

Appendix 9: s53(2)(a) Fast Track Approvals Act 2024, Technical Advice – Water Ecology

	04 November 2025
To	Joanne Mitten, Principal Consents Planner, Environment Canterbury
From	Nuwan De Silva, Scientist – Water Ecology Science – Water and Land Science, Environment Canterbury
Project advice provided for	NZTA – Woodend Bypass Project
Documents referred to	2C Proposed Resource Consent Conditions, 3A Construction Methodology Statement
Qualifications	I hold a PhD in Environmental Science, a Master of Science in Marine Ecology and a Bachelor of Science in Fisheries and Marine Sciences. I have over 7 years of experience as a Water Quality and Ecology Scientist within Regional Councils. I am a member of the New Zealand Freshwater Sciences Society.
Code of Conduct	I confirm that I have read and agree to comply with the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023. This technical report has been prepared in accordance with that Code. In particular, unless I state otherwise, the opinions I express are within my area of expertise, and I have not omitted to consider material facts that might alter or detract from the opinions that I express.

Executive summary/overview

1. My advice relates to the proposed activities involving the permanent realignment and culverting of portions of Waihora Stream, Taranaki Stream, and McIntosh Drain. It also addresses ecological offsetting and compensation measures recommended to mitigate residual adverse effects, including stream riparian vegetation enhancement, Quarry Lakes embankment and South Lake remnant infilling, and the management of construction-phase dewatering and stormwater discharges to surface water bodies.
2. It is understood that most of the concerns raised have now been addressed and included in the proposed resource consent conditions. However, there is still a one outstanding concern that need to be addressed, which can be resolved easily.

Agreement with the Applicant

3. I agree with the overall description of the water quality and ecological assessment of the affected streams and drains, as well as the assessment of the magnitude of effects.
4. I agree with the proposed mitigation measures to minimise construction phase sedimentation issues. The draft conditions provided include an erosion and sediment

control management plan (ESCMP) for all construction work involving damming and diversion activities.

5. I agree with the proposed culvert installation methodology and the mitigation measures outlined in the draft conditions to ensure adequate fish passage for the new permanent culverts.
6. The Ecology Advice provided has recommended fish salvage for areas where culverts are proposed to be installed and stream reaches of Waihora stream, Taranaki Stream and Taranaki Stream Tributary, where the permanent realignment were proposed and I agree that this will be necessary to mitigate potential effects on fish and larger invertebrates that live in or are moving through these reaches. The draft conditions provided include a suite of 'Fish management' conditions that I agree with, including the fish salvage requirements.

Benefits of the project

7. The proposed ecological offset and compensation actions (e.g., native planting in some waterbody margins) set out in the Ecological Impact Assessment (EclA) will result in a better outcome for aquatic ecological values.

Outstanding areas of contention and significance of these

Discussions with Applicant

8. I have had a direct discussion with the applicant; most of the water quality and ecological concerns that I raised in Table 2 have been adequately addressed in the draft proposed resource consent conditions.

Outstanding areas of contention

9. I do not agree with the proposed consent condition C4.5(b), which allows the discharge of dewatering water with a TSS concentration greater than 50 g/m³ during the first 24 hours into watercourses and wetlands. Therefore, the discharge should not exceed a TSS concentration of 50 g/m³ at any time.

Significance of these matters

10. Although 24 hours may seem short, the first 24 hours of dewatering represents a critical period during which a high-intensity pulse event is most likely to occur. Such pulse discharges can introduce a sudden and substantial sediment load into the receiving environment, overwhelming the natural assimilative capacity of the watercourse. Aquatic systems are particularly vulnerable to these short-term spikes, as they can cause acute stress to sensitive organisms. In addition, the rapid deposition of fine sediments can smother benthic habitats, including macroinvertebrate communities and fish spawning substrates, leading to a decline in habitat quality and ecological function.

Solutions and/or Conditions sought

11. The following conditions are now included in the proposed resource consent conditions:

- An Ecological Management plan, including Fish Management (MP.8)
- Adoption of suitable pumping rates/screen sizing to manage volumetric loss (MP.11 (I))
- Construction phase dewatering water TSS limit to 50 grams per cubic metre (C4.5 (a))

12. Further recommendations:

- It is recommended that consent conditions C4.5(b) and (c) of the proposed resource consent be removed. Accordingly, the discharge should not exceed a TSS concentration of 50 g/m³ at any time.

Table 2: Solutions			
Issue	Solution	Condition wording	Consideration against FTAA
<u>Review of proposed consent conditions</u> 1. No fish salvage plan has been proposed for the following activities: - Permanent culvert design (p.10) - Realignments of Waihora Stream, Taranaki Stream, and Taranaki Stream tributary (p.10) Issue – The above activities require either dewatering of stream sections (e.g., for culvert installation) or reclamation of stream beds (e.g., realignments), which may result in fish becoming stranded in these areas. Fish rescue shall be undertaken by a suitably qualified freshwater ecologist.	Provide a fish management/ salvage plan	A fish management plan shall be prepared by a suitably qualified freshwater ecologist. The plan should be in general accordance with Canterbury Regional Council and Christchurch City Council's "Fish Salvage Guidance for Works in Waterways" (12 October 2017). Prior to the commencement of works (including stream reclamation and culvert installation), the consent holder shall ensure that fish and other aquatic organisms are salvaged and relocated to an appropriate location within the stream by a suitably qualified and experienced freshwater ecologist, in accordance with the approved fish management plan.	
2. Permanent culvert design (p.10) Issue – The installation of the culvert will require temporary over-pumping of the waterway to allow the works to proceed in a dry environment. During this process, there is a risk that fish and other aquatic organisms could be inadvertently drawn into the pump system.	To avoid this, a suitably designed fish screen must be securely installed over the water intake hose to prevent the entrainment or injury of fish. The fish screen should be of		

		an appropriate mesh size, maintained in good working order, and monitored regularly throughout the pumping operation to ensure its effectiveness.		
	3. C3.5 Water shall only be taken from the Quarry Lakes at a rate not exceeding 2000 cubic metres per day and not exceeding 470,000 cubic metres per year. Issue – Lack of information on the potential impacts of the proposed water take on aquatic ecology. At present, there is no assessment detailing how taking water from the Quarry Lakes may affect the ecological values of these waterbodies. The littoral zones of the Quarry Lakes are likely to play a critical role in the spawning activities of the common bully. Water abstraction from the lakes could lead to a reduction in water levels, which in turn may restrict the ability of common bully to access these littoral zones for spawning.	An assessment is required to evaluate the potential ecological consequences of the proposed water take and to identify appropriate mitigation measures.		
	4. C4.1 The activities authorised by this resource consent shall be limited to the discharge of water and contaminants (including concrete and sediment) to land and water, and the discharge of dust to air, for the purposes of constructing the State Highway 1 North Canterbury - Woodend Bypass Project (Belfast to Pegasus).	Concrete material shall not be discharged into any surface waterbody.		

Issue – It is not clear whether the applicant is proposing to discharge concrete into surface water. However, the release of concrete or concrete slurry into surface waterbodies can have serious ecological impacts due to its chemical and physical properties.			
5. C4.6 (a) The discharge shall not have a TSS concentration greater than 100 grams per cubic metre at the point the discharge enters a Watercourse or drain except when the background total suspended solids in the waterbody is greater than 100 grams per cubic metre in which case the Schedule 5 visual clarity standards in the CLWRP shall apply; Issue – Given the surface waterbodies in the area are mainly “Spring-fed” streams, a TSS concentration should not be greater than 50 grams per cubic metre at the point of discharge.	Surface waterbodies in the area are mainly “spring-fed”. Therefore, a TSS limit of 50 grams per cubic metre should be applied in accordance with LWRP Rule 5.94A.	The discharge shall not have a TSS concentration greater than 50 grams per cubic metre at the point the discharge enters a Watercourse or drain except when the background total suspended solids in the waterbody is greater than 50 grams per cubic metre in which case the Schedule 5 visual clarity standards in the CLWRP shall apply;	
6. C4.7 Discharges of dewatering water from the Gladstone Road Landfill and other HAIL sites to surface water shall meet, after reasonable mixing, the receiving water standards for the relevant receiving water classification as per Schedule 5 of the CLWRP. Issue – The Schedule 5 “reasonable mixing” condition is only applicable if the concentrations of contaminants of concern in the receiving waterbody are below the receiving water standards for the relevant water classification (LWRP Tables S5A and S5B). If any contaminant of concern exceeds the relevant threshold, water quality standards must be applied at the discharge point.	The applicant is required to monitor the concentrations of contaminants of concern in the receiving waterbody before discharging dewatering water into surface waterbodies, to ensure that these concentrations are below the receiving water standards for		

		the relevant water classification. The applicant is also required to conduct an assessment to ensure that the Schedule 5 mixing zone definitions are met for the relevant receiving waterbody.		
	<u>Ecological Impact Assessment</u> 7. Quarry lakes – The applicant stated that effects from suspended sediment to common bully are low due to their susceptibility to elevated suspended sediment. However, as it was proposing to continue the work during common bully peak spawning season, how the elevated suspended sediment will impact on their eggs as most fish species' eggs are vulnerable to excess sedimentation. Therefore, if not manage appropriately suspended sediment can disrupt common bully recruitment process in the lakes.	Staged Reclamation: Implement works in smaller, staged sections per day rather than disturbing large areas at once, thereby limiting the spatial extent of disturbance and allowing fish to utilise undisturbed habitat areas during the construction period. Install appropriate erosion and sediment control measures such as silt curtains, bunds, or cofferdams to minimise sediment		

		plumes and protect water quality within the lakes.		
	8. EIA recommended to remove coarse fish from the Southern remnant lake in order to reduce predation and resource competition on common bullies. However, separate southern lake from rest of the lakes may result reduced number of adult common bullies remain in the Southern remnant lake, that may adversely impact on their recruitment process, therefore, risk that they may not be able to maintain viable population over time.	It is recommended hydraulically connect this Southern Lake with rest of the Quarry lakes.		