

Mr Kurmann's response to further questions from the Hearing Panel:

Question 1: How were the treated wastewater limits in the Mission Statement derived? (see below for an explanation)

In the Mission Statement provided in your evidence, there were wastewater limits/standards included (a copy of these limits is included below).

2. *The discharge shall not cause the soil quality in the unnamed designated area, to fall below the following standards:*

a) *The natural pH of the soil shall be within the range 6.0 to 6.5*

Answer: To discharge waste water with an acid or alkaline pH could cause a risk to the receiving environment. We could extend the pH from 6.5 (slightly acid) to 7.5 (slightly alkaline) without risk to the marine life.

b) *The median concentration of the faecal coliform bacteria in the water shall not exceed 100 per 100 millilitres, and the 80 percentile concentration shall not exceed 350 per 100 millilitres, based on not fewer than 5 samples taken over any 30 day period.*

Answer: We are aware that the existing recreational level is in the range of 500 faecal coliforms and we may accept that level.

c) *The dissolved oxygen concentration shall not be reduced below 90% of saturation.*

Answers: We should specify the above sentence; It should say not be reduced below 90% of the dissolved oxygen concentration of the oxygen content in the waterway above the wastewater discharge point. Some fish species are requiring a minimum of 90% oxygen below saturation at a certain pH (slightly alkaline) and a high water temperature (above 25 degrees Celsius)

d) *The concentration of total N in the discharged treated water shall not exceed the following:*

at pH 6.5; 20°C; 1.0 mg/l total Nitrogen

Answer: That is a typing error which I did not pick up. (It should say 10.0 mg/l total Nitrogen, with the reservation that the total Ammoniacal-N will be below 5.0 mg/l. We need to make sure that the nitrification in the wastewater plant will be functioning satisfactory.

e) *The concentration of total P in the discharged treated water shall not exceed 0.25 ppm*

Answer: The international level for total P content in a waterway (river; creek) is 0.05ppm. The P load from the discharge of the wastewater is below 0.25ppm plus the dilution factor between River water flow to the wastewater discharge flow, we can expect the required level of 0.05ppm in the river.

Question 2: What are the expected concentrations of the determinands, listed in questions i) and j) from Minute No. 2, not the likely removal rates?

Note: You have provided expected % removal values for some determinands (these being the same numbers already received in the evidence presented at the hearing). We appreciate that you may not have actual monitoring results for some of these determinands from the Taipa WWTP, but we are interested to know what the expected quality of the treated wastewater would be from an EC unit.

You may have information you can provide on the results of other WWTPs either in New Zealand or overseas on this.

Answers: The actual figure for some of the determinands from the wastewater of the Taipa plants are;

Total faecal coliforms = <500CFU/100ml

Nitrate = <5mgNO₃-/100ml

Ammonium = < 40mgNH₄/100ml

Phosphate = < 0.20mg/100ml

First please keep in mind that we are not taking about Total Nitrogen or Ammoniacial-N. The results would need to be converted to Ammoniacial-N to for comparison. I am aware that the parameter Ammoniacial Nitrogen does not comply with our mission statement, but I am convinced that a change of the operation of the existing Taipa wastewater treatment plant could achieve the required results.