

Sharyn Westlake (Senior Engineer, Greater Wellington Regional Council) initial review questions

1. The 2008 MfE recommendations have been used for climate change of 2 degrees warming by 2080 and 16% increase in rainfall intensities. Given the report is dated September 2019, the latest MfE recommendation should be used. Why have they not been, and what are the design impacts?
2. I would expect that the projected timeframe for climate change would be to 2120 rather than 2080. Why is it not the case, and what are the impacts on design and capacity of the design if you extend the timeframe to 2120?
3. Has freeboard been included for the design? If not, why not? I note that freeboard does not appear to be discussed in either the modelling report or the application except with regard to maybe being included in replacement of private access crossings (p 64 section 6.1). This has potential implications for the design capacity.
4. With regard to the replacement of private access crossings, has the effect of raised approaches on overflow paths been modelled? If this modelling was completed, I would expect that the effect on overflow paths of raising bridge approaches to have been established.
5. Has the proposed vegetation to be planted on the banks been taken into account in the hydraulic modelling? Is the effect of this significant?
6. Has the flow restricting effect of providing these inlet structure blockage screens been established and designed for?
7. 6.1.1 page 65 states “At the Reformed Church of Silverstream, the existing school field will be utilised as a cleanfill site for material for the project. This material will then be able to be used by the school as a base for redeveloping their sports field in the future.” Is there any effect of removing this area from flood storage?
8. 6.1.3 page 66 states “Along the boundary of 50 Blue Mountains Road, regrading of the land may be required to manage overland flow from the Pinehaven stream towards Birch Grove properties.” Do these earthworks trigger any rules in the regional plans? If not, how are they going to cover this off? Is it through an outline plan process later?
9. 6.1.3 page 66 states “Widening of the channel between 2A Freemans Way and 50 Blue Mountains Road will occur. And localised erosion protection may occur at the driveway of 50 Blue Mountains Road and along the stream channel.” What are the erosion protection works along this section of stream channel?
10. 6.2.1 page 67 states “Standard design types will be used for the various situations (as detailed in the cross-sections attached at Appendix E) rather than detailed design for the entire stream channel.” What if ground conditions require a non-standard approach? How will this be addressed?
11. 6.2.3 page 67 states “The proposed works are intended to be completed in stages. The stages may not be sequential, with the possibility that multiple construction crews may be used at any one time to reduce the overall construction timeframes. The number of stages could increase, and the duration of works for each stage will ultimately be a function of detailed design; however, the completion of sections before moving along the stream will be fixed as will the activity based individual teams.” What is the process for peer review and approval of

the detailed design? Is this information to be included in the CMP which is provided to GWRC for approval?

12. 6.2.3 page 67 states “Vegetation planting will occur after the last stage and all aspects of stream bank re-profiling are complete.” And “It is anticipated that construction for stream improvement works will occur over 70 weeks but may take up to 2 years, depending on weather and subject to meeting conditions of consent requirements.” This seems to be a very long time to leave the site unvegetated, and why not replant stages during the growing seasons as the works are completed, as weed control will likely become an issue?
13. 3/3 page 69 “The section of stream between the house at 48 Blue Mountains Road and the downstream end of improvements behind Birch Grove is excluded from channel works, however some observed stream erosion in this area has been identified for mitigation. Potential grading on properties west of 50 Blue Mountains Road to reinstate access areas, improve local drainage and mitigate overland flow from the Stream (subject to agreement with property owners).” What is the proposed design for the stream erosion repair? Do the earthworks for grading on properties trigger any rules in the regional plans? If not, how are they going to cover this off? Is it through an outline plan process later?
14. 8.2.1.5 page 95 The scour protection option chosen is native planting and geotextile matting “given the high velocity resilience of matting, and the riparian habitat advantages of native plantings.” Although implied to be sufficient, no information is provided on the velocities this to withstand, and whether this protection will be sufficient to withstand velocities in the 1% AEP flood, so I am unable to provide comment.
15. 10.7.2.2.2 page 124 states “A natural stabiliser will be applied to prevent the risk of sediment runoff into the stream.” How long is this stabiliser expected to work for, given 12. above?
16. 10.7.2.2.5 page 125 states “The weirs will be investigated during detailed design as to whether removal or reinstatement preferable in terms of potential adverse effects. Downstream of the project area a partial fish barrier exists at the confluence of Pinehaven Stream and Hulls Creek. To maximise the benefits of the project and compensate to some extent for the ecological disturbance of the project it is proposed that this barrier be remediated.” What is the process for design, review and assessment of effects of the proposed remediation for the partial fish barrier at the confluence of Pinehaven Stream and Hulls Creek, and possible removal or reinstatement of any other weirs? Do they trigger any rules in the regional plans? ? If not, how are they going to cover this off? Is it through an outline plan process later?
17. 11.3 Condition 17 page 144 “At least 15 Working Days prior to works commencing, the Consent Holder shall submit a final detailed hydraulic design to GWRC. The purpose of the final detailed hydraulic design is to confirm compliance and consistency with the information provided with the application and the conditions of the consent. The final hydraulic design shall be prepared by a suitably qualified hydrologist or hydraulic modelling specialist to ensure the Q25 flows are contained within the designed stream channel and flood hazard depths and velocities are maintained for Q100 design events.” What is meant by ‘final detailed hydraulic design’? What is the review process for the design of works? What is the process for post-construction sign-off?
18. Concept plan and typical section information only is included in the application. Design details have not been included, such as retaining wall design, sheet pile wall design, redi-rock retaining wall design, giving embedment details, end design etc. I am therefore unable to comment on effects on the environment in regard to erosion, scour and flooding.

19. 11.3 Condition 50 page 148. States "Any grade control weirs that are removed during construction should only be reinstated if absolutely necessary, and in consultation with the project freshwater ecologist." Who, along with the project ecologist, decides if reinstatement is necessary? And what the design of the reinstated weir should be?

20. 10.14 An operational designation over the stream and works is to remain in place to allow for maintenance to be carried out by UHCC. I assume that UHCC is satisfied that they can support the level of maintenance required for these works.