

Summary

Overview

Twelve councils along the New South Wales coast participated in recreational water quality monitoring and reporting programs during the 2008–2009 summer swimming season in partnership with the (then) Department of Environment and Climate Change's (DECC's) Beachwatch Program. The councils were:

- Ballina Shire Council
- Richmond Valley Council
- Clarence Valley Council
- Coffs Harbour City Council
- Kempsey Shire Council
- Port Stephens Council
- Newcastle City Council
- Wyong Shire Council
- Gosford City Council
- Shoalhaven City Council
- Eurobodalla Shire Council
- Bega Valley Shire Council.

Each council fully funded its own program. The size of the programs ranged from four to 29 sites and included ocean beaches, freshwater lakes, tidal pools, bays, rivers, lagoons and estuarine sites. A total of 143 swimming locations were monitored during the 2008–2009 summer season.

This report provides an outline of each council's monitoring and reporting activities, findings from the councils' programs and quality assurance information.

Beachwatch Partnership Pilot Program

The Beachwatch Partnership Pilot Program (BPPP) ran between 2002 and 2004 and was funded as part of the New South Wales Government's \$11.7-million Coastal Protection Package. The aim of the BPPP was to raise awareness of beach water

quality issues, streamline testing along the New South Wales coast and increase community access to beach water quality information.

The three key elements of the BPPP were:

- development of a water quality monitoring and reporting protocol to help councils design and run programs (DEC 2004a)
- funding for pilot monitoring and reporting programs to test all aspects of the protocol
- development of a training program to ensure future recreational monitoring and reporting were undertaken in a scientifically rigorous and credible manner.

More information on the BPPP, including access to protocols and reports generated as part of the program, is available from www.environment.nsw.gov.au/beach/BWPilot.htm.

Beachwatch Partnership Program

Councils that participated in the BPPP identified a need for ongoing assistance with data management, community reporting and quality assurance. The Beachwatch Partnership Program (BPP) began in 2004 to provide this assistance to councils.

As part of the BPP:

- coastal councils are contacted before the beginning of each summer swimming season to discuss intended recreational monitoring and reporting programs
- a program review is undertaken by Beachwatch field officers during the summer season; it includes quality assurance of sampling techniques and advice on data management procedures
- the laboratories used by councils are included in a quality assurance program coordinated by Beachwatch

- data are collated and uploaded to the Beachwatch database
- advice on reporting results to the community is provided.

Data availability

The annual BPP State of the Beaches reports are available on the Beachwatch website at www.environment.nsw.gov.au/beach/BPP.htm. Water quality data can also be downloaded from the Beachwatch website www.environment.nsw.gov.au/beachsoeapp/.

Water quality analyses and assessment

Two types of indicator bacteria, faecal coliforms and enterococci, were used to assess recreational water quality in the summer 2008–2009 programs, as recommended by the NHMRC *Australian Guidelines for Recreational Use of Water* (NHMRC 1990). These bacteria indicate the possible presence of waterborne pathogens, organisms that pose significant risks to human health.

Faecal coliforms, also known as thermotolerant coliforms, are strongly associated with faecal waste and are therefore excellent indicators of recent faecal contamination. Faecal coliforms are not reliable indicators of aged faecal contamination owing to their short survival times in marine waters.

Enterococci are a subgroup of faecal streptococci and, in contrast to faecal coliforms, survive for longer periods in seawater. Enterococci are thus good indicators of the presence of recent and aged faecal contamination.

Owing to resource constraints and in some cases laboratory limitations, eight councils chose to analyse samples for only one type of indicator bacteria. Gosford, Newcastle and Bega tested for faecal coliforms only. Clarence Valley, Coffs Harbour, Kempsey, Wyong and Eurobodalla tested for enterococci only.

From summer 2009–2010, recreational water quality will be assessed under the new NHMRC *Guidelines for Managing Risks in Recreational Waters* (NHMRC 2008). Under these guidelines, enterococcus is the single preferred indicator for the assessment of

microbial contamination in recreational waters. Appendix B contains an overview of the new guidelines.

Overview of findings

Below is a summary of key findings for each council area. Detailed results for each council area are provided in Chapter 2, along with individual pages for each site.

Ballina Shire Council

Nine swimming locations were monitored in the Ballina Shire Council area between November 2008 and February 2009. Faecal coliform and enterococci samples were collected from all locations to assess compliance with NHMRC (1990) swimming water quality guidelines.

The best performing swimming locations were:

- the ocean beaches of Seven Mile and Shelly
- Shaws Bay West and Shaws Bay East.

These four locations complied with the swimming guidelines in all four months.

A relatively high level of compliance was also recorded at all other sites. The three locations in Lake Ainsworth (South, West and East) and Shaws Bay North complied with the swimming guidelines in three of the four months.

To inform the community of water quality results during the summer swimming season, Ballina Shire Council publishes weekly 'star ratings' in *The Advocate* and also issues regular media releases.

Richmond Valley Council

Faecal coliform and enterococci samples were collected from four swimming locations in the Richmond Valley Council area throughout the year, but only data from the summer swimming season (October 2008 to April 2009) are included in this report.

The cleanest swimming locations during summer 2008–2009 were the three ocean beaches:

- Airforce Beach
- Main Beach
- Shark Bay.

These locations complied with the swimming guidelines in all seven months.

A high level of compliance was also recorded in the Evans River, which complied in six of the seven months. The site failed the swimming guidelines in April 2009 when elevated enterococci levels were recorded in response to heavy rainfall.

Richmond Valley Council provides water quality data on their website as monthly 'star ratings'. Information is also provided to the community through media releases.

Clarence Valley Council

Ten swimming locations were monitored in the Clarence Valley Council area during summer 2008–2009. Enterococci samples were collected between October 2008 and March 2009 to assess compliance with the NHMRC (1990) swimming water quality guidelines. Sufficient samples to assess compliance were collected in only four months at Kolora Lake.

The cleanest swimming locations were:

- Woolli Estuary North and Woolli Estuary South
- Lawrence and Ulmarra Jetty in the Clarence River.

These four locations complied with the swimming guidelines in all six months.

A relatively high level of compliance was also recorded at Kolora Lake which complied in three of four months, and Iluka Bay and Prince Street which complied in four of the six months.

Macleay Jetty complied in three of the six months, with very low levels of compliance recorded at Corcoran Park (one in six months) and Grafton Sailing Club (zero in six months).

Clarence Valley Council has erected warning signs at sites in Grafton that have low compliance. Further monitoring to identify the source of pollution at the Grafton Sailing Club has been undertaken but the results are inconclusive.

Coffs Harbour City Council

Seven swimming locations were monitored in the Coffs Harbour City Council area

between the end of November 2008 and February 2009, the busiest months of the summer swimming season. Enterococci samples were collected from all sites to assess compliance with the NHMRC (1990) swimming water quality guidelines.

The swimming sites were:

- Woolgoolga Main Beach
- Emerald Beach
- Diggers Beach
- Park Beach
- Jetty Beach
- Mid-Sawtell Beach
- Sawtell Rockpool.

All seven locations passed the swimming guidelines in all three months.

Kempsey Shire Council

Enterococci samples were collected from ten swimming locations in the Kempsey Shire Council area between October 2008 and April 2009. The five samples required to assess compliance with the NHMRC 1990 swimming water quality guidelines were not collected in all months.

The cleanest swimming sites were:

- Grassy Head Beach
- Horseshoe Bay
- Trial Bay
- Hat Head Beach
- Killick Beach.

These sites complied with the swimming water quality guidelines in all months in which compliance could be assessed.

A high level of compliance was also recorded at Stuarts Point, which complied in three of the four months, and at Korogoro Creek, which complied in four of five months.

Compliance was lower at the other creek swimming locations, with Killick Creek complying in three of six months, Back Creek complying in two of five months and Saltwater Creek complying in zero of four months.

Kempsey Shire Council regularly updates water quality data and star ratings information on its website, providing the community with ongoing information during the summer swimming season.

Port Stephens Council

Seven swimming locations were monitored in the Port Stephens Council area between October 2008 and April 2009. Faecal coliform and enterococci samples were collected to assess compliance with the NHMRC (1990) swimming water quality guidelines.

The cleanest swimming locations were:

- Birubi Beach at the northern end of Stockton Bight
- Little Beach, Dutchmans Beach and Bagnalls Beach within Port Stephens
- Lemon Tree Passage Tidal Pool.

All these locations complied with the swimming water quality guidelines in all seven months of the 2008–2009 summer swimming season.

High levels of compliance were also recorded at Georges Reserve and Karuah Tidal Pool, which both complied in six of the seven months.

Port Stephens Council issued joint media releases with DECC during the summer swimming season to provide the community with information on water quality at swimming sites.

Newcastle City Council

Newcastle City Council collected faecal coliform samples from four ocean baths to assess compliance with the NHMRC (1990) swimming water quality guidelines.

Samples were collected throughout the year at two sites, but only results from the 2008–2009 summer swimming season are presented in this report. Insufficient samples to assess compliance were collected from Canoe Pool and Merewether Learners Pool in three months due to pool closures for cleaning.

High levels of compliance were recorded at all sites. Newcastle Pool and Merewether Main Pool complied with the swimming water quality guidelines in all seven months.

Canoe Pool and Merewether Learners Pool complied in all four months in which sufficient samples were collected.

Newcastle City Council presented water quality results from the ocean baths at open community meetings throughout the summer season and issued joint media releases with DECC.

Wyong Shire Council

Twenty-nine swimming locations were monitored in the Wyong Shire Council area during the 2008–2009 summer swimming season.

Faecal coliform and enterococci samples were collected at all locations from October 2007 to April 2008 to assess compliance with NHMRC (1990) swimming water quality guidelines.

The cleanest swimming sites in the Wyong Shire Council area were:

- the ocean beaches of Frazer, Birdie, Budgewoi, Lakes, Hargraves, Jenny Dixon, Cabbage Tree Bay, Lighthouse, Gravelly, Soldiers, North Entrance, The Entrance, Blue Bay, Toowoan Bay, Shelly, Blue Lagoon and Bateau Bay
- Summerland Point, Gwandalan and Chain Valley Bay in Lake Macquarie
- Elizabeth Bay in Lake Munmorah
- San Remo and Toukley Aquatic in Lake Budgewoi
- The Entrance Channel and Long Jetty in Tuggerah Lake.

These swimming sites passed the NHMRC (1990) guidelines in all seven months of the 2008–2009 swimming season.

A high level of compliance was also recorded at Canton Beach in Tuggerah Lake which complied in six of the seven months.

Tumbi Umbi Creek failed the swimming guidelines in all seven months of the 2008–2009 summer swimming season, and Ourimbah Creek and Wyong River failed in five of the seven months. Swimming at these locations should be avoided at all times.

Wyong Shire Council has initiated a number of management actions in response to these findings: erecting warning signs at Tumbi

Umbi Creek, Ourimbah Creek and several estuarine swimming locations where there has been a history of failure to meet swimming guidelines, undertaking faecal sterol testing to identify the source of contamination and conducting additional sampling around Tuggerah Lake.

Gosford City Council

Twenty-two swimming locations were monitored in the Gosford City Council area between October 2008 and April 2009.

Faecal coliform samples were routinely collected at all sites to assess compliance with NHMRC (1990) swimming water quality guidelines.

The cleanest swimming locations were:

- the ocean beaches of Forresters, Wamberal, Terrigal, North Avoca, Avoca, Copacabana, McMasters, Killcare, Umina and Pearl
- Wamberal Lagoon
- Avoca Lake and Bulbararing in Avoca Lake
- Cockrone Lagoon
- Pearl Beach Rockpool.

These locations all complied with the swimming water quality guidelines in all seven months of the 2008–2009 summer swimming season.

A relatively high level of compliance was also recorded at Woy Woy Baths and Yattalunga Baths which complied in six of the seven months.

The two locations in Terrigal Lagoon (Terrigal Sailboards and Terrigal Paddleboats) complied in five of seven months, as did Pretty Beach Baths and Davistown Baths.

The lowest level of compliance was recorded at Ettalong Channel, which complied in four of the seven months. Very high faecal coliform levels (>10,000 cfu/100 mL) were recorded on two occasions in April 2009 following heavy rainfall.

Gosford City Council provides water quality information to the community on its website.

Shoalhaven City Council

Ten ocean beaches were monitored in the Shoalhaven City Council area between December 2008 and February 2009, the three busiest months of the summer swimming season. Faecal coliform and enterococci samples were collected to assess compliance with NHMRC (1990) swimming water quality guidelines.

The beaches were:

- Shoalhaven Heads
- Tilbury Cove
- Warrain
- Collingwood
- Cudmirrah
- Mollymook
- Rennies
- Racecourse
- Bawley
- Merry.

All ten locations passed the swimming guidelines in all three months of the 2008–2009 summer swimming season.

Shoalhaven City Council issued joint media releases with DECC during the summer swimming season to provide the community with information on water quality at swimming sites. Information was also provided on the Council's website.

Eurobodalla Shire Council

Eleven swimming locations were monitored in the Eurobodalla Shire Council area during the 2008–2009 summer swimming season. Enterococci samples were collected between October 2008 and April 2009 to assess compliance with the NHMRC (1990) swimming water quality guidelines.

The cleanest swimming locations were:

- the ocean beaches of Cookies, Casey, Malua Bay, Broulee, Bengello, Shelley, Tuross Main, Brou and Narooma Main
- Wagonga Inlet netted beach.

These ten locations all complied with the swimming water quality guidelines in all seven months of the 2008–2009 summer swimming season.

Surf Beach passed the NHMRC (1990) guidelines in four of the seven months, failing the guidelines in December 2008, February 2009 and April 2009. In each case, the geometric mean enterococci level only just exceeded the guideline limit.

Eurobodalla Shire Council issued joint media releases with DECC during the summer swimming season to provide the community with information on water quality at swimming sites.

Bega Valley Shire Council

Samples were collected from 20 swimming locations in the Bega Valley Shire Council area between the end of November 2008 and early February 2009. Sufficient samples to assess compliance with the NHMRC (1990) swimming water quality guidelines were collected from Cuttagee Inlet in December 2008 and Bar Beach in January 2009. Both locations passed the swimming water quality guidelines in that month.

There were insufficient samples to assess compliance at the remaining sites, however levels of faecal coliforms measured at these locations were generally very low.

Bega Valley Council issued joint media releases with DECC during the summer swimming season to provide the community with information on water quality at swimming sites.

Response to rainfall

Although monitoring during the 2008–2009 swimming season focused on the assessment of guideline compliance, bacterial results were also plotted with rainfall and, where possible, an assessment of the impact of rainfall on recreational water quality was made. These trends are discussed on the individual beach pages and on the council summary pages.

During the 2008–2009 summer season, some council areas recorded large or extended wet weather events.

Slightly elevated bacterial levels (values above median and geometric mean guideline limits) were measured at many ocean beaches following heavy rainfall. However, these results were not necessarily indicative of sewage contamination (which

for practical purposes is sometimes taken to be indicated by faecal coliform or enterococci levels of 1,000 cfu/100 mL or more). Diffuse sources of pollution within the catchment, such as animal droppings, may be the origin of the contamination.

Bacterial levels at estuarine and coastal lake swimming locations showed a greater response to rainfall than those at the ocean beaches. Elevated levels of indicator bacteria were measured during and after rainfall at many locations, indicating varying degrees of sewage contamination. As a precaution, it is recommended that swimming at ocean beaches be avoided during, and for at least 24 hours after, rainfall and in estuaries and coastal lakes up to three days after rainfall.

Quality assurance

Quality assurance and quality control procedures were incorporated into all aspects of the monitoring programs, including:

- sampling
- laboratory analysis
- data management
- community reporting.

The results of these assessments indicated that councils collected samples according to procedures, the microbiological data were reliable and the information reported to the community during the programs was accurate.

Appendixes

There are three appendixes to this report:

- **Appendix A** details the indicators and guidelines used to assess recreational water quality
- **Appendix B** provides an overview of the new NHMRC 2008 *Guidelines for Managing Risks in Recreational Waters*
- **Appendix C** lists further reading and information sources.