

Before an Independent Hearings Panel at Waimakariri District Council

under: the Resource Management Act 1991
in the matter the Proposed Waimakariri District Plan
of:

Summary Statement – Christopher Paul Bacon
Waimakariri District Council

On behalf of Waimakariri District Council

Summary Statement on Natural Hazards (Flooding) Relating to Hearing Stream 12D –
Ohoka RIDL

Dated: 1 July 2024

File Note: DDS-14-08

INTRODUCTION

1. The purpose of this summary statement is to set out the key points from my evidence in relation to the Applicant's Evidence on the Proposed District Plan, Hearing Stream 12D.
2. My full name is Christopher Paul Bacon and I am the Network Planning Team Leader for the Waimakariri District Council. In this position I am involved with planning for infrastructure growth and flood modelling. I am a Chartered Professional Engineer and hold a Bachelor Degree in Civil Engineering. I have over 20 years of experience in civil engineering.
3. My summary statement has predominantly been based on assessing the information presented in the Applicants Evidence to the Proposed District Plan, Hearing Stream 12D prepared by Ben Throssell related to Flooding.
4. I note that the concept presented has not materially differed from that presented as part of the Private Plan Change 31 (PC31) Proposal, and I refer to my evidence submitted as part of that process for a detailed assessment of the proposal.
5. I have provided a summary of the PC31 evidence in the following paragraphs including additional comments where new evidence has been provided.

METHODOLOGY AND MODELLING

6. I have reviewed the methodology and assumptions used to create the PDP flood model. I had previously raised concerns during the PC31 hearings process that the proposed raised flood attenuation areas had not been adequately accounted for in the model. These concerns were subsequently allayed as part of the expert witnessing process and I am now satisfied that the PDP model is fit for purpose.

WDC DISTRICT WIDE MODEL

7. I have reservations regarding the model validation undertaken by Mr Throssell using a flood frequency analysis of the Ohoka Stream undertaken by Tonkin and Taylor in 2017. The model validation does not account for spill over from the Cust river in extreme flood events and is covered in more detail in my PC31 evidence.
8. I do however agree with Mr Throssell that the WDC Model is likely conservative for the 200 year and 500 year events and I consider the model outputs from the WDC Model to be suitable for use as inputs into the PDP model.

MODEL RESULTS

9. I agree with Mr Throssell that conveyance of floodwaters through the site is the main issue with regards to flood management and mitigating effects from flooding during large flood events.

EFFECTS ON FREEBOARD

10. I agree with Mr Throssell's assessment that there is likely to be no change or impact on the compliance with recommended freeboard requirements for existing dwellings downstream of the

proposed development. However, I note that further work may be required as part of a Resource Consent process to confirm this.

EFFECTS ON FLOOD LEVELS

11. I note that the PDP model shows the flood effects from the development in the 200 year ARI event to be less than 20mm across all habitable dwellings with only two non-habitable sheds showing an increase greater than 20mm (24mm and 28mm).
12. I agree with Mr Throssell that these effects are less than minor.
13. I note that further modelling will be required at the detailed design phase to confirm these effects are still less than minor with the final subdivision surface.

DEVELOPMENT IN THE WAIMAKARIRI DISTRICT FROM A FLOOD PERSPECTIVE

14. I generally agree with the statements made by Mr Throssell regarding the need to avoid development in high hazard areas, however I don't consider there is a need to avoid development in these areas if the high hazard can be mitigated without any adverse effects.
15. I note that the recently released guidance from the Ministry for the Environment (MfE) has updated sea level rise predictions for the country and this is now much greater than the previous recommended values. I note that for the Waimakariri District the relative sea level rise is in the order of 2.0m for the SSP-8.5H+ scenario which is the scenario MfE recommends is used for greenfield developments.
16. I note that current planning assessments in the coastal area of the Waimakariri District have adopted a 1.0m sea level rise based on the Coastal Inundation work undertaken by Jacobs in 2020.
17. I also note that Jacobs did consider a 1.88m sea level rise scenario based on the RCP8.5+ 130 year scenario for the purpose of sensitivity testing.
18. I consider the updated guidance may have an impact on both brownfield and infill development in the coastal areas of the Waimakariri District. However, without undertaking an updated Coastal Inundation Assessment it is unclear what impact the new guidance will have on proposed greenfield development in the coastal areas of the district. I note that land raising remains a mitigation option for high hazard greenfield areas.