Connor Marner

From: MWH Hazards Team <MWHHazardsTeam@stantec.com>
Sent: Thursday, 17 August 2017 09:38 a.m.
To: Madeline Seeley
Cc: MWH Hazards Team
Subject: LUC-2017-319 72 Gordon Road Mosgiel, 76 Gordon Road Mosgiel

Follow Up Flag: Follow up
Flag Status: Flagged

Hello Madeline

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 redevelop and expand on BP Service Station in Mosgiel.
Site investigation reports have been provided from Incite titled Assessment of Environmental Effects for Dunedin City Council BP Oil New Zealand Limited.
Plans for the proposal are provided within the application

Hazards
From the Hazard Register, street files, and previously sent emails, the following hazards have been identified:

- Hazard ID 10106 – Land Movement, Alluvial Fans Active Floodwater
- Hazard ID 10111 – Intensified shaking, Earthquake Likely Amplification
- Hazard ID 10141 – Contaminated Land, Underground Storage Tank Removal
- Hazard ID 11407 – Liquefaction Domain B. The ground is predominantly underlain by poorly consolidated river or stream sediments with a shallow groundwater table. There is considered to be a low to moderate likelihood of liquefaction-susceptible materials being present in some parts of the areas classified as Domain B
- Hazard ID 11582 – Overland Flow Path Flood Area 20

  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 20 – Mosgiel, with the flood hazard characteristics defined for this area as follows.

  Mosgiel has limited exposure to flood hazard from the Silver Stream, Owhiro Stream, Quarry Creek, and from internal ponding. Because of its elevation it is not affected by the flood hazard of the Taieri River or the operation (or in-operation) of the Upper and Lower Ponds or by sea level. Part of this area was flooded in 1868 and 1923 (Figure 4.1).
  Floodbanks are located along the length of the Silver Stream, containing flows of 260m3/s (the assessed peak flow of the April 2006 event) or more on the Mosgiel (southern) side of the Silver Stream. As noted above, flow over the true right (northern) bank of the Silver Stream, downstream of Gordon Road, into Area 15 (thence Area 12) occurs when flows exceed about 170m3/s (the assessed threshold flow for the April 2006 event) (Figure 4.26).

Surface flooding and runoff from the eastern hills can cause localized ponding, such as occurred in April 2006, especially in the industrial, southern part of the urban area near Quarry Creek. Quarry Creek has a history of flooding (OCB, 1974). The extent of localized ponding within urban Mosgiel is determined in part by the stormwater network which is designed to provide primary drainage to an urban standard.
Part of the area is located within the East Taieri Drainage Scheme which provides land drainage to a rural standard (ORC, 2012c).
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:
Most of the Mosgiel urban area is elevated slightly above the land on the northern side of Silver Stream (Figure 50) and the land to the south alongside the Owhiro Stream. As such, it has limited exposure to flood hazard from Silver Stream, Owhiro Stream, Quarry Creek, internal runoff from within Area 20, and downslope runoff from Area 21. The floodbanks along the southern (true-left) side of Silver Stream are designed to contain flows that have an assessed return period of about 100 years.

The characteristics of flood hazard (including depth, duration and velocity) within urban Mosgiel are determined in part by the capacity of the drainage network, and most of Area 20 is serviced by an urban standard storm-water network. Heavy-rainfall events that exceed the design capability of this network can result in internal runoff and ponding of floodwater (Figure 51).

During periods of heavy rainfall, surface flooding and runoff from the eastern hills can cause localised ponding, especially in the industrial, southern part of the urban area, near Quarry Creek (ORC, 2013) (Figure 52). The flooding in the industrial area is not directly caused by Quarry Creek overtopping its true-right bank but is the result of an undersized stormwater network (Figure 53). The flooding is exacerbated by the location of the stormwater-network outlets discharging into Quarry Creek. When the water level in the creek is high, flood water can impede the stormwater discharge, and water can back up through the stormwater network causing flooding in the industrial area.

Global Setting
The underlying geology consist of alluvium material in a flat commercial/residential area.

Earthworks / Excavations / Retaining Structures
Significant earthworks are proposed with the installation of two new 100,000L underground tanks. The applicant notes that interlocking sheet piling will be used to support the excavation and fill tested and taken off site. Groundwater was identified 3.3m below ground level and the applicant notes that dewatering of the site will be required when installing the tanks. The applicant is still discussing discharging of dewatering water to Council reticulated stormwater network with Council.

As part of the redevelopment the following earthworks will be required:
400m3 for new shop floor
600m3 for the new tank pit area
800m3 for remainder works (e.g. Drainage, interceptors, sumps etc.)

Discussion
The application does acknowledge risks, and propose remedial measures to minimise disruptions to adjacent to properties.
There are no general potential instabilities of concern
Whilst there are significant excavations, the proposal will not create or exacerbate instabilities on this or adjacent properties if they follow their proposed method of stabilising the excavations.

Advice
We recommend that advice be made to the effect:-

- No earthworks may be undertaken until building consent has been granted.
- The works are close to the boundary, and the planner may wish to consider whether the neighbour is affected by the proposal.

- Prior to undertaking the work, a professional must assess the potential for instability on adjacent properties, as a result of the works.
- Confirmation should be made of foundation depths for existing structures in relation to the proposed earthworks.
- All temporary slopes shall be inspected and signed off by a suitably qualified individual.
- We recommend that appropriate third party liability insurances are in place which identify nearby structures prior to undertaking any excavation that might affect others' land
- Where the long-term stability of other's land or structures may rely upon the continued stability of retaining works, the designer must confirm that the retaining structure can be safely demolished following a complete design life without creating hazards for neighbouring property or structures.
- 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.
- 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

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.
- Further to this, we recommend that specific engineering design be required to address recognised potential liquefaction hazards.
- Specific Engineering Design, or exclusion of liquefaction risk may require investigation testing to 10m depth to quantify the potential for liquefaction for each dwelling.

Kind Regards

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MWH is now part of the Stantec Family.

Dunedin City Council

Memo Regarding LUC-2017-319 and Contamination Investigations and Issues with respect to the BP Service Station at 70 - 76 Gordon Road, Mosgiel

Background

BP Oil New Zealand Ltd (BP Oil) has made application to the Dunedin City Council for a land use consent (LUC-2017-319) with respect to a property at 70 – 76 Gordon Road, Mosgiel. The site is currently a BP service station outlet and the applicant, BP Oil, wishes to expand the current operations significantly, with extra pumps and associated bulk underground storage tankage and the installation of a café and other infrastructure such as a car wash.

Because of its status as a service station the site falls under the F7 category of the Ministry for the Environment's Hazardous Activities and Industries List (the HAIL). Given that soil disturbance is necessary on the site as part of its development (as described in the application document), the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations (the NES) is invoked ("disturbance of soil on a HAIL site").

Accordingly the Dunedin City Council (DCC) has requested Stantec to review the information within a Detailed Site Investigation (DSI) report and an Environmental Management Plan (EMP) that have each been provided to support the application.

DSI Review

A DSI has been prepared for the 70 – 76 Gordon Rd site by Separate Phase Ltd (SPL). This report meets the criteria set by the Ministry for the Environment for the coverage and content of such reports. In the early parts of the DSI, the history and findings of three previous contamination investigations associated with underground storage tanks (USTs) removal at the site are summarised; each of these investigations found only very limited and, in some cases, undetectable concentrations of petroleum hydrocarbons and heavy metals in site soils.

In the current DSI a total of four samples were obtained from two test pits, one at the site where the new tankage is to be installed and the other at the location of new buildings to house the facilities proposed as part of the site upgrade. In neither location did the sampling and analyses reveal any measurable concentrations of Total Petroleum Hydrocarbons (TPH) or BTEX compounds (BTEX = benzene, toluene, ethylbenzene and xylene) above the laboratory limits of detection, and the concentrations of heavy metals found were all at or below accepted background concentrations in Otago soils.

These results therefore endorse the findings of the previous investigations undertaken and provide conclusive evidence for the uncontaminated nature of the site. In keeping with the minimal findings of the DSI the report contains a single recommendation, this being that 'environmental hazards should be managed using a site-specific environmental management plan", and with this being made available for use on the site during future construction activities.

Comments on the Environmental Management Plan

BP Oil has prepared a generic EMP document for use at its sites and it is this document that has been included with the consent application documentation. As such it is not the "site-specific document" that SPL has suggested; however the generality of the EMP makes it perfectly suitable for application to activities at the 70 – 76 Gordon Rd site and in fact there are no site-specific peculiarities at the subject site that require any particular matters to be addressed.

In any event the generic EMP is eminently suitable for its proposed purpose to act as a controlling plan for the potential environmental impacts that might occur at the BP Gordon Rd site.

Applicability of the NES and Associated Consent Status

The DSI demonstrates that no contaminants at the site are present in concentrations that exceed the applicable standards for an industrial/commercial land use (which is the status of the current and proposed use of the site). Under reg 7 of the NES, consent is required for the replacement of the fuel storage system as proposed and for disturbing approximately 1,800m^3 of soil as part of the