

Meeting Title:	Recovered Water Working Group Meeting	
Date / Time:	Friday 21 November 2025 at 9:00am	
Chair:	Andrew Moraes (interim)	
Attendees:	Her Worship, Mayor Tania Tapsell	Nona Taute
	Stavros Michael	Hana Taipata
	Paul Warbrick	Deryck Shaw
	Ian Gray	Dr Kepa Morgan
	Michelle Hingston	Deliah Balle
	Dylan Thorne	Kerri-Anne Hancock
	Stefanie Barker	Tame Malcolm
	Damian White	Hokimate Kahukiwa
	Councillor Gregg Brown (via Zoom)	Dr Grant Northcott
	Alison Lowe	Jason Ewert
	Mary Pappon	
Minute Taker:	Michele Liddicoat	
Apologies:	Eric Cawte, Wallace Haumaha	Marlene Bosch, Ella Tennent

Agenda
Meeting opened 1. Welcome / Opening Karakia 2. Agenda 3. ‘Building for the Future – Upgrading Rotorua’s Wastewater Treatment Plant’ video presentation. 4. Presentation – Jason Ewert (Great Lake Consulting) Wastewater Treatment Plant (WWTP) Upgrade. 5. Presentation – Grant Northcott (NRC Ltd). Emerging Organic Contaminants (EOC’s) 6. Working Group Terms of Reference • Scope of responsibilities • Approach to collaboration and decision-making • Feedback 7. Closing Karakia Meeting closed

Recovered Water Working Group Items / Actions

Meeting opened at 9:02am by RLC Chief Executive Andrew Moraes
The opening Karakia by Hokimate Kahukiwa.

'Building for the Future – Upgrading Rotorua's Wastewater Treatment Plant' video presentation played.

Presentation – Jason Ewert

- A comprehensive overview on the processes involved with treating inflows of wastewater to remove contaminants and produce recovered water was presented to the group.
- Plant over 35 years old; upgrade currently underway; required for receiving and treatment capacity, compliance, environmental risk.
- Upgrade designed for direct discharge and managed non-potable reuse if required; a new discharge does not need to reduce nutrients or solids any further to those achieved by the plant.
- Peak capacity increase from 44 ML/day → 72 ML/day; average flow from 20 ML/day → 25 ML/day.
- Treatment process:
 - Inlet works: screens & grit removal.
 - Bardenpho biological process.
 - Membrane bioreactor (MBR).
 - UV disinfection.
 - Expected 94% N & P removal; 7-log pathogen reduction.

Questions:

- Nona Taute - Solids processing to stay the same, will increase proportionately to population growth.
Jason Ewert - Not part of scope at this stage as not required yet i.e. there is enough capacity in the solids processing plant to handle the upgrade.
- Hokimate Kahukiwa – How much ends up the forest? It currently all goes to the forest.
Andrew Moraes – The sooner we come up with a solution, we can turn the tap off to the forest.
- Her Worship Tania Tapsell – Drugs in the water, is there a possibility to stop the discharge if levels increase. The effluent going out – is it harmful?
Jason Ewert - Alarms used to alert operators of any significant changes in wastewater characteristics entering the plant but there is not necessarily an increase in the discharge.
- Kerri Anne Hancock – Examples of comparable WWTP's identified that most discharge to waterways (except Taupo), is there any global change in process that doesn't involve waterways. Singapore and some arid regions look to reuse.
Jason Ewert – Various options out there.
- Tame Malcolm – Future State, what modelling has been done considering population, climate change, drug use etc. How has that factored in to your thinking?
Jason Ewert – Design Criteria for the upgrade design was based on high growth modelling (population) based on high growth up to 2050. A big part of the upgrade is improvement of the resilience of the facility on peak rain days – which is becoming more common with climate change. Also work that looks at the entire system – infrastructure upgrades in the system to avoid rainwater getting into the waste water network.
- Dr Kepa Morgan –
 1. Please provide a definition of recovered water.Jason Ewert – it depends on what the water is intended to be used for. "Recovered water is suitable for intended use"

2. Ultra filtration – can it remove dissolved contaminants?

Jason Ewert – No. Dissolved contaminant will get through. The only thing that will remove that is reverse osmosis. This process has high concentrations and brine issues

3. Reuse in Taupo – Surface irrigation. Nutrients remain in the water, and it is irrigated to land. Nutrients are taken up by grass. Does not include Fonterra dairy land. Fonterra concern would be around pathogens, because the Taupo water is not disinfected. Dr Kepa concern is with dissolved contaminants in the water – going through irrigation, for cows to eat, to come into food production life cycle.

Grant Northcott – Fonterra decision is not based on scientific evidence. They have the same stance on bio-solids. Fonterra is more concerned about public perception of wastewater.

International studies show that if something does come through the process, it is negligible and does not affect the person – the person is more exposed through daily activities.

- Deryck Shaw – Trying to understand the level of contamination of rainwater.

Jason Ewert – A normal dry day is about 20ML i.e. 20M m³. On a wet day the volume can double. The WWTP can currently handle 44m cube per day. It can change by the hour. Stormwater infiltration comes mainly from private pipelines.

- Deryck Shaw – What is the lifetime of the membrane.

Jason Ewert - Approx 10 years. Provision is made for asset renewals through asset depreciation.

If there are any further questions, please send these through via email.

Presentation – Dr Grant Northcott

- Defined EOC – Emerging Organic Chemicals/Compounds. EOCs include pharmaceuticals, detergents, antimicrobials, fragrances, endocrine disruptors, microplastics.
- Explained permeate and what MBR permeate means. (q – Dr Kepa Morgan)
- Confirmed Influent is variable, effluent will therefore be variable based on population activity, day of the week etc.
- 350,000+ manufactured chemicals in global use; many not assessed before entering environment.
- NZ influent similar to overseas; effluent on average higher due to infrastructure such as a lot of oxidation ponds.
- EOCs are already detected in groundwater, estuaries, sediments.
- Rotorua MBR permeate (2017): mostly “new minimums”; four chemicals were higher than maximum levels from other plants in NZ (potentially a higher use of anti-microbials from pools and geothermal).
- Advanced treatment helps but cannot remove all dissolved chemical compounds.
- Dilution reduces risk.
- “Pseudo-persistence” is the term now used to describe constant low-level input.
- Point to note: We are discussing known biological impact on the environment exposed to the treated water.

Questions:

- Deliah Balle – With regard to EOCs currently found in the lake, not via the WWTP; what is the current control for monitoring of this?

Dr Northcott – Assume the only measure at the moment is measuring pathogens to determine if safe to swim etc. If a particular chemical is identified as a problem – analysis can be done on where it is coming from and how to control it entering the lake.

- Kerri-Anne Hancock – We can't measure all EOCs?
Dr Northcott - They can be, but testing is complicated and costly, so we use indicators of groups of contaminants.
- Kerri-Anne Hancock – Even with upgraded technology in the WWTP, we will not remove all EOCs?
Dr Northcott - Correct. The chemicals compounds do not meet the classification of persistent contaminant , but there is “pseudo persistent” because of the continuous contamination. Monitoring would determine level of risk
- Mayor Tania Tapsell – if we identify there are some harmful EOCs, what / who do we advise?
Dr Northcott – Key Govt Ministry's. Human Health - Ministry of Health. Environmental Impact - Ministry of ENV. EPA is responsible for management of key materials, hazardous materials.
- Hana Tapiata – How accurate are the maximum limits?
Dr Northcott- not enough data points to calculate as yet. We need about 50 data points before we can pull meaningful data (currently only about 20).
- Nona Taute – This assessment of EOC is about 10 years old. Will we get another assessment for this group?
Dr Northcott would advise completing WWTP upgrade prior to any further assessment.
Andrew Moraes added: We also need to identify baseline contaminant levels in the lake, determine the scope of any assessment. **Action item.**
Jason Ewert – Reverse osmosis was not considered as an option for the WWTP upgrade because of cost and because the process produces a clean stream of water and a concentrated waste stream (salty brine),that becomes very difficult to dispose of.
- Dr Northcott - Rotorua WWTP uses three steps to remove EOCs: Biological, Membrane Filtration and UV. For comparison, a dry arid state in USA uses five steps to remove all EOCs to enable drinking water to be produced from waste water. RLC did look at the option and to get the clean water we end up with the concentrated brine that would be more challenging to dispose.
RLC to investigate reverse osmosis as an option. **Action item.**
- Dr Kepa Morgan– Would like to make a point that we (as a population) know very little about EOCs, perhaps approximately 10% of what we need to know.
Would like to confirm that people's habits and lifestyles have increased EOCs.
Would like to see graphs of averages, but also the spread to provide an understanding of the uncertainty of using estimates. **Action item**
Is it possible EOCs have contributed to the different colour of roe for trout across our lakes?
What if we remove the hospital discharge and blackwater – what would be the impact of that to influent?
Dr Northcott - This wouldn't reduce the impact as we will still get EOCs and residues through grey water. Unknown percentages.
Jason Ewert – if doing a baseline report on EOCs in the lake, you could also test the Bardenpho effluent to show the improvement of the upgrade once fully operational.
- Mary Pappon (BOPRC) – Research and emerging limits can be dealt with through the consent, BOPRC can look at reviewing conditions of consents. We need to find a solution rather than be side tracked by the research.

Actions	Assigned to;
1. Investigate reverse osmosis as a future treatment option	Andrew Moraes
2. Develop baseline contaminant labels.	Andrew Moraes / Environmental Services Team

3. Confirm process for submitting technical questions to visiting experts (Dr Grant Northcott, Jason Ewert), keeping a track of questions and responses.	Stef Barker
4. Circulate minutes & materials	Stef Barker
5. Consider public communications campaign re: reducing EOCs	RLC Comms
6. Reassess full WWTP flows of EOCs after commissioning.	Technical Team
7. Create box and whisker plots to show the variation in EOCs in NZ	Grant Northcott

Closing Karakia at 12:11pm by Her Worship, Mayor Tapsell.

Next Meeting: 18 December 2025, 10:00am-12:00pm, Committee Room 2, RLC