

**BEFORE THE INDEPENDENT HEARING COMMISSIONERS
IN CHRISTCHURCH**

TE MAHERE Ā-ROHE I TŪTOHUA MŌ TE TĀONE O ŌTAUTAHI

IN THE MATTER OF Resource Management Act 1991

AND

IN THE MATTER of the hearing of submissions on Plan Change 14
(Housing and Business Choice) to the Christchurch
District Plan

JOINT STATEMENT OF HAZARDS EXPERTS

13 November 2023

INTRODUCTION

1. This joint witness statement relates to expert conferencing on the topic of **Hazards**.
2. The expert conferencing was held on **17 October 2023 and 8 November 2023**.
3. **Greg Whyte (DHI)** was unable to attend these meetings.
4. Attendees at the conference were:
 - (a) **Brian Norton** for Christchurch City Council. Brian is the author of a statement of evidence dated 11 August 2023.
 - (b) **Stephany Pandrea (Eliot Sinclair)**, for **Cashmere Park Ltd, Hartward Investment Trust, Robert Brown**. Stephany is the author of a statement of evidence dated 20 September 2023.
 - (c) **Antoinette Tan (DHI)**, for **Cashmere Park Ltd, Hartward Investment Trust, Robert Brown**.

CODE OF CONDUCT

5. This joint statement is prepared in accordance with sections 9.4 to 9.6 of the Environment Court Practice Note 2023.
6. We confirm that we have read the Environment Court Practice Note 2023 and agree to abide by it.

PURPOSE AND SCOPE OF CONFERENCING

7. The purpose of conferencing was to identify, discuss, and highlight points of agreement and disagreement on **Hazards** issues relevant to Plan Change 14.
8. At the Flood Hazard Conference held on 21 September 2023, Brian Norton has raised three flood hazard concerns (as detailed below) regarding the proposed Cashmere/Henderson's development plan change area. This memorandum summarises Brian Norton's (from CCC) concerns/comments regarding the flood hazard and the work carried out recently to address these items. An additional meeting was held with Brian on the 17th October 2023 to discuss the items to be addressed. A further meeting was held with Brian on the 8th November 2023 once the flood modelling was updated to address Brian's concerns. During this meeting Brian agreed in principle that the

updated flood model assumptions and results presented have addressed his concerns and based on this, he considers the development is feasible and that fine tuning of the proposed development basins will come during subdivision detailed design.

9. Addressing the Christchurch District Plan Flood Hazard Overlays

The proposed development site is partially located within the High Flood Hazard Management Area, Flood Ponding Management Area and the Flood Management Area of the Christchurch District Plan Natural Hazard Overlays as shown in Figure 1 below. As demonstrated in the DHI flood modelling report, by providing the compensatory storage within the proposed basins, the overall flood ponding volume within those areas is unchanged and there is no detriment to the ponding storage volume available.

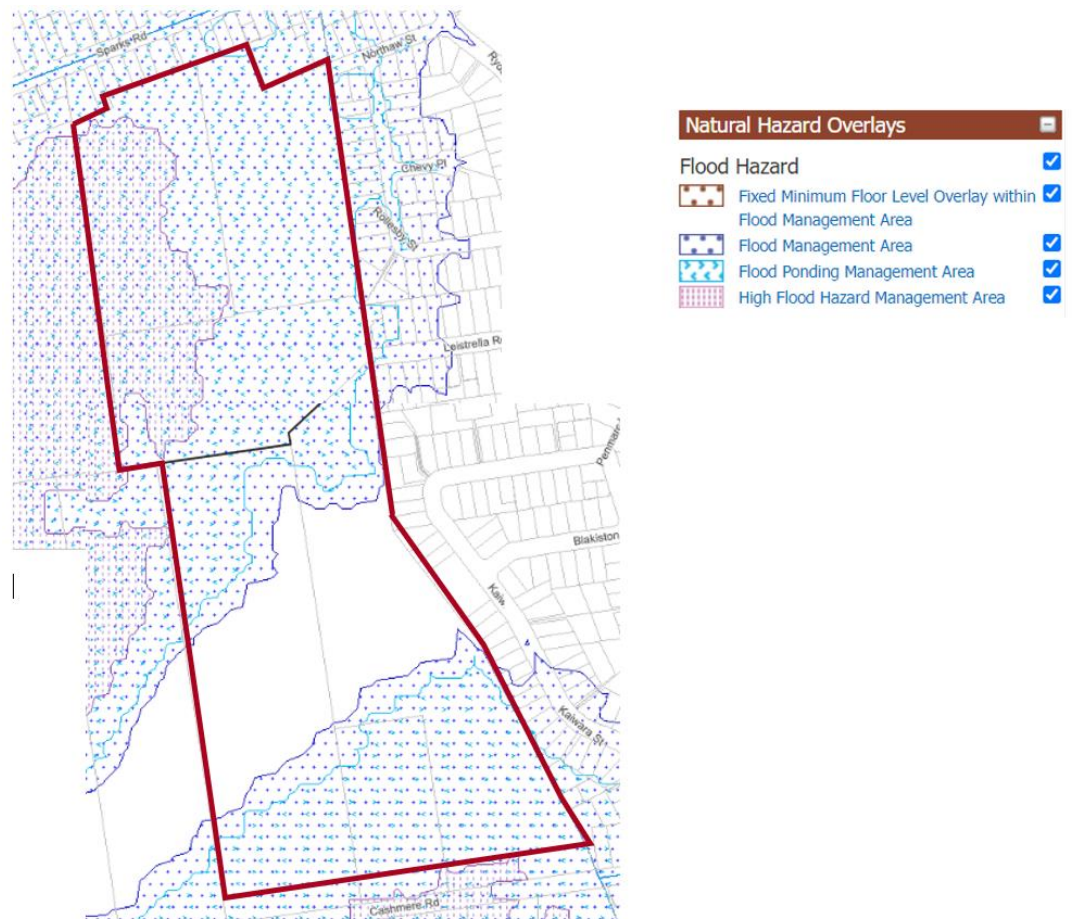


Figure 1. Flood Hazard Overlay at the Site (Christchurch District Plan)

10. **Annexure A** records the agreed issues, areas of disagreement and the reasons, along with any reservations.

11. This statement has been read and confirmed by Gregory Whyte (DHI).

Date: 13 November 2023



Brian Norton (Christchurch City Council)



Stephany Pandrea (Eliot Sinclair and Partners)



Antionette Tan (DHI)



Greg Whyte (DHI)

ANNEXURE A – EXPERT CONFERENCING ON [TOPIC]

Participants: Brian Norton, Stephany Pandrea, Antionette Tan

Issue	Agreed Position	Disagreements or reservations, with reasons
<p><u>1. Basins/compensatory storage design includes excavations in excess of 1m depth in an area which is known to have high groundwater. This may be overstating the amount of storage able to be provided within the designated footprint.</u></p>	<p>Eliot Sinclair (ES) have reviewed the available ground water level monitoring data and have proposed that an average groundwater level of 0.5m (north basins) and 0.6m (south basins) below ground level was adopted for the concept basin design for this plan change.</p> <p>Brian Norton has agreed in principle that this is a reasonable assumption that will need to be verified by doing groundwater level monitoring and monitored groundwater levels to be taken in consideration when setting the basin inverts at detailed design stage.</p> <p>The proposed basin inverts were raised to reflect this groundwater assumption. The basin volumes were calculated to include sufficient capacity for treatment, attenuation and compensatory storage for the flood volume displaced by the filling of the proposed lots.</p> <p>The updated basin design surface was provided to DHI who re-remodeled and updated the flood report. Refer to the updated DHI flood modelling report (Nov 2023) attached for more details.</p>	

<p><u>2. Para 20 Whyte evidence – The Council has always considered Hendersons Basin to have a 36 hour critical duration, however this modelling done has been done for a 24 hour duration. What “previous modelling” is referred to in paragraph 20? Does this evidence take into account the latest Heathcote modelling done in July 2023?</u></p>	<p>Updated DHI flood model shows that the 48-hour duration produced the highest water levels for the Henderson’s Basin area. The critical duration for Heathcote River at Ferniehurst is closest to the 24 hour duration.</p> <p>Yes, this modelling takes into account the latest Heathcote modelling done in July 2023. The Heathcote City Wide model version 26, also referred to as the Phase 3 model, was used in this investigation as the baseline. The Phase 3 model was completed mid 2023 and represents the most up to date CCC model of the Heathcote catchment.</p>	
<p><u>3. Para 23 Whyte evidence - The modelling shows increases in peak discharge of 50 l/sec into Stillwells pipe. This indicates a potential transfer of flow and flood storage from Henderson’s basin to Cashmere Stream as a result of the works, potentially adding to downstream flood peaks, noting that the Council is required by consent to reduce peak flood levels in the Heathcote River at Fernihurst Street to pre-1991 state. Please</u></p>	<p>The updated modelling now shows there is a 300L/s peak flow increase in Stillwells drain, however this occurs at the 30-36 hours duration, which doesn’t coincide with the peak flow in the Heathcote River which occurs at the 24 hour duration. Therefore, the peak increase in Stillwells has no impact on the peak flow in Heathcote River.</p> <p>Refer to the updated DHI flood modelling report (Nov 2023) attached for more details.</p>	

demonstrate how the proposed development will prevent increases of downstream peak water levels (of any kind) so as to not compromise the Council's consent compliance.