National Liquefaction Model – FAQs

This FAQ addresses common questions about accessing, using and interpreting the National Liquefaction Model (NLM) and its outputs. This document is intended to support technical users with using the NLM Portal.

How should I think about uncertainty when using NLM outputs?

Uncertainty is an explicit part of the NLM and varies across the country depending on data availability and local conditions. Areas with limited ground investigation or groundwater data generally have higher uncertainty. Users should interpret outputs as indicative, alongside other relevant information, and with regard to their specific use cases.

An important limitation to consider is that the current model does not include lateral spreading, which can be a significant contributor to liquefaction-related damage in some settings.

Why are some layers view-only and not available for download?

Some layers are designed to be interpreted within the context of the portal and are sensitive to scale, assumptions and uncertainty. Making all layers downloadable increases the risk they will be used outside their intended purposes. Core technical datasets are available for download in standard formats, and this approach will be reviewed as the model evolves.

How should NLM outputs be used alongside other liquefaction information?

NLM outputs are intended to complement, not replace, other liquefaction information such as council maps, site-specific investigations and MBIE/MFE guidance. Because the NLM is national- to regional- scale, locally developed information is more authoritative for site-level decisions.

The NLM can be used as a nationally consistent starting point or sense-check, helping provide context for cross-regional analysis.

Why does the NLM sometimes differ from council liquefaction maps?

Differences are expected. Council maps often include local data, manual refinements and expert judgement, making them more authoritative for local conditions. The NLM uses national datasets and automated methods to ensure consistency across the country. The NLM can be used as a starting point or sense-check, but it does not replace council-developed maps.

Can councils use the NLM for planning or regulatory decisions?

The NLM should not be applied directly for regulatory decisions without further interpretation by qualified professionals and careful consideration of local contexts. The NLM can support councils by:

- Helping identify gaps or inconsistencies in existing mapping
- Providing a nationally consistent reference layer.

Should the NLM be referenced in Land Information Memoranda (LIMs)?

The NLM is not designed for property-level assessment, and councils are not required to search or reference the NLM when preparing LIMs. If councils choose to include information from the NLM, it must be treated in the same way as other hazard information, with clear explanation of its regional scale and limitations, and in line with the Department of Internal Affairs (DIA) guidance on natural hazard information on LIMs, see below:

- Guidance for natural hazard information (DIA, September 2025)
- Scenario-based guidance for including natural hazard information in LIMs (DIA, September 2025)

Does the NLM change liquefaction risk?

No. The NLM does not change the underlying hazard. It improves how liquefaction susceptibility is assessed and compared at a regional scale, based on the latest science and data.

Can the NLM be used for insurance or financial decision-making?

The NLM provides regional-scale insights and is not suitable for property-level pricing.
It can support:

- Portfolio-level risk assessment
- Loss modelling and reinsurance decisions

Retail insurance pricing decisions remain the responsibility of insurers and reflect a wide range of commercial factors.

What data and outputs are available through the NLM Portal?

Through the NLM Portal, users can access:

- Interactive maps and scenario outputs
- Downloadable datasets in standard GIS formats (e.g. shapefiles, GeoTIFFs)
- Technical reports describing model design, inputs and limitations.

These outputs include estimation of liquefaction likelihood and probability of land damage under different earthquake scenarios.

Some interpreted layers are view-only to reduce the risk of inappropriate use outside of their intended context.

Do I need specialised expertise to use the NLM?

Yes. Interpreting the NLM outputs requires technical expertise in geotechnical engineering, hazard modelling or data analysis, and a clear understanding of the model's scale and limitations.
If you're unsure how to apply the outputs appropriately, seek advice from a suitably qualified professional.

Will the NLM be updated over time?

Yes. The NLM is designed to be updated as new data, methods and scientific understanding become available. Version updates and release notes will be published through the Portal.

Can I contribute local data or give feedback?

Yes. Local data such as ground investigations or groundwater information can be contributed via the New Zealand Geotechnical Database, or by contacting NHC. User feedback helps shape future updates and features.

Where can I get more help?

- Visit the NLM Portal FAQs and technical documentation
- Email research@naturalhazards.govt.nz with questions or feedback.