

# **KRED Pipe Jack** *an alternative delivery option*

*Stormwater Conference 2023*

May 2023

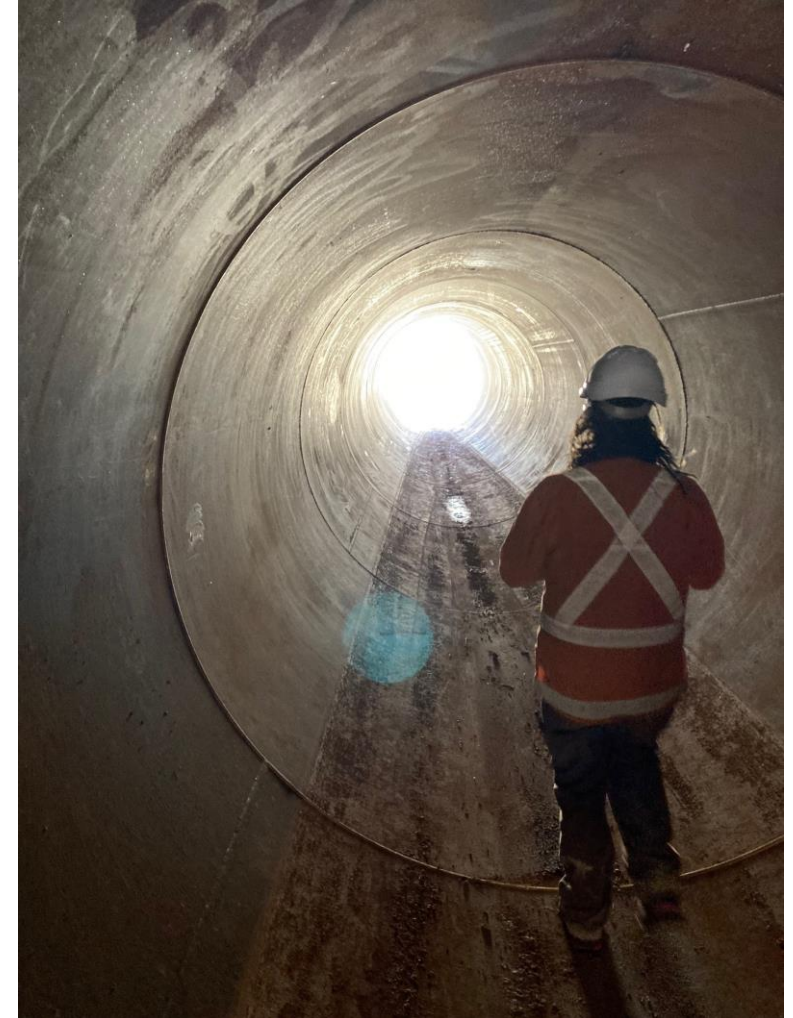
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*Tauranga City*

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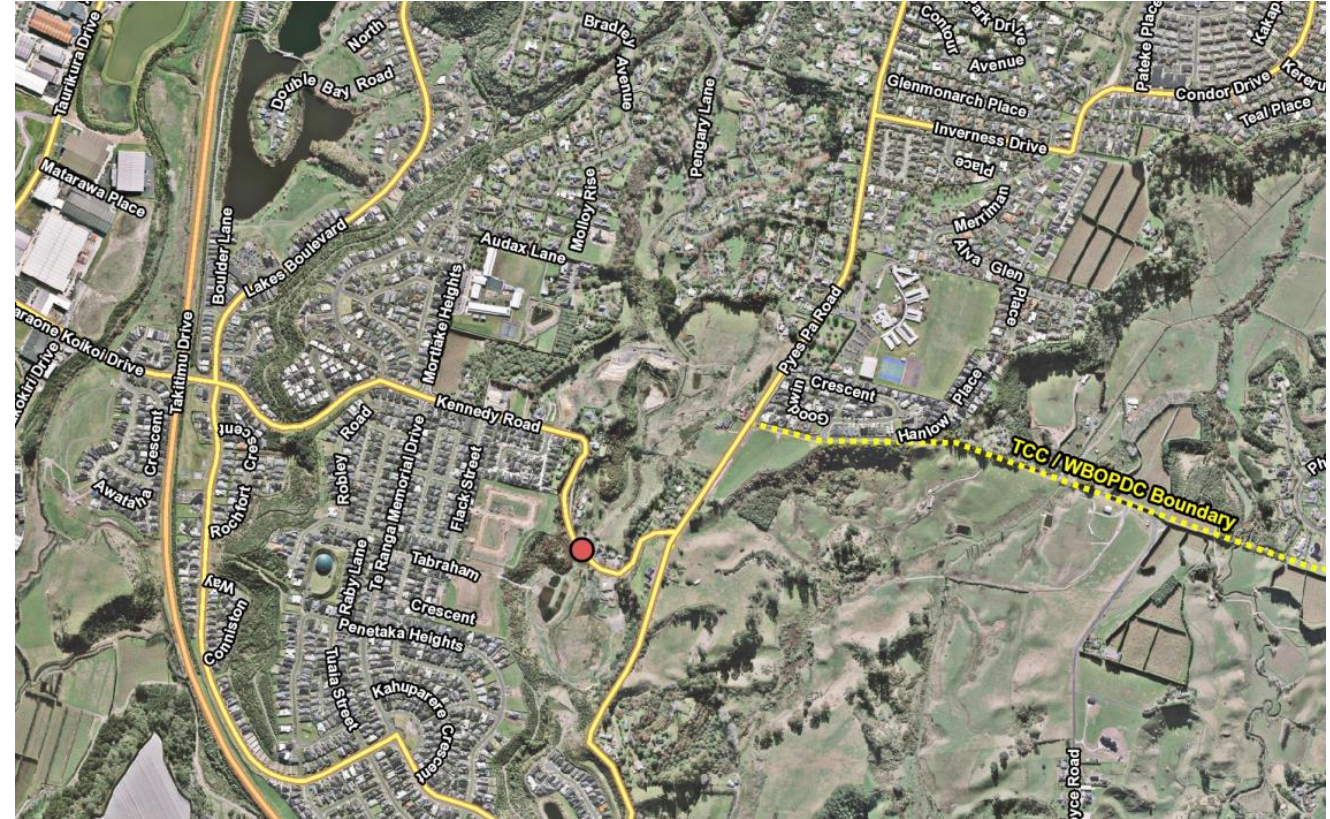
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# Background

- For the KRED culvert install, we opted to use pipe jack/thrust technology.
- Why???
  - **Quicker construction**, facilitating **faster delivery of much needed housing** for the city, as well as **enabling us to keep Kennedy Road open and operational during the works** (negating reconstruction of the road)
  - Reputational Risk – ‘a real pickle’
    - Kennedy Rd upgrade (new road over dam) recently completed



# Catchment overview (*where we are*)



- Zone A – 13.8 ha zoned as suburban residential, including the 4.4 ha Lakes Primary School site.
- Zone B – 20.7 ha zoned large lot residential and 4.5 ha zoned suburban residential, with Takhar Trust being the majority landholder.
- Zone C – 17.7 ha zoned suburban residential, with Paradiso Holdings being the majority landholder.



# KRED Timeline

- October 2020 - Award ECI contract to MAPP
  - Strait into optioneering with T+T
- November 2020 - Approval in Chambers for trenchless and budget increase
  - **Rationale: quicker construction, houses to market sooner and less disruption to public (but carries higher risk – we may need to revert to open cut)**
  - **Win / Win**
- December 2020
  - SPB split into SPB1 and SPB2
    - SPB1 – preload/enabling and steel cassion supply (awarded)
    - SPB2 – trust and everything else
- Feb 2020 – Practical Completion for SPB1
- March 2021 – Awarded SPB2 (thrust and main works)
- April 2021 – Commenced SPB2 (Inc **Jacking Works from June to Sept**)
  - 17 Aug NZ moves to AL4
  - 31 Aug BOP moves to AL3
  - 7 Sept BOP moves to AL2
- March 2022 – Practical Completion SPB2 (**DNP just wrapping up**)

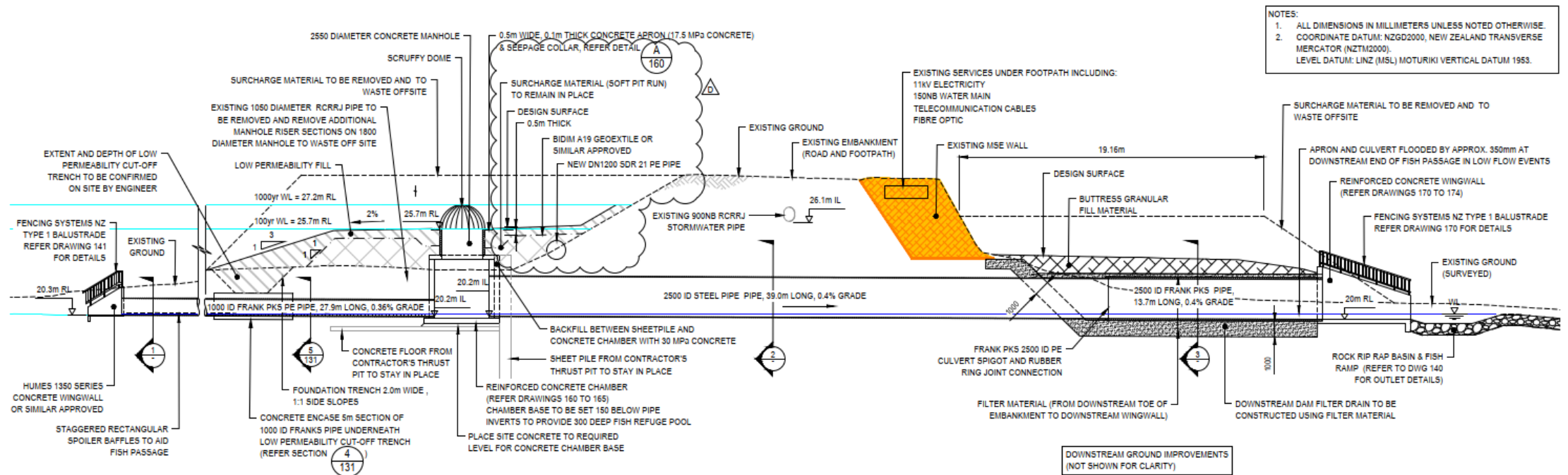
# Design intent







# KRED X-section

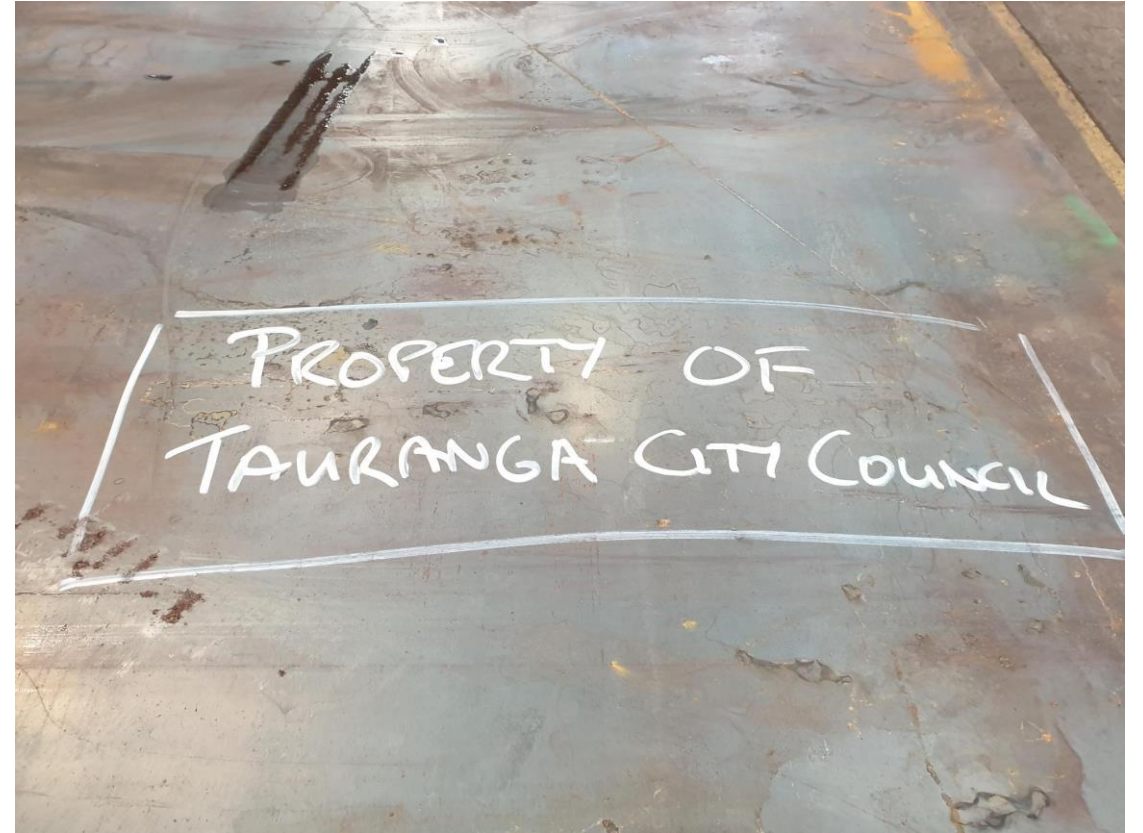




# Pipe Jack *(enabling/risk avoidance)*

- Exploratory Geotech
  - Pilot shots (6 through the face)
  - CPTS / HAs
- Various Risk Workshops (3x)
  - Experts (SMEs)
- Plan B (hammering) and Plan C (open cut)

# Australia to Petone (11x 32mm sheets 3mx9m) – May 2021





# Submerged arc weld – Petone (June 2021)

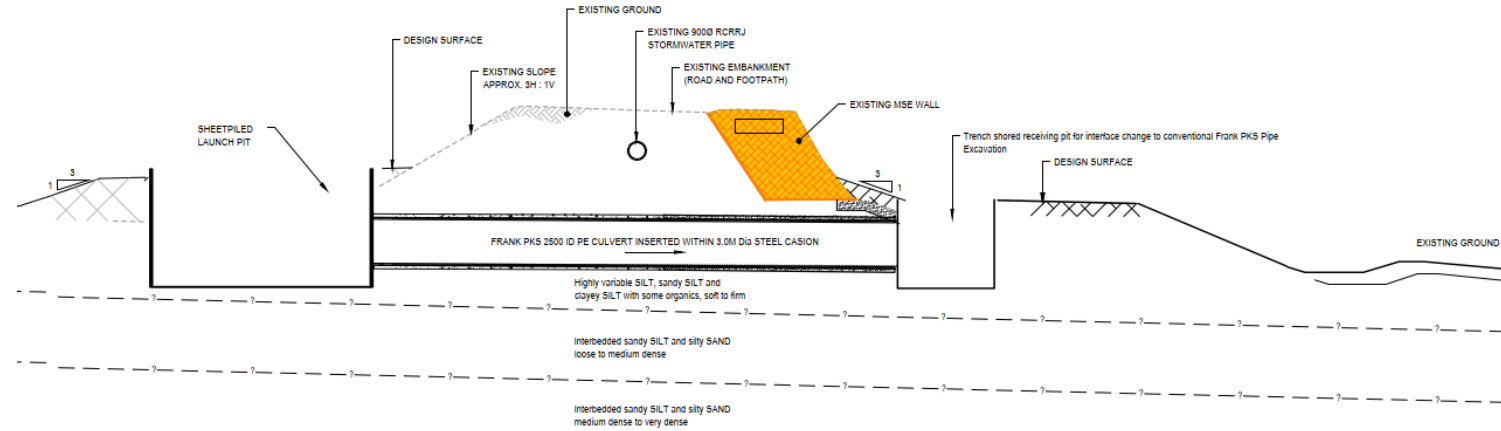
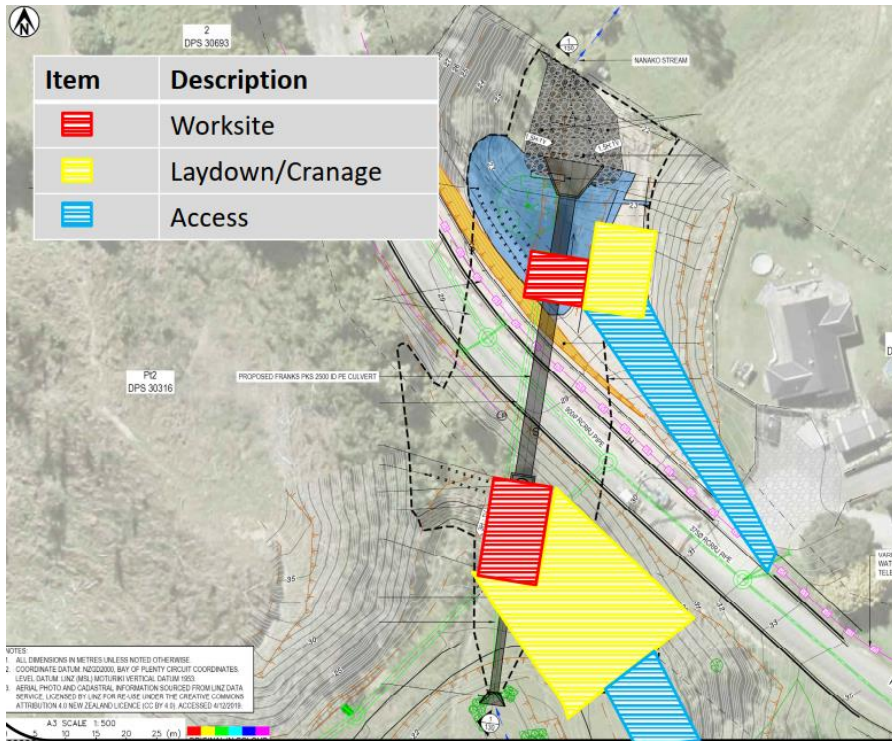








# Jacking set-up (June)



Upstream – 12m x 6m (1m below IL)

- Contingency for hammer

Downstream – 4m x 4m

<p>           PO Box 1001,            Cambridge 3450            Tel: (021) 856187            Email: <a href="mailto:nathan@uul.co.nz">nathan@uul.co.nz</a> </p>	Site Layout Plan: Tauranga City Council <b>KENNEDY RD JACKING WORKS</b> Layout Plan 1	Issue: _____ Description: _____ _____ _____





# Pilot (July 1<sup>st</sup>)



# Steel Arrives at Site (July)





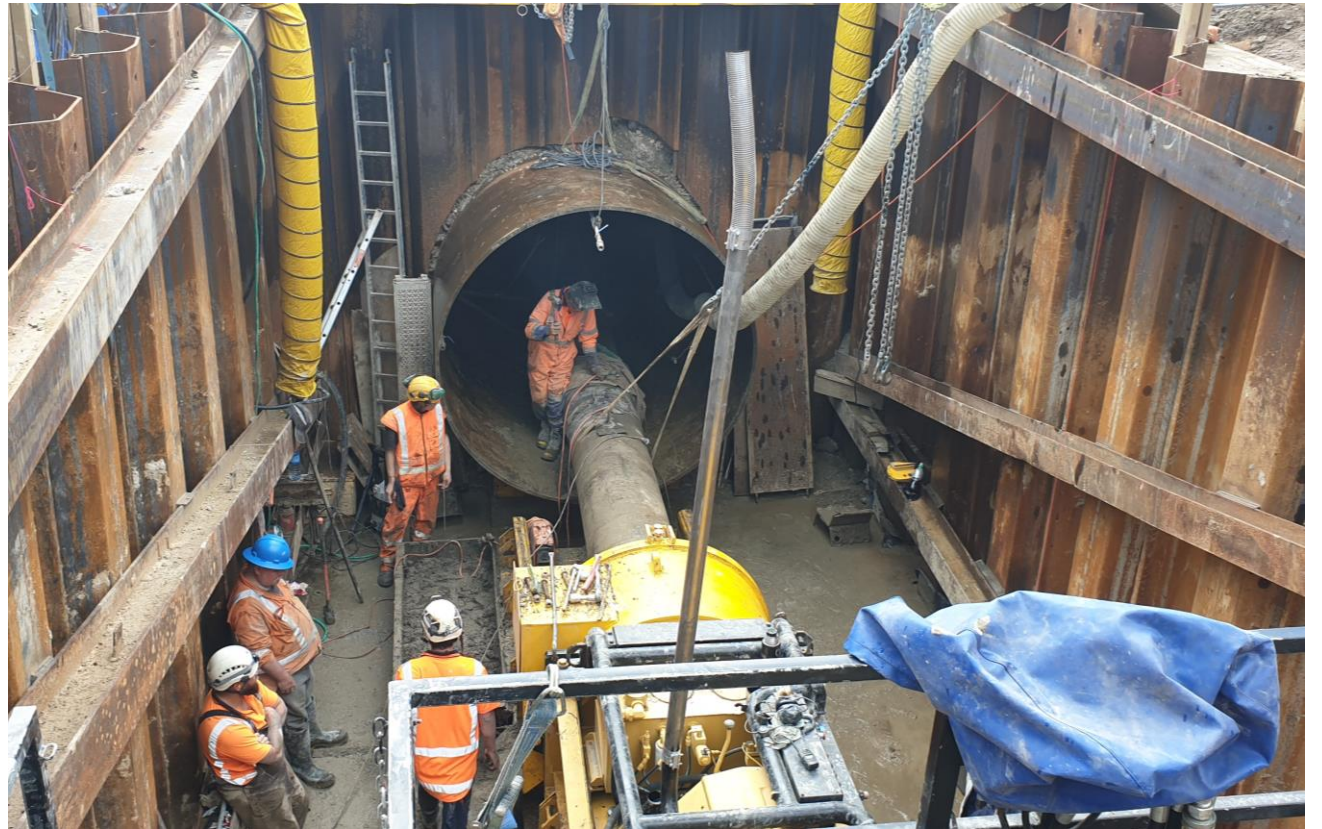
# Jacking in Action (July)





# Augering / Clearing out pipe

- After each 6-metre jack (roughly halfway through), we needed to clear out and remove the material from inside the pipe. This material was removed via a smaller pipe (600mm) within the larger pipe which draws back the material via a rotary setup and into the skips on the side.





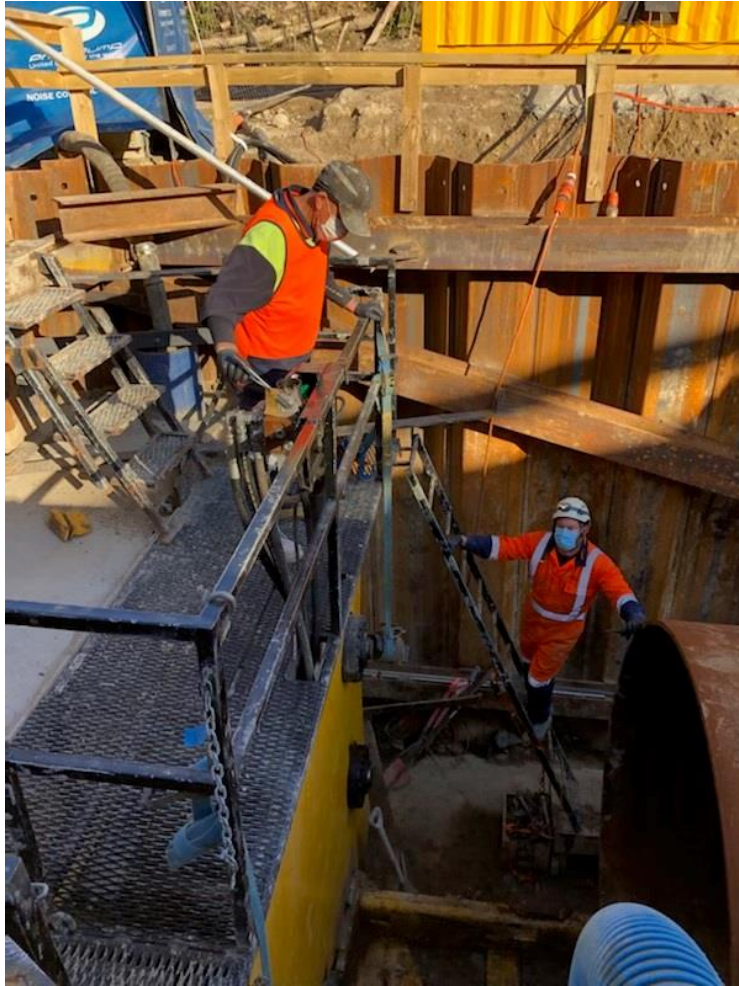
# Pipe welding

## CS Entry

- The welders were required to wear a full self-contained respirator and protective gear;
- forced ventilation system and gas detection in place.



# Working during AL4 / through the other side (Sept)





# Still need to build Dam....















# Conclusion

- Successful Delivery
- Collaborative ECI / Innovation
- Alternative means to Open Cut
- Limited disruption to residents/stakeholders
- Delivered under budget