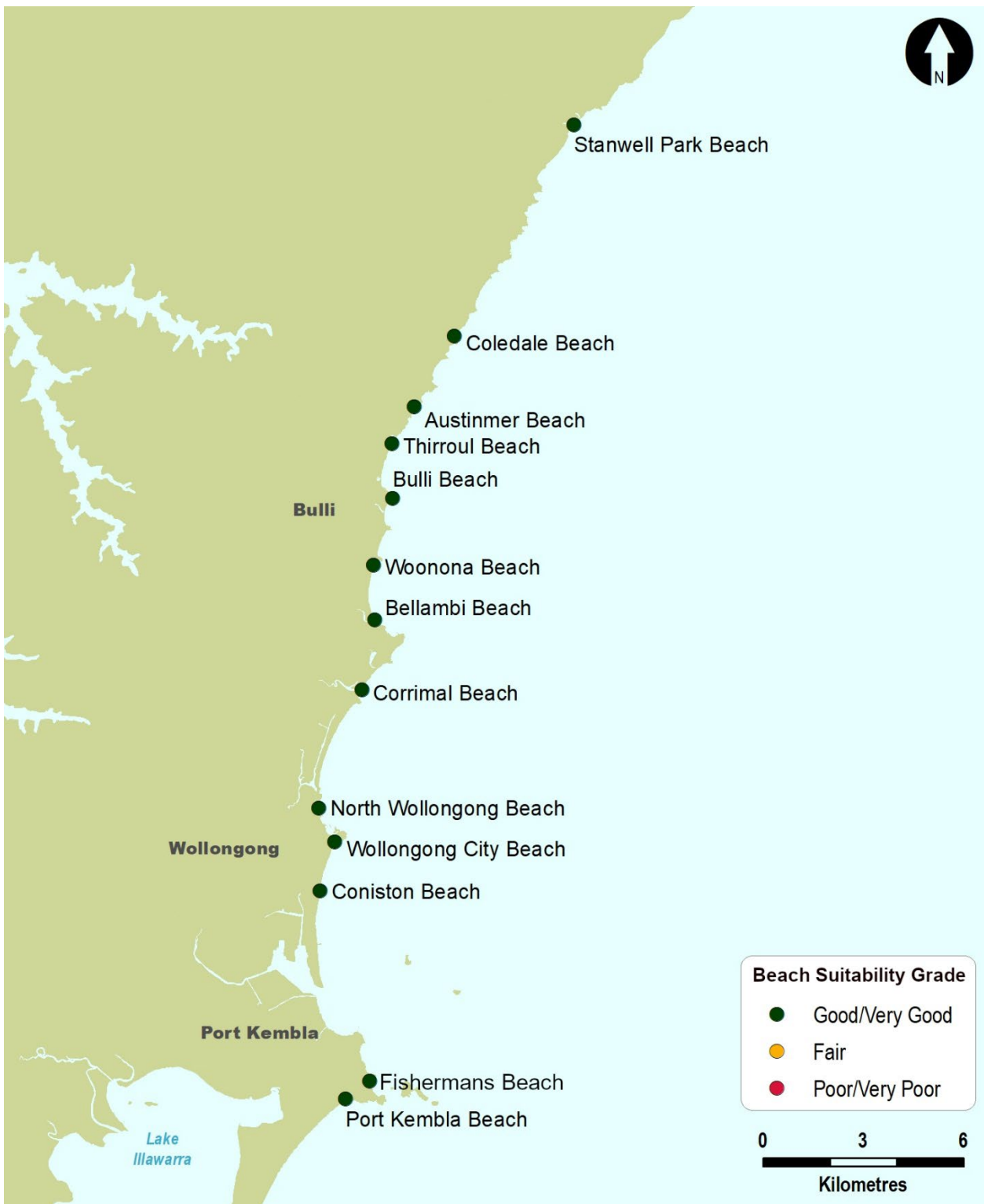
All 13 ocean beaches continued to be graded as Very Good or Good in 2023–2024.

Seven beaches were graded as Very Good: Stanwell Park Beach, Coledale Beach, Austinmer Beach, Woonona Beach, Coniston Beach, Wollongong City Beach and Fishermans Beach. Water quality at these beaches is suitable for swimming almost all of the time. Coniston Beach improved to Very Good from Good in the previous year due to improved microbial water quality.

Thirroul Beach, Bulli Beach, Bellambi Beach, Corrimal Beach, North Wollongong Beach and Port Kembla Beach continued to be graded as Good in 2023–2024. Water quality at these sites was frequently suitable for swimming during dry weather conditions. However, enterococci levels generally increased with increasing rainfall, often exceeding the safe swimming limit after moderate to heavy rainfall.

Many of these sites have several, or more significant, potential sources of pollution such as stormwater or upstream sources discharged from creeks or lagoons. Discharges from storm sewage treatment plants (SSTPs) at Bellambi and Port Kembla may also affect the water quality at nearby beaches following heavy rainfall.

It is recommended that swimming be avoided at these beaches during and for up to one day following rainfall, or if there are signs of pollution such as discoloured water, flowing drains or floating debris.



# Stanwell Park Beach

Beach grade: **VG**



The beach is 700 m long and is backed by dunes and a reserve. Lifeguards patrol the beach from September to April.

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

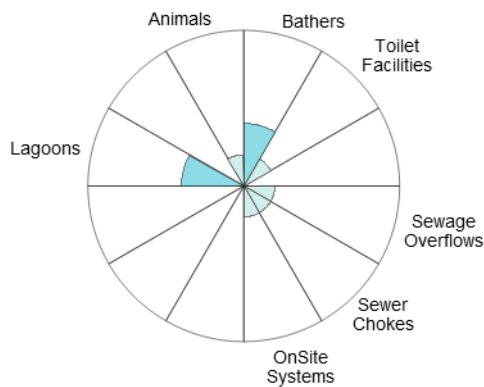
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit in response to 5 mm or more of rain, and often after 20 mm or more.

The site has been monitored since 2011.

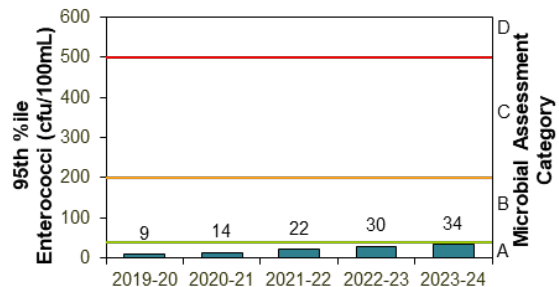
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Oct 2019 to Apr 2024	96%	100	Stable

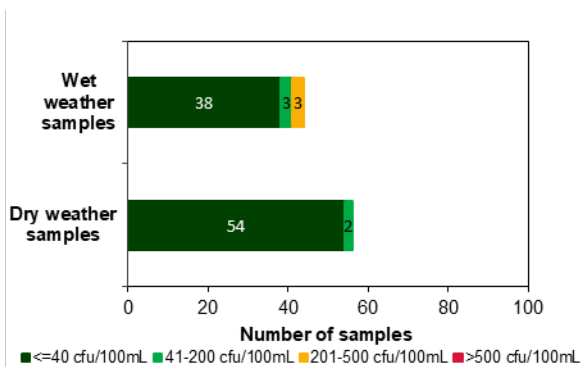
### Sanitary inspection: Low



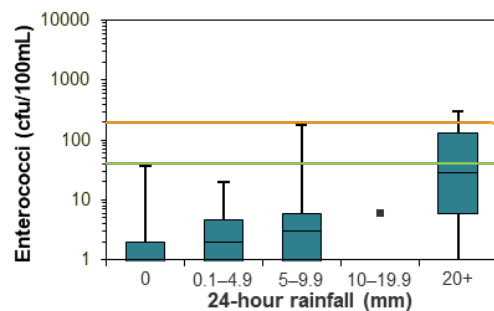
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Coledale Beach

**Beach grade:** VG



Coledale Beach is 300 m long and is backed by a small grass reserve and campsite. Lifeguards patrol the beach from September to April.

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

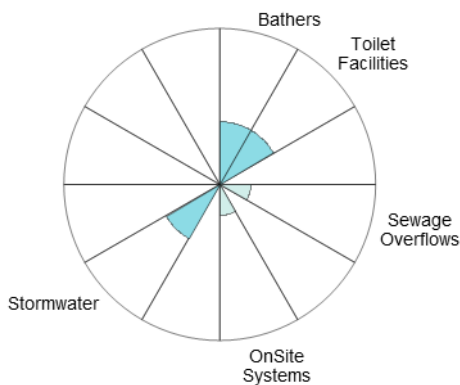
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after 5 mm or more of rain and often after 20 mm or more.

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

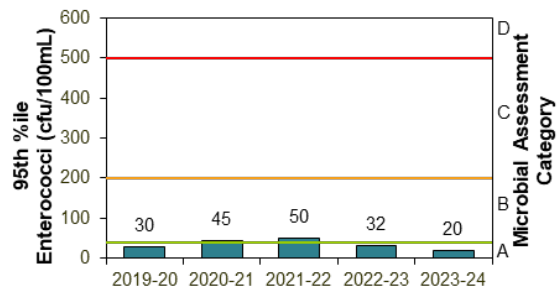
The site has been monitored since 2011.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Oct 2019 to Apr 2024	100%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

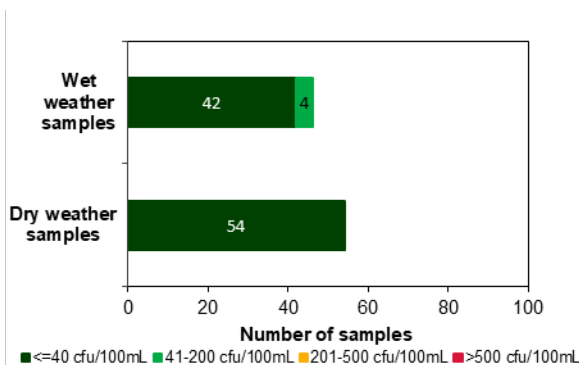
### Sanitary inspection: Low



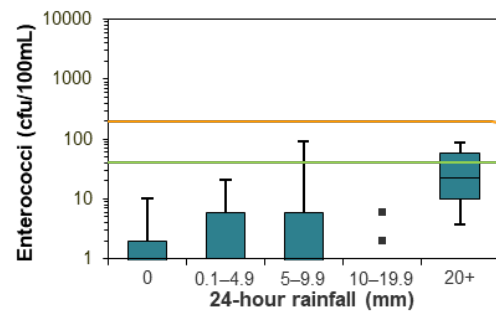
### Microbial Assessment Category: A



### Dry and wet weather water quality

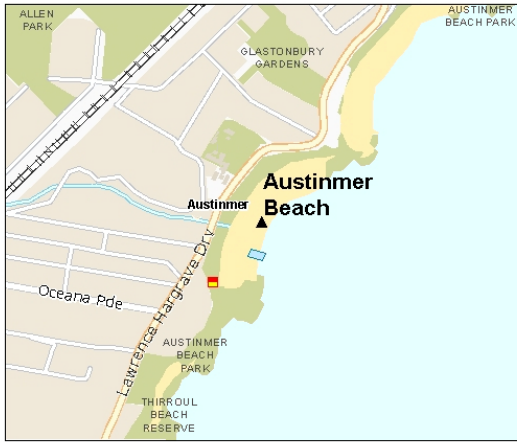


### Water quality in response to rainfall



# Austinmer Beach

Beach grade: **VG**



Austinmer is a small beach with ocean baths on the southern rock platform. Lifeguards patrol the beach from September to April.

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

Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit in response to 5 mm or more of rain.

See ‘How to read this report’ for key to map.

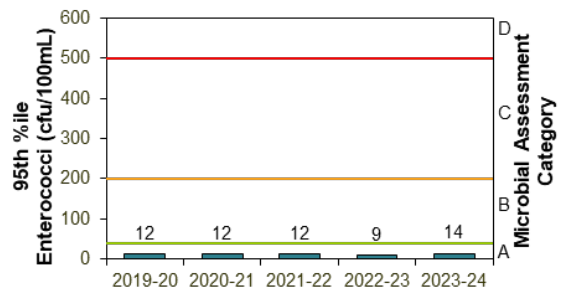
The site has been monitored since 2006.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status	
Ocean beach	Oct 2021 to Apr 2024	96%	100	Stable	○

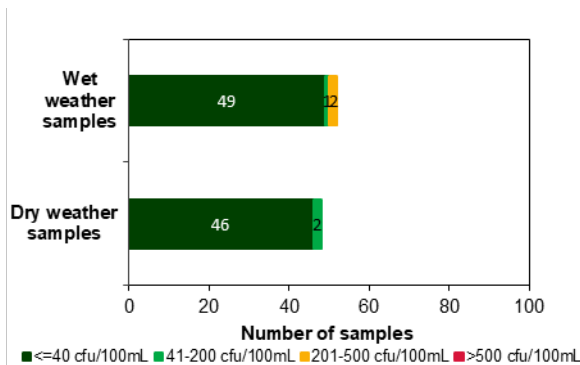
## Sanitary inspection: Low



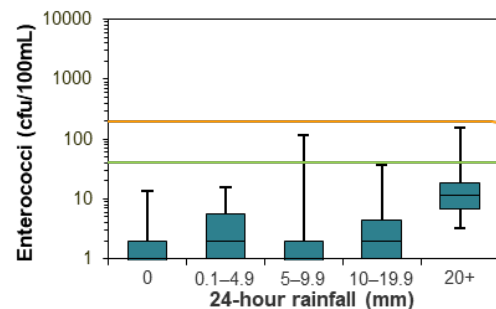
## Microbial Assessment Category: A



## Dry and wet weather water quality



## Water quality in response to rainfall



# Thirroul Beach

**Beach grade:** G



Thirroul Beach is 1 km long and backed by a grassed reserve. Lifeguards patrol the beach from September to April.

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

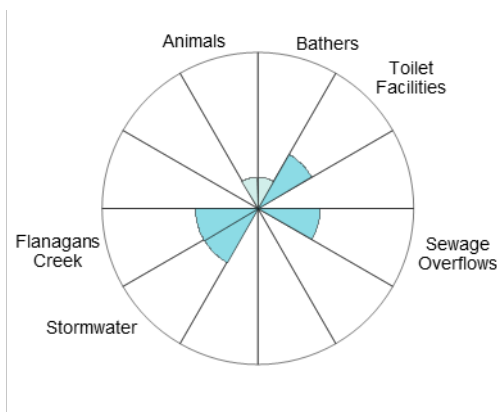
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after 10 mm or more of rain and often after 20 mm or more.

The site has been monitored since 2006.

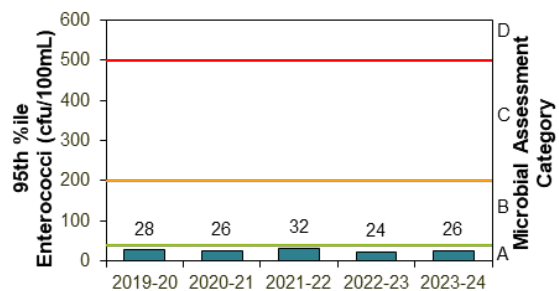
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Oct 2021 to Apr 2024	96%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

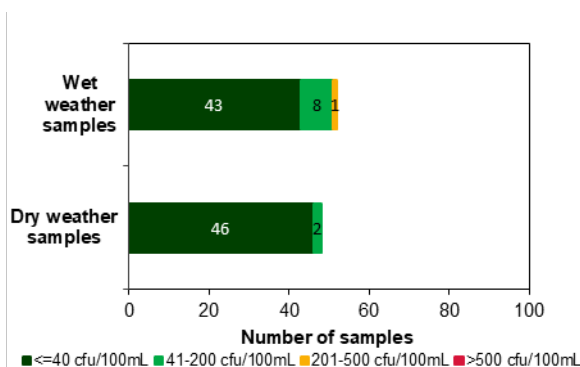
## Sanitary inspection: Moderate



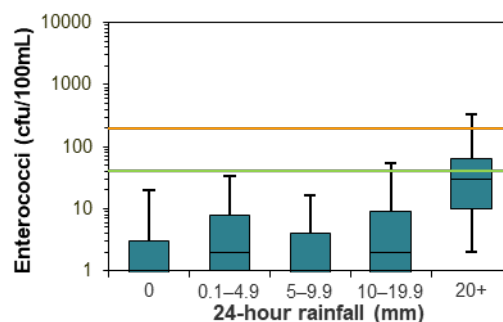
## Microbial Assessment Category: A



## Dry and wet weather water quality

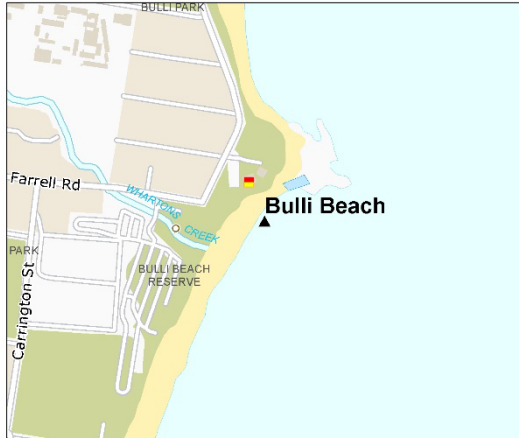


## Water quality in response to rainfall



# Bulli Beach

**Beach grade:** G



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

Bulli beach is at the northern end of a 900 m long beach. The beach is patrolled from September to April.

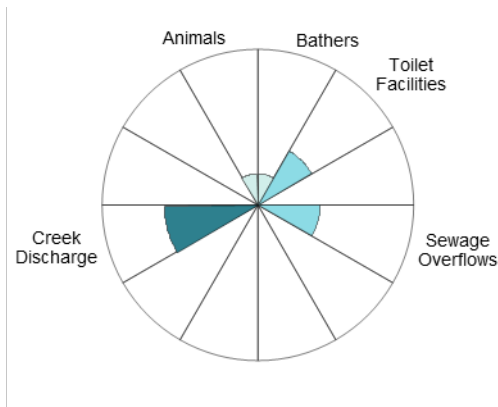
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination, including discharge from Whartons Creek.

Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after 5 mm or more of rain, and often after 20 mm or more.

The site has been monitored since 1996.

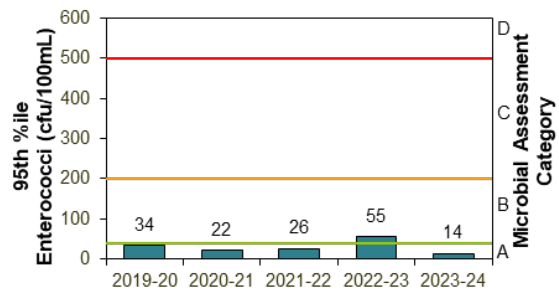
Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	100%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

### Sanitary inspection: Moderate

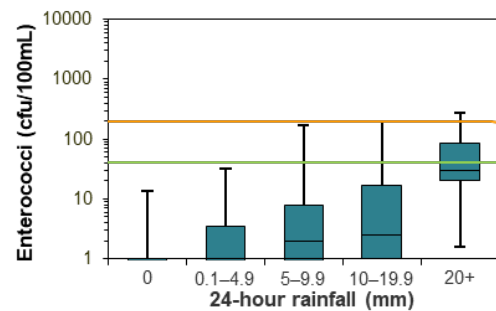
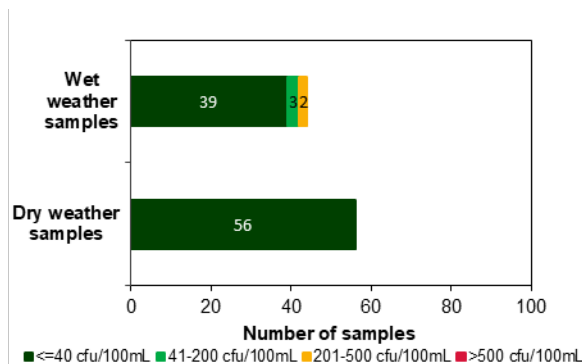


Dry and wet weather water quality

### Microbial Assessment Category: A

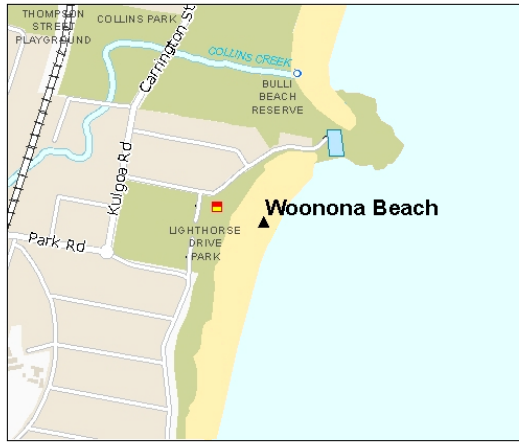


Water quality in response to rainfall



# Woonona Beach

Beach grade: **VG**



Woonona Beach is at the northern end of a 2 km stretch of beach. Lifeguards patrol the beach from September to April.

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

Enterococci levels generally increased with increasing rainfall, often exceeding the safe swimming limit in response to 20 mm or more of rain.

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

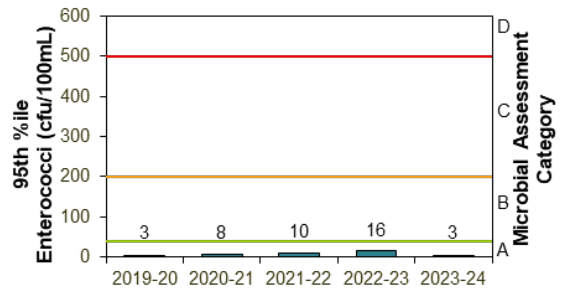
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status	
Ocean beach	Aug 2022 to Apr 2024	100%	100	Stable	○

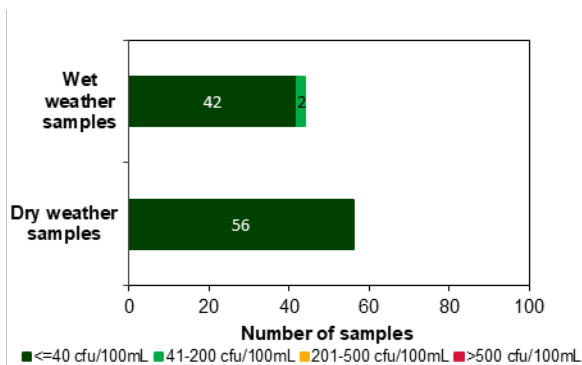
### Sanitary inspection: Low



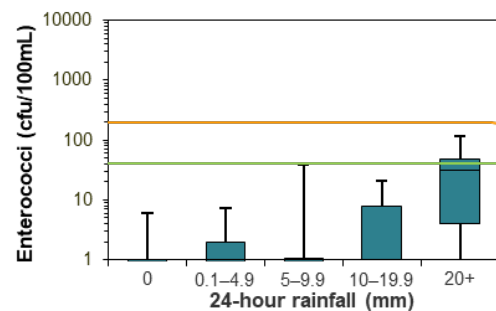
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Bellambi Beach

**Beach grade:** G



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

Bellambi Beach is at the southern end of a 2 km stretch of beach. Lifeguards patrol the beach from September to April.

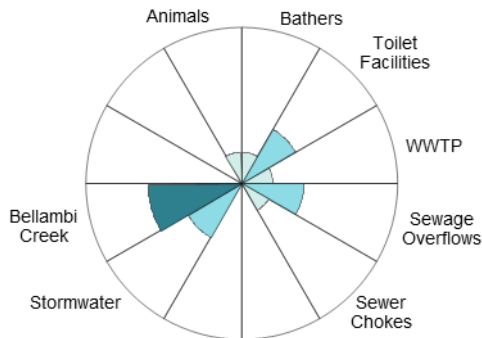
The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with several potential sources of faecal contamination, including discharge from Bellambi Gully.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and often after 5 mm or more.

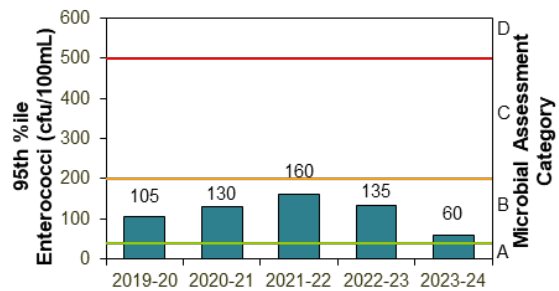
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	92%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

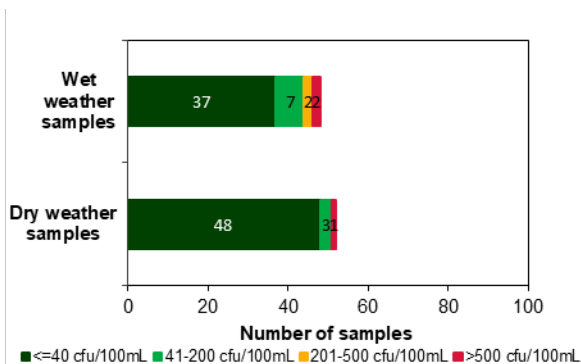
## Sanitary inspection: Moderate



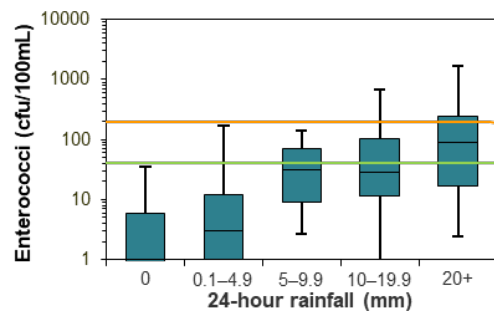
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Corrimal Beach

**Beach grade:** G



The beach is 1.4 km long and is backed by a reserve and caravan park. Lifeguards patrol the beach from September to April.

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

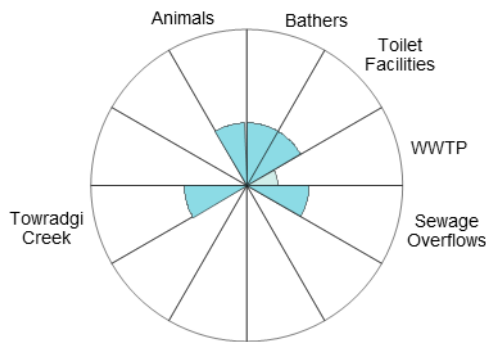
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and often after 5 mm or more.

The site has been monitored since 1996.

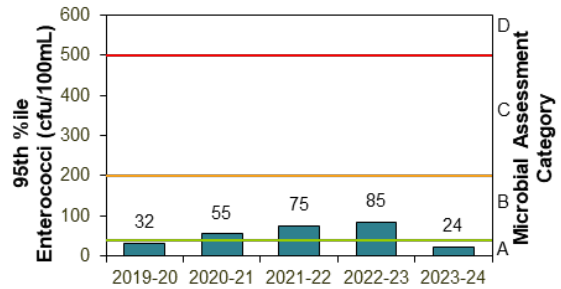
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	100%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

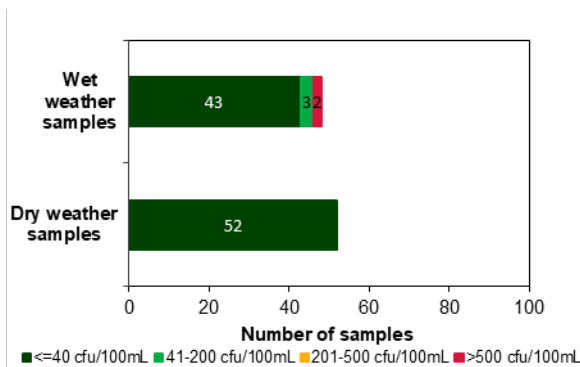
## Sanitary inspection: Moderate



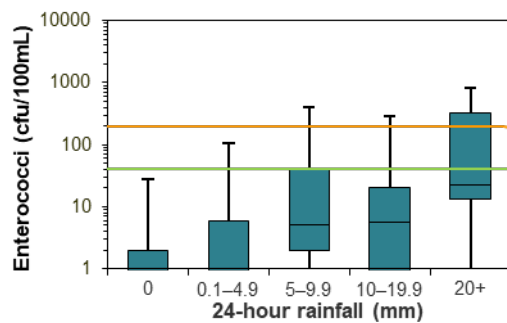
## Microbial Assessment Category: A



## Dry and wet weather water quality

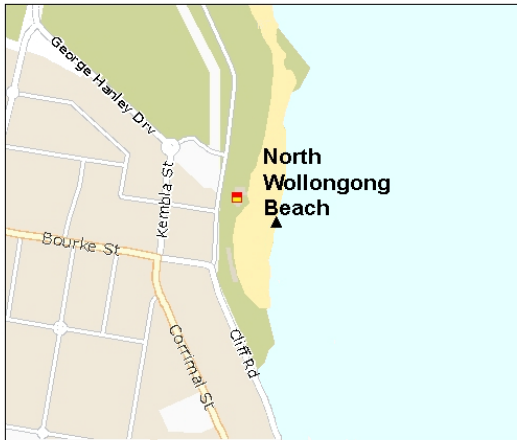


## Water quality in response to rainfall



# North Wollongong Beach

Beach grade: **G**



North Wollongong Beach is 500 m long and is backed by steep bluffs, a reserve and a picnic area. Lifeguards patrol the beach all year round.

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

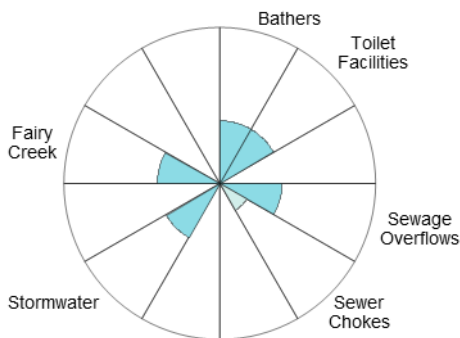
Enterococci levels generally increased with increasing rainfall, often exceeding the safe swimming limit after 20 mm or more of rain.

The site has been monitored since 1996, excluding 1997–1998.

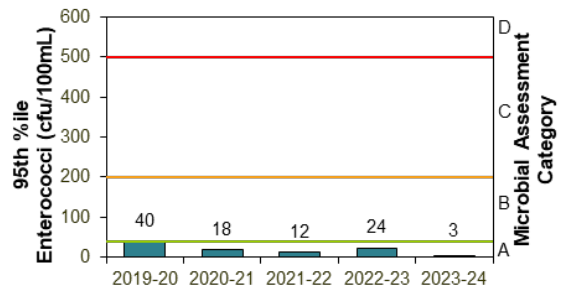
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	98%	100	Stable

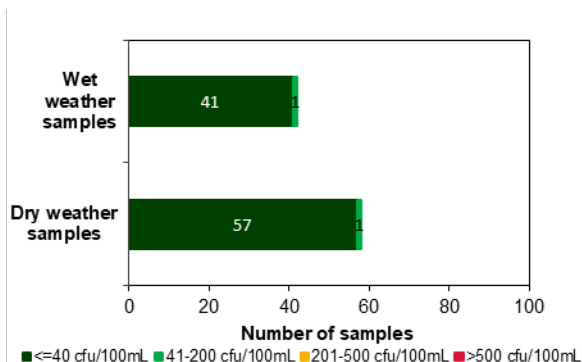
### Sanitary inspection: Moderate



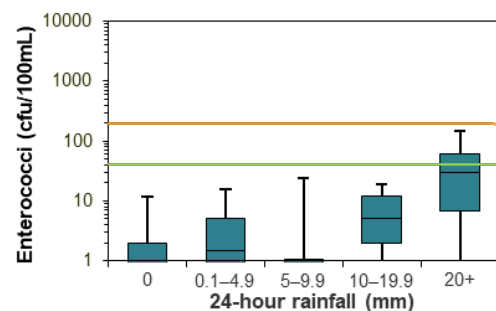
### Microbial Assessment Category: A



### Dry and wet weather water quality

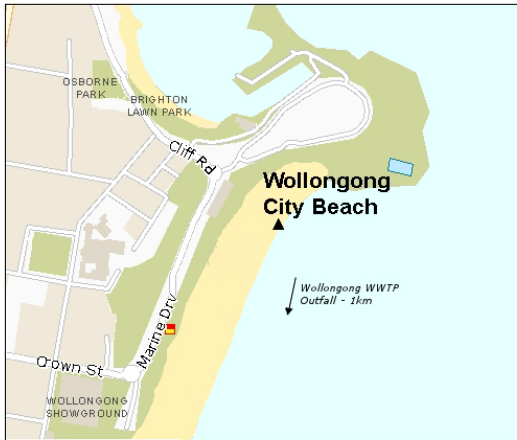


### Water quality in response to rainfall



# Wollongong City Beach

Beach grade: **VG**



Wollongong City Beach is at the northern end of a 4 km stretch of beach. Lifeguards patrol the beach from September to April.

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

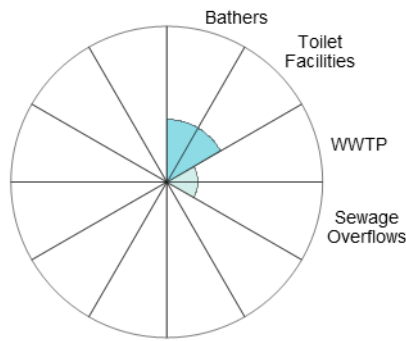
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after 20 mm or more of rain.

See ‘How to read this report’ for key to map.

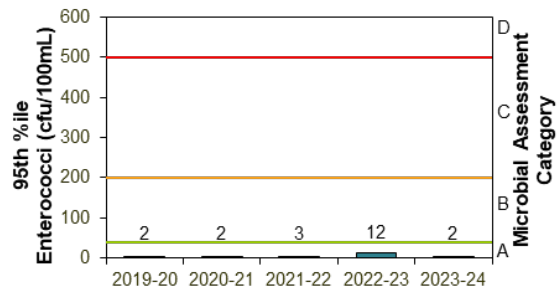
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	100%	100	Stable

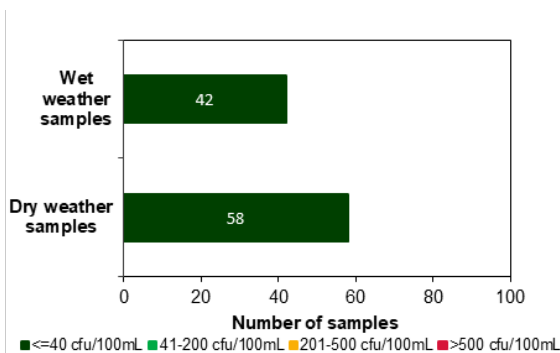
### Sanitary inspection: Low



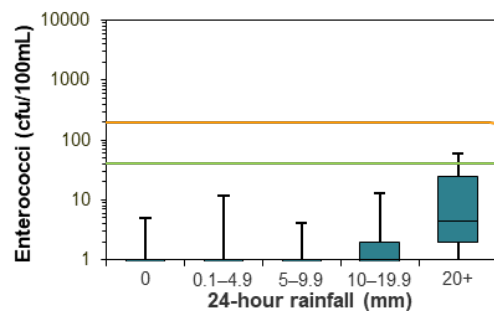
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Coniston Beach

Beach grade: **VG**



Coniston Beach is in the middle of a 4 km stretch of sand, to the north of Port Kembla, and backed by a golf course.

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

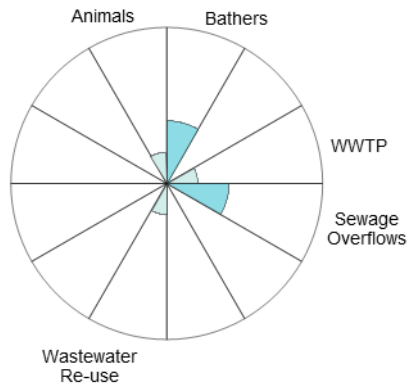
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit in response to 20 mm or more of rain.

See ‘How to read this report’ for key to map.

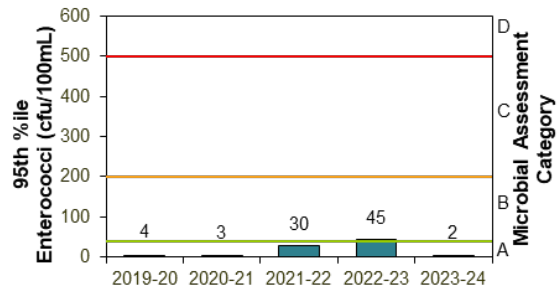
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	98%	100	Improved

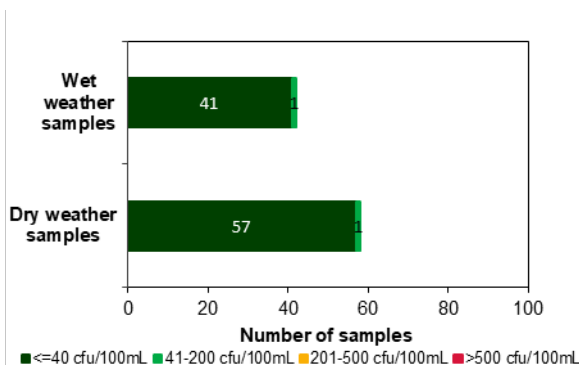
### Sanitary inspection: Low



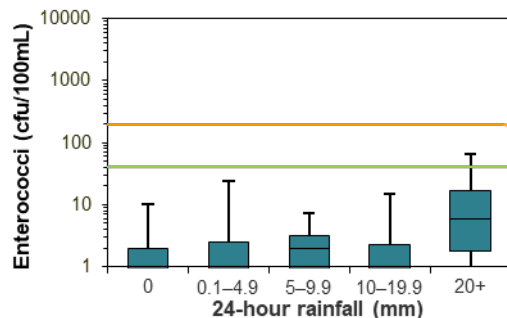
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Fishermans Beach

Beach grade: **VG**



Fishermans Beach is a small, north-east facing beach backed by high cliffs.

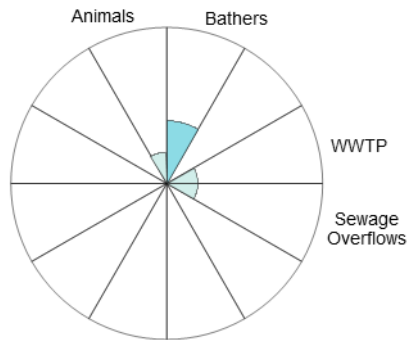
The Beach Suitability Grade of Very Good indicates microbial water quality is considered suitable for swimming almost all of the time, with few potential sources of faecal contamination.

Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after light rain and after 20 mm or more of rain.

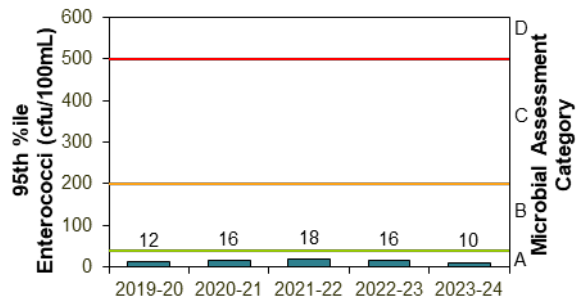
See 'How to read this report' for key to map. The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	100%	100	Stable

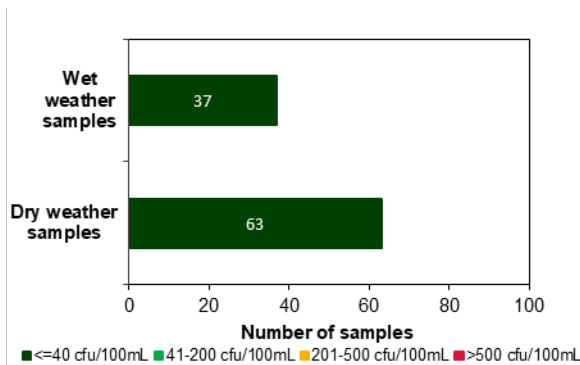
### Sanitary inspection: Low



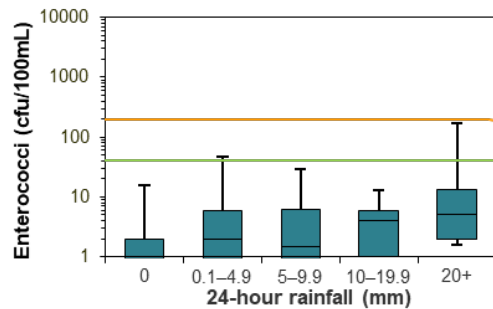
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Port Kembla Beach

**Beach grade:** G



Port Kembla Beach is in the northern corner of a long stretch of beach. Lifeguards patrol the beach from September to April.

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

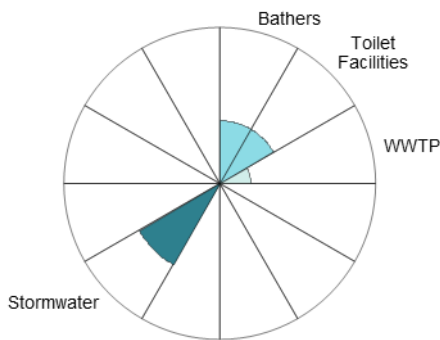
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and often after 20 mm or more.

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

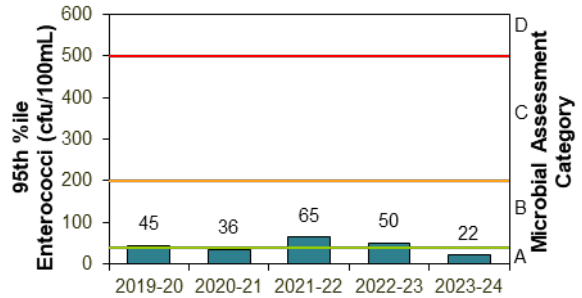
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	98%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

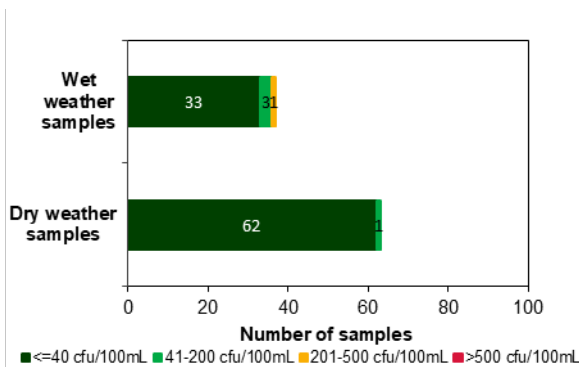
## Sanitary inspection: Moderate



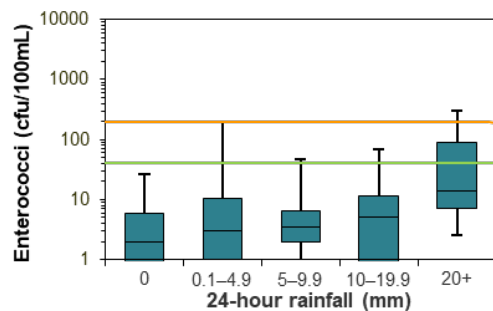
## Microbial Assessment Category: A



## Dry and wet weather water quality



## Water quality in response to rainfall



# Shellharbour City Council

## Overall results



Two of 3 swimming sites were graded as Very Good or Good in 2023–2024. This is a similar performance to the previous year.

### Percentage of sites graded as Very Good or Good

	2021– 2022	2022– 2023	2023– 2024	Trend
Ocean beaches (2 sites)	100%	100%	<b>100%</b>	
Lake/ lagoon sites (1 sites)	100%	0%	<b>0%</b>	

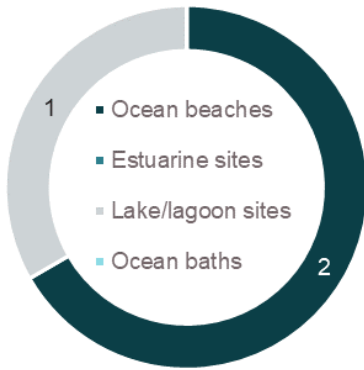
Three swimming sites were monitored in the Shellharbour local government area. All 3 locations were monitored by Sydney Water. Samples were collected every sixth day throughout the year.

See the section on **How to read this report** on page 38 for an explanation of the graphs, tables and Beach Suitability Grades.

### Best beaches

Warilla Beach and Shellharbour Beach.

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



**Site types in Shellharbour City Council**

Swimming sites monitored in the Shellharbour region include ocean beaches and a lake/lagoon swimming site in Lake Illawarra, with each site type having a different response to rainfall-related impacts.

In general, lake/lagoon swimming sites do not perform as well as ocean beaches, due to lower levels of flushing increasing the time needed to disperse and dilute pollution inputs, taking longer to recover from stormwater events.

As a general precaution swimming should be avoided during and for at least one day after heavy rain at ocean beaches, and for up to 3 days in lake/lagoon areas, or if there are signs of stormwater pollution such as discoloured water or floating debris.

### Ocean beaches



**Beach Suitability Grades for Shellharbour City Council ocean beaches**

Warilla Beach and Shellharbour Beach were graded as Very Good in 2023–2024. These sites had excellent water quality and were suitable for swimming almost all of the time. Warilla Beach was upgraded to Very Good from Good due to improved microbial water quality.

It is recommended that swimming be avoided at ocean beaches during and for up to one day following rainfall, or if there are signs of pollution such as discoloured water, flowing drains or floating debris.

### Lake/lagoon swimming sites



**Beach Suitability Grades for Shellharbour City Council lake/lagoon swimming sites**

Entrance Lagoon Beach continued to be graded as Poor in 2023–2024, consistent with the previous year. Water quality at this site was mostly suitable for swimming during dry weather conditions, with 79% of dry weather samples within the safe swimming limit when there had been no rain in the previous 24 hours. Enterococci levels increased with increasing rainfall and were often recorded after light rain.

The swimming site is located within the entrance of Lake Illawarra and has lower levels of flushing. Due to this, the site can retain pollution inputs and take longer to recover from the impacts of stormwater. Water quality at this site

may be impacted by contaminants discharged from Lake Illawarra, and stormwater during and following rainfall.

Swimming should be avoided during and for up to 3 days following rainfall, or if there are signs of pollution such as discoloured water, flowing drains or floating debris.



**Sampling sites and Beach Suitability Grades in Shellharbour City Council**

# Entrance Lagoon Beach

**Beach grade:** P



Entrance Lagoon Beach is on the southern shore of the entrance to Lake Illawarra and is partly enclosed by a rock breakwater.

The Beach Suitability Grade of Poor indicates microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including stormwater and upstream sources in Lake Illawarra.

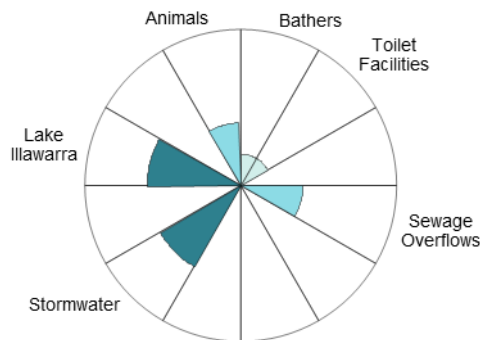
See 'How to read this report' for key to map.

Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after no rain and often after rain.

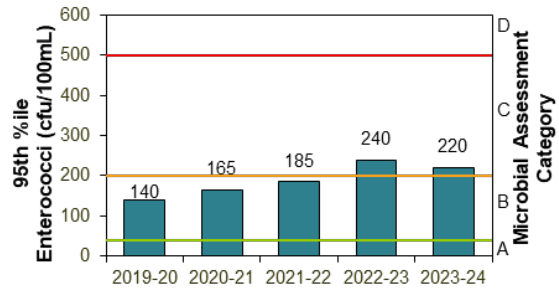
The site has been monitored since 2007.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Lake/Lagoon	Aug 2022 to Apr 2024	79%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

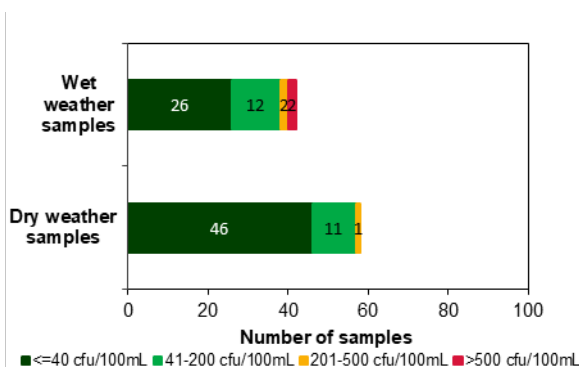
## Sanitary inspection: Moderate



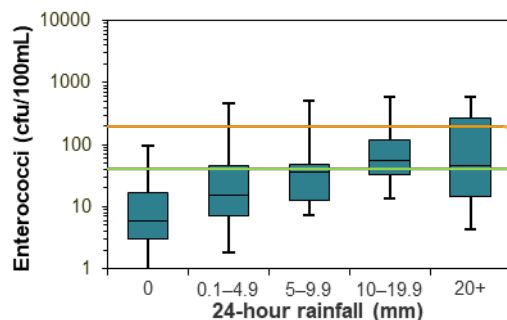
## Microbial Assessment Category: C



## Dry and wet weather water quality



## Water quality in response to rainfall



# Warilla Beach

**Beach grade:** VG



Warilla Beach is almost 2 km long, protected by prominent headlands. Lifeguards patrol the beach from September to April.

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

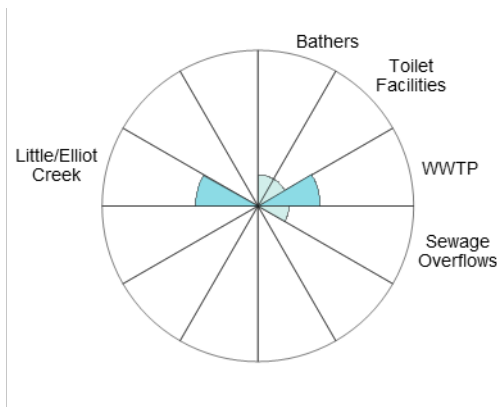
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after 5 mm or more of rain and often after 20 mm or more.

The site has been monitored since 1996.

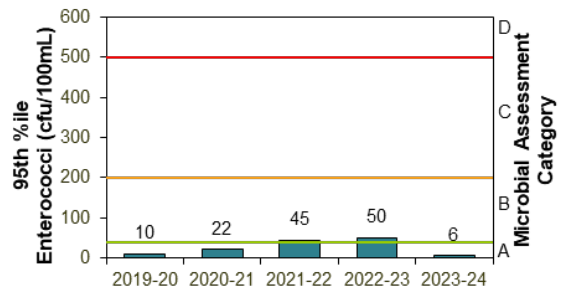
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	100%	100	Improved <span style="font-size: 2em;">↑</span>

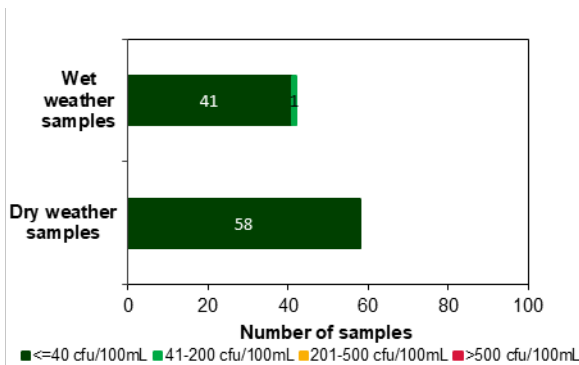
## Sanitary inspection: Low



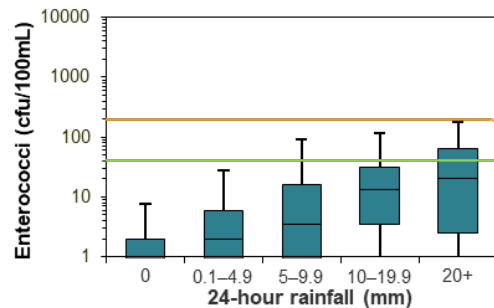
## Microbial Assessment Category: A



## Dry and wet weather water quality



## Water quality in response to rainfall



# Shellharbour Beach

Beach grade: **VG**



Shellharbour Beach is at the southern end of a small, east facing beach. Lifeguards patrol the beach from October to April.

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

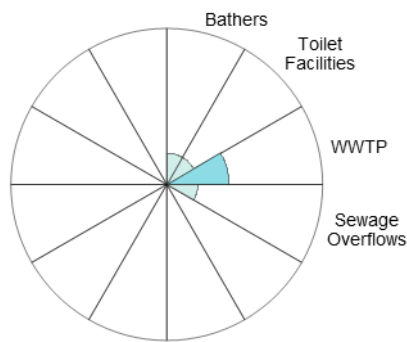
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit in response to 10 mm or more of rain.

See ‘How to read this report’ for key to map.

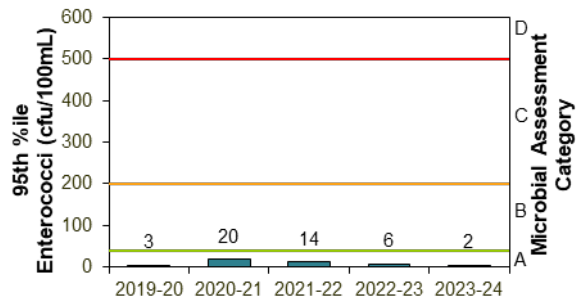
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	100%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

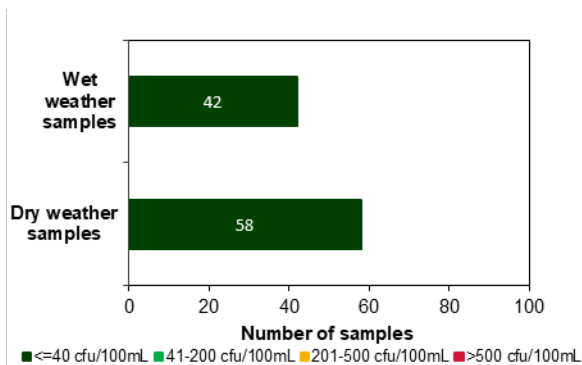
### Sanitary inspection: Low



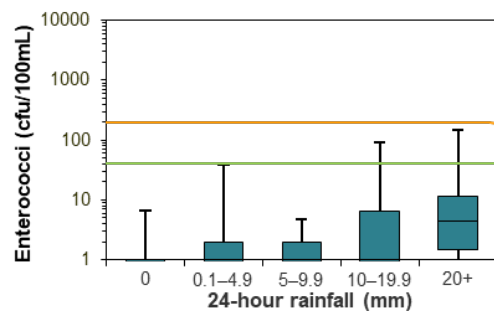
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Kiama Municipal Council

## Overall results



All 5 swimming sites were graded as Very Good or Good in 2023–2024. This is an excellent result and consistent with previous years.

### Percentage of sites graded as Very Good or Good

	2021– 2022	2022– 2023	2023– 2024	Trend
Ocean beaches (5 sites)	100%	100%	<b>100%</b>	—————

Five swimming sites were monitored in the Kiama local government area.

Four locations were monitored by Sydney Water with samples collected every sixth day. Three of these locations were monitored throughout the year. One location was monitored between October and April.

One location was monitored by Kiama Municipal Council. Samples were collected weekly between October and April and sampling and laboratory analysis was fully funded by the council.

See the section on **How to read this report** on page 38 for an explanation of the graphs, tables and Beach Suitability Grades.

### Best beaches

Boyd's Jones Beach, Bombo Beach and Werri Beach.

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



**Site types in Kiama Municipal Council**

Ocean beaches were the only site type monitored in the Kiama region.

As a general precaution swimming should be avoided during and for at least one day after heavy rain at ocean beaches, or if there are signs of stormwater pollution such as discoloured water or floating debris.



**Beach Suitability Grades for Kiama Municipal Council ocean beaches**

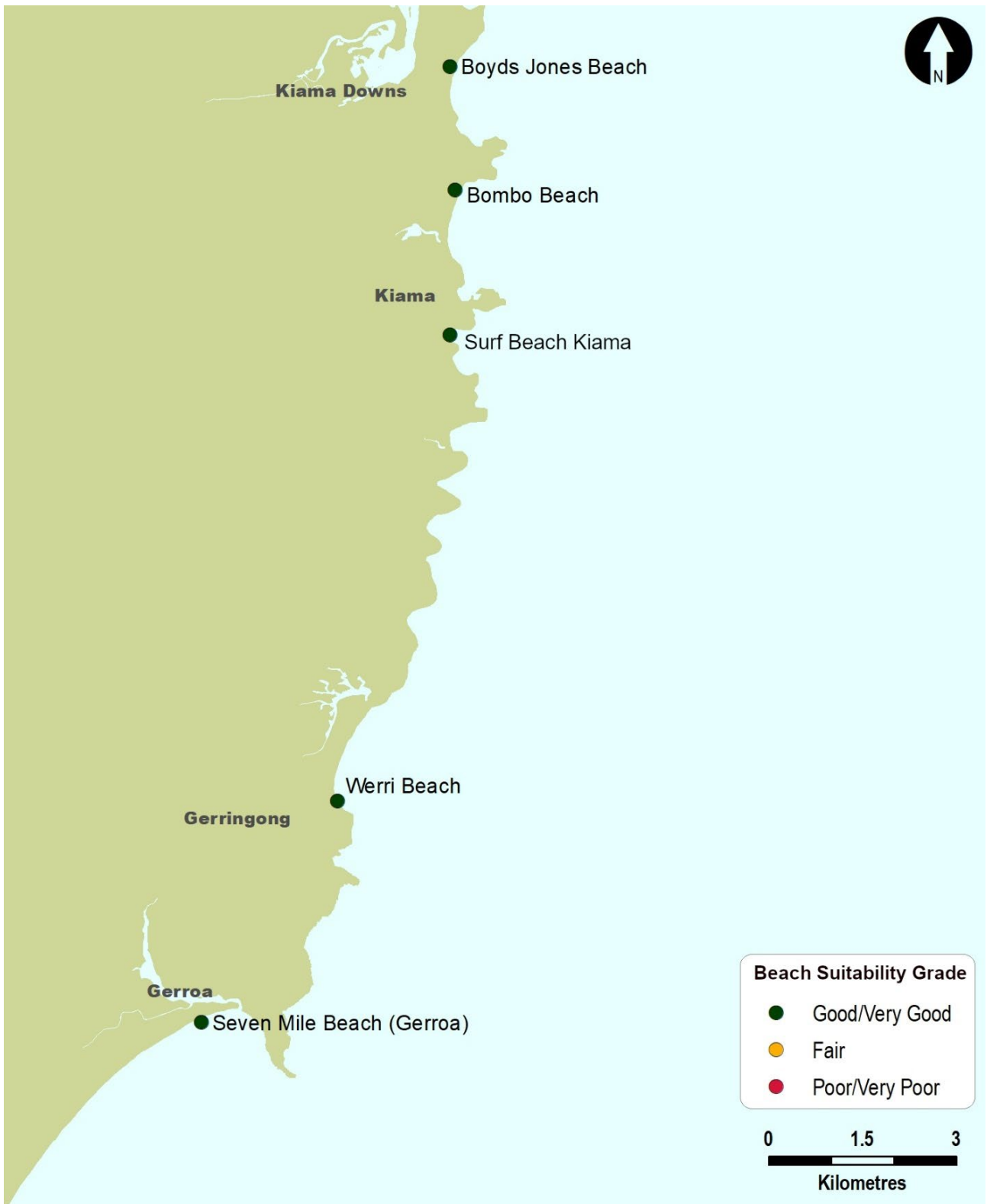
### Ocean beaches

All 5 ocean beaches were graded as Very Good or Good in 2023–2024.

Boyds Jones Beach, Bombo Beach and Werri Beach were graded as Very Good. These sites had excellent water quality and were suitable for swimming almost all of the time. All beaches were upgraded to Very Good from Good due to improved microbial water quality.

Surf Beach Kiama and Seven Mile Beach continued to be graded as Good in 2023–2024. While these beaches were frequently suitable for swimming during dry weather conditions, elevated enterococci levels were occasionally recorded following light rain, and more often after moderate to heavy rainfall.

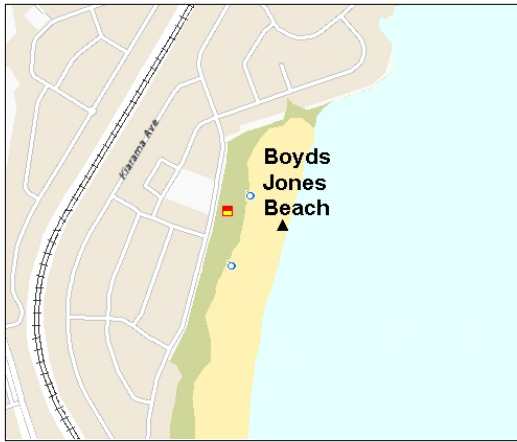
It is recommended to avoid swimming during and for at least one day following rainfall or if there are signs of stormwater pollution such as discoloured water and floating debris.



Sampling sites and Beach Suitability Grades in Kiama Municipal Council

# Boyd's Jones Beach

Beach grade: **VG**



Boyd's Jones Beach is 1 km long, east facing and backed by dunes. Lifeguards patrol the beach from October to April.

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

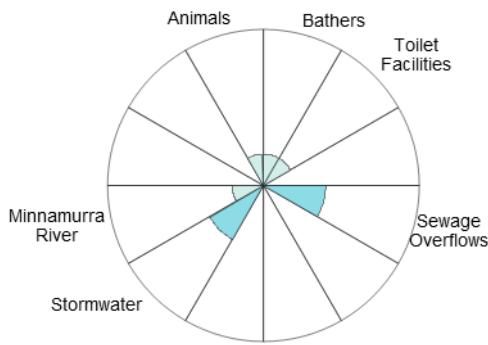
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after 5 mm or more of rain, and often after 10 mm or more.

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

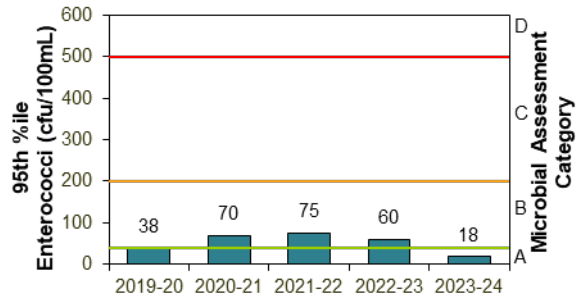
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	100%	100	Improved

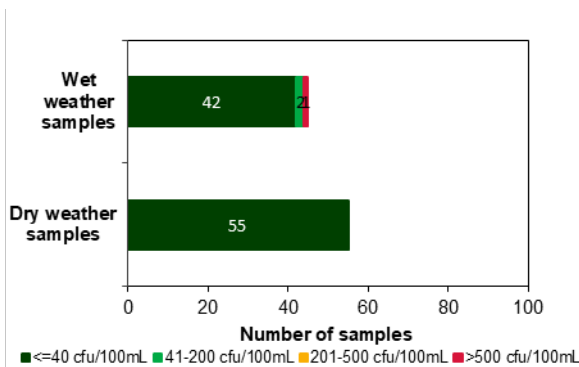
### Sanitary inspection: Low



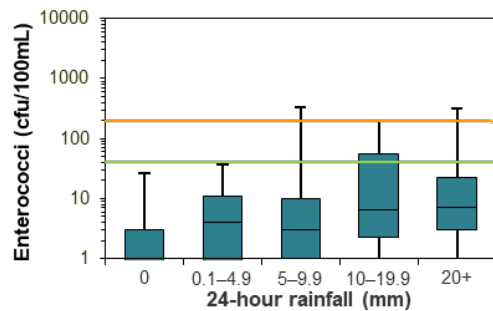
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Bombo Beach

Beach grade: **VG**



Bombo Beach is backed by a narrow reserve, railway and freeway. Lifeguards patrol the beach over the summer school holidays.

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

Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit in response to 5 mm or more of rain.

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

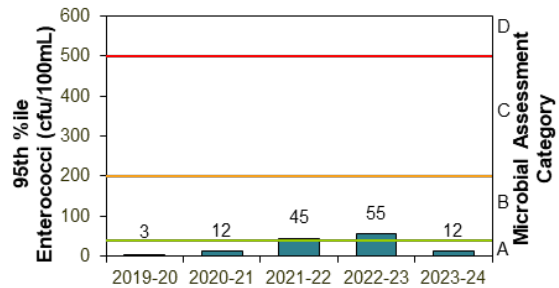
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	100%	100	Improved

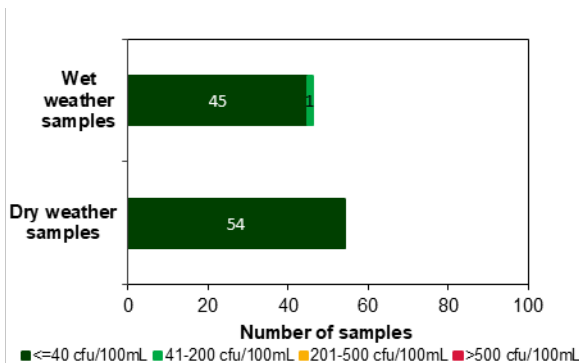
### Sanitary inspection: Low



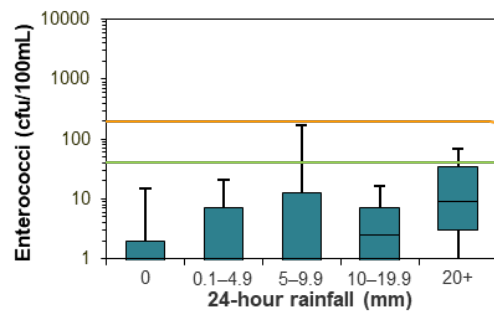
### Microbial Assessment Category: A



### Dry and wet weather water quality

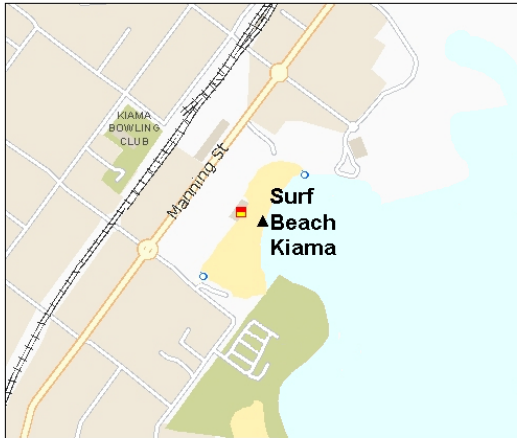


### Water quality in response to rainfall



# Surf Beach Kiama

**Beach grade:** G



Surf Beach in Kiama is 250 m long and backed by a park and surf club. Lifeguards patrol the beach from September to April.

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

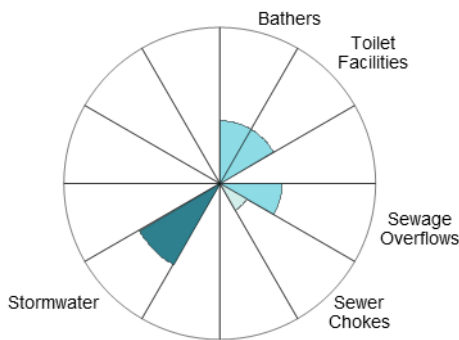
Enterococci levels increased with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 5 mm or more.

See ‘How to read this report’ for key to map.

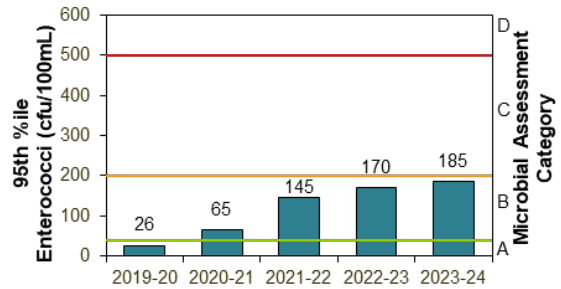
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Oct 2021 to Apr 2024	91%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

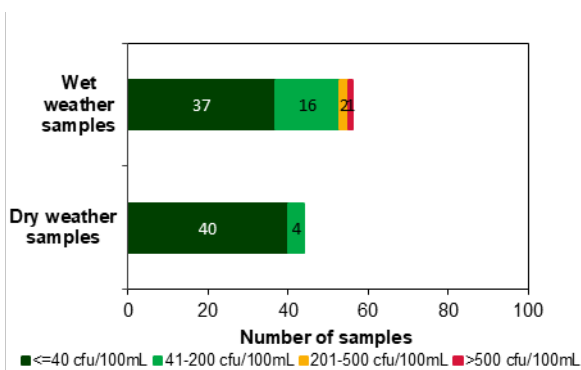
## Sanitary inspection: Moderate



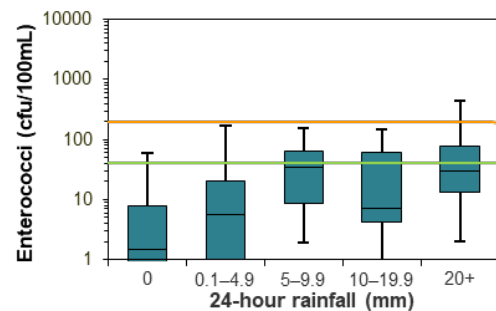
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Werri Beach

Beach grade: **VG**



Werri Beach is 1.7 km long with an ocean pool on the southern rock platform. It is patrolled over the summer school holidays.

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

Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and often after 20 mm or more.

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

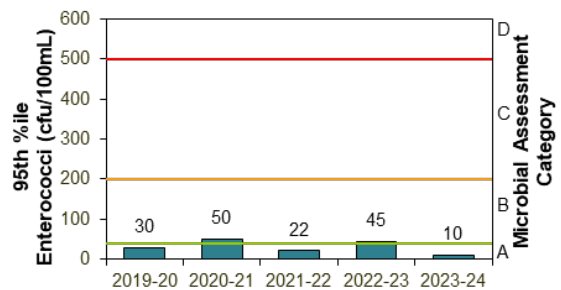
The site has been monitored since 1996.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Aug 2022 to Apr 2024	100%	100	Improved

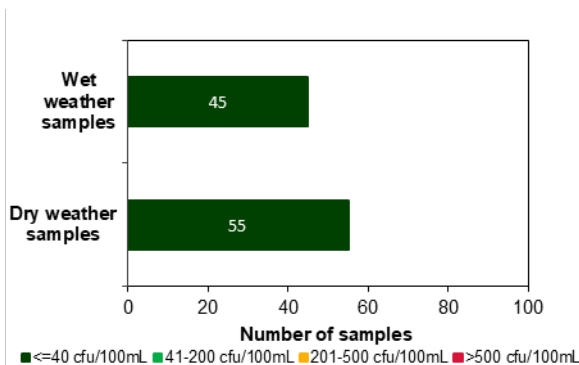
### Sanitary inspection: Low



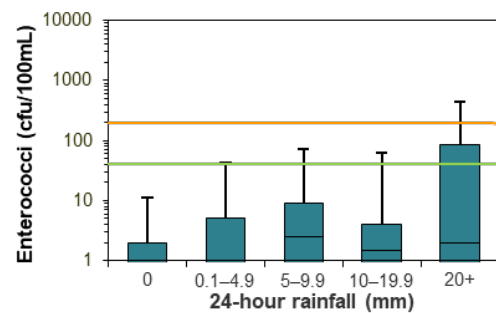
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Seven Mile Beach (Gerroa)

Beach grade: **G**



Seven Mile Beach at Gerroa is at the northern end of a long open beach. Lifeguards patrol during the summer school holidays.

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

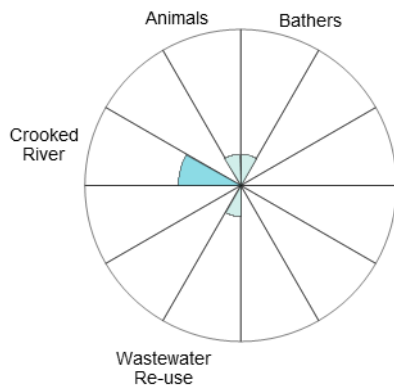
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and regularly after 20 mm or more.

See ‘How to read this report’ for key to map.

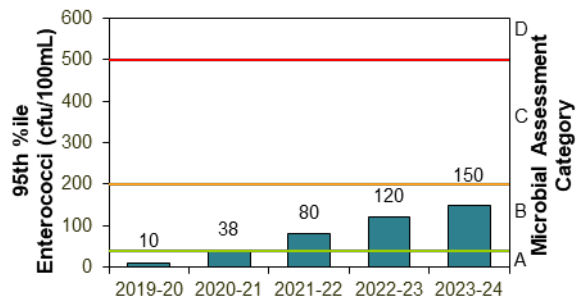
The site has been monitored since 2011.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Nov 2020 to Feb 2024	98%	100	Stable

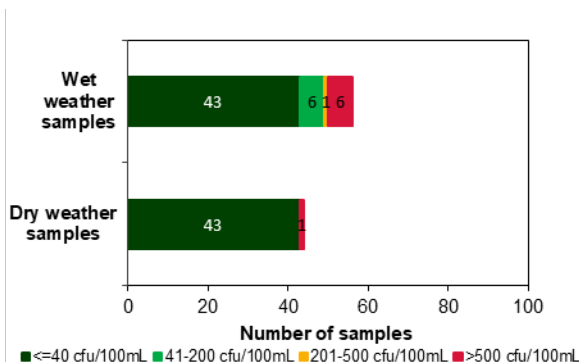
### Sanitary inspection: Low



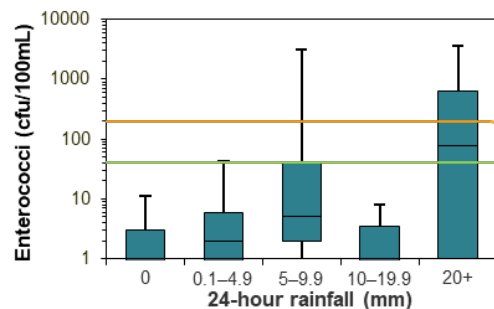
### Microbial Assessment Category: B



### Dry and wet weather water quality



### Water quality in response to rainfall



# 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 5 grades ranging from Very Good to Very Poor:

### 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

### 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 3 days at estuarine sites

### 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 3 days following rainfall or if there are signs of pollution such as discoloured water or odour or debris in the water

Some 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 the catchment.

### **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 3 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 almost all of the time.

## Follow Up

Sometimes a location's sanitary inspection and water quality data produce incongruent results. These locations are classified as 'Follow Up'. Further assessment will be required to obtain the necessary data to provide a definite classification in accordance with national guidelines.

### **The guidelines**

The National Health and Medical Research Council's guidelines for managing risks in recreational water (NHMRC 2008) were adopted for use in New South Wales 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 (WA Department of Health 2007).

## Enterococci

**The national guidelines advocate the use of enterococci as the single preferred faecal indicator in recreational 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 (Standards Australia 2007).

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

Beach Suitability Grades are determined by using the following matrix:

		Microbial Assessment Category			
		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

\* Follow up occurs when sanitary inspection and water quality data produce potentially incongruent results; further assessment will be required.

Using the Beach Suitability Grade classification matrix, sites assigned a moderate Sanitary Inspection Category can only be rated as Good or Poor, with no option of Fair grades. This can create the impression of a large change in water quality when in fact there need only be a slight increase in bacterial counts to push it over the threshold, with no significant increase in the risk to public health.

### Microbial Assessment Category (MAC)

There are 4 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 (Wyer et al. 1999).

### Risk of illness associated with Microbial Assessment Categories

Category	Enterococci (cfu/100 mL)	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 illness; AFR = acute fever and rash

### 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 4 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 New South Wales 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. The WA Department of Health recommends a minimum of 65 samples, collected from a particular site over 5 consecutive years, to provide sufficient confidence and reliability in the 95th percentile data output. 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 the WA Government's 'Environmental waters publications' webpage, under *Forms and templates*.

## Sanitary Inspection Category (SIC)

More information about the **sanitary inspection** process is available in the Beachwatch Protocol for assessment and management of microbial risks in recreational waters, found on the department's website.

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.

The main sources of faecal contamination considered in the sanitary inspection are: bathers, toilet facilities, wastewater treatment plants (WWTPs), sewage overflows, sewer chokes, onsite systems, wastewater re-use, stormwater, river discharge, lagoons, boats and animals.

Rivers, lakes and estuaries themselves can be potential sources of faecal contamination to sites located in these waterbodies, with contaminated water from upstream or surrounding areas impacting water quality at the swimming location. This source is captured in river discharge or lagoon category, and shown as the waterbody in the sanitary inspection charts.

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



Stormwater drain flow

Photo:

Beachwatch/DCCEEW

Stormwater in urban areas often contains sewage from leakages, overflows or sewer chokes when the sewerage system fails.

Sewage overflows can occur in wet weather when the network has exceeded capacity due to rainwater entering the system. The mix of sewage and rainwater discharges from designated overflow points and drains to waterways, usually via the stormwater system. Overflows from the sewerage system can also occur in dry weather due to mechanical failure or power outage.

Sewer chokes occur due to blockages in the pipes usually due to tree roots, oil, grease or debris. This causes sewage to back up and escape via sewer inspection points, designed overflow structures or cracks in the pipes, then drain to waterways, usually via the stormwater system.

## Explanation of tables

Each region contains tables listing all monitored swimming sites including site type, beach grade and change in grade from the previous year.

The following symbols are used to show the change in beach grade from the previous year:



Stable



Improved



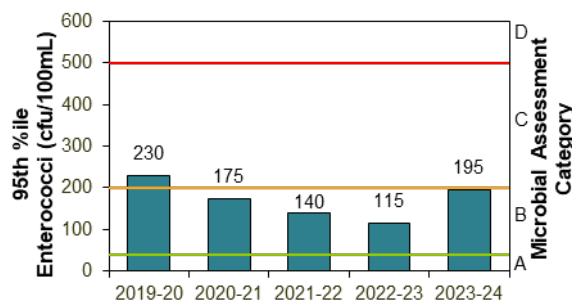
Declined

A provisional grade indicates the assessment is based on limited data collected during the assessment period and should not be compared to the beach grade from the previous year.

## Explanation of graphs, charts, and information bars on beach pages

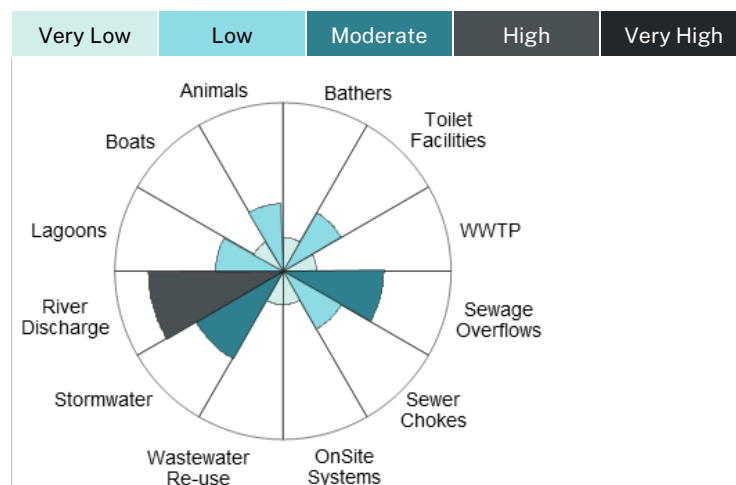
### Microbial Assessment Category (MAC) chart

On each beach page, the MACs for the last 5 years are displayed on a simple bar chart. The MAC for the current year is based on enterococci data collected during the assessment period. The bars are labelled with the 95th percentile value for each year and the thresholds dividing the A, B, C and D categories are marked in green, amber and red for reference.



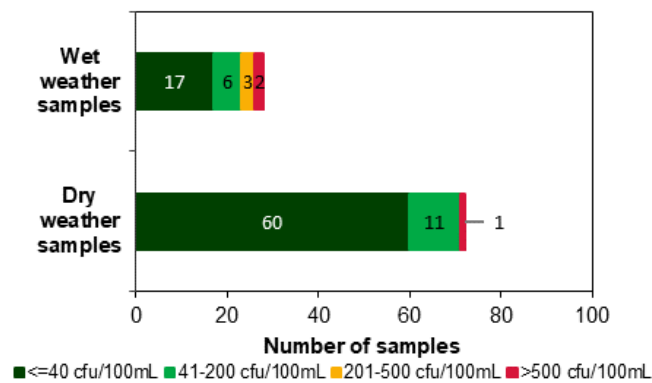
### Sanitary Inspection Category (SIC) chart

The results of the sanitary inspection for each swimming location are presented in a radar pie chart. The chart 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 segment, ranging from very low (lightest colour) to very high (darkest colour) as shown below. The sum of these contributions is the overall likelihood, or Sanitary Inspection Category.



## Wet and dry weather water quality chart

Enterococci levels in wet and dry weather conditions are presented for each swimming location as a bar graph. All data collected during the assessment period is included in the analysis. Dry weather is defined as no rainfall recorded in the previous 24 hours. Each bar is colour coded to show the number 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 as dark green, light green, amber and red respectively.

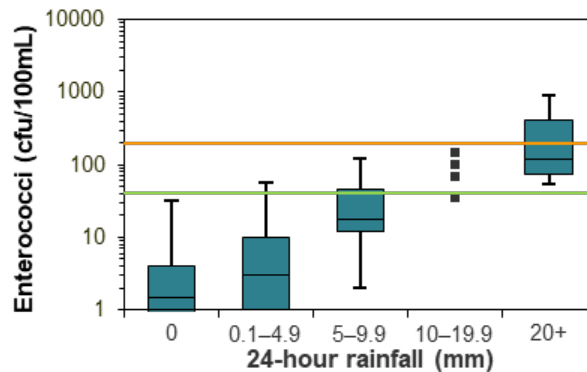


It is expected that swimming sites with lower levels of flushing will show some elevated bacterial results in dry weather samples (no rainfall in the previous 24 hours) due to the longer time needed to recover from a rainfall event. At some estuarine and lake/lagoon swimming locations the impacts of stormwater pollution on beach water quality may be detected up to 3 days after rainfall.

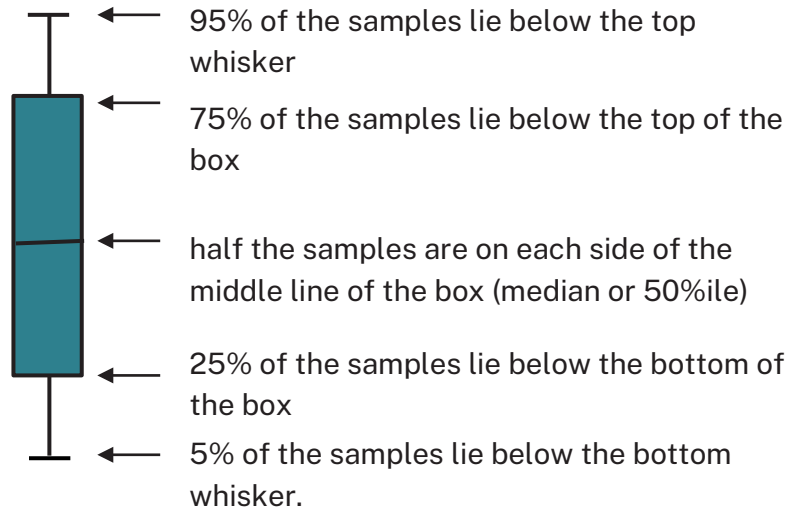
## Water quality in response to rainfall

Trends in enterococci levels in response to rainfall are shown using a box plot. 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 5 years of monitoring. Rainfall data were obtained from rain gauges situated close to the sample site and are 24-hour totals to 9 am on the day of sampling. If there are fewer than 5 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:



## Information bars

Information bars on each beach page provide a summary of details about the swimming site.
















The **assessment period** shows the timeframe in which the water samples were collected. The NHMRC guidelines state beach grades should be determined from the most recent 100 water quality results collected within a 5-year period. The assessment period varies between sites depending on sampling frequency.

Dry weather samples suitable for swimming (**dry weather swimmability**) shows the percentage of water samples with enterococci levels below 40 cfu/100 mL. Dry weather is defined as no rainfall in the previous 24 hours.

Swimming sites with lower levels of flushing often have a lower percentage of dry weather samples within the safe swimming limit due to the impacts of rainfall detected up to 3 days after the event.

## Explanation of maps

A map of individual swimming locations is presented on each beach page. The scale of the maps is 1:10,000. 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 Life Saving Club
	Wastewater Treatment Plant
	Sewage Pumping Station
	Sewage Overflow
	Stormwater Drain
	Water
	Baths
	National Park/Reserve/ Other Park
	Built-up Area
	Sand
	Roads
	Major Roads
	Baths – Netted Area
	Breakwater/Wharf

## References

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

Standards Australia (2007) *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.

WA Department of Health (2007), *Microbial 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, [ww2.health.wa.gov.au/Articles/A\\_E/Environmental-waters-publications](http://ww2.health.wa.gov.au/Articles/A_E/Environmental-waters-publications), accessed 23/06/23.

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.

## More information

- [Beachwatch NSW on X \(formerly Twitter\)](#)
- [Beachwatch NSW on Facebook](#)
- [Beachwatch webpage](#)
- [Coastal management program progress](#)
- [Sanitary inspection of beaches](#)
- [Subscribe to daily pollution forecast emails](#)
- [WA Government environmental water publications](#)
- [Wollongong City Council Coast and Waterways](#)
- [Shellharbour City Council Coastal zone management](#)
- [Kiama Municipal Council Coastal Management Program](#)



## Beachwatch

# State of the beaches 2023–24

South Coast region

Department of Climate Change,  
Energy, the Environment and Water



## Acknowledgement of Country

Department of Climate Change, Energy, the Environment and Water acknowledges the Traditional Custodians of the lands where we work and live.

We pay our respects to Elders past, present and emerging.

This resource may contain images or names of deceased persons in photographs or historical content.

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Artist and designer Nikita Ridgeway from Aboriginal design agency Boss Lady Creative Designs created the People and Community symbol.

Cover photo: Narooma Main Beach, Eurobodalla. Beachwatch/DCCEEW

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Recreational water quality has been monitored in the South Coast region since 2002 by Shoalhaven City Council and Eurobodalla Shire Council under the Department of Climate Change, Energy, the Environment and Water's Beachwatch Partnership Program. This report summarises the performance of 21 swimming sites on the south coast of New South Wales, providing a long-term assessment of how suitable a site is for swimming. Monitored sites include ocean beaches and an estuarine swimming site in Wagonga Inlet.

In 2023–2024, 95% of swimming sites in the South Coast region were graded as Good or Very Good, including 19 ocean beaches. These sites were suitable for swimming for most or almost all of the time. This is an excellent result, and a similar performance to the previous year.

# South Coast region summary 2023–2024



Mollymook Beach

Photo:  
Beachwatch/DCCEEW

See the section on **Quality assurance** in the Statewide Summary for results of the quality assurance program.

## Monitoring water quality for swimming in New South Wales

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 New South Wales 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 (2–4 years’ worth of data depending on the sampling frequency) and a risk assessment of potential pollution sources.

Recreational water quality has been monitored on the South Coast by Shoalhaven Council and Eurobodalla Shire Council since 2002.

A **quality assurance** program ensures the information collected and reported by Beachwatch and its partners is accurate and reliable.

## Rainfall impacts

During 2023–2024, 21 swimming sites were monitored including ocean beaches and an estuarine swimming site.

Rainfall is the major driver of pollution to recreational waters, generating stormwater runoff and triggering untreated 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 2023–2024 are based on water quality data collected over the last 2–4 years.

Rainfall over this period has been diverse:

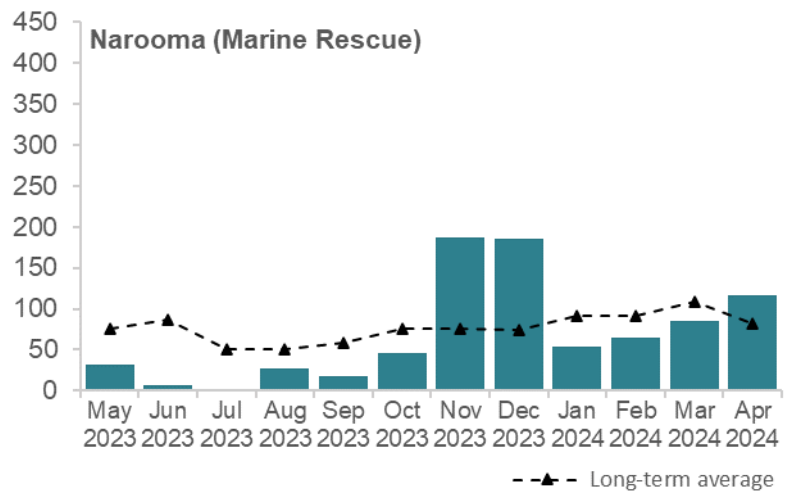
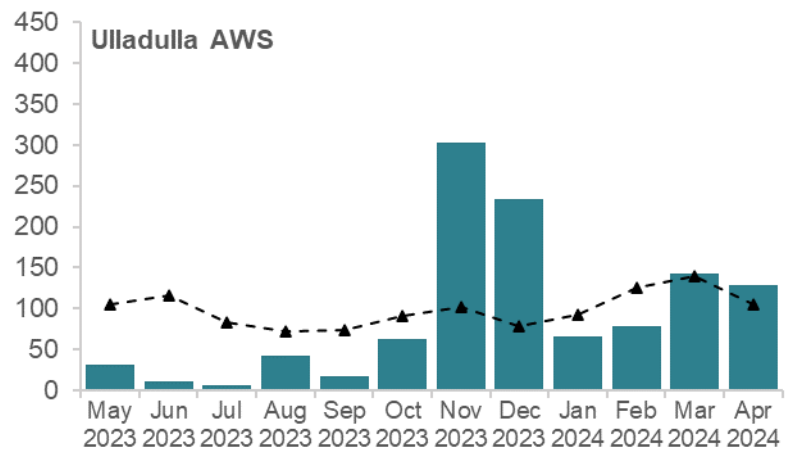
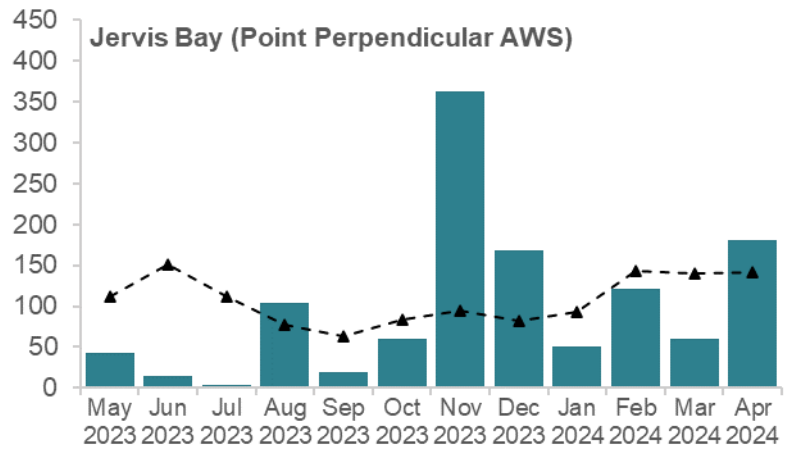
- 2020–2021: variable rainfall with some wet months
- 2021–2022: a very wet summer and autumn, including significant wet weather and flooding events
- 2022–2023: varied rainfall, with some very wet months over winter and spring, including the wettest July and October on record
- 2023–2024: mostly average to below average rainfall, except for some isolated wet months.

See the section on **How to read this report** on page 36 for an explanation of the graphs, tables and Beach Suitability Grades.

Rainfall on the South Coast was average to below average for the 2023–2024 reporting year, except for some isolated wet months. Well above average rainfall was recorded in November and December 2023 and April 2024 across the region.

November and December 2023 were notably wet on the South Coast. Jervis Bay and Ulladulla both recorded their highest November daily rainfall and record highest November and December total rainfall. Similarly, Narooma recorded its highest November total rainfall in 23 years.

**South Coast region rainfall**



## **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 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 South Coast region

Swimming site	Site type	Beach Suitability Grade	Change
<b>Shoalhaven City Council</b>			
Shoalhaven Heads Beach	Ocean beach	VG	<input type="radio"/>
Tilbury Cove	Ocean beach	VG	<input type="radio"/>
Warrain Beach	Ocean beach	VG	<input type="radio"/>
Collingwood Beach	Ocean beach	VG	<input type="radio"/>
Cudmirrah Beach	Ocean beach	VG	<input type="radio"/>
Mollymook Beach	Ocean beach	VG	<input type="radio"/>
Rennies Beach	Ocean beach	VG	<input type="radio"/>
Racecourse Beach	Ocean beach	VG	<input type="radio"/>
Bawley Point Beach	Ocean beach	VG	<input type="radio"/>
Merry Beach	Ocean beach	VG	<input type="radio"/>
<b>Eurobodalla Shire Council</b>			
Cookies Beach	Ocean beach	VG	<input type="radio"/>
Caseys Beach	Ocean beach	G	<input type="radio"/>
Surf Beach	Ocean beach	P	<input type="radio"/>
Malua Bay Beach	Ocean beach	VG	<input type="radio"/>
Broulee Beach	Ocean beach	VG	<input type="radio"/>
South Broulee (Bengello) Beach	Ocean beach	G	<input type="radio"/>
Shelley Beach (Moruya Heads)	Ocean beach	G	<input type="radio"/>
Tuross Main Beach	Ocean beach	G	<input type="radio"/>
Brou Beach	Ocean beach	VG	<input type="radio"/>
Wagonga Inlet	Estuarine	G	<input type="radio"/>
Narooma Main Beach	Ocean beach	G	<input type="radio"/>



# Shoalhaven City Council



## Overall results

All 10 swimming sites were graded as Very Good in 2023–2024. This is an outstanding result and a similar performance to previous years.

### Percentage of sites graded as Very Good or Good

	2021– 2022	2022– 2023	2023– 2024	Trend
Ocean beaches (10 sites)	100%	100%	<b>100%</b>	—————

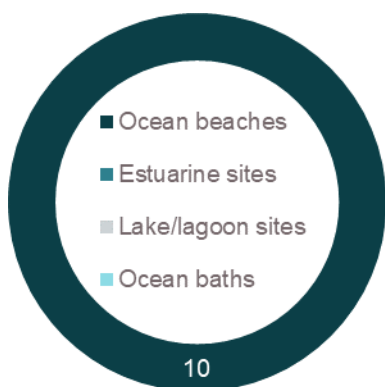
Ten swimming sites were monitored by Shoalhaven City Council. Samples were collected weekly between December and February and sampling and laboratory analysis was fully funded by the council.

See the section on **How to read this report** on page 36 for an explanation of the graphs, tables and Beach Suitability Grades.

### Best beaches

Shoalhaven Heads Beach, Tilbury Cove, Warrain Beach, Collingwood Beach, Cudmirrah Beach, Mollymook Beach, Rennies Beach, Racecourse Beach, Bawley Point Beach and Merry Beach.

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



**Site types in Shoalhaven City Council**

Ocean beaches were the only site type monitored in the Shoalhaven region.

As a general precaution swimming should be avoided during and for at least one day after heavy rain at ocean beaches, or if there are signs of stormwater pollution such as discoloured water or floating debris.



**Beach Suitability Grades for Shoalhaven City Council ocean beaches**

### Ocean beaches

All 10 ocean beaches continued to be graded as Very Good in 2023–2024: Shoalhaven Heads Beach, Tilbury Cove, Warrain Beach, Collingwood Beach, Cudmirrah Beach, Mollymook Beach, Rennies Beach, Racecourse Beach, Bawley Point Beach and Merry Beach.

While water quality at these sites was suitable for swimming almost all of the time, elevated bacterial levels were occasionally recorded at some of the beaches following heavy rainfall.



Sampling sites and Beach Suitability Grades in Shoalhaven City Council

# Shoalhaven Heads Beach

Beach grade: **VG**



Shoalhaven Heads Beach is located towards the southern end of Seven Mile Beach at Shoalhaven Heads. The beach is patrolled over the summer months.

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

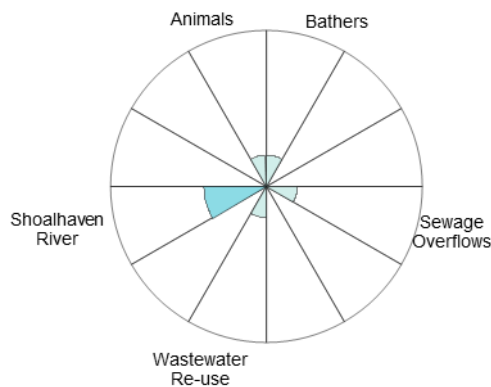
Enterococci levels had little response to rainfall and generally remained below the safe swimming limit across all rainfall categories.

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

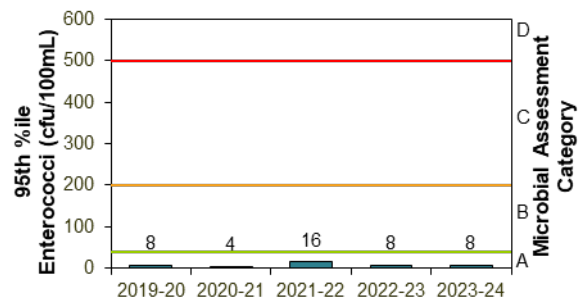
The site was monitored from 2003 to 2004 and since 2006.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Dec 2019 to Feb 2024	97%	55	Stable

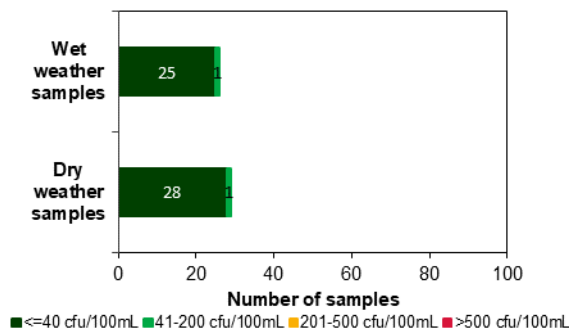
### Sanitary inspection: Low



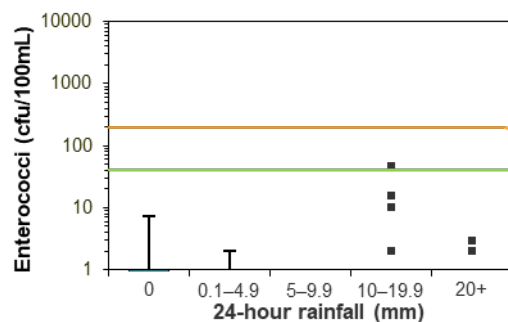
### Microbial Assessment Category: A



### Dry and wet weather water quality

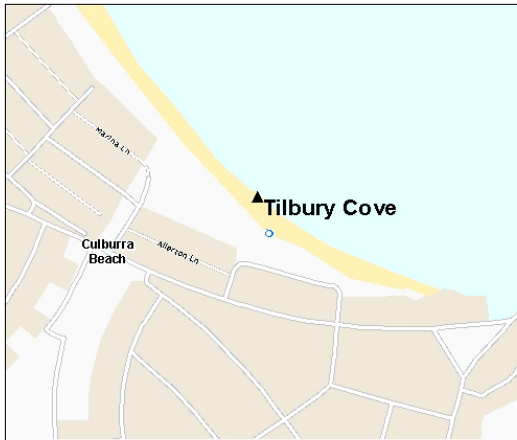


### Water quality in response to rainfall



# Tilbury Cove

Beach grade: **VG**



Tilbury Cove is located towards the south-eastern corner of Culburra Beach.

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

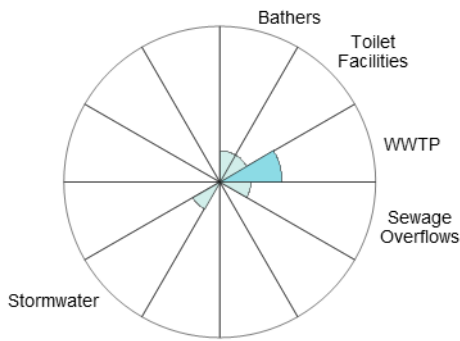
Enterococci levels had little response to rainfall and remained below the safe swimming limit across all rainfall categories.

The site was monitored from 2002 to 2004 and since 2006.

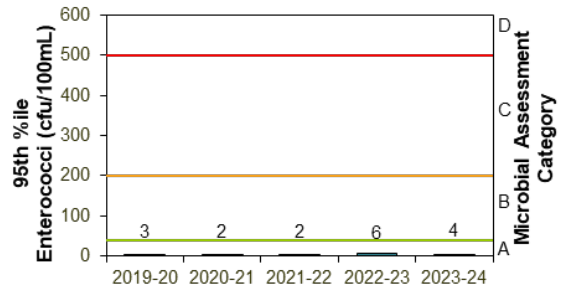
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Dec 2019 to Feb 2024	100%	57	Stable

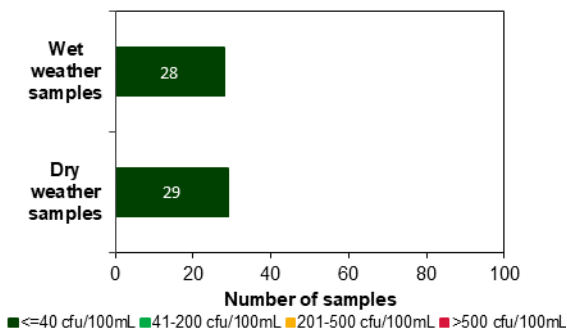
### Sanitary inspection: Low



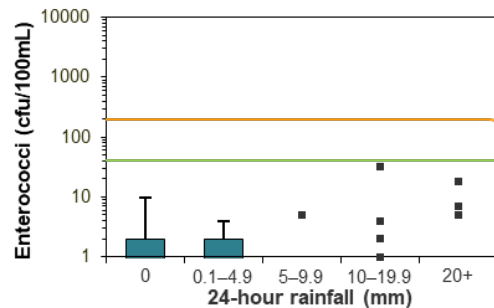
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Warrain Beach

**Beach grade:** VG



Warrain Beach is located to the south of Penguin Head. The beach is patrolled over the summer months.

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

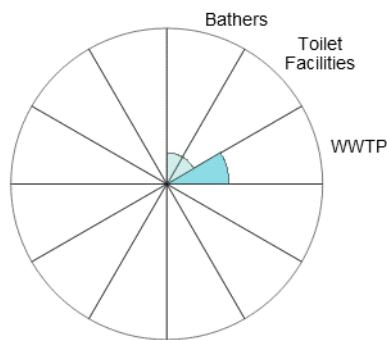
Enterococci levels increased slightly with increasing rainfall but generally remained below the safe swimming limit across all rainfall categories.

The site has been monitored since 2007.

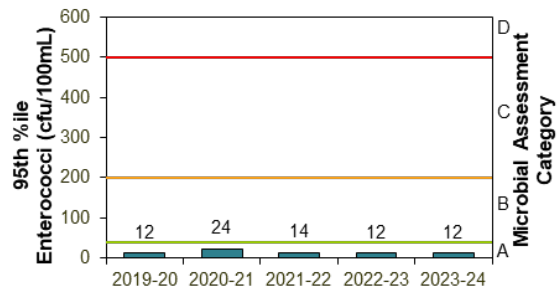
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Dec 2019 to Feb 2024	100%	56	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

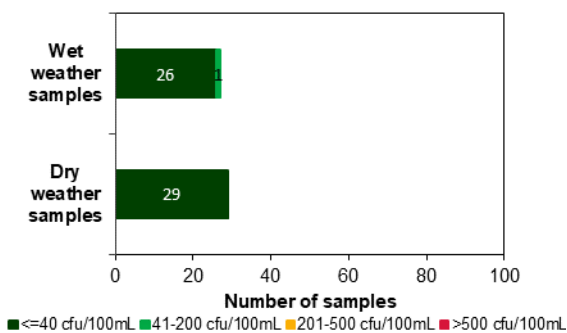
### Sanitary inspection: Low



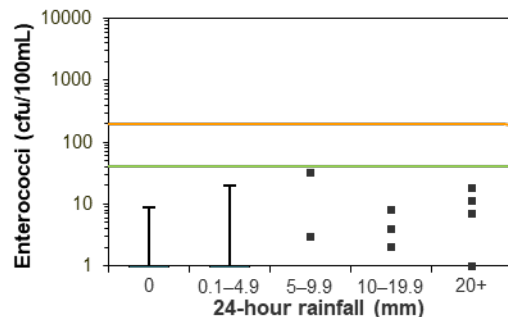
### Microbial Assessment Category: A



### Dry and wet weather water quality

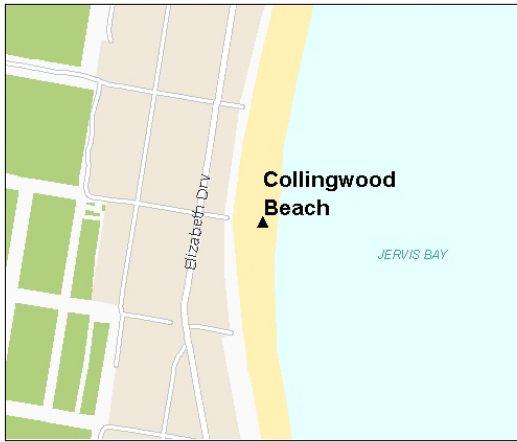


### Water quality in response to rainfall



# Collingwood Beach

Beach grade: **VG**



Collingwood Beach is located in Jervis Bay, adjacent to the town of Vincentia. The beach is approximately 2 km long.

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

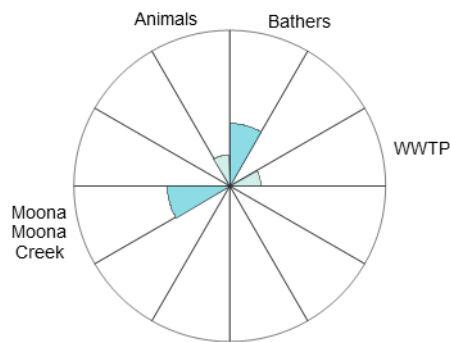
Enterococci levels increased slightly with increasing rainfall but remained below the safe swimming limit across all rainfall categories.

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

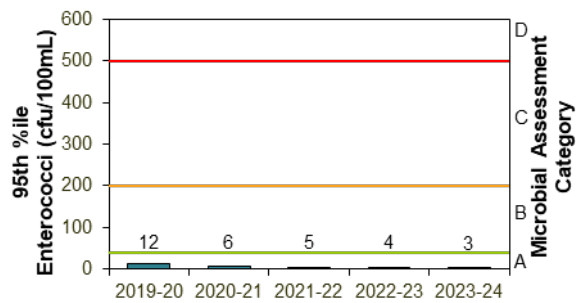
The site has been monitored since 2006.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Dec 2019 to Feb 2024	100%	57	Stable

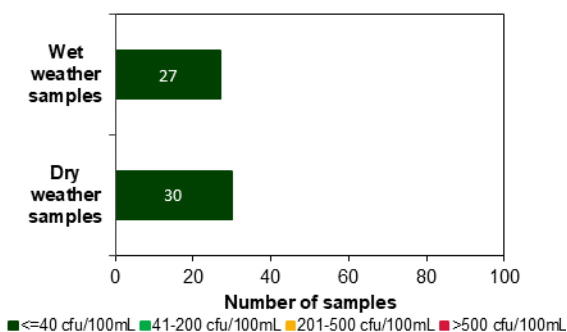
## Sanitary inspection: Low



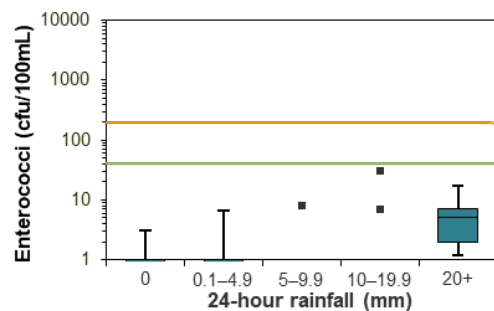
## Microbial Assessment Category: A



## Dry and wet weather water quality



## Water quality in response to rainfall



# Cudmirrah Beach

**Beach grade:** VG



Cudmirrah Beach is the main surf beach for the township of Sussex Inlet. The beach is approximately 3 km long and is patrolled over the summer months.

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

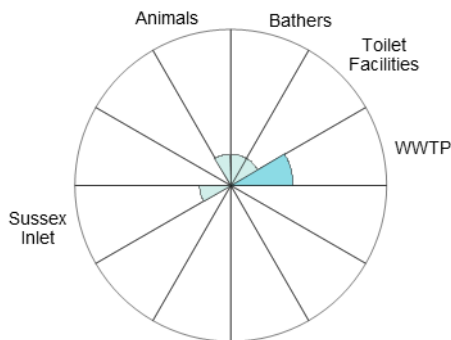
Enterococci levels increased slightly with increasing rainfall but generally remained below the safe swimming limit across all rainfall categories.

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

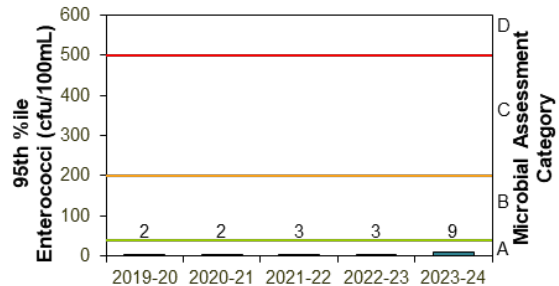
The site was monitored from 2003 to 2004 and since 2006.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Dec 2019 to Feb 2024	100%	56	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

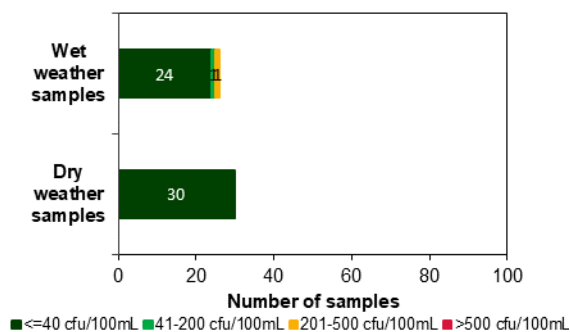
## Sanitary inspection: Low



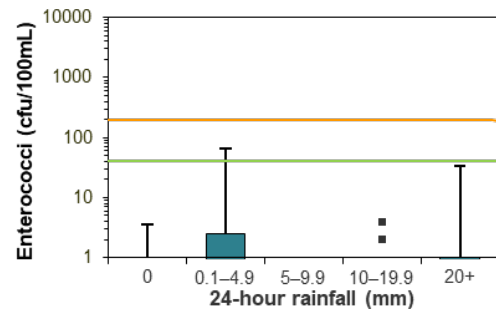
## Microbial Assessment Category: A



## Dry and wet weather water quality



## Water quality in response to rainfall



# Mollymook Beach

Beach grade: **VG**



Mollymook Beach is a popular beach that stretches for approximately 2 km. The beach is patrolled during the summer months.

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

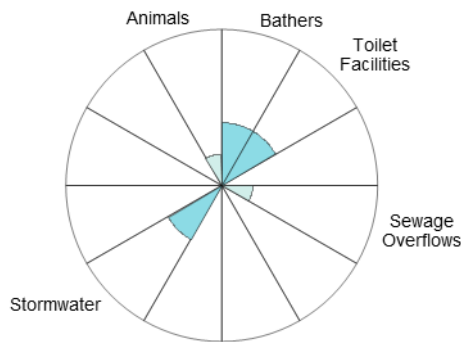
Enterococci levels increased slightly with increasing rainfall and generally remained below the safe swimming limit across most rainfall categories.

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

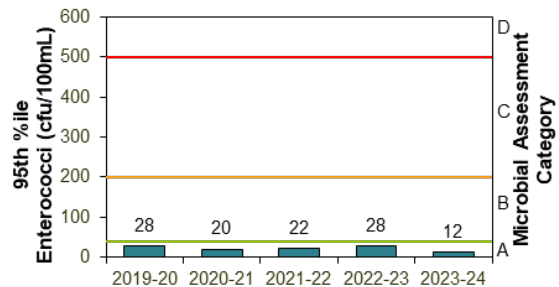
The site was monitored from 2002 to 2003 and since 2008.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Dec 2019 to Feb 2024	100%	57	Stable

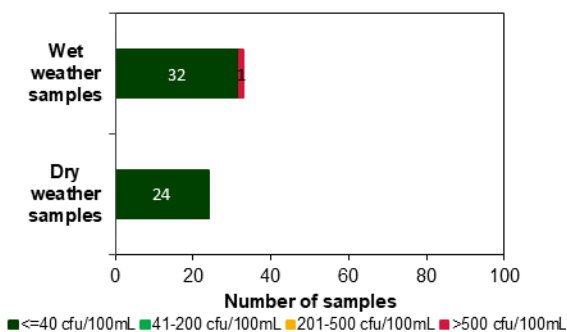
## Sanitary inspection: Low



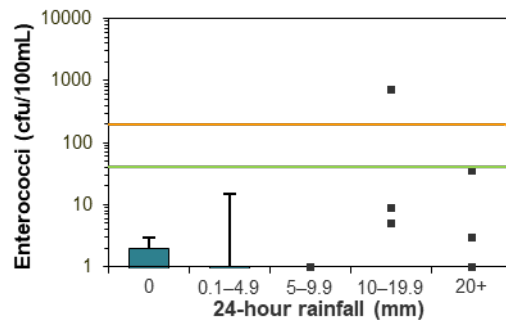
## Microbial Assessment Category: A



## Dry and wet weather water quality



## Water quality in response to rainfall



# Rennies Beach

Beach grade: **VG**



Rennies Beach is located near the town of Ulladulla. The beach is approximately 600 m long.

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

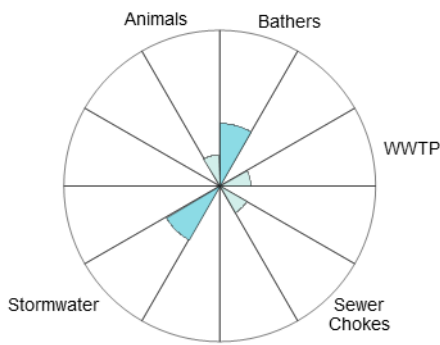
Enterococci levels had little response to rainfall and remained below the safe swimming limit across all rainfall categories.

The site has been monitored since 2006.

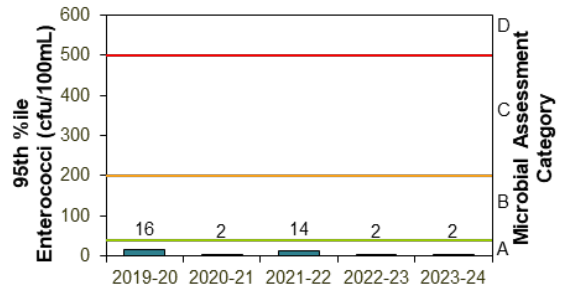
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Dec 2019 to Feb 2024	100%	56	Stable

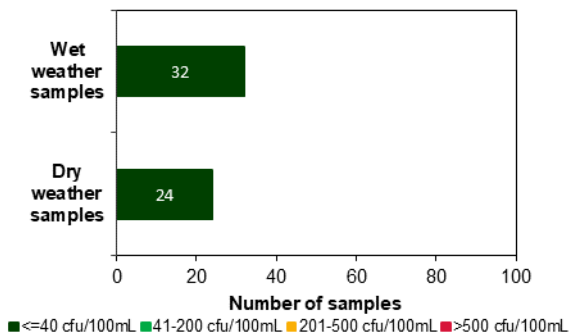
### Sanitary inspection: Low



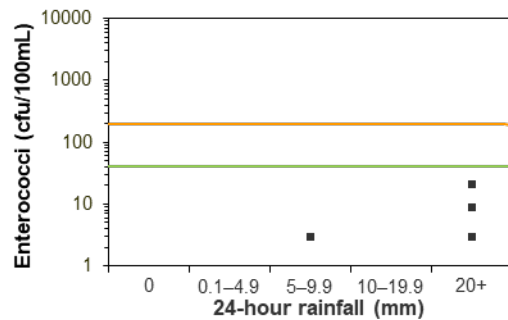
### Microbial Assessment Category: A



### Dry and wet weather water quality

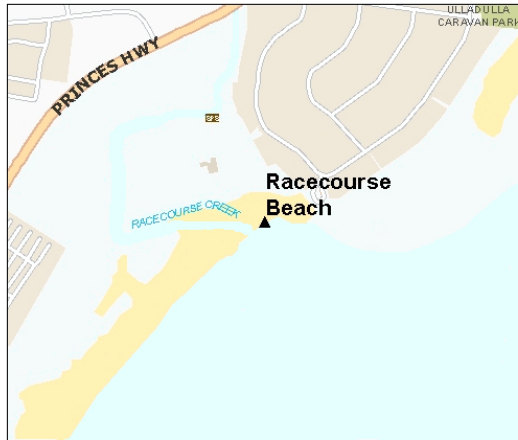


### Water quality in response to rainfall



# Racecourse Beach

Beach grade: **VG**



Racecourse Beach is located near the town of Ulladulla. The beach is approximately 1 km long.

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

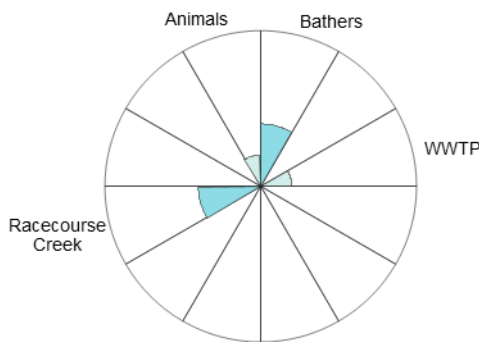
Enterococci levels increased slightly with increasing rainfall but generally remained below the safe swimming limit.

The site was monitored from 2002 to 2004 and since 2006.

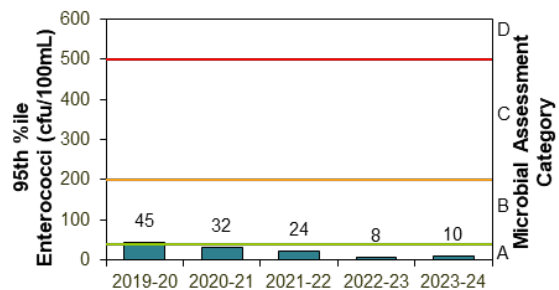
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Dec 2019 to Feb 2024	100%	57	Stable

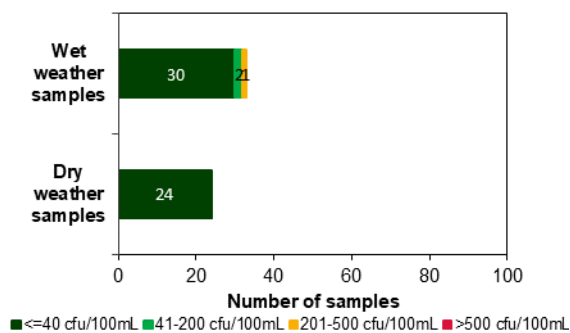
### Sanitary inspection: Low



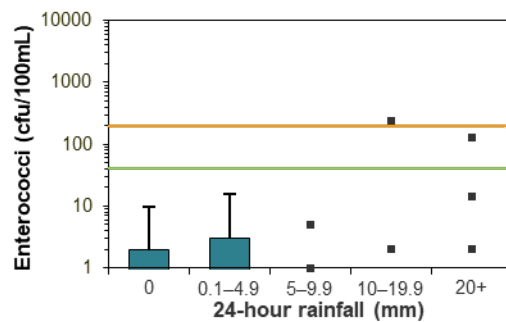
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Bawley Point Beach

Beach grade: **VG**



Bawley Point Beach is located on the northern side of Bawley Point and is approximately 250 m long.

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

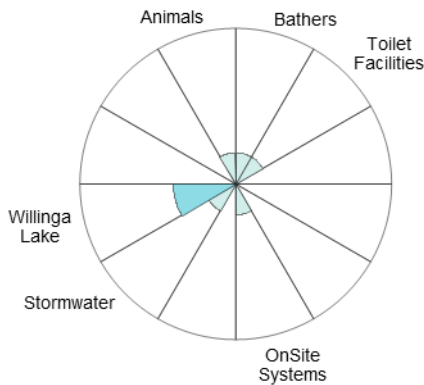
Enterococci levels had little response to rainfall and generally remained below the safe swimming limit across all rainfall categories.

The site has been monitored since 2006.

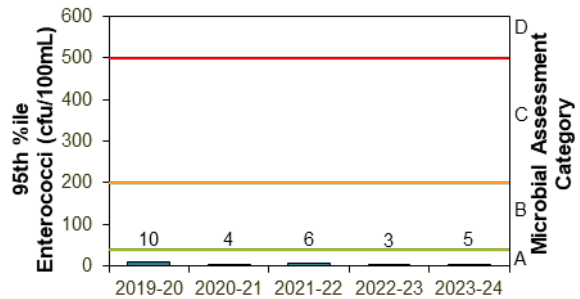
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Dec 2019 to Feb 2024	96%	56	Stable

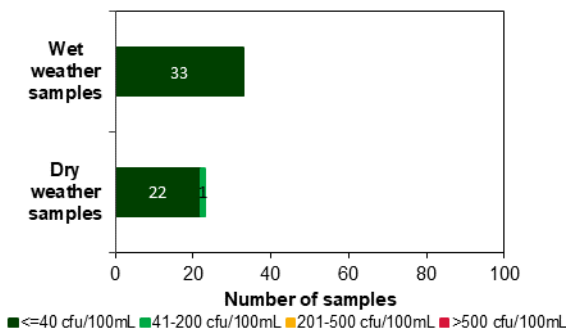
### Sanitary inspection: Low



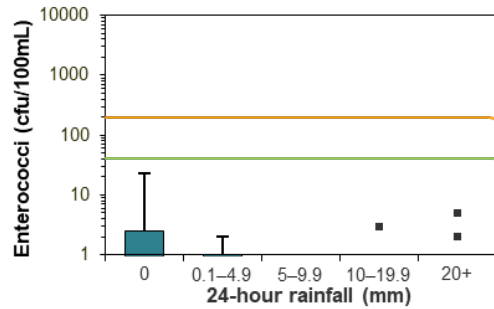
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Merry Beach

Beach grade: **VG**



Merry Beach is located south of the town of Kioloa. The beach is approximately 400 m long and is backed by a reserve and caravan park.

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

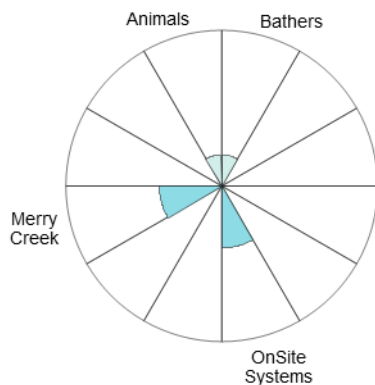
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after 20 mm or more of rainfall.

See ‘How to read this report’ for key to map.

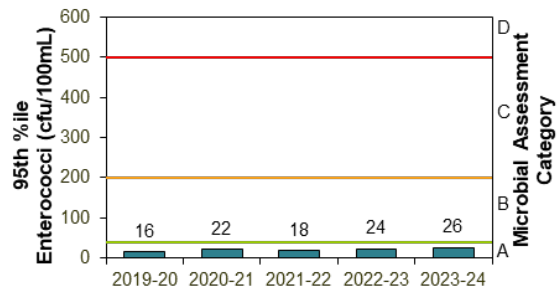
The site has been monitored since 2006.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Dec 2019 to Feb 2024	96%	56	Stable

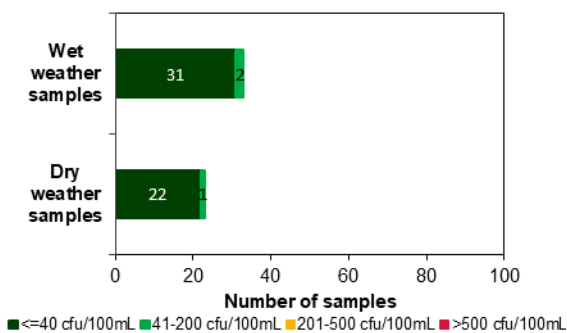
### Sanitary inspection: Low



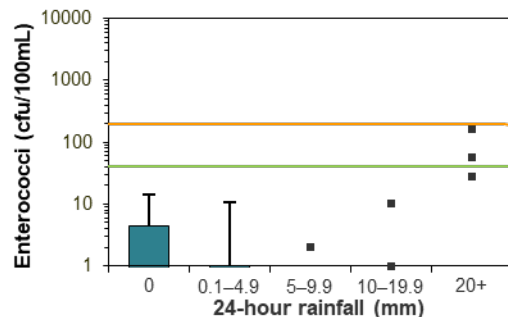
### Microbial Assessment Category: A



### Dry and wet weather water quality

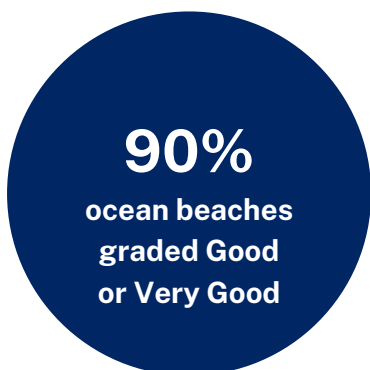


### Water quality in response to rainfall



# Eurobodalla Shire Council

## Overall results



Ten of the 11 swimming sites were graded as Very Good or Good in 2023–2024. This is a similar performance to the previous year.

### Percentage of sites graded as Very Good or Good

	2021–2022	2022–2023	2023–2024	Trend
Ocean beaches (10 sites)	80%	90%	<b>90%</b>	
Estuarine sites (1 sites)	100%	100%	<b>100%</b>	

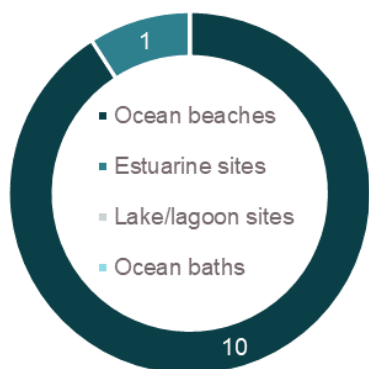
Eleven swimming locations were monitored by Eurobodalla Shire Council. Samples were collected weekly between November and March and sampling and analysis was fully funded by the council.

See the section on **How to read this report** on page 36 for an explanation of the graphs, tables and Beach Suitability Grades.

### Best beaches

Cookies Beach, Malua Bay Beach, Broulee Beach and Brou Beach.

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



**Site types in Eurobodalla Shire Council**

Swimming sites monitored in the Eurobodalla region include ocean beaches and an estuarine area in Wagonga Inlet, with each site type having a different response to rainfall-related impacts.

In general, estuarine swimming sites do not perform as well as ocean beaches, due to lower levels of flushing increasing the time needed to disperse and dilute pollution inputs, taking longer to recover from stormwater events.

As a general precaution swimming should be avoided during and for at least one day after heavy rain at ocean beaches, and for up to 3 days in estuarine areas, or if there are signs of stormwater pollution such as discoloured water or floating debris.

## Ocean beaches



**Beach Suitability Grades for Eurobodalla Shire Council ocean beaches**

Nine of the 10 ocean beaches were graded as Very Good or Good in 2023–2024.

Cookies Beach, Malua Bay Beach, Broulee Beach and Brou Beach were graded as Very Good in 2023–2024. Water quality at these sites was suitable for swimming almost all of the time.

Caseys Beach, South Broulee (Bengello) Beach, Shelley Beach, Tuross Main Beach and Narooma Main Beach were graded as Good in 2023–2024. Water quality at these sites was frequently suitable for swimming during dry weather conditions, with between 90% and 97% of dry weather samples within the safe swimming limit. However, enterococci levels occasionally exceeded the safe swimming limit after little or no rain. South Broulee (Bengello) Beach declined to Good from Very Good in the previous year due to a slight decline in microbial water quality in the assessment period.

Surf Beach was graded as Poor in 2023–2024, consistent with the previous years. Elevated bacterial levels were often recorded during dry weather conditions and increased with increasing rainfall. Despite this, 77% of dry weather samples were within the safe swimming limit.

Microbial water quality at Surf Beach has improved slightly this year, despite a higher proportion of wet weather samples in this year's assessment period compared to the previous year's assessment period. Microbial water quality at this site had been declining for several years prior to this result.

Council has been investigating the water quality at Surf Beach since 2019, which at times is identified as poor. Council undertook an extensive monitoring program to investigate potential sources of contamination in the

catchments draining to Surf Beach Creek and Surf Beach. Following this, council engaged a consultant to undertake a water quality investigation that included statistical analysis, hydrodynamic modelling, investigative sampling and DNA marker analysis. The investigation identified multiple potential sources of contamination including domestic canine faeces entering waterways, discharge from Batemans Bay Sewage Treatment Plant (STP) during overflow events, STP outfall contamination via tidal patterns and failure or leakage of onsite sewer management systems (OSSM) upstream of Surf Beach. Council will action the recommendations to improve water quality, including a responsible dog waste disposal education program and an audit of all OSSMs in the catchment to reduce any potential contamination from these sources. Council also completed the Surf Beach STP upgrades in December 2023.

It is recommended to avoid swimming during and for at least one day following rainfall at ocean beaches or if there are signs of stormwater pollution such as discoloured water and floating debris.



**Beach Suitability Grades for Eurobodalla Shire Council estuarine beaches**

## Estuarine beaches

Wagonga Inlet continued to be graded as Good in 2023–2024, similar to previous years. While water quality at this site was mostly suitable for swimming, elevated enterococci results were occasionally recorded after light rain, and often after moderate rainfall. Pollution inputs from elsewhere within Wagonga Inlet may impact water quality at this site.

Swimming should be avoided during and for up to 3 days after rainfall, or if there are signs of pollution such as discoloured water or floating debris.



**Sampling sites and Beach Suitability Grades in Eurobodalla Shire Council**

# Cookies Beach

Beach grade: **VG**



Cookies Beach is located near the town of South Durras. Murramarang National Park lies to the south.

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

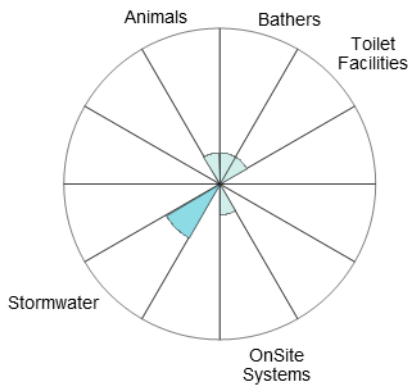
Enterococci levels increased slightly with increasing rainfall, often exceeding the safe swimming limit after 20 mm or more of rain.

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

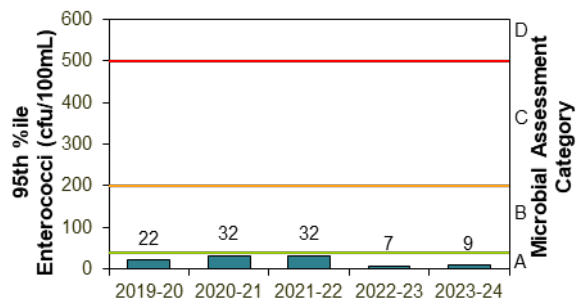
The site has been monitored since 2002.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Nov 2020 to Mar 2024	94%	100	Stable

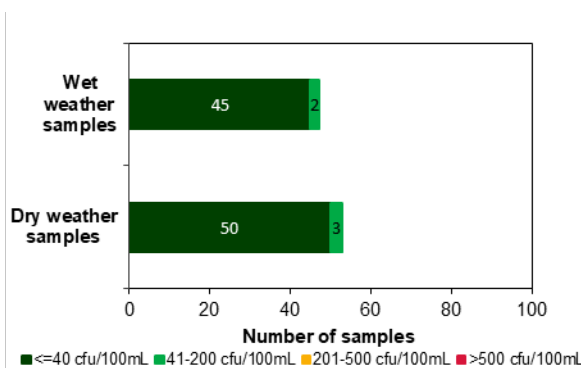
### Sanitary inspection: Low



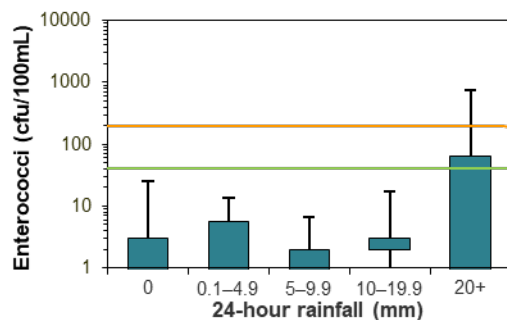
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Caseys Beach

Beach grade: **G**



Caseys Beach is approximately 800 m long and is located to the south of Observation Point.

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

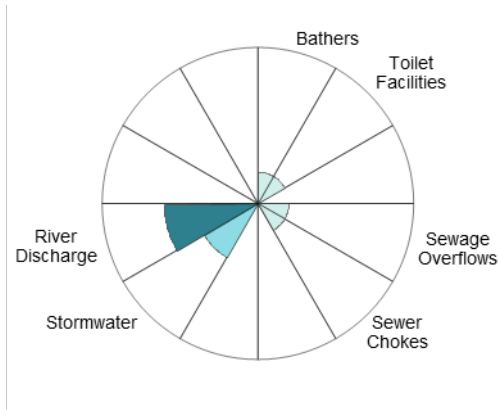
Enterococci levels generally increased with increasing rainfall, occasionally exceeding the safe swimming limit in response to little or no rain, and often after 10 mm or more.

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

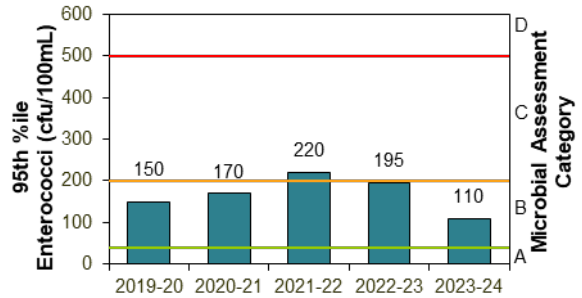
The site has been monitored since 2002.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Nov 2020 to Mar 2024	90%	100	Stable

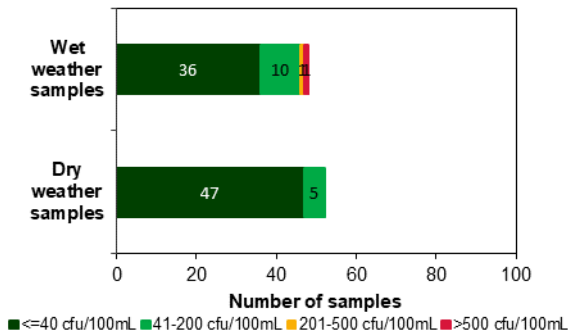
### Sanitary inspection: Moderate



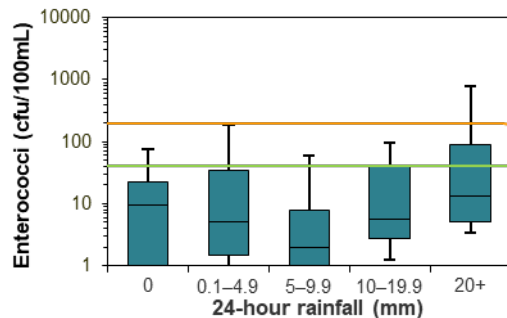
### Microbial Assessment Category: B



### Dry and wet weather water quality



### Water quality in response to rainfall



# Surf Beach

Beach grade: P



Surf Beach is a popular beach approximately 350 m long and is patrolled in the warmer months.

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

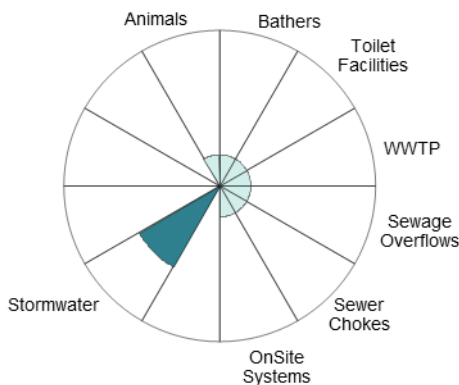
Enterococci levels increased with increasing rainfall, often exceeding the safe swimming limit after little or no rain, and regularly after 10 mm or more.

See ‘How to read this report’ for key to map.

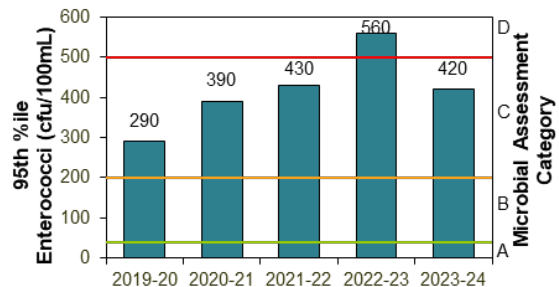
The site has been monitored since 2002.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Nov 2020 to Mar 2024	77%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

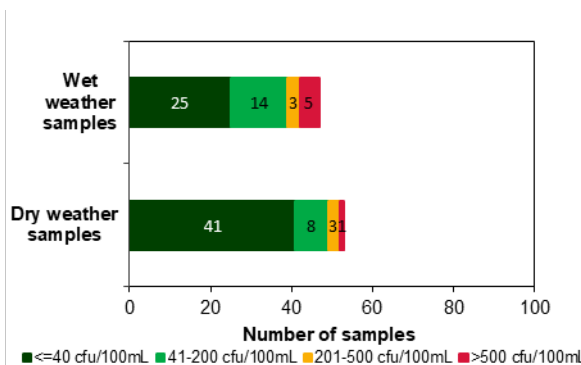
## Sanitary inspection: Moderate



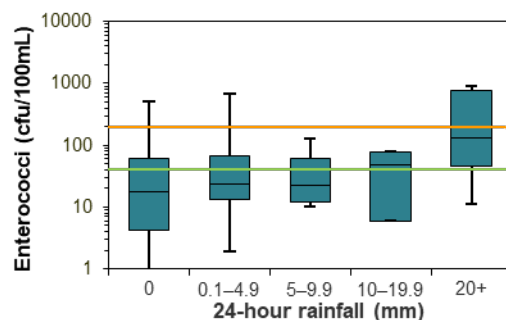
## Microbial Assessment Category: D



## Dry and wet weather water quality



## Water quality in response to rainfall



# Malua Bay Beach

Beach grade: **VG**



Malua Bay Beach is approximately 500 m long and is patrolled during the warmer months.

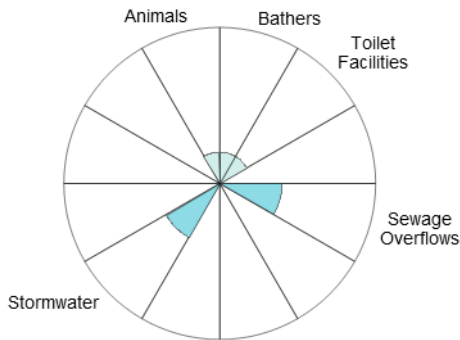
The Beach Suitability Grade of Very Good indicates microbial water quality is considered suitable for swimming almost all of the time, with few significant sources of faecal contamination.

Enterococci levels increased slightly with increasing rainfall, often exceeding the safe swimming limit in response to 20 mm or more of rain.

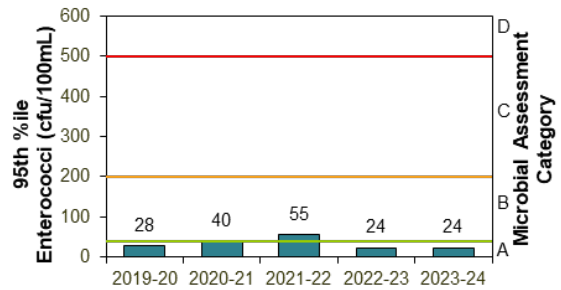
See 'How to read this report' for key to map. The site has been monitored since 2002.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Nov 2020 to Mar 2024	96%	100	Stable

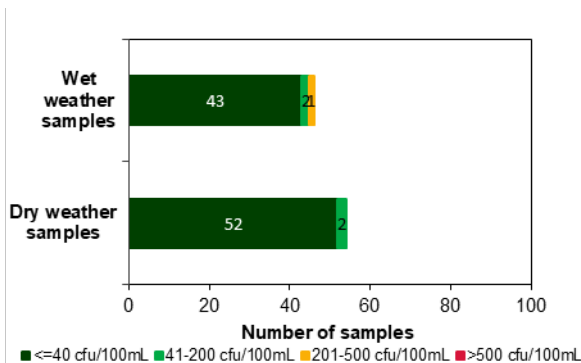
## Sanitary inspection: Low



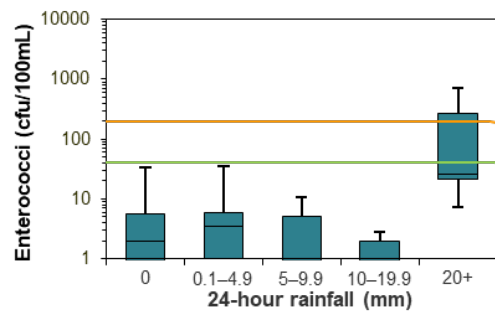
## Microbial Assessment Category: A



## Dry and wet weather water quality



## Water quality in response to rainfall



# Broulee Beach

Beach grade: **VG**



Broulee Beach extends from Candlagan Creek in the north to Broulee Island in the south.

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

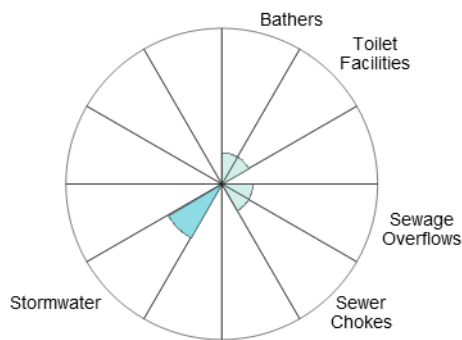
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain and often after 10 mm or more.

See ‘How to read this report’ for key to map.

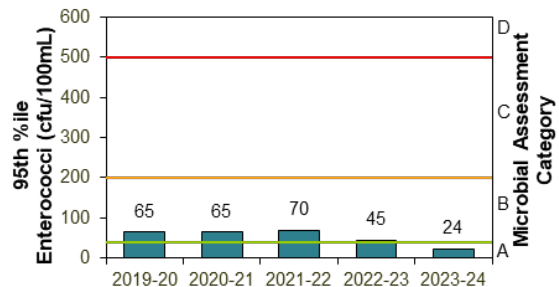
The site has been monitored since 2002.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Nov 2020 to Mar 2024	93%	100	Improved

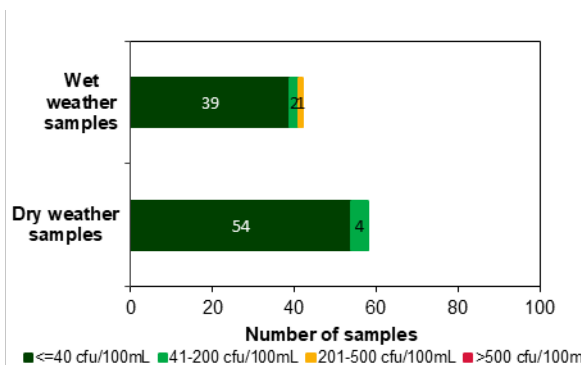
### Sanitary inspection: Low



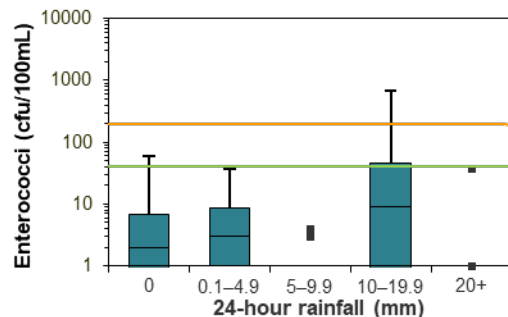
### Microbial Assessment Category: B



### Dry and wet weather water quality



### Water quality in response to rainfall



# South Broulee (Bengello) Beach

Beach grade: **G**



Bengello Beach extends from Broulee Head to the mouth of the Moruya River. The beach is patrolled during the summer months.

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

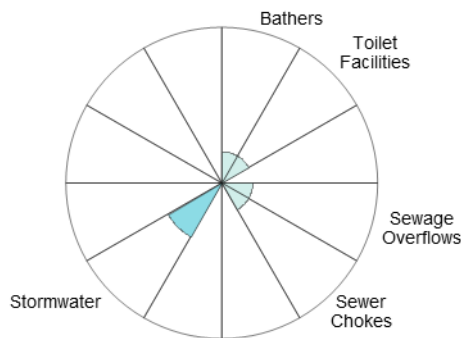
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after light rain, and often after 10 mm or more.

The site has been monitored since 2002.

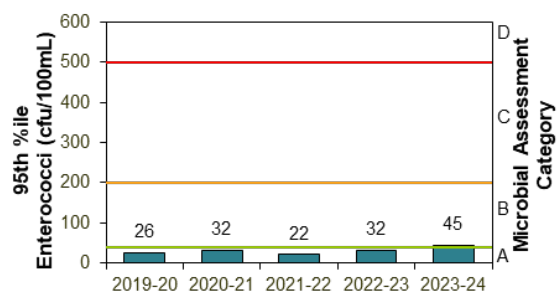
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Nov 2020 to Mar 2024	93%	100	Declined

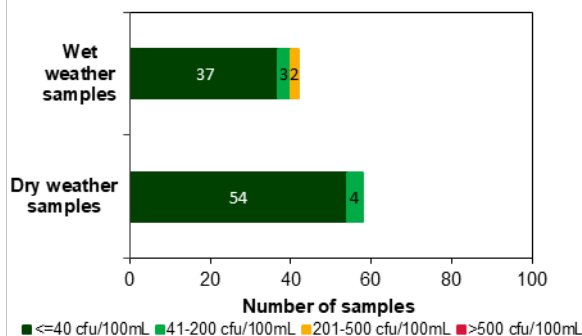
### Sanitary inspection: Low



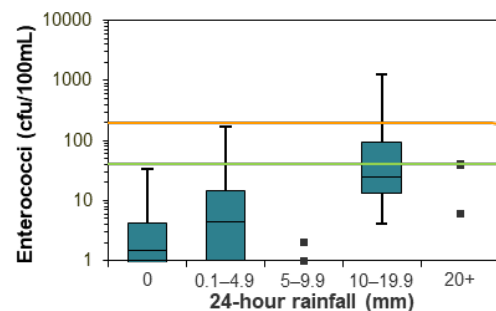
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Shelley Beach

**Beach grade:** G



Shelley Beach is located near the mouth of the Moruya River and backed by Eurobodalla National Park.

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

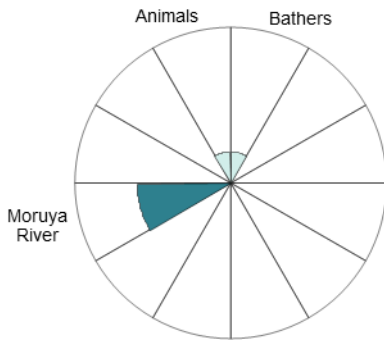
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain and often after 10 mm or more.

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

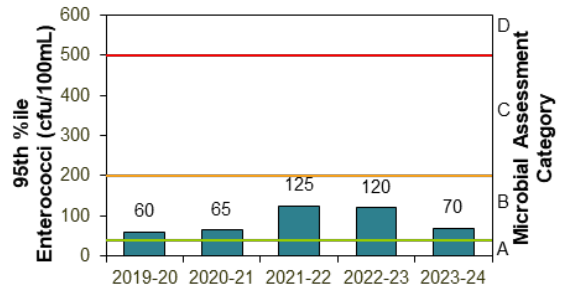
The site has been monitored since 2002.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Nov 2020 to Mar 2024	91%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

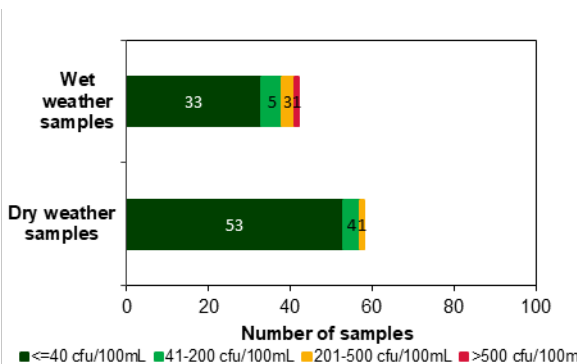
## Sanitary inspection: Moderate



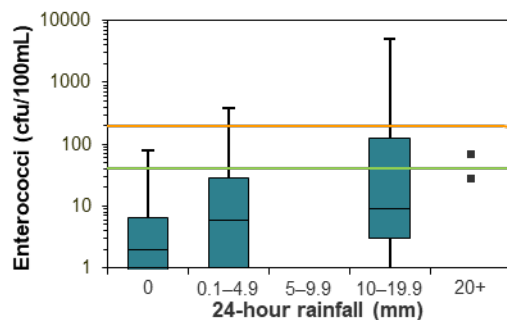
## Microbial Assessment Category: B



## Dry and wet weather water quality



## Water quality in response to rainfall



# Tuross Main Beach

**Beach grade:** G



Tuross Main Beach is a 250 m long beach located between Tuross Headland in the north and Tuross Lake in the south.

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

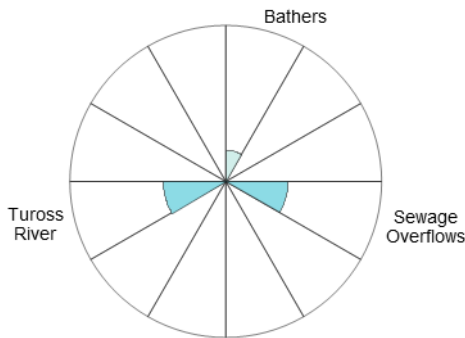
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit in response to little or no rain and often after 10 mm or more.

The site has been monitored since 2002.

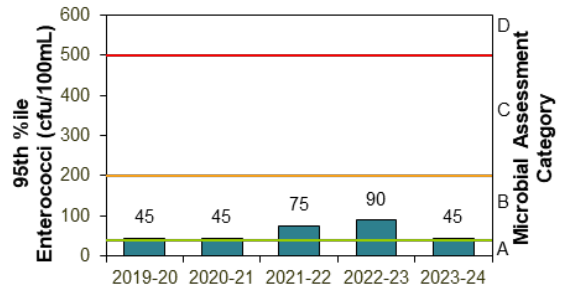
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Nov 2020 to Mar 2024	93%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span>

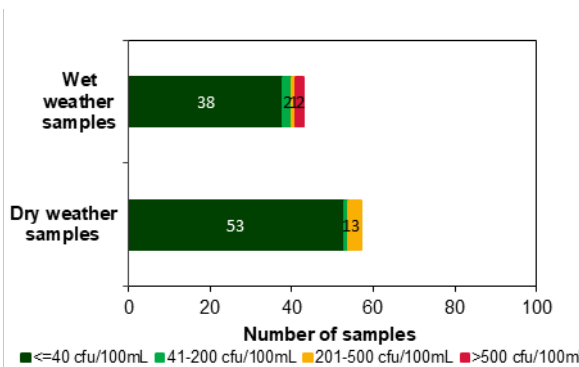
### Sanitary inspection: Low



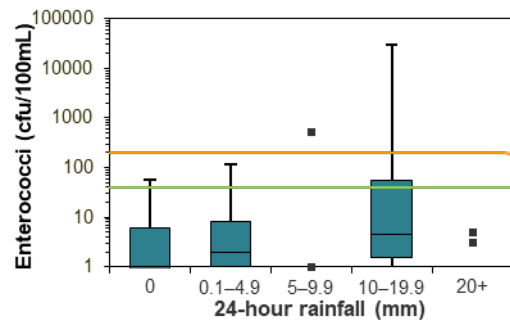
### Microbial Assessment Category: B



### Dry and wet weather water quality



### Water quality in response to rainfall



# Brou Beach

Beach grade: **VG**



Brou Beach is located to the north of Dalmeny. The beach is approximately 6.5 km long and is backed by Eurobodalla National Park.

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

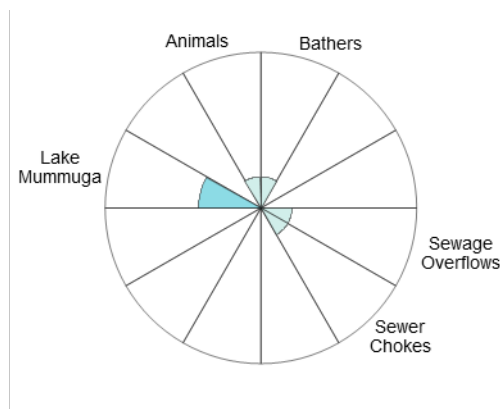
Enterococci levels increased slightly with increasing rainfall, often exceeding the safe swimming limit after 10 mm or more of rain.

The site has been monitored since 2002.

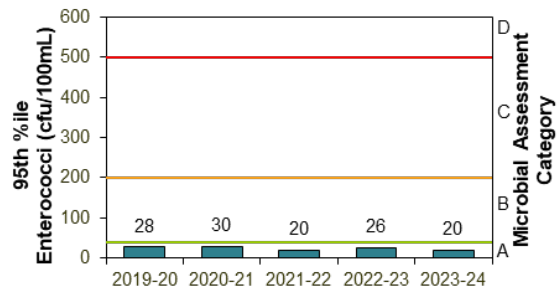
See ‘How to read this report’ for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Nov 2020 to Mar 2024	98%	100	Stable

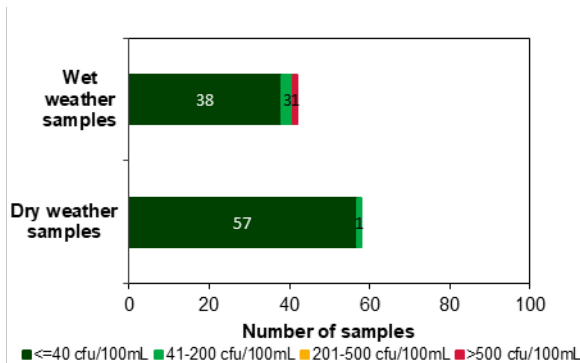
### Sanitary inspection: Low



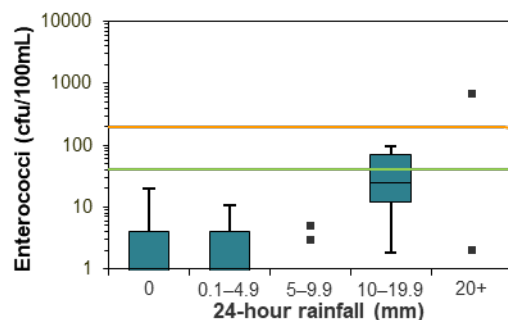
### Microbial Assessment Category: A



### Dry and wet weather water quality



### Water quality in response to rainfall



# Wagonga Inlet

**Beach grade:** G



The swimming site is a netted enclosure at the mouth of Wagonga Inlet. The town of Narooma is located on the southern side of the inlet.

The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with potential faecal contamination from upstream sources in Wagonga Inlet.

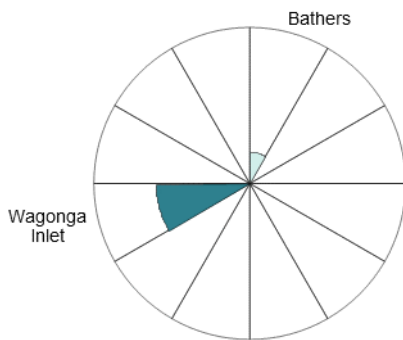
Enterococci levels increased slightly with increasing rainfall, occasionally exceeding the safe swimming limit after little or no rain, and often after 10 mm or more.

The site has been monitored since 2002.

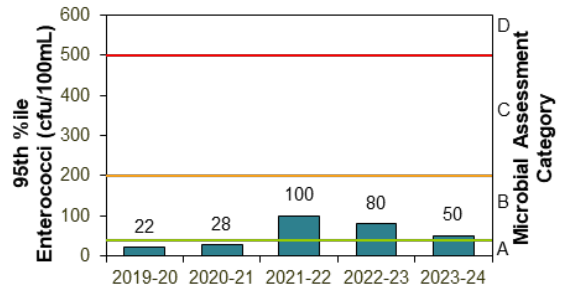
See 'How to read this report' for key to map.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Estuarine	Nov 2020 to Mar 2024	95%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

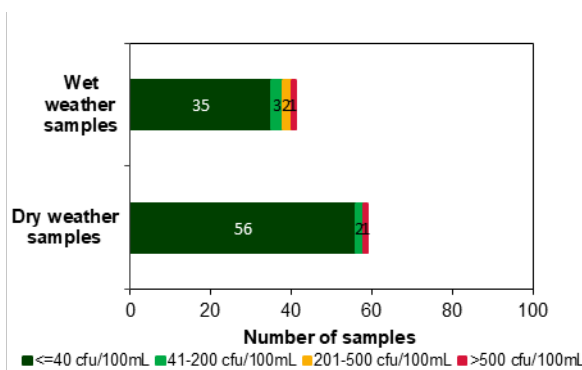
## Sanitary inspection: Moderate



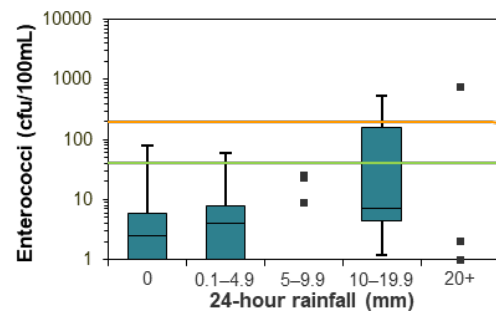
## Microbial Assessment Category: B



## Dry and wet weather water quality

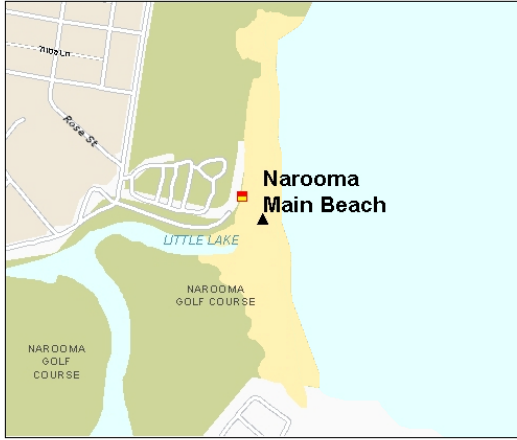


## Water quality in response to rainfall



# Narooma Main Beach

**Beach grade:** G



Narooma Beach is approximately 750 m long and is patrolled on weekends and holidays during the summer months.

The Beach Suitability Grade of Good indicates microbial water quality is considered suitable for swimming most of the time but may be susceptible to pollution after rain, with potential sources of faecal contamination including outflow from Little Lake.

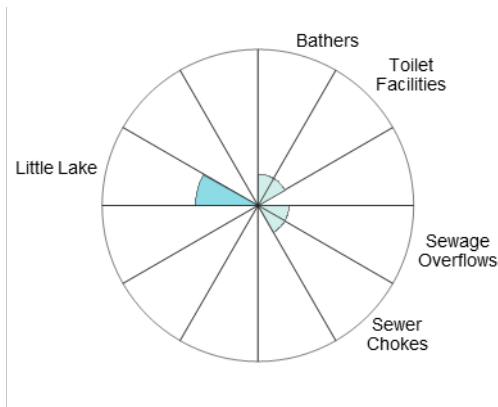
Enterococci levels increased slightly with increasing rainfall, often exceeding the safe swimming limit after 10 mm or more of rain.

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

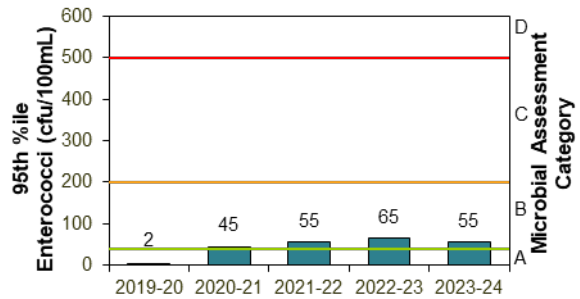
The site has been monitored since 2002.

Site type	Assessment period	Dry weather samples suitable for swimming	Water samples	Beach grade status
Ocean beach	Nov 2020 to Mar 2024	97%	100	Stable <span style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; display: inline-block; vertical-align: middle;"></span>

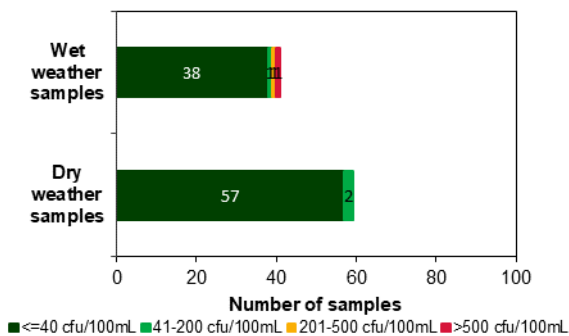
### Sanitary inspection: Low



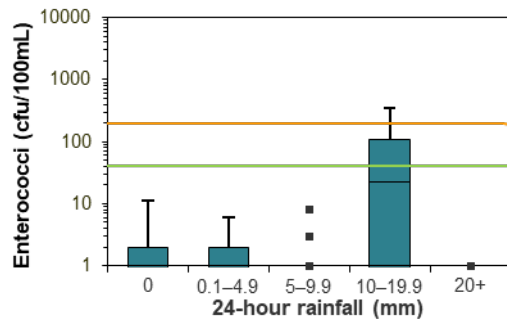
### Microbial Assessment Category: B



### Dry and wet weather water quality



### Water quality in response to rainfall



# 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 5 grades ranging from Very Good to Very Poor:

### 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

### 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 3 days at estuarine sites

### 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 3 days following rainfall or if there are signs of pollution such as discoloured water or odour or debris in the water

Some 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 the catchment.

### **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 3 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 almost all of the time.

## Follow Up

Sometimes a location's sanitary inspection and water quality data produce incongruent results. These locations are classified as 'Follow Up'. Further assessment will be required to obtain the necessary data to provide a definite classification in accordance with national guidelines.

### **The guidelines**

The National Health and Medical Research Council's guidelines for managing risks in recreational water (NHMRC 2008) were adopted for use in New South Wales 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 (WA Department of Health 2007).

## Enterococci

**The national guidelines advocate the use of enterococci as the single preferred faecal indicator in recreational 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 (Standards Australia 2007).

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

Beach Suitability Grades are determined by using the following matrix:

		Microbial Assessment Category			
		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

\* Follow up occurs when sanitary inspection and water quality data produce potentially incongruent results; further assessment will be required.

Using the Beach Suitability Grade classification matrix, sites assigned a moderate Sanitary Inspection Category can only be rated as Good or Poor, with no option of Fair grades. This can create the impression of a large change in water quality when in fact there need only be a slight increase in bacterial counts to push it over the threshold, with no significant increase in the risk to public health.

### Microbial Assessment Category (MAC)

There are 4 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 (Wyer et al. 1999).

### Risk of illness associated with Microbial Assessment Categories

Category	Enterococci (cfu/100 mL)	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 illness; AFR = acute fever and rash

### 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 4 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 New South Wales 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. The WA Department of Health recommends a minimum of 65 samples, collected from a particular site over 5 consecutive years, to provide sufficient confidence and reliability in the 95th percentile data output. 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 the WA Government's 'Environmental waters publications' webpage, under *Forms and templates*.

## Sanitary Inspection Category (SIC)

More information about the **sanitary inspection** process is available in the Beachwatch Protocol for assessment and management of microbial risks in recreational waters, found on the department's website.

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.

The main sources of faecal contamination considered in the sanitary inspection are: bathers, toilet facilities, wastewater treatment plants (WWTPs), sewage overflows, sewer chokes, onsite systems, wastewater re-use, stormwater, river discharge, lagoons, boats and animals.

Rivers, lakes and estuaries themselves can be potential sources of faecal contamination to sites located in these waterbodies, with contaminated water from upstream or surrounding areas impacting water quality at the swimming location. This source is captured in river discharge or lagoon category, and shown as the waterbody in the sanitary inspection charts.

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



Stormwater drain flow

Photo:

Beachwatch/DCCEEW

Stormwater in urban areas often contains sewage from leakages, overflows or sewer chokes when the sewerage system fails.

Sewage overflows can occur in wet weather when the network has exceeded capacity due to rainwater entering the system. The mix of sewage and rainwater discharges from designated overflow points and drains to waterways, usually via the stormwater system. Overflows from the sewerage system can also occur in dry weather due to mechanical failure or power outage.

Sewer chokes occur due to blockages in the pipes usually due to tree roots, oil, grease or debris. This causes sewage to back up and escape via sewer inspection points, designed overflow structures or cracks in the pipes, then drain to waterways, usually via the stormwater system.

## Explanation of tables

Each region contains tables listing all monitored swimming sites including site type, beach grade and change in grade from the previous year.

The following symbols are used to show the change in beach grade from the previous year:



Stable



Improved



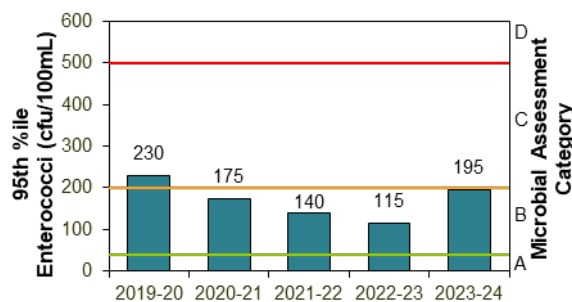
Declined

A provisional grade indicates the assessment is based on limited data collected during the assessment period and should not be compared to the beach grade from the previous year.

## Explanation of graphs, charts, and information bars on beach pages

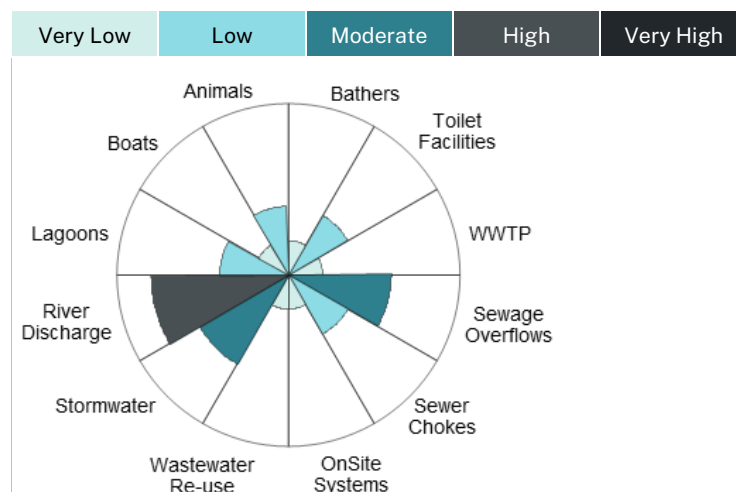
### Microbial Assessment Category (MAC) chart

On each beach page, the MACs for the last 5 years are displayed on a simple bar chart. The MAC for the current year is based on enterococci data collected during the assessment period. The bars are labelled with the 95th percentile value for each year and the thresholds dividing the A, B, C and D categories are marked in green, amber and red for reference.



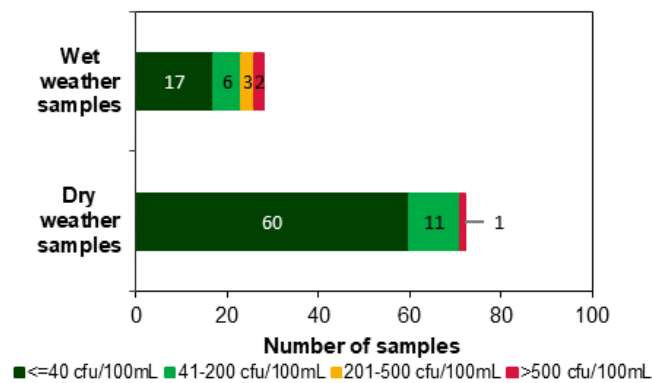
### Sanitary Inspection Category (SIC) chart

The results of the sanitary inspection for each swimming location are presented in a radar pie chart. The chart 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 segment, ranging from very low (lightest colour) to very high (darkest colour) as shown below. The sum of these contributions is the overall likelihood, or Sanitary Inspection Category.



## Wet and dry weather water quality chart

Enterococci levels in wet and dry weather conditions are presented for each swimming location as a bar graph. All data collected during the assessment period is included in the analysis. Dry weather is defined as no rainfall recorded in the previous 24 hours. Each bar is colour coded to show the number 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 as dark green, light green, amber and red respectively.

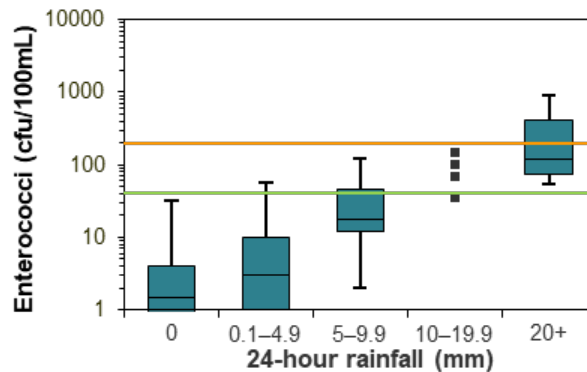


It is expected that swimming sites with lower levels of flushing will show some elevated bacterial results in dry weather samples (no rainfall in the previous 24 hours) due to the longer time needed to recover from a rainfall event. At some estuarine and lake/lagoon swimming locations the impacts of stormwater pollution on beach water quality may be detected up to 3 days after rainfall.

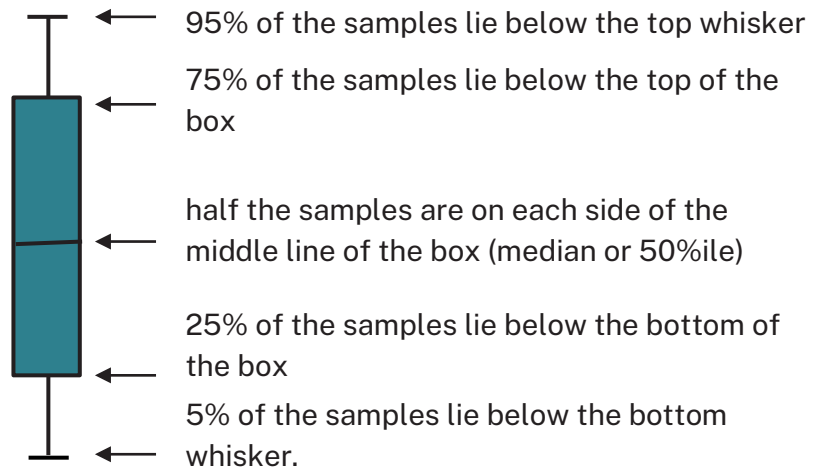
## Water quality in response to rainfall

Trends in enterococci levels in response to rainfall are shown using a box plot. 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 5 years of monitoring. Rainfall data were obtained from rain gauges situated close to the sample site and are 24-hour totals to 9 am on the day of sampling. If there are fewer than 5 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:



## Information bars

Information bars on each beach page provide a summary of details about the swimming site.

The **assessment period** shows the timeframe in which the water samples were collected. The NHMRC guidelines state beach grades should be determined from the most recent 100 water quality results collected within a 5-year period. The assessment period varies between sites depending on sampling frequency.

Dry weather samples suitable for swimming (**dry weather swimmability**) shows the percentage of water samples with enterococci levels below 40 cfu/100 mL. Dry weather is defined as no rainfall in the previous 24 hours.

Swimming sites with lower levels of flushing often have a

lower percentage of dry weather samples within the safe swimming limit due to the impacts of rainfall detected up to 3 days after the event.

## Explanation of maps

A map of individual swimming locations is presented on each beach page. The scale of the maps is 1:10,000. 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 Life Saving Club
Ⓜ	Wastewater Treatment Plant
ⓈⓅ	Sewage Pumping Station
⦿	Sewage Overflow
⦿	Stormwater Drain
■	Water
■	Baths
■	National Park/Reserve/ Other Park
■	Built-up Area
■	Sand
□	Roads
■	Major Roads
—	Baths – Netted Area
—	Breakwater/Wharf

# References

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

Standards Australia (2007) *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.

WA Department of Health (2007), *Microbial 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, [ww2.health.wa.gov.au/Articles/A\\_E/Environmental-waters-publications](http://ww2.health.wa.gov.au/Articles/A_E/Environmental-waters-publications), accessed 23/06/23.

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.

## More information

- [Beachwatch webpage](#)
- [Coastal management program progress](#)
- [Sanitary inspection of beaches](#)
- [WA Government environmental water publications](#)
- [Shoalhaven Council Coast and waterways](#)
- [Eurobodalla Shire Council Coast and waterways](#)