

Tahunanui Area Liquefaction Assessment General Information Sheet

An initial geological assessment of the areas in Nelson City that could be prone to liquefaction, given an earthquake of sufficient type and magnitude, identified Tahunanui as a priority for further investigation. Nelson City Council contracted Tonkin and Taylor Ltd to carry out preliminary site investigations to get more information.

Tonkin and Taylor have prepared a preliminary assessment of the likely liquefaction risk called "Tahunanui Area Liquefaction Assessment, 2013". It is available to read at all Nelson Public Libraries and on the Council website nel.so/n/hazards.

In preparing its report, Tonkin and Taylor have used the latest guidance for liquefaction assessment produced by the Government following the Canterbury earthquakes. The investigation has found a definite risk of liquefaction in Tahunanui. The risk across the study area generally increases from the east to the west. However, because of differences in the subsurface materials beneath Tahunanui, there is a big variation in liquefaction potential.

For smaller earthquakes with a return period of 25 years Tonkin and Taylor has found the impacts from liquefaction would be minor. For a 500 year return period earthquake (the event the Building Act requires most buildings to survive) the investigations found the Tahunanui study area would suffer:

- Widespread sand boils that can damage paved areas.
- Lifting of buried pipes (water and sewer) and manholes that aren't properly anchored.
- Failure of shallow building foundations and subsidence.
- Ground levels dropping between 130 mm to 290 mm resulting in increased potential for flooding, and damage to underground services, paved surfaces and buildings.
- Lateral ground spreading within about 100 metres of the shoreline and/or a water course.

What next?

Technical experts will continue to look at information from other liquefaction assessments. More research has been recommended by the contractors to refine the potential liquefaction area and Council will make decisions on that in 2014. After further research, we may be in a position to develop a new policy on how we address the potential for liquefaction in certain areas and community feedback on this will be welcome when the time comes.

In the meantime, to mitigate any potential liquefaction effects, Council may require building foundations to be specifically designed for some sites.

LIM (Land Information Memorandum) and PIM (Project Information Memorandum) interim note

While this information on Tahunanui is still preliminary, because we've received new information we will add an interim note to the property files that we hold. These interim notations will remain while work on finalising this information and ways of building it into our future plans continues throughout 2014.

Tahunanui Area Liquefaction Assessment Frequently Asked Questions

Why is liquefaction a risk in Tahunanui?

The flat land at Tahunanui is comprised of marine sand and sandy gravel. These soil types are the most likely to liquefy during significant ground shaking caused by an earthquake.

What are the effects of liquefaction?

Areas with liquefaction can suffer:

- Widespread sand boils that can damage paved areas.
- Lifting of buried pipes (water and sewer) and manholes that aren't properly anchored.
- Failure of shallow building foundations and subsidence.
- Ground levels dropping between 130 mm to 290 mm resulting in increased potential for flooding, and damage to underground services, paved surfaces and buildings.
- Lateral ground spreading within about 100 metres of the shoreline and/or a water course.

In what situations could liquefaction occur?

The type of shaking that could cause liquefaction is MM VIII (magnitude 8). The return period for a shake of this size is less than 200 years.

An earthquake on the local Waimea-Flaxmore Fault System is the one most likely to generate enough ground shaking to cause liquefaction in any waterlogged sediments.

This information is from page 10 of Mike Johnston's report 'Revised Preliminary Assessment of the Liquefaction Hazard in Tasman and Nelson' (16 February 2013).

What are the main points in the Tonkin and Taylor 'Tahunanui Area Liquefaction Assessment' report?

Tonkin and Taylor's assessment indicates there is a significant amount of variation in liquefaction potential within the Tahunanui study area.

Appendix A of the report provides maps of the area, and the results of "core penetration tests" called CPT. These tests have provided information on the presence of soil layers that have the potential to liquefy.

The summary of the liquefaction risk is on pages 12 – 13 of the report, where the core penetration test (CPT) number from the Appendix A maps is related to a liquefaction severity number (LSN).

For example, the table on page 13 states that CPT1 has a LSN number of 22. The table on page 12 states that the expected ground surface damage for a LSN in the 20-30 range is: "a moderate expression of liquefaction, with some sand boils and structural damage".

Appendix B of the report provides a detailed description of liquefaction and its effects.

How does the Council know this property will be affected by liquefaction when it hasn't been tested?

The extent of the Study Area is based on the type of soils in the Tahunanui area. However, testing done so far on some sample sites shows that the liquefaction risk is variable within the Study Area. Being in the Study Area means a more detailed assessment of the property may be needed if building works are proposed.

How does being in the liquefaction study area affect property values?

The Council cannot make any comment about what the effect on property values may be because the implications will vary from site to site. If there were to be any impacts on values as a result of the liquefaction risk information, this would be determined by sales evidence over a period of time.

How does being in the liquefaction study area affect insurance costs?

The Council cannot advise property owners about the effect this liquefaction risk information may have on their ability to obtain insurance or on insurance premiums. Different insurance providers will have different policies, so they are better able to discuss this. Councils do this kind of work all over New Zealand so it is not a situation unique to Nelson or new to insurance providers.

What if I want to sell this property?

The Council has an obligation to make hazard information available to the public, under the Local Government Official Information and Meetings Act 1987 and the Building Act. That means people can access information held by the Council about their property, and about any property they are considering buying. The Council will place an interim note on relevant land and property information files to inform potential buyers about the information in the new Tahunanui Area Liquefaction Assessment (see the information sheet).

What does an 'interim note' on the property file mean?

The interim note is based on the Council's current information. This "interim status" means that there may be some changes in response to further information.

I'm currently in the process of selling this property – do I need to tell the new owners?

It is desirable that you tell the prospective owner, but you should check your agreement to see if there is a specific obligation to disclose the information. If you are asked a specific question about it, you must provide the answer. It is important that purchasers do their own due diligence on any property they wish to buy.

Will this property being in the liquefaction study area limit the ability to build a new house or extend the existing one?

The Council will need to consider liquefaction risk when administering the Building Act 2004 (including compliance with the Building Code). The Building Code (section B1) requires all building works to be designed to accommodate the loads (including earthquake) that they are likely to experience throughout their life without causing risk to life or loss of amenity.

The site investigation recommendations provided by the Ministry of Business, Innovation and Employment (MBIE) and foundation treatments set out in section 6 of the Tahunanui Area Liquefaction Assessment (pages 16 – 20) are ways to comply with the Building Code.

There are no rules in the Nelson Resource Management Plan (NRMP) related to liquefaction risk.

Can this property still be subdivided if it's in the liquefaction study area?

Subdivision requires resource consent. Liquefaction risk is already taken into account when considering an application to subdivide land within this area.

Are liquefaction rules likely to be included in the Nelson Resource Management Plan in future?

The NRMP is due for review in 2014. At that time, Council will consider whether or not a liquefaction risk overlay on the planning maps and any related rules are required. You will have the opportunity to make a submission at this time.