

# Recent (and planned) work in the It's Our Fault programme

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It's Our Fault programme science leader



- Started in 2006 – 20 year anniversary
- **Vision:** To make the [Wellington Region](#) more resilient to [earthquakes and related hazards](#)

- **Funders:**



**Natural Hazards  
Commission**  
Toka Tū Ake

**Absolutely Positively  
Wellington City Council**  
Me Heke Ki Pōneke



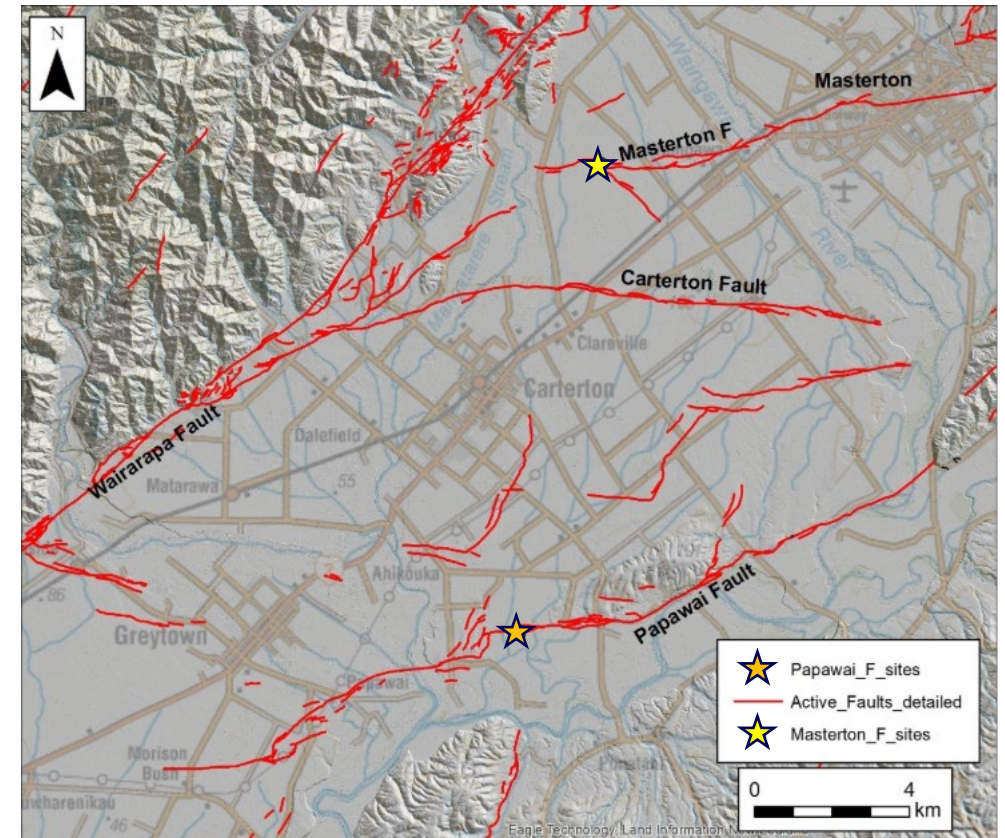


- Just finished year 2/3 of Phase 3
- Projects in year 2 (25/26):
  - Active Fault Paleoseismology - Wairarapa
  - Alpine Fault earthquake risk
  - Impacts on Māori facilities
  - Policy and Planning - Science to Practice Workshop
  - Website and Datasets

# Active Fault Paleoseismology - Wairarapa



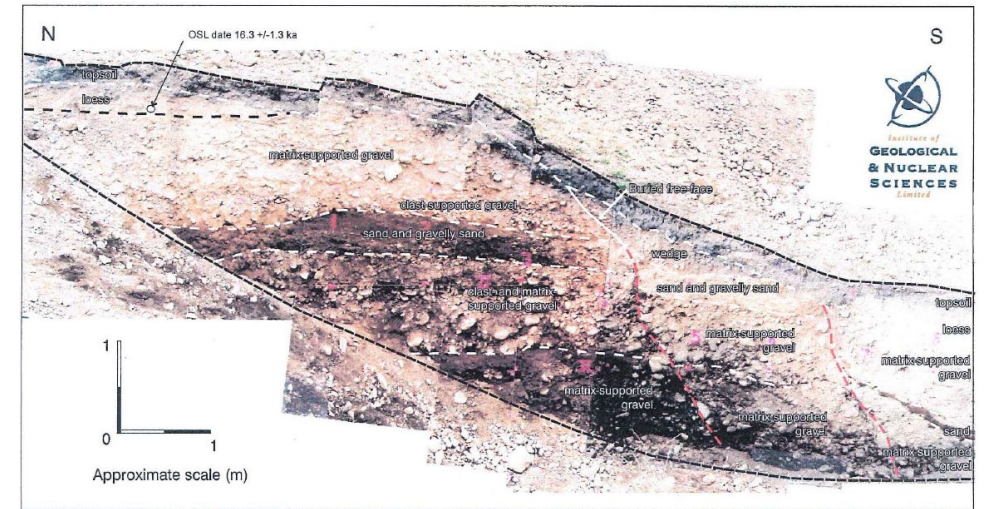
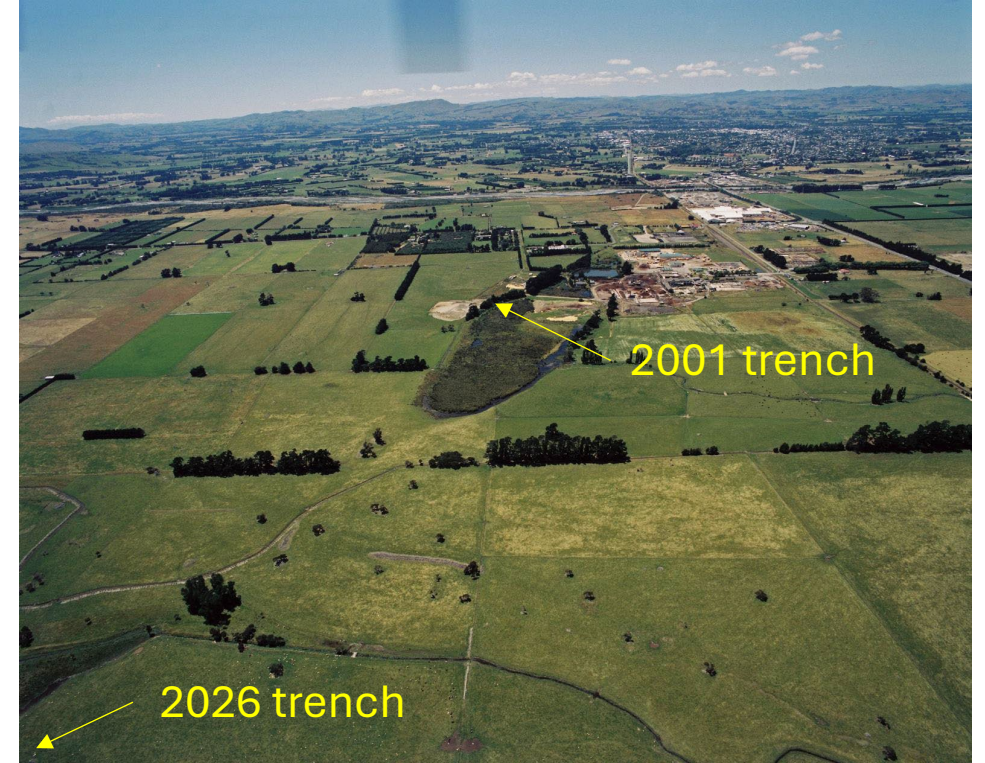
- 2 year project to obtain earthquake information from 2 trenches on secondary faults near towns in the Wairarapa
- Year 1 (25/26) – trenching and submit samples for dating
- Year 2 (26/27) – analysis and comparison with other faults and the Hikurangi SZ



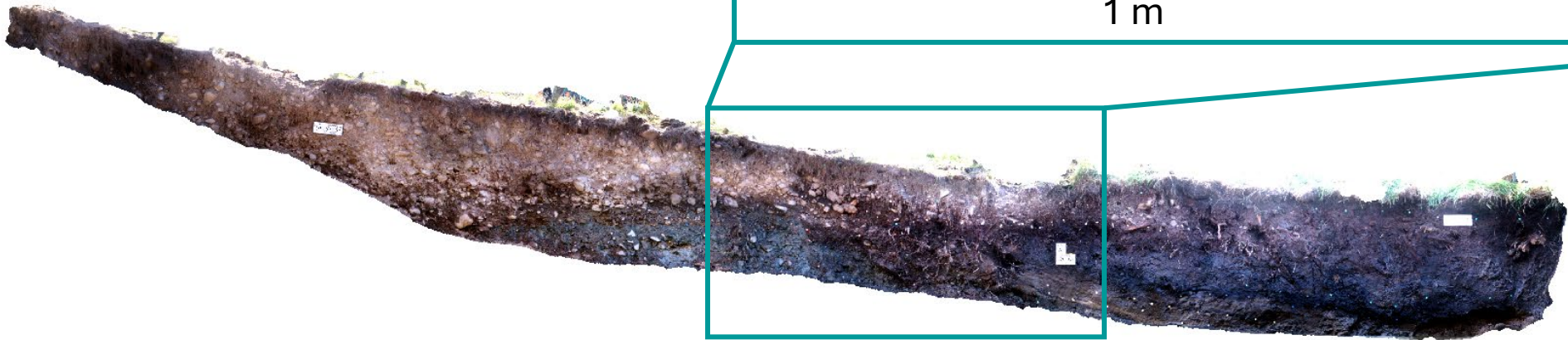
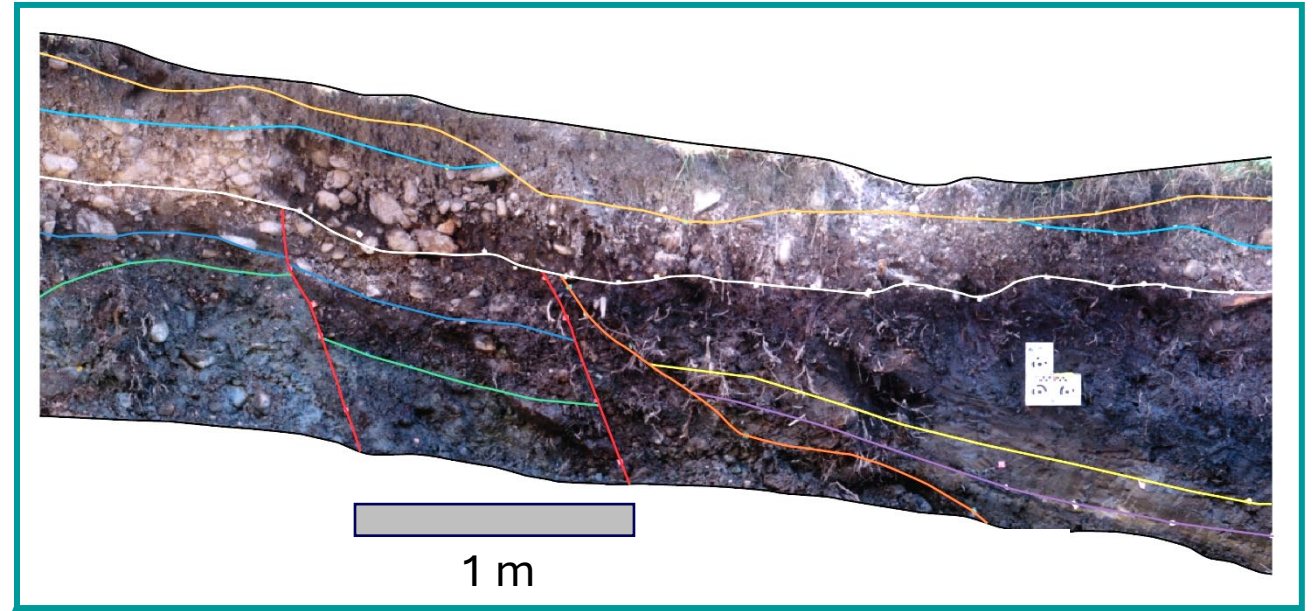


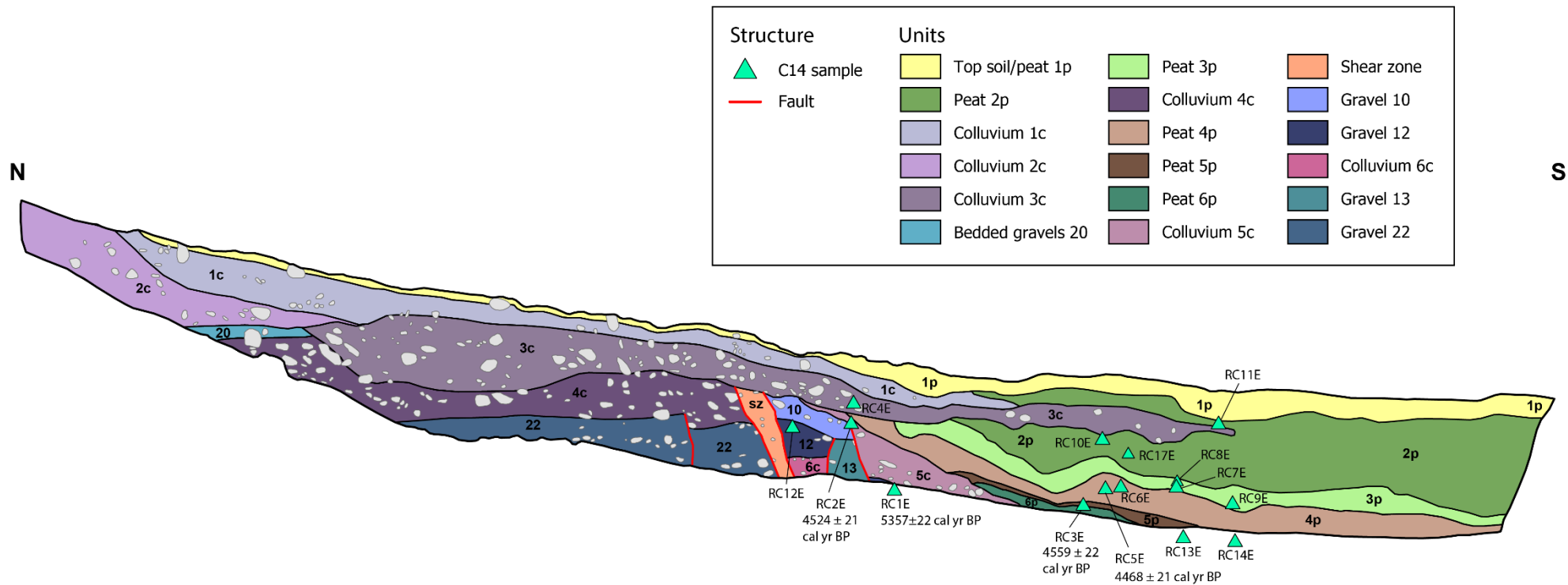
# Masterton Fault

- Runs right through Masterton, ~25 km long
- Only 1 trench previously excavated (in 2001)
- At least 1 earthquake in the last 10,000 years
- Inferred recurrence interval class 2000-3500 years







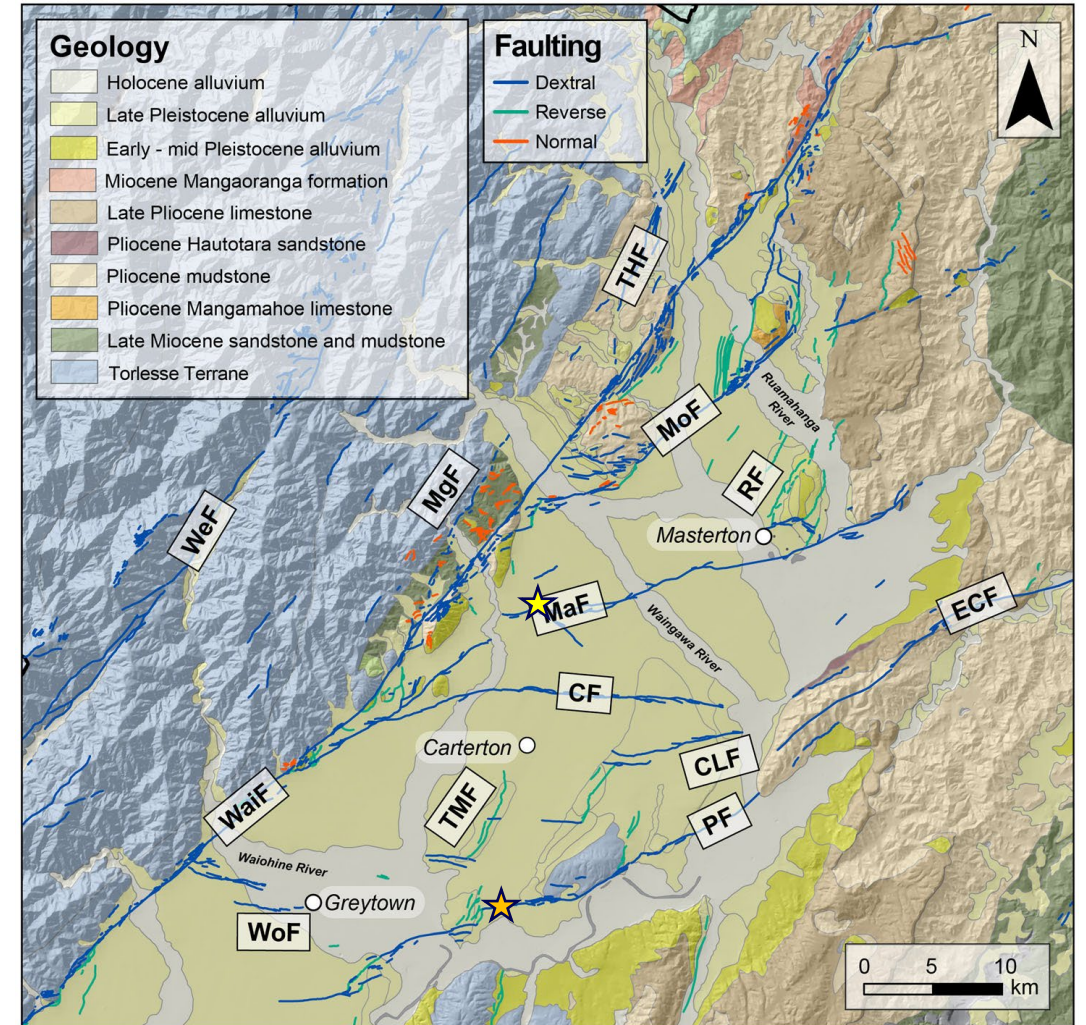


- 22 radiocarbon (C14) samples submitted for dating
- 4 dates back so far, the oldest 5357 ± 22 cal. yr BP
- So 2 earthquakes since then
- Supports the inferred recurrence interval class of 2000-3500 yrs



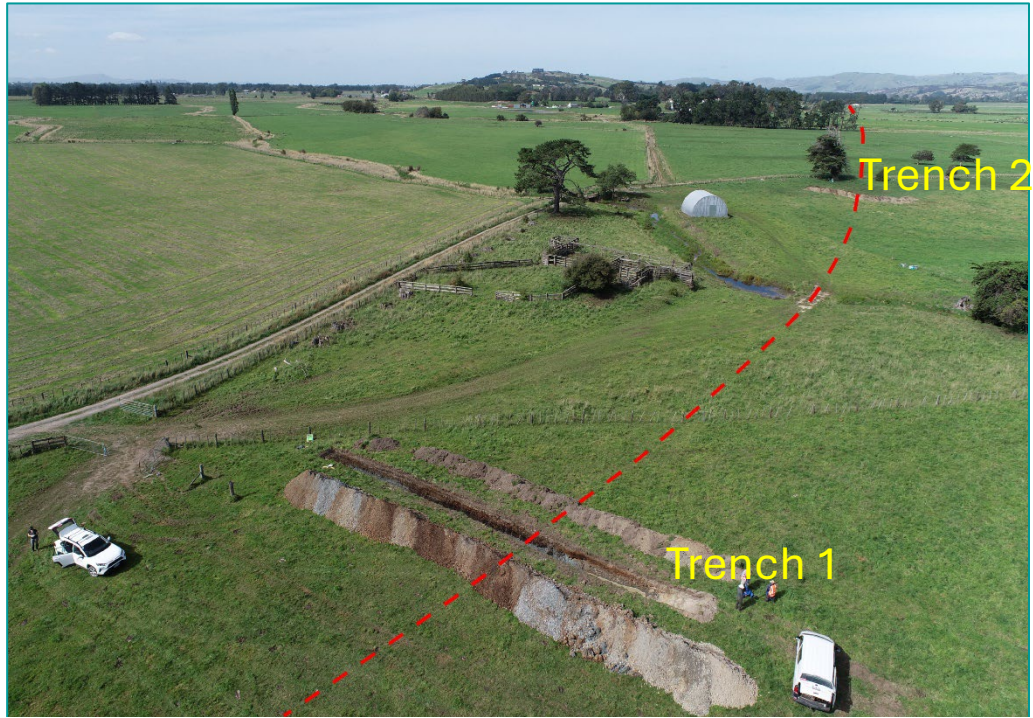
# Papawai Fault

- Newly-identified fault in 2022
- ~26 km long and may connect with the eastern Carterton Fault
- No previous trenches
- Slip rate  $0.8 \pm 0.1$  mm/yr
- Recurrence interval  $2200 \pm 1200$  yrs

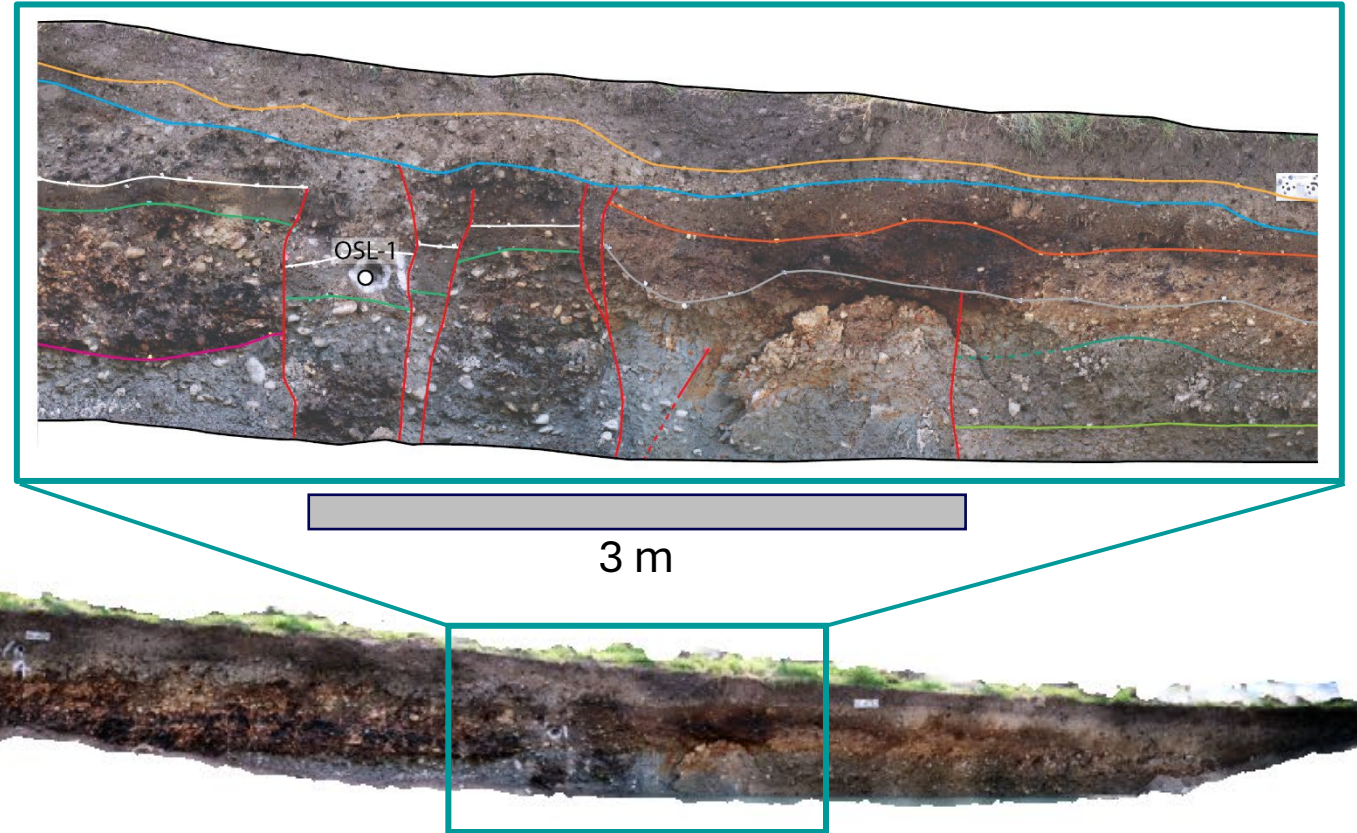


*Coffey et al. (2025)*





- 2 trenches revealed a ~3 m wide fault zone
- 3, possibly 4, earthquakes



- 2 radiocarbon samples and 7 OSL samples collected - currently being processed

# Alpine Fault earthquake risk

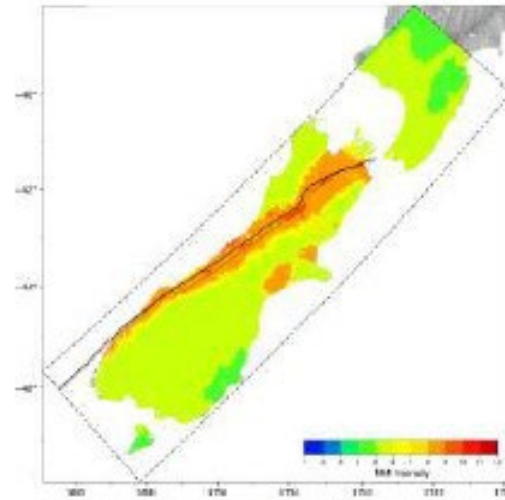
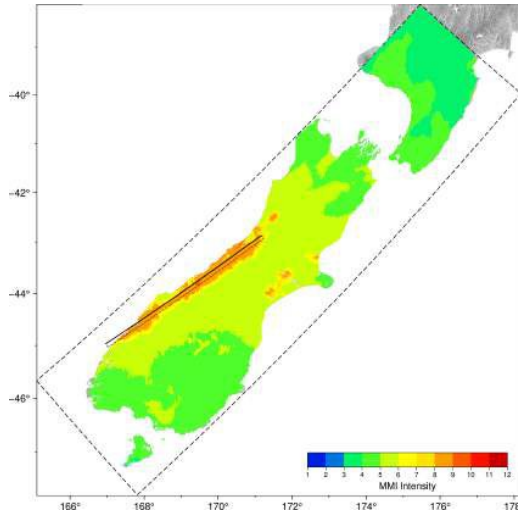


RI ~250 years

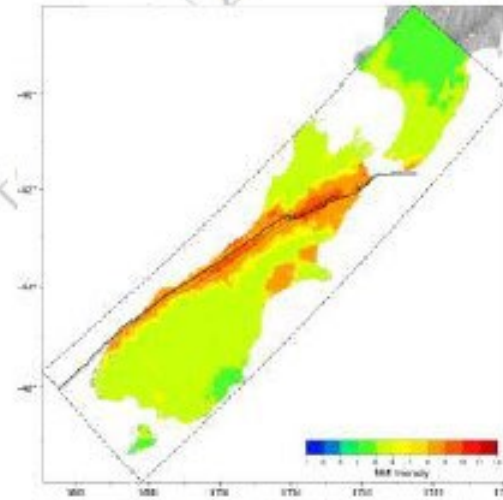
RI ~6600 years

RI ~3200 years

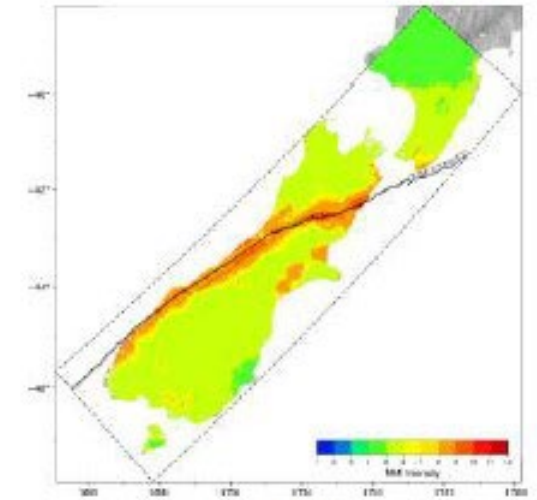
RI ~3100 years



(a) Wairau



(b) Clarence



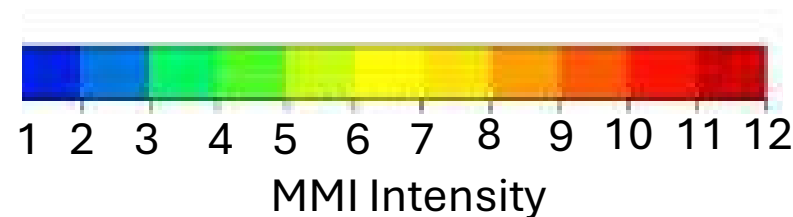
(c) Hope

Alpine F central (F2K) -  
original AF8 scenario -  
extended to N

75% probability in the  
next 50 years

AF8+, multi-fault, scenarios

**Ground shaking in Wgtn ≤2016 Kaikōura Earthquake**



*Bradley et al. (in prep.)*



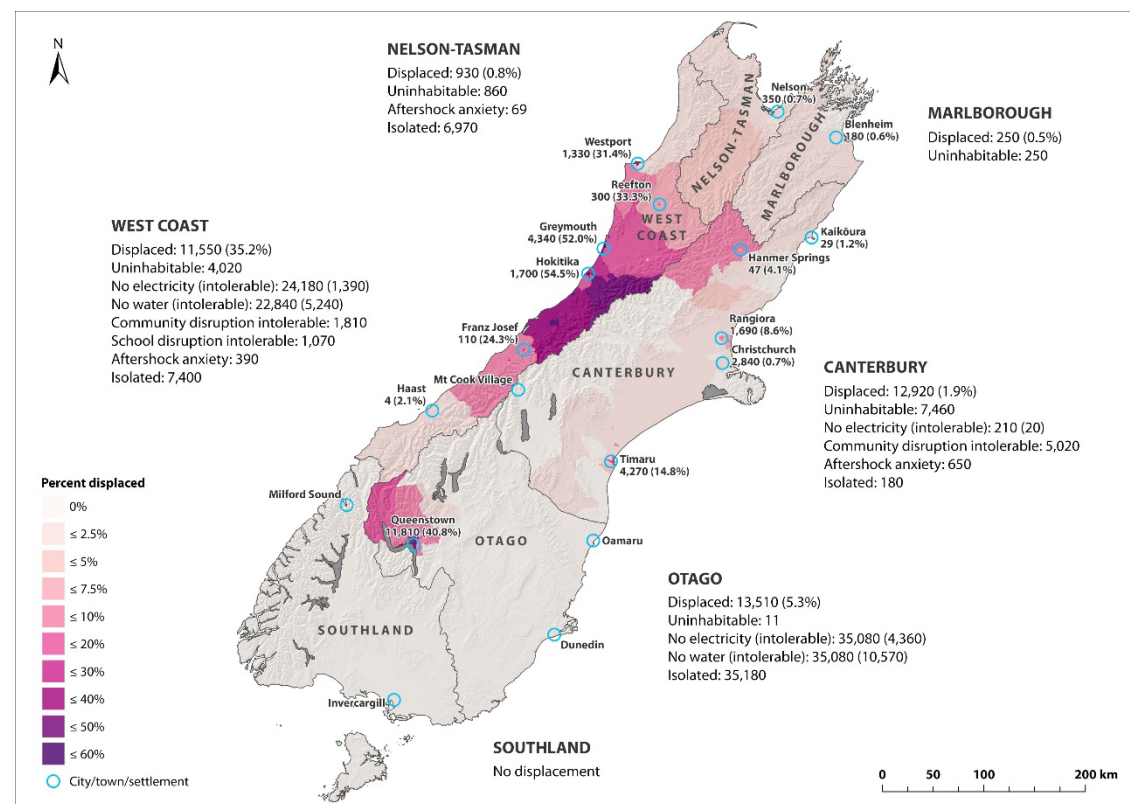
- Workshop to prioritise impact modelling:

- Building damage / direct loss
- Household impacts / displacement / demographics (over time)
- Human casualties (by time of day)
- Infrastructure outage zones / restoration times (electricity / water)
- Road access disruption
- Household isolation from services

- Lower priority options:

- Direct damage to utility infrastructure (electricity / water)
- Fire following earthquake

2 weeks after an AF8 earthquake

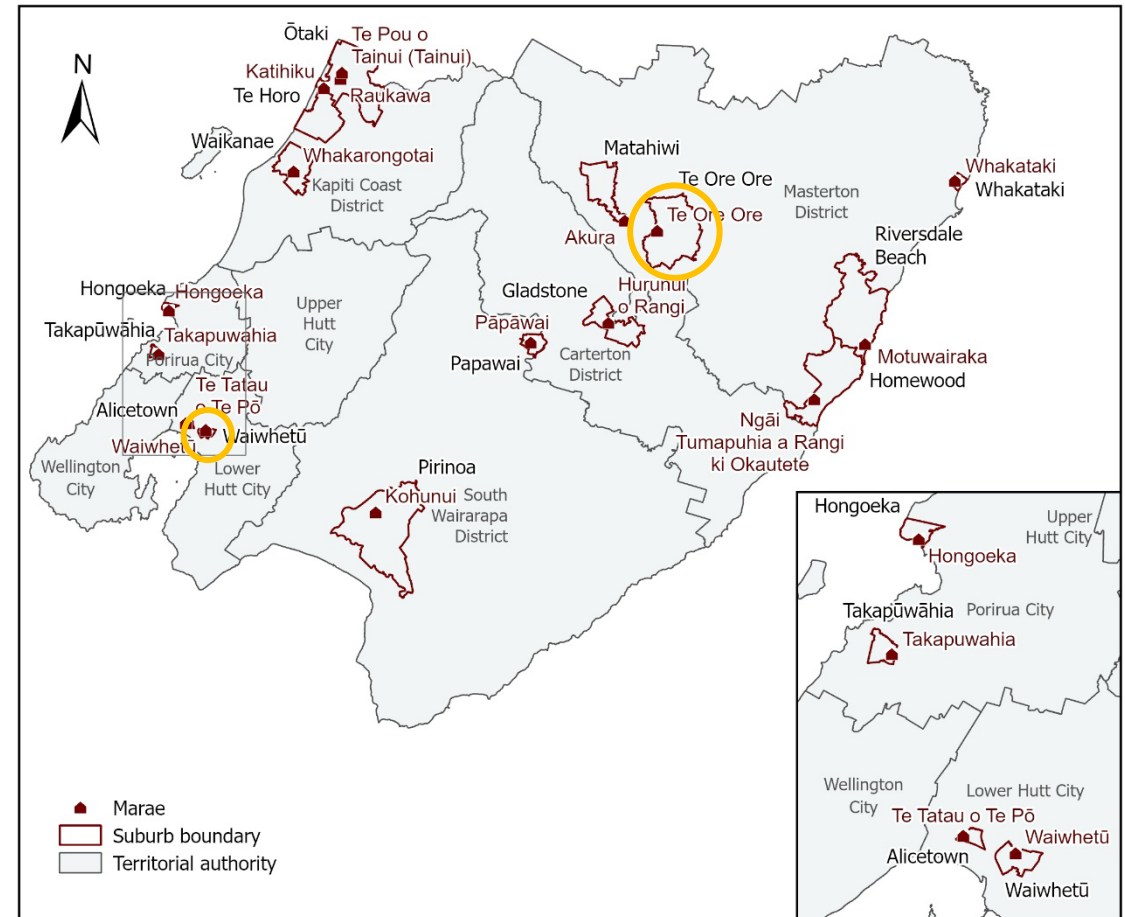


- Ground shaking in Wellington doesn't trigger any models



# Impacts on Māori facilities

- Two “Māori communities” were identified from a regional-scale, desktop geological hazards risk assessment in 2025
- Te Ore Ore near Masterton
- Waiwhetū in Lower Hutt



*Lin et al. (2025)*



- Hui to discuss the projects and priorities
- Te Ore Ore interested in what will happen to their rivers following an earthquake
- Hazard maps and preliminary risk calculations for earthquake shaking, active faults, liquefaction, landslides, flooding





# Policy and Planning – Science to Practice workshop

- Co-developed with KCDC
- Programme:
  - Overview risk profile
  - Hikurangi subduction earthquakes
  - Active Faults
  - Tsunami
  - Landslides
  - Flooding
  - Risk and fragility



# Website and Datasets

- Ongoing project to add publications, team and project descriptions to the IOF website
- Ongoing project to make datasets publicly available
  - Some datasets added to national databases (e.g., NZ Paleoseismic site database)
  - Some added to the GNS Dataset Catalogue – Wellington Region Liquefaction, Kāpiti Coast Geomorphology
  - Updated resource links on IOF website

The screenshot shows the GNS Science Dataset Catalogue interface. At the top, there's a header with the GNS logo, 'GNS Science Dataset Catalogue', a search bar, and a map icon. Below the header, there's a 'Back to search' button and 'Download' and 'Display mode' buttons. The main content area is titled 'Detailed geomorphological mapping of the coastal plain of the Kapiti Coast District'. It contains two paragraphs of text describing the GIS data and the accompanying report. A blue arrow points to the 'Distribution' tab in the navigation bar. Below the tabs, the 'Distribution' section is expanded, showing 'Distribution format' (File Geodatabase Feature Class (10.2)) and 'Digital transfer options' (OnLine resource: Kapiti Coast Geomorphology digital data (WWW:LINK-1.0-http--link) and OnLine resource: GNS Science Report SR\_2016-037.PDF). On the right side, there's a sidebar with 'Overviews', 'Spatial extent', 'Share on social sites', 'Access to the catalogue', and 'Associated resources'.

GNS Science Dataset Catalogue

Search Map

Back to search

Download Display mode

### Detailed geomorphological mapping of the coastal plain of the Kapiti Coast District

This Geographic Information Systems (GIS) data and the accompanying report outline the surface geomorphology of the coastal plain of the Kapiti Coast District, with emphasis on the area west of State Highway One or the Main Trunk Railway. Geomorphological units were mapped directly from detailed aerial photograph mosaics and regional light detection and ranging (LiDAR) derived topographic base maps. The high resolution (1 m ground resolution) provide enough detail to enable the boundaries of geomorphic units to be located to within 10 metres in most cases, and to within 5 metres in some instances. The mapping of discrete geomorphic units of the Kapiti Coast District has highlighted the diversity of geomorphic features on the coastal platform. The range of geomorphic units mapped includes dune systems of five different ages, intervening dune deposits including beach ridges and peat swamps, and a variety of alluvial features such as fans and stream and river terraces. All geomorphic units have been mapped remotely as part of this desk-based study, but have been correlated with published and unpublished information where possible.

The geomorphology of the coastal plain of the district reflects the competing geological processes between the uplifting and eroding Tararua Range to the east, and coastal-dominated processes to the west. Eroded sediment forms fans along the range front or is delivered to the coast mainly via the Otaki locations or materials that may be expected to be encountered. The data, in future, may prove useful in additional applications such as assisting in the determination of earthquake ground shaking subsoil class and liquefaction potential. The scale of the mapping, however (at 1:25,000 or better in some areas), is not intended to be site-specific.

DOI: <https://doi.org/10.21903/10.21903>

Identification Distribution Metadata

#### Distribution

**Distribution format**

- File Geodatabase Feature Class (10.2)

**Digital transfer options**

- OnLine resource**  
[Kapiti Coast Geomorphology digital data](#) (WWW:LINK-1.0-http--link)  
ESRI geodatabase format
- OnLine resource**  
[GNS Science Report SR\\_2016-037.PDF](#)  
Kapiti Coast Geomorphology Science Report SR\_2016-037 to accompany GIS data

Overviews

Spatial extent

Share on social sites

Access to the catalogue

Read here the full details and access to the data.

Associated resources

geomorphological\_boundaries

Child record

geomorphological\_linears



# 26/27 projects

- Active Fault Paleoseismology – Wairarapa
- Hikurangi Subduction Earthquake – Impact Modelling
- Planning and Policy – Regional spatial planning
- Outreach, Website and Datasets
- Wellington Earthquake Resilience Collaboratory – 5 Nov 2026, June-July 2027



# IT'S OUR FAULT

N Ō M Ā T O U T E H A P A

**Increasing Our Resilience**  
TE WHAKAPIKI MANAHAU

WELLINGTON EARTHQUAKE  
RESEARCH PROGRAMME

<https://www.itsourfault.org.nz/>