

Comments on a Substantive Application under section 53 of the Fast-track Approvals Act 2024: Flooding Effects

Fast-track project name	Waikanae North Development
Fast-track application number	FTAA-2603-1194
GW file number	FTA260420

Technical area	Flood hazard
Date	24 July 2026
Author	Kirsty Duff
Statement of expertise	Kirsty Duff holds an BSc in environmental sciences and MSc in environmental sciences specialising in river processes from the University of Otago. I have over 10 years' experience in hydrology, river geomorphology, river management and emergency management. As an investigations engineer for Greater Wellington I undertake hydraulic analysis which feeds into flood management plans, undertake flood protection asset investigations, provide technical advice on flood and erosion hazards within the Wellington region. I provide advice to policy analysts, resource managers, consents officers, engineers and elected councillors in the region, and to businesses and the wider public.
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 memorandum has been prepared in accordance with that Code. 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.
Documents considered	- Substantive Application - Waikanae North Developments Limited Final 30 March 2026 - Appendix 20 - Flood Hazard Assessment of Effects

Comments

Summary

A significant proportion of the site is a low laying wetland area which has been known to flood. At this point much of the planned design that has been proposed are high level concept design. Much of this will need to be addressed within the detailed design phase. There are a number of locations where flood waters pond along roads and access ways.

Matters in contention and suggested response

1. Egress from several properties is shown to be affected during smaller, more frequent flood events, as well as during the 1% AEP event. Several roads are expected to be significantly inundated during moderate to severe flood events, restricting access and egress. Flood depths greater than 0.5 m may prevent emergency vehicles from reaching parts of the development. Further assessment is required to understand the implications of this flooding for movement within the completed development, including whether people would be able to safely walk or drive through inundated areas. It is recommended that flood hazard mapping be undertaken using the Australian Rainfall and Runoff H1–H6 hazard classifications. This mapping would help inform emergency management planning and decisions.
2. Duration of road inundation should also be provided, if roads are impacted by 1-2 hours during the peak of the rainfall this is not as severe an issue, though if areas are impacted for a longer period this will increase the overall risk profile.
3. The double-barrel culvert at the downstream end of the Lower Ngarara Wetland Cluster requires further consideration through detailed design. The culvert has been modelled with a 50% blockage, assumed to represent sediment build-up. However, as the area is proposed to function as a constructed wetland, there is likely to be an increased risk of debris blockage once planting and wetland features are established. This blockage scenario, including the potential for both sediment and debris accumulation, should be tested during detailed design to confirm that the culvert can operate as intended and that no adverse flood effects would result.
4. Please note that this double barrel culvert and weir structure will function as a retention dam structure, if it is recommended that breach or failure modes are also tested. To understand potential downstream risks.

5. The current concept indicates that the culverts may function as a weir during larger flood events. Further consideration is required to confirm whether the proposed design can appropriately manage the associated hydraulic effects, including localised scour and erosion downstream of the structure. The detailed design should assess how flow velocities will be dissipated once water passes over or through the culvert arrangement, and whether any erosion protection or structural mitigation is required. The assessment should also consider potential effects on the downstream bridge structure to ensure that the culvert arrangement does not result in adverse impacts during larger flood events.
6. The climate change scenarios adopted for the development should be clearly defined and applied consistently across the relevant assessments. It is currently unclear which climate change assumptions have been used in AWA's modelling. AWA's projections appear to extend to a 2130 assessment horizon, whereas Landlink's stormwater assessment extends only to 2090. It is also unclear which emissions pathway or climate change scenario AWA has adopted, including whether it aligns with Landlink's use of RCP8.5. Given the whole-of-life nature of the development, the climate change assumptions, emissions pathways, and assessment horizons should be consistent across the modelling and assessment documentation.
7. Sensitivity testing should be undertaken for key flooding scenarios and model parameters, including blockage of culverts and outlets from both debris and sedimentation, changes in hydraulic roughness, and elevated groundwater levels coinciding with rainfall events. Given the scale of the development and the reliance on a wetland retention dam as a key flood mitigation measure, it is important to understand how sensitive the proposed flood and stormwater infrastructure is to changes in these parameters. This testing should be undertaken through detailed design to confirm the robustness of the proposed infrastructure and to identify any additional mitigation required to avoid adverse flood effects.
8. Substantial flood-protection infrastructure is proposed; the detailed design should specify maintenance requirements (including design life) and how maintenance will be carried out (for example, where sediment and debris can be removed).