

John Sule

Subject: FW: 33 Gladfield Rd SUB-2018-118 LUC-2018-616 - RFI by Wed 14 Nov and comments by Fri 16 Nov

From: MWH Hazards Team [mailto:MWHHazardsTeam@stantec.com]

Sent: Monday, 19 November 2018 9:36 a.m.

To: Laura Mulder; MWH Hazards Team

Cc: Robert Buxton

Subject: RE: 33 Gladfield Rd SUB-2018-118 LUC-2018-616 - RFI by Wed 14 Nov and comments by Fri 16 Nov

Hello Robert

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 the existing golf course land into two, creating a 5.3ha lot.

Site investigation reports have not been provided.

Plans for the proposal are provided within the application

Hazards

From the Hazard Register, street files, and previously sent emails ; for both this title and nearby properties

- Hazard ID 10111: Intensified shaking, Earthquake Likely Amplification
- Hazard ID 11407: Liquefaction 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.
- Hazard ID 11582: Waterway - Flood Area 18

This area can be affected by flooding in the Owhiro Stream, as well as the Taieri River and runoff (which may include sedimentation) from the hill tributaries to the south. The Owhiro Stream Gated Outfall Structure (OSGOS) is designed to prevent flow from the Taieri River entering this area, while providing the capability for the Owhiro Stream to discharge by gravity into the Taieri River whenever water levels in the river are lower than those in the stream. Ponding occurs behind (to the east of) the flood gate during high-flow events. There is some connectivity between Area 17 (East Taieri Lower Pond) and Area 18, via culverts in the railway embankment that continues in an easterly direction along the edge of the Lower Pond.

Ponding can reach depths of 5m if water were to reach the minimum-crest level of the Taieri River true-left floodbank (Figure 48), and can last for several days. The extent, depth and duration of ponding during each flood event depend on the flood's duration and size.

Flood hazard in this area, immediately south of the Owhiro Stream near the confluence of the Taieri River, is associated with the Taieri River, the Owhiro Stream and the hill tributaries to the south. Part of the area lies within the East Taieri Drainage Scheme which provides land drainage to a rural standard (ORC, 2012c).

Floodbanks that are part of the Lower Taieri Flood Protection Scheme are located next to the Taieri River and along the southern boundary of the East Taieri Lower Pond (Area 17) (OCB, 1974). The Owhiro Stream Gated Outfall Structure prevents flow from the Taieri River entering this area whilst providing the capability for the Owhiro Stream to discharge by gravity into the Taieri River whenever water levels in the Taieri River are lower than those in the Owhiro Stream. Ponding occurs behind (to the east of) the flood gate during high flow events but is less than it would be without the structure.

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Christchurch 8141, New Zealand

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The railway embankment continues on from the floodbank in an easterly direction along the edge of the Lower Pond however culverts in the railway embankment allow backflow from the Lower Pond into this area. The railway embankment therefore does not act as a flood barrier for this area.

Global Setting

The underlying geology consists of alluvial material and relatively flat.

Discussion

The proposed subdivision has no significant earthworks though does have a flooding risk. The natural hazards will need to be managed appropriately as outlined in the conditions and advice below.

We recommend that the application not be declined on the ground of known natural hazards.

There are no general potential instabilities of concern

The proposal will not create or exacerbate instabilities on this or adjacent properties

Advice

The site lies in an area where underlying soils have been identified as having potential for amplified movement and liquefaction during a significant seismic event.

- The cases for seismic loading are normally 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.
- Specific Engineering Design, or exclusion of liquefaction risk may require investigation testing to 10m depth to quantify the potential for liquefaction for each dwelling.

At the time of the subdivision, the developer must, for each potential Lot / Title:

- Confirm a minimum floor level to ensure that any development meets Building Act requirements to avoid potential inundation (including flooding, overland flow, storm surge, tidal effects, and ponding) on the land on which the building work is to be carried out or adjacent landowners property.
- This proposed level must therefore 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.

Conditions

We recommend that the following conditions be required:-

- Specific engineering design is required to address recognised potential liquefaction hazards.
- Any earth fill over 0.6m thick supporting foundations must be specified and supervised by a suitably qualified person in accordance with NZS 4431-1989 Code of Practice for Earthfill for Residential Development
- Slopes may not be cut steeper than 1:1 (45°) without specific engineering design and construction
- Slopes may not be filled steeper than 2h:1v (27°) without specific engineering design and construction
- As-built records of the final extent and thickness of any un-engineered fill should be recorded

Any new stormwater culverts shall be designed by appropriately qualified person/s and ensure that overland stormwater flows are not interrupted and not increase any adverse effects from local ponding during storm rainfall events.

Regards,

Edward Guerreiro

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Civil Engineer

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From: Laura Mulder <Laura.Mulder@dcc.govt.nz>