BASELINEGROUP

Appendix 10: Environment Canterbury Flood Assessment

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Sally Elford
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Dear Sally

LOTS 2 & 3 DP 29035, LOTS 1 & 2 DP 43993, LOT 1 DP 21433, LOTS 1 & 2 DP 27551, LOT 1 DP 407808, LOTS 1 & 2 DP 344727 CNR BIRCHES & HAMPTONS ROADS, PREBBLETON

Flood Hazard

The property is outside the floodplains of any major rivers and streams, but can be subject to surface flooding and ponding during significant local rainfall events

Enclosed are photographs from 1986 and 2013 that show the property (or parts of the property) following rainfall events in the area. Both photographs show substantial flooding in the south eastern corner of the property, with more isolated areas of ponded floodwater across other parts of the property. Note that the photographs may not show flooding at its peak. In larger rainfall events it is likely that more extensive areas will be affected by flooding

Also enclosed is a map showing ground levels at the property derived from LiDAR data obtained in 2016/2017 LiDAR is an airborne laser system that surveys the ground topography The ground levels are presented in metres – New Zealand Vertical Datum 2016 (NZVD2016). The map shows a substantial depression in the south-eastern corner of the property (where water is shown to be ponding in the photographs) and less pronounced channels and depressions in other areas

Selwyn District Council has recently completed 'rain on grid' flood modelling for the majority of the district, based on 200 and 500 year average recurrence interval (ARI) rainfall events The results of this modelling show water ponding in channels and depressions across the property, but with relatively minor flooding outside of these areas. The model results are available to view here:

https://apps.canterburymaps.govt.nz/FloodModelResults/?extent=1558346.492%2C5171277.1726%2C1562932 7137%2C5173419 798%2C2193

Chapter 11 of the Canterbury Regional Policy Statement (CRPS) provides a framework for managing natural hazard risk in Canterbury. Policy 11.3.1 of this document seeks to avoid new subdivision, use and development in 'high hazard' areas These are defined as areas where the water depth is greater than 1 m (or where the water depth (m) x velocity (m/s) is greater than 1) in a 500 year ARI flood event

Policy 11.3.2 of the CRPS states that in areas that are not high hazard, but that are subject to inundation in a 200 year ARI flood event, any new subdivision, use and development should also be avoided unless a range of conditions are met These include the requirement for new buildings to have a floor level above the 200 year ARI design flood level.

Based on the information outlined above, areas of the property that meet the CRPS definition of high hazard would be primarily limited to the depression in the south-eastern corner of the property, where

ponded water depths are well over 1 m in the modelled 500 year ARI scenario Approximately half of the property is shown to be affected by flooding in the 200 year ARI modelled scenario

When using the information provided in this letter, it is important that the following points are understood:

- The information is limited to what Environment Canterbury currently has available. The District Council or local residents may have further information about flooding at the property.
- Environment Canterbury's understanding of flooding at the property may change in the future as further investigations are carried out and new information becomes available
- It is assumed that flood protection works will be maintained to at least their current standard in the future
- Stopbank failure can occur at flows less than the design standard, and the location of bank failure/overtopping may affect flood depths/levels at the property.
- Flood flow paths and depths/levels can be affected by changes on the floodplain such as:
  - Earthworks, road alterations, and irrigation structures
  - Property development including buildings, fencing, and hedges
  - Blockages in culverts, drains, and bridges
  - Seasonal vegetation growth
  - Antecedent soil conditions

The prediction of flood depths/levels requires many assumptions and is not an exact science.

Yours sincerely

Nick Griffiths
Scientist (Natural Hazards)

Encl. Photograph No. 826 (24/08/1986)
Photograph No 0853 (23/06/2013)
2016/2017 LiDAR Map

Cnr Birches & Hamptons Roads, Prebbleton - 2016/2017 LiDAR (NZVD2016)