Before the Fast-track Panel

Under:	The Fast-track Approvals Act 2024
In the matter of:	FTAA-0143 SH1 North Canterbury-Woodend Bypass Project (Belfast to Pegasus)

Statement of advice

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Department of Conservation
Te Papa Atawhai

Te Kāwanatanga o Aotearoa
New Zealand Government

Introduction

1. My full name is Dr Amber McEwan.

Instruction

2. I am providing expert advice on behalf of DOC on the SH1 North Canterbury-Woodend Bypass (Belfast to Pegasus) Fast-track application.

Qualification and Experience

I hold three relevant degrees from New Zealand universities: BSc (ecology), MSc (conservation biology), and PhD (ecology). All of my postgraduate and professional work has been focussed exclusively on freshwater ecology.

I have been working as a freshwater ecologist in New Zealand for over 20 years, primarily as a consultant out of Riverscapes Freshwater Ecology Limited. I have published seven peer reviewed journal articles as first author (including three on the physical habitat requirements of New Zealand native fishes) and am a member of the New Zealand Freshwater Sciences Society.

Code of conduct

3. Whilst it is acknowledged this is not an Environment Court Proceeding, I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2023. I have complied with the Code of Conduct in the preparation of this advice. Unless I state otherwise, this assessment is within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

Scope of advice and expert opinion

4. My expert advice will address the following matters:

    i. **The absence of information regarding the aquatic values of the affected wetlands**

    ii. **The proposed offset for the loss and modification of natural wetlands**

    iii. **The proposed mitigation for the loss of the toitoi/common bully population in the quarry lakes remnant**

    iv. **The approach to offsetting the loss and modification of streams**

Sources

5. In preparing this advice I have reviewed:
    i. Substantive Application Report
    ii. Ecological Impact Assessment

Key Issues

The absence of information regarding the aquatic values of the affected wetlands

6. No information regarding the aquatic values of the affected wetlands has been provided. These wetlands are very close to a large number of confirmed Canterbury mudfish (Threatened - Nationally Critical) sites, and - based on the photos in the EcIA - look like very good mudfish habitat. Obviously, the aquatic values of wetlands should always be included in wetland assessments, but in this case, the probability that Canterbury mudfish will be present is sufficient that collecting information regarding these values is of critical importance.
7. The omission of ecological values has ramifications for the effects management process. In addition to the specific risk relating to Canterbury mudfish and their habitats, failing to include aquatic values will mean that the ecological value of the wetlands has likely been underestimated.
8. Even if Canterbury mudfish are not found in the affected wetlands, I (along with other DOC experts) consider that they are likely suitable habitat for this species - which means that the wetlands hold significant value based on this characteristic on its own. It is common for isolated habitat fragments to experience short-term impacts that can extirpate a resident species (that can then not naturally repopulate due to isolation) but remain suitable for that species once the effects of the impact have passed.
9. Translocation will likely be an important tool in future efforts to prevent the extinction of Canterbury mudfish. Translocations that have been carried out to date have been primarily driven by the need to reactively salvage mudfish populations that would otherwise be lost to development. Unfortunately, these projects have almost all failed due to the unsuitability of the chosen offset habitat. With this in mind, the wetlands that would be affected by this proposal might comprise some of the few suitable habitats available for future Canterbury mudfish translocation efforts that could make a significant contribution towards preventing the extinction of this species.
10. The loss and modification of the affected wetlands is highly significant in terms of regional and national biodiversity. As far as ecological value is concerned, the last few remaining fragments of habitat for a Nationally Critical species in its natural range should be viewed as ‘about as valuable as habitat could be’.
11. The failure to survey these wetlands in the present context is a significant omission, and rectifying it is important. Surveying should be done by an alternative provider and should

involve consultation with DOC experts in advance. Surveying mudfish requires specific techniques, knowledge, and experience - the fact that this consulting firm chose not the survey these wetlands for mudfish based on the habitat demonstrates that they do not have appropriately qualified personnel to carry out this work.

12. Given the significant rarity of natural wetlands in this landscape, if their loss and modification is not able to avoided, then appropriately significant effects management measures will be required. I consider that this is more likely to be achieved by focusing on alternatives to the currently proposed modification of the quarry lake remnant – a project which will require considerable input and is unlikely to succeed in replacing lost and modified habitat (see next points below).

The proposed offset for the loss and modification of natural wetlands

13. The applicant's currently proposed offset for the loss and modification of natural wetlands is a blocked off corner of an artificial quarry lake that contains four species of coarse fish (rudd, perch, tench, and goldfish). These fishes have likely been illegally introduced by humans for the purposes of recreational angling. The applicant proposes to modify the physical habitat and eradicate these fish using a novel and untested method (infilling the lake and burying all the fishes), which I consider very unlikely to succeed.
14. DOC have a long history of carrying out fish eradications, and consider ongoing monitoring to be an integral part of an eradication process. Every eradication carries risk that 1) all fish are not killed during the operation, 2) fish are accidentally reintroduced from nearby surface waters, and 3) fish are purposefully reintroduced by humans. Historically, the human risk is most prominent in cases where coarse fish are eradicated from coarse fishing spots (as is proposed here). Such reintroductions are easiest (and therefore most likely to happen) in situations where the same species are available nearby (as seems to be the case in the other quarry lakes).
15. The applicant claims that the above risk will be avoided because the habitat they will create will be unsuitably shallow for the currently present coarse fish species. Based on my professional experience and the abundant available data regarding habitat use of coarse fishes, creating and maintaining a sufficiently shallow depth for all the species is unlikely to be possible.
16. To summarise the issues with the proposed eradication method, I consider that infilling the lake and burying the fishes:
    - Would require the approval of Fish & Game in relation to sports fishes (perch and tench) before it was legally allowed to proceed.
    - Could be very difficult to practically achieve given the wide area and the probability of residual pools remaining.
    - May result in accidental surface runoff/unplanned surface connections and risk spreading introduced species.

- Would result in a potentially significant biomass of dead fish in the surface layers of the fill, which would then drive eutrophication in the created waterbody that could last for a long time.
- Without appropriate preventative measures, would likely be followed by deliberate reintroduction by coarse fishers.

17. Based on the above, it seems reasonable to assume that there is a high likelihood that some or all of the currently present coarse fish species will also inhabit the quarry lake remnant in the near future. Given the harm that they pose to native species and ecosystems, this outcome would render the quarry lake remnant inadequate to offset the loss/modification of natural wetlands in terms of quality.
18. Further to the above comment on quality, the applicant proposes to completely fill in the pit and then landscape and plant the area with the goal of creating a wetland environment. It would be many years before this environment could approach a reasonable degree of functionality in terms of the natural processes that are integral to healthy wetlands.
19. It is difficult at this point to offer precise comment regarding the proposed wetland offset quantum, given the fundamental nature of the values-based information that is currently missing from calculations.

Proposed mitigation for the loss of the toitoi/common bully population in the quarry lakes remnant

20. I consider the proposed toitoi salvage from the quarry lake remnant to be inadequate mitigation for the loss of the quarry lake remnant toitoi population. This is because the limited access for trapping and the health and safety issues present at the site mean that only a very small proportion of the population will be able to be collected. I think it would be more appropriate for this loss to be offset or compensated for in the form of riparian planting elsewhere, which provides ongoing and meaningful support for toitoi.

Offsetting the loss and modification of streams

21. I have no specific comments beyond reiterating DOCS position which has been communicated to NZTA on several occasions relating to stream realignments in other applications. That position being that stream reclamation and stream realignments constitute ecological losses that must be addressed through offsetting, not treated as mitigation or “like-for-like” replacement within the road corridor.
22. Reclamation removes current and potential values entirely. Realignments, even when well designed, carry material risk of under-performance and long-term maintenance burden before they approach natural functioning. Specifically, channel diversions seldom reproduce geomorphic and ecological processes (e.g., shading and temperature regimes, hydraulic and substrate diversity, hyporheic exchange, and connectivity) in the short to medium term.