BEFORE THE HEARING PANEL
APPOINTED BY KAPITI COAST DISTRICT COUNCIL

IN THE MATTER OF | I TE TAKE O	the Resource Management Act 1991
AND | ME	
IN THE MATTER OF | I TE TAKE O	Proposed Plan Change 5 (Private): 100 and 110 Te Moana Road, Waikanae, Kāpiti Coast District

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STATEMENT OF EVIDENCE OF CRAIG MARTELL ON BEHALF OF ERIC, VINCE AND RAECHEL OSBORNE

Dated 3 September 2026

Introduction

1. My full name is Craig Murray Martell. My qualifications are Bachelor of Science (Hons) from Victoria University (1994) and Master of Science (Hydrology) from Victoria University (1996).

2. I have prepared this Statement of Evidence regarding Private Plan Change 5 (**PC5**) to the Kapiti Coast District Plan, in relation to flooding and stormwater matters.

Qualifications and experience

3. I am a principal consultant at and Director of Awa Environmental (**Awa**), an environmental consulting firm with a focus on hydraulic modelling of rivers and stormwater networks. I have 30 years' professional experience in hydraulic modelling, flood plain management and stormwater management. Prior to operating my own independent consultancy I was, amongst other roles, the practice leader for flood risk management at SKM and then Jacobs NZ. I have worked extensively through New Zealand on river and urban stormwater projects and have been modelling stormwater systems since 1994.

4. I have had a strong working involvement in stormwater quality and quantity in Kapiti Coast District. This has included being the lead stormwater advisor to the Council, developing hydraulic models and associated flood hazard management plans from 1998 to present, designing and constructing numerous projects, providing asset management advice, climate change advice, low impact design standards, attending numerous public and private plan changes as an expert witness, and community consultation with much of the above. I have also worked extensively with developers in the District including substantial plan changes including leading the development of the Ngarara Zone and leading the 3 waters AEE for Waikanae North.

5. Specifically in my time working in Kapiti, I have led the following relevant projects;

    (a) The development of the first generation of hydraulic models in Kapiti between 1998 and 2001. I worked with Kapiti Coast District Council (**KCDC)** to integrate these into the district plan and prepared the first set of rules, which were integrated with the Greater Wellington Regional Council's zones and rules for the District.

    (b) The development of the second generation of hydraulic models for KCDC completed in 2010-12.

(c) The completion of the third generation of models for Kapiti Coast District Council completed in 2024. These have included all of the new motorway projects in the district.

(d) Led the investigation of soil permeability rates across the district with 191 tests being undertaken across all of the key soil and vegetation types.

(e) The project director for the hydraulic modelling of networks for Mackays to Peka Peka (**M2PP**) Highway.

(f) The development manager and lead stormwater designer for the Ngarara development.

(g) A key author for the MfE document "Preparing for Future Flooding: A guide for local government in New Zealand" in 2010.

Code of Conduct

6. I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023 and confirm that I have complied with it in preparing this evidence. I confirm that the issues addressed in this evidence are within my area of expertise, except where I have indicated that I am relying on others' opinions. I have not omitted material facts known to me that might alter or detract from my evidence.

Background

7. I have spent much of my career working with Councils and developers to take a precautionary approach to the development of land with respect to flooding risks. Key to success in this field is the ability to clearly explain the risks associated with flooding in different situations and provide long lasting solutions for mitigating these risks. The questions raised by both the Council and their reviewer are important and should be addressed.

8. I consider that the risks associated with flooding on this site can be appropriately managed through design solutions on the basis of the information collected but accept it can be a matter of judgement whether these risks are best resolved at the point of rezoning, or as part of a later consenting process. I make the following key technical points of clarification.

9. I confirm that I have read the briefs of Nicholas Taylor, which I will cross-refer as necessary. However, my evidence will focus on my area of expertise, flooding and stormwater. I have also read the relevant sections of the s42A

report, and the evidence of Mr James Oakley regarding flooding and stormwater.

Summary of work completed

10. I was the Technical Reviewer and Approver of the report titled 100 and 110 Te Moana Road, Flood Assessment and Stormwater Management Concept Memo, dated 18 August 2025 (**Flood Risk Assessment**). I was also the technical reviewer of the earlier versions of that report (March and July 2025). The August (and July) versions incorporated additional information in response to the Council's Request for Information received on 4 June 2025.

11. The KCDC 100YR 2130 Local Waikanae TUFLOW flood modelling and conclusions reached regarding stormwater and flood related risk matters relating to PC5 are all as set out in the Flood Risk Assessment.

12. I have also prepared along with Tony Trueman (Senior Hydraulic Modeller at Awa) additional responses to the further information requested by the Council entitled RFI Response - Peer Review Responses to 100 and 110 Te Moana Road, Flood Assessment and Stormwater Management Concept Memo, dated 20 July 2025 (**RFI Response**).

13. Except as otherwise modified or updated as stated in this evidence, I **adopt** the Flood Risk Assessment and the RFI Response as my opinion for the purpose of this hearing.

Summary of Opinion

14. For convenience, I summarise the conclusions and main findings from the Flood Risk Assessment and RFI response –as follows.

15. The Flood Risk Assessment has considered the flood hazards affecting 100 and 110 Te Moana Road and the feasibility, at a level appropriate for a plan change assessment, of managing those hazards and stormwater effects associated with future residential development of the site.

16. The low-lying parts of the property are identified as flood prone in the District Plan Flood Hazard Planning Maps, and for stream corridor, residual overflow, ponding and residual ponding hazards (refer Figure 3 of the Flood Risk Assessment). In saying that, as noted in the report, this mapping is out of date in this location as fill associated with the M2PP Expressway had moved the residual flow path (associated with a potential stop bank breach) to the north, and removed the ponding currently shown in the M2PP footprint.

17. The Flood Risk Assessment has used KCDC's 100-year 2130 Local Waikanae TUFLOW model to update that mapping for the site. This model applies RCP 8.5M scenario climate projections out to year 2130, and also includes the M2PP Expressway and therefore provides the more appropriate representation of the current physical environment compared to the District Plan maps (refer Figure 4 of the Flood Risk Assessment)

18. For the local 100-year 2130 event (accounting for climate change), flooding within the development area arises from a combination of upstream catchment flows, local ponding and tailwater effects from the Waimeha Stream, including tidal influence. The low areas of Lot 1 are subject to ponding, with modelled peak depths generally in the order of 10–800 mm. Flooding within Lot 2 is more isolated, with modelled depths generally in the order of 10–700 mm, while deeper water occurs within the existing wetland.

19. I have also considered regional flood risk associated with the Waikanae River. The regional modelling indicates that the site is not affected by flooding from the Waikanae River in the modelled 100-year climate-change event. For the three stop-bank breach scenarios assessed, the breach hydrographs from the Greater Wellington Regional Council (**GWRC**) Waikanae River model were incorporated into the KCDC TUFLOW model, thereby allowing the breach flows to be assessed with the Expressway represented.

20. For the Chillingworth scenario (the only scenario where a stopbank breach would affect the PC5 site), floodwater moves north-west towards the Expressway, passes beneath the Expressway and enters the site, with water subsequently conveyed towards the QEII wetland and Waimeha Stream. Awa concluded that there is sufficient physical scope to maintain the effective functioning of the residual overflow path through the site following development.

21. The Flood Risk Assessment presents the modelling information for this breach scenario identifying peak depths on the site in the order of 10 to 600mm. However, this is not simply additive to the ponding depths for a 100-year 2130 event as summarised at paragraph 18 above, because different headwater catchments are involved meaning there would be a time difference between the floodwater from a Chillingworth stopbank breach on the Waikanae river reaching the site through the residual flowpath, and peak on site flooding controlled by the water levels in the Waimeha stream to the north of Te Moana Road.

22. A breach scenario also assumes a very unlikely event significantly greater than the 100-year 2115 (with climate change) event which the stopbank is designed to manage. Indeed, in my opinion the likelihood of the separate risks associated with these two modelling outputs combining is extremely remote.

23. The relevant question for the rezoning from General Rural Zone to General Residential Zone sought under PC 5 is whether there is a practicable means of accommodating development without transferring unacceptable flood effects elsewhere. The Flood Risk Assessment provides recommendations for a stormwater strategy to this effect, taking into account the modelled flood hazards. The recommendations present a feasible mitigation approach tailored for each of Lot 1 and Lot 2, that balances the development priorities for the District with the management of the flood effects.

24. In essence, it involves filling the site to ensure dwellings are above the recommended building level, flood hazard and fluctuating groundwater levels with compensatory storage to remove the risk of displacement of floodwaters beyond the site, and to maintain the effective functioning of the residual flow path associated with a potential stop bank breach in a very large (but unlikely) storm event. At the same time, methods are proposed to ensure that stormwater is disposed of on-site and wetland hydrology is maintained, as also described in the Flood Risk Assessment.

25. The Flood Risk Assessment does not constitute the final flood and stormwater design for development. There is no final subdivision layout at this stage. Detailed earthworks volumes, finished platform levels, compensatory storage volumes, stormwater device sizing and final overflow routes will need to be demonstrated against the eventual development proposal at the resource consent stage. A site-specific flood hazard assessment and detailed stormwater design should therefore accompany subsequent subdivision/resource consent applications.

26. Nevertheless, given that Mr Oakley has stated his opinion that development feasibility has not been demonstrated to a sufficient level for the Plan Change stage of the process, a feasibility level earthworks concept plan has been prepared as described and produced by Mr Taylor. Awa has just completed high level flood modelling to confirm that this site earthworks configuration (providing for building platforms clear of the 1% AEP flood hazard) can maintain the effective functioning of the residual flow path along with sufficient room left on site to provide compensatory storage, ensuring overall flood hazard risks are minor and manageable. I discuss the results of that modelling further below and can give further explanation at the hearing.

27. As Mr Taylor also confirms, the bulk earthworks needed to achieve this outcome can maintain wetland hydrology, with provision for stormwater management generally on the site adopting a low impact design approach and mimicking natural hydrology while ensuring hydraulic neutrality That opinion is consistent with my own, again as recorded in the Flood Risk Assessment, and as with Mr

Taylor, based on extensive experience with developments in this general location.

Submissions

28. In the submission from the Fairway Oaks Drive Residents' Partnership, the submitter has raised concerns regarding escalating flood risk under climate change, flood conveyance and the Expressway, effects on the QEII wetland, and the potential for stormwater effects beyond the site. Those are legitimate matters to test. As noted above, the RCP 8.5M 2130 climate-change scenario has, however, been incorporated into the modelling, and the hydraulic assessment explicitly represents the Expressway. The stormwater concept is also based on maintaining, rather than severing, the hydrological relationship with the wetland.

29. Groundwater management and mitigation is addressed in the Flood Risk Assessment, where it is acknowledged that this represents a design constraint and can be managed by monitoring ground water levels over a calendar year to better establish seasonal groundwater conditions for subsequent development design.

30. For the above reasons it is considered that the stormwater and flooding matters raised in the Fairway Oaks Drive Residents' Partnership submission are fully addressed.

31. The further submission from the New Zealand Transport Agency (NZTA), received 20 November 2025 raised concerns about the consideration of the impacts on the Expressway and its infrastructure.

32. In March-April 2026 discussions were held between NZTA and the parties representing the applicant to discuss these concerns. Awa carried out a cross-reference check between the NZTA asset plans and the KCDC supplied stormwater network data that we used to build the model. The outcome was that the model inputs were considered consistent, and therefore NZTA stormwater assets and networks have been factored into the modelling. This matter has therefore been resolved.

33. With reference to the Chillingworth breach, the modelling that includes NZTA assets shows that floodwater follows the existing low-lying topography towards and beneath the Expressway before entering the site and ultimately passing towards Te Moana Road and the Waimeha Stream. The submitter's points reinforce the need for future development to maintain the effective functioning of existing flood conveyance and residual overflow paths and to avoid increasing flood risk beyond the site to address this scenario. I reference

paragraphs [23] to [26] above in this respect and design management through the resource consent process.

Section 42A Report

34. I have since read s42A Report and supporting Technical Evidence and I would like to provide my professional opinion and technical response.

Significance of flood risk

35. The s 42A report author has raised the issue of whether the flood risk on site is a very high natural hazard risk or creates or increases a significant natural hazard risk on other sites by referring to Policy 3 and Policy 4 of the NPS-NH (paragraph 12.102).

36. It is unclear if the reporting officer has used the NPS-NH risk matrix to assess the level of hazard or risk for the site. It is important that when applying these standards that each site is assessed professionally to see if it meets the criteria that would trigger policies or rules. My opinion is that PC5 does not represent either a very high hazard, or a significant natural hazard risk.

37. I have assessed the site for both of these criteria first for local flooding in the 1% AEP event, then for the residual over flow path through the site in the event of a stopbank breach.

38. The risk matrix under the NPS-NH is based on Likelihood and Consequence of flooding. In the 1% AEP event, the Likelihood could be read as either possible or unlikely. I have assessed the Consequence on the property as minor or negligible based on the flood mapping and modelling referred to above and based on a more detailed risk assessment than required by the NPS-NH, as now explained. Overall, this provides a medium to low risk using the NPS-NH matrix.

39. The NPS-NH is a national guidance document and provides coarse measure for risk. In Kapiti, a more detailed assessment framework for both **Hazard** and **Risk** has been developed. I have attached, as Appendix A, a plan identifying the modelled flood **Hazard** using the methodology adopted by GWRC. This shows that in a 1% AEP storm event the entirety of Lot 1 would fall into the lowest hazard category (the dark blue represents hazard category H1) under the standard being “generally safe for people, vehicles and buildings”. The classification is in accordance with the Australian Institute for Disaster Resilience 2017 Guidelines.

40. I have also been engaged by KCDC to develop a flood **Risk** methodology for Kapiti Coast District which provides a more useful measure when assessing the

site under the NPS-NH. This risk methodology combines vulnerability, exposure and hazard. The aggregated risk for the site using this methodology also shows the site at the lowest level of risk (the light blue represents the lowest risk class 1-3) as shown in Appendix B.

41. The modelled flood hazard and the risk assessment maps could be considered as representing the best available information, upon which the Plan Change should be considered, in accordance with Policy 5 of the NPS-NH. I provide a full assessment of the re-zoning and risk rating assessment against the principles of the NPS-NH in para 62-69 of this evidence.

Suitability of the site for low impact drainage

42. Mr Oakley has asserted that the suitability of the proposed stormwater approaches remains unproven and that further investigation is required before the rezoning is confirmed (paragraphs 1.1 and 1.2 of his evidence). I would note that:

(a) The site has been shown to have deep high soakage soils typical of the Kapiti Coast.

(b) It is bounded by a drain that will remain and is the control on groundwater.

(c) The solutions set out in the Flood Risk Assessment are proven, including in the immediate vicinity of the site. Awa has been involved in advising on this same range of issues for development of the site on the northern side of Te Moana road with low impact stormwater solutions exactly as we have suggested for this site. The original soil conditions on this developed site, Ngarara, were almost identical to those found on our site. The Ngarara stormwater solution has been extremely successful and has no formal discharge off site with all stormwater being resolved with soakage and storage.

(d) The site over the road was filled with compacted sand exactly as we are suggesting for Lot 1.

43. I accept that Mr Oakley may not have the context of the local soil conditions, or the experience in working with these, based on his experience and work in the Waikato region. My view remains that the soils on the PC 5 have been shown to be deep sands with good soakage rates measured, as expected on site given our local experience. These types of soils are ideal for low impact stormwater devices and will maintain infiltration characteristics despite compaction following bulk earthworks to create sufficiently elevated building platforms (refer paragraph 67 of Mr Taylor's evidence, which I agree with).

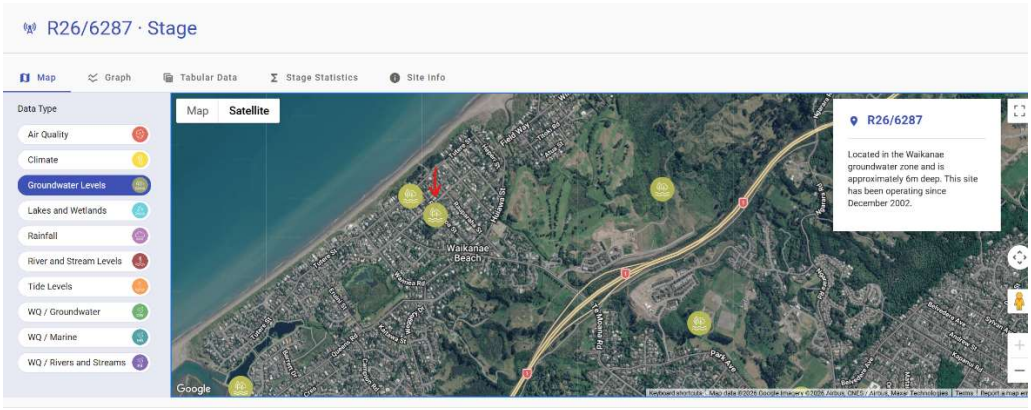
44. This is consistent with the stormwater management approach taken by Mr. Taylor, where it is considered that low impact stormwater solutions are appropriate in the elevated parts of the site, with stormwater discharged to ground as close to source as practicable to mimic natural hydrology and ensure hydraulic neutrality. I agree with Mr. Taylors conclusion that further work is required to confirm the location, sizing and detailed design of the stormwater measures once the roading footprint, number of lots and platform elevations are known (paragraph 38 of Mr Taylor's evidence), but that this does not present a design constraint because the site is large enough to accommodate the proposed stormwater measures.

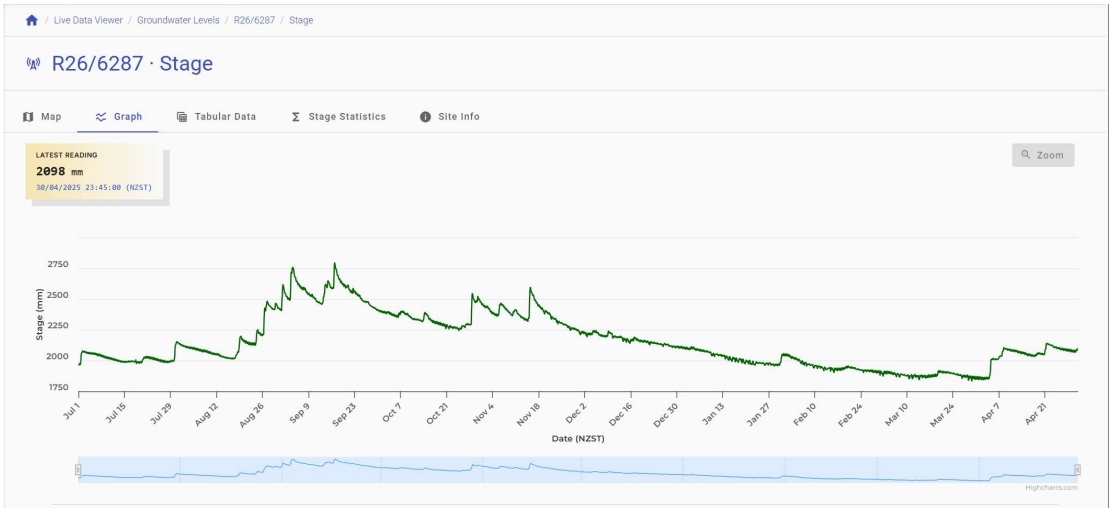
45. I also agree with Mr Taylor that an appropriate engineered solution to manage for compensatory storage is at the western end of the developed site. This area may also be used to attenuate regular stormwater flows to meet hydraulic neutrality requirements, however the volume of storage provided must consider both compensatory storage, and storage required for hydraulic neutrality (Mr Taylor's evidence at paragraph 79).

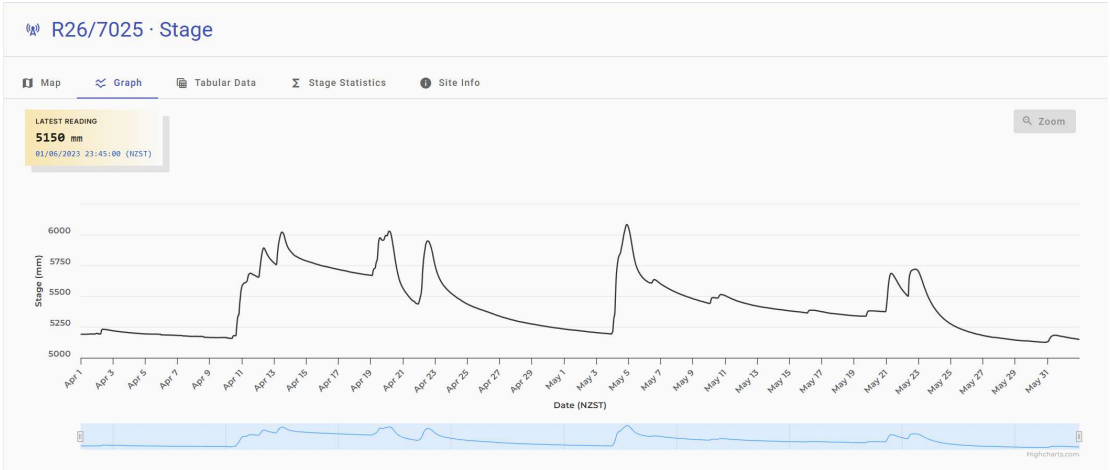
46. Although I have not commented in detail on the hydrology and the treatment of the QEII wetland, I rely on Mr Ussher's evidence for the ecological effects assessment and agree with Mr. Taylor that detailed design should retain the existing controlling drainage levels and hydrological connections unless any proposed change is demonstrated to avoid unacceptable effects (paragraph 85 of his evidence).

Groundwater & Soakage

47. The coastal plain in Kapiti is dominated by Holocene sands and gravels that are up to 100m deep at the coast. Where the main rivers run to the sea these soils are complicated by silt loams and gravels for river deposition, but they remain high permeability. The transmissivity of these soils below ground is very high and this is reflected by highly variable groundwater levels with groundwater often rising by 1m or more in a large rainstorm event. Groundwater peaks drop away quickly also albeit with a slower receding limb, as shown in the following figures.







48. This variability will be the key reason for variable results in groundwater testing over time. The key for managing groundwater will be the open channel running down the western boundary. If this is retained, as suggested by Nick Taylor in his evidence, it will be a straightforward engineering task to maintain groundwater relative to the low impact drainage devices.

49. We have recommended that piezometers be installed to better understand in more detail where the base of any stormwater solutions should be set. However, we have no concern that the groundwater can be managed on site.

50. Further and as stated by Mr. Taylor, in lower areas, where groundwater is shallow and infiltration may not be suitable, attenuation areas or constructed wetlands are likely to be required to achieve hydraulic neutrality and provide compensatory storage. Groundwater is therefore not a design constraint and can be managed through the resource consent process.

Greater Wellington Model Update

51. Mr Oakley noted in his evidence that GWRC had some concerns with the current modelling assessment (paragraphs 6.22 to 6.24 of his evidence) . I set out here the specific comments from GWRC on this issue (as relayed to Ms Jones by the reporting officer on 5 August) and respond to them each in turn.

(a) *Greater Wellington Regional Council is currently updating the Waikanae River flood hazard model to reflect changes in catchment hydrology and hydraulics associated with urban development and the construction of the Kāpiti Expressway.*

(b) *Given the updated hydrology, together with changes in national guidance on climate change allowances since the previous Waikanae River model was developed in 2011, it is likely that the river flood hazard profile in this area will change. We are currently finalising the hydrology and climate change assumptions and will be able to provide KCDC with an indication of the expected changes once the work has undergone peer review.*

(c) *The effects of the Expressway are more complex. As part of the bridge design, a section of the Waikanae River was widened to increase lateral flood conveyance capacity, rather than raising the bridge soffit, which was constrained by road safety requirements. This modification has altered sedimentation and river adjustment processes through the Greenaway Road and Chillingworth Stopbank reach. These changes in river dynamics are likely to influence flood behaviour and overflow pathways associated with a potential breach of the Chillingworth Stopbank.*

52. On the first two matters I would note the NPS-NH employs the ‘best available information’ principle, which directs that decisions must be made using the best available information and not delayed because the information is uncertain or incomplete. In our case we believe the work completed uses models of the highest quality.

53. On the third matter I have extensive experience. I have been involved with mediated with GWRC and the M2PP project team on sedimentation through this reach and confirm that;

(a) In a facilitated session managed by Buddle Findlay between M2PP and GWRC (for the constructor) and myself (for the landowners) it was made clear that the river widening for the 150m length of river below the Expressway bridge was completed to meet requirements around naturalisation of the river for the Regional Council to improve the river environment and reduce river maintenance. This is covered in the mediation document. The downstream works were not required for the construction of the road, or indeed it's road safety.

(b) The increase in bed levels through this river section express themselves in the 20-30m upstream of the Expressway Bridge and for the 130 odd meters downstream where the widening took place. The Chillingworth stopbank is some 1000m upstream of the Expressway.

(c) The design of this bridge, and the modelling of the Chillingworth Breach, both included Climate Change assumptions.

54. In addition to the above I would like to highlight that if and when the Chillingworth breach is reanalysed there is a good chance the flows through this breach will be reduced. The historic modelling was particularly conservative, modelling the complete removal of the stopbank. In an extract from the conference paper reporting on this work the author noted *"Considering all the data from Froelich (1990) as referenced in Wahl (2004), for sites where the water depth was small, the maximum likely breach width would be 14m. Our modelling has conservatively assumed a width of 60m…"*

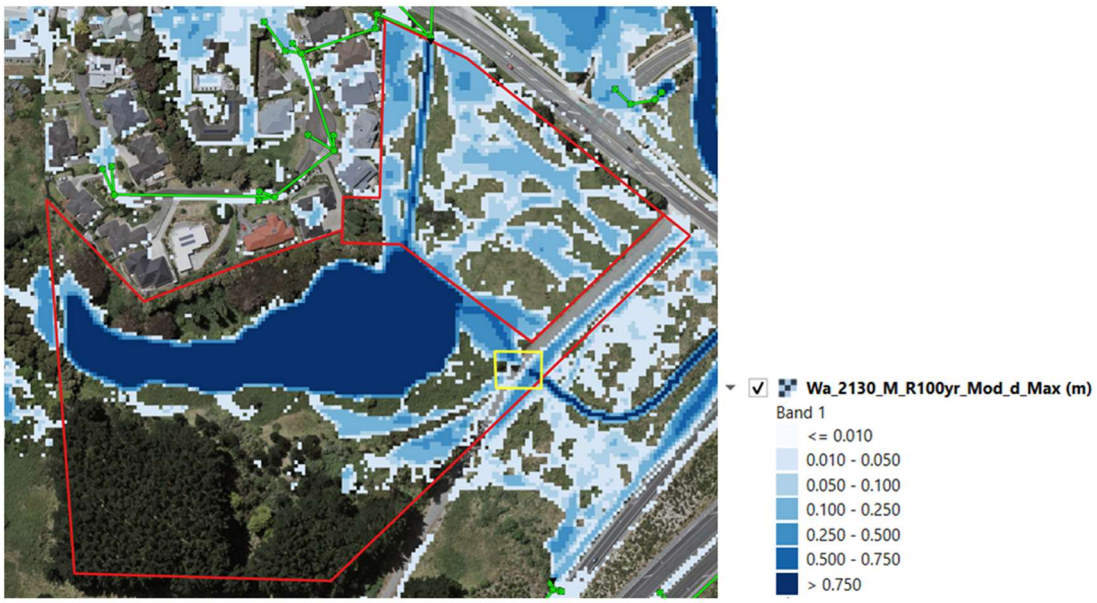
Design Response

55. I accept that Mr Oakley was relying on GWRC's comments on this matter, however the concerns raised by GWRC state opinions that I consider to be technically incorrect. In my professional opinion the modelling undertaken on the Chillingworth breach to date is conservative and is unlikely to meaningfully change with the Regional Councils new models. The Flood Risk Assessment has used the new climate change assumptions the Regional Council will be applying in all of our local modelling and believe this matter is adequately addressed.

Further Work

56. As noted above, Awa has now just completed testing of a typical development scenario provided by Nick Taylor through our hydraulic model. For both the 2130 1% storm event, and the Chillingworth breach model our modelling shows the site can readily manage flooding risks while managing offsite impacts.

57. This modelling work has been based on the earthworks concept plan referred to by Mr Taylor (Annexure A to his evidence) to provide an example of how the site could be developed and meet the requirements of a consenting process. As part of this work a new base model was run as onsite investigation confirmed there was no culvert under the access driveway into the site (yellow box on the below plan).



58. The concept plan provided by Mr Taylor allowed for an open channel to remain on the western boundary and a road and single right of way to pass through Lot 1 accessing raised platforms on either side of the road.

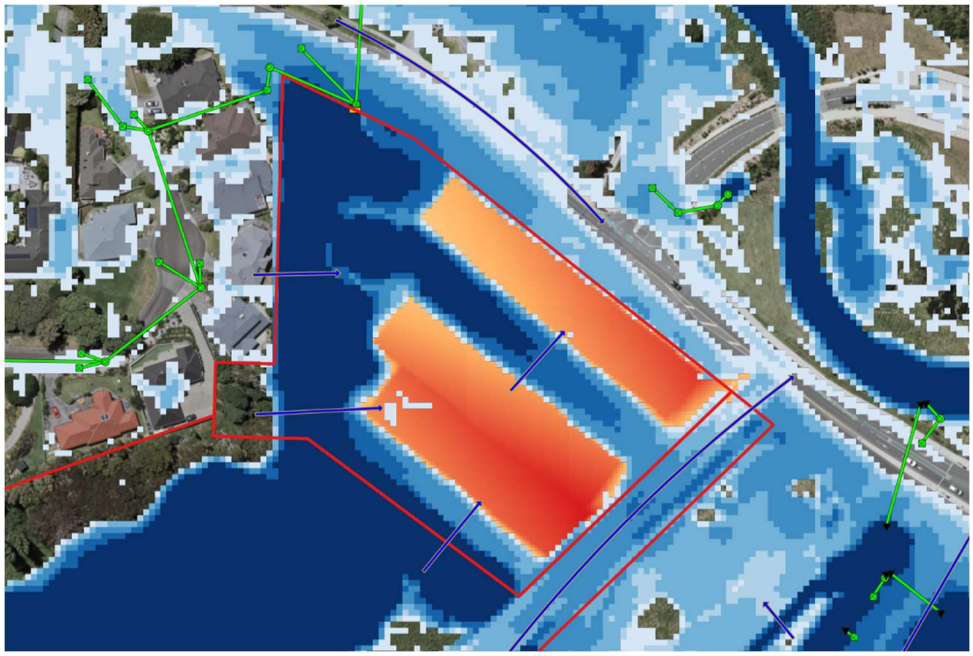
59. The figure below shows the result of modelling this plan concept, run in the required design event.

2130 100YR DESIGN 1 PEAK INUNDATION

60. The difference between these model outputs clearly shows that effects can be maintained on site with minor effects on the road frontage being able to be managed with slight design changes to the earthworks at the consenting stage design.

DEPTH DIFFERENCE (DESIGN MINUS BASE) (Red thru Yellow = increase, green = decease)

61. Further the following figure shows that the same earthworks design allows passage of the residual overland flowpath along the right of way without flooding impacts to the building platforms.



Proportionate and Risk-Based Natural Hazard Risk Management

62. The s42a report states that it is unclear how the request to rezone Proposed Lot 1 would satisfy Policies 3 and 4 of the NPS-NH.

> *Policy 3: Where subdivision, use or development is assessed as having very high natural hazard risk, that risk must be avoided.*
>
> *Policy 4: Where subdivision, use or development, including any associated mitigation measures, will create or increase significant natural hazard risk on other sites, that risk must be avoided or mitigated using an approach that is proportionate to the level of natural hazard risk.*

63. As outlined in paragraphs 35-41 of this evidence, I have demonstrated that Lot 1 is more appropriately assessed as medium to low risk using the NPS-NH matrix. Importantly, the source of this risk is the existing flood hazard affecting the site, including the residual overflow path; it is not a risk created by the proposed rezoning or future residential development. The modelling and flood risk assessment demonstrate this and that development does not increase the risk.

64. This assessment is based on high-quality hazard and risk modelling and mapping undertaken for Kapiti Coast District Council. Therefore, there is no direction to avoid development on the site and the re-zoning and development, with flood mitigation measures is consistent with Policy 3. As discussed in my evidence above using more detailed local analysis the hazard would be classified as low.

65. Regarding Policy 4 of the NPS-NH, our stormwater management strategy demonstrates that Lot 1 can accommodate development and flood mitigation measures on-site with no increase to off-site flood risk.

66. Regardless, the flood hazard risk and design solutions with mitigations measures for Lot 1 correspond to a risk matrix rating of medium-low that does not create or increase off-site significant natural hazard risk.

67. It is therefore considered that the proposal is consistent with the NPS-NH risk-based approach and intent to manage natural hazard risk to a level proportionate to the medium-low risk rating.

68. As also noted above, the NPS-NH employs the 'best available information' principle, which directs that decisions must be made using the best available information and not delayed because of uncertainty in the quality or quantity of information available. In this case high-quality modelling and risk assessment has been undertaken to demonstrate consistency with a risk-based approach, and therefore deferring the Plan Change decision would be inconsistent with the NPS-NH directions.

69. The flood modelling and risk assessment undertaken by Awa for the basis of the Plan Change provides robust evidence of the flood risk for Lot 1 and satisfies Policy 5 of the NPS-NH and the above policy approach.

70. Regarding consistency with the District Plan objectives and policies, the design will maintain the residual overflow path and is therefore consistent with NH-FLOOD-P12. The modelled scenario adopting Mr Taylor's conceptual earthworks plan (as with the Flood Risk Assessment itself) demonstrates that development is feasible on Lot 1 while taking a precautionary approach, which can be further managed through the resource consent process. Consistency with the risk-based approach and development that avoids the increase of natural hazard risk in accordance with NH-P2 and NH-P3 has been demonstrated through the NPS-NH assessment.

Summary

71. In summary my professional opinion is that;

    (a) I consider the reporting officer may have referenced policies in the NPS-NH that do not apply to this land.

    (b) The hazard and risk on this property are not 'very high' or 'significant'.

(c) The modelling undertaken to date is high quality, includes latest climate change parameters, includes M2PP, and is suitable for the assessment.

(d) The Chillingworth Breach modelling is conservative, includes climate change, and is not impacted by changes to the river at the Expressway.

(e) The site investigations are at an appropriate level to determine the site can be developed and provide low impact stormwater solutions.

(f) The groundwater on site will vary but will be controlled by the open channel within the property that will remain.

(g) I consider there are multiple ways the flood and residual overflow risks can be managed through development when a design is presented for resource consent. Primarily we would see mitigation being provided with compensatory storage and low impact drainage solutions.

(h) The modelling and flood risk assessment provide the best available information upon which to make the decision, to a level appropriate for a Plan Change proposal on a medium-low flood hazard risk site, and that deferring the decision would be inconsistent with the best available information principle of the NPS-NH.

Conclusions

72. The TUFLOW modelling represents the most recent representation of flood hazards for the site subject to Plan Change 5, including the Expressway and regional flood risk associated with the Waikanae River. Therefore, this can be taken as the more reasonable and reliable information available for the flood risk assessment for the Plan Change purposes.

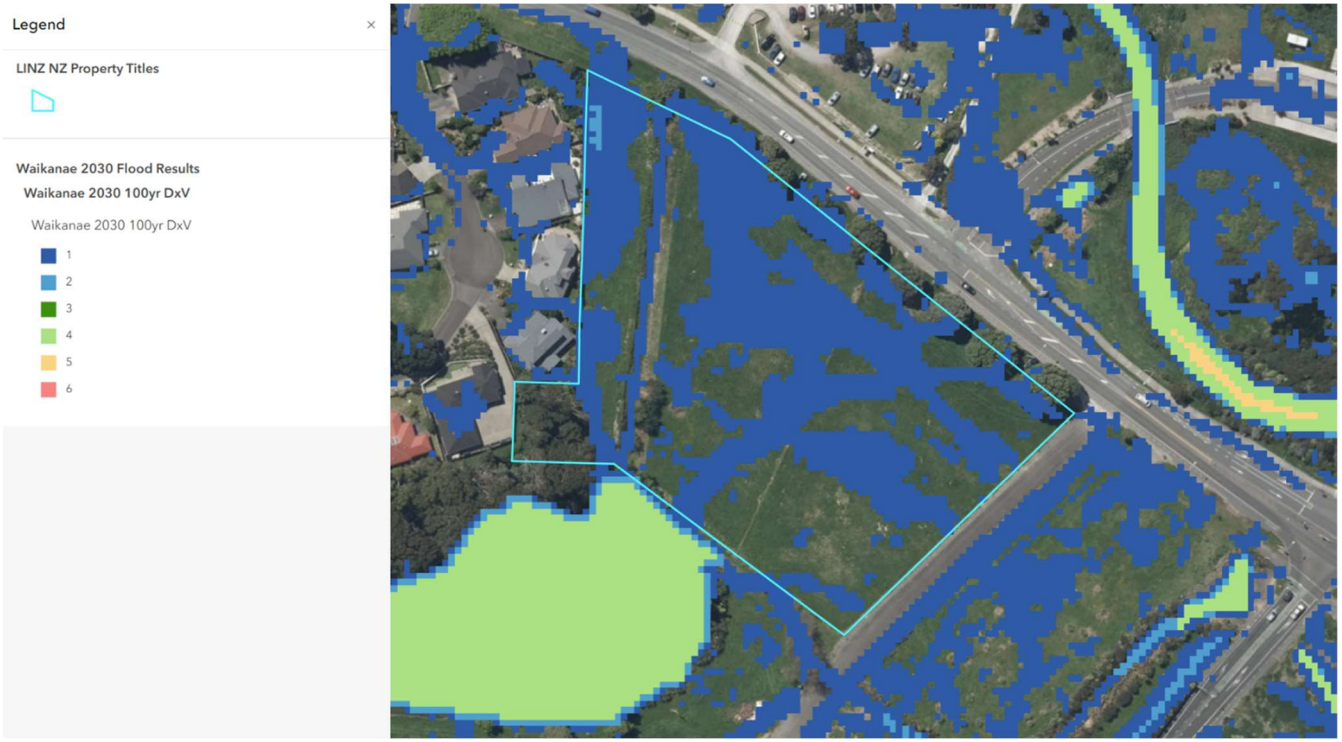
73. In my opinion, the present assessment and mitigation proposed is sufficient for plan change purposes. It demonstrates that the relevant flood hazards have been identified, their principal mechanisms are understood, and there are technically practicable measures available to manage them. The detailed design and verification of those measures can appropriately occur at subdivision and resource consent stage, once the development layout is known.

74. Overall, I remain of the opinion that the identified flood and stormwater constraints do not present a technical impediment to residential rezoning of the site. The detailed form of mitigation measures is appropriately resolved once a subdivision layout is known, provided subsequent design demonstrates that flood risk is not transferred or increased off site and that the hydrological function of the QEII wetland is maintained.

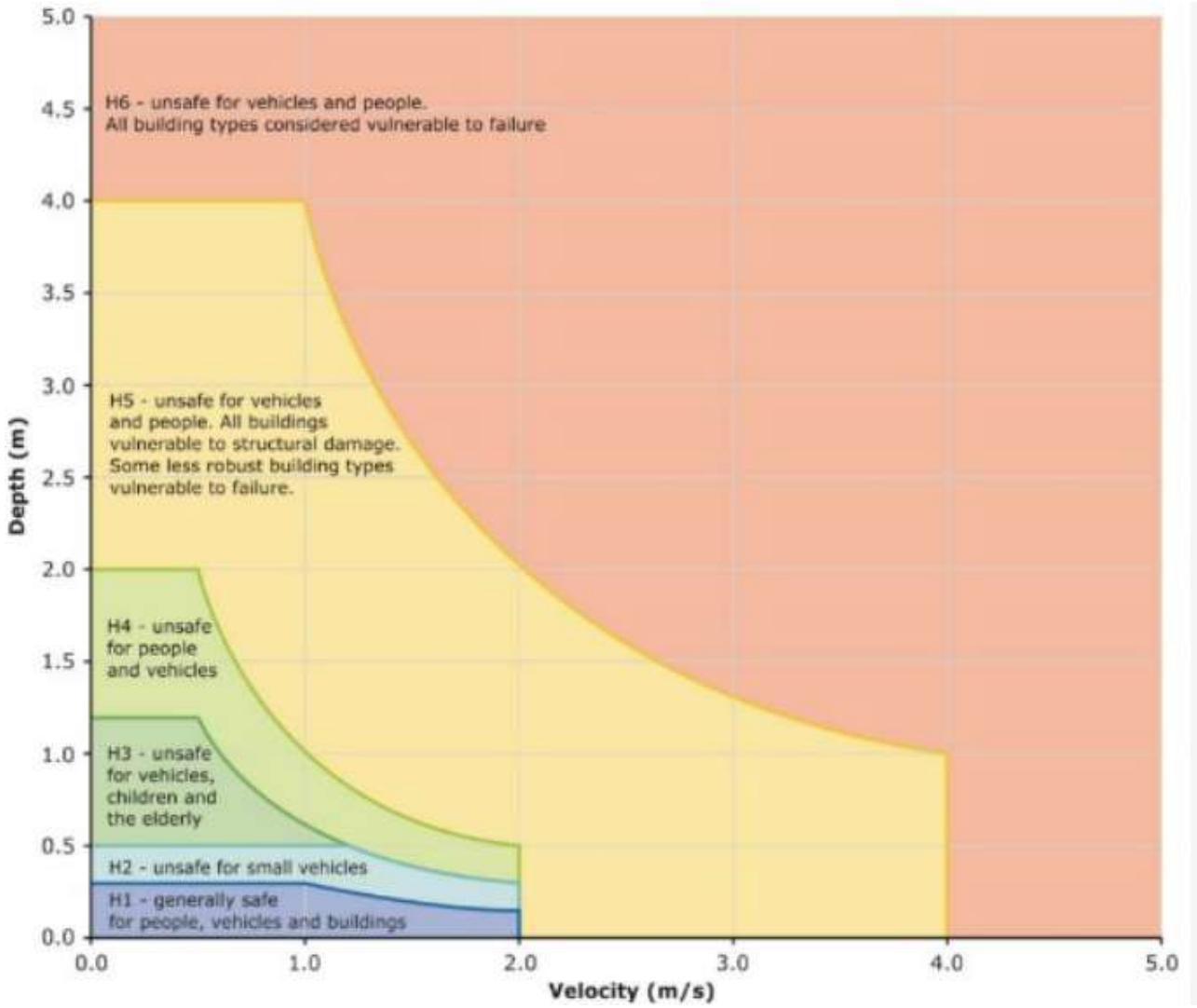
Craig Martell

3 September 2026

Appendix A - Waikanae 2030 Modelling Flood Hazard Rating Map and Australian flood hazard vulnerability classification Guidelines[1]



[1] Australian Institute for Disaster Resilience 2017 Guidelines


H6 - unsafe for vehicles and people.
All building types considered vulnerable to failure
H5 - unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust building types vulnerable to failure.
H4 - unsafe for people and vehicles
H3 - unsafe for vehicles, children and the elderly
H2 - unsafe for small vehicles
H1 - generally safe for people, vehicles and buildings
Depth (m)
Velocity (m/s)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0

Appendix B – Modelled Aggregated Risk Rating