Review of Ecological Memo for PC0003/23 – Wakanui Creek Ecology (*now referred to as Wakanui/Mill Creek*)

A Plan Change was proposed for a high-density residential development at Farm Road section of Wakanui/Mill Creek (now referred to as Mill Creek) with up to 160 residential units and a culvert traversing the Creek Channel. The development is currently at the phase of plan change consent process before a formal subdivision application would be made. In considering the grant of the plan change, an ecological assessment was requested to:

- *Provide a high-level ecological assessment which considers the ecological values of the Wakanui/Mill Creek and the potential impacts of the increase in density on this waterbody. In particular, the assessment should identify if any additional mitigation measures are required in relation to this site, or if the existing Plan provisions (including future consenting processes) are sufficient to manage the effects resulting from the change in zoning.*
- *Please advise what consents may be required from the Regional Council to facilitate the development anticipated under the zoning, and the activity status and policy framework applicable to these consents. This is necessary to confirm that there is nothing in the regional plan framework that is likely to preclude the development that is anticipated under the Residential C framework.*

An ecological assessment was conducted by Aquatic Ecology Limited (AEL) to consider the effect of the proposed development on the ecology of the Wakanui and address the queries raised by the planner. The ecological memo partially addressed both points. However, it does not specify whether the existing plan provisions are enough to manage the effects resulting from the zone change. In reviewing the report provided by the AEL, I accept their two-point mitigation recommendation mentioned on page 5 in its entirety. I also reiterate that subsequent development will require regional consent for the culvert installation, and a minimum of 5 m setback for the esplanade reserve from the water edge to the property boundary is necessary under the Ashburton District Council District Plan Rule. In this report, the proposed 7.5 meters is sufficient to satisfy Council DP requirements and protect the water quality and ecology of the Creek.

However, while Wakanui/Mill Creek may have been suggested to have low ecological values, the absence of eels and other native species, such as freshwater mussels, mudfishes in this report does not indicate these species are not present in Wakanui/Mill Creek and it is also not due to the non-existence of sea access as stated in the report. I found this conclusion inaccurate. The absence of eels and other native fish species could be attributed to sampling techniques used and limitations to these techniques, time and season of sampling, weather conditions and skill level of the field personnel. For example, native eels are present in some water networks with similar attributes to Wakanui/Mill Creek, and these sites are less than 3 km from Wakanui/Mill Creek. These water channels also do not have sea access as Wakanui/Mill Creek.

Also, I am not satisfied with the authors suggestion that a temporary increase in flow will not adversely impact on ecology of the Wakanui/Mill Creek. The authors did not qualify the non-significant impact on the Creek during a high flow in downstream sections of the waterway and effect of the stormwater discharge into the Creek on the ecosystem health indicators at both now and in the future. The effect of increased flow in a water body is more likely to affect the downstream section of the creek than the flow origin due to gravity effect.

Evidently, in addition to the effect on fish habitat mentioned in the report, increased water flow beyond the capacity of the creek may displace the benthic substrates thereby dislodging potential microhabitats available to juvenile fishes and aquatic invertebrates. The increased flow from the stormwater retention pond may also result in increased scouring of periphyton from the stream substrates as they are dislodged (Story et al. 2013[1]). Upland bullies' abundance also depends on these stream substrates and will reduce once dislodged (the report). Additionally, increased nutrients and contaminants may enter the water bodies from the residential sites as well if there is a discharge of untreated stormwater from a retention pond.

Macroinvertebrate Community Index (MCI) used to evaluate the stream heath in this report were below the national bottom (**MCI 90**, (MFE 2020[2]) for both MCI-hb and

[1] Storey R, Brierley G, Clapcott J, Collier K, Kilroy C, Franklin P, Moorhouse C and Wells R (2013). Ecological responses to urban stormwater hydrology. Prepared by National Institute of Water and Atmospheric Research for Auckland Council. Auckland Council technical report, TR2013/033.

[2] Ministry for the Environment, 2024. National Policy Statement for Freshwater Management 2020, January 2024 amended version. https://environment.govt.nz/acts-and-regulations/national-policy-statements/national-policy-statement-freshwater-management/

MCI-sb (hb **75.7**, hard and sb **67.2**, soft bottom substrate respectively). This is consistent with a recent monitoring of the Wakanui/Mill Creek at Farm Road in 2023 (directly across the culvert from the proposed plan change site) with MCI scores of 88.3 at less than 100 m from the proposed plan change site (Demchick & James, 2023[3]). The MCI scores indicate an apparent severe pollution (Stark and Maxted 2007[4]; Stark 1998[5]) in Wakanui/Mill Creek at present. High concentration of Zinc and elevated fine sediment accumulation were also recorded at Wakanui/Mill Creek Farm Road site and high abundance of poor ecological health indicator species (the report, Demchick & James, 2023[6]). Macroinvertebrate community found in Wakanui/Mill Creek are mainly species that tolerates or prefer degraded habitats.

Wakanui/Mill Creek is degraded already with poor water quality indicators. Any recommendations or mitigations should be centred on improving the ecosystem health indicators and water quality, and avoiding discharge of stormwater into the creek especially from the proposed high density residential site. Stormwater in highly dense area contains high amount of zinc from worn-off tyres, coated and galvanised roofs or from paint material used for constructions (Parliamentary Commissioner for the Environment, 2022[7]). In addition to the recommendation suggested by AEL, I will add the following based on the existing reports and findings within Wakanui/Mill Creek channels.

- An environmental management plan will be required during potential development on how run-off from the project site will be managed.
- The stormwater retention pond should be designed to receive all stormwater runoff limiting discharge to Wakanui/Mill Creek. To contain all the stormwater in the retention pond, the design should be at least within 1 in 100 years event or 1 in 200 years event.
- Stormwater discharge to comply with ECan global consent to ADC and no water run-off from the development site, roads or from the retention ponds into

[3] Demchick, E. & James, A. 2023. Ashburton Stormwater Management Plan – Biological Monitoring 2023. EOS Ecology Report No. ASH01-22028-01. 32 p.
[4] Stark JD, Maxted JR 2007. A user guide for the Macroinvertebrate Community Index. Prepared for the Ministry for the Environment. Cawthron Report No.1166. 58 p.
[5] Stark JD 1998. SQMCI: a biotic index for freshwater macroinvertebrate coded abundance data. New Zealand Journal of Marine and Freshwater Research 32:55-66.
[6] Demchick, E. & James, A. 2023. Ashburton Stormwater Management Plan – Biological Monitoring 2023. EOS Ecology Report No. ASH01-22028-01. 32 p.
[7] Parliamentary Commissioner for the Environment. 2022. Knowing what's out there: Regulating the environmental fate of chemicals. Wellington, New Zealand.

the Wakanui/Mill Creek. The Creek channel within the proposed place change area should incorporate ecological enhancement protocol in ECan's global stormwater consent to ADC. Thus:

Ecological Enhancement

33 *Any Mill Creek, Carters Creek and Lagmhor Creek works undertaken by the Ashburton District Council relating to stormwater outlets and waterway channel erosion, substrate improvement works, and riparian margin works that is either a permitted activity or authorised under a resource consent that does not have the following criteria, shall incorporate 'where practicable' an ecologically suitable design as recommended by a suitably qualified and experienced ecologist. These criteria shall include, but not be limited to:*

a. Provision for fish cover;

b. Appropriate in-stream habitat complexity, including varied flow sequences;

c. Planting of ecologically sensitive riparian vegetation; and

d. Material used to form new margins, banks and substrate shall be clean, uncontaminated rock, gravel, sand, or soil.

- Current water flow width should be built into the design, and this should in addition to the proposed planting buffer (7.5 meters) on both side of the Creek from the water edges.
- Planting on both sides of the creek should be limited to only native vegetation occurring naturally in Ashburton (ecosourced) and the concept plan and species list to be approved by the Council.
- Council will undertake a post-completion inspection of the creek and the planting to ensure that it follows the plan.

Internal review provided by

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