

# Former Tokanui Hospital – Closed Landfill Investigation & Remediation Options Assessment

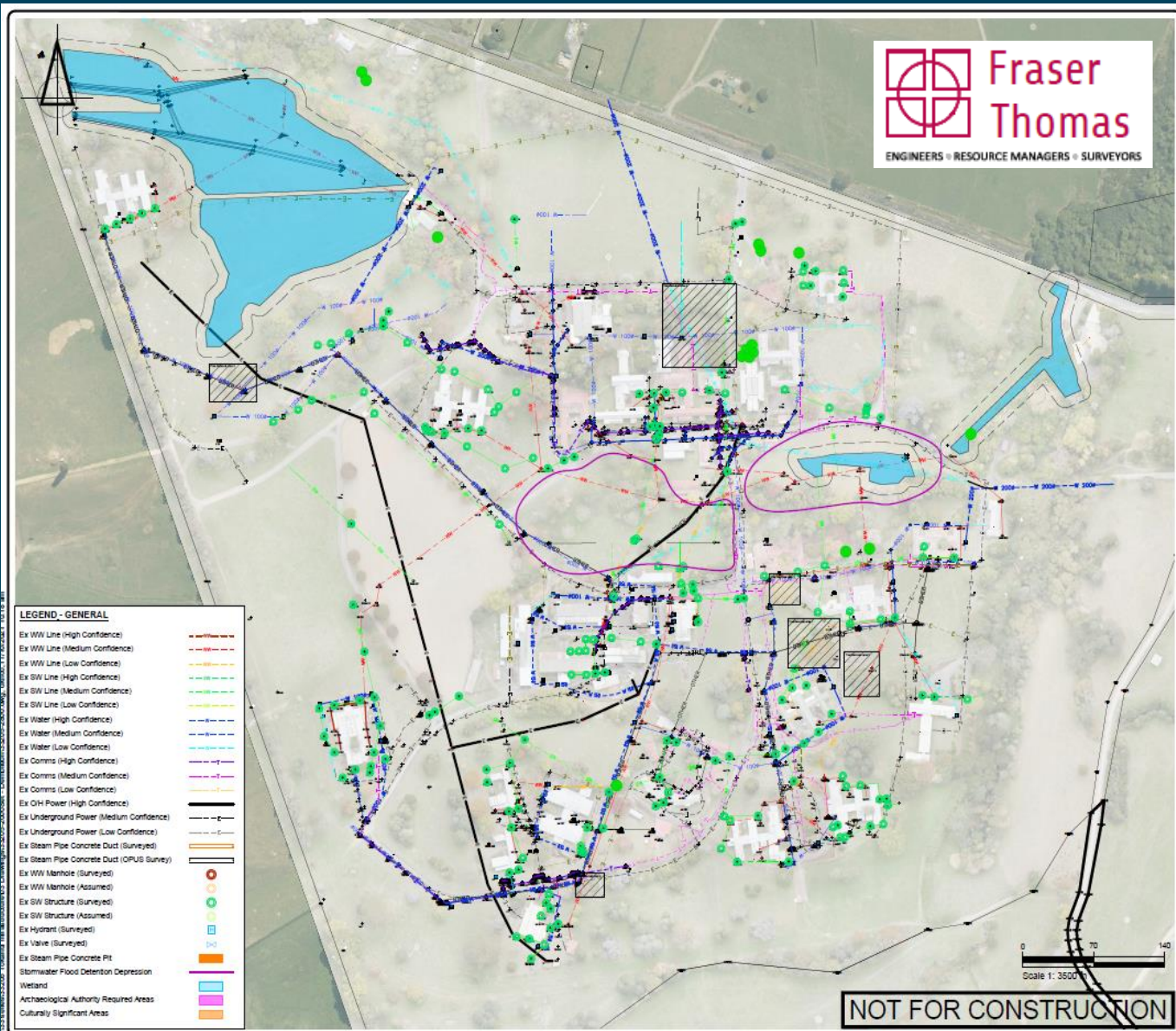
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# Introduction

- Part of Land Package taken under Public Works Act in 1910.
- Hospital opened 1912 and closed 1998.
- Deferred selection property in the Ngāti Maniapoto Deed of Settlement.
- Crown has committed to a standalone process within the Property Redress Schedule for the transfer of the Site:
  - Specific requirements for demolition/remediation before it is available for transfer to Maniapoto.
  - LINZ is the Government agency responsible for delivering this project.





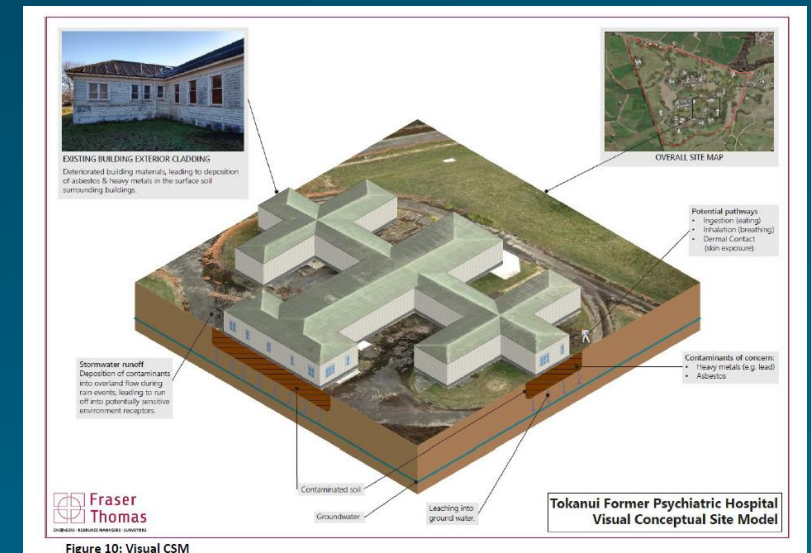
# Site Overview

- 80 ha, 1 stream, 3 wetlands
- ~76 buildings in poor condition (LBP & ACM)
- ~9 km roading (including Coal Tar)
- Extensive underground infrastructure:
  - 2.9 km Concrete ducting
  - 7.2 km Water piping (~4 km asbestos cement)
  - 6.2 km Stormwater
  - 4.9 km Wastewater
  - 7.3 km Power + 4.6 km Telecom
- 1 Swimming pool
- 8 Substations
- WWTP (decommissioned)
- **~2 ha Closed Landfill (~30,000 m<sup>3</sup>)**

# Hospital village soil contamination

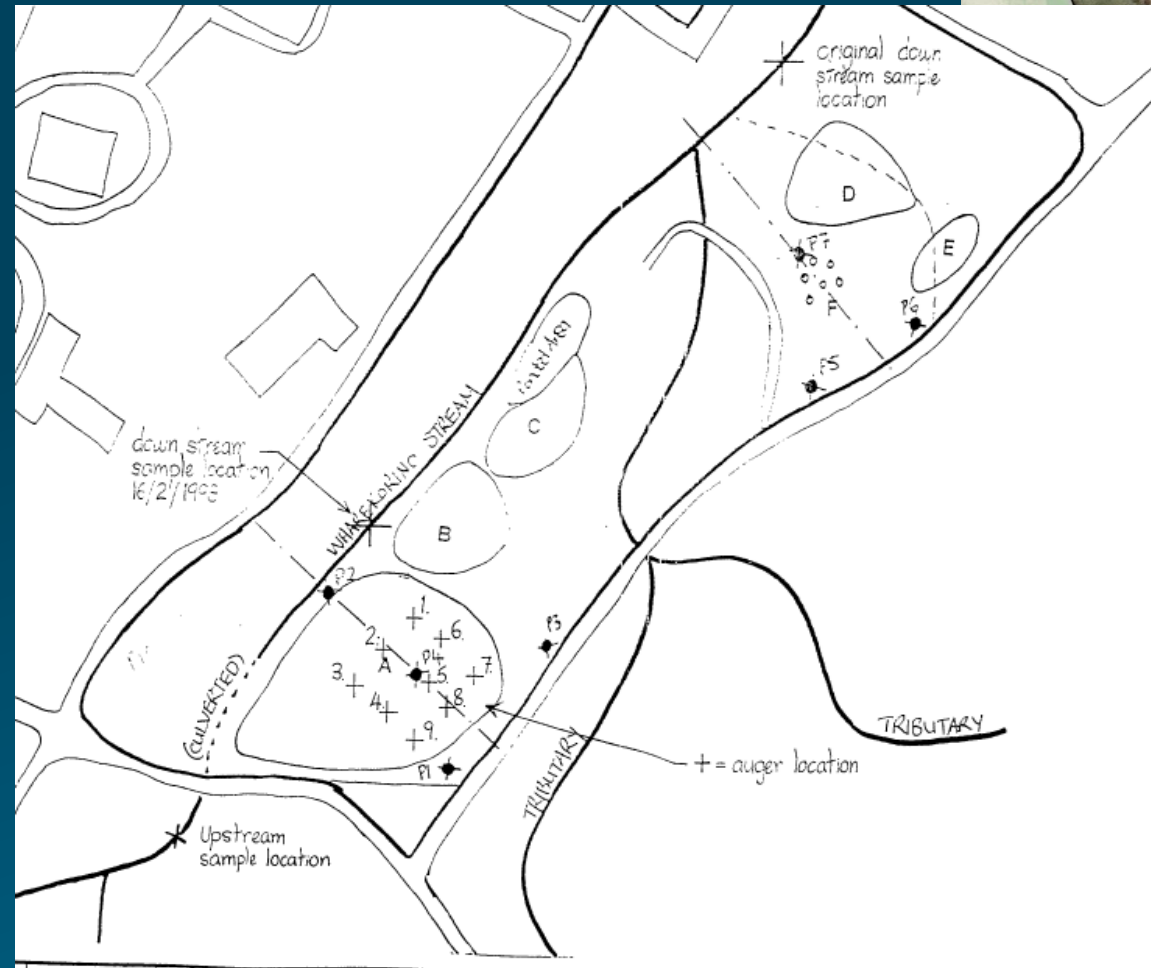
- Objective: Investigate extent and severity of soil contamination in hospital from historic use.
- Compilation and analysis of results from multiple reports AECOM, GHD, FTL and HAIL Environmental Ltd.
- Contamination less than expected – primarily low-moderate level contamination soil – 7,700m<sup>3</sup>
  - From soil sampling results - Building perimeters (HALOs) + Localised hotspots: 3,400m<sup>3</sup>
  - Provisional allowances for other sources:
    - HALO scrape post building demolition: 590m<sup>3</sup>
    - Building subfloor scrape, post building demolition – 1930m<sup>3</sup>
    - Soil around asbestos watermains -320m<sup>3</sup>
  - Contingency – 1400m<sup>3</sup>
- Best practicable option (MCA analysis):

*Place soils in existing landfill area*



# Closed Landfill

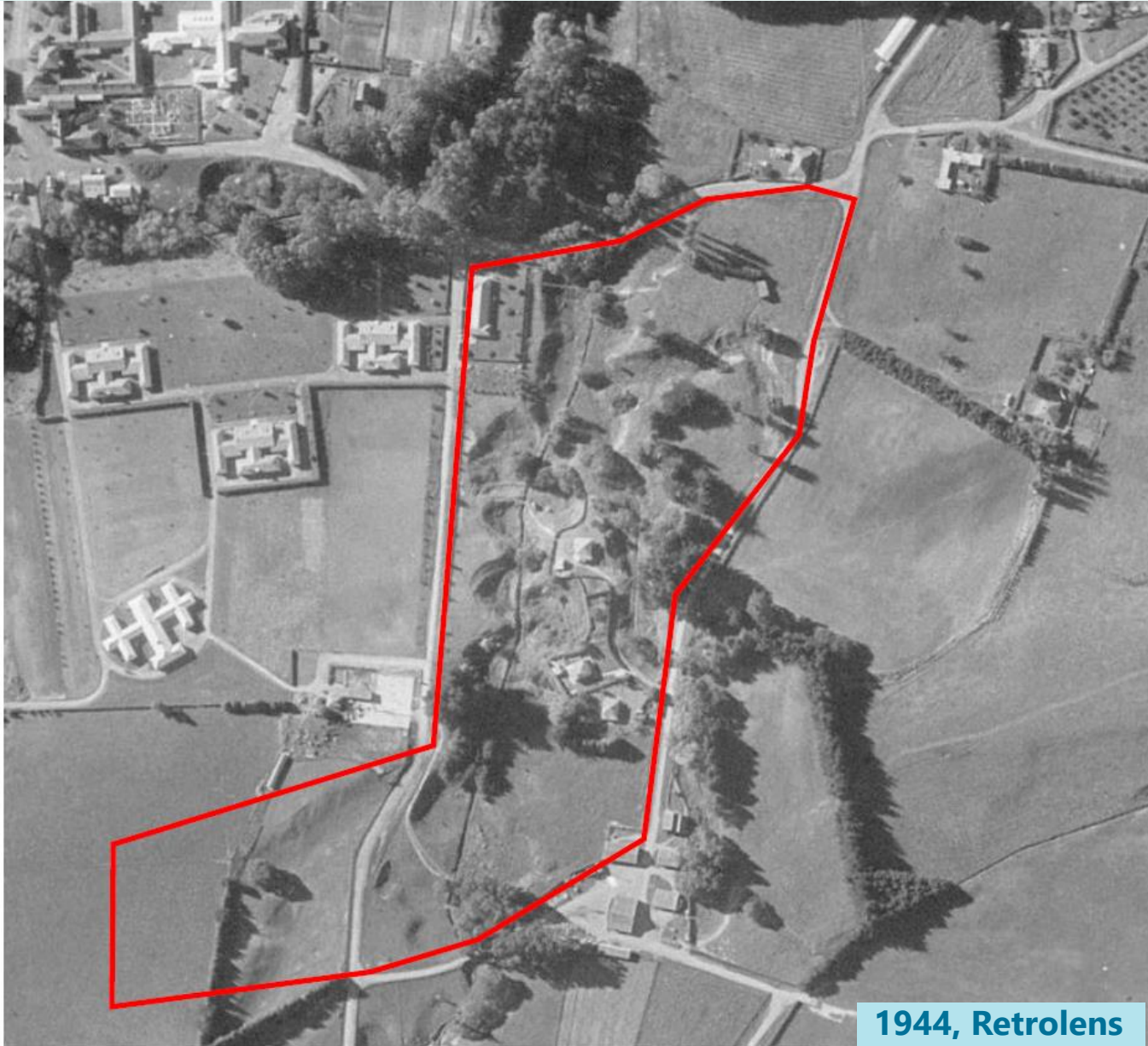
- Consented in 2000, consents expire in 2035: (AUTH102269.01.01, AUTH102270.01.01 and AUTH102271.01.01)
- Original AEE describes several distinct areas
- Used for different types of refuse
- Started ~1943 through to late 1980s
- LINZ retains liability in perpetuity, including maintaining consents



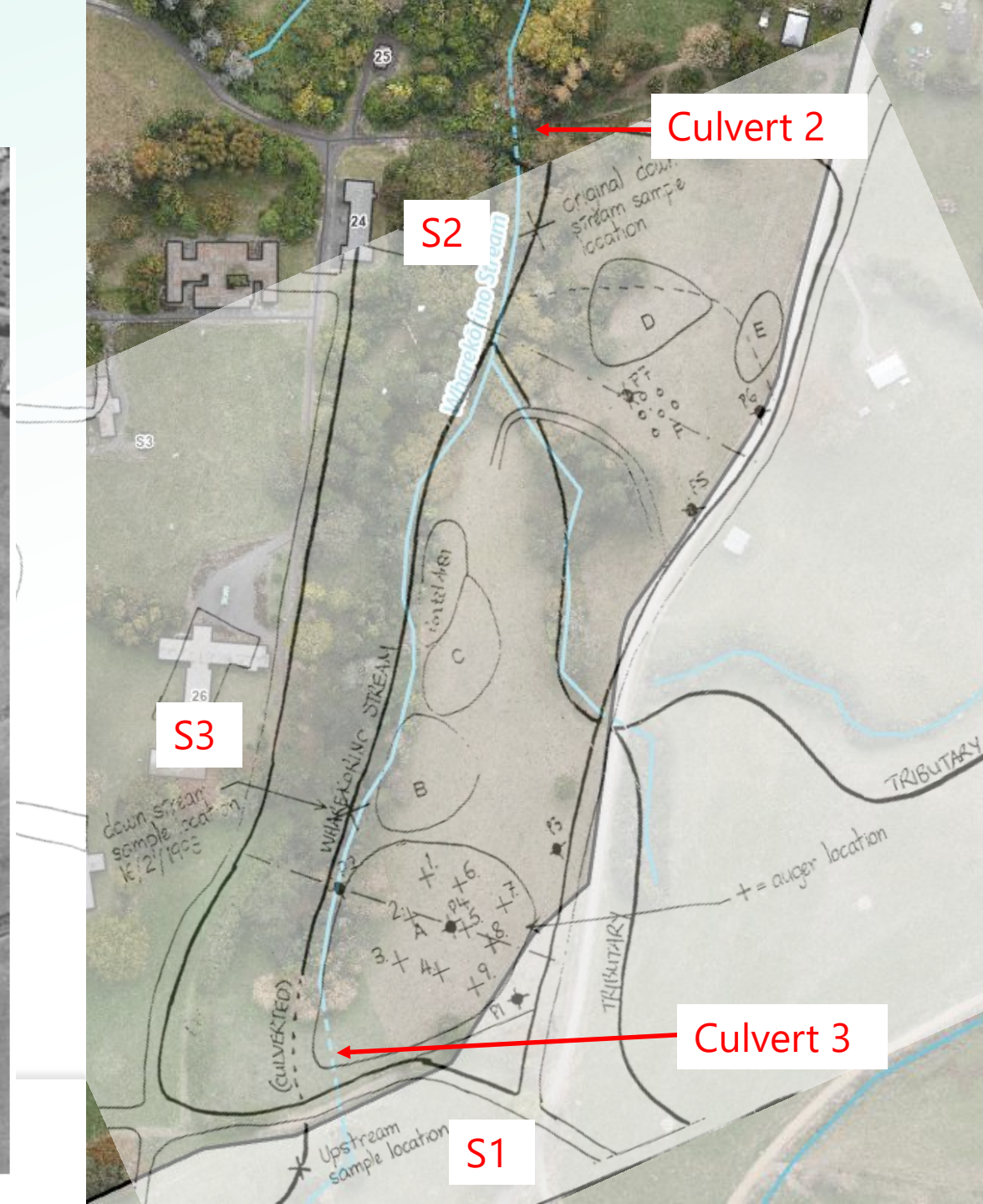
# Landfill Issues

- Landfill bigger than shown on historic plans.
- Some areas have non-compliant capping.
- No leachate collection system + groundwater flows through refuse → boron from coal ash leaching into stream.
- Culvert 3 (1200dia, 44-65yrs old) pipes Wharekōrino Stream through the landfill.
- Parts of landfill within 100yr floodplain, with culvert 2 a key contributor.

# Closed Landfill



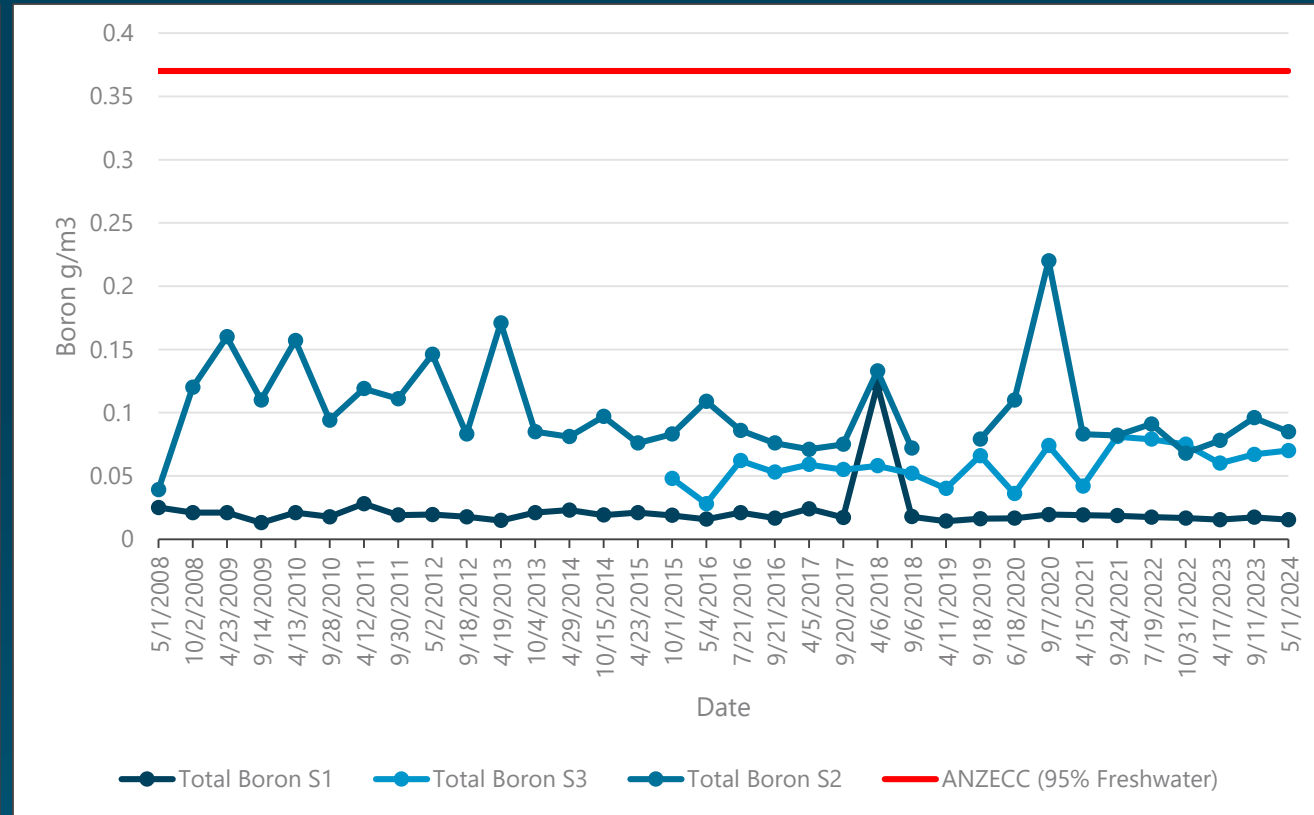
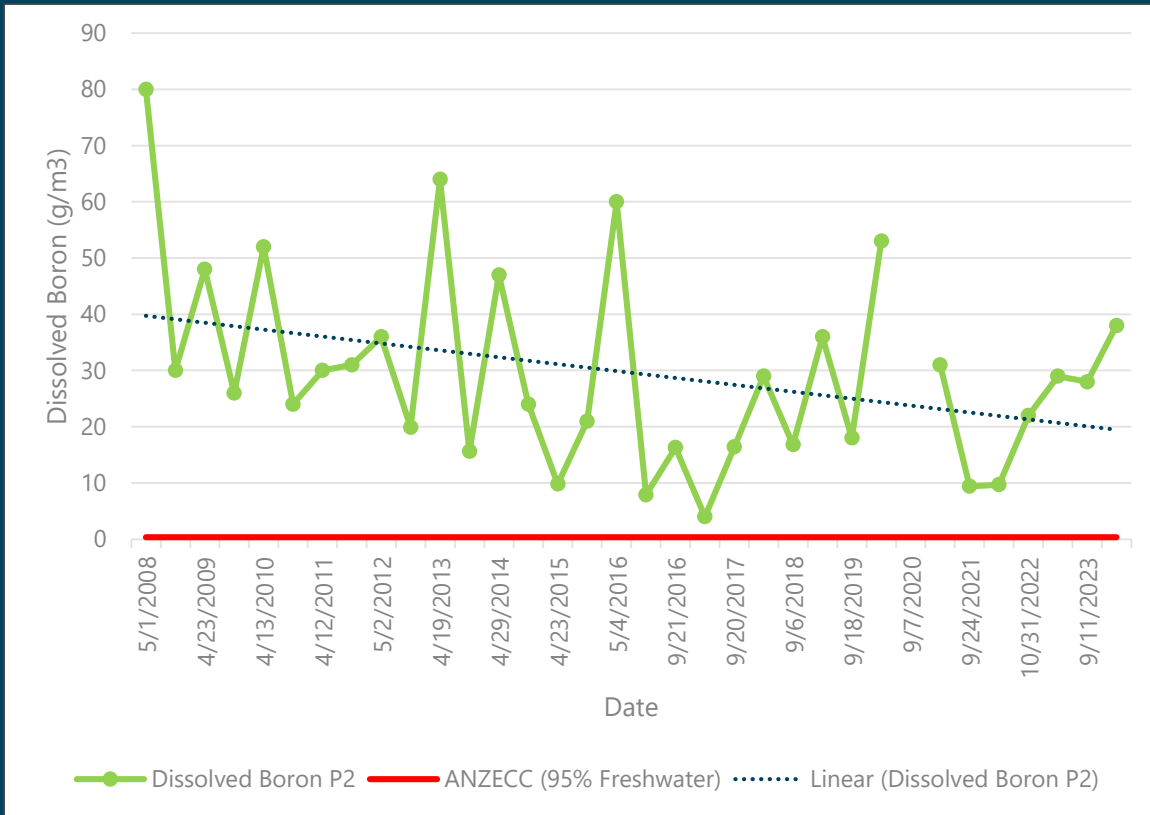
ENGINEERS | SURVEYORS



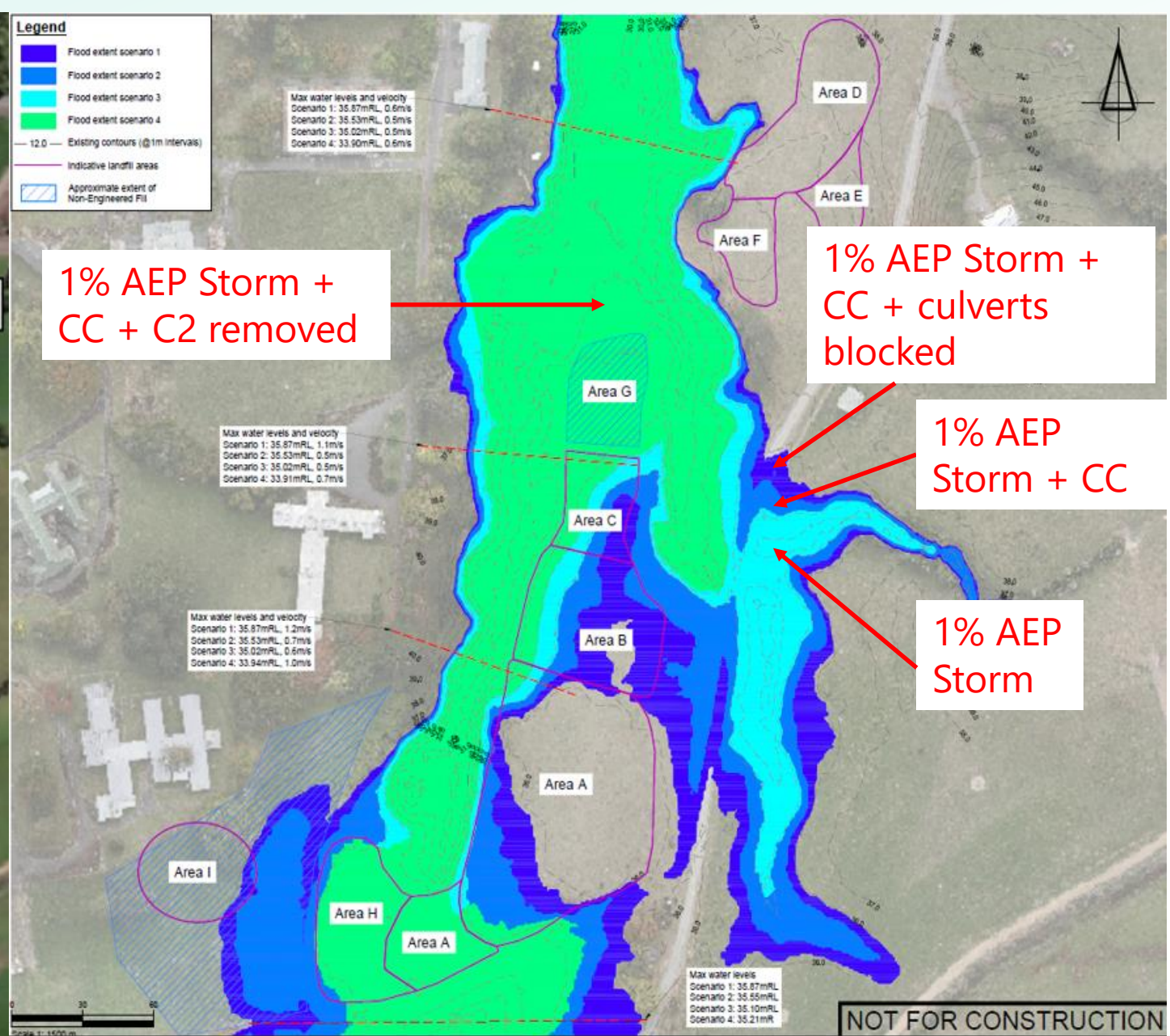
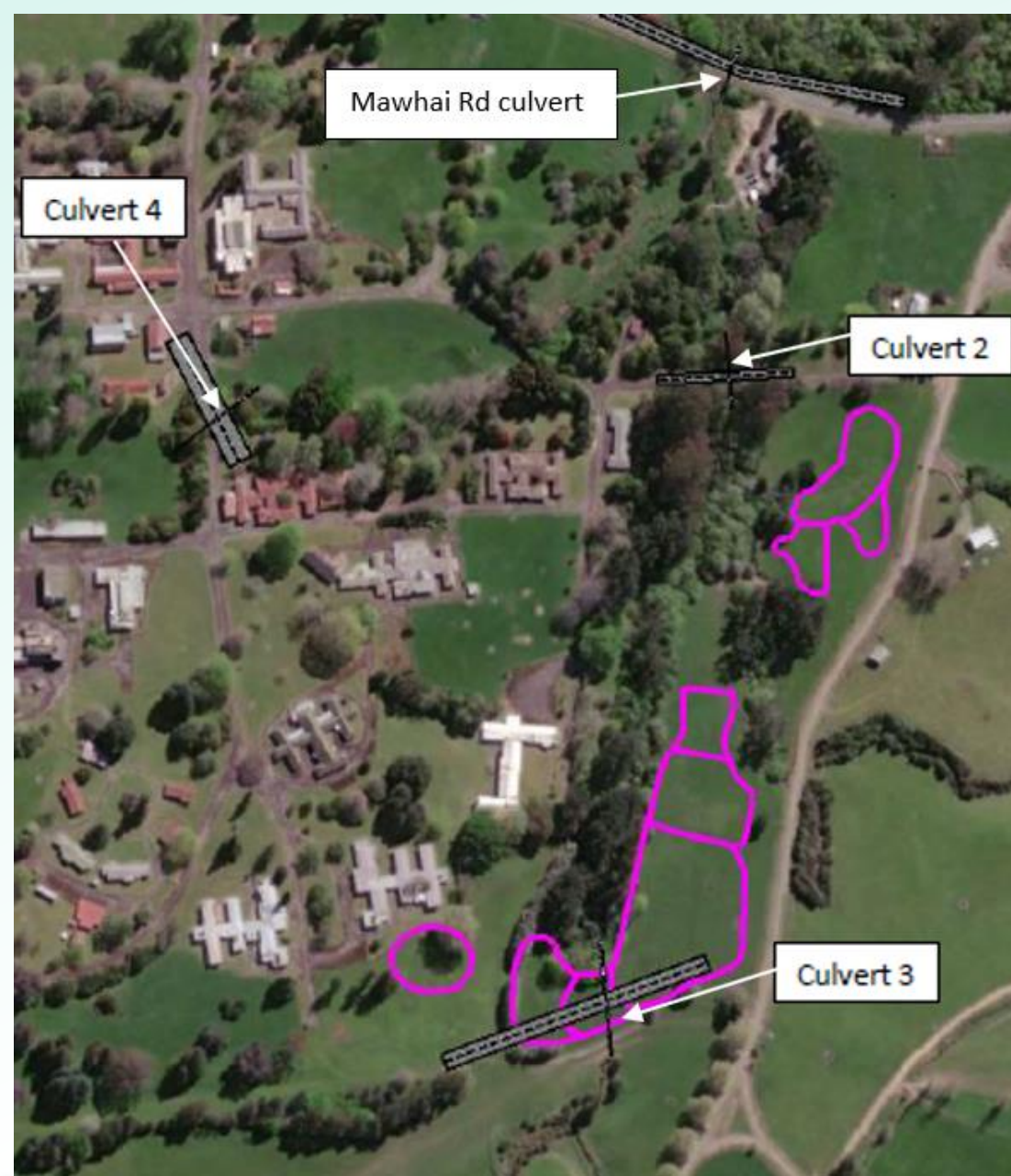




# Stream and Groundwater monitoring



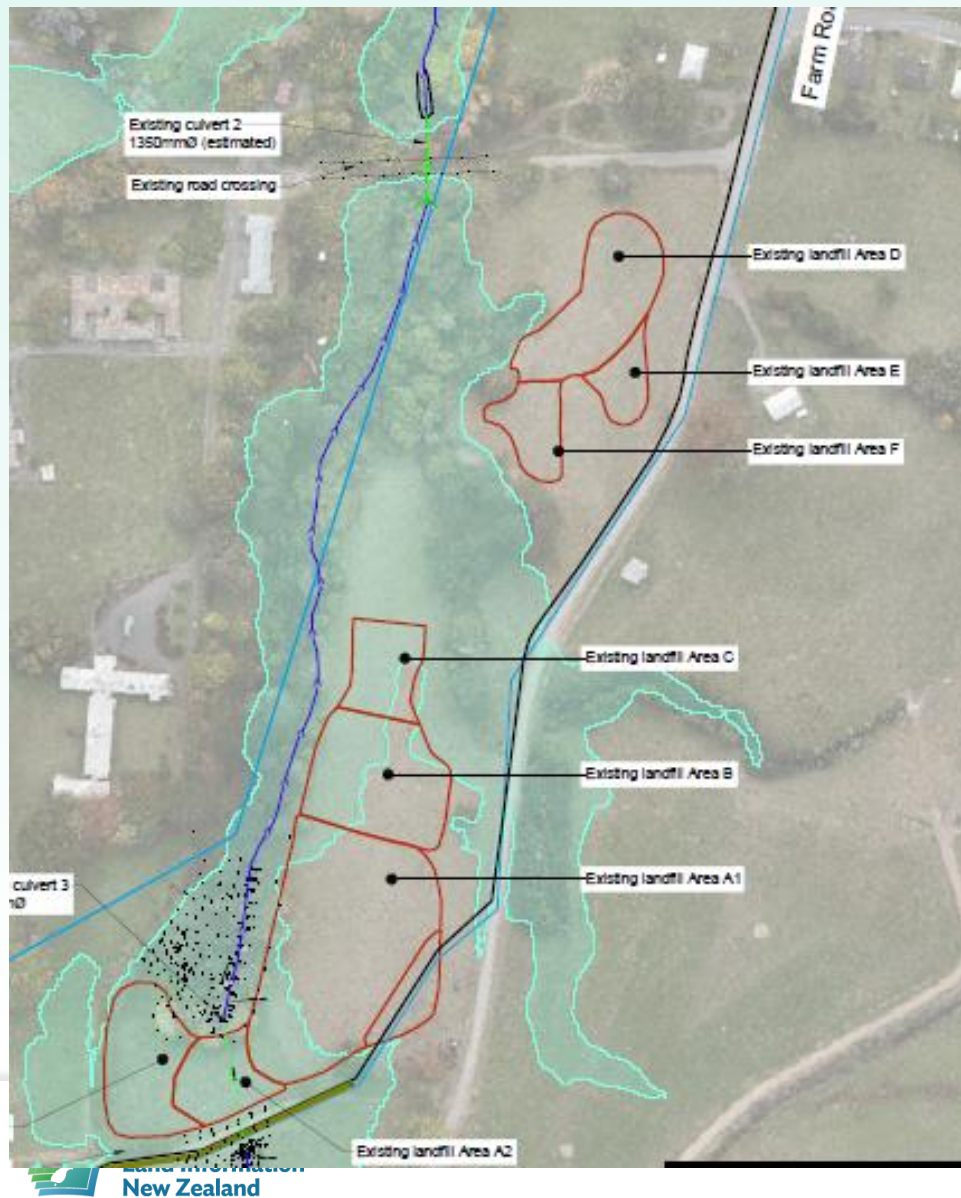
- Groundwater in contact with refuse + elevated boron.
- Elevated Boron in stream: S2 (downstream) > S3 (mid-stream) > S1 (upstream) but all within ANZECC 95%



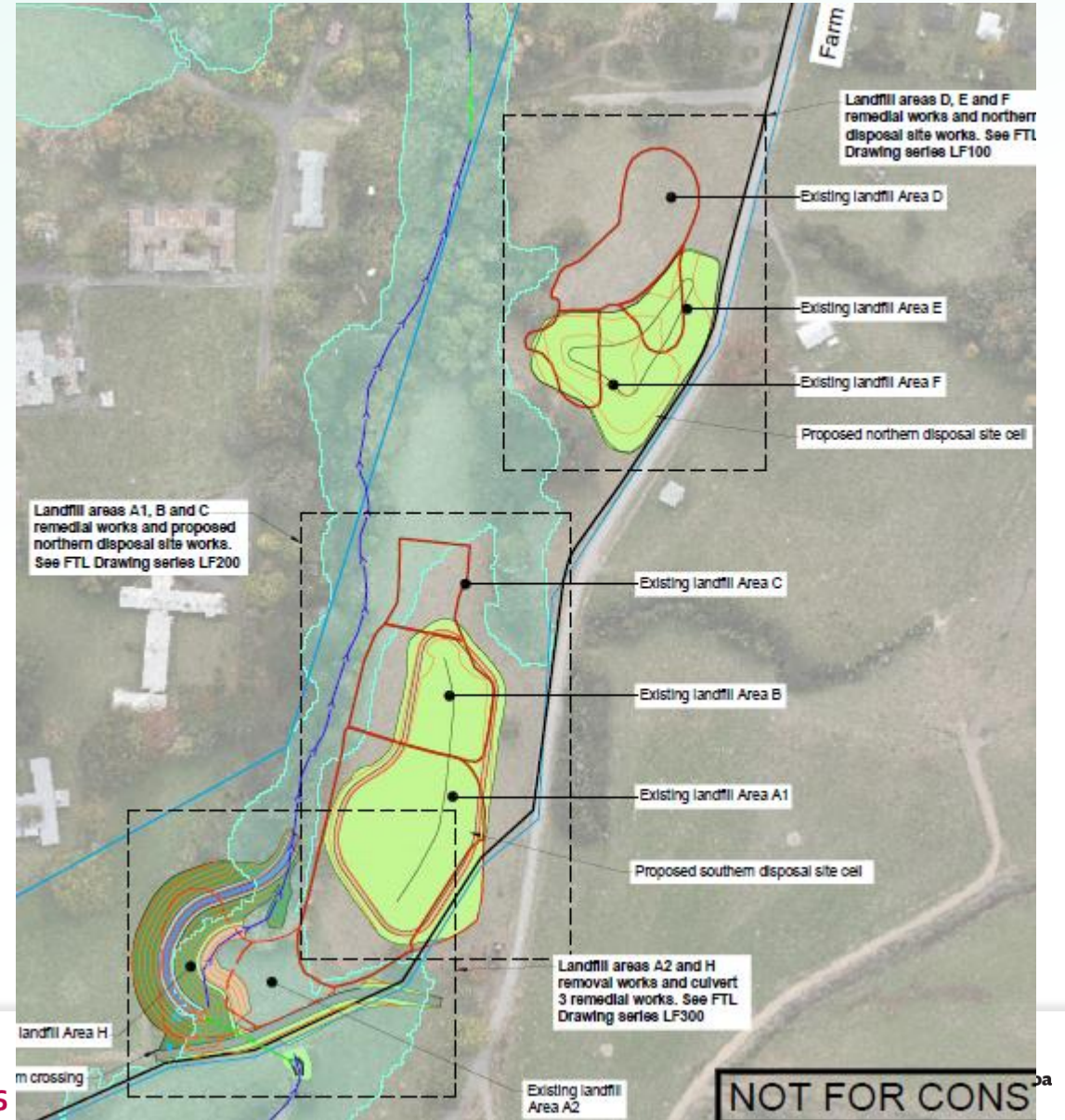
# Preferred Option

- Improved capping of the entire landfill + groundwater intercept trench.
- Removal of Culvert 2 and associated road embankment, with spoil being used as backfill in hospital demolition works.
- Transfer of contaminated soil from hospital demolition works into Area E/F and isolated medical waste removal, with excavated material from this area used as backfill in demolition works.
- Shifting of fill/refuse material from SE corner of Area A1 on AgResearch land, outside of hospital site, into A1 area within site.
- Shifting of fill/refuse material from Areas A2/H into Area A1 + plugging of Culvert 3 + new culvert over farm accessway + stream reinstatement + new toe bund embankment on eastern side of stream to separate reclaimed area from existing landfill area A1.

# Existing



# Proposed



# Northern Area Works

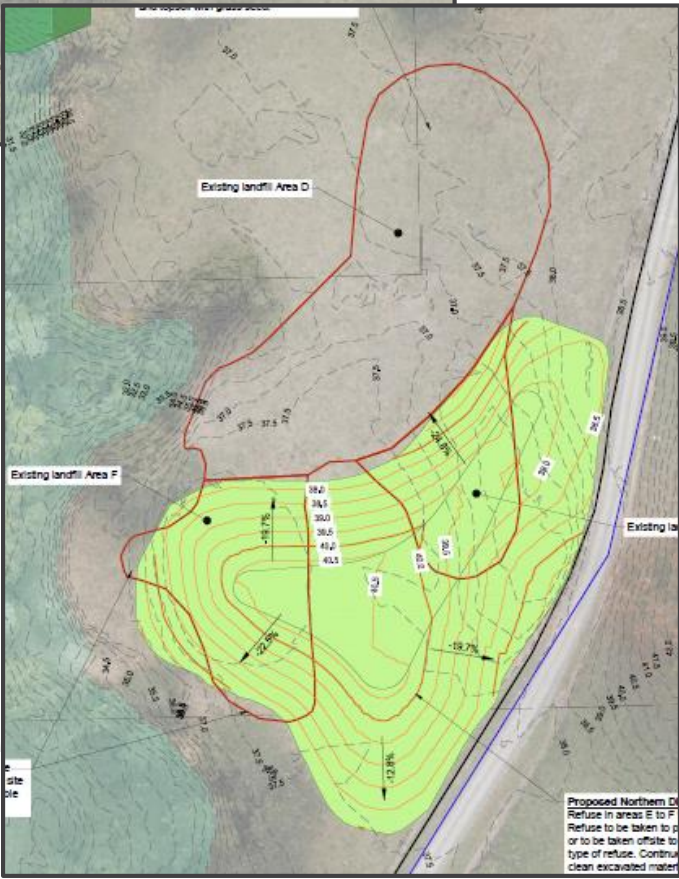
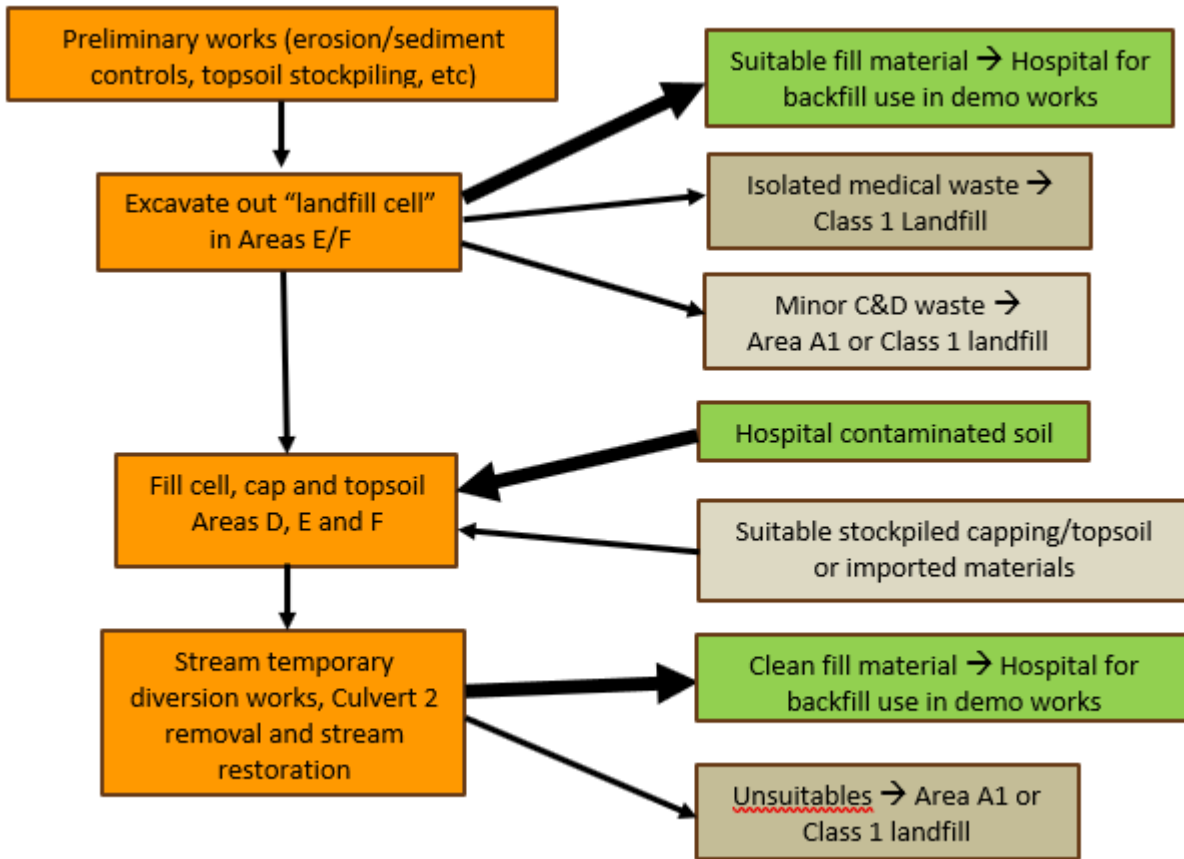
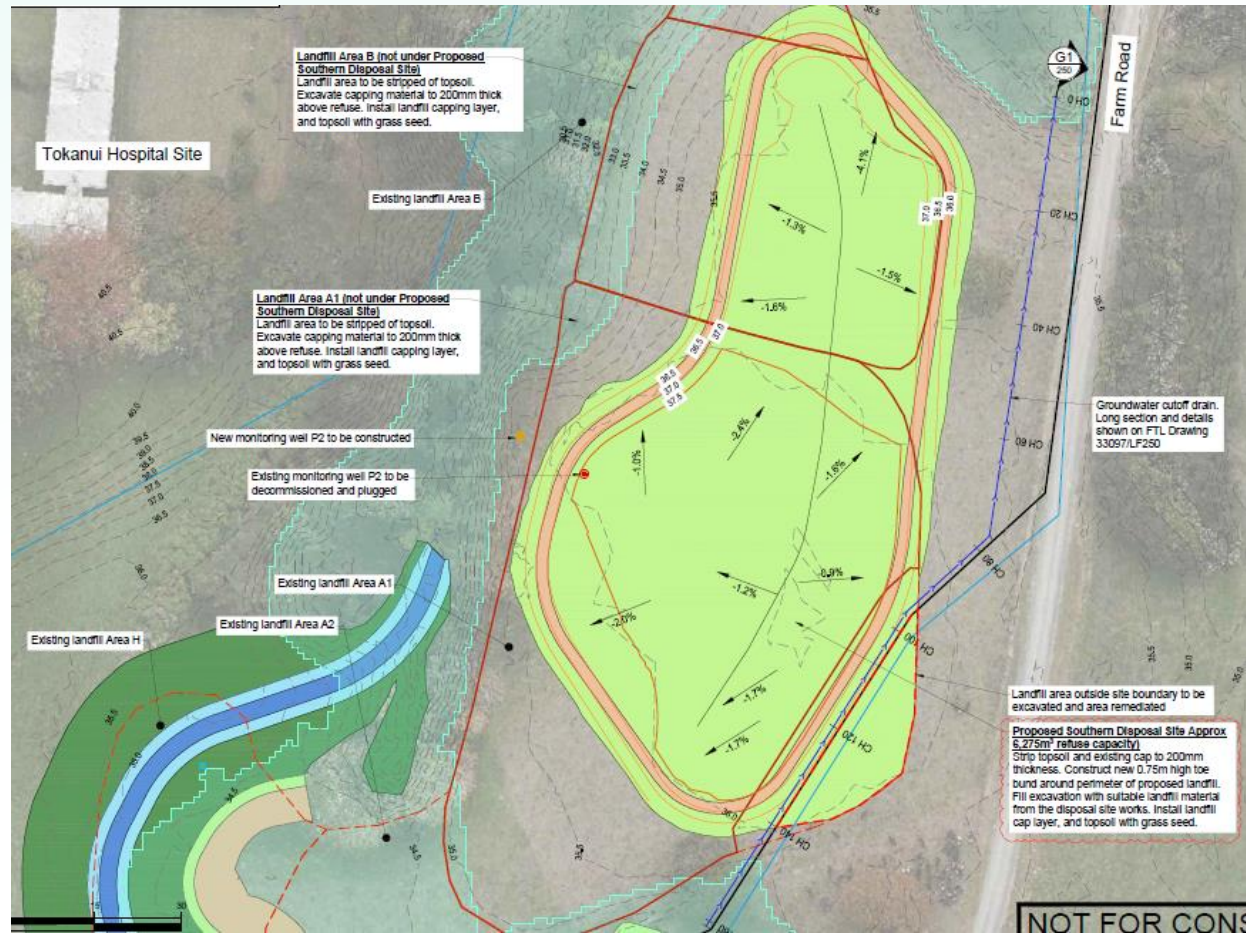
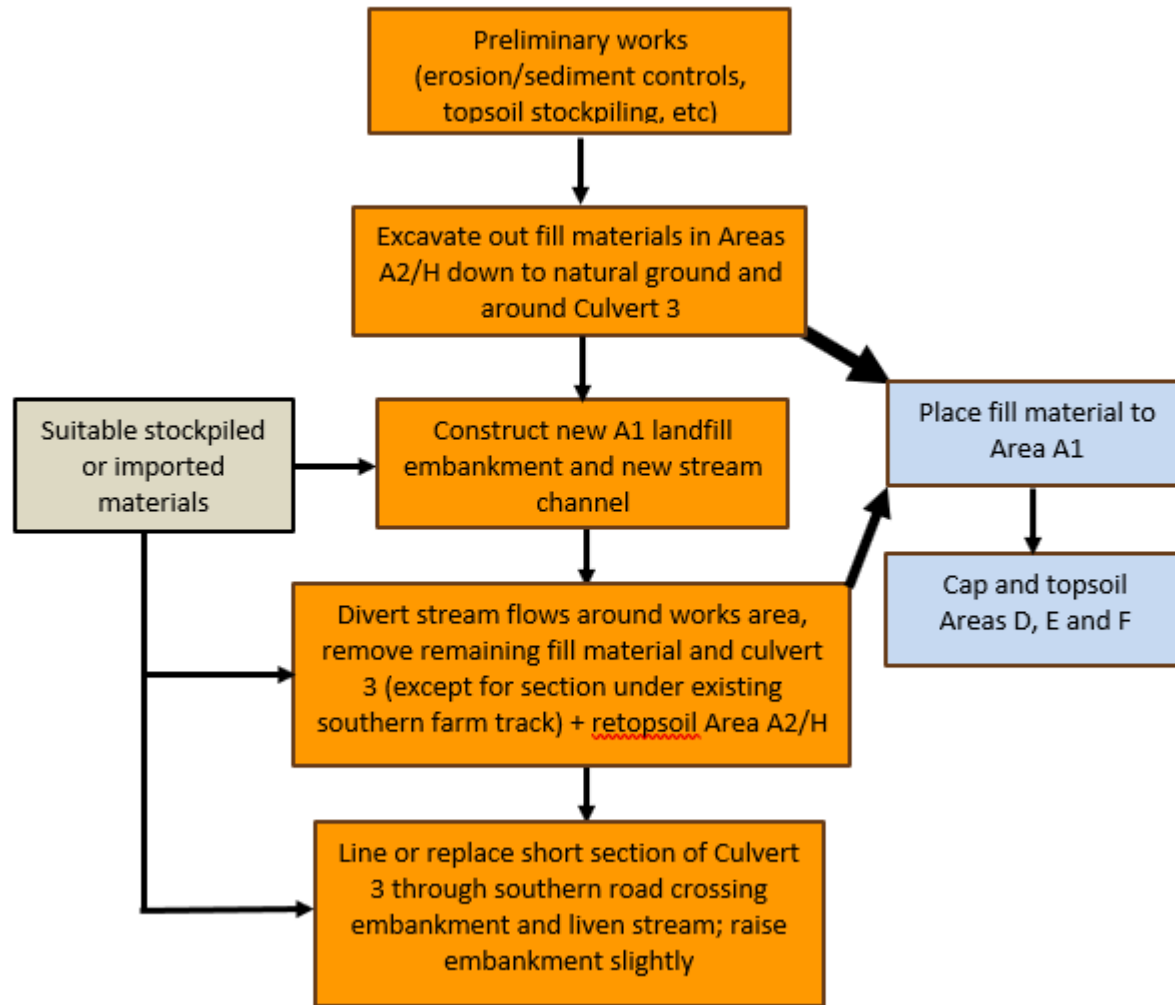


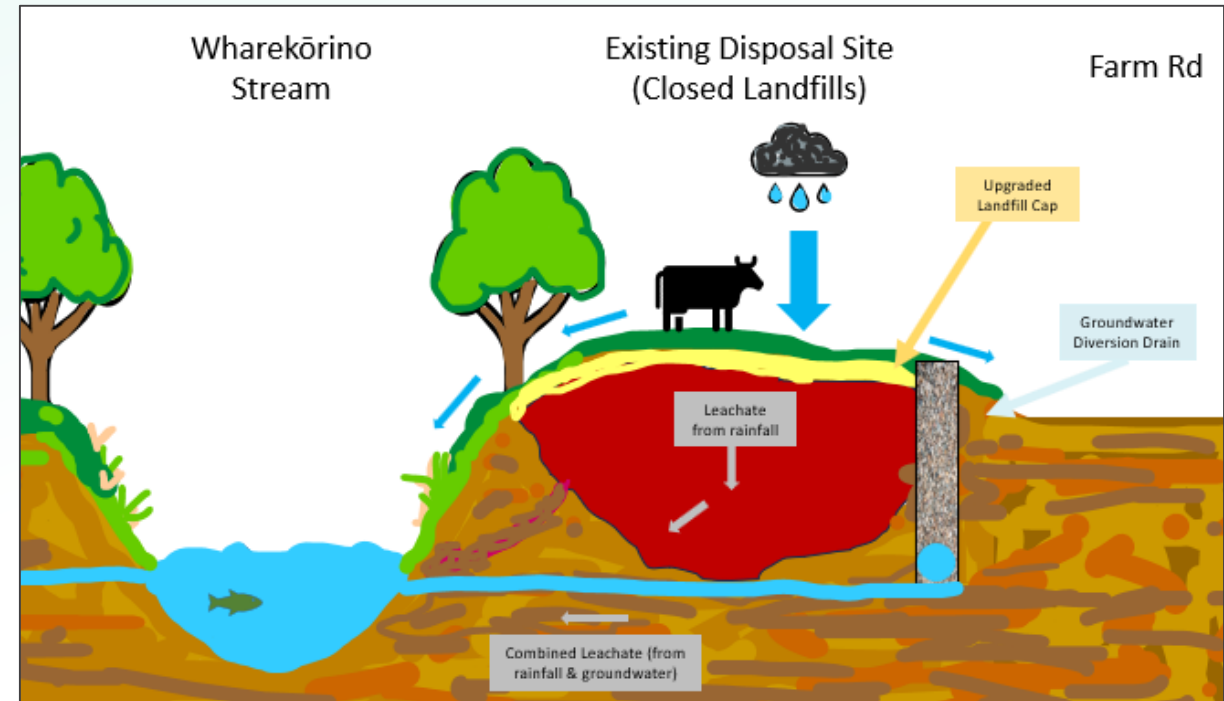
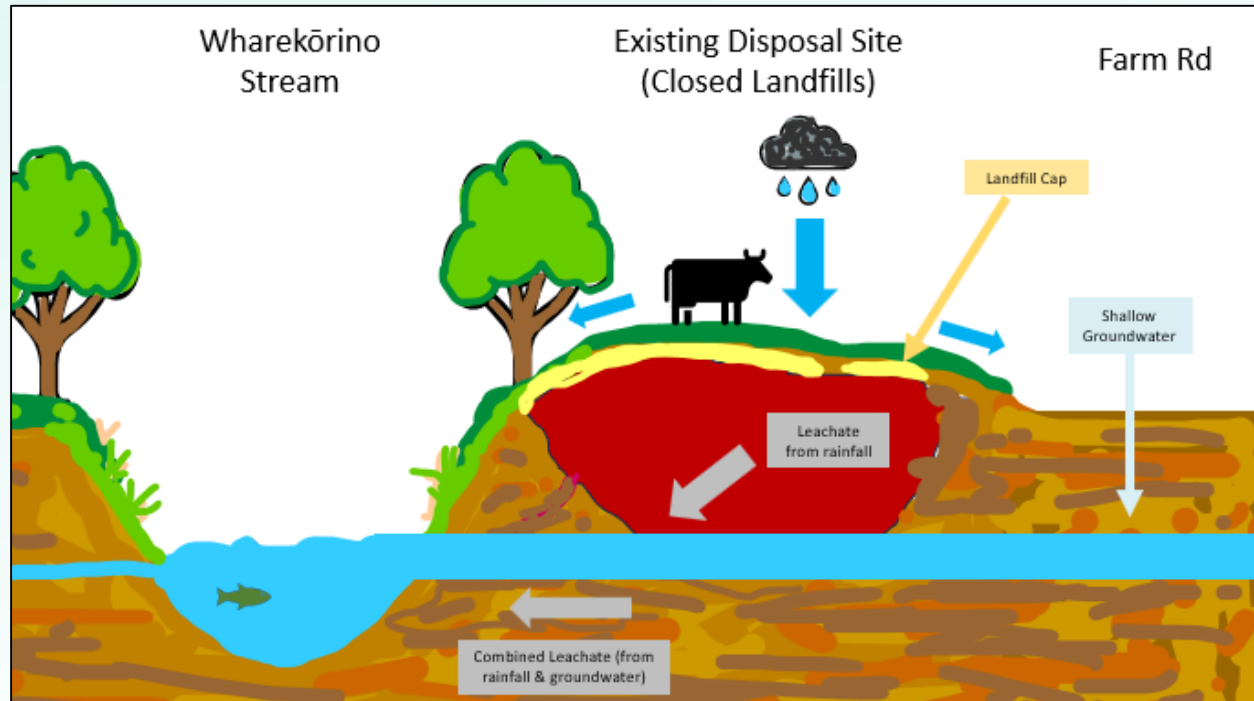
Figure 15: Stage 1: Area D-F and Culvert 2

# Southern Area Works



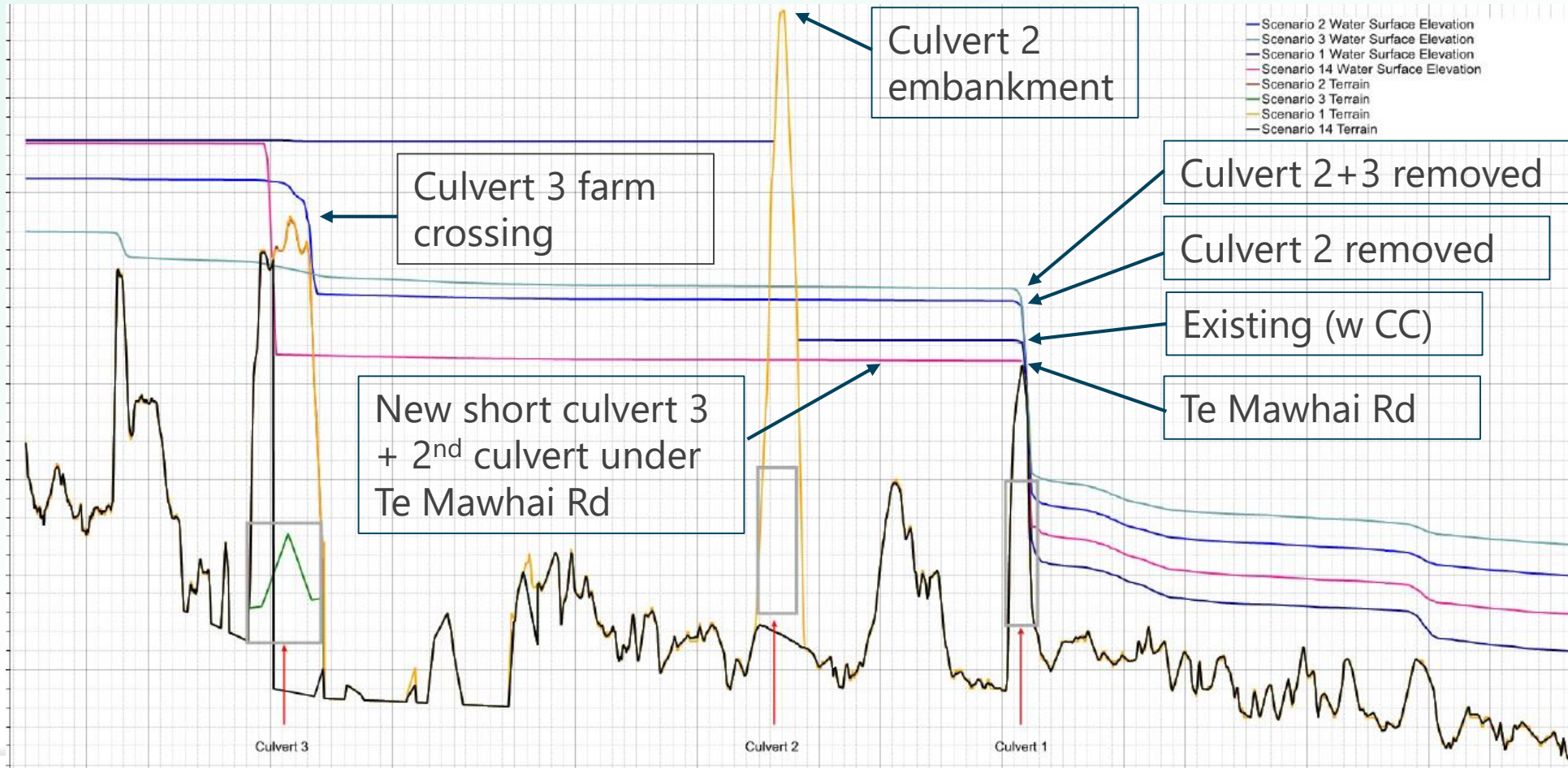
# Existing

# Proposed



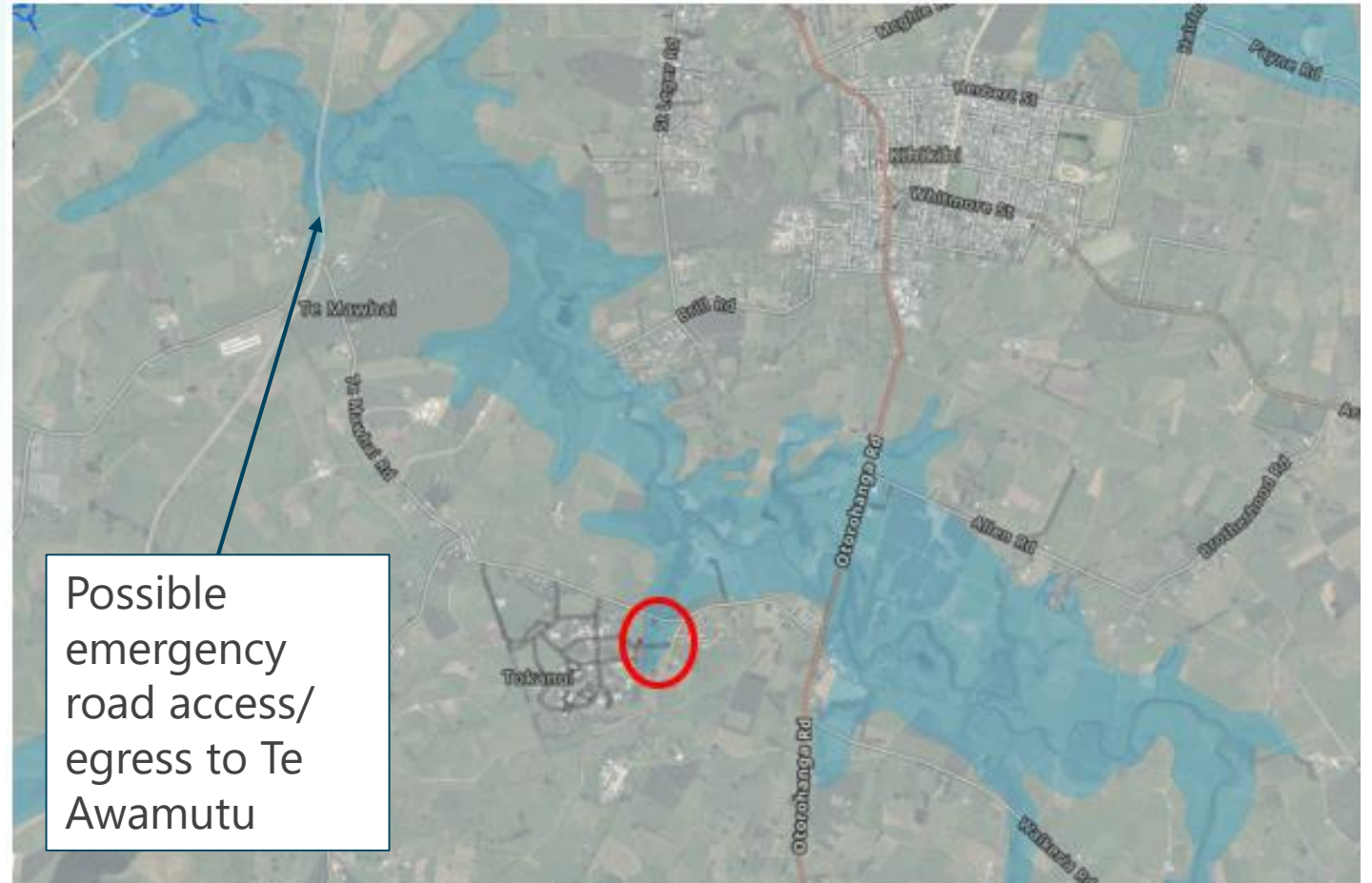
- Leachate discharges to stream estimated to reduce by 72-92%.

# Flood Modelling



## + Check on Flooding from Pūniu River

- WRC Flood Hazards portal shows Pūniu River flooding flowing back up Wharekōrino Stream extending above Te Mawhai Rd.
- Flood extent doesn't look correct based on site LiDAR data.
- If some backflow does occur, benefit of second culvert under Te Mawhai Rd is questionable, particularly if emergency access/egress is still possible via road to west.
- Waipa DC have agreed with this assessment → only C2 removed.



# Current status of works

- All resource consents granted – WRC & WDC
- Contract awarded for hospital demolition and landfill remedial works.
- Works split into three separable portions
  - SP1: Building demolition works (vertical infrastructure) – in progress
  - SP2: Hospital horizontal infrastructure and soil contamination – erosion and sediment controls being installed.
  - SP3: Landfill repair and upgrade works – erosion and sediment controls being installed.