Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

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15th June 2022

Robert Clarkson
249 Greendale Road
Greendale
Darfield 7671

Dear Robert

RS12627 – BRIDGE ROAD, GREENDALE

Flood Hazard

The property is located on the floodplains of the Selwyn River and Waianiwaniwa River. Overflows from the Waianiwaniwa River and overland flows from rainfall runoff are the most likely sources of flooding at the property.

Enclosed is a LiDAR map showing ground levels across the property. LiDAR is an airborne laser system that surveys ground topography. When compared to known survey points, the data has an accuracy of ± 150 mm or better. The ground levels, surveyed in 2015, are presented in meters – Lyttelton 1937 Datum (LVD1937). This map shows ground levels at the proposed relocated dwelling location are approximately 140.0 – 140.2 m LVD1937.

Selwyn District Council has recently completed rain-on-grid flood modelling for the majority of the district. This modelling includes 200 and 500 year average recurrence interval (ARI) events. Results of this modelling shows flooding to levels of 140.25 and 140.35 m LVD1937 for the modelled 200 and 500 events respectively. Mapped results of this modelling are available here:

https://apps.canterburymaps.govt.nz/FloodModelResults/?extent=1524069.2622%2C5174221.1925%2C1526362.373%2C5175304.4485%2C2193&showLayers=Region_Base_3597%3BAdopted_Scenarios_Elevation_7528

Policy 11.3.2. of the Canterbury Regional Policy Statement states that development should be avoided in areas subject to inundation in a 200 year ARI flood event 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, **a relocated dwelling at the location shown on the enclosed LiDAR map with a finished floor level of at least 140.55 m LVD1937** would provide a standard of mitigation consistent with the Canterbury Regional Policy Statement. Care should be taken to ensure that there is adequate fall away from the dwelling and that any building platform and associated driveway and landscaping will not direct flows into the dwelling. Based on the model results described above, it should also be considered that accessibility to and from the dwelling (across both the property and along Bridge Road) may be compromised during flood events.

Our Ref: HAZA/FLD/ASS/CHC/22526
Your Ref:
Contact: Daniel Ward

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,

Daniel Ward

Science Analyst (Natural Hazards)

Encl. 2015 LiDAR Map