

**Hearing Statement of Stuart Farrant – RPS Proposed Change 1 – Hearing Stream 5:
Freshwater and Te Mana o te Wai Monday 20 November 2023**

1. I would like to provide a high level summary of the points raised in relation to hydrological controls in both my primary and rebuttal evidence. This includes responses to submissions and subsequent deliberations on policy detail and definitions.
2. It is fundamentally important to differentiate the proposed hydrological controls from the current hydraulic neutrality as defined by Wellington Water and routinely required now across the region. Hydraulic neutrality is focused solely on peak flowrates from infrequent large rainfall events and is intended to provide resilience to flood events through detention whereby stormwater is held back and released over an extended timeframe at a throttled flowrate. Whilst I do not question the importance of flood mitigation, and the intent of hydraulic neutrality, it is important to recognize that it does not provide environmental benefit and in many instances can worsen outcomes through artificially extending the duration of elevated flowrates. Detention to support hydraulic neutrality also has no influence on the changed flowrate and frequency in small rainfall events which are fundamental to supporting freshwater ecosystem health.
3. Freshwater streams are particularly sensitive to flow regimes in small frequent events. In a natural stream (i.e. without urban development in catchment) a significant volume of rainfall is intercepted by vegetation and evapotranspired or held in shallow surface soils meaning that flows during small events do not vary substantially enabling the establishment of robust riparian margins, stable bed substrates and important transitions between permanent and intermittent reaches to support our unique indigenous fish species.
4. Unmitigated urban development results in extreme variability in stormwater discharges to streams during frequent small rainfall events resulting in 'flashy' flows causing downcutting of streambeds, ongoing slumping/scour, instability of riparian margins and loss of viable habitat. These impacts also significantly reduce the resilience to large flood flows which results in further mass instability which does not occur in undeveloped natural undeveloped catchments. These phenomena are clearly observed across the regions developed and undeveloped freshwater streams.
5. Proposed hydrologic controls are therefore focused on the retention of a portion of stormwater to replicate a more natural hydrology and protect freshwater streams to align with the principles of Te Mana o Te Wai and community aspirations for improved environmental outcomes.

6. The proposed wording for hydrologic controls is intentionally based on the outcomes being sought which are simplified to align with the inferred pre developed water balance. Submitters (on behalf of Wellington Water) raised a preference for a more static defined retention depth to be specified in rules similar to Auckland Councils unitary plan. It is noted that this defined retention depth is only really valid in instances where you can reliably remove the retained water volume in the period between consecutive rainfall events (such as through infiltration) which is often not feasible in Wellington due to low infiltration rates and geotechnical concerns. It is also noted that the depth of rainfall that is assimilated within an undeveloped catchment varies substantially over the year in response to temperature, rainfall and soil moisture levels. Therefore, adopting a single retention depth, to be applied at all rainfall events, is considered to both misrepresent a natural hydrologic response and be difficult to enforceable due to the seasonal variability.
7. It is therefore recommended that solutions which demonstrate that stormwater management strategies adopted in development will align with an annual water balance provides a better means of demonstrating appropriate protection to waterways and is easily supported through relatively easy modelling.
8. Concerns with the expectation of complex modelling to demonstrate compliance with proposed rules was responded to in my supplementary evidence. Continuous simulation modelling is considered to be easily undertaken by suitably experienced advisors and can be readily supported for small scale developments through provision of Technical Guidance similar to the current approach to Hydraulic Neutrality for stand alone dwellings. Less standard solutions or large integrated greenfield/brownfield developments can then still use continuous simulation modelling to demonstrate compliance. This is considered to be reasonably straight forward with inputs and assumptions able to be refined as research provides improved calibration data.
9. In conclusion it is considered that the proposed RPS policies relating to freshwater protection and hydrologic controls provide an efficient and effective means to protect waterways from adverse impacts from development. The proposed methodology is considered to best reflect the nuances of natural hydrology and can be reliably supported by the development industry and possible technical guidance to simplify compliance for small scale developments.