

Kirstyn Lindsay

From: Kirstyn Lindsay
Sent: Friday, 29 July 2016 08:50 a.m.
To: Kirstyn Lindsay
Subject: FW: 10 Riccarton Road - sub-2015-108

From: Z1649206 MWH Hazards Team [<mailto:SM-AP-NZ-MWHHazardsTeam@mwhglobal.com>]
Sent: Tuesday, 1 December 2015 3:52 p.m.
To: Lianne Darby
Subject: RE: 10 Riccarton Road - sub-2015-108

Hello Lianne

We have assessed the application in relation to the hazard register, street files and available aerial photography. We have not visited the site.

We have the following comments to make regarding the application.

Proposal

The proposed activity is to subdivide and construct 2 new dwellings on this property.

Plans for the proposal are provided within the application

Hazards

Flooding

The ORC Lower Taieri Floodplain hazards (September 2006) identify the property within zone I – where “Existing protection is provided to a 100 year (1% AEP) flood level, and floors are to be set 200mm above flood level.” This 200mm flooding relates to local ponding, and the dwelling should be set 200mm above any known local ponding levels.

This report was revised and updated by the Otago Regional Council Report on Natural Hazards on the Taieri Plains, Otago, Engineering and Hazards Committee, July 2012. Figure 4.10 of this report places the property within Area 19 – East of Taieri Pond, with the flood hazard characteristics defined for this area as follows.

This area east of the East Taieri Lower Pond is exposed to flood hazard from the Silver Stream, the Owhiro Stream and the hill catchments to the south and from internal runoff. Because of its elevation it is not affected by the flood hazard of the Taieri River. The area lies within the East Taieri Drainage Scheme which provides land drainage to a rural standard (ORC, 2012c).

The floodbanks along the southern side of the Silver Stream contain flows of 260m³/s (the assessed peak flow of the April 2006 event) or more. There are no floodbanks next to this part of the Owhiro Stream but the stream channel has been modified in the past so as to increase its capacity. Despite that, extensive flooding of Gladstone Road South occurred in the April 2006 flood making the road impassable to vehicles and pedestrians.

This report was further updated by ORC report: Flood hazard on the Taieri Plain, Review of Dunedin City District Plan: Natural hazards First revision: August 2015; with the following description:

Description: Internal runoff is the predominant source of flooding in this area, although it is also exposed to flooding from Silver Stream and Owhiro Stream (ORC, 2013) (Figure 49). The southern part of this area was affected by flood flows in the Owhiro Stream in April 2006, making Gladstone Road south impassable to vehicles and pedestrians. Scheduled drains and other overland flow paths provide an important function by conveying floodwater downslope to Area 17 (Figure 49). Structures and earthworks can impede or redirect

07 *At this flow of water. It is noted that drains that form part of the East Taieri Drainage Scheme provide land drainage to a rural standard.*

The depth of water can range from 0.25m in smaller and wider overland flow paths, through to 2m in some drains. Velocity of runoff tends to be relatively slow, although higher speeds can occur due to water overtopping adjacent floodbanks and in the larger drains.

We understand that the Ophiro stream flooding affected the southern portion of this property in the 1923 flood event, within 100m of the proposed dwelling location on Lot 1, and within 300m of the proposed dwelling location on Lot 2.

Liquefaction

The site is recorded on the GNS Assessment of Liquefaction hazards in Dunedin City, dated May 2014, as within: Domain C. The ground is predominantly underlain by poorly consolidated marine or estuarine sediments with a shallow groundwater table. There is considered to be a moderate to high likelihood of liquefaction-susceptible materials being present in some parts of the areas classified as Domain C.

Global Setting

Underlying soils are alluvial plains deposits

The site is generally flat

- LIDAR information provided putting the property ground level at between 12m and 15m.
- There are some local depressions; most notably a 1m deep depression approximately 80m across, situated within Lot 2, approximately 80m west of the proposed platform.
- Ground water will generally sheet to the south towards the Owhiro Stream.
- The proposed dwelling platform on Lot 2 is set at the highest part of the property.
- The proposed dwelling platform on Lot 1 is not situated in any particular high or low spot.

Discussion

There are general concerns associated with ponding and sheet flow of stormwater overland, however, the proposal will not create or exacerbate instabilities on this or adjacent properties

MWH generally recommends that, for larger subdivisions, the requirement to quantify these risk should lie with the developer; however, we believe that the proposed subdivision is not sufficient for this efficiency to be recognised whilst under single-title.

Each proposed title should assess the risk of potential liquefiable ground and required minimum floor level at Building Consent stage.

Advice

We recommend that the application not be declined on the grounds of natural hazards, but that advice be made to the effect:-

Liquefaction

The site is recorded on the GNS Assessment of Liquefaction hazards in Dunedin City, dated May 2014, as within:

- Domain C. The ground is predominantly underlain by poorly consolidated marine or estuarine sediments with a shallow groundwater table.
- There is considered to be a moderate to high likelihood of liquefaction-susceptible materials being present in some parts of the areas classified as Domain C.

Underlying soils have a potential for amplified movement and liquefaction during a significant seismic event. The cases for seismic loading should be addressed at building control stage.

- The Dunedin City Council Building Control Authority will ask for verification that the site is 'good ground' in accordance with NZS3604, Section 3.1.
- This verification may require site investigation in accordance with the standard, potentially including dynamic cone testing to 10m depth to quantify the potential for liquefaction for each dwelling.

- Specific foundation design may subsequently be required, or if the assessed potential movement is significant; specifically designed ground improvement works may be more cost effective.

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Minimum Floor Levels

This property is on flat low-lying property with only Rural protection level, southern parts of the property have been affected by flooding from the Owhiro Stream in the past (1923 even and 2006)

At the time of the Building Consent, the developer must:

- Confirm a minimum floor level to ensure that any development meets Building Act requirements to avoid potential inundation (including flooding, overland flow, and ponding) on the land on which the building work is to be carried out or adjacent landowners' property.
- This proposed level must address the potential for egress of water from the property via secondary flow paths, ensure that construction is not proposed in low-lying areas and that the path of storm water is not displaced from ephemeral flow paths into neighbouring properties.
- Normal building requirements exist to ensure that overland stormwater flows are not interrupted and the dwelling should be situated to avoid any adverse effects from local ponding during storm rainfall events.

Regards

Lee Paterson

Senior Geotechnical Engineer



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