

News Update

To Tatou Vai

Water is a universal resource provided by nature - owned by no-one, but valued by all.

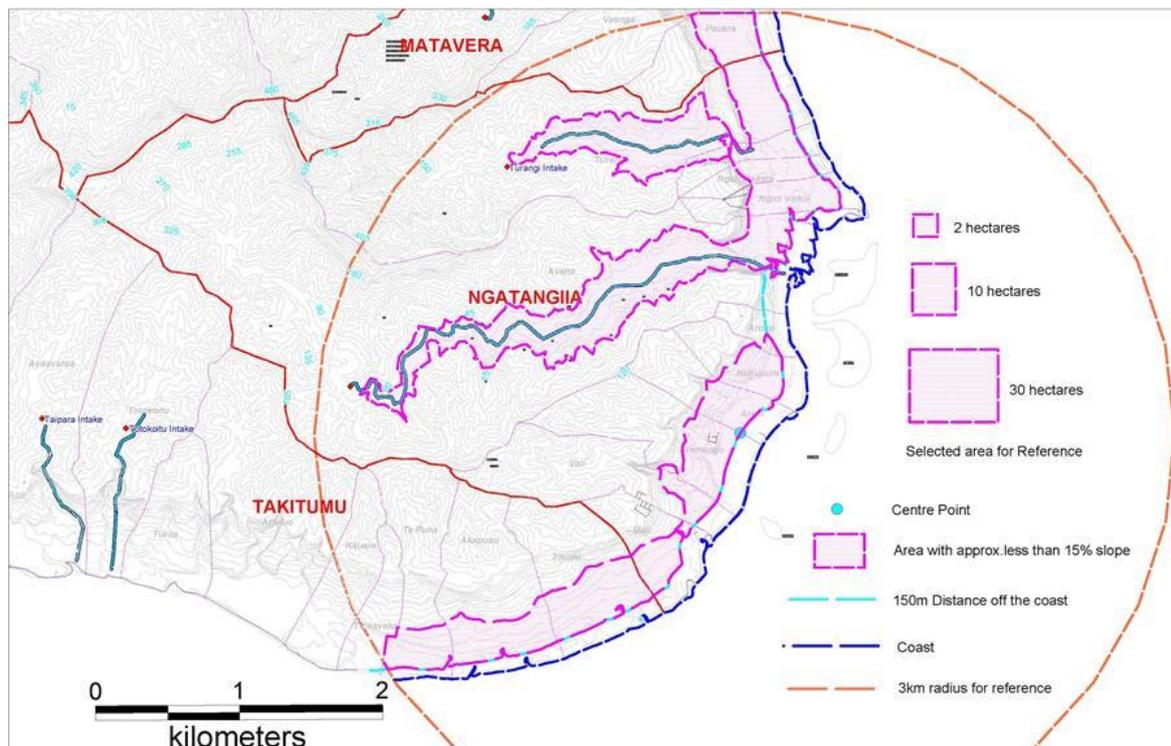


At a glance

- The 'land-based vs ocean outfall' dilemma
- What is secondary treatment?
- Avana and Turangi intake site works to be completed first
- Our commitment to delivering potable drinking water at the tap

Mei Te Vai Ki Te Vai - What's happening?

The 'land-based vs ocean outfall' dilemma



Suitable land for land-based wastewater treatment to service Muri

The Mei Te Vai Kei Te Vai project team will have to overcome a key dilemma if they are to design a wastewater system that is practical, affordable and can be successfully operated and maintained locally.

The dilemma is that on the one hand, community feedback to-date indicates preference for a land-based system, but on the other hand there have been very few offers of suitable land to make this option viable. As a result, ocean outfall is currently the only viable option for treated wastewater disposal.

In response, the team is currently investigating whether a combined ocean outfall and land-based system could be a third option, as a way to progress land-based treatment within a much smaller footprint. This would enable the benefits of using a nature-based final treatment stage to be realised, while also catering for wastewater volumes.

All options put forward for Government to consider must meet international environmental and public health standards, be robust and reliable to operate, affordable for Rarotonga to maintain, and have the capacity to cope with future growth.

Regardless of which disposal option is chosen, land will be needed for the treatment plant, where sewage will be treated to secondary level. The secondary treatment process produces two products for disposal – treated wastewater, and solid waste called 'sludge'.

“Both treated wastewater and sludge can be used to enrich the soil because they contain nutrients and organic matter,” said PMU lead environmental scientist Murray Wallis, a soil specialist. “Rather than looking at waste as something to simply ‘dump’ into the environment, there can be great benefit from recycling suitably treated waste to improve soil quality and support agriculture.”

Both treated wastewater and sludge from secondary treatment are suitable and safe to use on the land, when managed properly. For sludge this would involve composting it to a high temperature before applying to the land. For treated wastewater it would involve putting it into the soil without contacting crops.

What is secondary treatment?

Secondary treatment uses a biological process to digest and remove dissolved organic matter from wastewater. It is an additional stage after pre-treatment and primary treatment.

Pre-treatment removes any large debris from the wastewater stream.

Primary treatment removes organic matter and other solid particles, usually through settlement of the particles in a pond or tank.

Both pre-treatment and primary treatment improve the quality of the wastewater significantly.

Secondary treatment involves a process where natural micro-organisms feed on the organic matter in the wastewater. This process removes the organic matter and significantly improves the quality of the wastewater. There are a number of types of secondary treatment systems – the PMU will recommend a system that:

- doesn't require a lot of land
- is relatively easy to operate and maintain
- has minimal impact on the community and natural environment, and
- can be extended to allow for future demand.

If treated wastewater is then disposed of onto land, this acts as an additional treatment as plants take up the nutrients from the soil.

Te Mato Vai - What's happening?

Avana and Turangi intake site works to be completed first

Construction at the Avana and Turangi intake sites is progressing well and expected to be complete by the end of April 2019 – these will be the first of the 10 sites to be completed.

Contractor McDonnell Dowell started construction on these two intake sites in late 2018, closely followed by several other intake sites. Each site takes about 6-9 months to complete, and all intake works will be completed by the end of 2019. Once all intake works are complete, the Te Mato Vai project team will be able to achieve their objective to “deliver potable water, reliably to all properties connected to the existing water supply network.”

Te Mato Vai project manager David Sloan said: “The team has been hard at work ensuring these intake sites are constructed to a high standard, and on time. We are especially thankful to the landowners who have been involved and supportive throughout the process.”

The team has completed all of the concrete structures at Turangi and Avana, almost completed the stainless steel storage tank at Turangi and are making good progress on the tank at Avana.

As construction progresses, we will provide site visits for landowners to view work in progress and the completed structures on their land.

The PMU thanks landowners for their contribution to the project; their continued support is greatly appreciated.



Landowners site visit at Turangi

Our commitment to delivering potable drinking water at the tap

The Te Mato Vai Project is tasked with *“Delivering potable water, reliably to all properties connected to the water supply network”* – so what do we mean by potable?

‘Potable water’ is a term commonly used to describe water that is considered safe for human consumption whether through drinking, cooking or personal bathing. It has either been treated, cleaned, or filtered and meets established drinking water standards. Examples of potable water would be tap water from treated water supply systems or water that has been UV filtered, or distilled.

Non-potable water is generally raw water that is untreated for example from lakes, rivers, rainwater, groundwater, natural springs, and ground wells. Such water is not considered safe to drink or use in cooking or personal bathing.

The Te Mato Vai Project Management Unit (PMU) is using World Health Organization (WHO) drinking water quality specifications as a guide to achieving the project’s potable water objective. WHO specifications state that *“drinking water available at the tap shall be microbiologically safe, wholesome and potable.”* This standard addresses drinking water quality from the holistic perspective of taste, smell, and turbidity (cloudiness) as well as safety.

All water intakes on Rarotonga are untreated and do not provide potable water. Community and school drinking water stations as well as privately owned accommodation establishments undergo some form of treatment, whether by physical filtering or ultraviolet (UV) treatment.

The Ministry of Health has conducted between two to three drinking water safety surveillance tests every year at community and school water stations, and up to monthly in the latter half of 2018. Over the past five years, most community and school water stations have produced variable results especially after heavy rain with a select few continuing to fail to meet the required microbiological standards for acceptable drinking water. This has required public health officers to temporarily place red stickers on those stations which have failed, until remedial action has been taken.

The Ministry of Health public health department has become increasingly concerned with the poor water safety surveillance test results in 2018.

“The endorsement of the National Drinking water Standards this month provides an important benchmark for the Cook Islands in moving forward to ensuring the provision of microbiologically safe, wholesome, and potable water and thus reducing the risk of a water-borne disease outbreak” says Dr Herman, Secretary of Health.

The Ministry of Health, the PMU and other Government agencies are investigating water disinfection options in preparation for water quality discussions during community consultations in 2019. Factors under consideration include safety, complexity, reliability, capital cost, and ongoing operational and maintenance costs.

Disinfection options include

- UV - A complex system that uses ultraviolet (UV) energy. Maintenance costs are high, and specialist skills are required

- Ozone - Used for niche applications where good technical support is available. Maintenance costs are high, and specialist skills are required
- Chemical disinfection – Safe, cost-effective and easier to manage effectively. The most commonly used option, including in New Zealand and Australian water supply networks.

Concurrent discussions include consideration to minimise the environmental impact of single-use plastic bottles and other non-biodegradable plastic products that hold drinking water. The Water, Waste and Sanitation (WATSAN) Division of Infrastructure Cook Islands (ICI) has highlighted the mounting burden that plastic bottles and other non-biodegradable products have on the economy, human health and the environment of the Cook Islands.

By providing potable drinking water at the tap for all properties connected to the public water supply network, the Te Mato Vai project would contribute to reducing not only drinking water-related public health risks, but also support waste minimisation and healthier environmental efforts.

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