



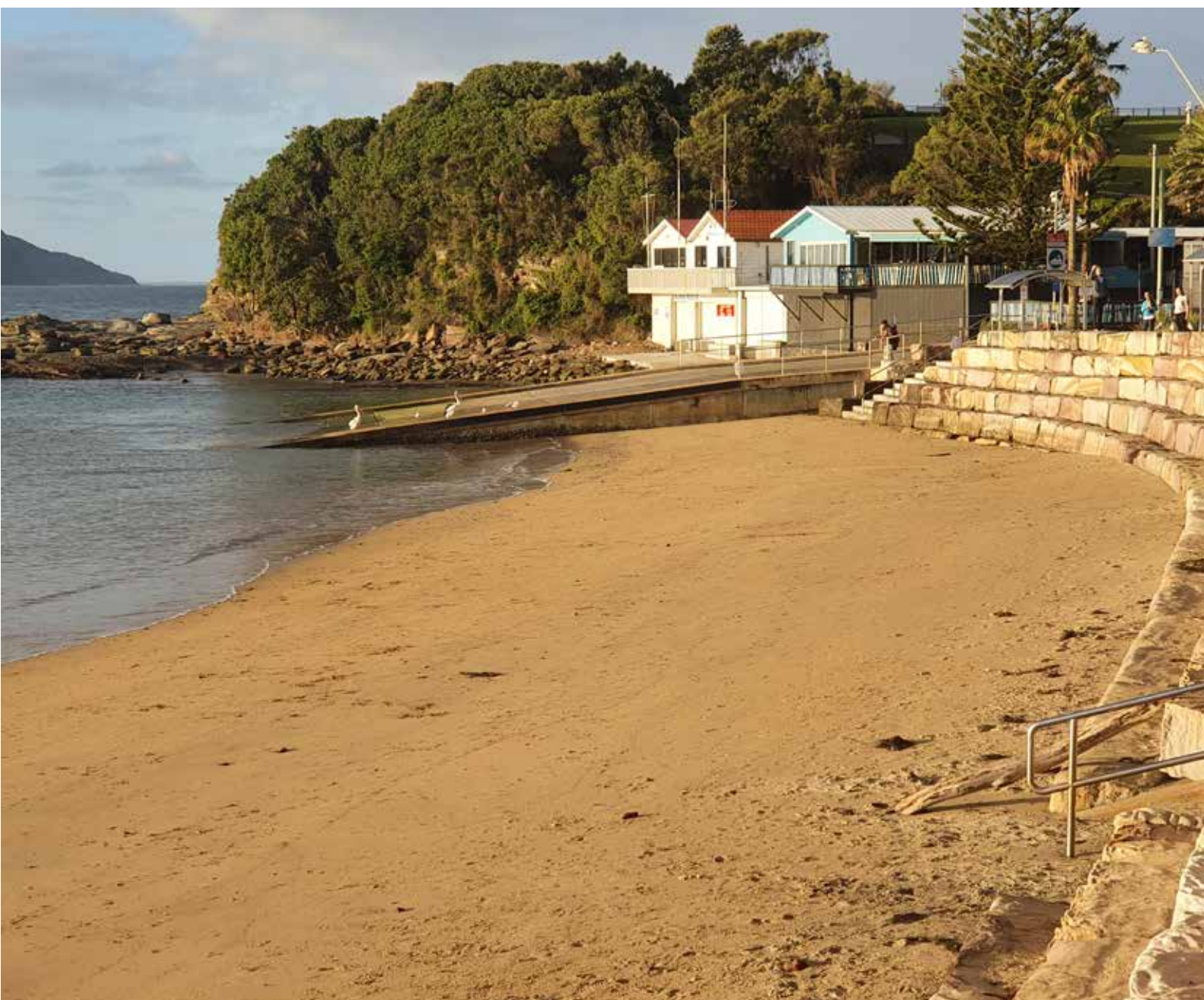
In partnership with:

The logo for Central Coast Council, consisting of the text "Central Coast Council" in white inside a black circle.

DEPARTMENT OF PLANNING, INDUSTRY & ENVIRONMENT

Towards safer swimming: Terrigal Beach and Haven

Understanding poor water quality





The recreational water quality of Terrigal Beach is monitored by the Central Coast Council in partnership with the Department of Planning, Industry and Environment's (the Department) Beachwatch Program. Terrigal Beach was routinely graded as 'Poor' in the *NSW State of the Beaches* report between 2011-12 and 2017-2018 due to faecal contamination.

Beachwatch monitors recreational water quality in accordance with the *National Health and Medical Research Council's (2008) Guidelines for Managing Risks in Recreational Waters*. Water is tested for enterococci bacteria as its presence means the water contains faecal matter. Over time, this testing measures the impact of pollution sources on the swimming site and highlights areas of poor water quality where further investigation is needed. Additional monitoring is needed to determine the extent of the problem and the source of microbial (faecal) contamination.

The Department is working with the Central Coast Council to investigate the extent and cause of poor recreational water quality issues at Terrigal Beach and Haven. We began a water quality source audit in January 2019. It extended the existing Beachwatch sampling at the Terrigal Surf Club to include eleven more ocean water sites from the Terrigal Lagoon mouth to the Haven, as well as sites at Forresters Beach to the north and North Avoca to the south, along with sampling at stormwater drain exits when present. The Department and Council scientists also worked with researchers from the Climate Change Cluster at the University of Technology Sydney (UTS) using DNA markers to determine if the microbial contamination in the water was from human sewage or animal (e.g. bird and dog) faeces.

The audit then sampled systematically through the catchment from stormwater drain outlets, testing stormwater to find the areas where sewage contaminates stormwater. This information helps Council prioritise those areas that need remediation.

When and where swimming water quality is poor

In dry and wet weather, scientists from the Department, UTS and the Central Coast Council collected water samples from the nearshore waters of Terrigal beach and the Haven and out into the deeper waters of Terrigal Bay to assess the extent of the problem.

The water quality of Terrigal Beach, the Haven and the lagoons is generally suitable for swimming in dry weather conditions. After rain, levels of microbial indicators of faecal contamination in swimming waters increase. The main sources of contamination are stormwater outlets and water from Terrigal Lagoon if it opens. Samples from three days after a major storm indicated poor water quality was confined to nearshore areas. Microbial indicators of faecal contamination returned to safe levels within one to three days after the rain stopped, so the current advice of not swimming for three days after rain is appropriate. These findings were consistent with water modelling results which showed that the majority of stormwater from drains and Terrigal Lagoon were moved offshore less than 24 hours after flow stopped.

Similar patterns are seen in Terrigal and Avoca lagoons. Microbial levels rise quickly after rain and contaminate most waterways. Levels become safe again after three days.

Source of microbial pollution

Using state of the art DNA markers, our research partners from UTS identified that microbial pollution in Terrigal Beach and the Haven is largely caused by human sewage which contaminates stormwater, particularly after rain. A smaller contribution from dog faeces is likely washed from the catchment during wet weather. Bird faeces were also found but have little impact on water quality at Terrigal Beach and the Haven and are the same as background levels found along the NSW coastline.

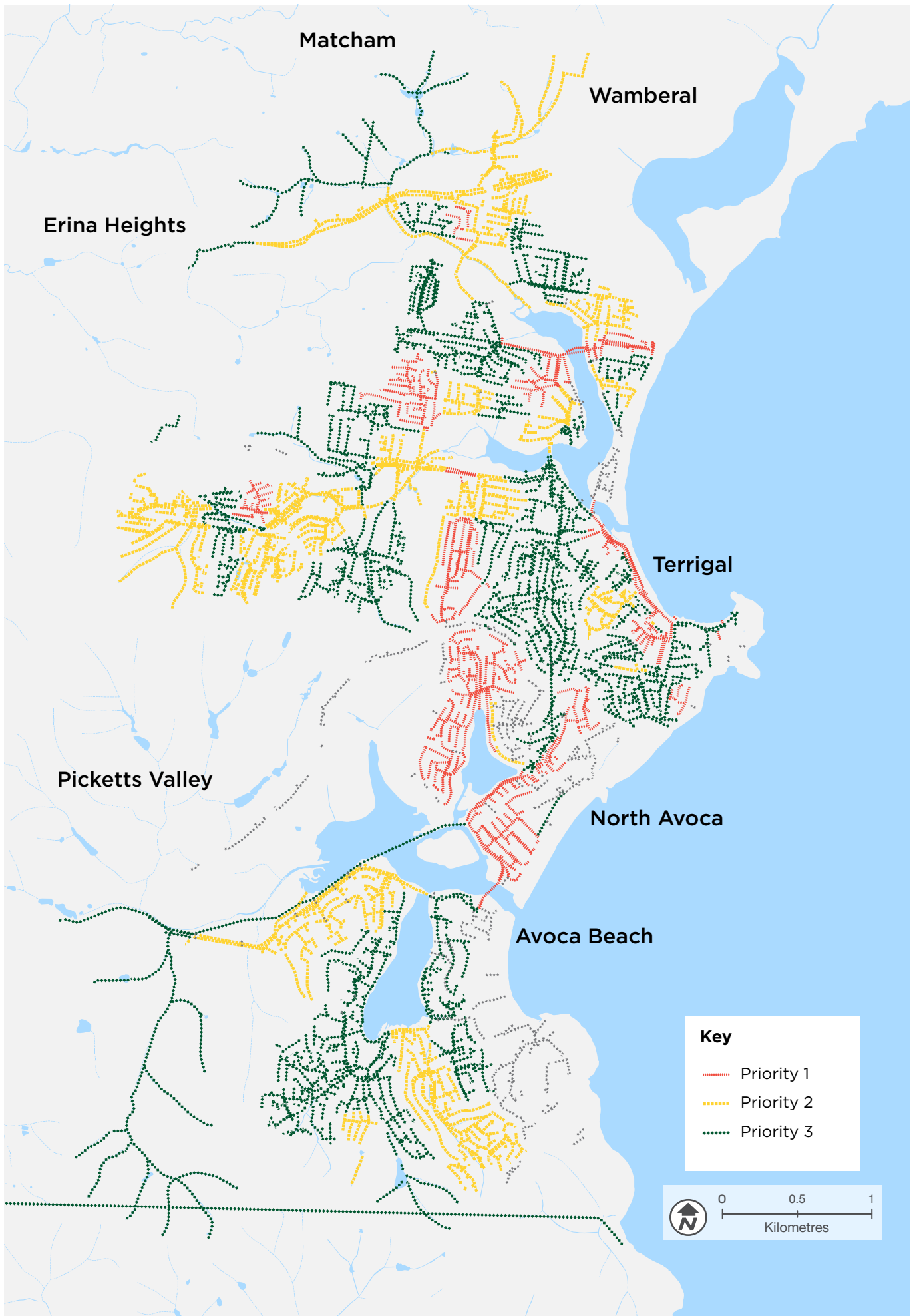


Figure 1 Priority drainage areas for investigation and remediation

Cause of microbial pollution

The main sources of faecal contamination are sewerage leakages or overflows entering the network of stormwater drains discharging to the beach and Haven. Terrigal Lagoon is also a large source of faecal contamination of the beach's water when it is opened to the sea following and during moderate to large rainfall events.

Extensive water quality testing in the Terrigal Beach, Haven and Terrigal and Avoca lagoon drainage networks found areas of elevated faecal bacteria levels, indicating where sewage is contaminating stormwater drains.

Council are using these findings to identify and focus investigation and remediation efforts in the catchment (see Figure 1) and to implement cost- and time-efficient management strategies that will resolve water quality issues at Terrigal Beach and Lagoon. Council have started infrastructure investigations and remediation works. The locations of completed and ongoing repairs of sewerage and stormwater infrastructure can be found on the [Your Voice Your Coast Terrigal and Coastal Lagoons Audit webpage](#).

The NSW Government with the Central Coast Council launched a community-wide engagement program in December 2019 to share information with the community, seek local knowledge on potential contamination sources and communicate the progress of investigations and remediation.



Accumulation of seaweed at drain junction

Other things you may see at Terrigal Beach

Seaweed grows on the many rocky reefs just off Terrigal Beach. Storms break it off the reefs and wash it on to the beach and sometimes up into the stormwater drains during large high tides and storm surges. Seaweed may become smelly as it naturally breaks down, but it does not affect swimming safety.

The waters off Terrigal Beach can become murky when waves stir up the fine material that gathers on the seafloor in the more protected waters of the Haven. The current that keeps the Haven well mixed with the ocean also carries the murky waters north along the beach.

There was no evidence of other forms of chemical pollution from stormwater drains found in the ocean sands or waters of Terrigal Beach and the Haven.

Safer swimming

To be safer when you swim:

- avoid swimming at Terrigal Beach, the Haven and the lagoons during and up to three days after rainfall
- avoid swimming near flowing drains
- avoid swimming if there are signs of stormwater pollution such as discoloured water, odour or street litter floating in the water.

Find out more

The ten technical reports produced as part of the water quality audit are available on the Environment, Energy and Science [Water quality investigations webpage](#).

All photos DPIE. Cover Terrigal Haven, DPIE.

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