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EDWARDS ROAD DEVELOPMENT – POTENTIAL ECOLOGICAL EFFECTS OF PROPOSED PLAN CHANGE

Dear Tanveer

1. INTRODUCTION

Tiranga Aotearoa Group is preparing a private plan change request to Selwyn District Council that involves rezoning approximately 60 hectares of land at Edwards Road, Rolleston from rural to urban landuse. The area is referred to as the Edwards Road Development (hereafter, the Site) and it contains a district council water race that requires an ecological assessment to support the plan change application.

Instream Consulting were engaged to undertake an ecological assessment of the water race and wider project area. This letter summarises the existing environment, based on a desktop review of existing ecological information and observations from a site visit on 27 August 2025. It also identifies the actual and potential environmental effects of the proposed landuse change, assesses whether there is sufficient information to support a decision on closing the water race, and highlights other areas that may require further assessment at the subdivision consent stage.

2. EXISTING ENVIRONMENT

The Edwards Road development is located between Edwards Road and Selwyn Road at the southern edge of Rolleston (Figure 1). The Site's current land use is a mixture of lifestyle dwellings, dairy farming and other multipurpose agriculture. The broader area north of Selwyn Road, between Edwards Road and Dunns Crossing Road has all been proposed for residential development, and some of this land has already been rezoned. The land south of Selwyn Road and west of Edward Road remains in rural landuse. The site footprint contains a water race that is part of the Paparua water race network, running north to south and terminating at a soak hole on the neighbouring property to the east.

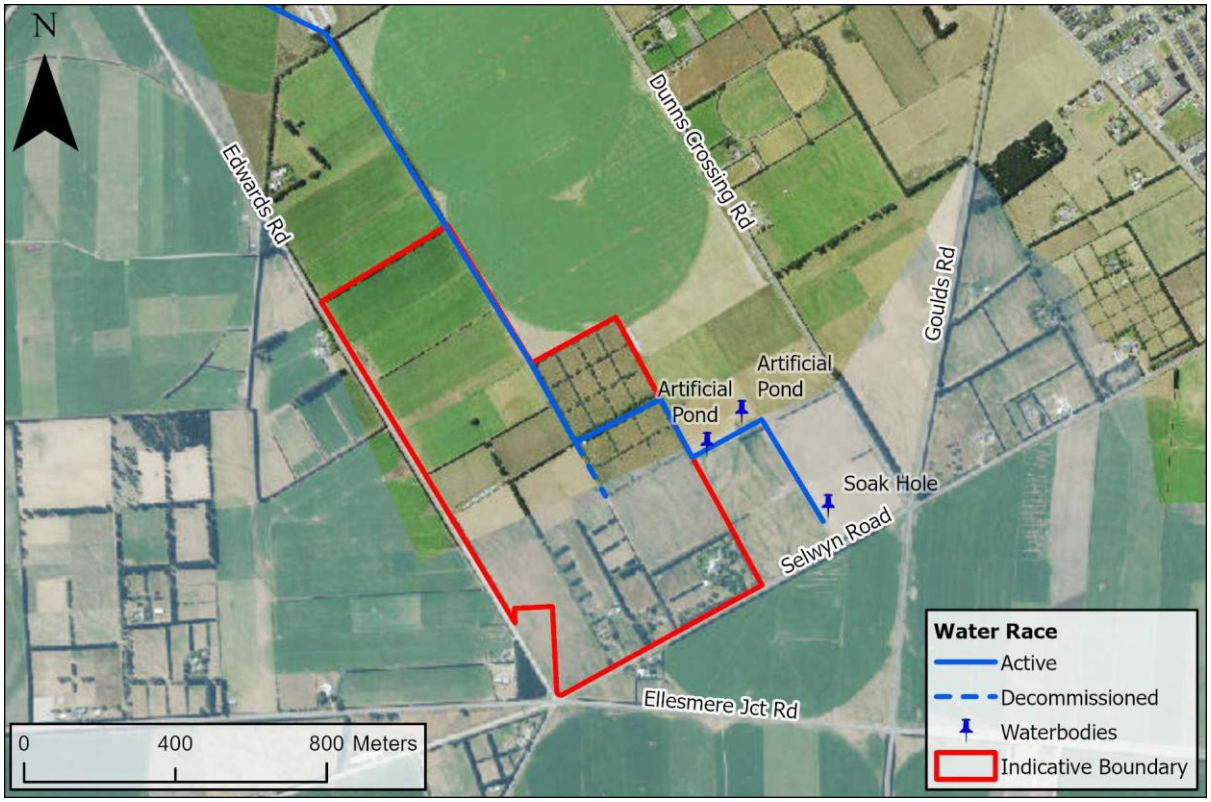

Figure 1: Site overview showing indicative outline of the Edwards Road development (the Site) and the Paparua Water Race terminating at a soak hole on the neighbouring property. The location of two artificial stockwater ponds are shown along with a section of decommissioned water race in the middle of the site.

2.1. Desktop Assessment

A desktop assessment was undertaken to determine the known ecological values of the site. This included checking for significant wetlands and consulting historic survey records using Canterbury Maps[1], reviewing historical and recent aerial imagery in Google Earth, and examining ecological reports from nearby plan changes. The New Zealand Freshwater Fish Database was also checked for fish records within the water race running through the site. Potential wetlands, low-lying areas with surface water, ponds and overland flow paths were flagged for field validation.

There are no nationally- or regionally significant wetlands mapped within the site or within 100 m of the site. A review of the digitised 19th century South Island survey maps (Black Maps) layer within Canterbury Maps shows the site was once a mixture of fern, grass and herbs indicating the vegetation present during early settlement of Canterbury (ca. mid 1800s). Since this time the land has been use for agriculture and has been actively cultivated. Old historic paleo channels and overland flow paths are visible in aerial imagery, along with small areas of standing water in some years.

The Paparua water scheme was developed in the late 1800s primarily to supply drinking water for stock. The water race passing through the site is the endpoint of the Paparua scheme, terminating at a soak pit on the neighbouring property. Three artificial ponds were identified in aerial imagery, and they presumably served as accessible drinking sources for stock, given

[1] https://mapviewer.canterburymaps.govt.nz/

the shallowness and weed-prone nature of the water race. There were no Freshwater Fish Database records for the length of water race running through the site.

An ecology report prepared for PC81 (Skellerup South Block) included the section of water race that continues downstream (east) of the Site[2]. The report considered that *"migrating fish, like eels and common bullies, will be rare, if not totally absent"* and concluded that the water race had low ecological values. The report also stated that the presence or absence of fish should be verified with an ecological survey prior to determining whether the water race could be decommissioned. I agreed with their assessment[3] and recommended *"…that prior to subdivision, a field-based ecological assessment should be carried out to confirm ecological values. The assessment should include recommendations about whether any wetland features on the property should be retained, plus guidance on ecological enhancement and waterway realignment."*

Figure 2: Google Earth imagery of the southeast paddocks of the site. Left image shows wet area visible in aerial imagery between April 2018 and August 2019. Right image shows the depressions in landscape that indicate historic overland flow paths still visible in December 2024.

2.2. Site Visit

A site walkover was conducted along the full length of the water race within the project area. During the walkover we made general notes on water depth and flow, undertook rapid habitat assessments[4] at five representative locations along the race, and took site photographs. We also undertook a broad vegetation survey across the Site, to record the presence or absence of wetlands or other significant vegetation. The assessment broadly followed the water race and its surroundings and focused on paddocks where depressions or standing water were visible in recent aerial imagery.

[2] Taylor, M. (2021a). Ecological values in the Skellerup South Block (Rolleston Industrial Developments Ltd.). Letter to Bruce van Duyn of Rolleston Industrial Developments Ltd, from Aquatic Ecology Ltd, dated 29 September 2021. Appendix F to the PC81 Assessment of Environmental Effects.

[3] Burrell, G (2022). Review of ecological assessment for PC81 Rolleston.

[4] Clapcott J (2015). National rapid habitat assessment protocol development for streams and rivers. Cawthron Institute Report 2649, prepared for Northland Regional Council, January 2015.

The Site is dominated by actively grazed pasture. The pasture is dominated by a mixture of ryegrass, cocksfoot, yarrow, clover, plantain, cats ear, and speedwell (*Veronica persica*). Numerous depressions in the paddocks identified in the desktop exercise were checked. These were all found to be dry and dominated by pasture species, although the composition varied between paddocks. Clover was generally dominant over grass species in the depressions. Importantly, no wetland plant species were identified.

A decommissioned orchard block contained a shelterbelt of native and non-native tree species. Native plantings including kōwhai (*Sophora* spp.), Griselinia (*Griselinia littoralis*), lemonwood (*Pittosporum eugenioides*), kōhūhū (*P. tenuifolium*), and akiraho (*Olearia paniculata*) were established throughout the orchard area. Many of these plants had perished. The deciduous walnut trees were within barrels, and it was unclear whether they were still alive. The shelterbelt was a mixture of *Eucalyptus* (swamp gum), silver wattle, pine, and macrocarpa. Notably, the only native tree species present were those that had been intentionally planted.

The water race is narrow (<1.5 m wide) and shallow (< 0.5 m deep) with slow water velocity and a bed dominated by soft fine sediment, mixed with gravels in some locations. Riparian vegetation is dominated by pasture species, providing minimal waterway shade, although some sections are shaded by exotic shelterbelt trees and shrubs. Sparse native *Carex secta* were planted along a short section of the water race, where sparse ferns were present too. The water race is actively maintained, with evidence of recent dredging spoil piled up along the banks in many locations. The spoil contained a mixture of sediment, cobbles and gravel material. In the dredged areas east of the orchard block, aquatic vegetation was sparse. In contrast, north of the orchard, which was less accessible for dredging due to gorse cover, the water race contained a mixture of exotic monkey musk (*Erythranthe guttata*) and watercress (*Nastutium officinale*), and native duckweed (*Lemna disperma*). Total rapid habitat assessment scores were low at all five sites sampled, ranging from 17 to 36 (out of a total possible score of 100), indicating poor to fair habitat[5]. All sites scored poorly for deposited sediment, hydraulic heterogeneity, invertebrate habitat abundance and riparian width.

The stockwater ponds east of the site are shallow and broad and surrounded by pasture species. The ponds were presumably excavated to create larger pools for cattle to drink from, as the adjacent water race was very shallow. The stockwater ponds and soak hole are clearly artificial and are surrounded by pasture grasses and weeds. As such, they do not meet the Resource Management Act definition of a wetland, or the narrower definition of natural wetlands in the National Policy Statement for Freshwater Management 2020 (NPS-FM). This is important with respect to this application because it means that decommissioning the water race within the site would not adversely affect any significant wetlands downstream of the Site boundary.

All culverts were inspected for kākahi (freshwater mussels) and none were found. One upland bully (*Gobiomorphus breviceps*) was observed within the water race. The upland bully is a common native species that is non-diadromous, meaning it does not migrate to the sea to complete its life history.

In summary, the site visit confirmed that the water race has low ecological value and that there is no significant indigenous native vegetation or wetlands present on the Site.

[5] Clapcott J, Casanovas P, Doehring K (2020). Indicators of freshwater quality based on deposited sediment and rapid habitat assessment. Prepared for Ministry for the Environment. Cawthron Report No. 3402, February 2020.

3. POTENTIAL ECOLOGICAL EFFECTS

At the time of writing, future options for the water race included retaining, decommissioning or realignment, with the ultimate decision being made at the subdivision stage of design. Given the artificial nature of the water race and the low ecological values present, decommissioning presents a relatively low ecological risk. If the water race is to be kept, there would be ecological value in ecological enhancement, with a focus on native planting for biodiversity. However, any enhanced aquatic values would be at the mercy of any future decisions on water race closure upstream.

Overall, the proposed change of landuse presents a low risk to ecological values on the Site. Some fish will likely be present, so I recommend that fish capture and relocation is undertaken prior to any waterways being decommissioned. All caught fish would be best relocated to waterways elsewhere within the Te Waihora/Lake Ellesmere catchment, so that any migratory species can make their way to the sea, rather than being trapped within the water race network.

4. SUMMARY AND RECOMMENDATIONS

The water race within the Site has low ecological values, based on the results of the desktop survey, nearby similar assessments, and our own walkover site visit. A decision on whether to decommission the water race could be made at the subdivision stage of development, but there are no ecologically significant values. No wetlands or significant indigenous vegetation is present.

I recommend the following is considered prior to subdivision stage:

- Undertake a fish survey to confirm fish values and inform decisions on whether to keep the water race open.
    - This should be done in conjunction with developments upstream, to facilitate a co-ordinated approach to water race management.
- If water race closure does occur, then undertake fish salvage and relocation, to ensure no fish are stranded.
- If the water race is to be retained and enhanced as part of the development, then an ecological enhancement plan should be prepared that includes details such as native plant selection and enhanced channel form (channel meandering and bank battering).
    - “No build” waterway setback distances should be in the order of 5 m from the water edge, to provide sufficient ecological buffering.

Yours sincerely

Dr Greg Burrell
Director
Instream Consulting Ltd

Attachment: Site photographs

ATTACHMENT: SITE PHOTOGRAPHS TAKEN ON 27 AUGUST 2025

Figure 1: Representative photograph of water race.

Figure 2: Representative photograph of water race.

Figure 3: Representative photograph of water race

Figure 4: Representative photograph of water race.

Figure 5: Representative photograph of water race.

Figure 6: A stock water pond formed from the water race, downstream of the development site.

Figure 7: A second stock water pond formed from the water race, downstream of the development site.

Figure 8: Soak pit at the downstream end of the water race, east of the proposed development site.

Figure 9: Representative photograph of the overall site.

Figure 10: Representative photograph of the overall site.

Figure 11: Representative photograph of the overall site.