

10 February 2020

Process for Te Mato Vai (TMV) one off water treatment plants disinfection and PACL dosing trial

1.1 Context

It is important to note that while some critical key steps will be followed for Te Mato Vai commissioning processes at all intake sites, the exact process will vary according to site specifics, weather and other conditions at the time. The processes outlined below are therefore an overview of the critical key steps only.

1.2 Water Treatment Plants one-off disinfection process

Witness point: NES and Landowners will be given prior notice that the one-off disinfection process will begin.

Throughout the disinfection process there will be a series of tests done on the disinfected water, to both monitor the success of the disinfection process, and to ensure there is no potential for an effect on the downstream environment. We will use the naturally occurring chlorine level present in the stream's water prior to treatment as a baseline.

Firstly, the complete water treatment facility, from the stream water intake point to the bulk storage tank/s, will be completely drained.

Witness Point: NES and landowner representatives on site will be informed that disinfection will begin.

The chlorination process will then start by progressively filling all of the treatment plants various facilities with water disinfected with Calcium Hypochlorite ('Hypo'). This water will be contained within the system for a minimum of 24 hours until testing shows disinfection has been completed appropriately.

Once this is achieved the water will be stored on site until testing shows the chlorine concentration has naturally decayed to below the minimum level of detection.

We have elected to use a non-chemical protocol to remove the chlorine through the natural decay of chlorine over time and with exposure to sunlight and air. Normally, prior to discharge of disinfected water, sodium thiosulphate would be added to the water to neutralise the chlorine.

If the natural decay process takes too long, we may elect to add a small concentration of sodium thiosulphate. If this is necessary, we will notify landowners prior to this occurring and before discharge to the environment.

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Witness Point: NES and landowners notified that the water will be released to the stream.

The water will then be released to the stream.

1.3 Water Treatment Plant PACL dosing trial

Witness point: NES and Landowners will be given prior notice that the PACL coagulant trial will begin.

During the trials, a mix of tests will be done both within the water treatment plant and in the stream environment. This includes testing for dissolved aluminium in water. These tests will be at regular intervals and each time the PACL concentration is changed.

We will use the naturally occurring dissolved aluminium level present in the stream's water prior to treatment as a baseline.

When the Contractor starts adding PACL (during the trial period) the PACL concentration will be raised to determine the optimum concentration.

Also during the trials, the treated water is expected to be released to the water supply network. However this will not occur until the concentration of dissolved aluminium in the discharge has been tested, reported to To Tatou Vai (TTV) and approved by TTV for release to the network.

From time to time during the trial period, backwash water will be released from the AVGs to the backwash ponds, and then that water will be decanted from the backwash ponds to the streams.

Prior to any discharge to streams, the concentration of dissolved aluminium will be tested to ensure it meets the target level. The target level for dissolved aluminium as measured in the environment is 0.055mg/L.

During the trial period, backwashes may need to be forced to enable discharges to the streams to be measured. Stream water samples upstream and downstream of the Water Treatment Plants will be taken within 60 minutes of the discharge, to determine the levels of dissolved aluminium.
