

**BEFORE A PANEL OF INDEPENDENT HEARING COMMISSIONERS IN THE
WAIKATO REGION**

I MUA NGĀ KAIKŌMIHANA WHAKAWĀ MOTUHEKE WAIKATO

UNDER the Resource Management Act 1991 (RMA)

AND

IN THE MATTER of Proposed Variation 3 to the Waikato Proposed
District Plan (PDP)

**SECOND STATEMENT OF REBUTTAL EVIDENCE OF ANDREW BOLDERO FOR
WAIKATO DISTRICT COUNCIL
(STORMWATER)**

Dated 25 AUGUST 2023

TOMPKINS | WAKE

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INTRODUCTION

1. My name is Andrew Stanley Boldero and I am a Principal Stormwater Engineer at Te Miro Water.
2. My qualifications and experience are set out in my statement of evidence in chief (“EIC”) dated 20 June 2023.
3. I reaffirm the commitment in my EIC to adhere to the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023.
4. This statement of rebuttal responds to questions raised during the hearing relating to:
 - (a) Waikato Regional Council (“WRC”) Stormwater Management Guidelines (“Guidelines”) and Regional Infrastructure Technical Specifications (“RITS”);
 - (b) The proposed stormwater rules and criteria;
 - (c) Accuracy of the flood modelling; and
 - (d) Te Ture Whaimana and Te Mana o te Wai.

WRC GUIDELINES AND RITS

5. The Panel observed that the RITS document available online is dated May 2018 and the WRC Guidelines are dated 2020.¹ The Panel asked whether proposed rule WWS-R1A should require compliance with the WRC Guidelines rather than RITS, as the more up to date document.

¹ In the hearing I advised that Panel that RITS was being updated. I understand that CoLAB, the company owned by 12 Councils that provides shared services available to those Councils, is working through submissions received from the Councils on the proposed update and that a revised document is not yet available for the public. See: [RITS \(Regional Infrastructure Technical Specifications\) - Co-Lab \(colabsolutions.govt.nz\)](https://colabsolutions.govt.nz).

6. The Council's Comprehensive Stormwater Discharge Consent ("CSDC") conditions for the four towns relating to stormwater quality objectives and treatment requirements align with both WRC Guidelines and RITS. However, in relation to quantity management and flood protection the current version of RITS does not include the specifications to ensure all the requirements of the CSDC conditions are met.
7. As the WRC Guidelines are more comprehensive than RITS in terms of outlining how to comply with the stormwater objectives in the CSDC conditions, in my opinion, it would be beneficial to reference the WRC Guidelines rather than RITS to ensure compliance.
8. The RITS objective is to provide consistent specifications for the construction of public assets throughout the Waikato region. Although these objectives have some overlap with stormwater discharge consent compliance, it does not ensure compliance or cover all aspects of compliance. As such, the revised version of the RITS is unlikely, in my view, to ensure compliance with the CSDC. As this information is already set out in the WRC Guidelines, in my opinion, it would be better to reference these in the WWS rules.

REFERENCES TO STORMWATER MANAGEMENT PLANS

9. The Panel was concerned about ensuring the correct references to management plans in the proposed rules. The proposed rules refer to the following:
 - (a) Compliance with the "relevant stormwater catchment management plan" ("CMP"). This language refers to the CMP required to be developed under the CSDC.
 - (b) A requirement to prepare a Stormwater Management Plan ("SMP") for a development including four or more residential units or creation of four or more lots. This is intended to be a site

specific SMP that would be required to illustrate compliance with RITS and the relevant CSDC for the applicable catchment.

10. The rules currently refer to both the Council's CSDC and the CMPs required under those consents. I agree with Commissioner Mark-Brown that references to these documents could be more consistent. My overall preference however would be to reference both the CSDC and CMP, because the CSDC outlines the general compliance requirements and the CMP outlines catchment specific requirements along with Council's long-term plans for the stormwater catchment.
11. In my view, it is important to ensure that for development involving three or less residential units or lots, can still be assessed by the Council for compliance with Council's CSDC. The further s42A rebuttal report from Ms Hill will outline the changes to ensure this consistency.

OTHER MATTERS RELATING TO THE PROPOSED RULES

SUB-153 – general subdivision rule

12. The Panel suggested the following change to matter of discretion (o) in SUB-153 (shown as track changes below)

The potential for adverse effects to the environment in terms of stormwater volume including downstream channel erosion quantity and stormwater quality, taking into account the requirements or recommendations of the relevant CSDC [comprehensive stormwater discharge consent], RITS and the WRC Stormwater Guideline. ~~effects~~

13. I agree with these proposed amendments, except that based on my assessment above, I consider that the reference to RITS can be removed. These amendments will be shown in the provisions attached to the further s42A rebuttal report.

NH-26D – subdivision in the overlay

14. The Panel queried whether matters of discretion (e) and (f) in NH-R26D were necessary as they do not directly relate to flood hazards.
15. I agree that these matters are best addressed under the general subdivision rules.

FLOOD MODELLING

Proposed District Plan maps

16. The Panel asked whether there was a Natural Hazards planning map for Pookeno showing the different overlays in the Proposed District Plan (PDP). The maps for Tuakau, Huntly and Ngaaruawaahia were included in the Section 32 Report.
17. I understand that no map of Pookeno was included as under the PDP there are currently no natural hazards overlays in Pookeno.

Accuracy and fit for purpose modelling

18. On the final day of the hearing, in response to questions from Commissioner Mark-Brown, I provided a summary of the modelling and outlined how it was fit for purpose – to identify flood affected properties. I had listened to the discussion that the Commissioner had had with Mr Patel, on behalf of Pōkeno West, the day before relating to the model and what further work was needed to provide confidence in the model outputs.
19. In summary:
 - (a) Large scale urban models (such as the one Te Miro Water have undertaken) are not suitable for detailed design or determination of finished floor levels. They are suitable for identifying flood affected properties and undertaking catchment wide analysis for strategy assets planning (flood mitigation strategies) and zone

planning. Detailed design models should utilise surveyed topography, not LIDAR. The catchment flows determined by large-scale urban model can be used as inputs into site scale hydraulic models.

- (b) The developer is required to assess and accurately determine the flood levels on their site so they can design an appropriate development. Responsibility for this should not lie with Council as its not practical to create large scale hydraulic model accurate enough for this purpose (cost and timeframes). In my view, this would also create potential liability issues if Council did have this responsibility.
 - (c) Including additional conveyance assets (<300mm piped network and catchpits) would have undiscernible impacts on the 100-year ARI flood levels due to the small percentage of flows this represents. This approach aligns with rapid flood modelling standard practice which excludes stormwater networks. The modelling provided is considered more accurate than rapid flood hazard mapping as it includes all critical culverts and critical pipe networks that are greater than 300mm dia.
20. I appreciate that there are legal and planning matters outside my area of expertise relating to flood hazard layers in district plans and whether these should form part of the district plan itself. Commissioner Morrison-Shaw asked me about how the Auckland Unitary Plan operated; I defer that question to Ms Hill.
21. Commissioner Morrison-Shaw also asked about accuracy of the model and whether confidence in it needed to be higher if it was included in the PDP.

22. In response I noted that the following has already been included:
- (a) Latest (current) available LIDAR;
 - (b) The most up to hydrology data;
 - (c) The latest climate change estimates;
 - (d) The latest hydraulic modelling software; and
 - (e) Compliance with the WRC modelling guidelines (2020) where appropriate.
23. Te Miro Water are currently undertaking the following additional quality assurance (QA) work:
- (a) Detailed checks of culvert and network relating to connectivity of flood zones;
 - (b) Removal of ponding caused by LIDAR processing (removal of houses in urban areas);
 - (c) Additional sensitivity checking including:
 - (i) Running several pipe/culvert blockage scenarios;
 - (ii) Varying runoff co-efficients to check criticality;
 - (iii) Running additional rainfall events with varying intensity and duration; and
 - (iv) Comparing results to additional existing models, including previous rapid flood models and WRC flood scheme maps.
24. In my view, there would be no additional work required (outside of the additional matters discussed above), that would improve the accuracy of the catchment wide urban models for the purpose of identifying

properties impacted by flood risk. The next step up in accuracy would be to use surveyed topography instead of LIDAR which, as I mentioned previous, isn't practicable or standard practice for a large-scale urban model.

TE TURE WHAIMANA AND TE MANA O TE WAI

25. At the conclusion of the hearing Commissioner Hill ask me about my view on how the MDRS can comply with Te Turi Whaimana and Te Mana o te Wai. My response was that that statement was reasonably broad, but that in my view, the MDRS did not contain any rules that prioritised (protected or enable rehabilitation of) fresh water over urban development which is a key principle of both Te Ture Whaimana and Te Mana o te Wai. The MDRS does not in itself outline or reference water quality objectives or requirements or provide suitable riparian zones for the protection of fresh water.

26. I understand that Waikato Regional Council is currently working through a new freshwater framework and plan change to give effect to the revised National Policy Statement for Freshwater Management which elevates the concept of Te Mana o te Wai.

Andrew Boldero
25 August 2023