



More than a drain; the ecological surprise of Harrisons Cut drain

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Stormwater Conference

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Tauranga City

Agenda

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- Background
- Subject Site/Surrounds
- Scope
- Site conditions pre-works
- Baseline Ecology
- Enabling Works/Ecological and “The Surprise”
- Construction
- Conclusion

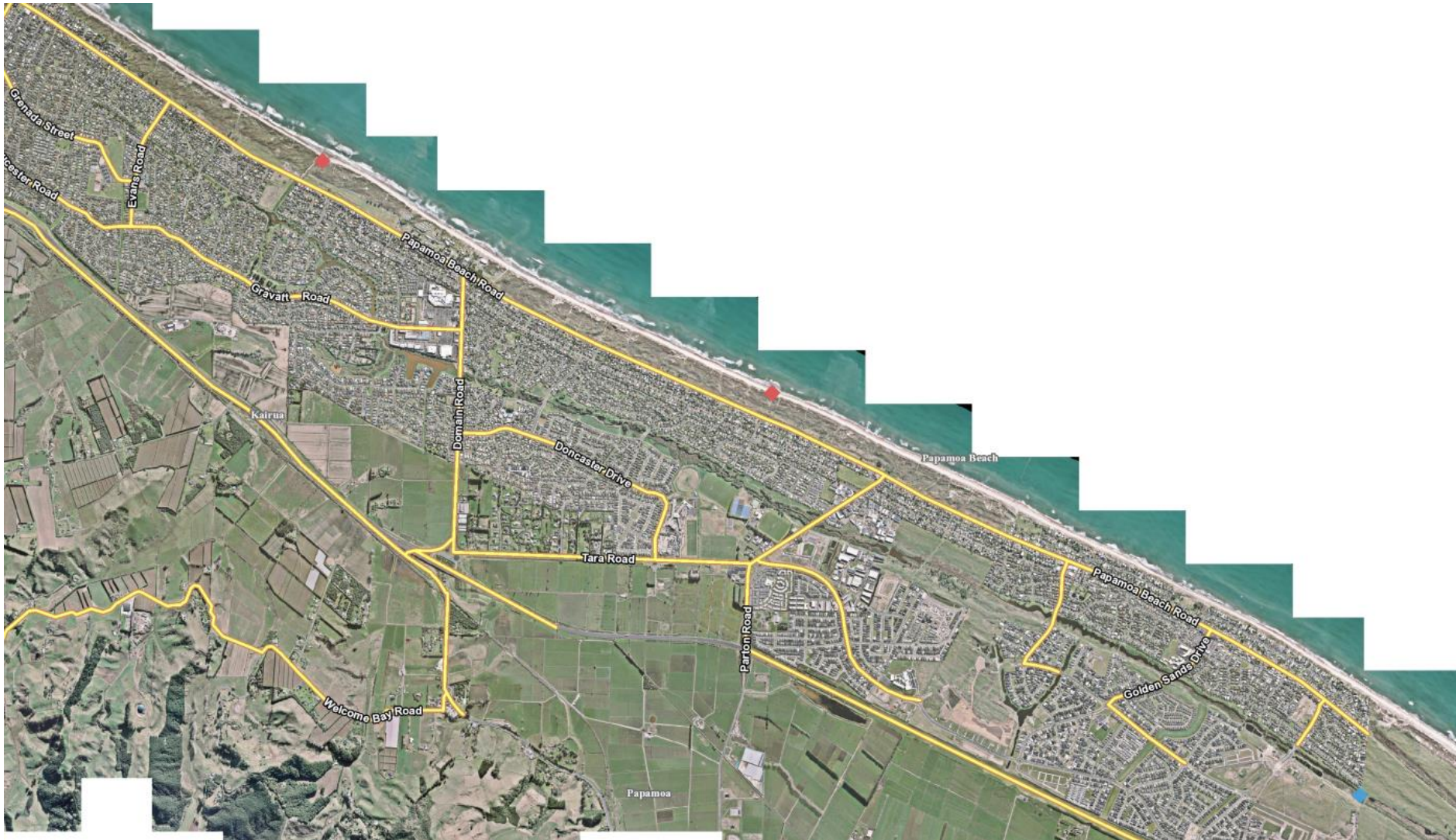


Background

- The Harrisons Cut drain (from Papamoa Beach Road to the foreshore) was severely damaged in a storm event back in August 2018.
- Optioneering, Investigation, design and consenting took place between 2019 and 2021.
- Project Objective: ***cultural acknowledgement, protection of native species within the drain and dune habitat, upgrade the existing road/accessway and drain to provide safe and resilient access to the beachfront and carpark.***
- Construction: April 2022 – December 2022.

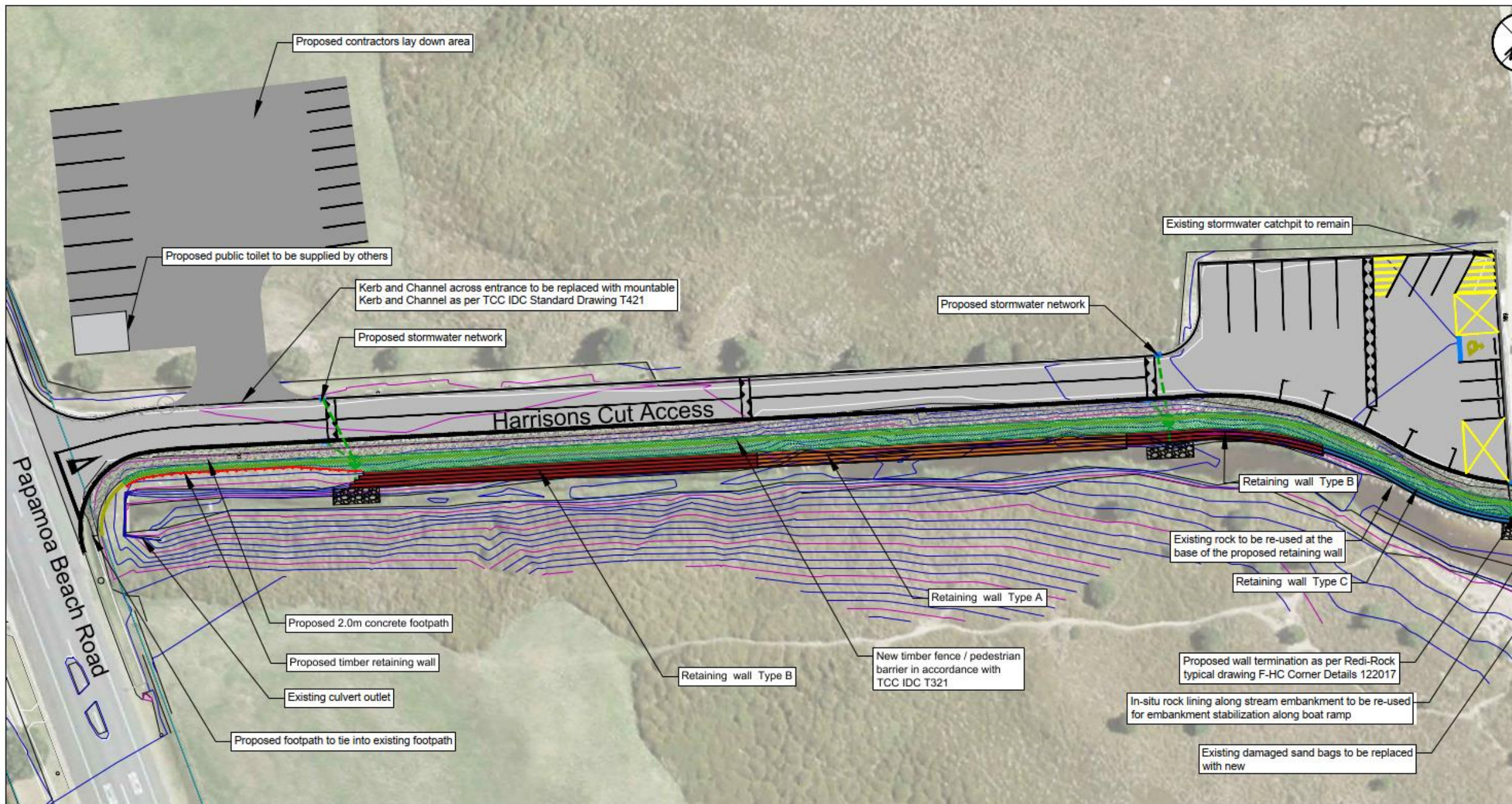


Subject site and surrounds



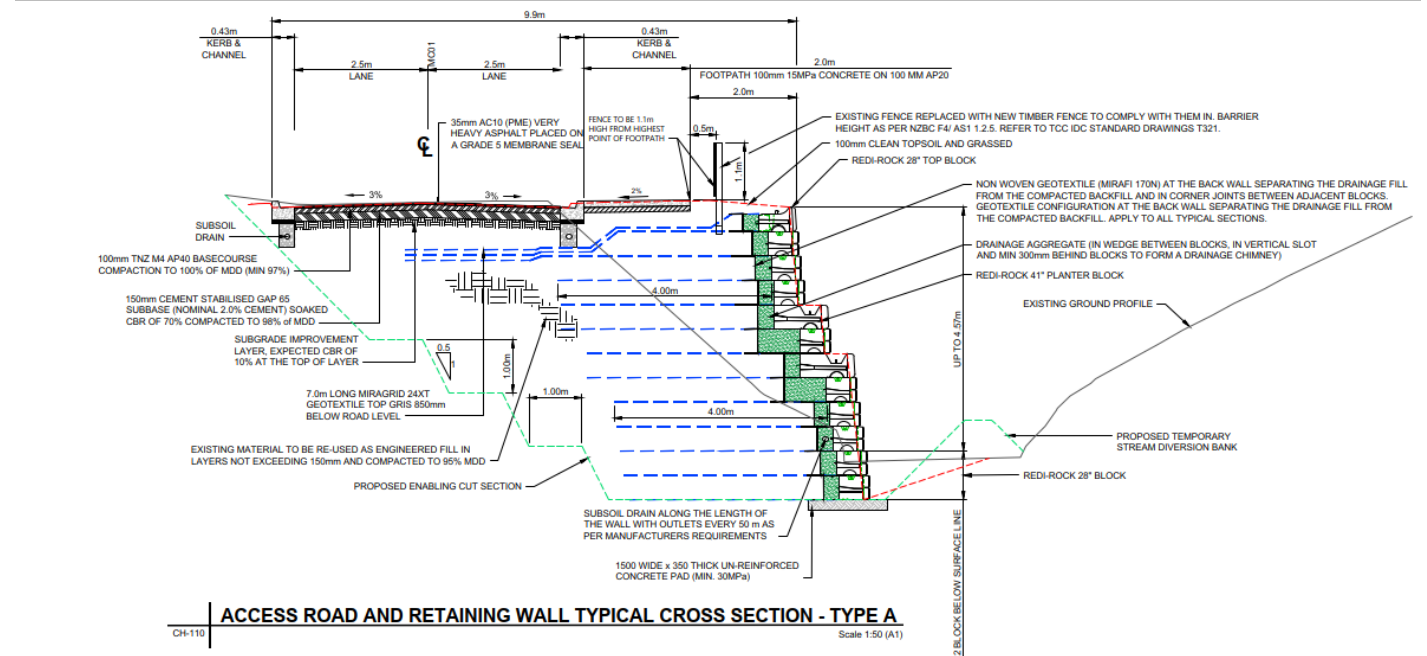
Closer to Home





Scope

- Scope of Works
 - Earthworks;
 - Construction of **Redi-Rock** retaining wall to support the road/accessway (approx. 175m of total wall + 30m);
 - Minor drainage and road reconstruction (new pavement/surfacing, kerb/channel, footpath line marking and signage); and
 - Landscaping.
- Area is well used – coastal boat ramp/launch. Popular spot for locals.



Site/drain – prior to works







2005 works

- Works to keep up with development (residential subdivision, CMP)
- Papamoa Beach Road Culvert and 50m of gabions installed in 2005 (previous storm damage)



Baseline Ecology (pre works)

- EIA prepared to support the AEE - required for the consent application.
- Various surveys (desktop and site), assessments, reports and plans were prepared and implemented during the physical works.
- ***A significant focus was placed on the native skinks*** and the appropriate approvals and plans/mitigations needed to be in place prior to construction commence.



- *The baseline assessment provided a moderate ecological valuation on fish and a **low valuation on the habitat of the drain.***
- More focus and effort were put into lizards in the lead-up to physical works.
- The overall level of effects from the Project were assessed and included compliance with the Wildlife Act 1953. As a result, lizard and fish salvage and native nesting bird management was proposed in the lead-up to physical works.
- *DoC Permit (Wildlife Act Authority) / Lizard and Katipo Spider Management Plan (LKMP)*

Habitat or species	Ecological valuation	Justification
Terrestrial habitats	Low	Bank stabilisation works will occur on the true left bank of the drain and consists of bare sand overlaid with introduced Kikuyu grass and annual/perennial weeds.
Bats	Negligible	Review of database records provided no indication of bats within 10km of the Project site. Habitat within Project area unlikely to support bat foraging, roosting or connectivity with other potential bat habitats.
Birds – adjacent dune habitat	High	Potential that several indigenous bird species rely on the coastal dune environment as their primary habitat and breeding ground, including 'At Risk' and 'Threatened' species.
Birds – true left bank grass and weeds	Low	Grass and weed habitat on true left bank of the drain is not considered to be a habitat that indigenous birds would utilise.
Lizards	Moderate	The grass and weed habitat within the true left bank is likely to contain indigenous skink species. Given the presence of the dense pohuehue growth surrounding the Project area, it is possible that indigenous skink species such as copper skink and other 'At Risk' species such as Shore and Moko skink, could also be present within the grass and weeds on the true left bank of the drain.
Freshwater habitats (drain)	Low	Poor instream habitat and structure resulting in a low habitat diversity and abundance.
Fish	Moderate	Permanently flowing highly modified drain. Evidence that the drain could be used by indigenous freshwater species for migratory purposes, including the 'At Risk' longfin eel and inanga.

Enabling works and Ecological (skinks)

- Lizard and Katipo Spider Management Plan and Ecological Management Plan works.
 - Ecologist stand-over during vegetation removal and three nights of funnel trapping (10 gee minnow traps baited with banana).
- ***Spoiler Alert!*** - Only plague skinks were observed, no indigenous lizards were found
- no suitable lizard habitat remained inside the footprint.
- *good news / bad news....*



Enabling works and Ecological (fish)

- Fish salvage was required as we needed to divert the drain, dewater, and install boxing for our retaining wall footing within the live drain.
- Gee Minnow traps and Fyke Nets overnight within the drain
 - Checked in AM and relocating any fish caught after data was collected including species, length etc.
- Fish salvage continued until the fish numbers were reduced by 80% for common species and >90% for At Risk species relative to the first days catch.



Fish Barriers



Yes – these were audited/regularly inspected



Fish Salvage



Fish Salvage 'The Surprise'

- During fish salvage (between April and June 2022) of this small section of drain (approx. 175m) the **ecologists caught and relocated a whopping 2,132 fish** (including some 'At Risk' native species).
 - 46 longfin eel (*Anguilla dieffenbachii*; At Risk – Declining),
 - 209 shortfin eel (*Anguilla australis*; Not Threatened),
 - 17 redfin bully (*Gobiomorphus huttoni* – Not Threatened,
 - 59 giant bully (*Gobiomorphus gobioides*; At Risk – Naturally Uncommon),
 - 674 yellow eye mullet (*Aldrichetta forsteri*; Not Threatened),
 - 340 common bully (*Gobiomorphus cotidianus*; Not Threatened);
 - 70 unidentified bully (*Gobiomorphus* sp.);
 - 61 unidentified eel (*Anguilla* sp.; juvenile eels); and
 - 633 inanga (*Galaxias maculatus*; At Risk Declining).
 - 3 parore (*Girella tricuspidata*; Not Threatened).
- Overall, 1,243 Not Threatened species and 738 At Risk species were caught and relocated.

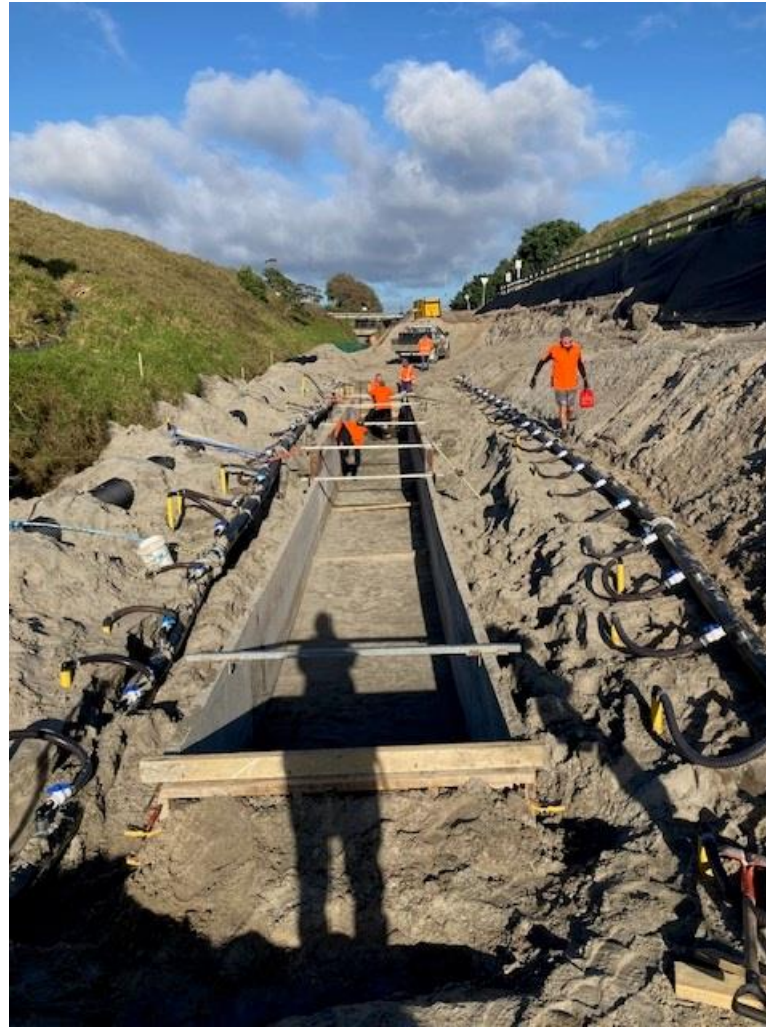


But why????

- On second thought it was a good environment for fish / aquatic life
- Main highway for migration in catchment
- Varying water levels (shallow pools, deeper pools), debris, kikuyu overgrowth, shade, tidal



Construction – Main Works (MSE Wall)







Conclusion

- Project success for TCC and the community (delivered on time and below budget).
- ***It demonstrates that even an apparently degraded and highly modified environment (drain) can provide habitat and an abundance of biodiversity. It is an example of how resilient ecosystems can be and how we can all be surprised once we get stuck in and undertake a job/project.***



Thank you / acknowledgments

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