

Science advice

Date	21 March 2025
To	Mackenzie District Council (Meg Justice, Taylor Planning)
CC	Rachel Tutty, Senior Planner, Environment Canterbury Nick Griffiths, Natural Hazards Team Leader, Environment Canterbury
From	Helen Jack, Senior Scientist, Environment Canterbury

Advice on the Natural Hazards Commission's submission point regarding the surface fault rupture definition

Key messages

- The Natural Hazards Commission has requested a change to the surface fault rupture definition in Mackenzie District Council's Proposed Plan Change 28.
- I recommend that the Proposed Plan Change 28 definition is retained without amendment.

Introduction and purpose

Meg Justice from Taylor Planning, working on behalf of Mackenzie District Council, has asked me to comment on the Natural Hazard Commission's submission on Proposed Plan Change 28, specifically their submission point on the surface fault rupture definition.

Proposed Plan Change 28 to the Mackenzie District Plan includes the following definition of surface fault rupture:

Surface fault rupture – means the sudden and permanent fracturing, ripping, buckling and folding of the ground caused by movement on an earthquake fault reaching the ground surface.

The Natural Hazards Commission made a submission point on this definition in their submission on Proposed Plan Change 28, requesting that 'Can involve uplift and subsidence (sinking) of the ground near the fault' be added to the definition, because 'these often cause the greatest damage to infrastructure and buildings located on faults'.

Data and analysis

The proposed surface fault rupture definition, and the detailed mapping of the Ostler Fault as part of the Plan Change, follows the Ministry for the Environment's *Planning for Development of Land on or Close to Active Faults* guidance. This document provides guidance for planning around areas of well-defined (fault scarps – fracturing and ripping) and distributed (areas of broader folding and buckling) fault deformation and does not deal with other earthquake-related hazards 'such as strong ground shaking, liquefaction, uplift, subsidence, landslide and

tsunami'. In my opinion, near-fault uplift and subsidence is included in 'buckling and folding', where land is moved differentially up and down, and it is the fracturing, ripping, buckling and folding of the ground that does the most damage to infrastructure and buildings. If 'uplift and subsidence' is included in the definition, it may be confused with wider-scale coseismic uplift and subsidence, which can affect a much wider area kilometres away from the fault and is not considered 'surface fault rupture'.

Interpretation

I recommend that the Proposed Plan Change 28 definition is retained without amendment.