



# How we report beach grades

Beachwatch Programs

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This resource may contain images or names of deceased persons in photographs or historical content.

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# The guidelines

Beachwatch Programs monitor and report recreational water quality in line with the National Health and Medical Research Council's *Guidelines for Managing Risks in Recreational Water* (NHMRC 2008). The guidelines were adopted for use in New South Wales in 2009.

The main health risk in recreational waters comes from microbial pathogens introduced through faecal contamination. All recreational waters contain some level of microbes that can cause illness. Simply allowing people to use the water creates a known risk of contamination from human activity.

The aim is to manage this risk by identifying when and where the risk to public health is elevated, so appropriate steps can be taken to reduce it and keep the public informed. The goal is to minimise risk and communicate it clearly, so people can make informed decisions about water use. To support this, water quality categories (beach grades) have been developed based on epidemiological studies.

A microbial-based approach is used to assess the risk of faecal pollution in recreational waters and determine their suitability for swimming. This involves 2 parts:

- Sanitary inspection – assesses the likelihood of faecal contamination, resulting in a **sanitary inspection category**.
- Water quality testing – measures levels of enterococci bacteria over time, resulting in a **microbial assessment category**.

The national guidelines recommend the use of enterococci as the single preferred faecal indicator in recreational waters.

Following the guidelines, Beachwatch tests only for enterococci. Water samples are analysed in a laboratory using the *AS/NZS 4276.9:2007* method, with results reported in colony forming units per 100 millilitres (cfu/100 mL).

Enterococci bacteria are found in faeces and are rarely present in unpolluted water. Studies have shown a clear link between enterococci levels and illness in marine waters.

Applying marine-based water quality categories to freshwater is considered a cautious approach, as faecal bacteria generally survive longer in freshwater than in seawater. This means that for the same bacterial count, the risk may be lower in freshwater. However, a precautionary approach is supported, since freshwater areas usually have less dilution of pollution from stormwater and effluent than marine environments.



# Beach grades

Beach 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 faecal pollution sources at a beach) and microbial assessment (water quality measurements gathered over previous years). These are reported annually and released at the start of swim season.







The **assessment period** refers to the timeframe during which water samples were collected. According to the NHMRC guidelines, beach grades should be based on the most recent 100 water quality results collected within a five-year period. The length of the assessment period may vary between sites, depending on the frequency of sampling.

The outcome of the sanitary inspection and the microbial water quality assessment is a five-level classification for recreational waters – ‘very good’, ‘good’, ‘fair’, ‘poor’ and ‘very poor’. There is also a requirement for follow-up where there is potential discrepancy between the results of the microbial water quality assessment and the sanitary inspection.



Photo 1      Barmouth Beach. John Yurasek/DCCEEW

**Table 1**      **General advice for each beach grade classification**

Classification	Advice
Very Good 	<p>Water quality monitoring and sanitary inspection indicate very good microbial water quality and few potential sources of faecal pollution.</p> <p>Water quality is suitable for swimming almost all of the time.</p>
Good 	<p>Water quality monitoring and sanitary inspection indicate generally good microbial water quality, with several potential sources of faecal pollution. There is occasional increased risk to public health, particularly after rainfall.</p> <p>Water quality is suitable for swimming most of the time.</p>
Fair 	<p>Water quality monitoring and sanitary inspection indicate fair microbial water quality, with potentially significant sources of faecal pollution. The likelihood of contamination increases particularly following rainfall.</p> <p>Water quality is often suitable for swimming, but caution is advised during and after rainfall, especially for young children, the elderly and those with compromised health.</p>
Poor 	<p>Water quality monitoring and sanitary inspection indicate poor microbial water quality, with significant potential sources of faecal pollution.</p> <p>Water quality is often unsuitable for swimming. Always avoid swimming after rainfall or if there are signs of pollution, such as discoloured water, odour or floating debris.</p>
Very Poor 	<p>Water quality monitoring and sanitary inspection indicate very poor microbial water quality and a high or very high likelihood of faecal contamination, and significant increase in the risk to public health.</p> <p>Water quality is unsuitable for swimming. Swimming should always be avoided.</p>
Follow Up 	<p>Water quality monitoring and sanitary inspection produce inconclusive or inconsistent results.</p> <p>Further assessment is required to collect sufficient data and provide a definitive classification.</p>

Some beach grades are **provisional** due to incomplete information, such as limited bacterial data or insufficient details about potential pollution sources in the catchment.

# How we calculate beach grades

Recreational water is classified by combining the sanitary inspection category with the microbial water quality assessment category using the matrix in Figure 1.

		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

**Figure 1** Classification matrix for faecal pollution of recreational waters

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

## Microbial assessment category

There are 4 microbial assessment categories, labelled A to D. These are determined using the 95th percentile of an enterococci dataset comprising of 100 data points. Each category corresponds to a level of illness risk, as established by epidemiological studies and shown in Table 2. The illness risks presented are not linked to individual data points, but rather reflect the overall risk associated with a dataset that has a corresponding 95th percentile value.

**Table 2** 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 microbial assessment category

The 95th percentile is a useful statistic for summarising the distribution of enterococci data at a swim site. It reflects both the central tendency (how high or low the enterococci counts are) and the variability (how spread out the values are) within the dataset.

The threshold 95th percentile values used to define the 4 microbial assessment categories (A to D) were originally established by the World Health Organization, based on enterococci data collected from swimming locations across Europe. However, these values may correspond to different levels of illness risk if the distribution of enterococci data from swimming sites in New South Wales differs from the European dataset.

To address this, Dr Richard Lugg (Department of Health, Western Australia) developed a Microsoft® Excel tool that calculates a modified 95th percentile, accounting for the distribution of data. The Western Australian Department of Health recommends using a minimum of 65 samples collected over 5 consecutive years at a single site to ensure sufficient confidence and reliability in the 95th percentile estimate.

This tool has been used to calculate the 95th percentile values. It is available for download from the Western Australian Government's *Environmental Waters Publications* webpage, under *Forms and templates*.

## Sanitary inspection category

The aim of a sanitary inspection is to identify all potential sources of faecal contamination that could impact a swimming location and to assess the associated public health risk. It evaluates the likelihood of bacterial contamination originating from identified pollution sources and should, to some extent, correlate with the microbial water quality results obtained through sampling.



Key sources of faecal contamination considered during the sanitary inspection are bathers, toilet facilities, wastewater treatment plants, sewage overflows, sewer chokes, onsite systems, wastewater re- use, stormwater, river discharge, lagoons, boats and animals.

Rivers, lakes, and estuaries can themselves act as sources of faecal contamination, with polluted water from upstream or surrounding areas potentially affecting the swimming site's water quality. This influence is captured under the 'river discharge' or 'lagoon' category and is shown as the waterbody in sanitary inspection charts.

Based on the outcomes of the sanitary inspection, beaches are categorised according to the overall likelihood of faecal contamination.

There are 5 categories – 'very low', 'low', 'moderate', 'high' and 'very high'.

## Calculating the sanitary inspection category

There are 5 key steps for conducting a sanitary inspection:

1. Define the swimming area and catchment

Clearly delineate the boundaries of the swimming site and its contributing catchment area.

2. Identify sources of faecal contamination

Investigate and document potential sources of faecal pollution. Gather information on the frequency, duration, and intensity of each source's impact using:

- desktop studies (e.g. maps, reports, published data)
- field inspections
- reconnaissance surveys
- interviews with relevant stakeholders and information holders.

3. Assess the likelihood of each identified source

Evaluate how likely each source is to contribute to faecal contamination at the site.

4. Determine the sanitary inspection category

Assign an overall likelihood rating based on the cumulative assessment of all identified sources.

5. Consult with stakeholders

Conduct a workshop or meeting to review and validate the findings, including pollution sources and likelihood assessments.

# How we review beach grades

Beach grades are reviewed annually by Beachwatch and our partners or swim site managers before being released at the start of the swim season. This process involves a review of both the sanitary inspection and microbial assessment for each monitored swim site.

## Sanitary inspection review

Sanitary inspections are reviewed each year by Beachwatch in collaboration with partners and swim site managers. The review process includes updating existing sanitary inspection reports as needed. This may involve gathering recent data on sewage chokes and overflows, wastewater treatment plant performance, and any changes to stormwater drainage infrastructure.

The review includes a field visit (conducted at least every second year) as well as desktop research. All records are maintained in the Beachwatch Sanitary Inspection Report Database.

## Microbial assessment review

The microbial assessment category is recalculated annually using the most recent enterococci data, with up to 100 data points collected within a 5-year period.

As part of this assessment, Beachwatch analyses water quality in relation to rainfall and compares the results to previous years to identify any trends or changes in water quality at each swim site.

## Final review

The final review is conducted to ensure that beach grades are calculated consistently across all monitored swim sites in New South Wales.

# References

NHMRC (National Health and Medical Research Council) (2008) Guidelines for managing risks in recreational water, NHMRC, accessed 6 August 2025.