



Dannevirke Water Update



Public Meeting
27 June 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

Impounded Supply Leaks

Tears identified 12-14 May 2023



Temporary Repairs

Temporary repair operation 13-19 June 2023

- Objective – to safely complete temporary repairs necessary to stabilise the impounded supply, reducing the risk of failure
 - Reduce measured leakage to less than 10 L/s
 - Enable permanent repairs to be completed 2024/25



Temporary Repairs

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

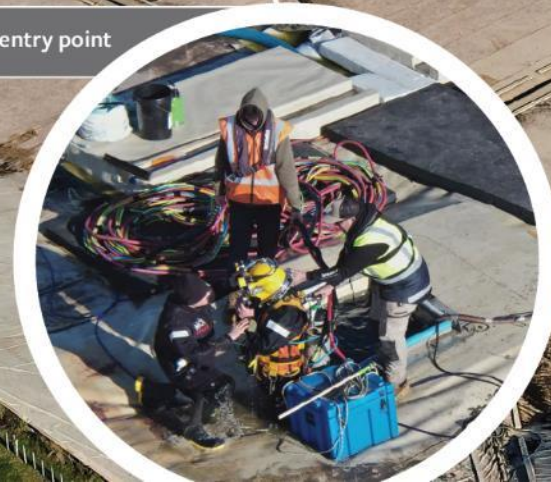
Dive equipment container



Location of tears & repairs site

Sandbag slide

Dive entry point

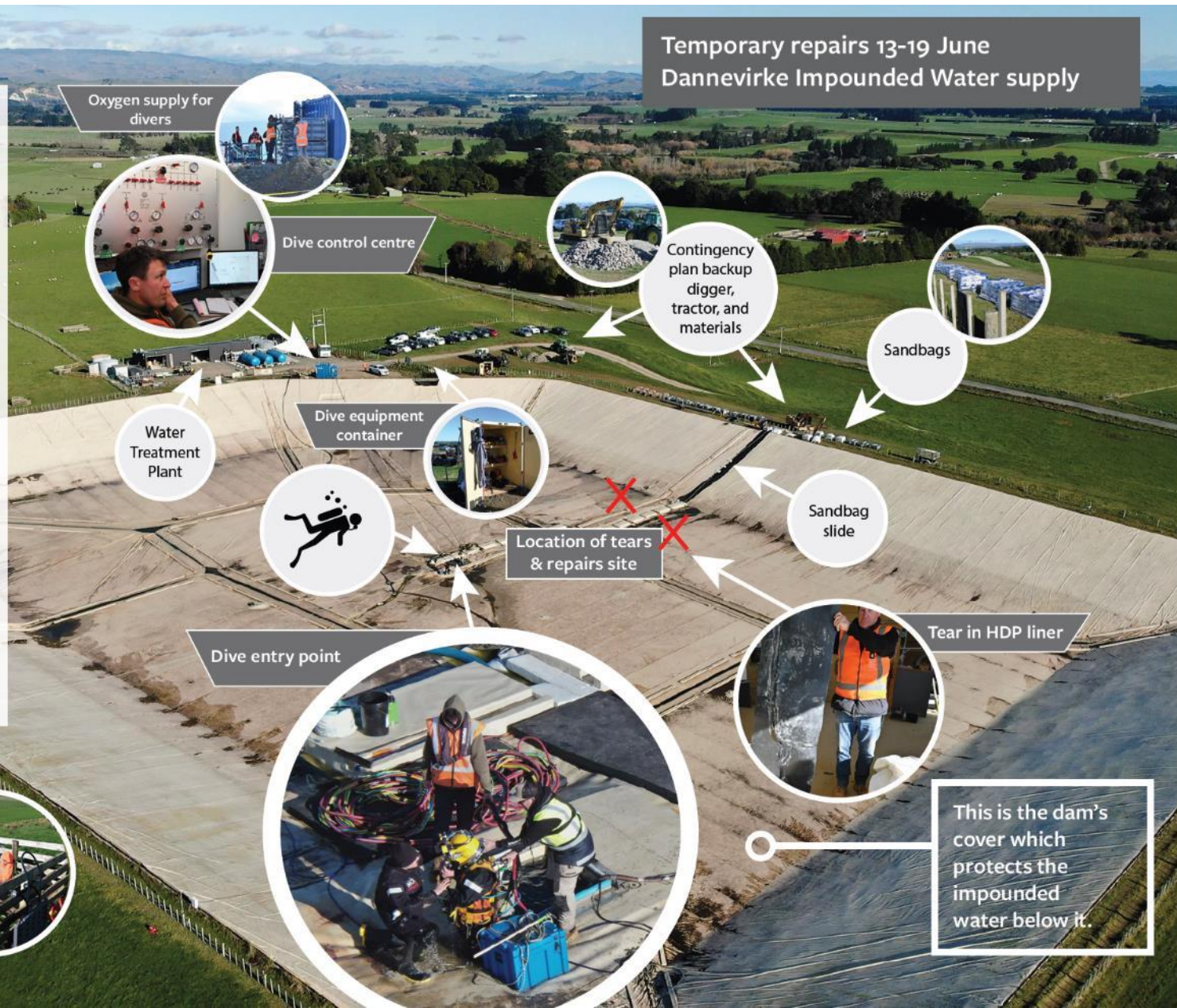


Tear in HDP liner



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

Temporary repairs 13-19 June
Dannevirke Impounded Water supply



71VM

ADUS ACCM3 3.2.8

Single View

Multi View

Video Options

- View 1
- View 2
- View 3
- View 4
- Unassigned Camera

2023-06-17 16:35:40
6.7(MSW)

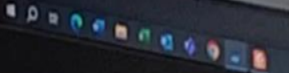


Start Recording

Screenshot

April 10
Monday AM
Pomona 9234-100
Recording 100x100

Refresh Screen



Additional Features

OSD	OSD
Text	Logo
Recording (Streaming)	Levels
Start Audio Playback	Zoom
Refresh Screen	Refresh Screen

Refresh Screen



Sharepoint password

Temporary Repairs

Outcomes

- Slow but steady progress
- No deterioration of the eastern embankment (the dam wall) noted
- Subsoil drain outlet flow has reduced from ~25 litres per second to ~5 litres per second

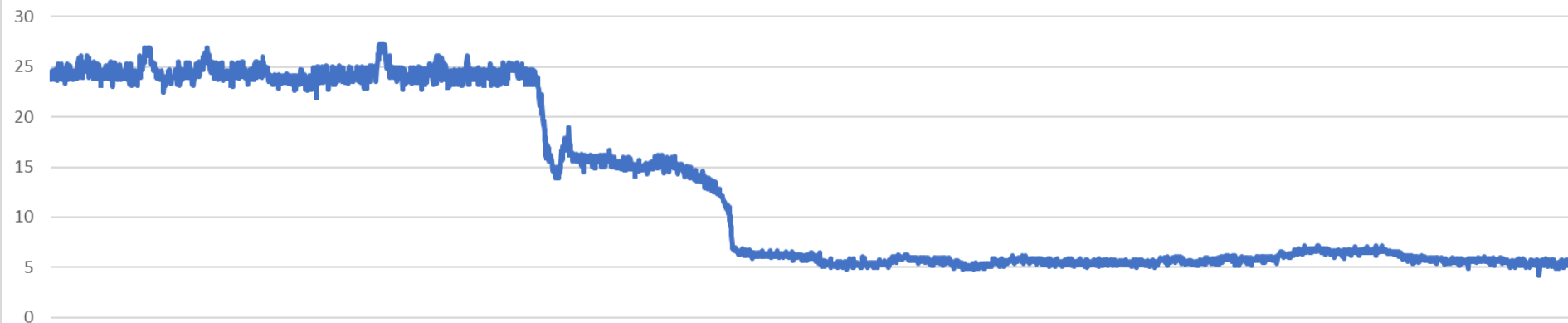
From...



To...



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

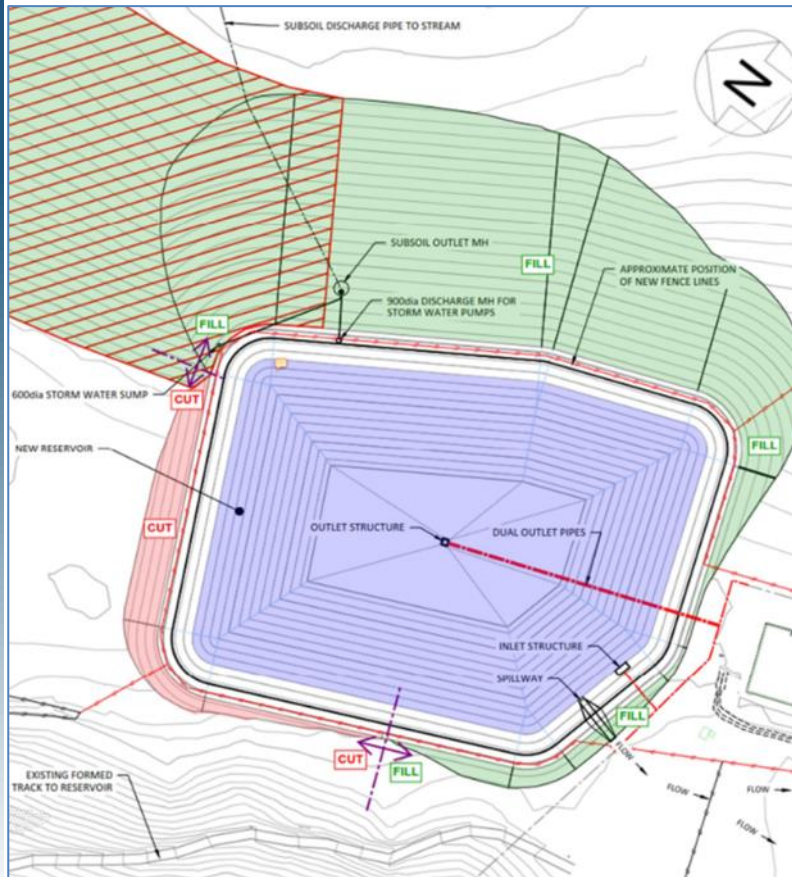


Temporary Repairs

Key Findings

- Condition of the liner is worse than expected
- High risk that more tears/leaks will form
- Regular assessment is required
 - ROV inspection within the next month
 - Subsequent ROV and/or diver inspection
- Almost certain that we cannot wait until 2024/25 summer to do permanent repairs which reduces the range of options:

About the impounded supply



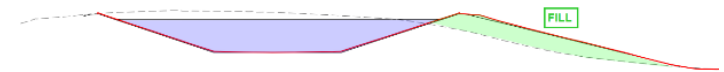
Full supply volume: 120ML

Full supply depth: 12m

Crest full volume: 160ML

Dam height (Building Act definition): 21m

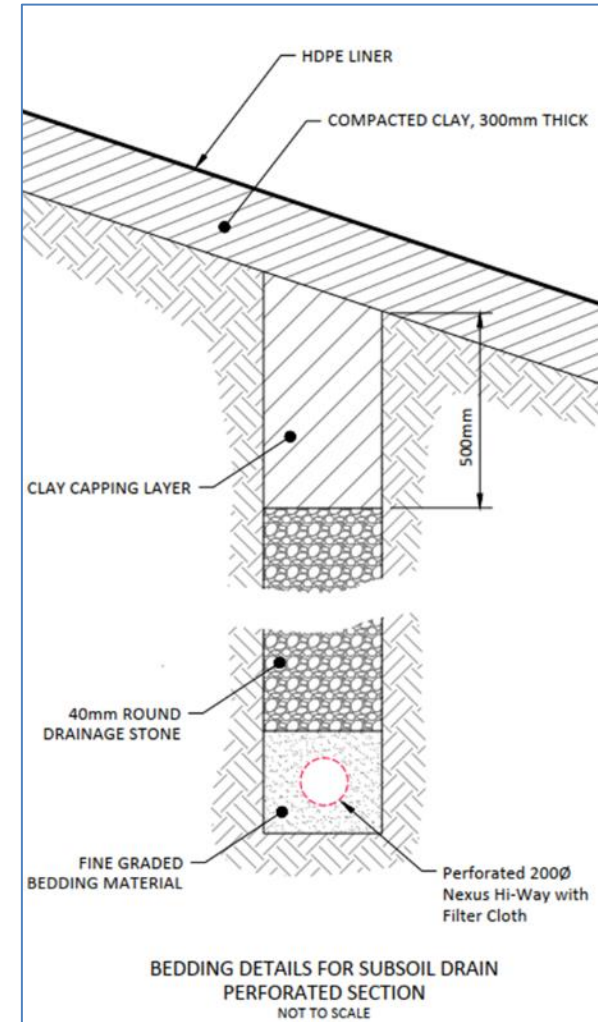
Mostly an excavated pond except for a dam fill embankment on the eastern side.



SECTION

Concrete structures = Inlet, Outlet, Spillway.

About the impounded supply

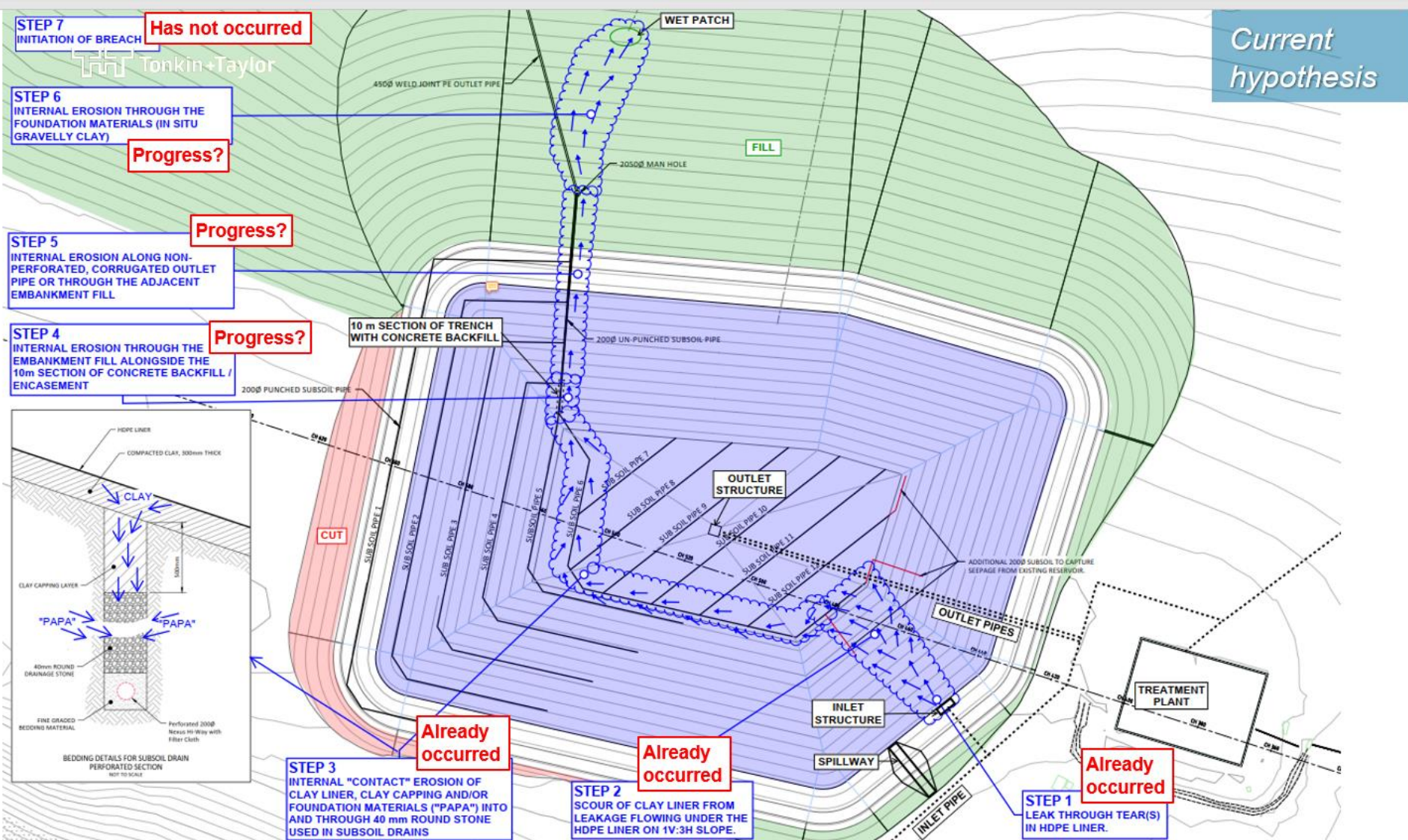


Liner =

- HDPE
- 300mm clay.

Subsoil drainage network under liner.

What is the issue?



Options - Permanent Solution

- Option 1 – Remedy the impounded supply
- Option 2 – Monitor and mitigation
- Option 3 – Decommission, build alternate storage
- Option 4 – Decommission, develop new

Permanent Solution: Option 1

"Remedy the impounded supply"

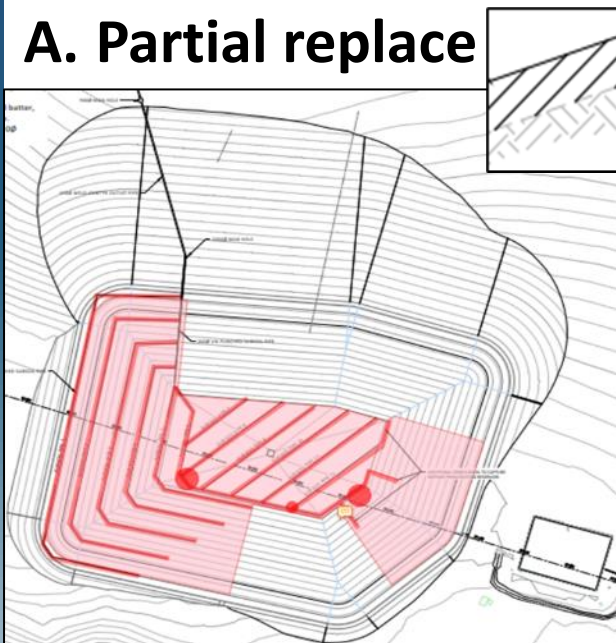
Several options, subject to further investigation and design.

Aim of all options = to reduce dam safety risks to a level consistent with accepted practice for a long-term situation.

Combined option	Suboptions				
	Reservoir liner + subsoil upgrade	Eastern dam embankment	Outlet works	Inlet works	Instrumentation
A1	A. Partial replace	1. No change	Minimum upgrade for modern practice		
A2		2. Strengthen			
B1	B. Full replace	1. No change			
B2		2. Strengthen			
B3		3. Replace			
C1	C. Build over	1. No change			
C2		2. Strengthen			

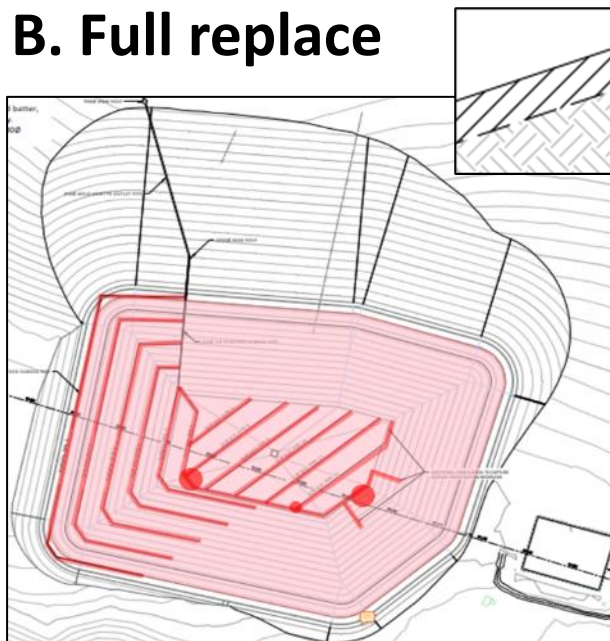
Reservoir liner + subsoil upgrade

A. Partial replace



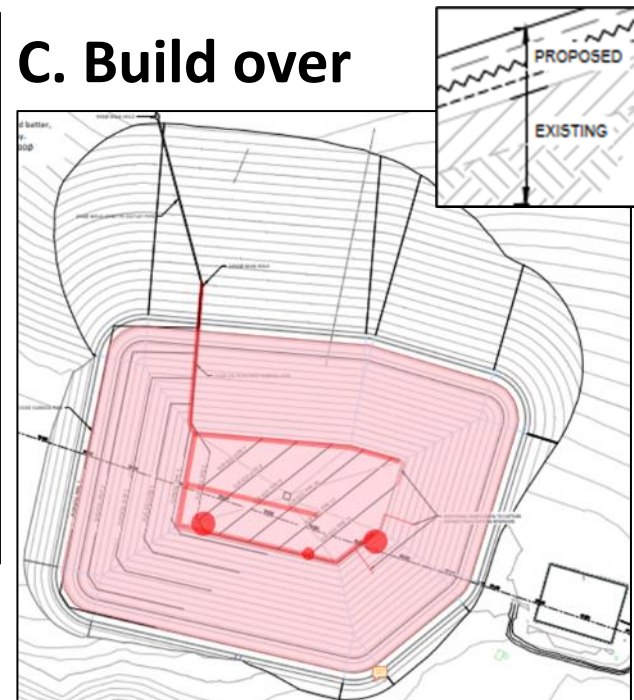
- Replace 100% subsoils.
- Top up depressions.
- Replace 60% of HDPE-clay liner.

B. Full replace



- Replace 100% subsoils.
- Top up depressions.
- Replace 100% of HDPE-clay liner.

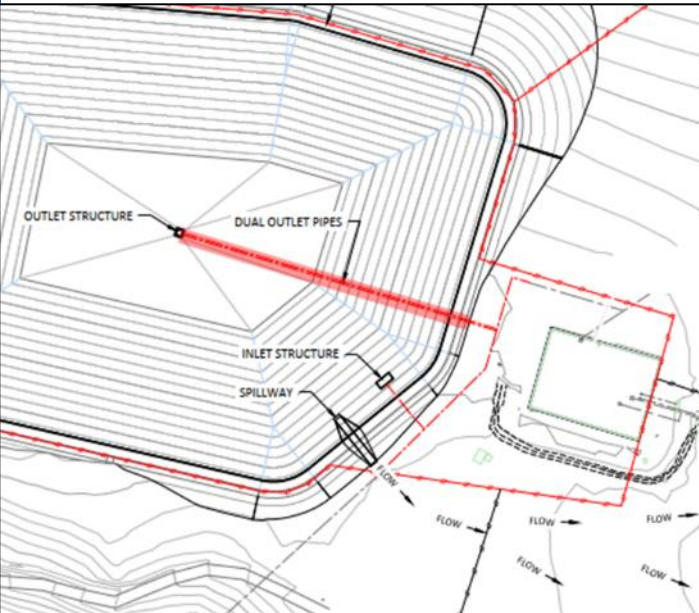
C. Build over



- Build new liner + drainage system over the existing system except local repairs.
- Thrust bore a steel pipe to connect new drainage to existing manhole.

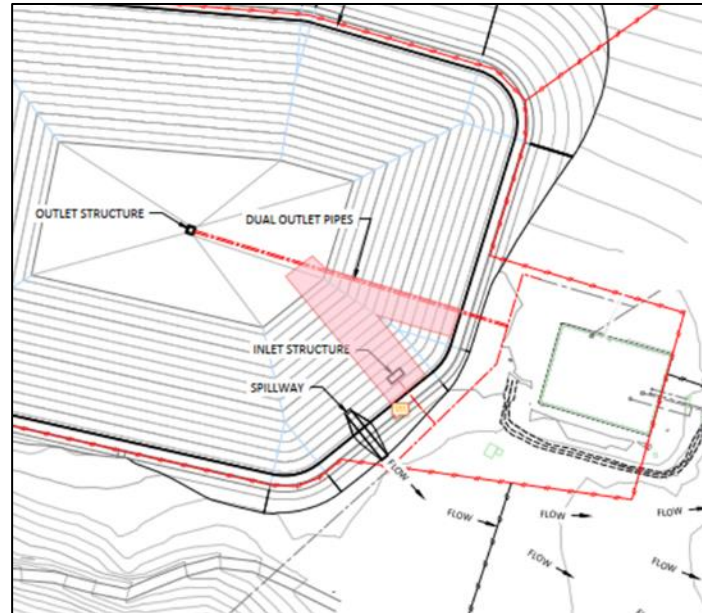
Dam safety upgrades

Outlet works



- Replace water supply outlet pipes + bedding

Inlet works



- Extra layer of HDPE and an underlayer of drainage geocomposite below the inlet structure.

Instrumentation

- Subsoil flowmeters.
- VW piezometer.
- Survey benchmark + monitoring pins.
- Access rainfall + earthquake data.
- Upgrade current inflow, outflow, + reservoir level monitoring.

Water Supply Risk Mitigation

Options being considered

- Water treatment improvements
 - Water storage improvements
 - Water supply and demand improvements
 - Alternate/supplementary supply now focussing on Alliance Group
 - Connection identification and metering between source and town
- **Key consideration is the risk of water supply disruption versus the cost to minimise this**

Expectations for 2023/24 Summer

- Likely that the impounded supply will be offline for repairs
- Water restrictions extremely likely
- Boil water notices a possibility

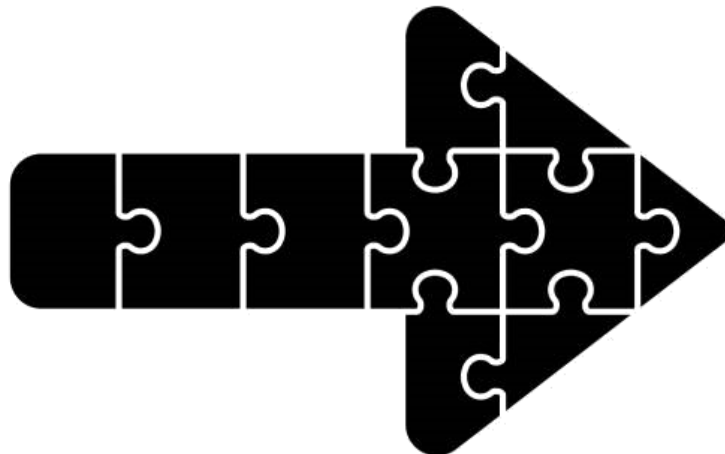
What you could do...

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



Next Steps

- Ongoing monitoring
- Further investigation of options scope of work and Reports to Council for decision making
- Planning and delivery of selected option(s)
- Preparation for 2023/24 Summer



Questions

Contact Us

T: 06 374 4080 (North) 06 376 0110 (South)

E: info@tararua.govt.nz

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

