



Item No: 3.7
Title: Response to Motion of Urgency - Terrigal Water Quality
Department: Water and Sewer

13 May 2019 Ordinary Council Meeting

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Report Purpose

The purpose of this report is to provide a response to Urgency Motion – Terrigal Water Quality.

Summary

Council, at its meeting held on 29 April 2019 resolved:

- 347/19 *That Council notes the potentially significant public health issue that has arisen from reports of repeated discharge of malodorous and discoloured water from the 7 drains at the southern end of Terrigal Beach;*
- 348/19 *That Council notes with concern the possible illness to users of Terrigal Beach and potential issues of liability that may arise;*
- 349/19 *That Council notes that the issue of potentially hazardous water entering Terrigal Beach may negatively impact tourism which may cause economic loss to the businesses of Terrigal and the Central Coast generally;*
- 350/19 *That Council recognise that delaying action on this issue may pose reputational risk to Council;*
- 351/19 *That Council arrange for expeditious testing of water in and around the 7 drains at Terrigal Beach and, if appropriate, display signage in the area warning against entering the water and provide a report to Councillors on this aspect of the matter within 7 days;*
- 352/19 *That Council commence an urgent investigation into the possible source of the pollution including investigating matters of compliance, relating to discharging water into the stormwater system that leads to the drains at Terrigal Beach;*
- 353/19 *That Council liaise with appropriate agencies and authorities in undertaking the investigations;*

354/19 *That Council request that the Chief Executive Officer provide a report with at least the results of the water tests and preliminary investigations at the 13 May 2019 Ordinary Meeting.*

Recommendation

That Council receive the report on Response to Motion of Urgency - Terrigal Water Quality.

Background

Council has identified the need to conduct further investigations into water quality at Terrigal and initiated a Terrigal Catchment Audit which has been ongoing since January 2019. In the interim there have been several reports by community members during the month of April of the discharge of malodorous and discoloured water from the seven drains at the southern end of Terrigal Beach. Council immediately responded to all events and commenced an investigation into the source of these reported discharges. Results of the preliminary investigations as well as information regarding the Terrigal Catchment Audit is provided in this report.

In summary, the recent investigations undertaken to date show that:

- Council responded to the sewer blockages and overflows reported, in undertaking necessary sewer and stormwater drain inspections and resolving the matter in a timely manner. Council's standard operating procedures were followed, and the overflows were managed quickly and effectively.
- All reports of overflows were investigated and actioned as required. The seven drains at Terrigal beach and the drain at Terrigal Haven were also inspected after each event and no evidence of sewage was found. This is reflected by the water quality results collected as part of the Terrigal Catchment Audit. Beach water samples collected before and after the long weekend at Terrigal Beach and Terrigal Haven were considered "Good" under the Guidelines for Managing Risks in Recreational Water (2008, National Health and Medical Research Council (NHMRC) and therefore, no warning signs were required.
- An algae bloom was present at the time and was confirmed after testing was conducted and samples sent to external laboratories for verification. The algal bloom has since been identified as a naturally occurring, non-toxic, marine algal bloom.
- Water quality monitoring will continue as a part of the Terrigal Catchment Audit, which is comprehensively addressing water quality issues at Terrigal Beach in partnership with the NSW Government (former Office of Environment and Heritage).

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- Council will continue to conduct CCTV inspections of stormwater drains and sewer infrastructure as more results are obtained from the Terrigal Catchment Audit.
- Council continues with its partnership with the NSW Government; Council in the Beachwatch program. Samples are collected by Council and tested for Enterococci - a group of bacteria common to the faecal matter of warm-blooded animals and used as an indication if the water is safe to swim in.

Reported discharges from 17 April until 21 April

Initial response and investigation

On receipt of three complaints of potential sewer discharge discharging from the "seven drains" onto Terrigal Beach for the period 17 April to 21 April, Council undertook an investigation. The investigation included possible sources of sewage entering the stormwater system at Terrigal Beach over this period. The investigation confirmed that all sewerage pumping stations were operating normally, and no signs of sewage was present at the drains.

Three reports were investigated: Two were of sewer discharges and crews were dispatched to attend to these events. Blockages were found in inspection pipework and cleared. Stormwater drains were then inspected and no evidence of sewer discharge from the drains were observed.

A third report was regarding a large volume of water overflowing from a stormwater drain on the Terrigal Esplanade. Council staff inspected the outlets of the seven drains at the southern end of Terrigal Beach and did not observe unusually high flows or evidence of a sewage discharge.

Follow up inspections

Several further complaints regarding water quality at Terrigal received by Council during the week commencing 22 April. In response Council staff undertook several inspections of the outlets of the stormwater drains discharging to Terrigal Beach, Terrigal Haven and the sewage pumping stations within the area. During these inspections there was no evidence of sewer overflows.

Inspections on 24 April and 26 April found there was no sewage odour or any visual evidence of a sewage discharge from any drains at Terrigal. However, there was a significant amount of seaweed detritus observed on the beach. Refer to Figure 1 below for a photo of "seven drains" which was the reported location of the high flows on Sunday 21 April.

During inspections, discoloured water around the boat ramp at The Haven was observed on the morning of 26 April. No discharge of water was observed from the stormwater drains at The Haven at this time. A significant amount of seaweed detritus was also observed on the beach during this inspection. Refer to Figure 2 below.



Figure 1 Seven drains outlet onto the southern end of Terrigal Beach on 24 April, location of the drainage outlets indicated by red rectangle.



Figure 2 Stormwater outlet (indicated by a red circle) at The Haven on 26 April 2019

During a follow up inspection in the afternoon of the 26 April, the discolouration around the boat ramp appeared to have increased in area and density (refer to Figure 3 below). A sample of water exhibiting discolouration in The Haven was taken and tested for ammonia (ammonia is a reliable indicator of the presence of sewage), this returned a very low result of less than 0.03mg/L, indicating that sewage was unlikely to be present. This is consistent with the

Guidelines for managing Risks in Recreational Water 2008 (National Health and Medical Research Council (NHMRC)). This sample was further referred to Sydney Water Analytical Laboratories and tested for the presence of algae and returned a positive result for non-toxic algae on 3 May 2019.



Figure 3 Discoloured water at The Haven near the boat ramp on 26 April 2019 was confirmed to be a natural marine algal colony with no presence of sewage

The marine algal bloom has the appearance of a brownish slick in the water. The life cycle for these blooms is approximately 2 weeks. They can typically be seen at many beaches up and down the coast at any one time. Marine algal blooms are a natural occurrence and can appear from time to time in response to water and climatic conditions. Council advises against swimming in locations where the bloom has been observed as skin and eye irritation could occur following contact with the water. Algal blooms dissipate with changes in tide and wind conditions.

Results of Recent Inspection and Testing

As a part of an on-going water quality investigation, *Terrigal Catchment Audit*, Council undertook inspections and water quality testing at Terrigal Beach and the outlet of the stormwater drains at Terrigal and The Haven on 12 April. This is in addition to the BeachWatch program developed jointly with Council and NSW Office of Environment and Heritage (OEH).

Swimming safety results prior to and after the Easter weekend

Results indicated the beach was considered good for swimming with low Enterococci levels (<41mpn/100ml) as per the Guidelines for Managing Risks in Recreational Water (NHMRC Guidelines). A further inspection and water quality testing were undertaken on 23 April.

This found the beach was again considered good for swimming with all sites low Enterococci levels (<41mpn/100ml) as per the NHMRC guidelines. Before and after the long weekend, water quality in the rock pool adjacent to the seven drains was also considered good for swimming with low Enterococci levels (<41mpn/100ml as per the NHMRC guidelines).

Sampling stormwater pipes prior to and after the Easter weekend

Council does not recommend direct contact with stormwater in any location, as stormwater can be affected by pollution from several different sources. Sample results at the seven drains (the northern drain and the second southern-most drain) found levels of Enterococci but low levels of ammonia indicating that sewage was unlikely to be present. These stormwater pipes are under further investigation as a part of the Terrigal Catchment Audit and investigations are ongoing. Once the data has been gathered, Council will consider the best options to resolve any potential problems. The outcome of the audit will be made public. More information on the Terrigal Catchment Audit is explained further in this report.

Ongoing investigations

Terrigal Catchment Audit

Council is aware of and is investigating the issue of recreational water quality at Terrigal Beach and The Haven. A water quality catchment audit at Terrigal commenced in January 2019 (refer to details listed below) to investigate potential sources of poor-quality water that may emanate from the stormwater drainage system on some occasions.

It is important to note that coastal water quality is complex, and many anthropogenic and natural factors affect the quality of water from catchments, in waterways, estuaries, lagoons and the ocean. Poor water quality in urban areas is not a new phenomenon and any program to address water quality holistically must consider a range of different impacts and set reasonable expectations for what such a program can achieve in the short and long term.

Since 2002, Gosford City Council and Wyong Shire Council have undertaken the Beachwatch program in partnership with the New South Wales Office of Environment and Heritage (OEH). As part of the Beachwatch program, water samples are collected by Council and tested for Enterococci - a group of bacteria common to the faecal matter of warm-blooded animals. These bacteria indicate potential sources of contamination from stormwater, sewage and/or animal faecal matter. The results of the Enterococci tests can be used to determine if a designated swimming site is recommended for swimming and provide the community with information to make informed decisions about where and when to swim. Through this program, Council reports on the water quality of 32 swimming sites. Sampling occurs once a week during the swimming season from September to April, and fortnightly outside of the swimming season.

During periods of poor water quality where Enterococci is equal to or exceeds 201mpn/100ml (rating of Poor – see Table 1), Council installs additional temporary swimming advisory signs or closes the site until water quality improves. Due to the low levels of bacteria in the ocean and rockpool in recent weeks (<41mpn/100ml), beach warning signs are not presently considered appropriate under the Beachwatch program procedures.

Table 1: Star rating and swim safety rating for bacteria sampling from the Office of Environment and Heritages [Beachwatch](https://www.environment.nsw.gov.au/topics/water/beaches/reporting-beach-water-quality/about-weekly-star-ratings) website:
<https://www.environment.nsw.gov.au/topics/water/beaches/reporting-beach-water-quality/about-weekly-star-ratings>

Rating	Enterococci category(colony forming units per 100ml)	Category	Description
* * * *	<41	Good	Good: bacterial levels are safe for bathing according to NHMRC guidelines.
* * *	41–200	Fair	Fair: bacterial levels indicate an increased risk of illness to bathers, particularly those with lower immune function such as the elderly and young children.
* *	201–500	Poor	Poor and Bad: bacterial levels indicate a substantially increased risk of illness to bathers. Temporary swimming advisory signs installed or closes the site until water quality improves.
*	>500	Bad	

The process of an audit and water quality improvement program is complex and requires clear steps and processes to track changes in water quality, which in this case includes:

1. Establishing a robust water quality monitoring program to provide a comprehensive understanding of conditions and hotspots for further interrogation - the current single weekly/fortnightly sample collected at Terrigal under the Beachwatch Program is designed to "flag the issue", but is insufficient to describe broader trends in water quality and identify the scale of the problem or the causes of contamination;
2. Developing an understanding of the factors driving poor water quality and then identifying appropriate actions to address these;
3. Implementing priority actions to address poor water quality; and
4. Undertaking follow-up monitoring to determine if priority actions have improved water quality.

Currently, Central Coast Council is progressing in through Stages 1 and 2 which are crucial to monitoring progress long-term.

Details of the Terrigal Catchment Audit are as follows:

- In response to poor Enterococci results from Council's Beachwatch Program, the Terrigal Catchment Audit was conceptualised in the 2017-2018 financial year;

- Funding allocation was made in the 2018-2019 financial year, for staff to undertake the Terrigal Catchment Audit to detect possible source/s of microbial contamination;
- A staff member was allocated to continue the Beachwatch program, refine the scope of work for the catchment audit/s and undertake sampling as required;
- In January 2019, audit sampling commenced to assess the presence of Enterococci from stormwater pipes for dry, wet and first flush stormwater pipe discharges. Sampling will continue over the coming months, to ensure a sufficient sample size is reached to adequately understand the issue and make informed decisions.
- Bacterial contamination can arise from a variety of sources - Council is working closely with expert scientists, both local and international, and using cutting edge technology including DNA analysis to determine the source of contamination - these techniques should be able to distinguish microbes associated with human faeces from dog, cow, duck and seagull, whilst working towards developing indicators for pig, cat, marsupial and rabbit faeces - the results of these tests will help us understand the sources of contamination, and guide future management.
- Council is concurrently undertaking pharmaceutical and ammonia testing to determine if these contaminants exist in the stormwater discharge.
- Sampling and asset inspections will continue systematically up into the catchment to detect possible contaminant sources, such as illegal connections to sewer and stormwater or damaged infrastructure that may impact on water quality.
- Based on the water quality and asset inspection information, Council will consider the best options to resolve the problem, which may include a suite of actions such as compliance and works solutions, and a monitoring program to assess the success of the program. The speed at which these issues are resolved will depend on the scale of the problems identified throughout this catchment audit process.

Current status of the Terrigal Catchment Audit

Sampling is continuing throughout the Terrigal Catchment, including Terrigal Haven, for Enterococci (bacteria), ammonia (potential sewage input) and trace pharmaceutical (confirmed input of sewage) run by Central Coast Council and DNA testing run by the Office of Environment and Heritage (to detect if bacteria is due to human or other animal sources).

CCTV inspection of the stormwater drains at The Haven is complete. CCTV of the sewer mains at The Haven is starting this month (May 2019). CCTV of the stormwater and sewer mains is planned for Terrigal pending the Terrigal Catchment Audit results.

Link to Community Strategic Plan

Theme 5: Liveable

Goal L: Healthy lifestyle for a growing community

L-L2: Invest in health care solutions including infrastructure, services and preventative programs to keep people well for longer.