

# Increased Liquefaction Vulnerability (ILV)

Fact sheet October 2015

## Qualifying for ILV land damage

### What is liquefaction?

Liquefaction occurs where earthquake shaking increases the water pressure in sandy and silty soil layers in the ground. This process results in a

temporary loss of soil strength. Liquefaction can give rise to significant damage – for example, where sediment ejects through cracks to the ground surface.

### What is Increased Liquefaction Vulnerability (ILV) land damage?



When an earthquake causes the land to subside, the non-liquefying crust of the land can become thinner. This effect is shown in the picture above.

This thinner non-liquefying crust means that in future earthquakes the land may be more vulnerable to liquefaction damage than it was before the earthquake. Where this increase in vulnerability will have a material impact on the property, the land has ILV damage.

In December 2014, the High Court decided that ILV is a form of natural disaster damage to land that is covered by the Earthquake Commission (EQC).

EQC only covers ILV damage to insured residential land. This insured land is the land within the property boundary that is:

- under the house and outbuildings (for example, a garage or a shed);
- within eight metres of the house and outbuildings; and
- under or supporting the main access way from the boundary, up to 60 metres from the house and outbuildings.

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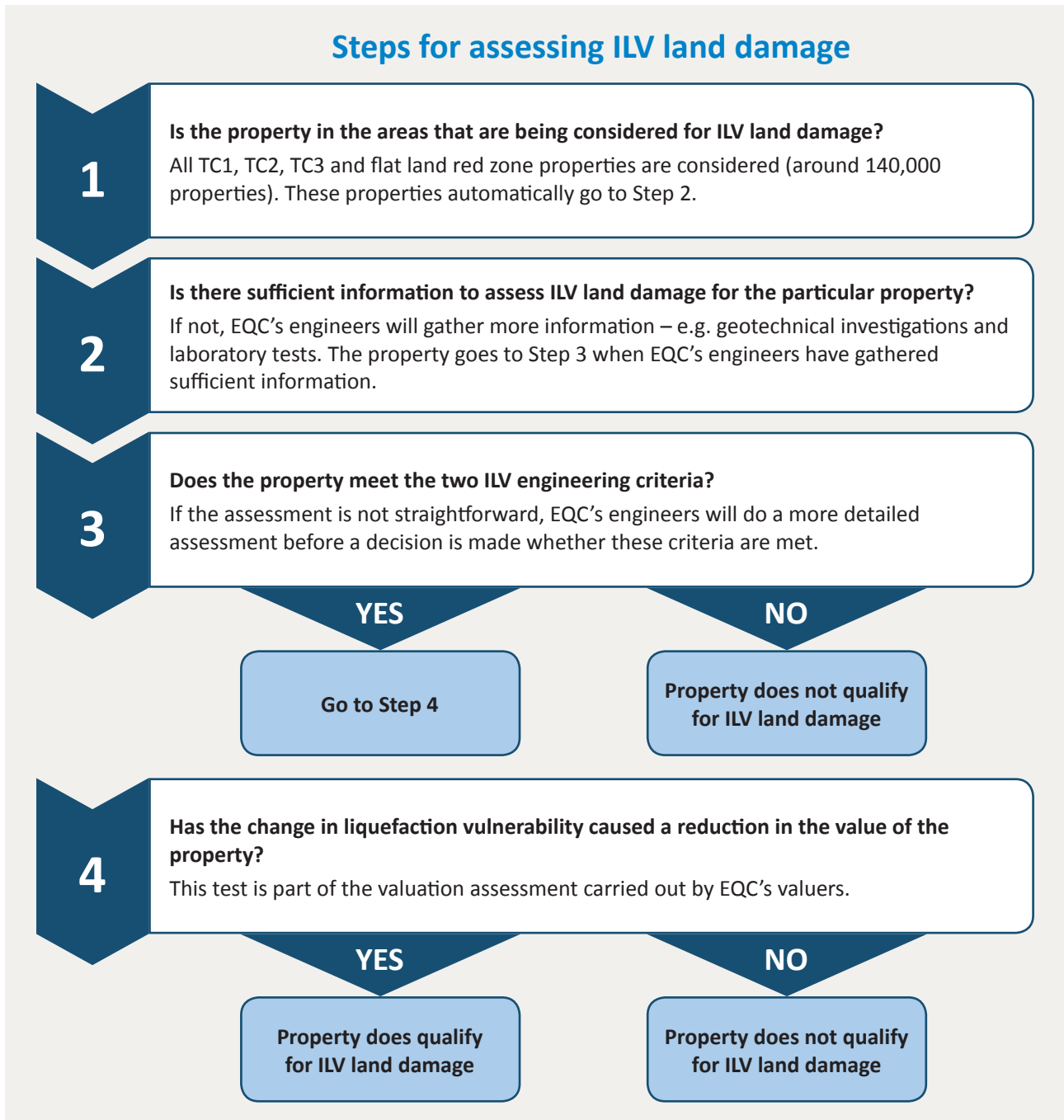
## How is ILV land damage assessed?

EQC has developed an ILV Policy on how it will assess and settle claims with ILV land damage. The ILV assessment and settlement have to be consistent with EQC's obligations under the Earthquake Commission Act 1993. The ILV Policy is available on the EQC website at [www.eqc.govt.nz/ILV](http://www.eqc.govt.nz/ILV).

To qualify for ILV land damage, the insured land must first meet the engineering criteria and then meet the

valuation criterion for a property. This is because ILV involves both a physical change to the insured land as well as a loss of utility (or value) of the insured land and the relevant associated buildings (e.g. the house).

The diagram below shows the steps for assessing ILV land damage.



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## Engineering assessment

When assessing ILV land damage, EQC's engineers consider whether the following two engineering criteria are met:

1. the insured land has material vulnerability to liquefaction damage after the Canterbury earthquakes; and
2. the vulnerability to liquefaction damage of the insured land in future earthquakes has materially increased as a result of ground surface subsidence of the land caused by the Canterbury earthquakes.

These engineering criteria are assessed at up to 100 year levels of earthquake shaking. The choice of these levels is consistent with the assessment of other natural land hazards in New Zealand.

The engineering criteria require an assessment of what level of liquefaction vulnerability (and what level of change in liquefaction vulnerability) is 'material'.

EQC's engineers, Tonkin + Taylor, have developed an ILV Assessment Methodology to assess the ILV land damage which resulted from the Canterbury earthquakes. The methodology contains details of how the ILV land damage assessment is carried out, what is considered 'material' for the assessment of the engineering criteria, and the reasons for the approach adopted.

A key objective of the ILV Assessment Methodology is to use the best scientific understanding of ILV land damage. The methodology also aims to provide a consistent approach across the large number of individual properties that may potentially be affected by ILV land damage because of the Canterbury earthquakes.

The ILV Assessment Methodology has been peer reviewed by an international review panel, comprising world-leading liquefaction experts. The methodology is available on the EQC website at [www.eqc.govt.nz/ILV](http://www.eqc.govt.nz/ILV).

The ILV Assessment Methodology uses relevant information available to EQC. The sources of information used in the methodology include:

- ground surface levels derived from LiDAR (aerial surveys);
- groundwater levels throughout Canterbury. Approximately 1,000 shallow groundwater monitoring wells have been used for this purpose;
- aerial photographs taken after each of the four main Canterbury earthquakes;
- observed land performance relative to the estimated levels of shaking in each of the earthquakes;
- peak ground acceleration models based on recorded earthquake shaking intensity for each of the four main Canterbury earthquakes; and
- soil characteristics data obtained from extensive geotechnical investigations. This includes data from approximately 18,000 Cone Penetrometer Tests (CPTs), 4,000 boreholes, and 6,000 laboratory tests.

Information about land characteristics and performance is kept on the Canterbury Geotechnical Database. This database is publicly available to technical professionals from a range of organisations, including EQC, insurers, and professional engineering companies involved in the Canterbury recovery.

## Valuation assessment

To qualify for ILV land damage, the property must also meet a valuation criterion. This criterion is whether the change in liquefaction vulnerability has caused a reduction in the value of the property (i.e. of the insured land and relevant associated buildings combined). EQC has relied on its expert valuers to assess whether this criterion is met.

## What happens next?

Where a property qualifies for ILV land damage, the next step is settlement.

Settlements for ILV land damage will be made by cash payment. EQC will not itself be repairing ILV land damage. This manner of settlement is consistent with how EQC has settled claims for other types of land damage caused by the Canterbury earthquakes.

When EQC cash settles ILV land damage, it assesses the customer's loss in one of two ways – either:

- the amount it would cost to repair the ILV land damage to the land under and around the edge of the house (the **repair cost**), together with the loss of market value (if any) of the rest of the insured land; or
- the loss of market value of the insured land (and the relevant associated buildings) as a result of the ILV land damage (called Diminution of Value or **DOV**).

Customers whose properties qualify for ILV land damage will receive an ILV land settlement pack after EQC has assessed the ILV land settlement amount. This pack will contain more detail on the way that EQC has assessed their loss for ILV land settlement purposes and the amount of their cash payment.

## You can have your ILV decision reviewed

Customers can ask EQC to review the decisions it makes on whether the property qualifies for ILV land damage and/or the amount of the cash settlement.

EQC will carry out a review where the customer provides EQC with new information or a different interpretation regarding these decisions. For example, EQC may carry out a review of the qualification decision where the customer provides new engineering information about the change in liquefaction vulnerability at the property after the earthquakes.

When EQC reviews its decisions about ILV land damage in light of any new information or interpretation, it will include people with relevant expertise to help consider the issue. The experts included could be, for example, a senior engineer and a senior valuer.

Further information about ILV land damage and about the claims review process can be found on the EQC website at [www.eqc.govt.nz/ILV](http://www.eqc.govt.nz/ILV) or by calling us on 0800 326 243 between 7.00am to 9.00pm Monday to Friday, and 8.00am to 6.00pm on Saturday.



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