



Dannevirke Impounded Supply



Public Meeting
28 November 2023



TARARUA

D I S T R I C T

Tamaki nui-a-Rua

W E L C O M E

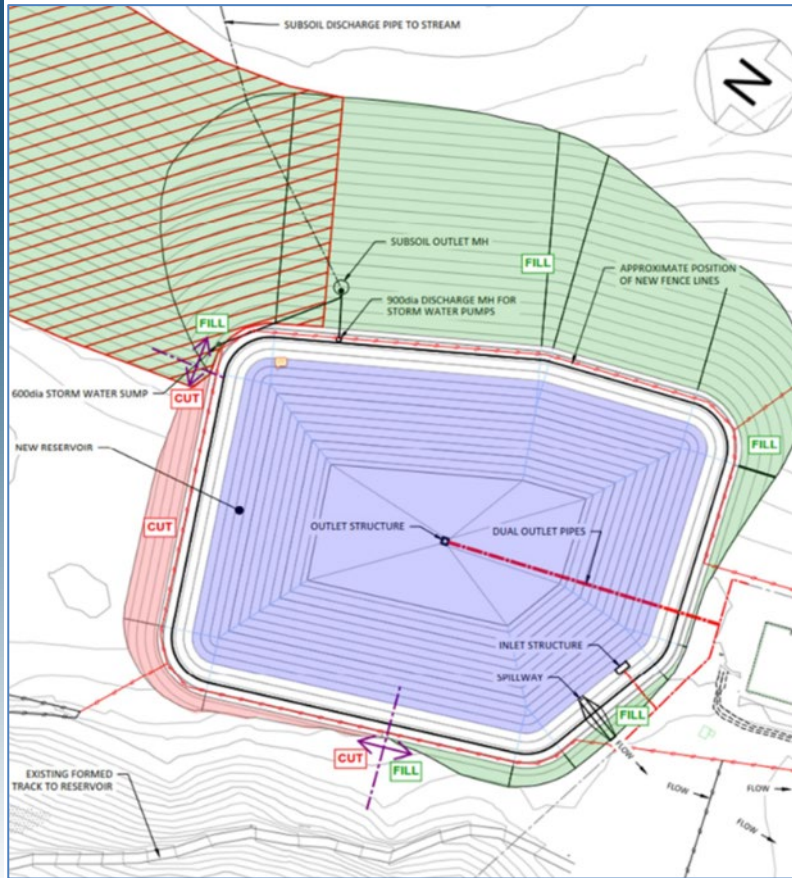
NAU MAI
HAERE MAI

land *of* ranges

Presentation Outline

- History of the Impounded Supply
- Leaks and Temporary Repairs
- What is the Problem
- Water Supply Risk Mitigation Measures
- Extraordinary Council Meeting – Key Outcomes including Funding Model
- Detailed Design of Remediation Works
- Expectations for Summer 23/24
- Next Steps

History of the Impounded Supply

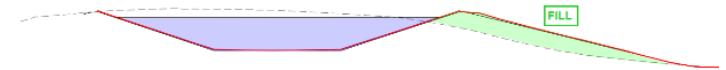


Commissioned in 2013

Full supply volume: 120ML

Full supply depth: 12m

Mostly an excavated pond except for a dam fill embankment on the eastern side.



SECTION

Concrete structures = Inlet, Outlet, Spillway.

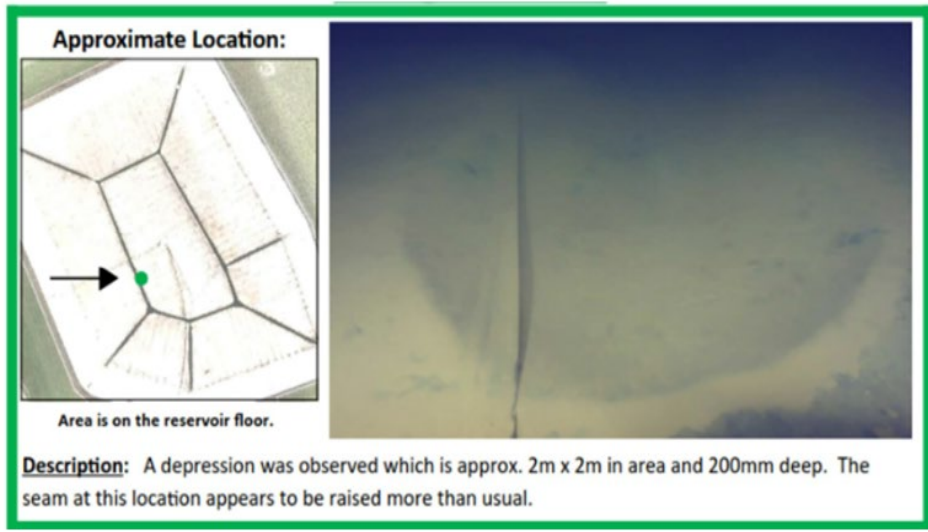
Initial Leak



July 2021 to September 2021.

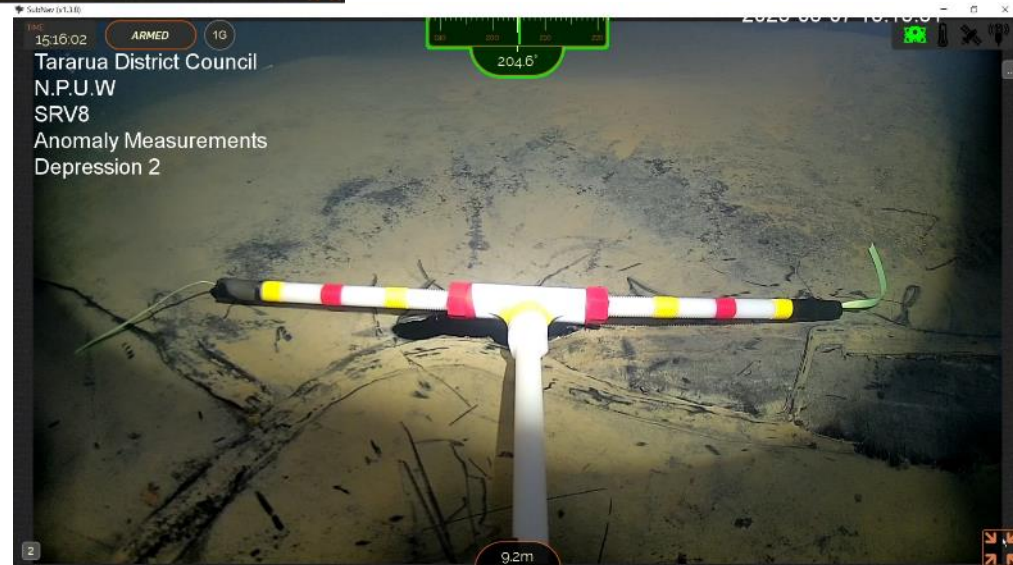
Observations:

- Subsoil outlet flows increased
- Reservoir level started dropping
- After floating cover removed, HDPE liner found to be “shredded” near the inlet
- The damaged liner below the inlet was repaired.
- ROV inspections found depressions under the HDPE liner:
 - On the slope below the inlet
 - At two locations on the reservoir floor
- Elevated level of water loss continued



Subsequent Leaks

Two tears located in May 2023



Temporary Repairs

Temporary repairs 13-19 June
Dannevirke Impounded Water supply

The temporary repairs were carried out on the dam floor, around 6.5 mtrs below the water level.

The liner around the 2 tears was cut out and the cavity which had formed below was filled with sand, after which a specially designed patch was sealed onto the existing liner.

Outcomes:

- Increased stability of the Impounded Supply
- Reduced loss of water from the dam by around 80% - from 25 ltrs to 5 ltrs per second)
- Revealed more details about the state of the dam, which will inform Council on the next steps. This may involve emptying the dam sooner than initially planned.

Dam monitoring team

- Observing seepage volumes)
- North-Eastern Embankment



Oxygen supply for divers



Dive control centre



Contingency plan backup digger, tractor, and materials



Sandbags



Water Treatment Plant



Dive equipment container



Sandbag slide



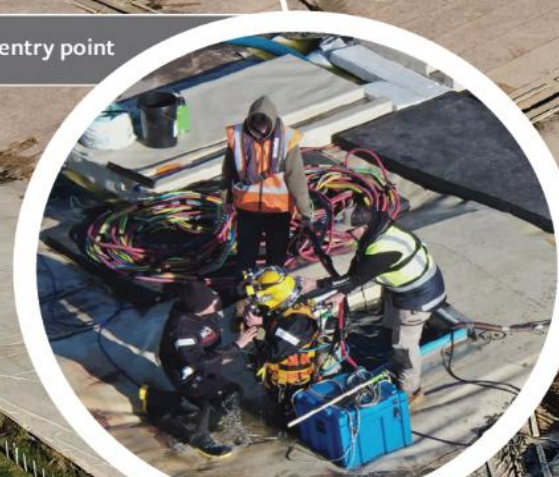
Location of tears & repairs site



Tear in HDP liner



Dive entry point



This is the dam's cover which protects the impounded water below it.

Outcome of Temporary Repairs

Outcomes:

- Minor ongoing deterioration of internal depressions
- No deterioration of the eastern embankment (“dam wall”) identified
- Subsoil drain outlet flow has reduced from ~25 litres per second to ~3 litres per second

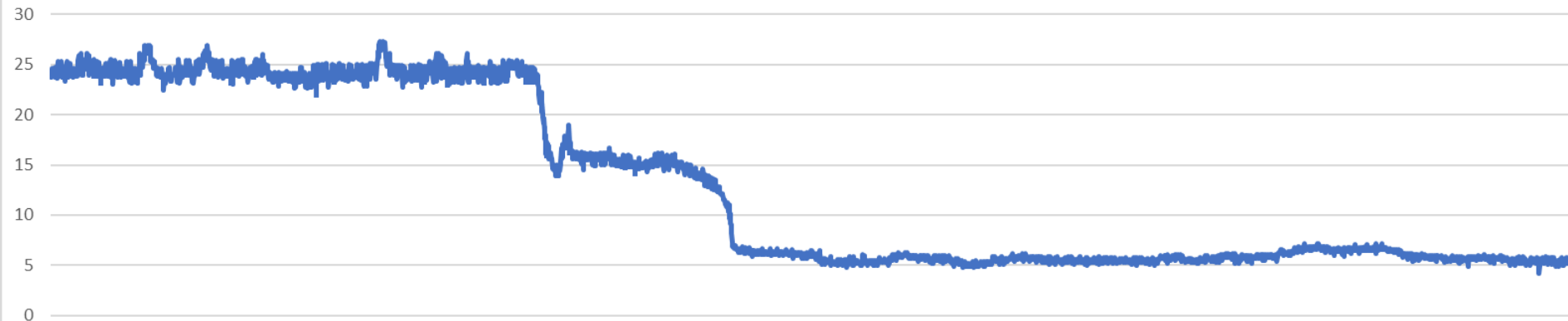
From...



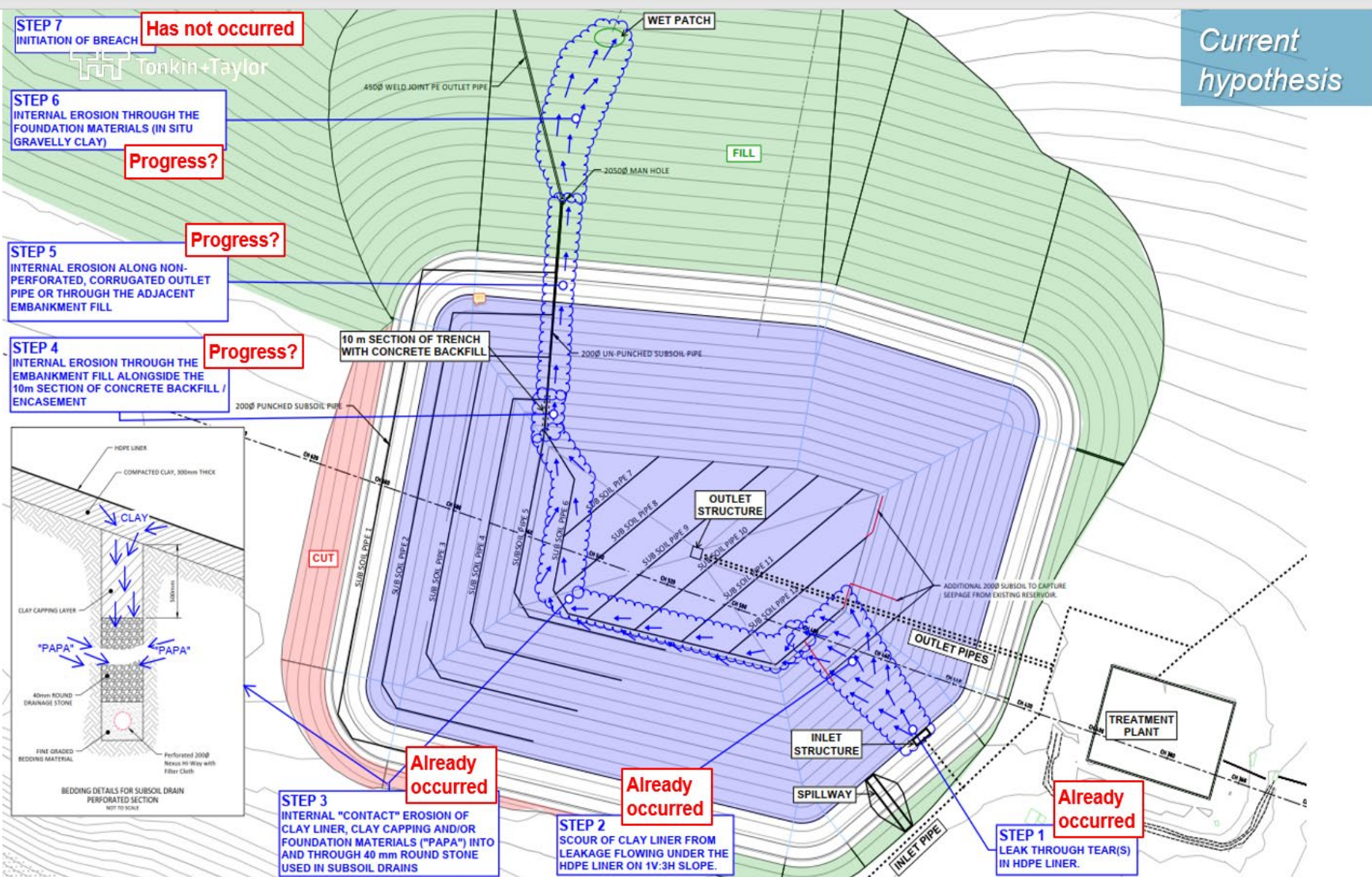
To...



Impounded Supply Subsoil Drain Discharge Flow Rate (l/s)
10 June - 26 June 2023



What is the Problem?



Water Supply Risk Mitigation Measures Underway

- Identification of alternative water sources:
 - Alliance Meatworks – test bore unsuccessful
 - Tamaki River southwest of the Impounded Supply
- Leak detection in Dannevirke, Woodville, Pahiatua and Eketahuna. Repairs to the networks are underway.

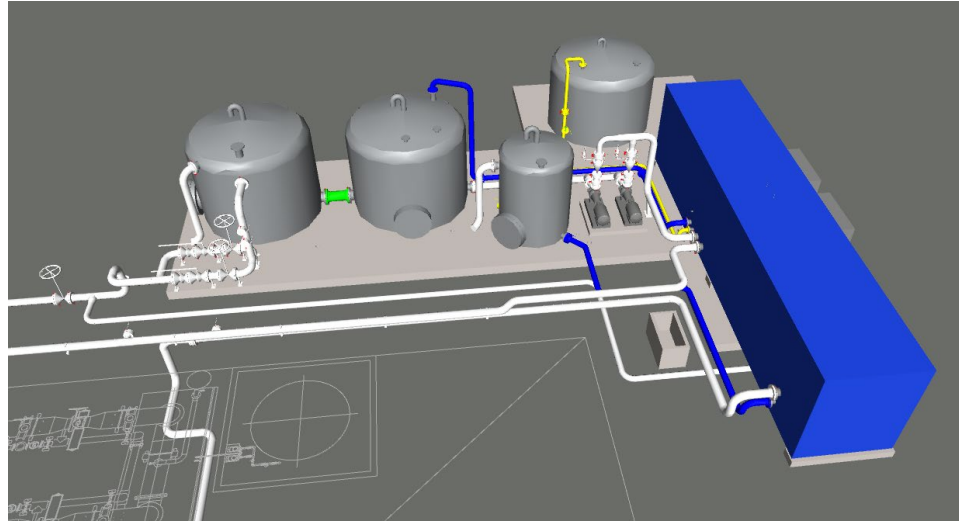
Water Supply Risk Mitigation Measures Underway

- Demand Management:
 - Metering connections between the Tamaki River intake / gallery and the Impounded Supply.
- Purchase an underwater remotely operated vehicle
- Maintain Impounded Supply at reduced depth
- Investigating the installation of flow meters on the sub-soil drain outlet pipes
- Investigating the condition of the Tamaki River intake / gallery

Extraordinary Council Meeting 31 October 2023 – Key Outcomes

- Delayed the decision to commence the remediation works until the design work is complete including geological investigation and liner system confirmation.
- It is likely this will mean a delay to any permanent repairs until the 2024/25 construction season.

Purchase a Pre-Treatment Plant



Purchase Raw Water Storage Kliptank



Purchase a Treated Water Storage Tank



Budgets Approved and Debt Funding

Budget approved

- Total Funding approved - \$8.1M
 - Extraordinary meeting was \$6.1m for pre-treatment and water tanks (raw and treated)
 - Spend to date - \$1.95m

Debt Headroom

- Headroom following the capital \$6.1m is \$13.1m for 2023/2024 financial year
- When you consider this in conjunction with borrowings required for year 4 capital projects (\$9.789 million) this reduces headroom availability to \$2.9m

Budgets Approved and Debt Funding

Other cost

- Interest cost estimated - \$196,000 for first year and \$392,000 second year onwards
- Depreciation estimated - \$140,000 per year
- Note – yet to determine the operating cost associated with pre-treatment and water tanks

Funding

- Debt funded
- Rates
 - Targeted water rates
 - Estimated increase is \$100.33 per year

Expectations for Summer 23/24

- Water restrictions likely
- Boil water notices are a possibility

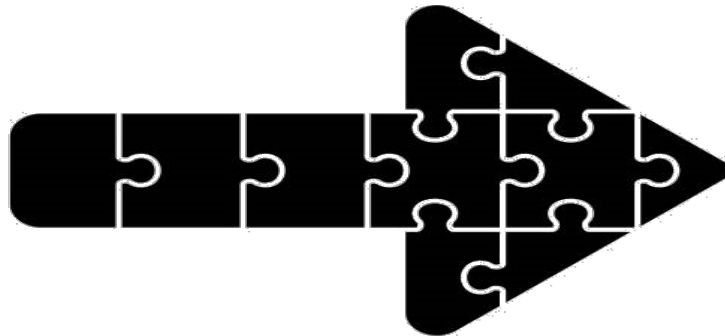
What you could do...

- Consider timing for high water use activities
- Consider onsite tanks for gardens
- Repair leaks on your property
- Report other leaks



Next Steps

- Continue Monitoring Regimen
- Procurement and installation of:
 - Additional pre-treatment and raw water storage
 - Additional treated water storage
- Consolidation and assessment of geological investigations
- Completion of detailed design
- Preparation for 23/24 Summer



Questions

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Or [facebook.com/tararua.govt.nz](https://www.facebook.com/tararua.govt.nz)

www.tararua.govt.nz/damrepair

