

Sydney Metropolitan Area Harbour Swimming Sites

Lower Georges River

Lower Georges River

Sites: Jew Fish Bay Baths, Como Baths, Oatley Bay Baths, Carss Point Baths, Sandringham Baths and Dolls Point Baths



Location

The lower Georges River is the ten kilometre downstream reach of the 96 kilometre long Georges River. Land use in the lower Georges River catchment is mostly residential, with some industrial, commercial, recreational and bushland.

Hurstville, Kogarah, Rockdale and Sutherland Councils operate in this area.

Compliance with guidelines

Faecal coliform and enterococci compliances were varied at sites in the lower Georges River during summer 2007–2008 (Table 21).

Four of the six swimming sites complied with faecal coliform and enterococci guidelines at least 84% of the time. These sites were Jew Fish Bay Baths (88% compliance with both faecal coliforms and enterococci), Como Baths (88% with faecal coliforms and 84% with enterococci), Sandringham Baths (88% with faecal coliforms and 94% with enterococci) and Dolls Point Baths (88% with faecal coliforms and 91% with enterococci guidelines).

Oatley Bay Baths complied 88% of the time for faecal coliforms and 72% with enterococci criteria. Carss Point Baths complied 78% of the time with faecal coliforms and 59% with enterococci criteria.

The range of indicator bacteria levels measured at Botany Bay, lower Georges River and Port Hacking swimming areas during summer 2007–2008 is shown in Figure 28. Lower Georges River sites are highlighted in grey. The levels of faecal coliforms and enterococci tended to be similar to the range of values measured across the local estuaries.

Ranking of beaches

All monitored harbour and ocean beach swimming locations in the Hunter, Sydney and Illawarra regions were ranked on the basis of their compliance with swimming guidelines during summer 2007–2008. A total of 41 distinct ranks were determined

for the 131 sites monitored for both faecal coliforms and enterococci, with many sites ranked equally.

Rankings for some swimming areas in lower Georges River were in the lower ranks. Sandringham Baths ranked equal ninth, Dolls Point Baths ranked twelfth, Jew Fish Bay ranked fifteenth and Como Baths ranked eighteenth (Table 21). Oatley Bay Baths and Carss Point Baths ranked poorly, at twenty-seventh and thirty-fifth places respectively.

Actions to improve water quality

Actions specific to individual swimming locations are included on the 'swimming area' pages. Improvements in water quality within lower Georges River should also be achieved as a result of the Georges River Combined Councils Committee, which includes the 'Riverkeeper Program', and a number of stormwater management plans and council programs.

Georges River Combined Councils Committee

The Georges River Combined Councils Committee (GRCCC) consists of nine councils working together to lobby for the protection of the River. The Committee manages the 'Riverkeeper Program', which has held a number of clean-ups to remove litter from the foreshores of the Georges River. It assists councils and other stakeholders to rehabilitate the river and thus ensure its sustainable future. The GRCCC has been awarded a grant by the NSW Department of Environment and Climate Change to undertake the first step in the development of a Georges River Estuary Management Plan.

Stormwater Management Plans

Local councils have developed Stormwater Management Plans for Mill Pond Creek, Lower Georges River and Cooks River. These plans contain many structural and non-structural actions that will be implemented over the next five years to improve water quality in these waterways and in Botany Bay.

Grant Funding

Kogarah Council, Hurstville Council and Rockdale City Council received funding through the DECC Sustainability Grants Program for the Eco Living Community Environmental Workshops as well as DECC's support for the Dumping It's Dumb campaign.

Hurstville Council

Stormwater Quality Improvement Device (SQID) Maintenance: Council has a total of 13 SQIDs installed around the area to assist in the capture of rubbish and other stormwater pollutants before they enter receiving waters. Council has also constructed the Riverwood and Lime Kiln Bay Wetlands. The stormwater devices are regularly maintained and improve the quality of stormwater entering the Georges River.

Water Savings Action Plan: Hurstville City Council has formulated a Water Savings Action Plan, as required by the NSW Government. Implementation of the recommendations under the plan will reduce the total water consumption at Council's top ten water-using sites by approximately 50%.

Stormwater Training and Internal Audit Program: Council developed this program to improve the awareness, knowledge and skills of staff. The internal audit program ensures that standard operational environmental procedures are being applied and that best practices are being implemented.

Kogarah Council

Oatley Bay Estuary Management Plan: The Oatley Bay Estuary Management Plan is under way, with a comprehensive study on the hydrodynamics and sedimentology processes of the Bay having recently been completed. A Management Plan will be developed to sustainably manage Oatley Bay.

Water Quality Management Strategy: Kogarah Council continues to implement its Water Quality Management Strategy, which aims to be a key decision-making tool for Council. As part of the strategy a

community-based water quality monitoring program has also been established. The Georges River Watchers group meets monthly. It collects water samples from eight strategic sites and performs various water quality tests, which have recently included faecal coliform testing.

Kyle Bay Foreshore Restoration and Water Quality Project: Kogarah Council has undertaken upgrades to Kyle Bay foreshore, including vegetated natural drainage whereby stormwater runoff from a nearby car park will effectively be captured before entering Kyle Bay. A gross pollutant trap has now been installed across the road to collect stormwater pollutants before discharging into Kyle Bay.

Connells Point Stormwater Improvement Project: An underground sand swale has been constructed in Connells Point Reserve. It acts as a filter for stormwater before reaching the Georges River. An overland grass swale has also been constructed to slow down and filter excess stormwater in the event of an overflow.

Kogarah Bay Creek Naturalisation Project: Council has begun investigating design concepts for returning a section of Kogarah Bay Creek to a more natural state and flow path. This will include the construction of a wetland that will help to slow and filter the creek before it reaches Kogarah Bay.

Stormwater Quality Improvement Device (SQID) Maintenance: Throughout the catchment Council continues to clean, maintain and install where required, pit litter baskets, sediment basins, booms and ten larger gross pollutant traps. New 'buttraps' have been installed in Kogarah town centre to prevent cigarette butts entering the stormwater system. The SQIDs have collected over 170 tonnes of rubbish, preventing it from entering the Georges River.

Carlton Industrial Sustainable Water Program (CISWP): Kogarah Council with the sponsorship of The NSW Environmental Trust, has developed and begun to implement a two year educational program for sustainable water management. The program aims to decrease potable water use

and minimise stormwater pollution generated from the largest industrial area in Kogarah Municipality.

Environmental Business Audits: Kogarah Council conducts annual Environmental Audits of all businesses in Kogarah Municipality to prevent potential stormwater pollution discharge by business activities.

Eco Living Environmental Workshops: In collaboration with Rockdale and Hurstville councils, the St George Sustainable Living Workshops provide practical information on water and energy conservation, pollution prevention and green cleaning to the community.

Catchment Crusaders – Sustainable management of catchments Program: Catchment Crusaders is an interactive environmental education project that aims to build capacity within schools by providing students with the framework to implement sustainable catchment management actions through a local Catchment Action Plan. The project will be offered free of charge to Year Four students in the local government area and will include workshops, water quality testing, drain stencilling and a tour incorporating visits to a gross pollutant trap and a constructed freshwater and mangrove wetland in the area, as well as a pit litter cleaning exercise.

Rockdale Council

Street Sweeper Program: Council has continued its street sweeping program and monitors the waste collected by street sweepers.

Rockdale wetlands corridor: The Scott Park Wetland was constructed on a disused soccer field at Dolls Point. The wetland treats water flowing into the lower Georges

River at Sandringham and also provides important saltmarsh habitat.

School education: Council visited local primary schools to conduct an environmental education lesson focusing on stormwater management. Participating students were given a take-home exercise to encourage them to take the environmental messages home to their families. Council continues its work with local schools through the Environmental Education Network, which meets once a month to discuss different issues that affect local schools.

Community education: Educational signage has been installed in the Georges River Catchment. The signs consist of an aerial photo of the catchment, with arrows showing where stormwater flows. Using the signs, residents are able to locate where they live and see where their drains discharge into the waterways. As part of Council's educational program tours led by a wetland specialist have been held at local wetlands. A number of school holiday activities, including a puppet show, were held for children to educate them about the importance of protecting the waterways.

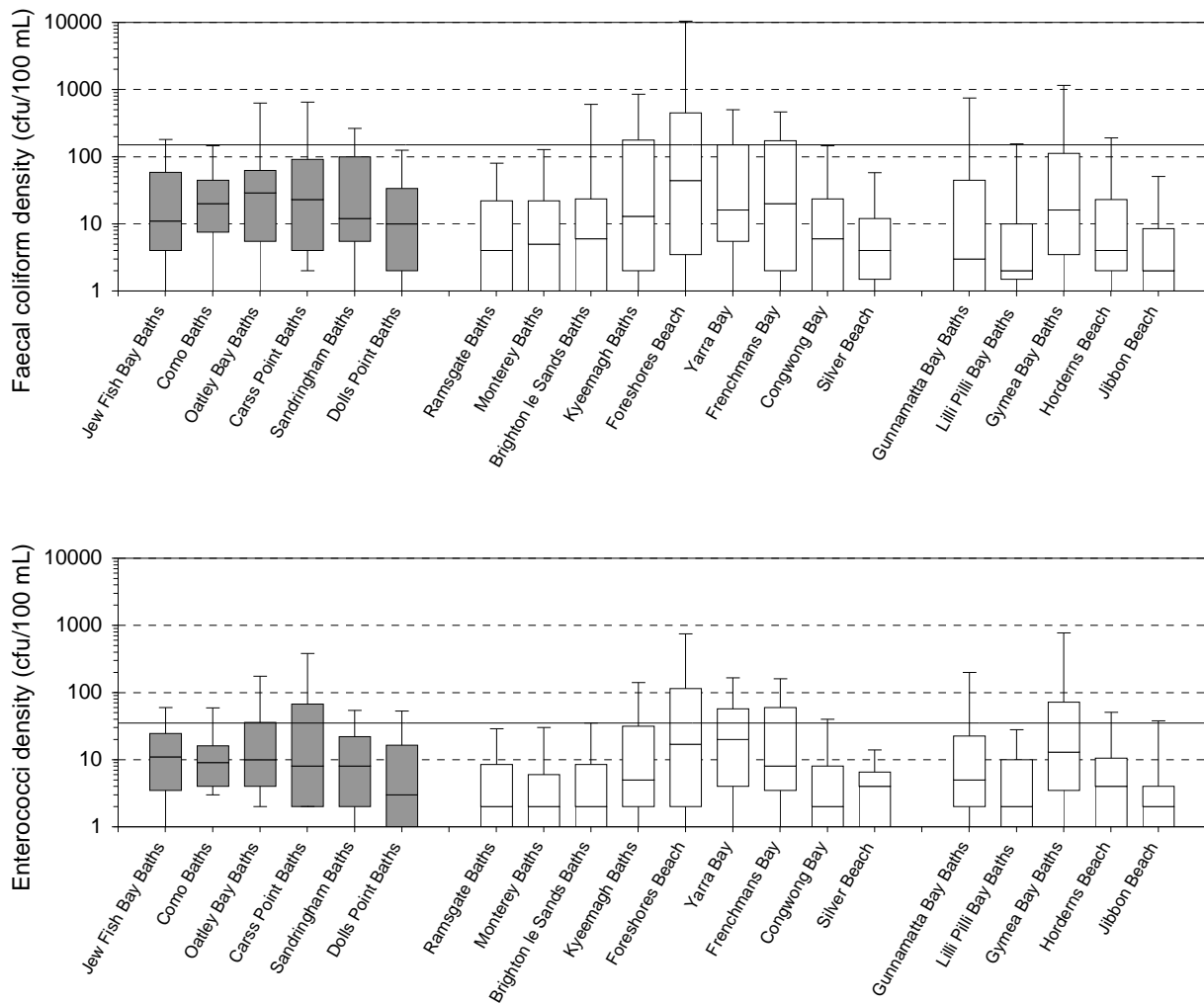
Sutherland Shire Council

Woronora Estuary Management Plan: Council adopted the Woronora Estuary Management Plan in February 2008 following exhibition of the draft during 2007. The plan was completed in accordance with the NSW Government's Estuary Management process and included the completion of data collection, an estuary management process study, and modelling. The plan also incorporated feedback from stakeholders and the community to identify priorities for the management of the estuary.

Table 21: Compliance and Ranking of Lower Georges River Sites during Summer 2007–2008

Site	Compliance (%)		Overall rank (out of 41)
	Faecal Coliforms	Enterococci	
Jew Fish Bay Baths	88	88	15
Como Baths	88	84	18
Oatley Bay Baths	88	72	27
Carss Point Baths	78	59	35
Sandringham Baths	88	94	9
Dolls Point Baths	88	91	12

Figure 28: Bacterial Levels at Lower Georges River, Botany Bay and Port Hacking Sites during Summer 2007–2008



Jew Fish Bay Baths

See page 258 for key to map

Description

This is a 200 metre long netted swimming enclosure with a narrow, sandy beach. The baths are situated within the 45 hectare Oatley Park.

Pollution sources

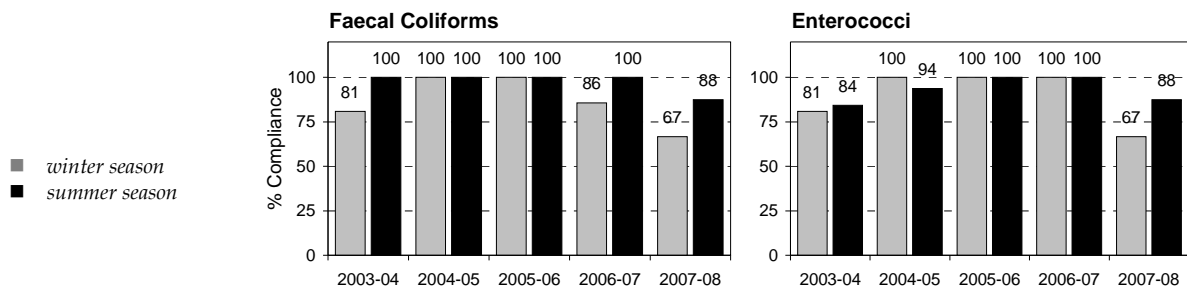
Stormwater drains discharge directly to the beach area. This site may also be affected by poor quality water from the upper Georges River.

Actions

There are no actions specific to this beach.

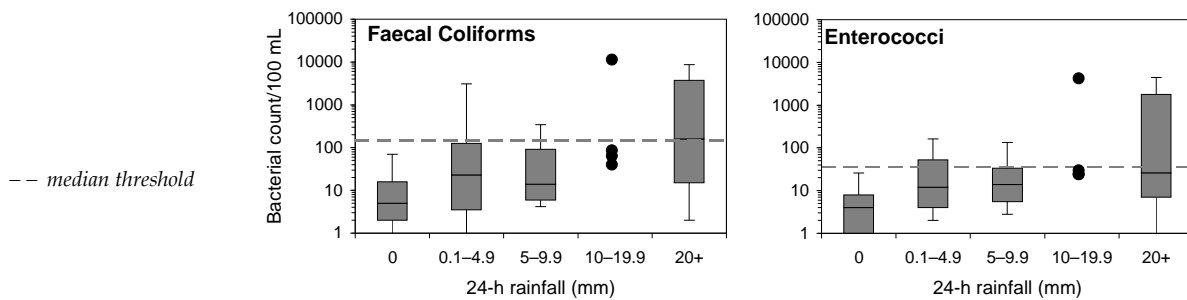
Compliance

Faecal coliform and enterococci compliance with swimming guidelines has varied over the last five years, both ranging from 67% to 100%.



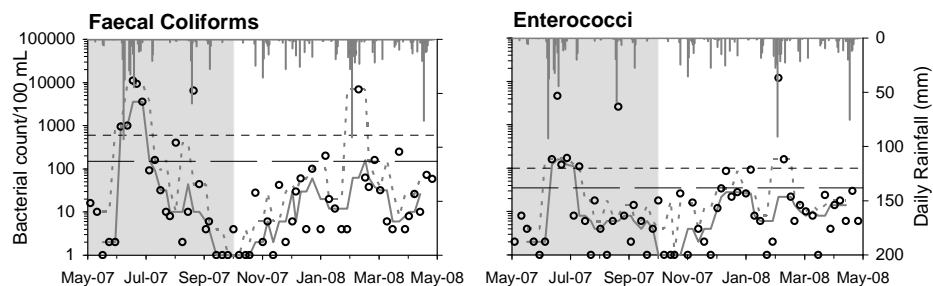
Response to rainfall

Bacterial densities increased with increasing rainfall. Faecal coliform levels occasionally exceeded the median guideline limit after light rain and regularly exceeded the median guideline limit in response to 20 millimetres of rain or more in the previous 24 hours. Enterococci levels often exceeded the median guideline limit in response to light rain in the previous 24 hours.



Season data

- | rainfall
 - o individual result
 - rolling median
 - rolling 80th percentile
- Guidelines
(see page 7 for details)
- median threshold
 - 80th percentile threshold



Como Baths

Description

The enclosed tidal baths are approximately 25 metres wide and include a narrow, sandy beach. The baths are situated adjacent to Como marina and back on to the Como Pleasure Gardens.

See page 258 for key to map



Pollution sources

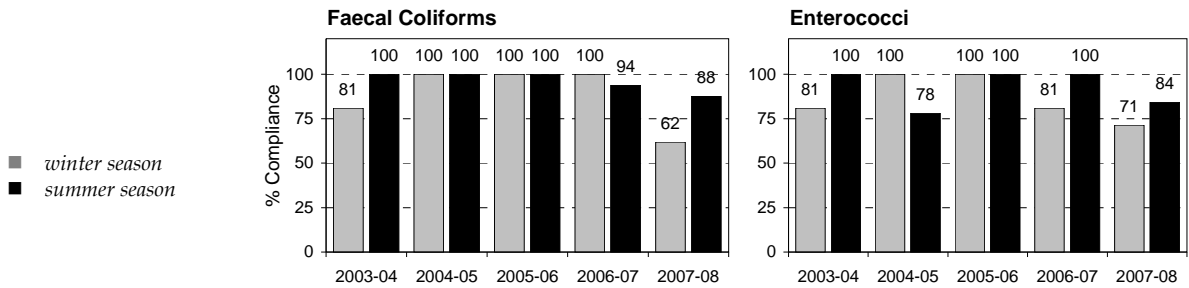
Several stormwater drains discharge in the vicinity of the baths. Waters from the Woronora River may also affect water quality. Septic tank seepage from several unsewered properties in Como may also be a source of pollution.

Actions

There are no actions specific to this beach.

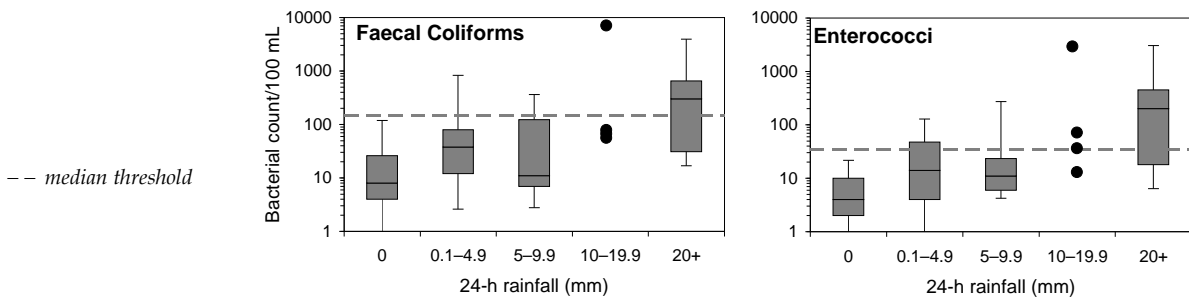
Compliance

Faecal coliform compliance with swimming guidelines has varied, ranging from 62% to 100% over the last five years. Enterococci compliance with swimming guidelines also varied, ranging from 71% to 100% over the last five years.



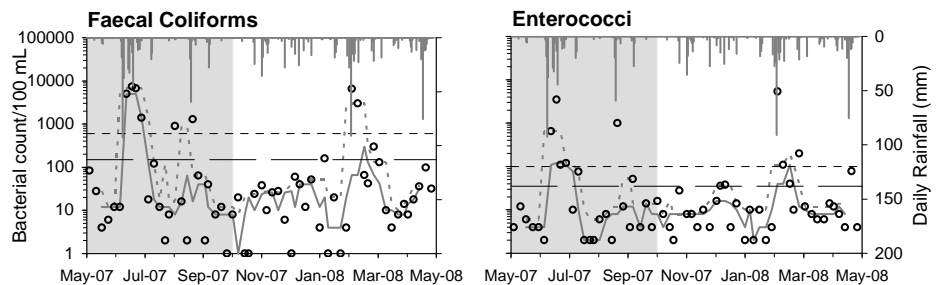
Response to rainfall

Bacterial densities increased with increasing rainfall. Faecal coliform levels occasionally exceeded the median guideline limit in response to light rain and regularly exceeded the median guideline limit in response to 20 millimetres of rain or more in the previous 24 hours. Enterococci levels often exceeded the median guideline limit after light rain and regularly exceeded the median guideline limit in response to 20 millimetres of rain or more in the previous 24 hours.



Season data

- | rainfall
 - o individual result
 - rolling median
 - rolling 80th percentile
- Guidelines
(see page 7 for details)
- median threshold
 - 80th percentile threshold



Oatley Bay Baths

See page 258 for key to map

Description

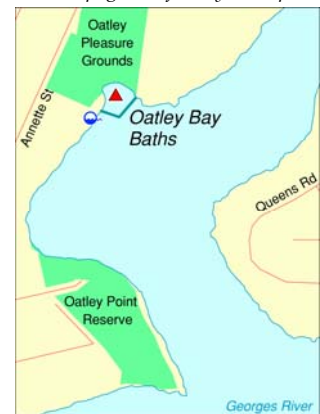
This netted swimming enclosure is approximately 50 metres long and backs on to a small beach. A recreational reserve and picnic area border the beach.

Pollution sources

A stormwater drain discharges alongside the swimming enclosure. Sewer overflows may discharge into Oatley Bay during wet weather.

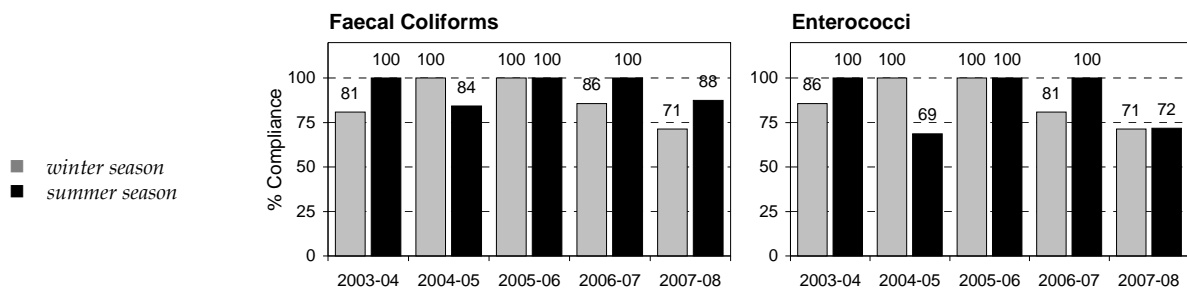
Actions

Kogarah Council is committed to the Oatley Pleasure Grounds Creek Restoration, Moore Reserve Wetlands Projects and Oatley Bay Management Plan to improve water quality in Oatley Bay through litter and sediment reduction.



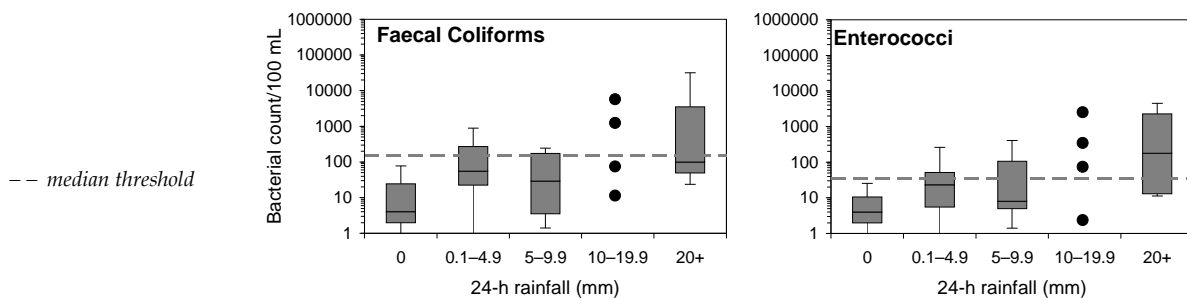
Compliance

Faecal coliform compliance with swimming guidelines has been variable, ranging from 71% to 100% over the last five years. Enterococci compliance has also varied, ranging from 69% to 100% over the last five years.



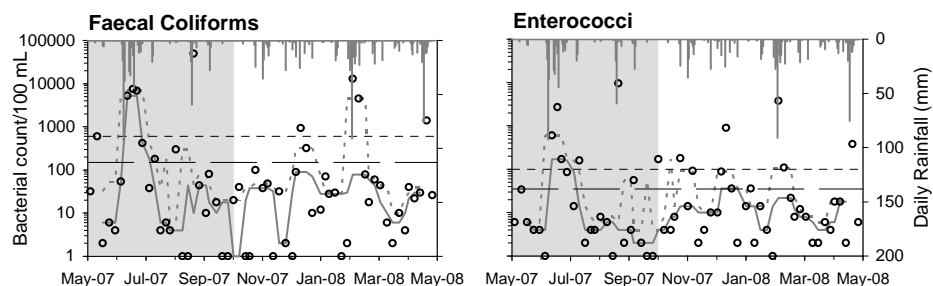
Response to rainfall

Faecal coliform and enterococci densities generally increased with increasing rainfall, often exceeding the median guideline limits after light rain in the previous 24 hours. Enterococci densities regularly exceeded the median guideline limit in response to 20 millimetres of rain or more in the previous 24 hours.



Season data

- | rainfall
 - o individual result
 - rolling median
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Carss Point Baths

See page 258 for key to map

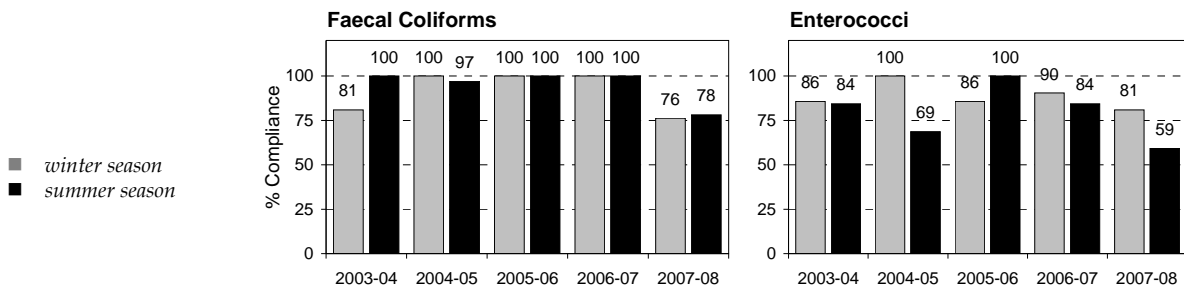
Description This is a 100 by 60 metre netted swimming enclosure that backs on to a narrow beach.

Pollution sources Stormwater drains discharge in the vicinity of the swimming enclosure, bringing litter from two major roadways: the Princes Highway and King Georges Road. Sewer overflows can discharge into Kogarah Bay during wet weather.

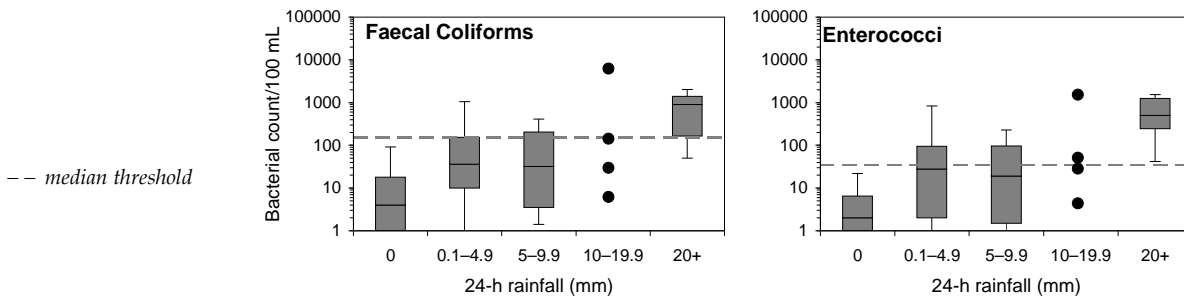


Actions Kogarah Council maintains GPTs at Carss Park canal and Beverley Park Creek. Council is also implementing the Kogarah Bay Estuary Management Plan to sustainably manage Kogarah Bay into the future.

Compliance Faecal coliform compliance with swimming guidelines has ranged from 76% to 100% over the last five years. Enterococci compliance with swimming guidelines has varied considerably, ranging from 59% to 100% over the last five years.

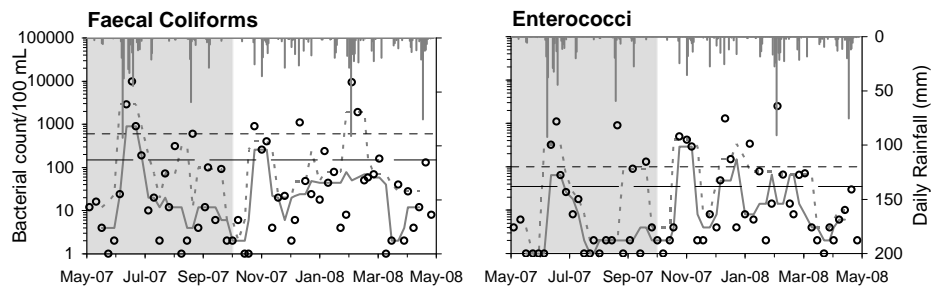


Response to rainfall Faecal coliform and enterococci densities generally increased with increasing rainfall. Faecal coliform densities often exceeded the median guideline limit in response to light rain and frequently exceeded the median guideline limit in response to 20 millimetres of rain or more in the previous 24 hours. Enterococci densities often exceeded the median guideline limit after light rain and usually exceeded the median guideline limit in response to 20 millimetres of rain or more in the previous 24 hours.



Season data

- | rainfall
 - o individual result
 - rolling median
 - - - rolling 80th percentile
- Guidelines (see page 7 for details)
- median threshold
 - - - 80th percentile threshold



Sandringham Baths

See page 258 for key to map

Description

This is a 30 by 40 metre netted swimming enclosure that is backed by a narrow beach and a promenade.

Pollution sources

A stormwater drain discharges alongside the swimming enclosure.

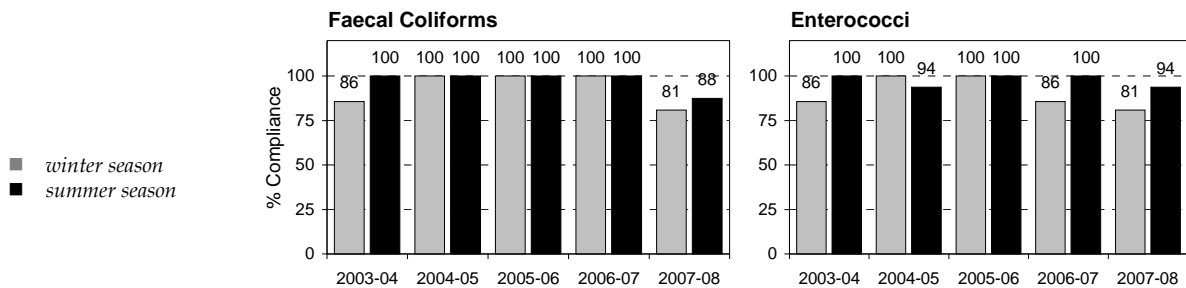
Actions

Rockdale City Council has constructed the Scotts Park Wetland, which treats stormwater that discharges close to the baths. Ten gully pit traps have been installed in the Sans Souci area to control silt and some dissolved pollutants in stormwater flows. Council has continued to install small absorption pits in Meriel Street, Lawson Street and Sybil Lane to prevent direct gutter flows discharging into the Georges River.



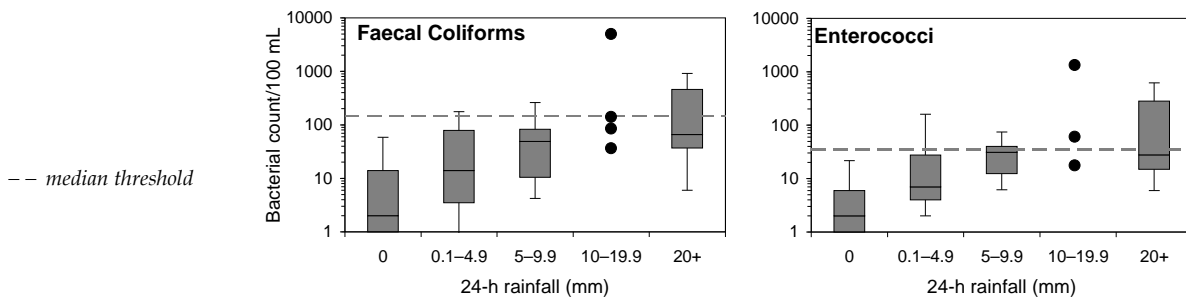
Compliance

Faecal coliform and enterococci compliance with swimming guidelines has generally been high, both ranging from 81% to 100% over the last five years.



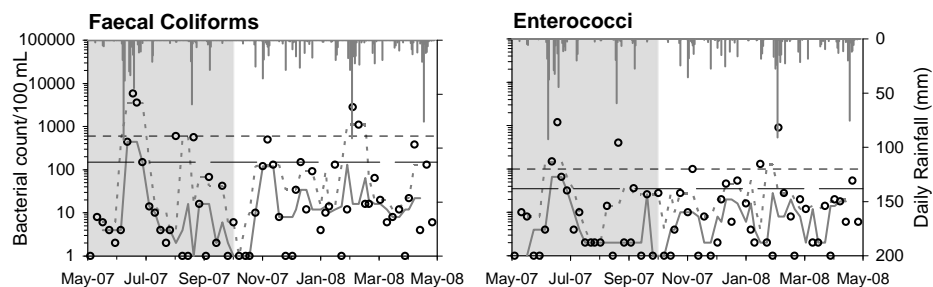
Response to rainfall

Faecal coliform and enterococci densities occasionally exceeded the median guideline limits in response to light rain in the previous 24 hours. Faecal coliform levels often exceeded the median guideline limit in response to 20 millimetres of rain or more in the previous 24 hours. Enterococci levels often exceeded the median guideline limit after five millimetres of rain or more in the previous 24 hours.



Season data

- | rainfall
 - o individual result
 - rolling median
 - - - rolling 80th percentile
- Guidelines
(see page 7 for details)
- median threshold
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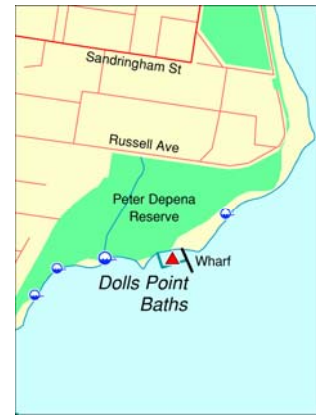
Dolls Point Baths

See page 258 for key to map

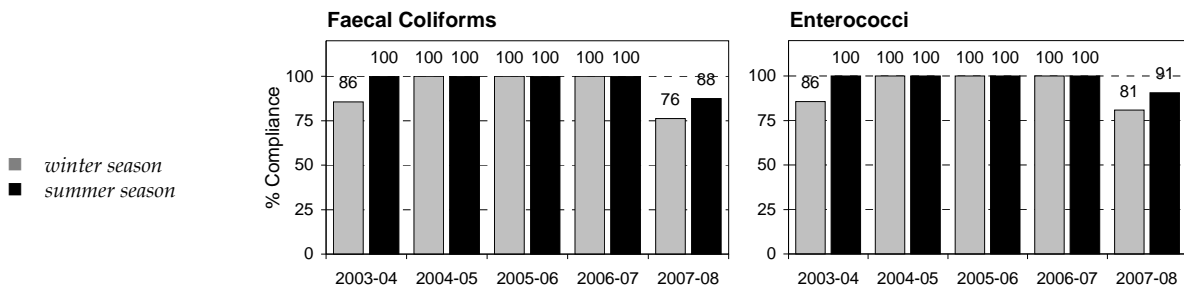
Description This is a 50 by 30 metre netted swimming enclosure with a narrow sandy beach. A large recreational area backs the swimming area.

Pollution sources An open stormwater channel and stormwater drains discharge to the beach in the vicinity of the swimming enclosure.

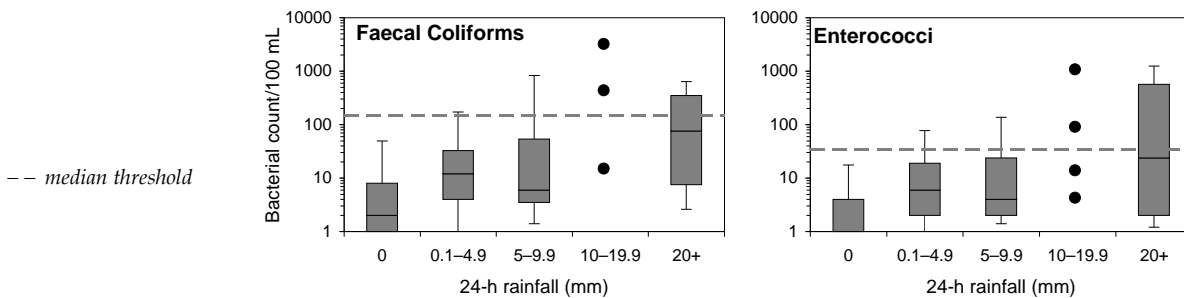
Actions Rockdale City Council continues to maintain and improve the specialised GPT (Bandalong boom) in Waradiel Creek at Peter Depena Reserve, which is located near the baths. Ten gully pit traps have been installed in the Sans Souci area to control silt and some dissolved pollutants in stormwater flows.



Compliance Faecal coliform compliance with swimming guidelines has ranged from 76% to 100% over the last five years. Enterococci compliance with swimming guidelines has generally been high, ranging from 81% to 100% over the last five years.

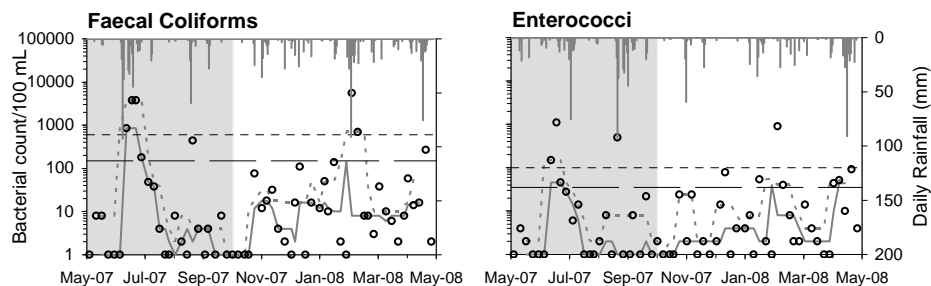


Response to rainfall Faecal coliform and enterococci densities occasionally exceeded the median guideline limits in response to light rain and often exceeded the median guideline limits in response to 20 millimetres of rain or more in the previous 24 hours.



Season data

- | rainfall
 - o individual result
 - rolling median
 - - - rolling 80th percentile
- Guidelines
(see page 7 for details)
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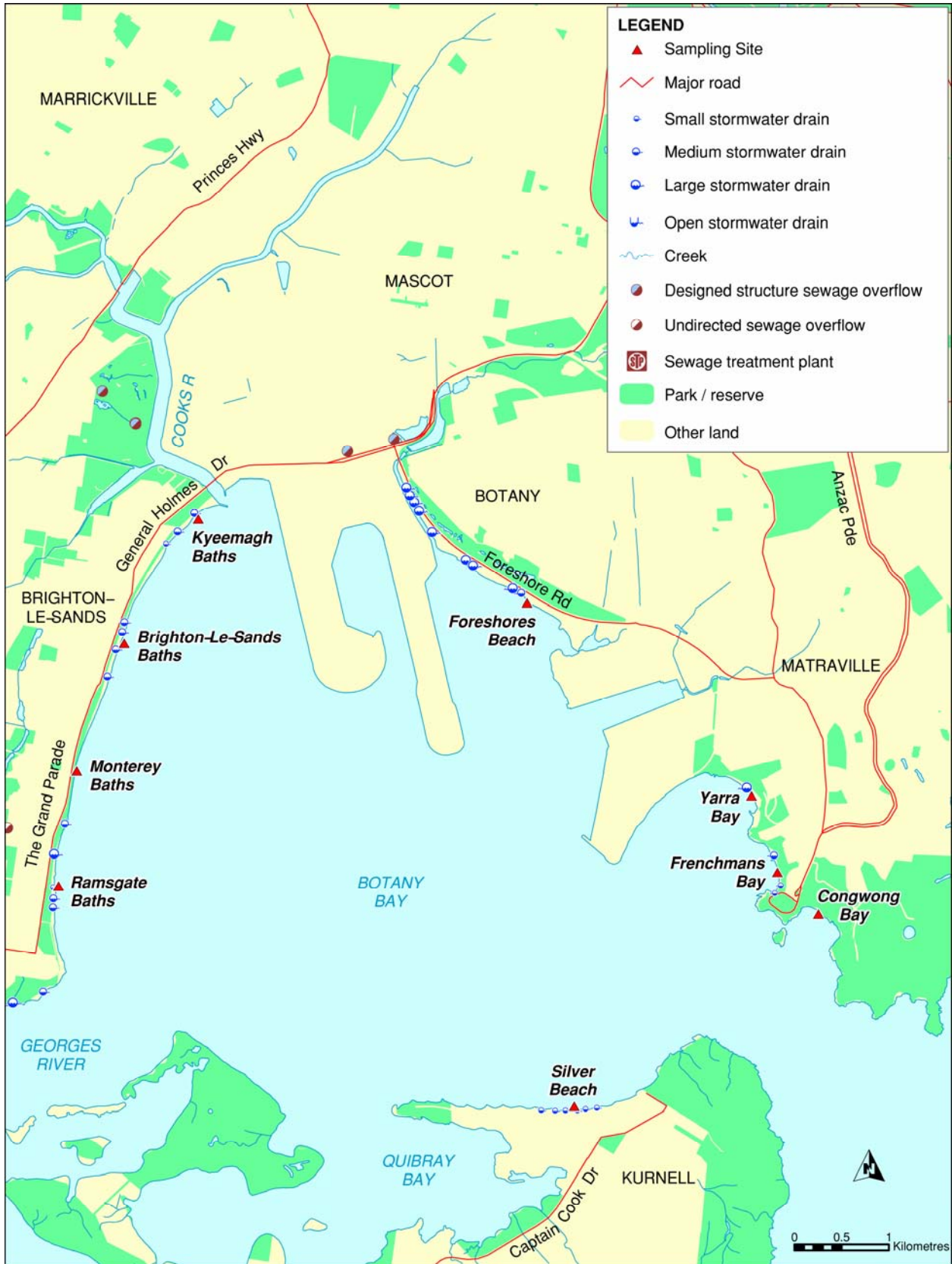


Sydney Metropolitan Area Harbour Swimming Sites

Botany Bay

Botany Bay

Sites: Ramsgate Baths, Monterey Baths, Brighton-Le-Sands Baths, Kyeemagh Baths, Foreshores Beach, Yarra Bay, Frenchmans Bay, Congwong Bay and Silver Beach



Location

Botany Bay is a wide, shallow bay. The Cooks River and Georges River flow into the bay. Land use in the Botany Bay catchment includes residential, industrial, commercial, recreational and bushland (including national parks and nature reserves).

Botany Bay, Randwick, Rockdale and Sutherland councils operate in this area.

Compliance with guidelines

Faecal coliform and enterococci compliances varied at sites in Botany Bay during summer 2007–2008 (Table 22).

Five of the nine swimming sites complied at least 87% of the time with both faecal coliform and enterococci guidelines. Ramsgate Baths complied 87% of the time for faecal coliforms and 100% of the time with enterococci criteria. Congwong Bay complied 100% of the time for faecal coliforms and 91% of the time with enterococci criteria. Monterey Baths, Brighton-le-Sands Baths and Silver Beach complied with faecal coliform guidelines 88% of the time and 100% of the time with enterococci criteria.

Kyeemagh Baths complied 84% of the time for faecal coliforms and 78% with enterococci criteria. Yarra Bay complied 100% of the time for faecal coliforms and 66% with enterococci criteria. Foreshores Beach complied 63% of the time for faecal coliforms and 44% with enterococci criteria. Frenchmans Bay complied 72% of the time for faecal coliforms and 56% of the time with enterococci criteria.

The range of indicator bacteria levels measured at Botany Bay, lower Georges River and Port Hacking swimming areas during summer 2007–2008 is shown in Figure 29. Botany Bay sites are highlighted in grey. Bacterial levels at most sites were within the same range measured at other sites in Botany Bay, lower Georges River and Port Hacking. Bacterial levels at Foreshores Beach were slightly higher than at other sites in the region.

Ranking of beaches

All monitored harbour and ocean beach swimming locations in the Hunter, Sydney and Illawarra regions were ranked on the basis of their compliance with swimming guidelines during summer 2007–2008. A total of 41 rankings were determined for the 131 sites monitored for both faecal coliforms and enterococci, with many sites ranked equally.

Congwong Bay ranked fourth, Monterey Baths, Brighton-le-Sands Baths and Silver Beach all ranked equal sixth and Ramsgate Baths ranked equal seventh (Table 22). Yarra Bay, Kyeemagh Baths, Frenchmans Bay and Foreshores Beach ranked lower at twenty-second, twenty-fifth, thirty-seventh and fortieth places respectively.

Actions to improve quality

Actions specific to individual swimming locations are included on the individual 'swimming area' pages. Improvements in water quality within Botany Bay should also be achieved through the implementation of stormwater management plans and council programs.

Stormwater management plans

Local councils have developed Stormwater Management Plans for Mill Pond Creek, Lower Georges River and Cooks River. These plans contain many structural and non-structural actions that will be implemented over the next five years to improve water quality in these waterways and in Botany Bay.

Cooks River Ecology Grant

Rockdale, Kogarah, Canterbury and Marrickville Councils received a grant from the Cooks River Foreshore Improvement Program to undertake an ecological study of the Cooks River in relation to water quality. The project's objective is to establish a cost-effective ecological monitoring program that will develop information and guidelines for the management of tidal vegetation and inform future capital works projects along the riverbanks. Monitoring for this project continued in 2007 and 2008.

City of Botany Bay

Stormwater re-use: As the predominant subsurface material in Botany is sand (which forms an aquifer that drains to Botany Bay), Council has developed guidelines for the design of stormwater drainage systems. The guidelines require stormwater re-use for non-potable purposes for developments wherever possible. Stormwater overflows from such systems can be directed to Council's stormwater system, subject to the provision of stormwater pollution prevention devices to remove litter and sediment.

Orica (former ICI Site) Botany Groundwater Project Community Liaison Committee: Council continues to facilitate and participate in the Botany Groundwater Project Community Liaison Committee, which meets quarterly to review the progress of the Botany Groundwater Cleanup Plan and to update residents and interested parties in the implementation of the plan. The Groundwater Treatment Plant (GTP), which was commissioned in February 2006, continues to pump and treat groundwater from a number of containment lines that bisect the groundwater flow. The containment line located along Foreshores Drive (parallel to Foreshores Beach) is the final capture point for contaminated groundwater flowing towards Botany Bay.

Penrhyn Estuary: In 2006, a human health risk assessment completed on the Penrhyn Estuary area (at the eastern end of Foreshores Beach) found that the exposure risks from contamination within the estuary to swimming and/or consuming fish exceeded designated levels and were determined to be unsafe. Subsequently, the NSW Department of Primary Industries gazetted a fishing ban in the Penrhyn Estuary. In conjunction with Orica, DECC installed new warning signage at Penrhyn Estuary, replacing older advisory signs placed by Council. This ban and associated signage are still in operation.

Botany Wetlands Environment Management Steering Committee: The Botany Wetlands flow southwards through the Botany Bay local government area before discharging

into Botany Bay at the western end of Foreshores Beach. The Botany Wetlands Steering Committee – composed of various stakeholders, including Botany Bay City Council – was reconvened in December 2005 to review the Botany Wetlands Plan of Management. The review of the management plan has been undertaken to determine what actions have been completed since 2002 and to determine actions for the future.

Port Botany Upgrade Works: As a component of the planned works for Botany Bay, Penrhyn Estuary and Foreshores Beach will undergo changes. The estuary will be closed to pedestrian traffic and a new boat ramp will be built midway along Foreshores Beach. Foreshores Beach shoreline will be renourished with sand to the west of the boat ramp, and a rock retaining wall will be constructed to the east of the boat ramp.

Other activities: Council was involved in Clean-Up Australia Day at Foreshores Beach and Sir Joseph Banks Park. Council also participated in the DECC Household Chemical Collection Day to reduce the risk of chemicals ending up in our waterways, being dumped in public areas, or being stored inappropriately.

Randwick City Council

Soil and water management: Randwick City Council continues to implement the Southern Sydney Regional Organisation of Councils (SSROC) soil and water management program. This program aims to prevent degradation of waterways and stormwater systems by minimising the loss of soil and other building materials from building and construction sites.

Summer activities program: Held over a two week period in January, the summer activities program aimed at increasing the understanding and appreciation of marine and coastal water quality and conservation issues through a series of activities for residents and visitors to the area. This year participants enjoyed many new activities in the program, as well as the old favourites including snorkelling at Gordons Bay and Bare Island and learning to surf at Maroubra Beach.

EcoLiving Fair: Randwick's second EcoLiving Fair was held in April to celebrate Earth Day 2008. This provides residents with practical sustainability workshops and demonstrations for the home and garden, such as keeping chemicals and cleaning agents out of the drainage system.

Rainwater tank fact sheet: A rainwater tank fact sheet was developed by Council to encourage residents to install rainwater tanks to conserve water and promote the efficient use of stormwater, which can be used within the premises for flushing of toilets and in laundries, as well as for external uses. This fact sheet is supported by a Council rainwater tank rebate scheme for residents.

Stormwater drain relining: A number of sections of stormwater drains, thought to be close to 100 years old, have been replaced or relined in the last year. This will contribute to improved water quality and flow.

Plastic bags: The local chambers of commerce are working directly with Council to highlight the environmental issues associated with plastic bag use and the benefits that come with a plastic-bag-free city, such as fewer plastic bags in our ocean.

Rockdale Council

Gross pollutant traps (GPT): Council has installed 20 small gully pit traps in the Bardwell Creek Catchment Area. These devices prevent gross pollutants from eventually washing up on the beaches at the northern end of Botany Bay. A further trash rack and four large mesh screens along the Scarborough Ponds Outlet Pipeline have been installed to improve water quality,

ventilation and solar access to promote fish access between the ponds and Botany Bay. A large GPT has also been installed at Subway Road Reserve.

Rockdale wetlands corridor: A wetland is planned for construction in Tonbridge Street Reserve. It will treat water flowing from Scarborough Ponds into Botany Bay. Council has also undertaken a habitat improvement program at Landing Lights Wetland to enhance saltmarsh habitat for migratory birds.

Keep Australia Beautiful Clean Beach Challenge: Council has been recognised in the Keep Australia Beautiful Clean Beach Challenge for Lady Robinson Beach. Lady Robinsons Beach was the 2008 State winner in the Water Conservation award and won the 2008 Water Conservation and Resource Management award categories for the Sydney region. Several aspects of Council operations have contributed to Council achievements, including the installation of gross pollutant traps, daily beach cleaning, Council's green waste mulching program (which reduces organics entering the waterways), and Council's environmental programs.

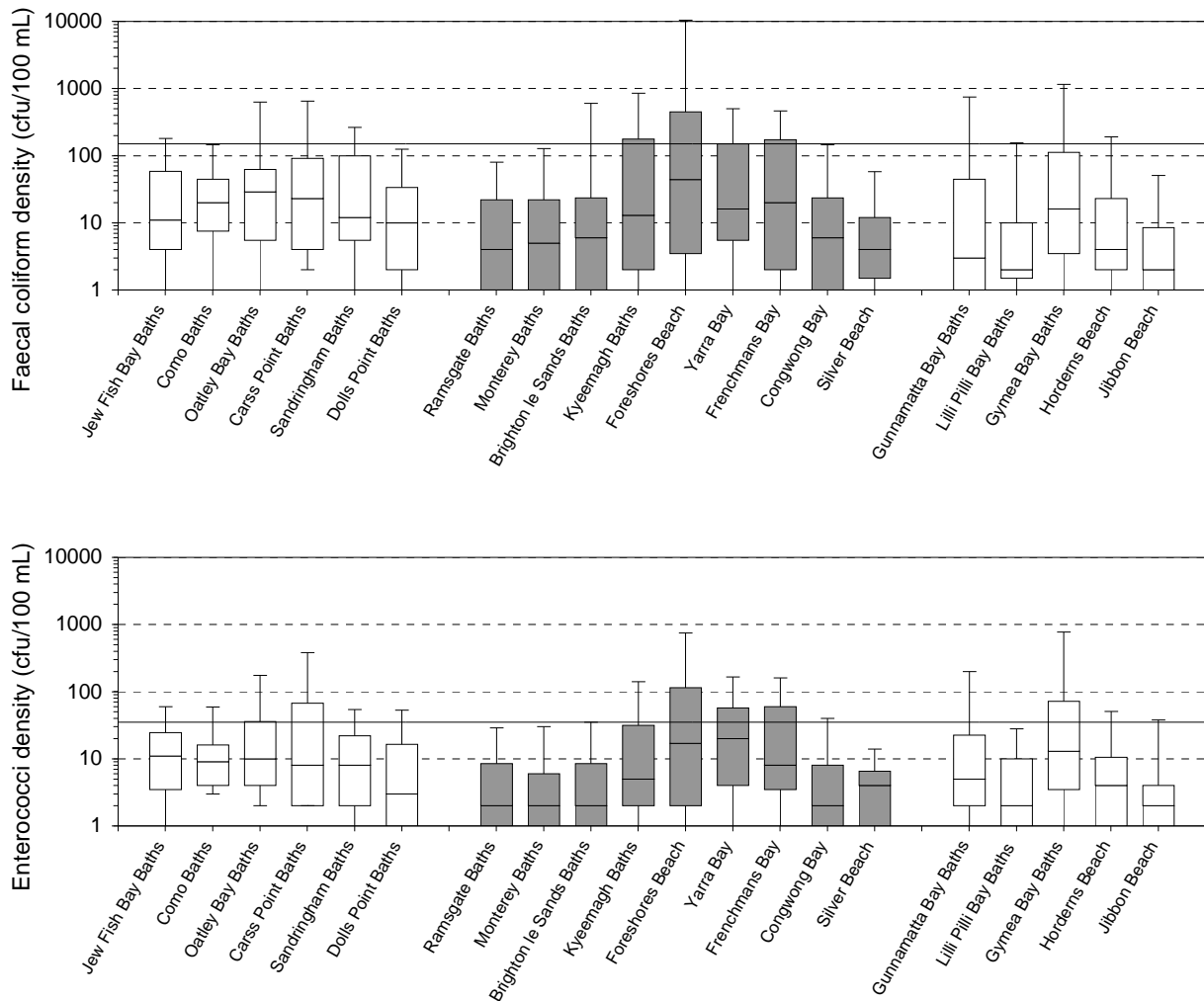
Sutherland Council

Stormwater Quality Improvement Devices (SQIDs) installation: Sutherland Council has installed a number of SQIDs in the local council area. They will ultimately reduce the amount of land derived pollution entering the waterways and will therefore help to improve water quality.

Table 22: Compliance and Ranking of Botany Bay Sites during Summer 2007–2008

Site	Compliance (%)		Overall rank (out of 41)
	Faecal Coliforms	Enterococci	
Ramsgate Baths	87	100	7
Monterey Baths	88	100	6
Brighton-le-Sands Baths	88	100	6
Kyeemagh Baths	84	78	25
Foreshores Beach	63	44	40
Yarra Bay	100	66	22
Frenchmans Bay	72	56	37
Congwong Bay	100	91	4
Silver Beach	88	100	6

Figure 29: Bacterial Levels at Lower Georges River, Botany Bay and Port Hacking Sites during Summer 2007–2008



Ramsgate Baths

See page 270 for key to map

Description

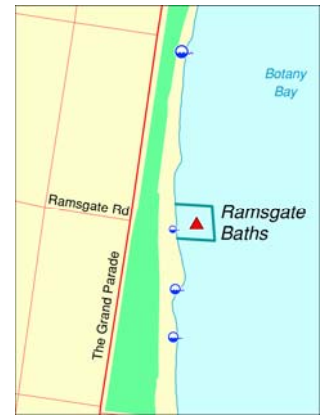
The baths are a 50 metre squared swimming enclosure situated at the southern end of Lady Robinsons Beach. A boardwalk and a small recreational reserve back the swimming enclosure.

Pollution sources

Stormwater drains discharge to the beach in the vicinity of the swimming enclosure. Outflow from the Georges River and Cooks River may also affect the water quality of the swimming area.

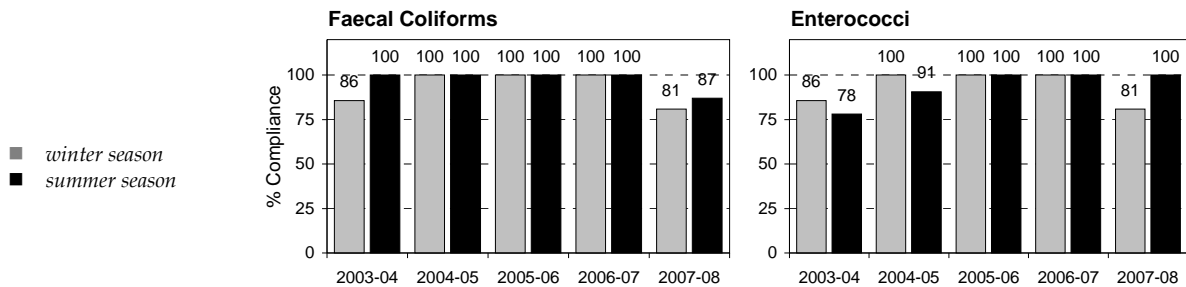
Actions

A wetland is to be constructed in Tonbridge Street Reserve to treat water entering Botany Bay at Ramsgate. Twenty-four pollution control nets have been installed at Scarborough Ponds. Four mini GPTs have been installed at Cook Park. Lady Robinsons Beach won the 2008 state Keep Australia Beautiful Water Conservation award and was highly commended in the Resource Management award.



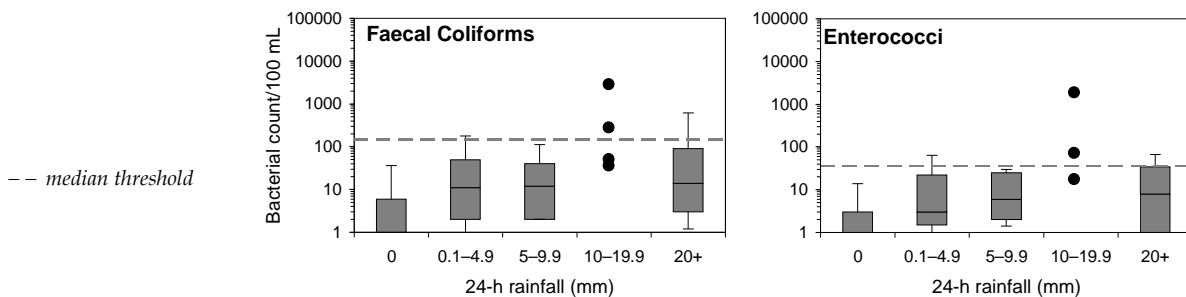
Compliance

Faecal coliform compliance with swimming guidelines has generally been high ranging from 81% to 100% over the last five years. Enterococci compliance with swimming guidelines has ranged from 78% to 100% over the last five years.



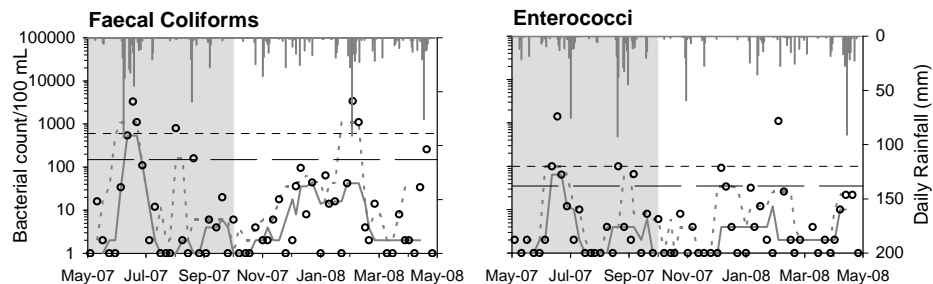
Response to rainfall

Faecal coliform and enterococci densities generally increased with increasing rainfall. Faecal coliform densities occasionally exceeded the median guideline limit in response to light rain in the previous 24 hours. Enterococci densities occasionally exceeded the median guideline limit after light rain and often exceeded the median guideline limit in response to 20 millimetres of rain or more in the previous 24 hours.



Season data

- | rainfall
 - o individual result
 - rolling median
 - - - rolling 80th percentile
- Guidelines
(see page 7 for details)
- median threshold
 - - - 80th percentile threshold



Monterey Baths

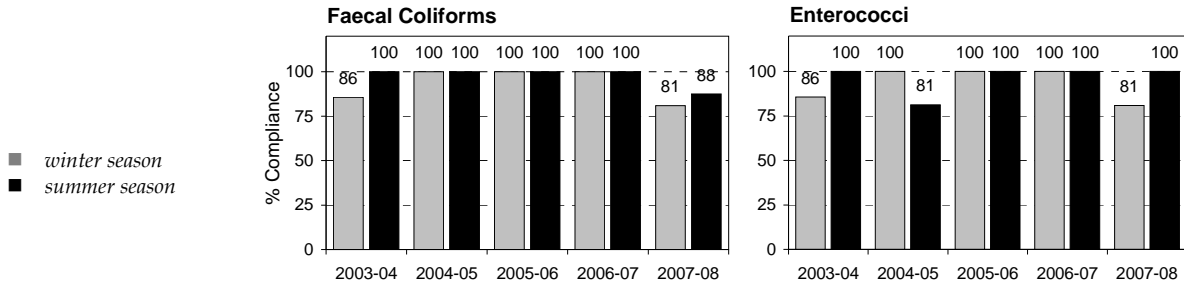
See page 270 for key to map

Description This swimming area is situated towards the southern end of Lady Robinsons Beach. The baths are not netted and are backed by a sandy beach and a small recreational reserve.

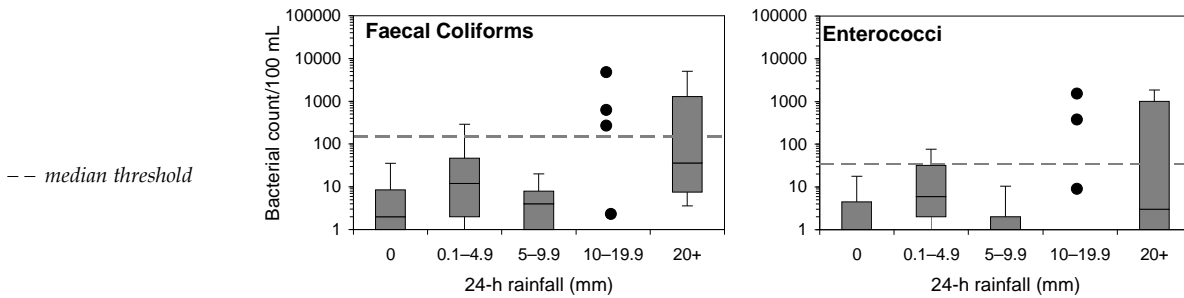
Pollution sources Stormwater drains discharge to the bay in the vicinity of the swimming enclosure. Outflows from the Georges River and Cooks River can affect the water quality of the swimming area.

Actions Lady Robinsons Beach won the 2008 state Keep Australia Beautiful Water Conservation award and was highly commended in the Resource Management award.

Compliance Faecal coliform and enterococci compliance with swimming guidelines has ranged from 81% to 100% over the last five years.



Response to rainfall Faecal coliform and enterococci densities generally increased with increasing rainfall. Faecal coliform and enterococci densities occasionally exceeded the median guideline limit after light rain and often exceeded the median guideline limit in response to 20 millimetres of rain or more in the previous 24 hours.

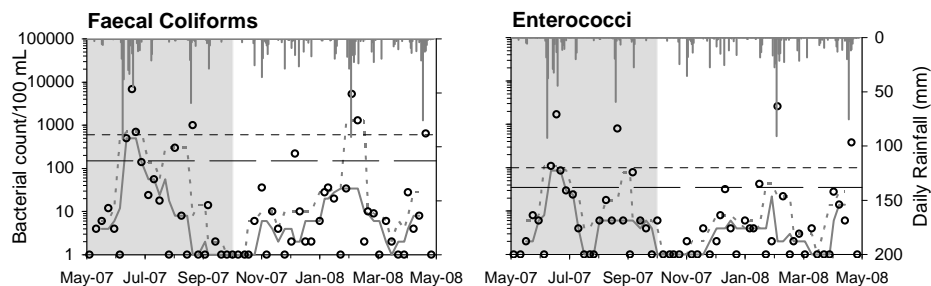


Season data

- | rainfall
- o individual result
- rolling median
- - - rolling 80th percentile

Guidelines
(see page 7 for details)

- median threshold
- - - 80th percentile threshold



Brighton-le-Sands Baths

See page 270 for key to map

Description

This 60 by 50 metre netted swimming enclosure is situated towards the centre of Lady Robinsons Beach. The southern edge of the swimming enclosure is a pier.



Pollution sources

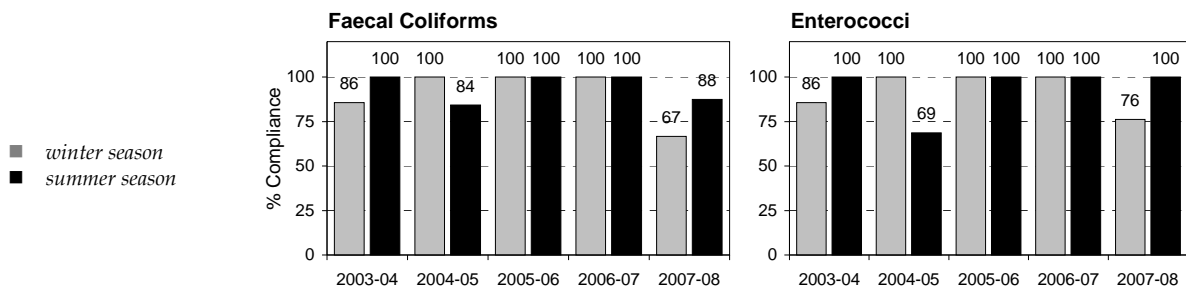
Stormwater drains discharge to the beach in the vicinity of the swimming enclosure. Outflow from the Cooks River can also affect the water quality of the swimming area.

Actions

Council installed a GPT near the boardwalk to filter stormwater runoff before discharging onto the beach. Council has also undertaken dune stabilisation works at Brighton-le-Sands and has installed a Hydrocon Absorption pipeline to prevent gutter flows discharging into Muddy Creek which flows into the Cooks River and Botany Bay. Lady Robinsons Beach won the 2008 state Keep Australia Beautiful Water Conservation award and was highly commended in the Resource Management award.

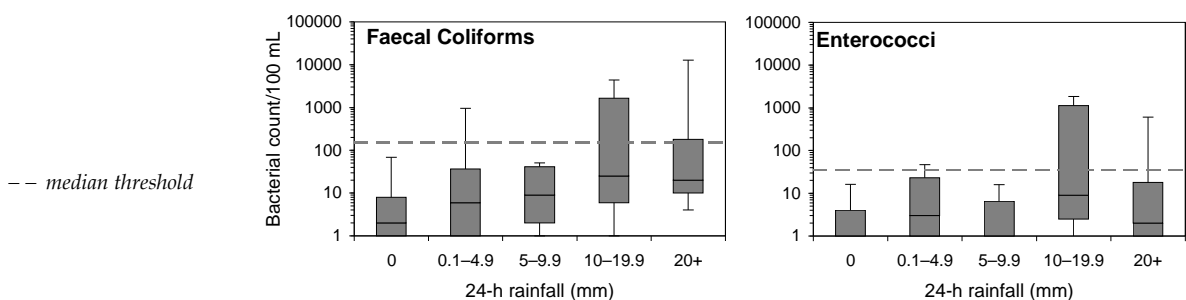
Compliance

Faecal coliform and enterococci compliance with swimming guidelines has varied, ranging from 67% to 100% for faecal coliforms, and 69% to 100% for enterococci over the last five years.



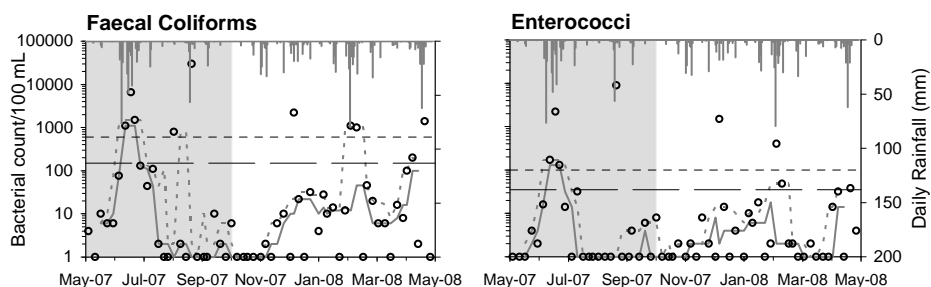
Response to rainfall

Faecal coliform and enterococci densities generally increased with increasing rainfall. Faecal coliform and enterococci levels occasionally exceeded the median guideline limits after light rain and often exceeded the median guideline limits after ten millimetres of rain or more in the previous 24 hours.



Season data

- | rainfall
 - o individual result
 - rolling median
 - - - rolling 80th percentile
- Guidelines
(see page 7 for details)
- median threshold
 - - - 80th percentile threshold



Kyeemagh Baths

Description

This 50 by 70 metre netted swimming enclosure is situated at the northern end of Lady Robinsons Beach. The baths have a narrow, sandy beach and are backed by a recreational reserve.

Pollution sources

Stormwater drains discharge in the immediate vicinity of the swimming enclosure. Outflow from the Cooks River may also affect water quality.

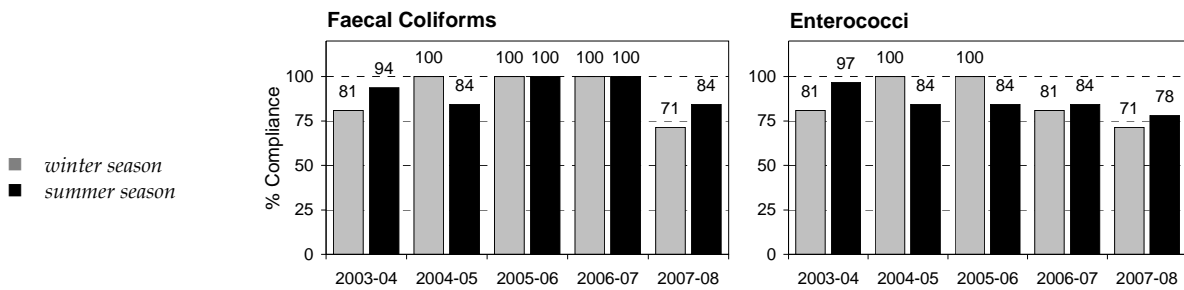
Actions

Rockdale City Council continues to maintain 20 small gully pit traps in the Bardwell Creek Catchment Area. Council has also erected educational signs illustrating the Bardwell Valley Catchment and stormwater flows and discharge points. Large GPTs have been installed at Subway Road Reserve and in the Spring Street drainage system.

Compliance

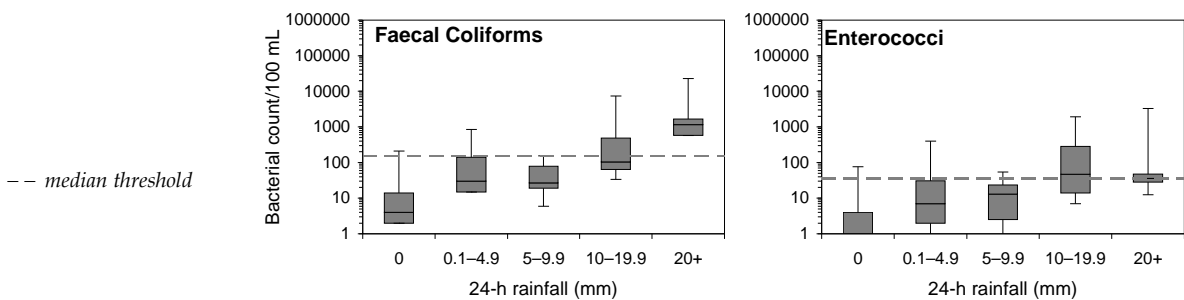
Faecal coliform and enterococci compliance with swimming guidelines has varied, ranging from 71% to 100% over the last five years.

See page 270 for key to map



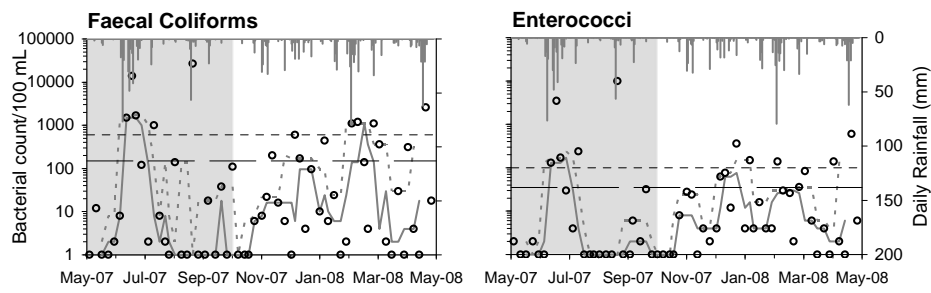
Response to rainfall

Bacterial densities tended to increase with increasing rainfall, occasionally exceeding the median guideline limits during dry weather, indicating a possible dry-weather contamination problem. Faecal coliforms often exceeded the median guideline limit in response to ten millimetres of rain or more in the previous 24 hours. Enterococci densities regularly exceeded the median guideline limit in response to ten millimetres of rain or more in the previous 24 hours.



Season data

- | rainfall
 - o individual result
 - rolling median
 - rolling 80th percentile
- Guidelines
(see page 7 for details)
- median threshold
 - 80th percentile threshold



Foreshores Beach

See page 270 for key to map

Description

This narrow beach, approximately 2.2 kilometres long, is opposite Sydney Airport's third runway. The swimming area is not netted.

Pollution sources

Stormwater drains discharge along the length of the beach. Sewage overflows discharge into Mill Pond Diversion Channel at the western end of the beach, and industrial and urban runoff discharge into Penrhyn Estuary at the eastern end of the beach.

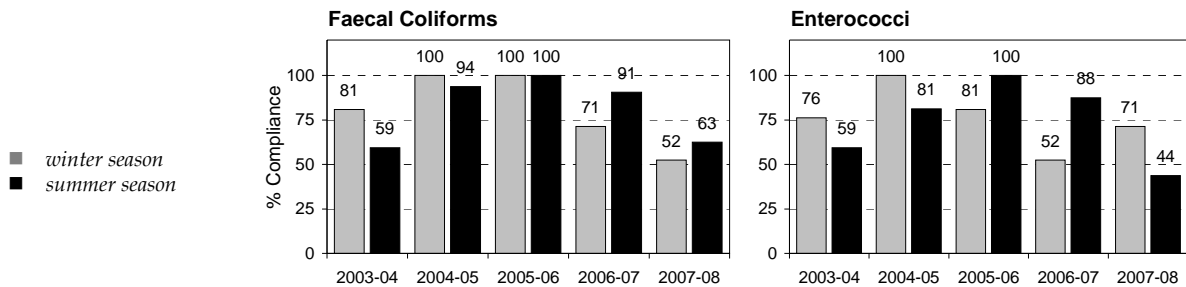


Actions

City of Botany Bay Council has been involved with numerous environmental education programs and has also developed guidelines for the design of stormwater drainage systems to improve water quality.

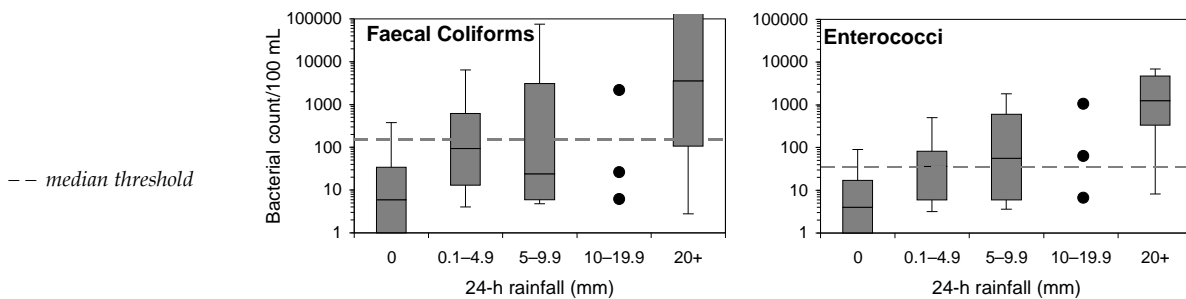
Compliance

Faecal coliform and enterococci compliance with swimming guidelines have varied considerably, ranging from 52% to 100% for faecal coliforms, and from 44% to 100% for enterococci over the last five years.



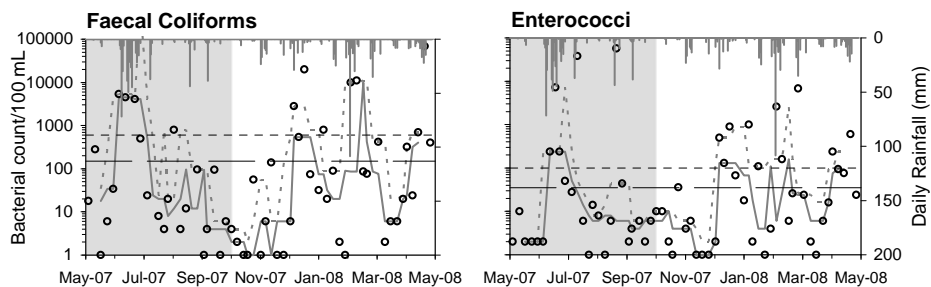
Response to rainfall

Bacterial densities tended to increase with increasing rainfall, occasionally exceeding the median guideline limits during dry weather, indicating a possible dry-weather contamination problem. Faecal coliform levels often exceeded the median guideline limit in response to light rain and regularly exceeded the median guideline limit after 20 millimetres of rain or more in the previous 24 hours. Enterococci levels regularly exceeded the median guideline limit after light rain and frequently exceeded the median guideline limit in response to 20 millimetres of rain or more in the previous 24 hours.



Season data

- | rainfall
 - o individual result
 - rolling median
 - - - rolling 80th percentile
- Guidelines
(see page 7 for details)
- median threshold
 - - - 80th percentile threshold

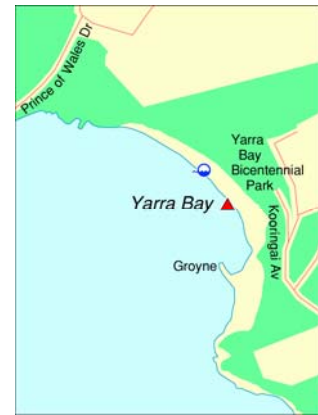


Yarra Bay

See page 270 for key to map

Description

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



Pollution sources

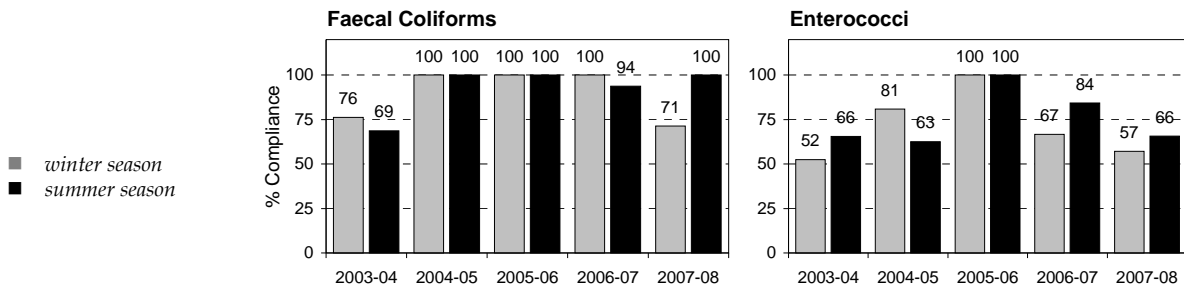
A stormwater drain discharges at the centre of the beach during both wet and dry weather. Leachate from Botany Cemetery and market gardens may contaminate stormwater discharging to the beach.

Actions

Randwick City Council regularly undertakes street sweeping and beach cleaning. Yarra Bay was highly commended in the 2008 regional Keep Australia Beautiful Environment Protection award.

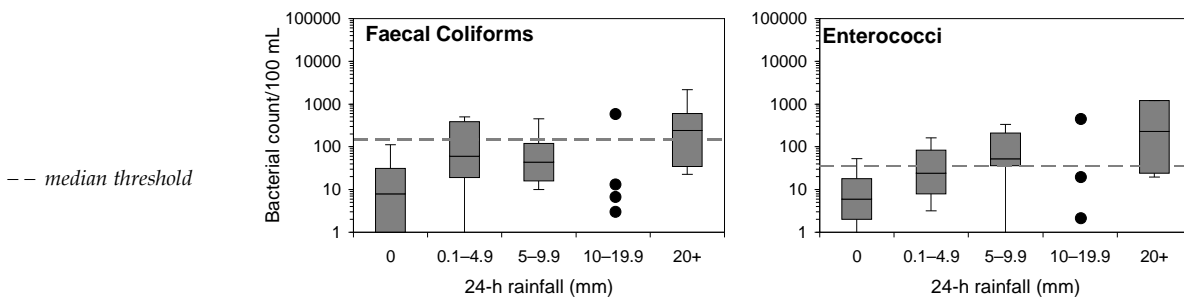
Compliance

Faecal coliform compliance with swimming guidelines has ranged from 69% to 100% over the last five years. Enterococci compliance with swimming guidelines has been more variable, ranging from 52% to 100% over the last five years.



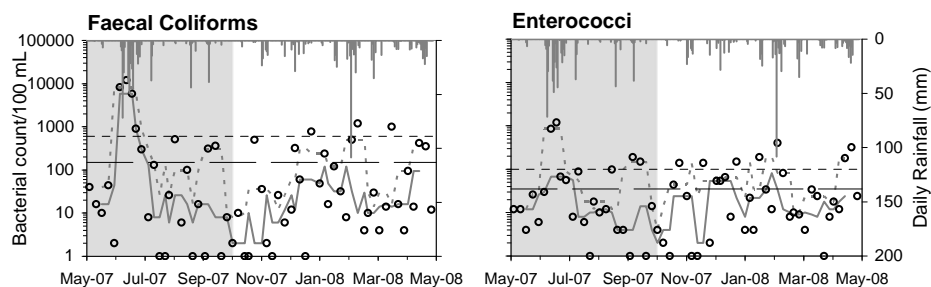
Response to rainfall

Faecal coliform and enterococci densities tended to increase with increasing rainfall. Faecal coliform levels often exceeded the median guideline limit after little rain and regularly exceeded the median guideline limit after 20 millimetres of rain or more in the previous 24 hours. Enterococci levels occasionally exceeded the median guideline limit after no rain, indicating a possible dry-weather contamination problem. Enterococci levels frequently exceeded the median guideline limit after five millimetres of rain or more in the previous 24 hours.



Season data

- | rainfall
 - o individual result
 - rolling median
 - - - rolling 80th percentile
- Guidelines
(see page 7 for details)
- median threshold
 - - - 80th percentile threshold



Frenchmans Bay

See page 270 for key to map

Description

This narrow beach is approximately 500 metres long, with a rock wall towards the northern end. The swimming area is not netted. A small recreational reserve is situated behind the beach at the southern end.



Pollution sources

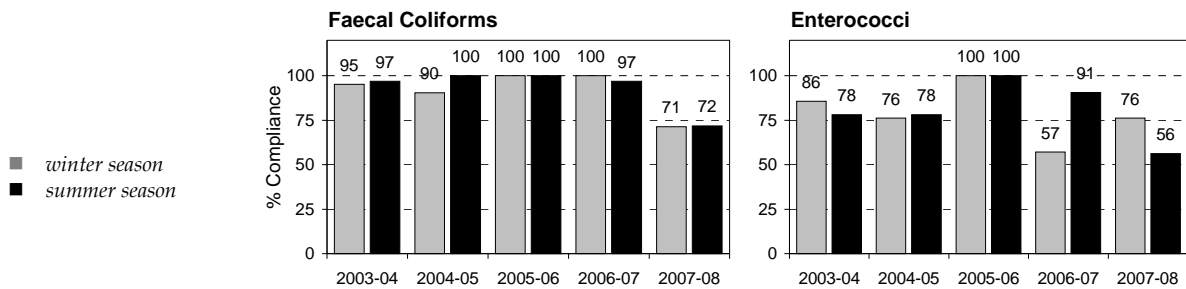
Stormwater drains discharge to the beach.

Actions

Randwick City Council regularly undertakes street sweeping and beach cleaning.

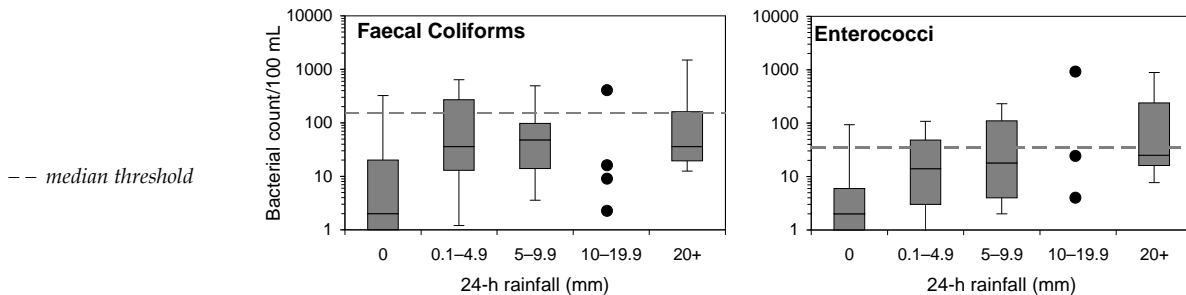
Compliance

Faecal coliform compliance with swimming guidelines has ranged from 71% to 100% over the last five years. Enterococci compliance with swimming guidelines has been more variable, ranging from 56% to 100% in the last five years.



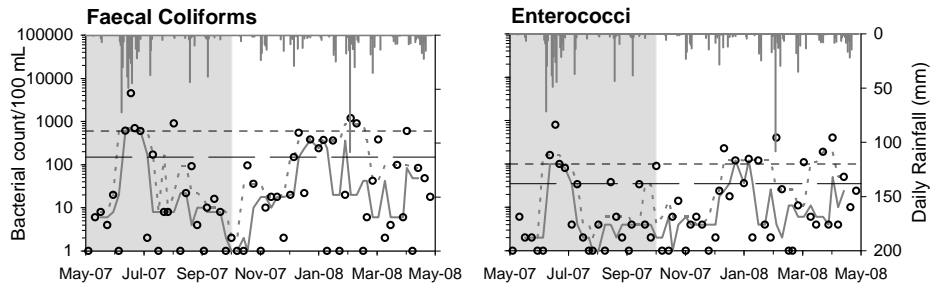
Response to rainfall

Faecal coliform and enterococci densities did not display a clear response to increasing rainfall and occasionally exceeded the median guideline limit in response to no rainfall in the previous 24 hours. Results indicate a possible dry-weather contamination problem.



Season data

- | rainfall
 - o individual result
 - rolling median
 - - - rolling 80th percentile
- Guidelines
(see page 7 for details)
- median threshold
 - - - 80th percentile threshold



Congwong Bay

See page 270 for key to map

Description

This narrow beach is approximately 150 metres long. The swimming area is not netted and the beach is bordered by Botany Bay National Park.

Pollution sources

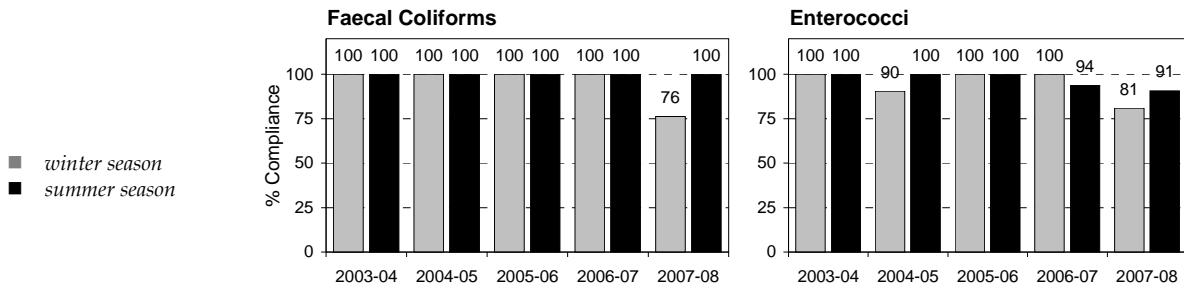
A stormwater drain discharges to the beach. Swimming water quality may also be affected by outflows of poor quality waters from Mill Pond, Cooks River and Georges River during wet weather.

Actions

Randwick City Council regularly undertakes street sweeping and beach cleaning.

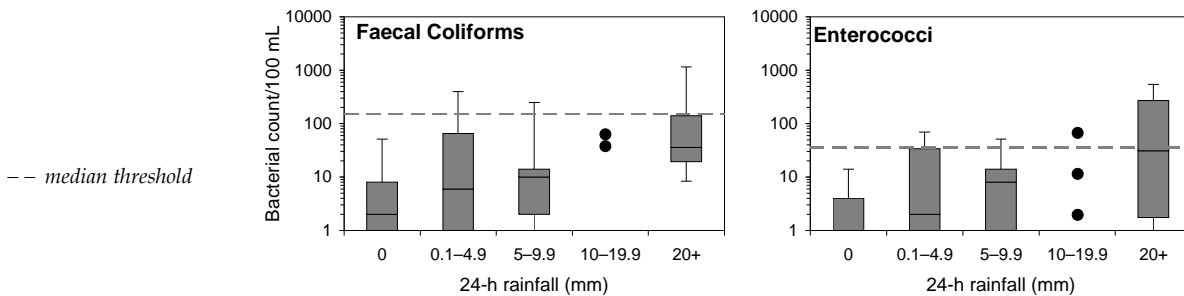
Compliance

With the exception of winter 2007, faecal coliform levels have complied 100% of the time with swimming guidelines over the last five years. Enterococci compliance with swimming guidelines has been more variable, ranging from 81% to 100% over the last five years.



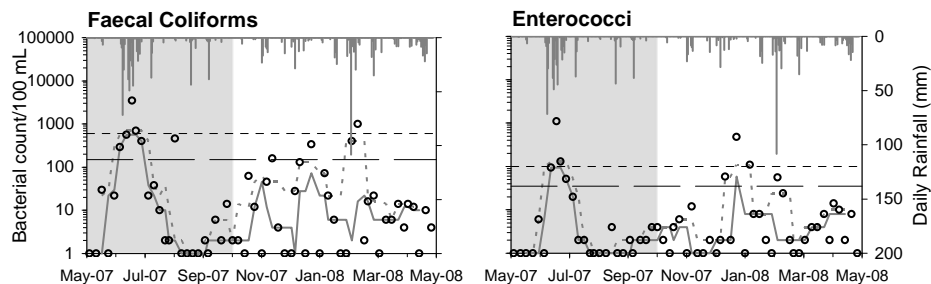
Response to rainfall

Faecal coliform and enterococci densities tended to increase with increasing rainfall. Faecal coliform and enterococci levels occasionally exceeded the median guideline limits in response to light rain in the previous 24 hours. Enterococci levels often exceeded the median guideline limit in response to 20 millimetres of rain or more in the previous 24 hours.



Season data

- | rainfall
 - o individual result
 - rolling median
 - rolling 80th percentile
- Guidelines
(see page 7 for details)
- median threshold
 - 80th percentile threshold



Silver Beach

See page 270 for key to map

Description

This narrow, sandy beach is approximately 2.8 kilometres long and divided by a number of rock walls. A 150 by 100 metre swimming enclosure is situated towards the centre of the beach.

Pollution sources

Stormwater drains discharge to the beach immediately behind the swimming enclosure and also in the vicinity of the enclosure.

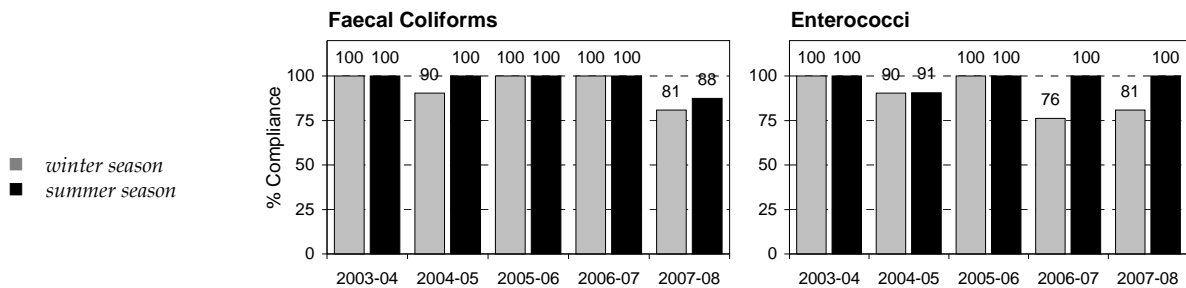
Actions

Sutherland Shire Council completed an investigation of beach and coastal processes in the Silver Beach area. Silver Beach may be affected by the construction of the desalination plant pipeline in the future.



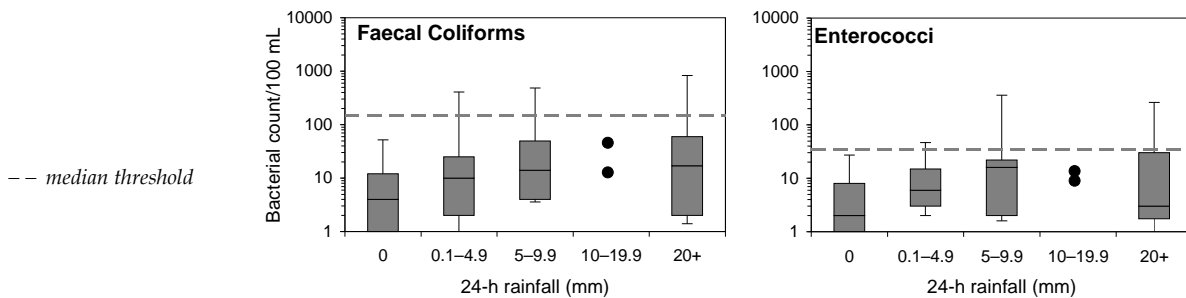
Compliance

Faecal coliform compliance with swimming guidelines has generally been high, ranging from 81% to 100% over the last five years. Enterococci compliance with swimming guidelines has ranged from 76% to 100% over the last five years.



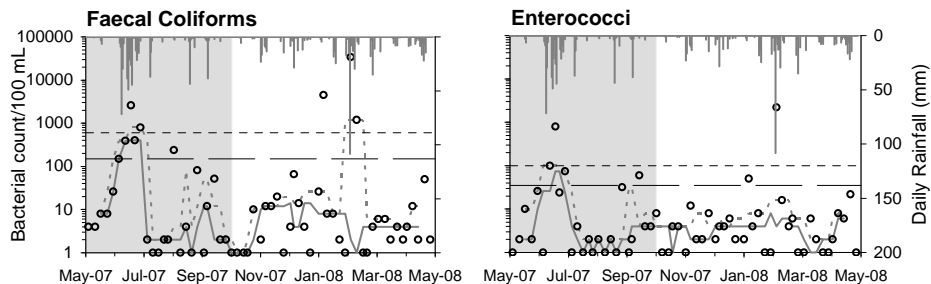
Response to rainfall

Faecal coliform and enterococci densities increased slightly with increasing rainfall. Bacterial densities occasionally exceeded the median guideline limits in response to rain.



Season data

- | rainfall
 - o individual result
 - rolling median
 - - - rolling 80th percentile
- Guidelines
(see page 7 for details)
- median threshold
 - - - 80th percentile threshold



Sydney Metropolitan Area Harbour Swimming Sites

Port Hacking

Port Hacking

Sites: Gunnamatta Bay Baths, Gymea Bay Baths, Lilli Pilli Bay Baths, Horderns Beach and Jibbon Beach



Port Hacking Catchment

Port Hacking is the downstream reach of the Hacking River, which flows into Bate Bay. Land use in the Port Hacking catchment is mainly residential on the northern shore, with The Royal National Park on the southern shore.

Sutherland Shire Council operates in this area. DECC's National Parks and Wildlife Service is also responsible for a large area of the catchment.

Compliance with guidelines

Faecal coliform and enterococci compliances to guidelines varied at swimming sites in the Port Hacking during summer 2007–2008 (Table 23).

Compliance at Jibbon Beach was excellent, with 100% recorded for both bacterial indicators.

Gunnamatta Bay Baths Beach complied 81% of the time with faecal coliform criteria and 94% with enterococci criteria. Lilli Pilli Baths complied 88% of the time with faecal coliform criteria and 100% with enterococci criteria. Gymea Bay Baths complied 75% of the time with faecal coliform criteria and 66% with enterococci criteria. Horderns Beach complied 91% of the time for both bacterial guidelines.

The range of indicator bacteria levels measured at Botany Bay, lower Georges River and Port Hacking swimming areas during summer 2007–2008 is shown in Figure 30. Port Hacking sites are highlighted in grey. The levels of faecal coliforms and enterococci were comparable with the range of values measured in other local estuaries.

Ranking of beaches

All monitored harbour and ocean beach swimming locations in the Hunter, Sydney and Illawarra regions were ranked on the basis of their compliance with swimming guidelines during summer 2007–2008. A total of 41 distinct ranks were determined for the 131 sites monitored for both faecal

coliforms and enterococci, with many sites ranked equally.

Jibbon Beach ranked equal first, Lilli Pilli Bay Baths ranked equal sixth, and Horderns Beach ranked equal ninth (Table 23). Gunnamatta Bay Baths ranked sixteenth and Gymea Bay Baths ranked thirty-fourth.

Actions to improve water quality

Actions specific to individual swimming sites are included on the 'swimming area' pages. Improvements in water quality within Port Hacking should also be achieved as a result of various management plans and council programs.

Port Hacking Integrated Environmental Management Plan

Sutherland and Wollongong councils have developed a draft Integrated Environmental Management Plan for the Hacking River catchment. The plan identified a number of short and long term stormwater management strategies. Initiatives arising from the plan include researching and monitoring sources of poor water quality in the catchment; a program of works at hot-spots; conducting and assessing the benefit of community education campaigns; an audit of industrial and commercial premises; and the production of a step-by-step brochure describing development application requirements in relation to stormwater management.

Sutherland Council

Estuary Management Plans (EMP): Sutherland Shire Council has established plans for the Gunnamatta and Gymea Bay estuaries. These plans have made recommendations on specific actions to protect water quality in those bays.

Stormwater Quality Improvement Device (SQID) installation: Council installed two gross pollutant traps (GPTs), one trash rack, and one net trap in Caringbah. Two GPTs were installed in Woronora. Three GPTs were installed in Gunnamatta Park to protect Gunnamatta Bay from pollution. One GPT was installed in Gymea Bay and one in Bundeena. Two trash racks are being

constructed in Kirrawee and one each in Bangor, Cronulla and Gymea Bay. This resulted in a total of 16 SQIDs installed in 2006–2007.

Water monitoring program: Council has undertaken fortnightly water monitoring from December to April of six popular swimming spots at Darook Park (located at the entrance of Gunnamatta Bay), Cronulla Ocean Pool (southern pool), Gunnamatta Baths, Swallow Rock (at Grays Point), Como Baths and Gymea Bay Baths. The results will help identify areas for water quality improvement and further monitoring.

Strategic Water Monitoring Program (SWAMP): Council undertook the SWAMP program for 2007–2008, starting in December 2007. Samples were collected from 17 locations across the Sutherland Shire approximately every six days for five weeks during summer and winter. Samples were also collected from the inlets and outlets of six SQIDs (four in wetlands and two GPTs) during different rain intensities. Samples were analysed for a wide range of parameters. Preliminary results indicated

that the wetlands were performing well compared with the GPTs. Data also indicated that if the GPTs were not cleaned regularly, bacterial levels increased.

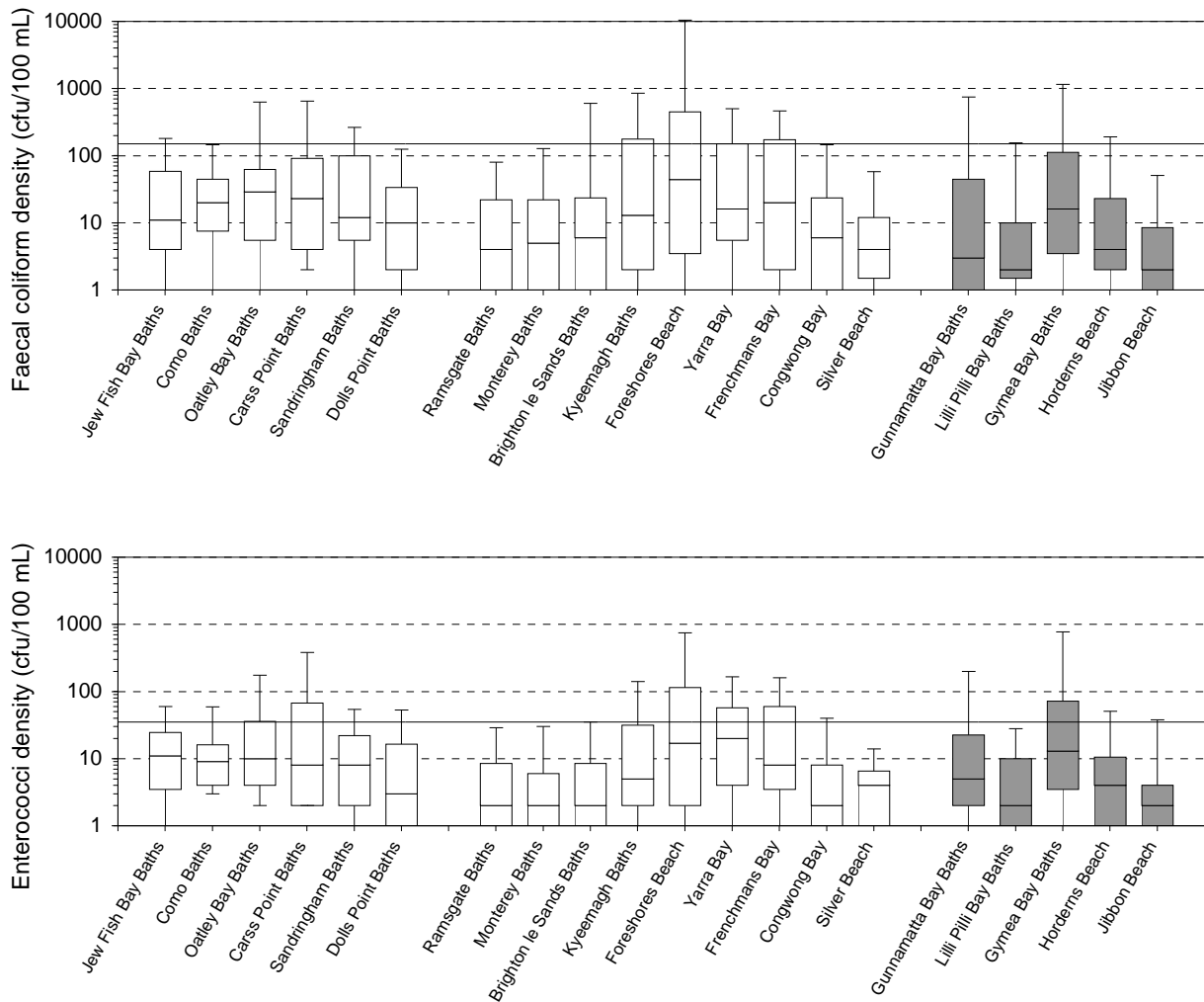
Port Hacking Riverkeeper Program: Council and the NSW Maritime Authority are responsible for the implementation of the environmental management plans applicable to Port Hacking. The program provides enforcement of regulations, development of policy and coordination of programs to rehabilitate the waterways and foreshores and enhance their natural, commercial and recreational values.

Georges Riverkeeper Program: Council and the NSW Maritime Authority are responsible for the implementation of the environmental management plans applicable to the Georges River. The program provides enforcement of regulations, development of policy and coordination of programs to rehabilitate the waterways and foreshores and enhance their natural, commercial and recreational values.

Table 23: Compliance and Ranking of Port Hacking Sites during Summer 2007–2008

Site	Compliance (%)		Overall rank (out of 41)
	Faecal Coliforms	Enterococci	
Gunnamatta Bay Baths	81	94	16
Lilli Pilli Bay Baths	88	100	6
GyMEA Bay Baths	75	66	34
Horderns Beach	91	91	9
Jibbon Beach	100	100	1

Figure 30: Bacterial Levels at Lower Georges River, Botany Bay and Port Hacking Sites during Summer 2007–2008



Gunnamatta Bay Baths

See page 286 for key to map

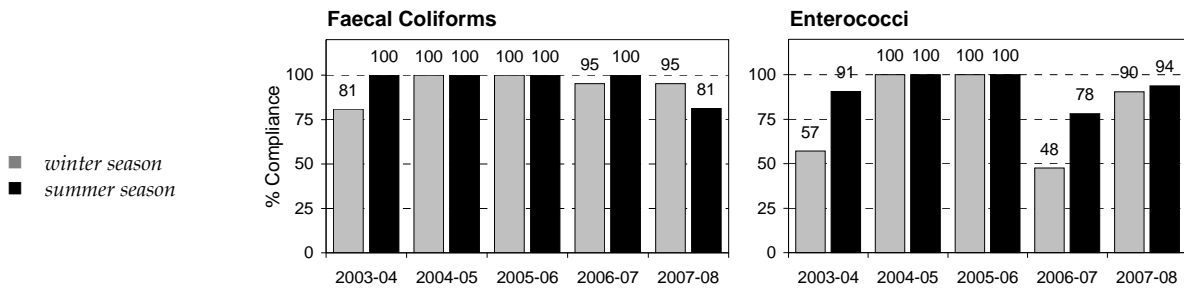
Description This is a 50 by 30 metre enclosed tidal swimming area with a narrow sandy beach. The beach is adjacent to a large reserve and picnic area.

Pollution sources Stormwater drains and sewage overflows discharge to the bay during wet weather. Blocked or damaged sewer mains may cause sewage leaks in dry weather.

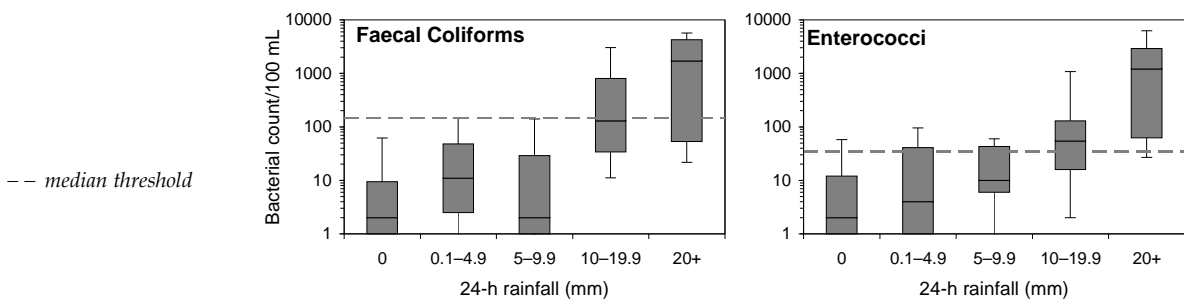
Actions Sutherland Shire Council maintained a GPT at Tonkin Park, adjacent to the baths. As part of the SWAMP program, Council monitored the concentration of contaminants present in the inflow and outflow of the GPT.



Compliance Faecal coliform compliance has generally been high ranging from 81% to 100% over the last five years. Enterococci compliance has been more variable, ranging from 48% to 100% over the last five years.



Response to rainfall Faecal coliform and enterococci densities generally increased with increasing rainfall. Faecal coliforms often exceeded the median guideline limit in response to ten millimetres of rain or more and regularly exceeded the median guideline limit in response to 20 millimetres of rain or more in the previous 24 hours. Enterococci levels occasionally exceeded the median guideline limit after no rain and frequently after 20 millimetres of rain or more in the previous 24 hours. Enterococci densities exceeding the median guideline limit after no rainfall indicate a possible dry-weather contamination problem.

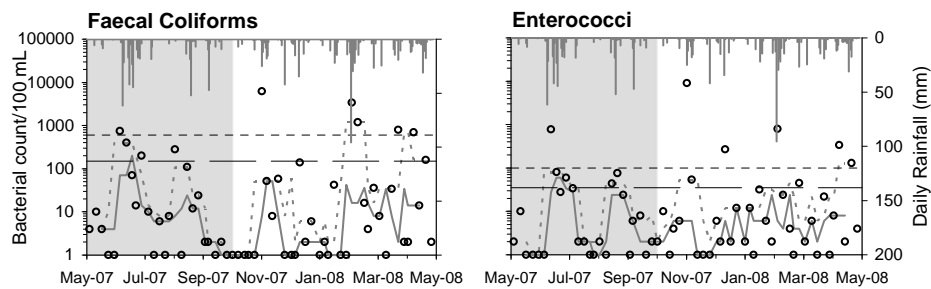


Season data

- | rainfall
- o individual result
- rolling median
- - - rolling 80th percentile

Guidelines (see page 7 for details)

- median threshold
- - - 80th percentile threshold



Lilli Pilli Bay Baths

See page 286 for key to map

Description

This is a 50 by 30 metre tidal swimming area on the western side of Lilli Pilli Point. The pool is netted and is backed by a narrow strip of recreation reserve.

Pollution sources

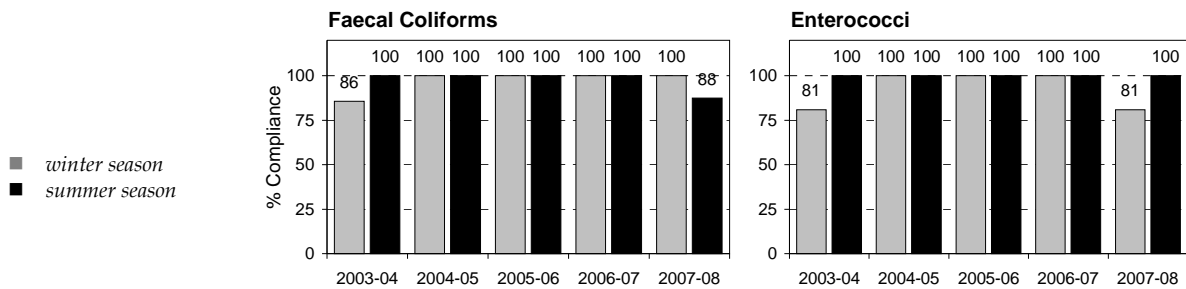
Stormwater discharges from residential areas into Lilli Pilli Bay and nearby water bodies are a potential source of pollution.

Actions

Sutherland Shire Council regularly maintained the baths.

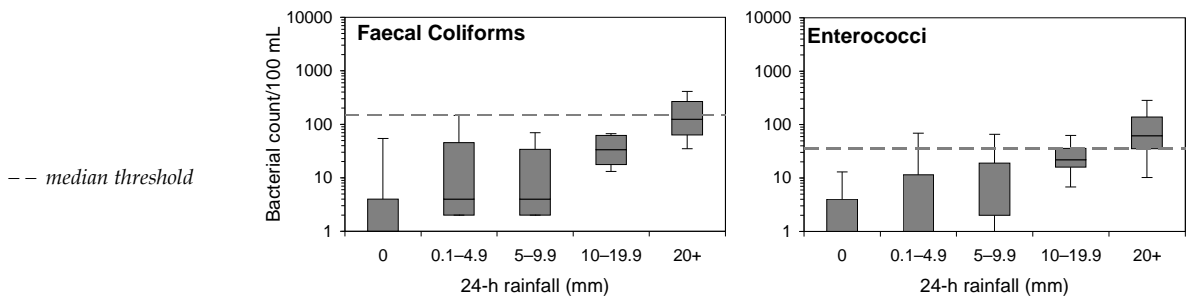
Compliance

Faecal coliform compliance with swimming guidelines has generally been high, ranging from 86% to 100% over the last five years. Enterococci compliance with swimming guidelines has been high, ranging from 81% to 100% over the last five years.



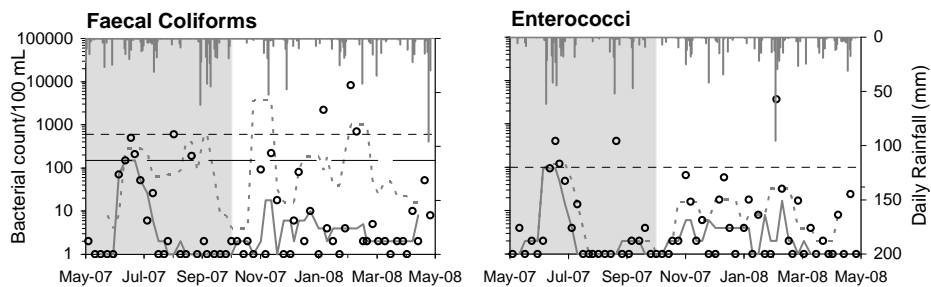
Response to rainfall

Faecal coliform and enterococci densities generally increased with increasing rainfall, occasionally exceeding the median guideline limits in response to light rain. Faecal coliform densities often exceeded the median guideline limit in response to 20 millimetres of rain or more in the previous 24 hours. Enterococci densities frequently exceeded the median guideline limit in response to 20 millimetres of rain or more in the previous 24 hours.



Season data

- | rainfall
 - o individual result
 - rolling median
 - - rolling 80th percentile
- Guidelines
(see page 7 for details)
- median threshold
 - - 80th percentile threshold



Gymea Bay Baths

See page 286 for key to map

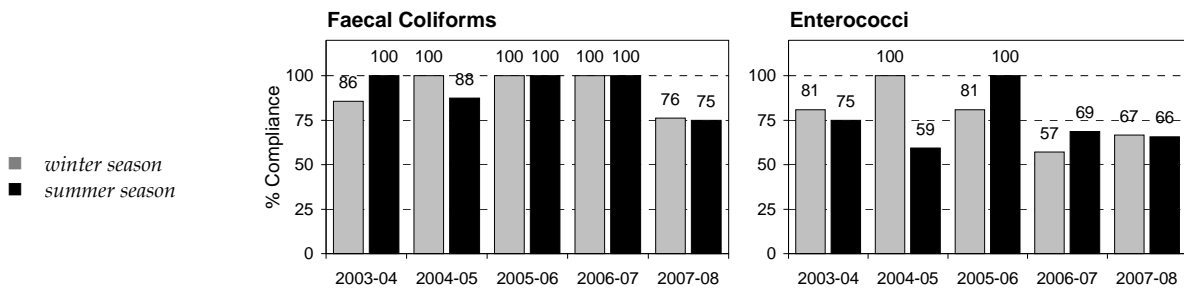
Description This is a 50 by 30 metre enclosed tidal swimming area with a narrow, sandy beach. Two small recreation reserves lead to the beach. Coonong Creek flows to Gymea Bay behind the beach.



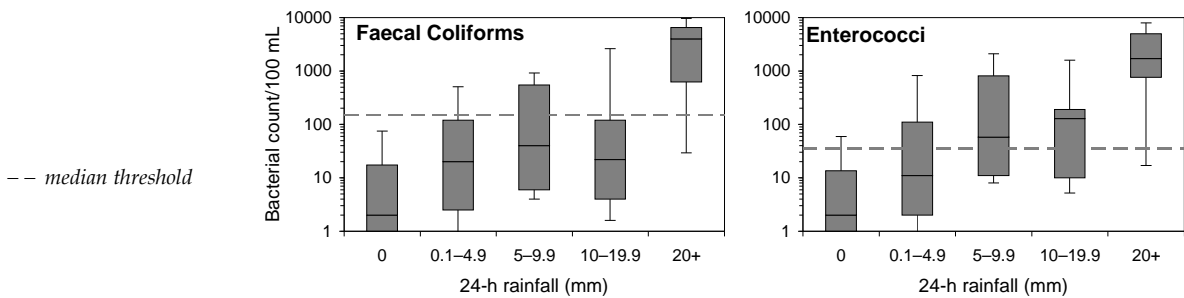
Pollution sources Stormwater discharges from the surrounding residential area, and sewers may overflow from blocked sewer mains.

Actions There were no actions specific to this beach.

Compliance Faecal coliform compliance with swimming guidelines has ranged from 75% to 100% over the last five years. Enterococci compliance with swimming guidelines has varied considerably, ranging from 57% to 100% over the last five years.

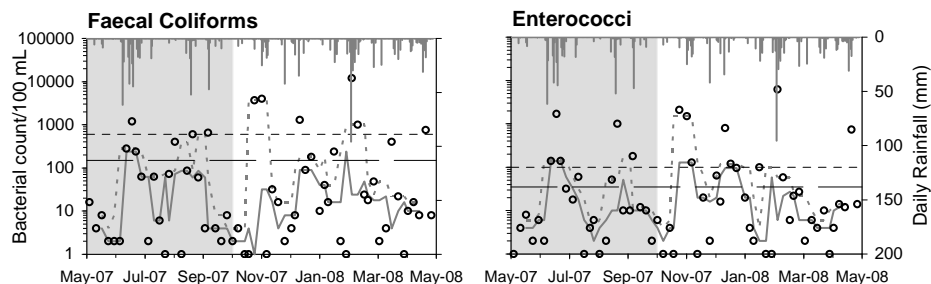


Response to rainfall Faecal coliform and enterococci densities generally increased with increasing rainfall. Faecal coliform levels occasionally exceeded the median guideline limit after light rain and frequently exceeded the median guideline limit in response to 20 millimetres of rain or more in the previous 24 hours. Enterococci densities occasionally exceeded the median guideline limit after no rain, indicating a possible dry-weather contamination problem. Enterococci densities regularly exceeded the median guideline limit in response to five millimetres of rain or more and frequently exceeded the median guideline limit in response to 20 millimetres of rain or more in the previous 24 hours.



Season data

- | rainfall
 - o individual result
 - rolling median
 - - - rolling 80th percentile
- Guidelines
(see page 7 for details)
- median threshold
 - - - 80th percentile threshold



Horderns Beach

See page 286 for key to map

Description

This is a 700 metre long, narrow, sandy beach in Bundeena Bay on the southern side of Port Hacking. The Cronulla–Bundeena wharf and a recreation reserve border the beach on the eastern end. The beach is backed by the township of Bundeena.



Pollution sources

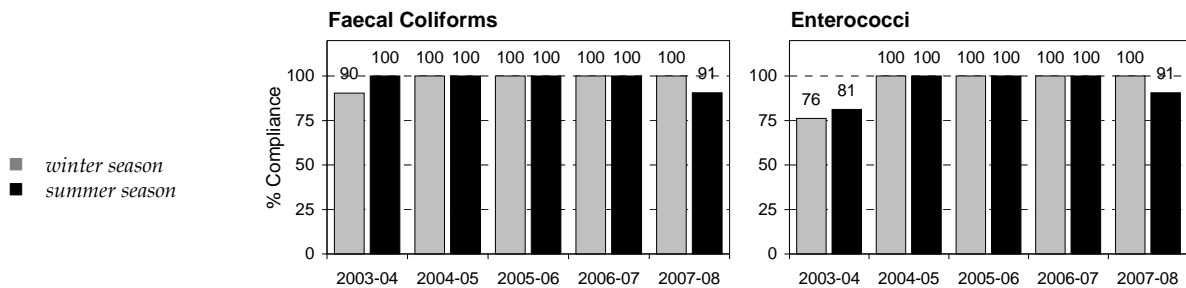
There is potential septic tank seepage from an unknown number of properties in Bundeena and Maianbar not yet connected to Sydney Water's sewerage system. Stormwater discharge and a small creek at the eastern end of the beach may also be a potential source of pollution.

Actions

There were no actions specific to this beach.

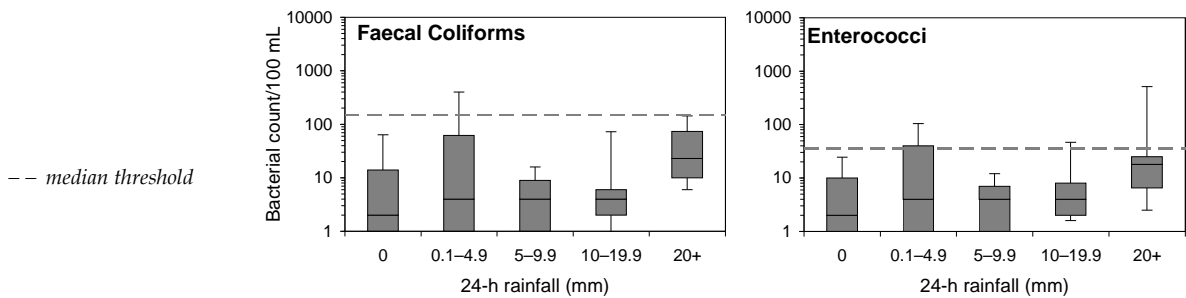
Compliance

Faecal coliform compliance with swimming guidelines has generally been high over the last five years, ranging from 90% to 100%. Enterococci compliance with swimming guidelines has ranged from 76% to 100% over the last five years.



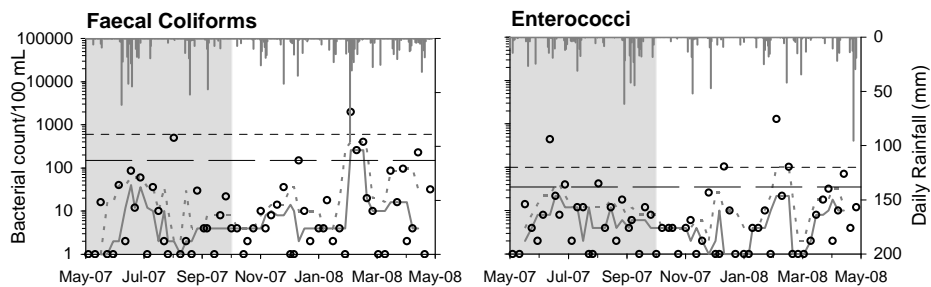
Response to rainfall

Faecal coliform and enterococci densities tended to increase with increasing rainfall. Faecal coliform densities occasionally exceeded the median guideline limit after light rain and enterococci densities often exceeded the median guideline limit after light rain in the previous 24 hours.



Season data

- | rainfall
 - o individual result
 - rolling median
 - - - rolling 80th percentile
- Guidelines
(see page 7 for details)
- median threshold
 - - - 80th percentile threshold



Jibbon Beach

See page 286 for key to map

Description

This is a 700 metre long sandy beach located inside the southern entrance to Port Hacking. The beach is backed by the Royal National Park and can be accessed via Bundeena. The water is deep inshore and a popular boating destination. Beach conditions are safest in the eastern corner.



Pollution sources

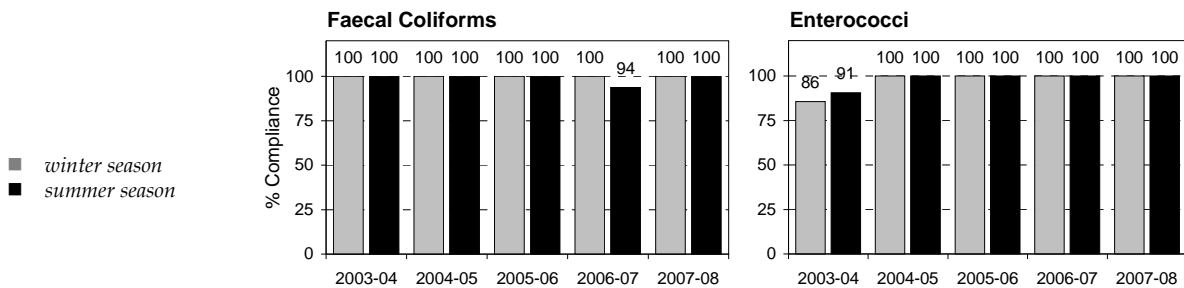
Stormwater discharge from the nearby residential area of Bundeena is a potential source of pollution, along with illegal discharge of untreated sewage from visiting vessels without holding facilities.

Actions

There were no actions specific to this beach.

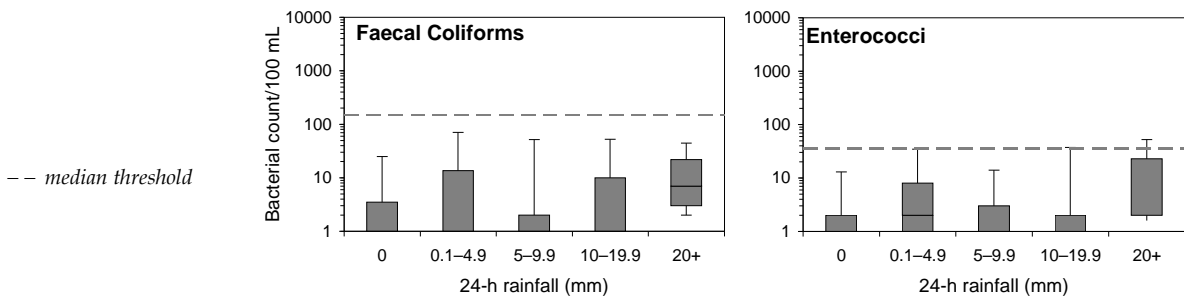
Compliance

With the exception of summer 2006–2007, faecal coliform levels complied with swimming guidelines 100% of the time over the last five years. With the exception of 2003–2004, enterococci levels complied with swimming guidelines 100% of the time over the last five years.



Response to rainfall

Faecal coliform densities showed little response to rainfall and generally remained below the median guideline limit across all rainfall categories. Enterococci densities occasionally exceeded the median guideline limit in response to rain in the previous 24 hours.



Season data

- | rainfall
 - o individual result
 - rolling median
 - rolling 80th percentile
- Guidelines
(see page 7 for details)
- median threshold
 - 80th percentile threshold

