

MEMO

TO Te Awarua-o-Porirua Whaitua Committee

FROM Project Team

DATE 18 October 2018

SUBJECT Further advice and recommendations for harbour Enterococci objectives

Background

The Committee received and considered technical advice and recommendations for the setting of Enterococci objectives in the harbour. The Committee did not agree to the recommendations presented and sought further advice from the project team.

That advice, presentation and minutes of the Committee workshop are available in the following documents:

- [Recommended harbour objectives](#)
- [Technical report associated with harbour modelling results](#)
- [PRESENTATION Harbour objective setting TAoPW Committee Workshop – 23 August 2018](#)
- [RECORD Te Awarua-o-Porirua Whaitua Committee Workshop - 23 August 2018](#)

This paper provides further advice and recommendations from the project team, including:

- Additional advice in response to specific questions/clarifications sought by the Committee. This advice clarifies the basis for the previous technical recommendations and finds no technical basis to alter the recommendations given in the previous advice.
- Additional advice and options on the spatial scale for the Committee to set Enterococci objectives
- Additional advice outlining the risks and benefits of setting objectives in different attribute states from the previous recommendations
- Additional advice on the Enterococci conditions in the open coast environment

New recommendations

1. Committee consider the spatial scale used to set Enterococci objectives.
2. The Committee consider setting Enterococci objectives in line with the technical advice for the short term and more aspirational in the longer term to reflect high values of these areas and uncertainty around how to achieve these water quality objectives in the shorter term.
3. The Committee consider setting an Enterococci objective for the open coast environment.

The following tables present two options reflecting alternative choices in line with the advice offered by the Project Team

		Shorter term	Longer term
Onepoto Arm	Intertidal	C	B
	Subtidal	A	A
Pauatahanui Inlet	Intertidal	B	A
	Subtidal	B	A
Coast		B	B

OR

	Shorter term	Longer term
Onepoto Arm	C	B
Pauatahanui Inlet	B	A
Coast	B	B

Project team advice to the Committee

Committee question: Generally speaking, does the intertidal/subtidal delineation provide the most appropriate spatial delineation for objectives in the harbour for pathogens?

Response:

There is no “right” way to spatially divide the harbour for the purpose of setting Enterococci objectives. Dividing the arms into intertidal and subtidal is one way of doing it. Alternatives could include a simpler single objective that covers both intertidal and subtidal areas (described below) or going for more complicated subdivisions into multiple different objectives for more spatial areas.

The division of the two arms into intertidal and subtidal reflected that there tends to be better Enterococci conditions in the subtidal areas which the project team felt the Committee may have wanted to recognise through objective setting, though this is a suggestion not mandatory.

Objectives could alternatively be set in more spatial areas. However, as with the advice for sediment and metals, the fate of pathogens from different catchment sources is uncertain and mixed through the harbour, so our ability to set and manage to spatially explicit objectives is somewhat limited. The project team would discourage making things more complicated unless the Committee can identify a good reason for doing so.

The Committee could consider setting a single objective (or perhaps one for each arm) that must be met everywhere in the harbour. This would drive improvement in the most vulnerable areas and the catchment inputs to the harbour, and by extension, the lower risk areas would likely stay that way or even improve. The down side of this approach is that if only a single objective is chosen it will have the appearance of being un-aspirational because it will need to be set low enough to be achievable in the most vulnerable (worst) intertidal areas. As described above this is one of the reasons the intertidal/subtidal split was suggested.

Committee question: A sense check of the Pauatahanui subtidal recommendation of a B band when the WS scenario indicates an A is possible

Response:

The GW team heard Committee discussions at previous meetings indicating that freshwater objectives and land use practice changes more closely reflecting the improved scenario might be justified in the rural areas of the Pauatahanui Inlet catchments rather than the changes of the water sensitive scenario.

The Committee has agreed on freshwater *E. coli* objectives that are largely achievable with the levels of *E. coli* reduction estimated with the improved scenario and has observed the relatively high additional costs of the water sensitive scenario in rural areas for only marginal additional gain in sediment load reduction. The implication of these choices are that your *E. coli* freshwater objectives, sediment load reduction targets and associated land use practice changes are estimated to reduce *E. coli* levels in the order of 50-60% in rural catchments.

The water sensitive scenario estimated to reduce *E. coli* levels from rural freshwater catchments in the order of 70-80% and estimated to achieve A band Enterococci levels in subtidal parts of Pauatahanui Inlet. It is uncertain if the level of *E. coli* reductions required to meet freshwater

objectives (ie, 50-60%) would achieve A band Enterococci objectives in subtidal parts of Pauatahanui Inlet, or if that would require *E. coli* reductions closer to 70-80%.

The recommendation of a B-band objective in Pauatahanui Inlet subtidal area was based on setting an Enterococci objective that is likely commensurate with the *E. coli* reductions sought with the freshwater objectives.

The Committee may set an Enterococci objective of A, recognising this would provide a lower level of pathogen risk and may require *E. coli* reductions higher than those sought to achieve freshwater objectives in rural catchments.

Committee question: A sense check of the Onepoto intertidal recommendation of a C band when:

- *These locations are highly valued and used recreationally and culturally*
- *Some parts of the Onepoto intertidal area are likely to get to an A or B under the scenarios while others will be hard to move from D*

Response:

The water sensitive scenario model result shows that there is likely to be a range of conditions across parts of Onepoto intertidal areas, with some upper parts of the Arm remaining in D band and some potentially achieving A band closer to the Mana end of the arm.

As noted in the responses to the two previous questions, the project team recommendations were intended to:

- recognise that Enterococci conditions tends to be better in the subtidal areas
- recognise uncertainty and mixing in the fate of pathogen sources from different sources
- be commensurate with the likely *E. coli* reductions to be made through freshwater objectives
- improve conditions in the highest risk areas
- keep the objectives simple

The Committee may wish to set an Enterococci objective in a higher attribute state to reflect the values of these places and provide a lower level of pathogen risk. It is uncertain if the level of *E. coli* reductions required to meet freshwater objectives would achieve C band Enterococci objectives. Setting Enterococci objectives higher than C band is likely to require reductions in *E. coli* in freshwater catchments that are greater than those modelled with the water sensitive scenario and greater than required by the Committee's currently agreed freshwater objectives.

Committee question: Is the model underestimating pathogen contamination at Brown's Bay – current state shows red/yellow but the band is given as a B?

Response:

The model may be under-estimating conditions in Brown's Bay. If conditions are worse than estimated by the model, this may indicate that greater reduction in *E. coli* from freshwater catchments may be required to reach objectives.

Committee question: Is there value in looking at a two-step objective at some locations where water quality is hard to shift but where community values and aspirations are high?

Response:

There is potential for the Committee to have a two-step objective. This could allow the Committee to set an aspirational target that recognises the challenges in achieving improvements in harbour water quality and that community aspirations are only achievable in the long-term.

In setting any long-term aspirational objectives, it is important to acknowledge that the ways to achieve these will not be based on science and identified mitigation actions, but on an assumption that all relevant agencies and the community will take every opportunity to reduce catchment inputs of pathogens. This will have ongoing implications for agencies and the community beyond that which has been modelled through the water sensitive scenario and required by the Committee's currently agreed freshwater objectives.

The main risks with this approach are that the longer-term objectives are not achieved and the community expectations are not met. This risk can be mitigated through clearly acknowledging the significant, ongoing effort required up front and being responsive to monitoring and emerging technology to ensure the most effective management options are identified and implemented.

Committee question: What is possible with the open coast?

Response:

There is no 'right' way to delineate the open coast, however, we do see variation in the summer recreational monitoring results along the western coastline (Table 1). This may indicate that different parts of the coast are more or less influenced by freshwater catchment discharges and others have more or less mixing with coastal waters. Beaches within bays and closer to urban areas, such as Titahi Bay and Plimmerton appear to be in lower attribute states, while beaches more open to the coast tend to have higher attribute state.

Table 1: Summer recreational monitoring results, 2015/16-17/18

Location	Estimated attribute state ¹
Titahi Bay	B-C
Plimmerton Beach	C-D
Karehana Bay	B
Pukerua Bay	B
Paekakariki Beach	B

¹ Ranges are given where there are different attribute states for multiple monitoring points in a location

The harbour scenario modelling results indicate there is potential for improvements in the inner harbour areas such as Plimmerton Beach to potentially A or B attribute state. Note that the current monitoring suggests conditions may be worse than that indicated by the modelling, so the level of improvement required to reach those outcomes may be greater than indicated. The monitoring also indicates that most open beaches are B attribute state, which may indicate that it is particularly challenging to achieve A attribute state objectives.

Setting coastal Enterococci objectives also needs to consider the Wastewater Treatment Plant (WWTP) outflows and priorities being discussed by the Wellington Water collaborative group. Priority was previously on the upgrade of the WWTP, though that group is now considering how the network can provide for the improved outcomes of the harbour.