

Hawke's Bay State of the Environment 2018 - 2021

Land & Water

**Pōrangahau and
Southern Coast**



20. Pōrangahau and Southern Coast catchments

Key points:

- Indigenous vegetation is rare in this area and exotic grassland with sheep and beef farming is the dominant land cover.
- Temperatures were warmer than usual and the average decline in rainfall in these catchments was more significant than elsewhere in the region.
- River flows were below average in both summer and winter.
- Sediment and *Escherichia coli* (*E. coli*) are the main stressors for the river systems and estuary, impacting recreational values and invertebrate health.

From the Maraetotara River in the north to the Pōrangahau catchment in the south, these catchments are a mix of steep and rolling hill country. Spring-fed streams like the Maraetotara and Waingongoro drain the limestone country in the north, while rain run-off provides most of the flow for the Mangakuri River and the waterways in the Pōrangahau catchment. The sheltered Pōrangahau Estuary is popular for swimming, boating, and mahinga kai.

The Southern Coastal catchments are situated at the eastern boundary of the region. South of Cape Kidnappers, the beaches change from river gravels to white sand, and are popular for swimming and surfing. The abundant rocky reefs and relatively clear water attract people gathering seafood, and the Te Angiangi marine reserve protects the rocky coast between Aramoana and Blackhead.

The catchments' waterways and coast are highly valued by tāngata whenua, with a rich history of settlement at Rangaiika, Ocean Beach, Waimarama, and Pōrangahau.

Land cover

Typical of most of the East Coast lowland country in New Zealand, indigenous vegetation is rare in these catchments, with only a small area covered in pockets of remnant forest and some mānuka/kānuka scrub. The dry hill country lends itself to extensive sheep and beef farming, which makes up most of the land cover in the catchment, along with a small amount of exotic forest (Figure 20-1). Between 2001 and 2018, exotic grassland cover slightly decreased and exotic forest cover slightly increased (Figure 20-2).

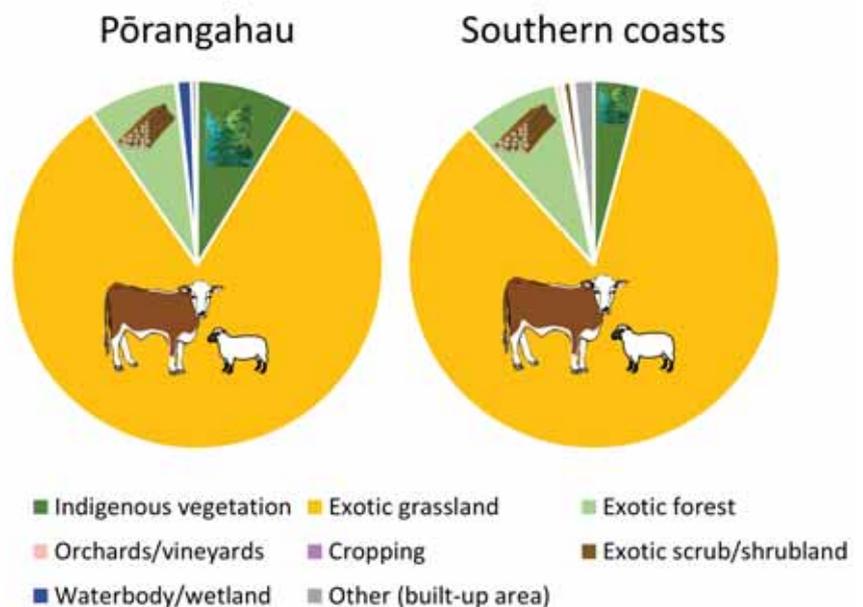


Figure 20-1. Land cover in the Pōrangahau and Southern Coast catchments. The 'other' category includes built-up areas (settlements, urban parkland, and transport infrastructure) and bare surfaces such as bare soil, gravel, and rock.



The three most common soil types in the Pōrangahau and Southern Coasts catchments are pallic, brown, and gley soils (Table 20-1). Pallic soils cover most of the northern and central part of the Pōrangahau catchment and are primarily in the northern coastal area of the Southern Coastal catchments. Pallic soils have medium to high nutrient levels, low organic matter content, and high bulk density.

Brown soils are distributed in the southern and southwestern area of the Pōrangahau catchment and are widely distributed along the coastal area of the Southern Coastal catchments. Brown soils generally have low to medium fertility levels and relatively stable topsoil.

Gley soils are commonly found on the floodplains across the Pōrangahau catchment and in the northern area of the Southern Coastal catchments. Gley soils have high organic matter content and can be susceptible to water logging.

The Southern Coast and Pōrangahau catchments both have considerable areas of land with high erosion risk, particularly in the mid-southern part of Southern Coast as well as western and eastern hill country areas within Pōrangahau. The annual sediment generation rate in the catchment is approximately 694,476 tonnes, roughly 9.6% of the annual sediment load in Hawke’s Bay. The average sediment generation rate in the Pōrangahau and Southern Coast catchments is estimated to be 515 tonnes/km² per year. Like other areas in Hawke’s Bay, hill country pastoral grassland contributes most of the sediment load entering waterways in these catchments.

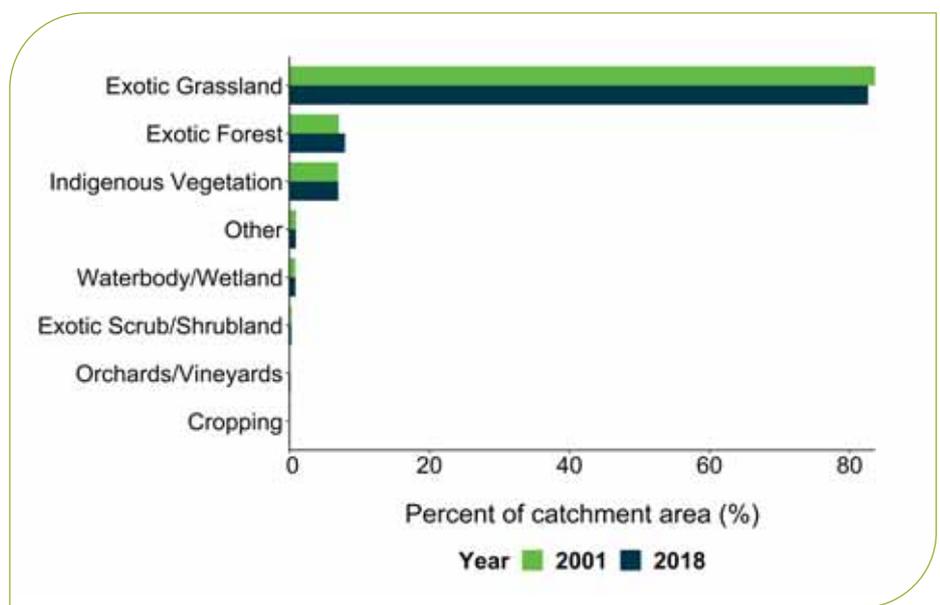


Figure 20-2. Land cover change for the Pōrangahau and Southern Coast catchments (138,128ha) between 2001 and 2018. The ‘other’ category includes built-up areas (settlements, urban parkland, and transport infrastructure) and bare surfaces such as bare soil, gravel, and rock.

Soil type	Pōrangahau	Southern Coasts
Pallic	52.4%	8.3%
Brown	30%	48.4%
Gley	7.2%	15.9%

Table 20-1. Percentage of area covered by different soil types in the Pōrangahau and Southern Coast catchments.

Climate



The Pōrangahau and Southern Coast catchments may suffer most from the rain shadow effects of our western ranges, but can benefit from rain brought on by easterly wind flows. This happened, to a certain extent, in early September 2018 when easterly winds brought days of persistent rain to the area. The five-day rainfall total exceeded a 1-in-40 year event at the southernmost rainfall site.

However, drought dominated the last three warmer than usual years – summer and autumn of 2019-20 were very dry and were followed by another very dry summer and autumn in 2020-21 (Figure 20-3). The average decline in rainfall in the latter seasons, as a percentage of normal rainfall across these catchments, was more significant than elsewhere in the region.

The Waipoapoa rainfall site, located in the hills, has had decreasing rainfall over the past 30 years, particularly during summer. Satellite measurements suggest that potential evapotranspiration is also increasing.

Climate change projections indicate that the downward trend in summer rainfall could reverse by the end of the century, with more easterly flows expected during summer. However, annual total rainfall is expected to decline, with particularly high drops in spring. The upward trend in potential evapotranspiration is anticipated to persist as temperatures warm.

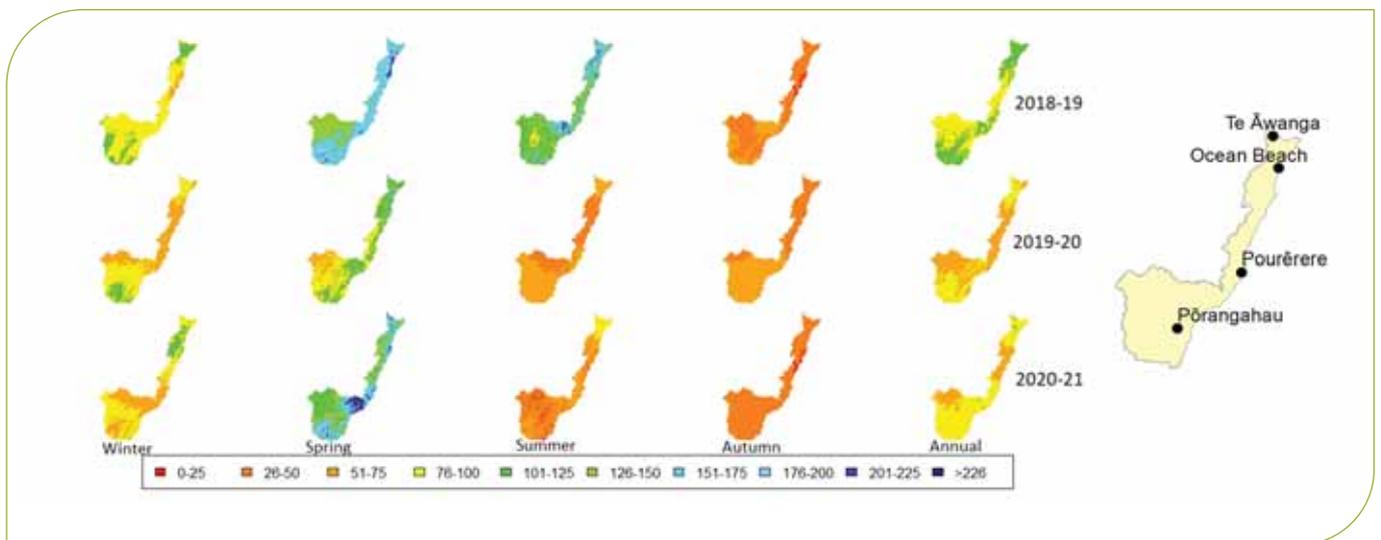


Figure 20-3. Seasonal and annual rainfall for 2018-2021, shown as a percentage of the long-term average.



Surface water flows

Each catchment and sub-catchment is unique in its hydrological characteristics, as they differ in size, shape, and topography. Mean stream flows and the annual 7-day low flow in these catchments were within the normal range during 2018-2019, but below normal during 2019-20 and 2020-21 (Figure 20-4).

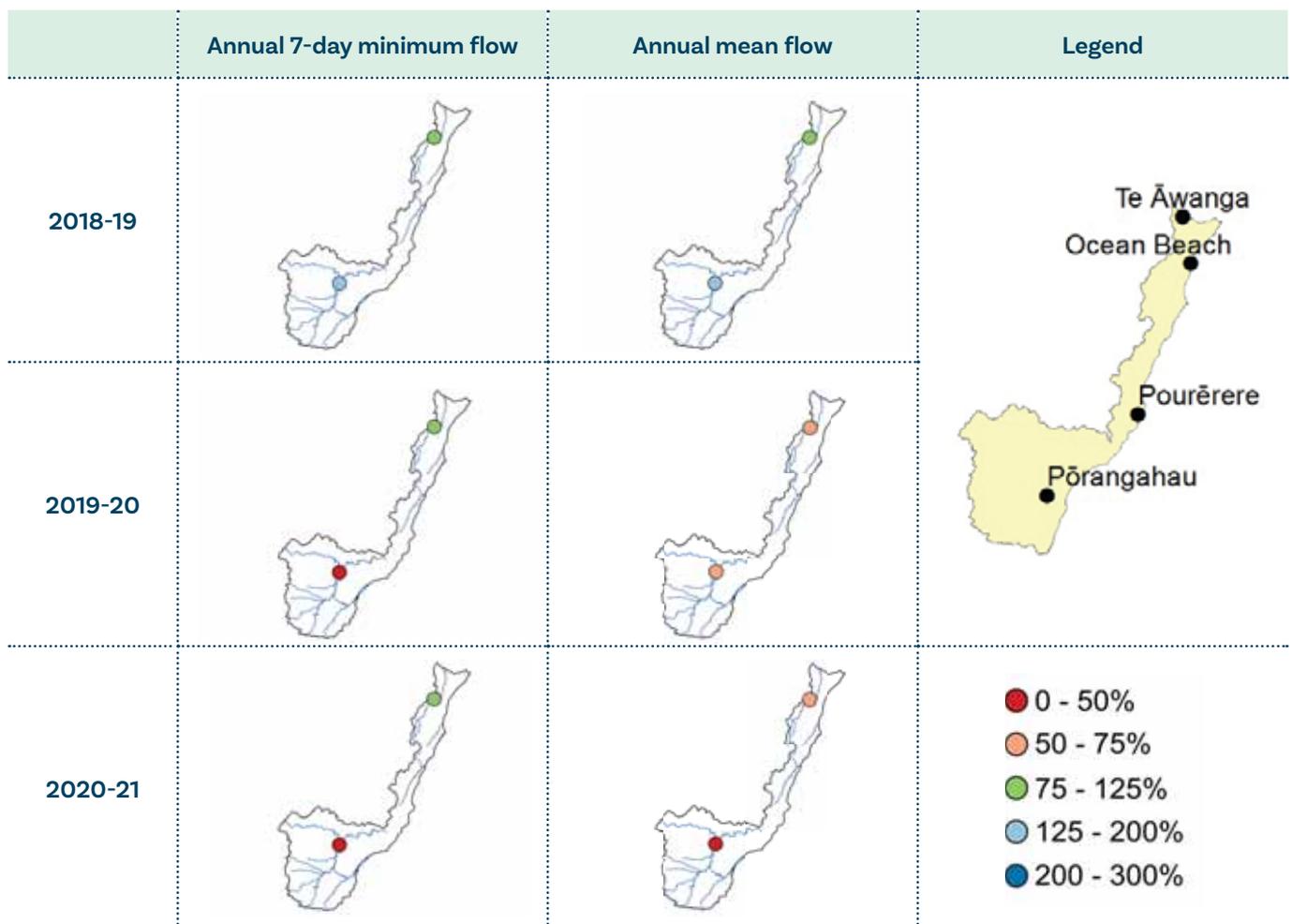


Figure 20-4. River flows as a percentage of the long-term average.



River water quality

Nitrate, ammonia, and water clarity are all at healthy levels in these catchments (Figure 20-5). Many sites also have healthy levels of both dissolved inorganic nitrogen (DIN) and dissolved reactive phosphorus (DRP), but these attributes vary between sites, and some sites have poor levels. The macroinvertebrate index (MCI) scores for all eight sampled sites in the Pōrangahau and Southern Coastal catchments indicate compromised stream health. A lack of riparian vegetation and structure is likely to contribute to these poor MCI scores. Faecal contamination is also problematic at seven of the eight sites.

Riparian management is usually an efficient way to reduce *E. coli* and improve ecosystem health. Riparian trees and plants provide shade, which cools water temperatures, limits nuisance periphyton and macrophyte growth, regulates dissolved oxygen, filters sediment run-off, and provides adult insect habitat. Excluding stock from riparian areas reduces bank erosion and sediment transport to streams, as well as reducing direct faecal contamination (Figure 20 6).

In the Pōrangahau, Mangakuri, and Pouhokio catchments, stock access is generally unrestricted and riparian buffers are rare. The Pōrangahau Catchment Group is working to improve this.

In the Waingongoro, parts of the lower catchment have stock exclusion and an intact riparian plant community, but there are still large tracts of unbuffered streams in the upper catchment. The Maraetotara Tree Trust have undertaken major fencing and planting work in their catchment, but the positive effects may take some time while the trees establish.

New stock exclusion rules under the Essential Freshwater package require farmers to keep cattle, deer, and pigs out of waterways in low-slope areas from July 2025.

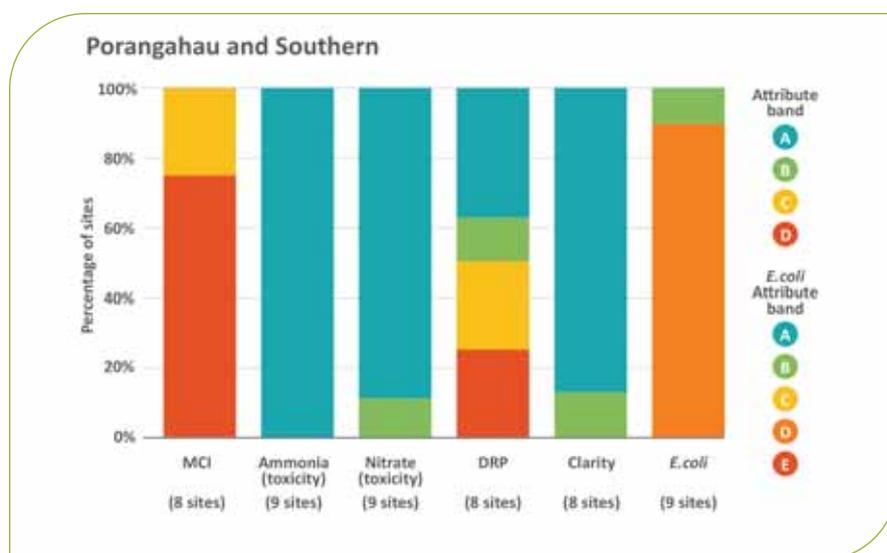


Figure 20-5. Bands (A = Good, D/E = Poor) in the National Policy Statement for Freshwater Management (NPS-FM) for river attributes in the Pōrangahau and Southern Coast catchments. DRP = dissolved reactive phosphorus. MCI = macroinvertebrate community index. Grading based on latest five years of available data.

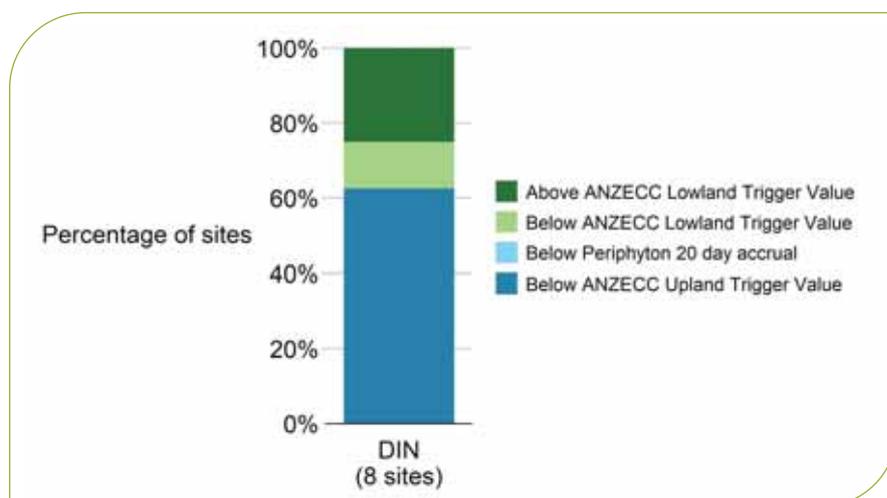


Figure 20-6: Median dissolved inorganic nitrogen (DIN) concentrations for sites in the Pōrangahau and Southern Coast catchments, relative to ANZECC upland and lowland (2000) or Biggs (2000) periphyton trigger values.

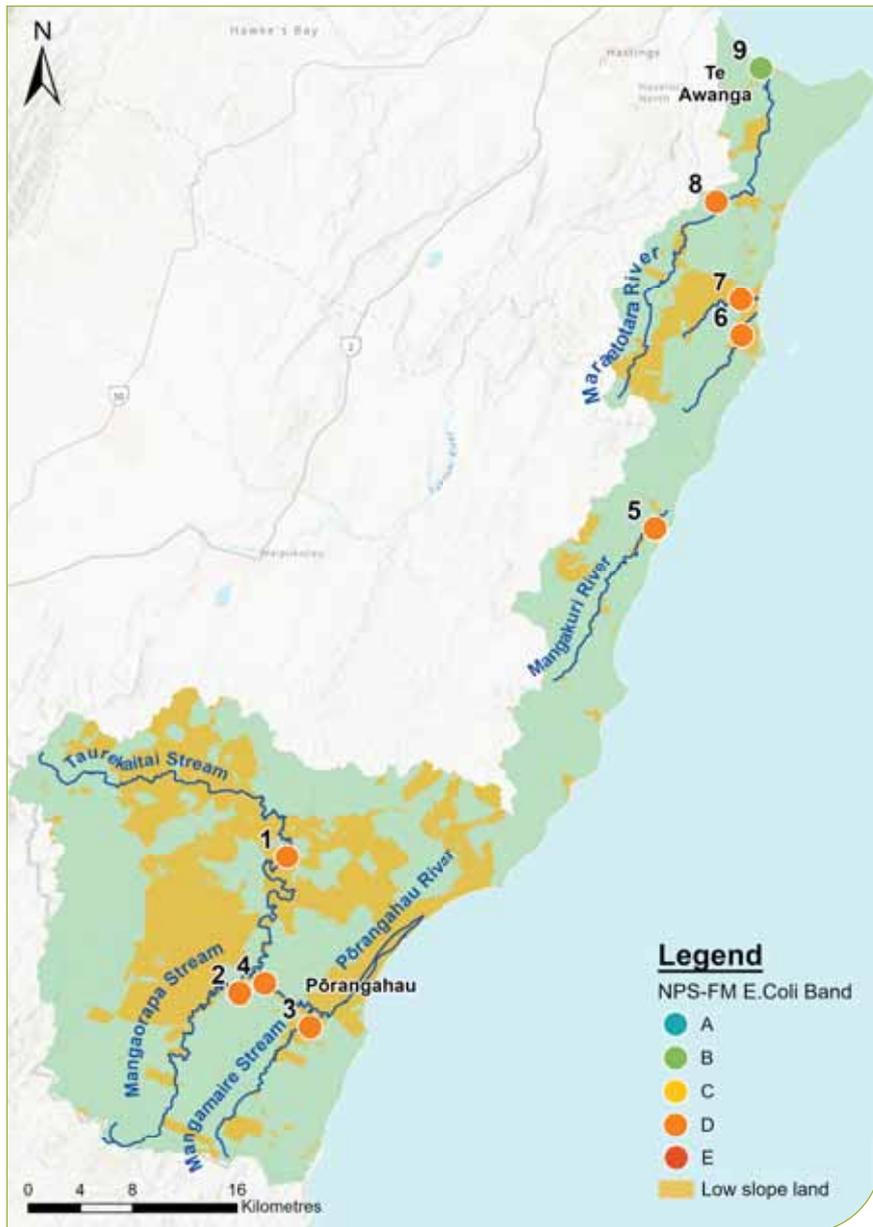


Figure 20-7. NPS-FM *Escherichia coli* (*E. coli*) bands for sites in the Pōrangahau and Southern Coast catchments, and areas of low-slope land where nationally mandated stock exclusion rules will apply from 1 July 2025. In the Pōrangahau and Waingongoro catchments, significant portions of stream length will require fencing from cattle, deer, and pigs, which should help to reduce instream *E. coli* levels. In the steeper Mangakuri, Pouhokio, and Maraetotara catchments, much less stream length will require fencing to comply with stock exclusion regulations. 1: Taurekaitai Stream at Wallingford, 2: Mangaorapa Stream at Mangaorapa Rd, 3: Mangamaire Stream, 4: Pōrangahau River at Kates Quarry, 5: Mangakuri River at Mangakuri Bridge, 6: Pouhokio Stream at Pouhokio Rd, 7: Waingongoro Stream at Peaches Gully, 8: Maraetotara River at Waimarama Rd, 9: Maraetotara River at Te Awanga.



Figure 20-8. Aerial view of Pōrangahau Estuary

Estuary and coastal water quality

The Pōrangahau Estuary (Figure 20-7) is one of the least modified estuaries on the East Coast and is recognised as a nationally significant wildlife habitat. The estuary supports the second largest number of indigenous bird species in Hawke’s Bay and provides nursery and feeding habitat for many fish species.

The estuary has elevated turbidity and suspended sediments, because of the high sediment and nutrient load from the surrounding catchment. Mud concentrations (fine sediments) in the Pōrangahau Estuary are indicative of sediment stress and may be adversely impacting the animals living there, including the popular mahinga kai, tuangi/cockles (Figure 20-8).

Like river water quality, in the rest of the Pōrangahau catchment, concentrations of bacteria such as *E. coli*, Enterococci, and faecal coliforms often exceed national guidelines for contact recreation and food gathering at the sites monitored in the Pōrangahau Estuary. Faecal contamination source tracking shows that ruminant animals (cows, sheep, goats, and deer) are the dominant source of contamination (Figure 20-9).

To reduce faecal contamination, and as part of a wider programme for ecological enhancement in the Pōrangahau catchment, HBRC has been working with landowners to co-fund riparian fencing and planting. More than 45km of riparian fencing work has been completed to date, which includes most of the estuary.

Contaminants carried in rivers may settle into estuarine waters, but some contaminants are discharged from estuaries, mixing with coastal waters. Levels of suspended sediments, turbidity, dissolved oxygen, chlorophyll-a, nitrogen, and phosphorus in coastal waters of this catchment are within the ranges observed in other New Zealand open coast sites (Figure 20-10).



Figure 20-9. Tuangi/cockles



Figure 20-10. Stock standing at edge of estuary



Figure 20-11. Coastal water quality indicators in the Pōrangahau and Southern Coasts catchments, compared to other coastal sites around New Zealand.



Recreational water quality

As part of the stunning southern coast of Hawke’s Bay, the Pōrangahau and Southern Coast catchments have several popular river and beach swimming areas. The coastal beaches tend to have excellent water quality (some of the best in the region) and are almost always suitable for swimming (Figure 20-11). Swimming sites in the river mainstems also have relatively high water quality.

In contrast, lagoon sites have some of the lowest levels of swimming suitability because of the impact of catchment contaminants. Puhokio Lagoon, Kairakau Lagoon, and the Pōrangahau Estuary exceeded water quality guidelines 22%, 17% and 14% of the time respectively, suggesting that on average at least one day a week these areas were unsuitable for swimming. Ruminant animals (cows, sheep, goats and deer) were the dominant source of faecal contaminants at these sites. Maraetotara Lagoon does not have a long enough monitoring record to be graded under the NPS-FM.

Kairakau Lagoon, Pōrangahau Estuary, and Waipuka Lagoon also showed deteriorating water quality over the last 15-20 years.

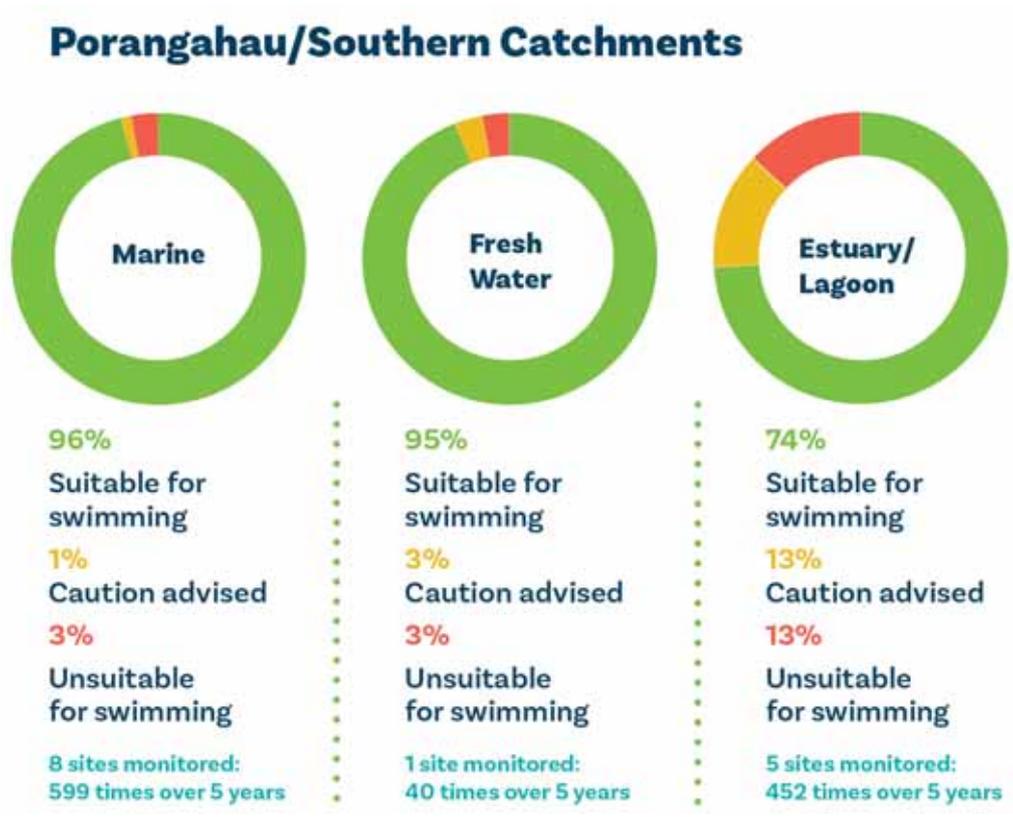


Figure 20-12. Swimming suitability metrics for marine, estuarine, and freshwater sites in the Pōrangahau and Southern Coast catchments.