



Urban Stock Water Races and The Dilemma of Obligations

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Introduction

NZ Transport Agency Waka Kotahi SH73 West Melton Improvements project in the Selwyn District converted existing open stock water races to piped networks to address safety concerns and allow for associated traffic safety improvements.

The presentation focuses on stock water races; however, the philosophies apply to all open waterways.

Open water poses a drowning risk and pedestrian/road safety hazard but also provides ecological, biodiversity and aesthetic values.

Consideration of the piping of open water channels needs to be made on a case-by-case basis and can create a dilemma in meeting the hierarchy of obligations of Te Mana o te Wai.

Project Location

West Melton:

- 20 kilometres west of Christchurch
- Established as a farming district in 1863
- Population: 2450



SH73 West Melton Intersection Improvements

Key features

- A. Traffic signals at the SH73/Weedons Ross Road intersection with pedestrian crossings on all four legs of the intersection making it safer for pedestrians and cyclists to cross at the intersection.
- B. Piping of stockwater races to improve safety and allow widening of roads and shared paths.

- C. A cul-de-sac at the northern end of West Melton Road improving on-street parking (the current West Melton Road intersection with Weedons Ross Road would be too close to the new traffic signals).
- D. Weedons Ross Road (south of SH73) and West Melton Road widened and reshaped.

- E. A new link road between Weedons Ross Road and West Melton Road opposite Kingsdowne Drive (to the south of St Paul's Church).
- F. A new single lane roundabout at the intersection of the new link road and Weedons Ross Road opposite Kingsdowne Drive, with crossing points for pedestrians.



Stock Water Races

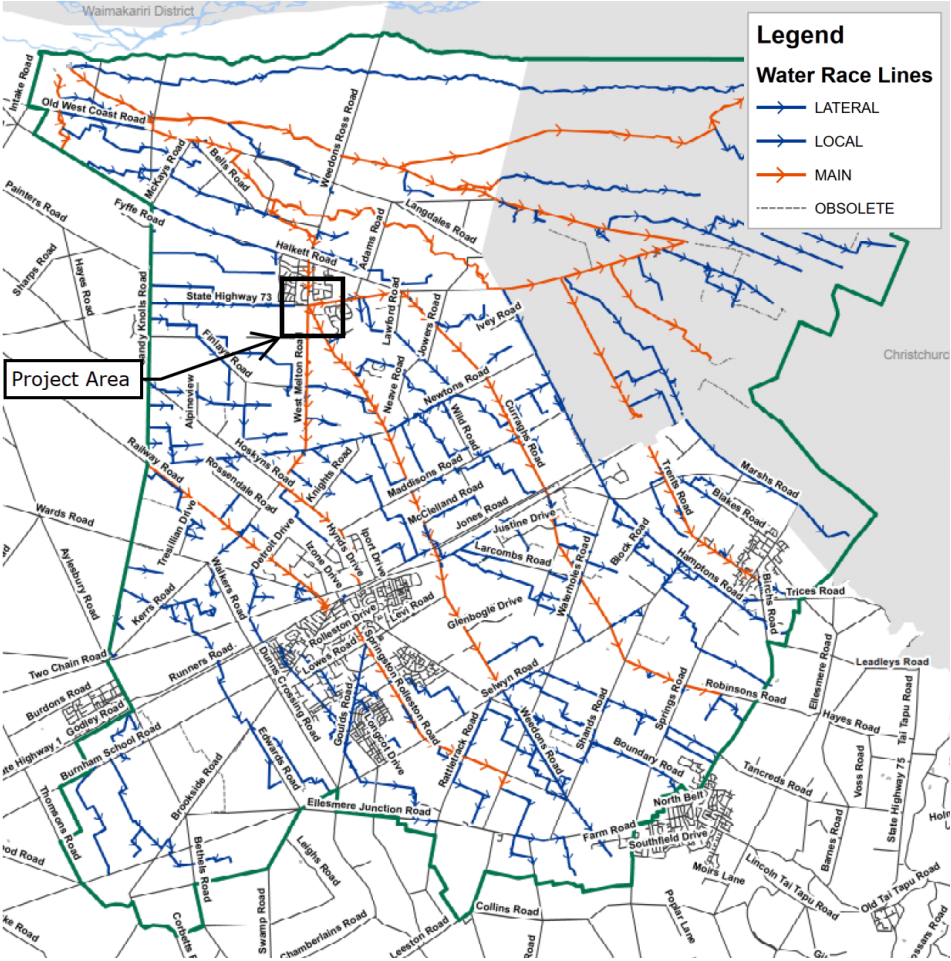
What are stock water races?

- Primarily: Supply drinking water to livestock.
- Secondary: Firefighting, irrigation and landscaping.
- Values: Flood conveyance, ecological, cultural, heritage and amenity purposes.

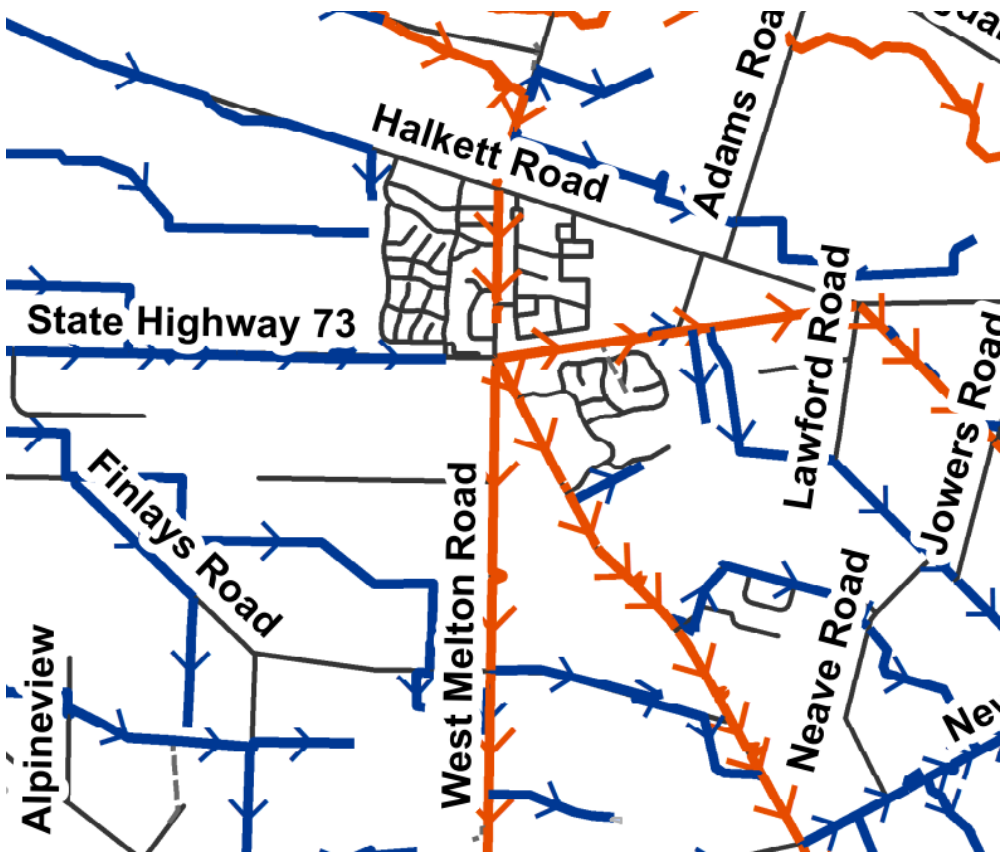
Despite being artificial ecosystems, stock water races provide habitat for fish and macroinvertebrates. Riparian margins can be terrestrial habitats for lizards and birds.



Stock Water Races



SDC Paparua Water Race Scheme



Hazards

11-month-old dies after falling into water race in Rolleston

Tom Kitchin

October 01, 2018, - 11:17am

Share



An 11-month-old child drowned in a water race on Tennyson St, Rolleston, on Sunday.
JOHN KIRK-ANDERSON / STUFF

Wednesday, 20 January 2021

Boozed driver retrieves car then crashes into ditch

By Susan Sandys

1953 0

Canterbury > Districts > Selwyn



Two tree stumps prevented this car from overturning into a water race. Police say the driver could have drowned. Photo: Supplied

Removing the Hazard by Piping

Several community facilities surround the SH73 West Melton Improvement Project site, including a primary school, shopping centre, church, tavern, and recreational reserve.

This resulted in a direct interface of pedestrians and traffic with open water.

The piping of the stock water races eliminates the open water hazard and can create space within the existing road reserve for traffic safety improvements and stormwater treatment swales and basins.

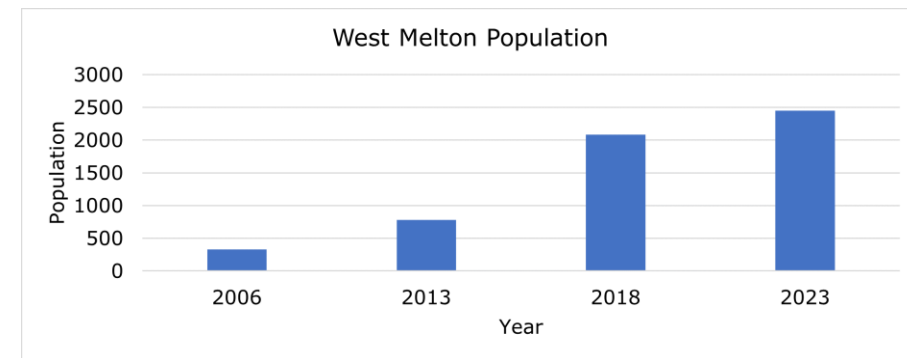
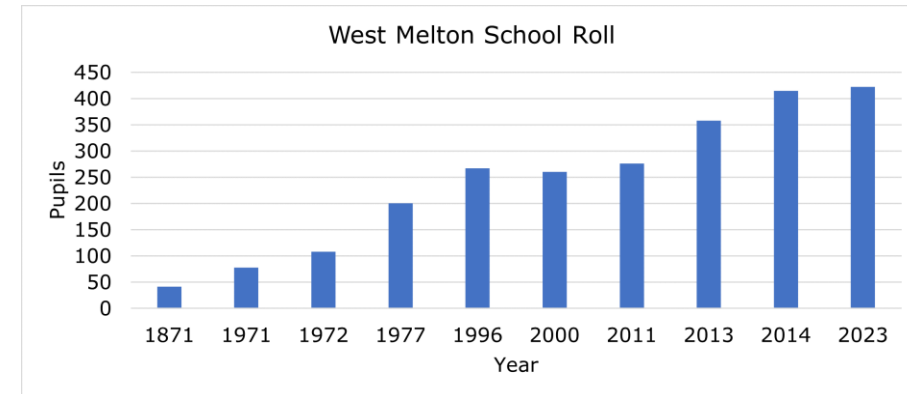
West Melton Urbanisation



2004-2010



2020



Te Mana o te Wai

Te Mana o te Wai is a concept that refers to the fundamental importance of water and recognises that protecting the health of freshwater protects the health and well-being of the wider environment.

There is a hierarchy of obligations in Te Mana o te Wai that prioritises:

1. First, the health and well-being of water bodies and freshwater ecosystems.
2. Second, the health needs of people (such as drinking water).
3. Third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.

Te Mana o te Wai has been part of the National Policy Statement for Freshwater Management since 2014.

Dilemma of Obligations

The first obligation of Te Mana o te Wai is not met by piping stock water races as it disrupts the health and well-being of water bodies and freshwater ecosystems by removing in-stream habitats and terrestrial habitats.

The third obligation prioritises the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future. This would include the safety of the communities.

Piping stock water races can be interpreted as prioritising the third obligation over the first. This highlights the importance of weighing up the pros and cons of piping stock water races.

Existing Site Conditions



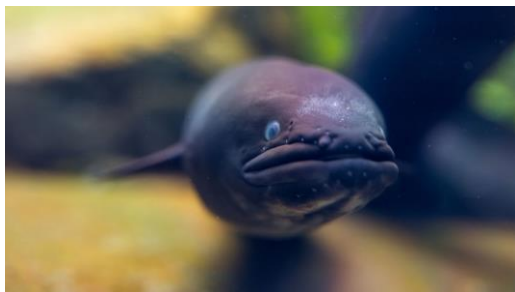
Existing Ecological Conditions

Terrestrial Habitat:

- No indigenous habitats.
- Exotic and planted native species.
- Exotic-dominated -> low ecological value.

Terrestrial Fauna:

- No indigenous lizards were identified.
- Suitable terrestrial habitat for southern grass skink.



In-stream Habitat:

- Limited in-stream habitat (uniform profile, bare or mown grass banks).
- Kingsdowne Drive ponds provided more diverse habitat with the addition of rocky boulders and a riffle and pool sequence.
- eDNA analysis detected two native fish species (longfin eel and upland bully) and the introduced brown trout.
- An ecological survey of the Papanui Water Race Scheme in 2022 by EOS Ecology also detected Kākahi (freshwater mussels).
- During construction of the project works, close to 120 fish were caught and relocated including upland bully, longfin and short-fin eels, and brown trout.

Case-by-case Decision

Pros	Cons
Traffic safety improvements	Loss of terrestrial habitat
Pedestrian safety improvements	Loss of in-stream habitat
Operations and maintenance safety improvements	Loss of community connection with water
Increased active transport options	
Provision of stormwater treatment	
Creation of habitats in swale, basin, and landscape plantings	
Existing terrestrial habitat types were considered to be low ecological value	
Limited existing instream habitats	

Opportunities to retain open stock water races

The decision to convert stock water races to a piped network should be made on a case-by-case basis. Opportunities to retain open races should be adopted where possible to retain community connection with water and the surrounding environment.

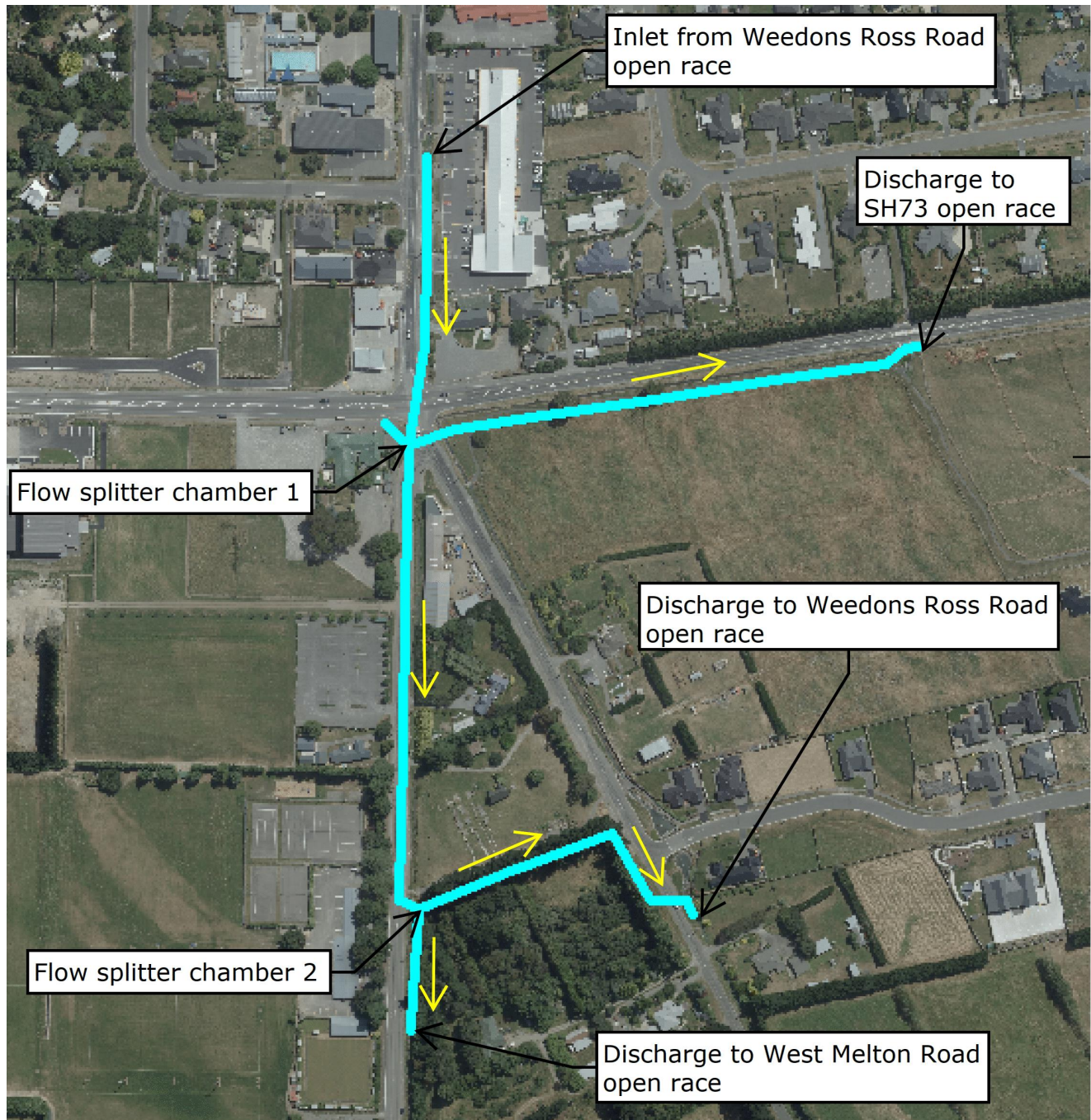
Opportunities to retain open stock water races can be adopted via:

- Enhancing stock water races through parks and reserves via plantings, naturalised alignments and creation of riffle and pool sequences.
- Using riparian planting to create pedestrian separation.

Selwyn District Council values the protection of habitats and biodiversity within water bodies, races, and drains and sees the benefit of connecting communities to water through enhanced accessibility.

Stock Water Design





Stormwater Design



Safety in Design



Conclusions

Community safety around infrastructure is a key issue for local authorities.

Authorities should consider changes associated with the development of previously rural or low-density areas.

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Opportunities to retain open races should be adopted where possible to retain community connection with water and the surrounding environment.

Thank you!
Questions? Patai?