

19 June 2012

Sharon & Zane Crofts  
PO Box 91  
Tai Tapu  
Christchurch 7645

Dear Sharon and Zane

### **FLOOD RISK – LOT 2 DP 436571 – HAUSCHILDS ROAD, TAI TAPU**

The property is outside the major ponding areas of the Halswell River catchment. The enclosed aerial photographs show the property following local rainfall events.

Photograph No. **603** was taken on 24 August 1986 following a rainfall event where 77 mm was recorded at Greenpark and 81 mm at Lincoln over 72 hours. Photo No. **216** was taken on 28 July 1994 following a similar sized event with 76 mm recorded at Greenpark over 72 hours. Both events are estimated to have a return period of 2 - 5 years. For the 1986 event, the return period of the flooding is considered to be slightly greater than the return period of the rainfall due to rainfall earlier in the month.

Photograph No. **727** was taken on 30 August 1992 following a rainfall event where 94 mm was recorded at Lincoln and 104 mm at Greenpark over a 72 hour period. The return period of this event is estimated at 5 -10 years.

Note that the photographs may not show flooding at its peak, as there is often a delay between the cessation of rainfall and the taking of photographs.

Larger flood events occurred in the Halswell Catchment in 1975 and 1977, with both events having return periods of around 20 years. Unfortunately the property is not visible in any of the photographs taken during these events.

The highest flood levels that ECan has for the Halswell River and adjacent ponding areas were recorded during the 1977 event. Flood levels were generally higher in 1977 than in 1975 due to wetter antecedent conditions.

Peak flood levels were recorded at various locations along the Halswell River on 4 July 1977. Interpolating the levels measured at Branthwaites Bridge (upstream) and the ECan yard at Tai Tapu (downstream) gives an estimated peak level of approximately **6.7 metres above mean sea level (m.a.m.s.l.)** at the SH75 Bridge.

The property is within part of the Selwyn District that has been flown by LiDAR; an airborne laser system that maps the ground topography. From comparison of the

**Our Ref:** HAZA/FLD/ASS/CHC/12480

**Your Ref:**

**Contact:** Nick Griffiths

LiDAR ground levels with known survey points the survey has been found to have an accuracy of  $\pm 150\text{mm}$  or better. Enclosed for your information is a map showing ground level variations across the property derived from the LiDAR data. This survey shows ground levels at the property as generally being **6.3 – 7.1 m.a.m.s.l.**

The LiDAR topographical information has allowed staff at Environment Canterbury to undertake detailed computer modelling of Halswell River overflows. Flood ranges modelled have been for estimated flood overflows associated with 2% AEP (Annual Exceedance Probability) (50 year return period) and 0.5% AEP (200 year) flood events in the river. The Annual Exceedance Probability is the probability of a flood of a particular size being equalled or exceeded in any year. The return period is the average time between floods of a particular size.

Floodwater levels at the property are very similar for both of the modelled scenarios with levels ranging from around **6.7 m.a.m.s.l.** near the south-west corner of the property to around **6.9 m.a.m.s.l.** opposite the intersection of Hauschids and School Roads.

It is recommended that any dwelling built at the property should have a finished floor level at least 300 mm above the modelled floodwater levels, i.e. in the order of **7.0 – 7.2 m.a.m.s.l.** depending on the chosen location and at least **400 mm above natural existing ground level.**

A floor constructed to these specifications would likely comply with the Selwyn District Plan requirement to be above the 2% AEP flood level and also the Proposed Canterbury Regional Policy Statement requirement for floor levels be above the 0.5% AEP flood level.

**If a dwelling is to be constructed at the property, a floor level recommendation for the specific dwelling location should be requested from ECan prior to a building permit being obtained.**

The property has also been mapped as being on the Waimakariri River floodplain because of the possibility of Waimakariri River overflows reaching the Halswell River catchment. Because of the low probability of such an occurrence Environment Canterbury has not recommended minimum floor levels to mitigate against such an eventuality. Avoidance of local flooding will also give a reasonable degree of mitigation against flooding from potential Waimakariri River overflows.

Where estimates of flood depths and associated return periods are given above it is important the following matters are understood:

1. The information provided is the best information that Environment Canterbury has available at this time and any assessment of flood levels is based solely on information held by Environment Canterbury.
2. The District Council or neighbours may have further details of flooding which has occurred at this site and which may influence any recommendations made in this letter.

3. This assessment assumes the river control works are maintained at least in their present standard in the future.
4. The location of a stopbank failure or overtopping may vary for different flood events. This may alter flood depths at the site.
5. Changes in the floodplain e.g. raising roads, may alter flood levels at the site.
6. Flood depths, and return periods may change as further investigations into flooding and hydrology in this area are undertaken.
7. **There are many uncontrollable factors that influence flooding. The prediction of flood depths requires many assumptions and is not an exact science.**

Yours sincerely

Nick Griffiths

**HAZARD ANALYST**

Encl. Photo No. 603 (24/08/1986)  
Photo No. 216 (28/07/1994)  
Photo No. 727 (30/08/1992)  
LiDAR Map





216    Tai Tapu (Northwest)





603. Leatham Swamp centre left. Tai Tapu centre right. (North)





727

Tai Tapu (West)

727

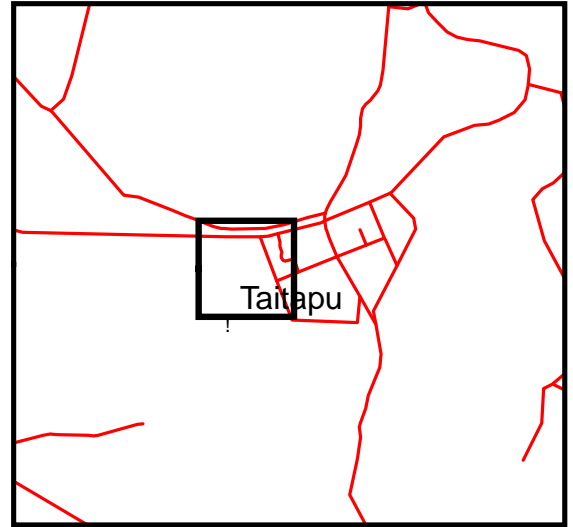


# Hauschids Road, Tai Tapu - LiDAR

Landparcels

Roads

0 50 100 200 Meters



Perymans Road

Lincoln Tai Tapu Road

Riverside Lane

Hauschids Road

School Road

< 5.5

5.5 - 6

6 - 6.5

6.5 - 7

7 - 7.5

7.5 <