

## Summary from Liam Foster

1. My full name is Liam Alexander Foster.
2. I am a Technical Principal – Water for WSP New Zealand Ltd.
3. I am a Fellow of the Chartered Institution of Water and Environmental Management, a Chartered Water and Environmental Manager, Chartered Scientist and Environmentalist and have been since 2007. I hold a Master of Science Degree. I have over 25 years of experience in stormwater, catchment and flood risk management.
4. I have been authorised by Wellington Water Limited to make a submission in relation to Plan Change 1 for Hearing 2 and comment on the implications of the proposed Target Attribute States for the ongoing management of the public stormwater network on behalf of their client councils.
5. The summary of my evidence shared previously captures several key elements that I would like to draw to your attention.
6. The difference between the current state, and the target state, creates a large challenge. Strategies to bridge this gap include minimising impacts from new development, retrofitting urban treatment through implementing investigations such as catchment management plans, and promoting source control through education and behaviour change. Both structural (e.g., wetlands, swales) and non-structural (e.g., policy, education) options are considered as options that can support the overall goal of improving stormwater discharges.
7. In my opinion, most of the activities that can support reductions of contaminants being generated are within the control of organisations other than WWL, including property owners, Local Authorities, other infrastructure providers and the Regional Council. WWL does not have direct control over how the contributions of contaminants from these other parties can be achieved.
8. I would like to identify that the ability to meet the TAS attributes through, and at the end of, network solutions requires appropriate stormwater discharge consents in place and that the scale of planning, design, works and funding required to support these is of a significant scale that requires service delivery providers like WWL to shift their approaches to delivery, given how WWL is funded and network investments are carried out currently.
9. It is my opinion that if there is no ability to control the source, recognised as being difficult, time consuming and expensive then WWL will be required to address the improvements at the discharge point.
10. The current practices and techniques available require land to be set aside for the function of treatment, are equally costly and time consuming to deliver and the effectiveness of these devices to reduce the dissolved contaminant state means that there is the potential to not achieve the TAS requirements within the timeframes as

currently proposed and the rebuttal evidence of Susan Ira agrees with this. I agree that improvements can be made, with these compromises in place. I would like to note that this may result in either driving more innovation into this space, or result in greater numbers of, or larger assets to be put in place to support the reduced efficiencies all in heavily urbanised areas already, with the likely impacts on cost and time to deliver and confidence that the investment will support the network operator to achieve the TAS within the time periods identified.

11. The evidence of Mr Norman appears to be in agreement with this, the fact that there are some differences in relation to the opinion of the scale of investment required is natural at this stage as there is little clarity about what interventions are required where in the urban environment and how these can be consented to be implemented and as such certain assumptions have had to be made to support increasing our awareness of the scale of the challenge that could be ahead.
12. I noted in my evidence that WWL does not currently have access to the data or analytical tools required to assess the correlation between contaminant load out of a pipe and contaminant concentrations (i.e. TAS) in the receiving environment. The evidence of Mr Blyth agrees with this point, when considering analytical tools. Mr Blyth identifies there to be appropriate levels of data to help inform a tool development. I agree with Mr Blyth to this end and his point that they WWL may not have the information on discharge quality at every pipe. As such I agree with Mr Blyth's call for a pragmatic modelling application with robust monitoring being put in place to track changes and improvements over time – I draw attention to the experiences and approach that Christchurch City Council (CCC) follow to support the Comprehensive Stormwater Network Discharge Consent (CSNDC) and its stated aim of improving water quality.
13. WWL do not hold the appropriate powers to enforce contaminating land uses or activities to implement improvements when these parties are unwilling/unable to act, again the experiences from operation of the CCC CSNDC points to this, requiring additional bylaws to be written and agreements to be made between the consent holder and regulatory authority.
14. Even with the necessary ongoing investment and resources being available to deliver the necessary infrastructure by the stated timelines for each catchment, the outcomes are not certain to be achieved. I am of the opinion, that good practice stormwater management devices will deliver an enhancement to the quality of current stormwater discharges but am unable to state that they will satisfactorily achieve the TAS for Zinc and Copper in a dissolved state. Source control remains our best option for avoiding or minimising the generation of these contaminants, requiring catchment wide integrated management of stormwater quality.