Christchurch City Council

Banks Peninsula Water Management Zone Committee
MINUTES ATTACHMENTS

Date: **Tuesday 21 March 2023**
Time: **5 pm**
Venue: **Lyttelton Community Boardroom,**
                        25 Canterbury Street, Lyttelton

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Summer water quality monitoring at Banks Peninsula swimming sites

Shirley Hayward

Team leader – surface water quality and ecology

Outline

- ➢ Why, what and where we monitor – focus on Banks Peninsula

- ➢ How the data is communicated to the public

- ➢ Site gradings

- ➢ Our investigations this season

- ➢ Where to from here?

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Why we monitor swimming sites?

To ensure that the public are informed of the health risks in time for them to make informed decisions about whether to enter the water (MfE & MoH 2003)

➤ To assess human health risks of:

➤ Pathogens associated with faecal contamination

➤ Cyanobacterial blooms

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What we monitor?
- faecal indicator bacteria

- Indicator of the potential presence of faecal matter and disease-causing (**pathogenic**) micro-organisms

- Occur naturally in the gut and faeces of humans, other mammals (e.g, dogs, sheep, cattle) and birds.

- Enterococci - saltwater

- *Escherichia coli (E. coli) - freshwater*

- Both in brackish water

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Health risks from pathogens in swimming waters

- Bacteria
- Viruses
- Protozoa

- Ear infections
- Infected sores
- Respiratory illnesses
- Gastrointestinal illnesses

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MfE/MoH guidelines 2003
Microbial quality of swimming areas

Two components to assessing health risks

- **Long term grades** – determine overall level of health risk – uses past 5 years sampling data and a site assessment of known risks (e.g., stormwater outfalls)

Very Good – Good – Fair   Poor – Very Poor

Generally suitable for swimming   Generally unsuitable for swimming

- **Weekly surveillance sampling** – helps identify short-term health risks – especially at sites graded suitable for swimming

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Human health risk

What risk is acceptable?

The NZ guidelines are based on maximum acceptable levels of risk.

- marine waters - 19 illnesses in every 1000 bathers.

- freshwater - 8 illnesses in every 1000 bathers.

If tested waters exceed the acceptable level of risk, the public is advised that the area is not suitable for recreational activities

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Calculating the long term grade

- **Microbiological Assessment Category (MAC)**
  - Five years of data are used to quantify the actual water quality

- **Sanitary Inspection Category (SIC)**
  - A measure of the susceptibility of a water body to faecal contamination

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Long term grade categories

Susceptibility to faecal influence		Microbiological Assessment Category (MAC) (95 percentile of 5 years data)			
		A	B	C	D
Freshwater		≤ 130 E. coli/100 mL	131-260 E. coli/100 mL	261-550 E. coli/100 mL	>550 E. coli/100 mL
Marine		≤ 40 Enterococci/100mL	40 - 200 Enterococci/100mL	201 - 500 Enterococci/100mL	>500 Enterococci/100 mL
Sanitary Inspection Category (SIC)	Very low	Very good	Very good	Follow-up*	Follow-up*
	Low	Very good	Good	Fair	Follow-up*
	Moderate	Follow-up*	Good	Fair	Poor
	High	Follow-up*	Follow-up*	Poor	Very poor
	Very high	Follow-up*	Follow-up*	Follow-up*	Very poor

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Weekly surveillance trigger values

Surveillance modes	Single sample result	Action
Acceptable	≤ 140 Enterococci /100 mL ≤ 260 *E.coli* /100 mL	Continue routine monitoring
Alert	>140 and ≤ 280 Enterococci/100 mL >260 and ≤ 550 *E.coli* /100 mL	Increase sampling Identify and report on possible sources
Action	> 280 Enterococci/100 mL > 550 *E.coli* /100 mL	Increase sampling Identify and report on possible sources Erect warning signs Inform public

Data available on Land Air Water Aotearoa
(www.lawa.org.nz)

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Environment Canterbury swimming site monitoring programme

➢ 57 freshwater sites (lakes and rivers)
➢ 46 coastal sites and estuaries

Sampled ~weekly mid Nov to early March

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Agencies working together

Environment Canterbury

- Weekly sampling and reporting
- Data available on Land Air Water Aotearoa (www.lawa.org.nz)
- Inform agencies of results above guideline trigger values
- Collate data, grade sites, produce an annual report
- Undertake relevant investigations

Te Mana Ora/Community and Public Health

- Manage Inter-agency protocols
- Issue media releases and health warnings
- Arrange inter-agency meetings
- Ensure warning signage is erected

TAs - CCC

- Erect/manage warning signage when required

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Whakaraupō/ Lyttelton Harbour 2022/23 season grades

- Five out of eight sites graded as poor at the start of this season
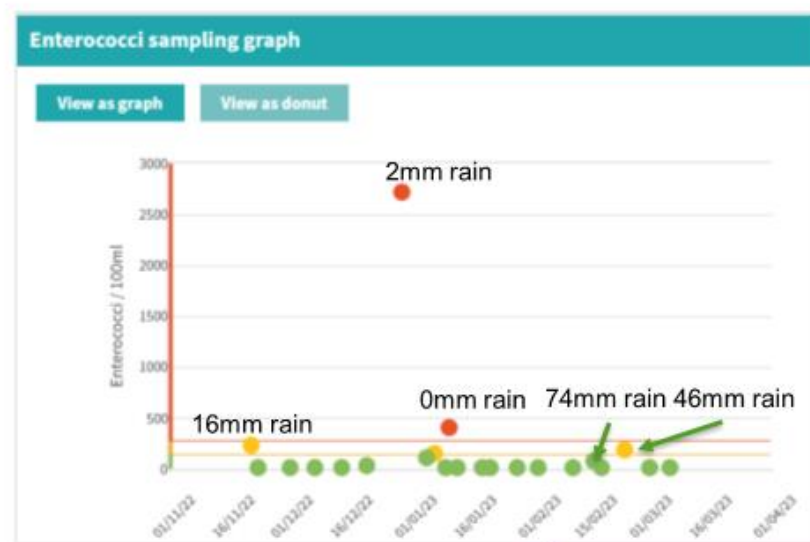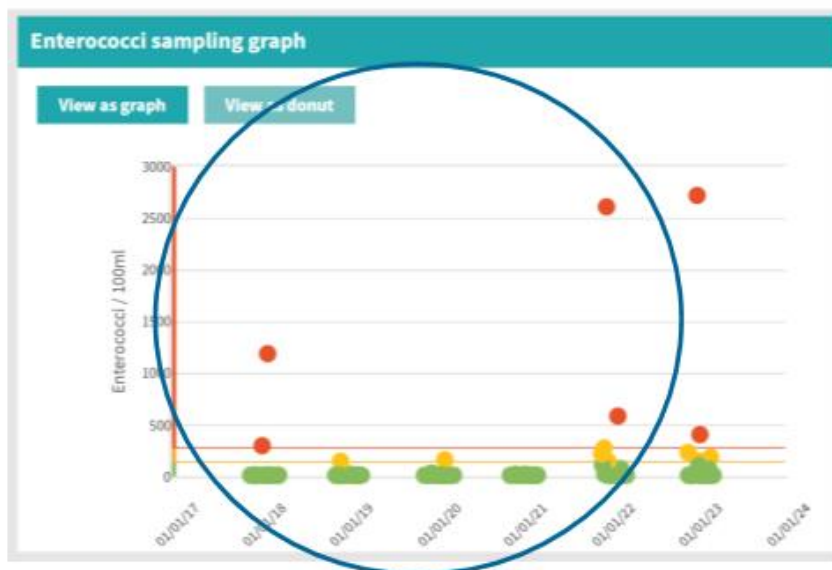
- Last season, only one site graded poor

Canterbury Territorial Authority Boundaries

Recreational water quality
Monitoring site grades

- ● Very good
- ● Good
- ● Fair
- ● Poor
- ● Very poor
- ● Insufficient data

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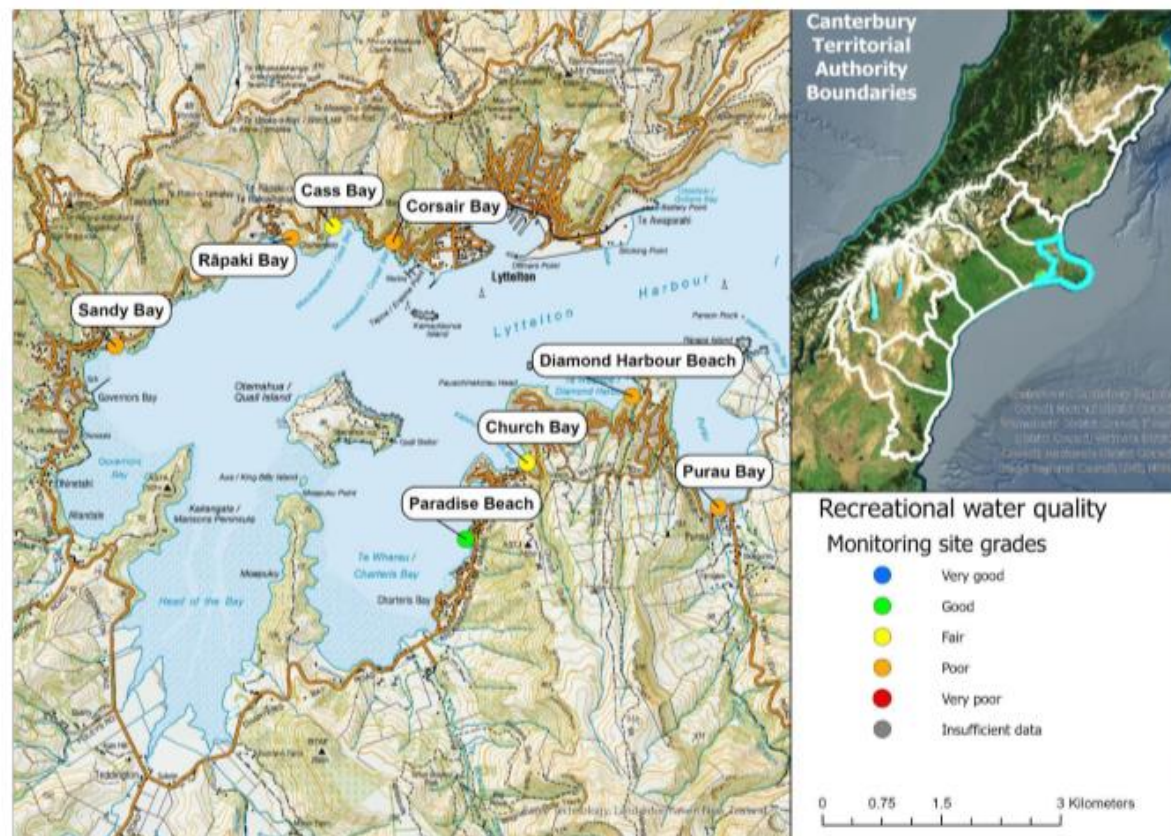
Akaroa Harbour 2022/23 season grades

- One out of eight sites graded as poor at the start of this season

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Attachment A
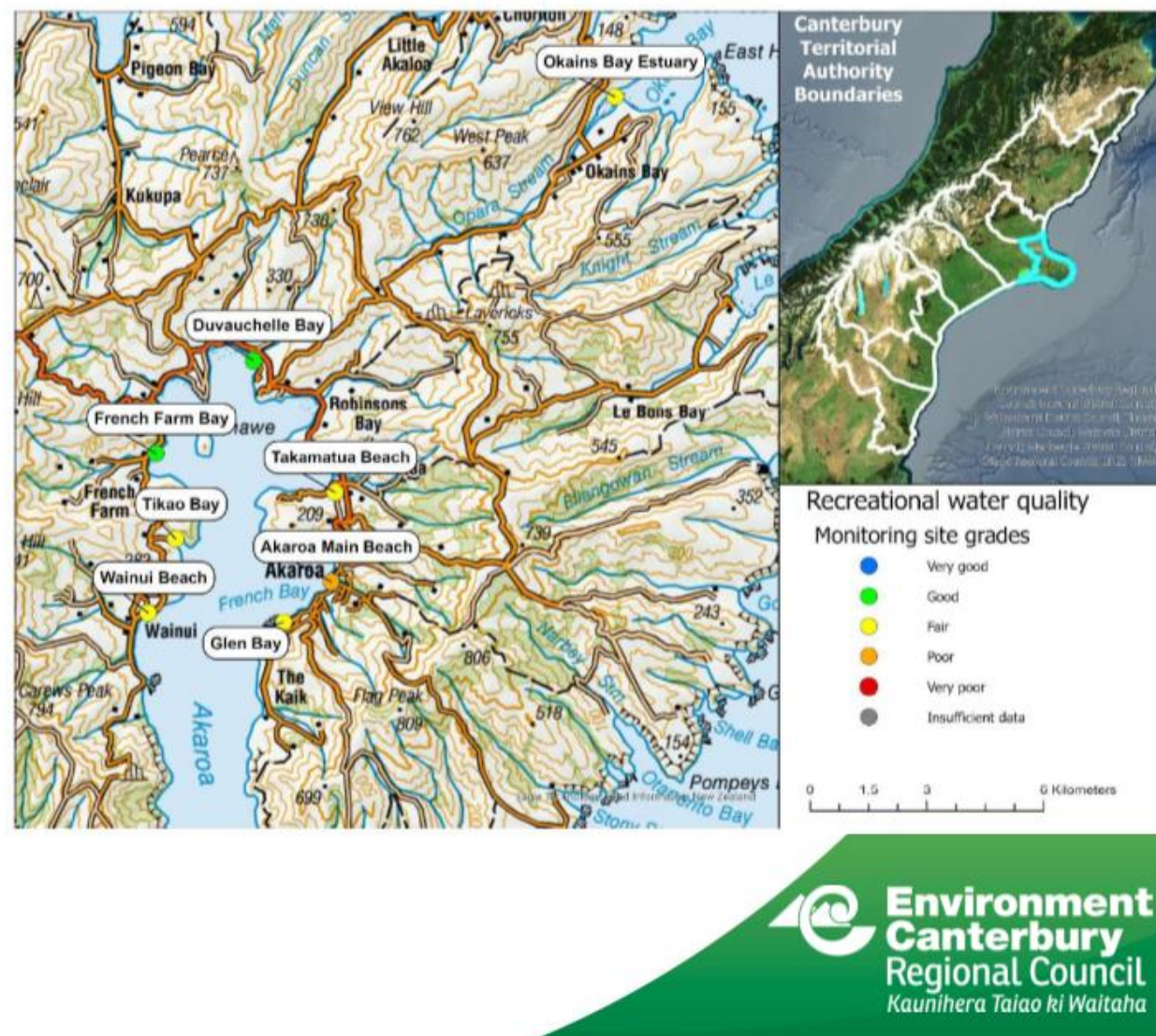
Cass Bay – long term grade of Fair

Five years of data used for grade calculation

This season (2022-2023)

Rainfall is from Coopers Knob, within 48 hours of sampling

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Corsair Bay – long term grade Poor

Five years of data used for grade calculation   This season (2022-2023)
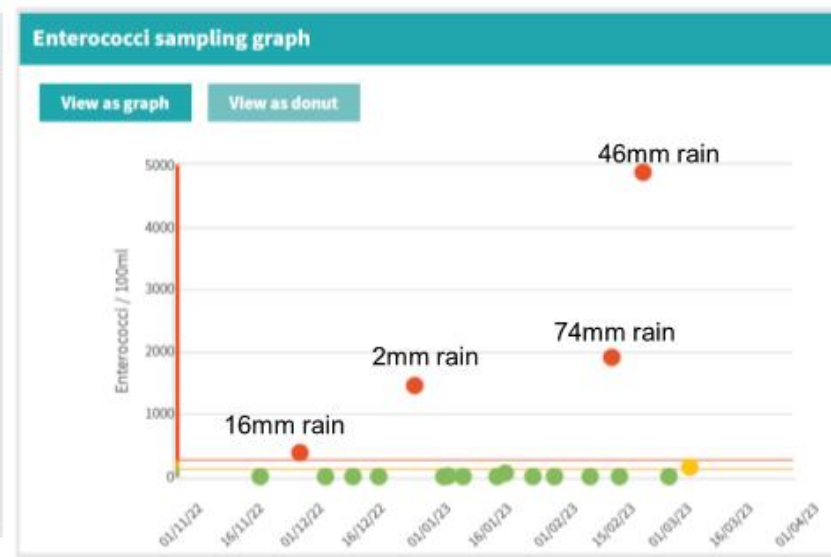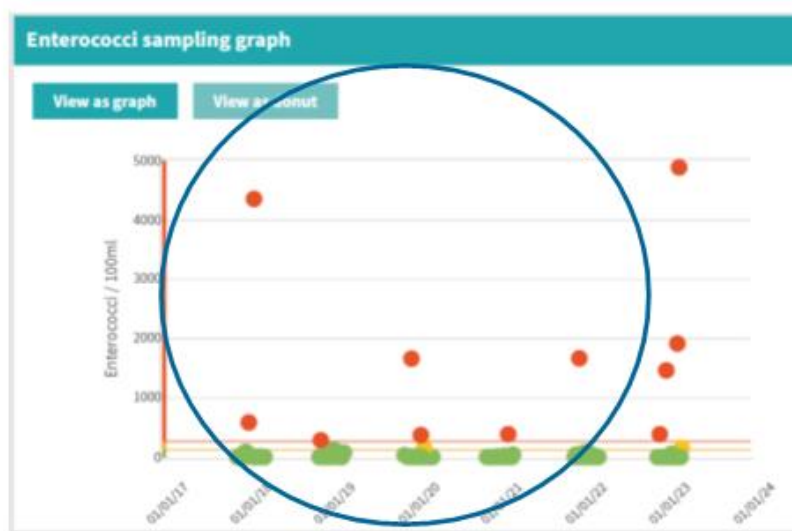
Rainfall is from Coopers Knob, within 48 hours of sampling

Investigations to understand drivers and sources of faecal contamination

Hot weather sampling – (given the high faecal contamination event on 29th December 2022)

– We have undertaken to additional sampling during periods of hot and dry weather days (18-20th Jan and Waitangi weekend).
– No high faecal results found

Rainfall event sampling – 15-18th February - 76 mm at Coopers Knob

– First day of rainfall resulted in **most sites exceeding health thresholds** (Te Mana Ora issued health warning for Whakaraupō and Akaroa harbour sites 17th Feb)
– Resampling daily – most sites improved below health threshold **within 24 hours**
– Samples for Faecal Source Tracking have been collected, to be analysed

Where to from here?

➢ Explore if predictive modelling can help identify times of high risk of faecal contamination –eg how much rainfall is needed to trigger poor water quality results

➢ Work with Te Mana Ora and TAs/CCC on communication of predictive risks

➢ If known sources are found, work with agencies to reduce risks from known sources

➢ Develop improved signage

➢ Review of monitoring sites

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Comments and questions?

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