

An investigation into newly identified faults in the Wairarapa

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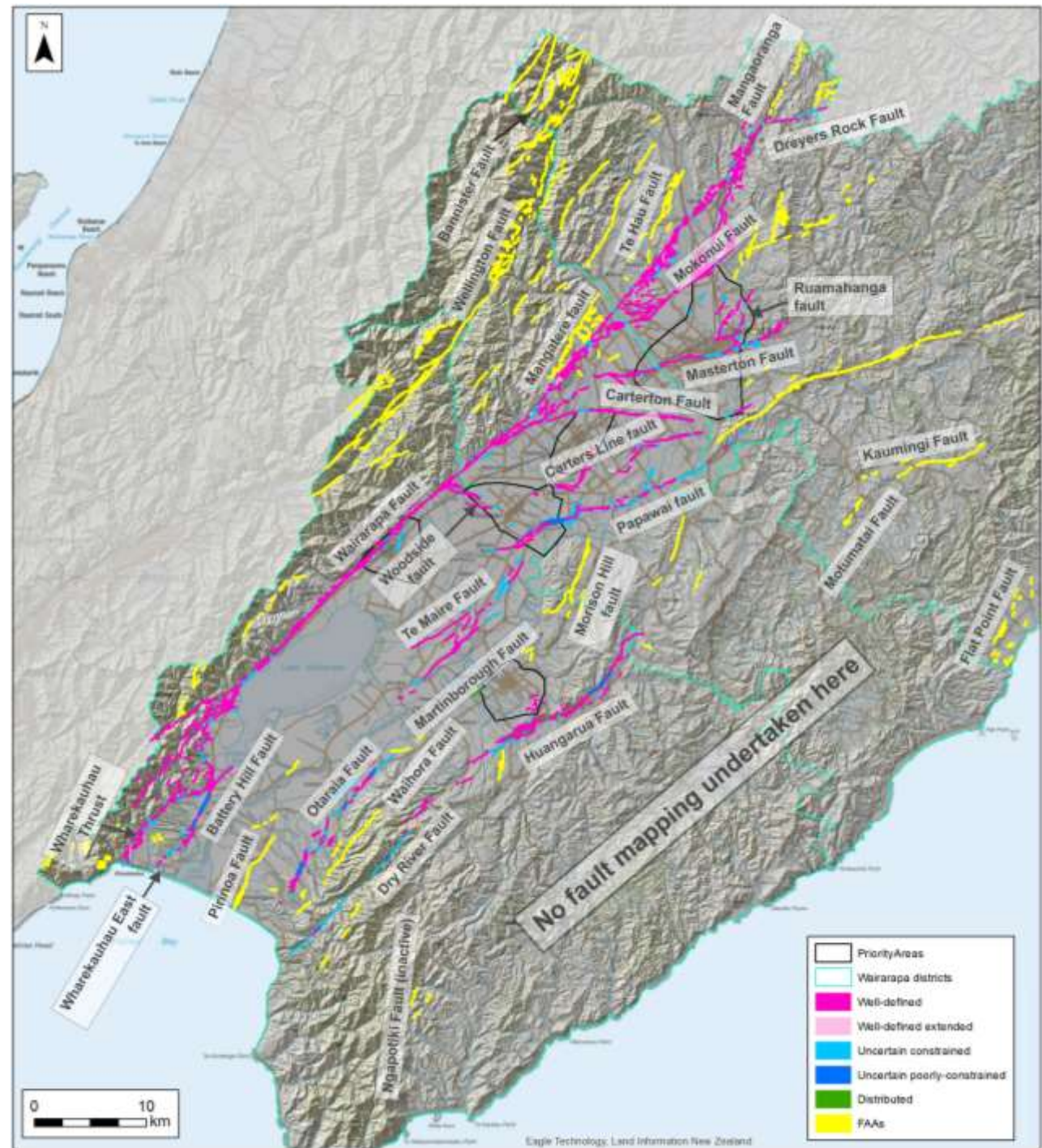
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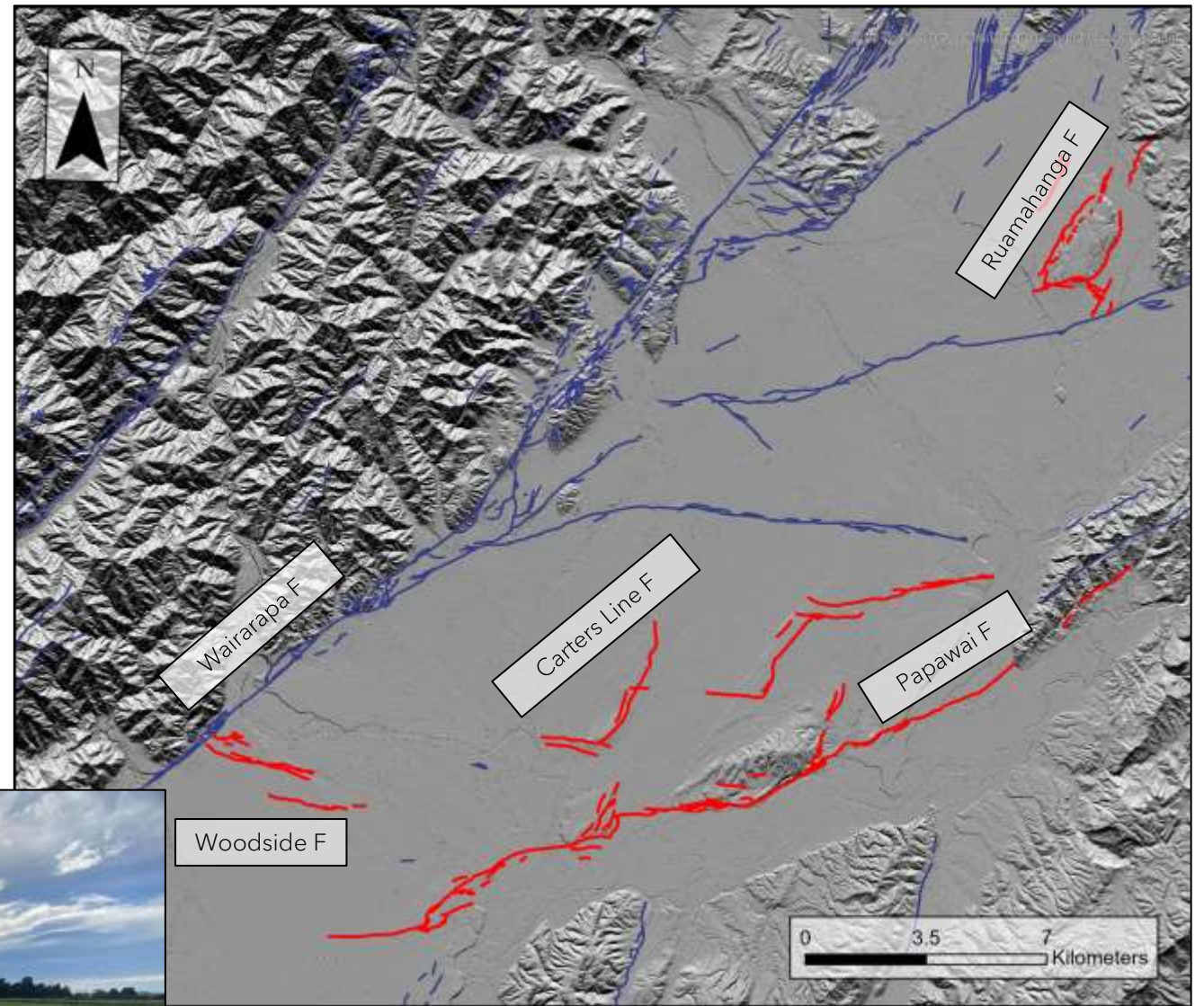
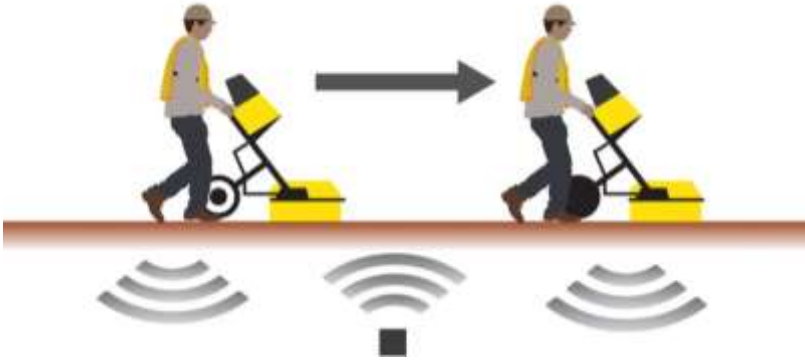
Wairarapa active fault mapping

- GNS Science report by Litchfield et al. (2022)
- Active faults were mapped using LiDAR in the combined Wairarapa district.
- Many new strands were mapped on existing faults and seven new faults were identified.
- Of these new faults, four were close to metropolitan centres:
 - Woodside fault
 - Carters Line fault
 - Pāpāwai fault
 - Ruamahanga fault



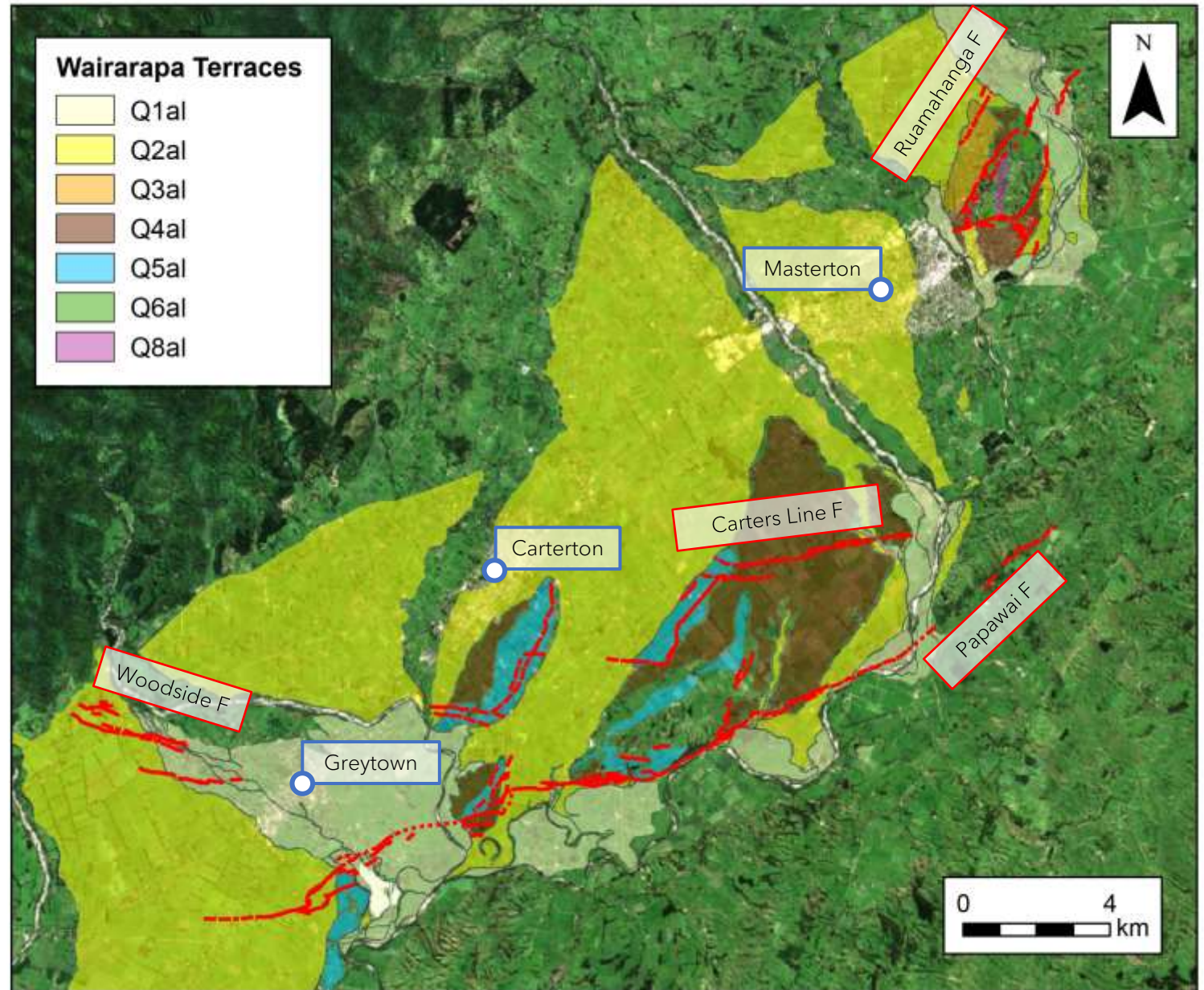
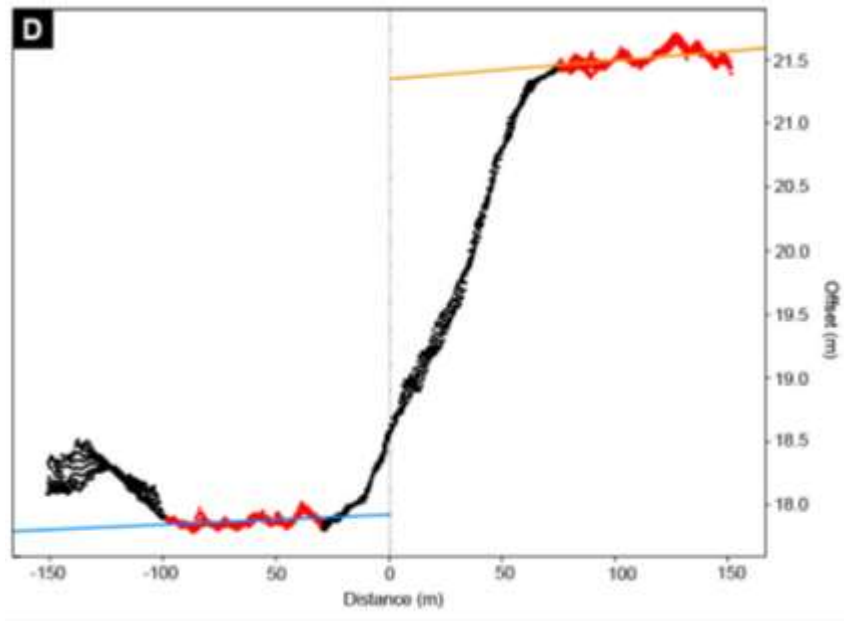
Research aims

- 1) Investigate newly mapped faults using Ground Penetrating Radar (GPR).



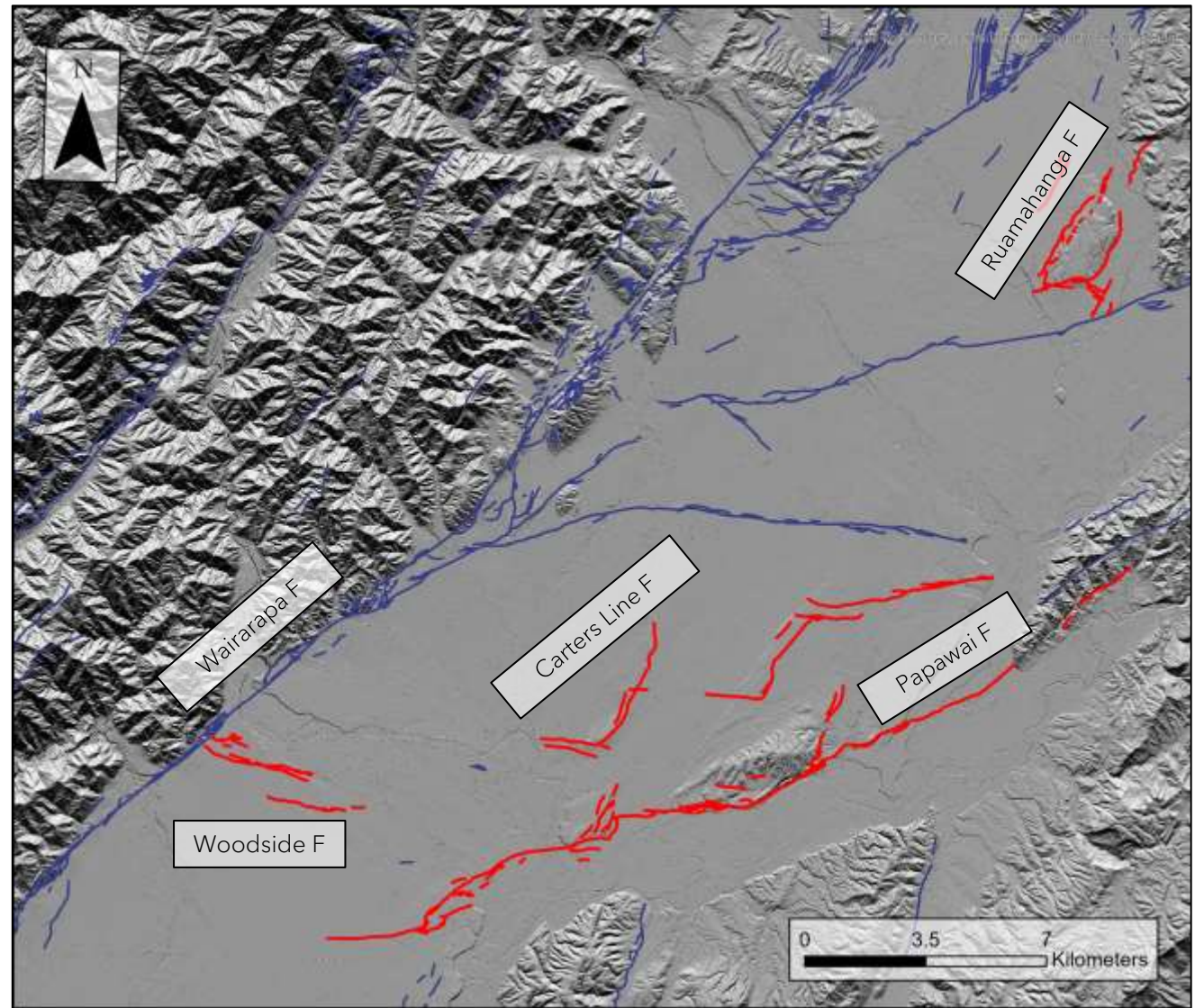
Research aims

- 1) Investigate newly mapped faults using Ground Penetrating Radar (GPR).
- 2) Develop estimates of slip rate based upon geomorphology



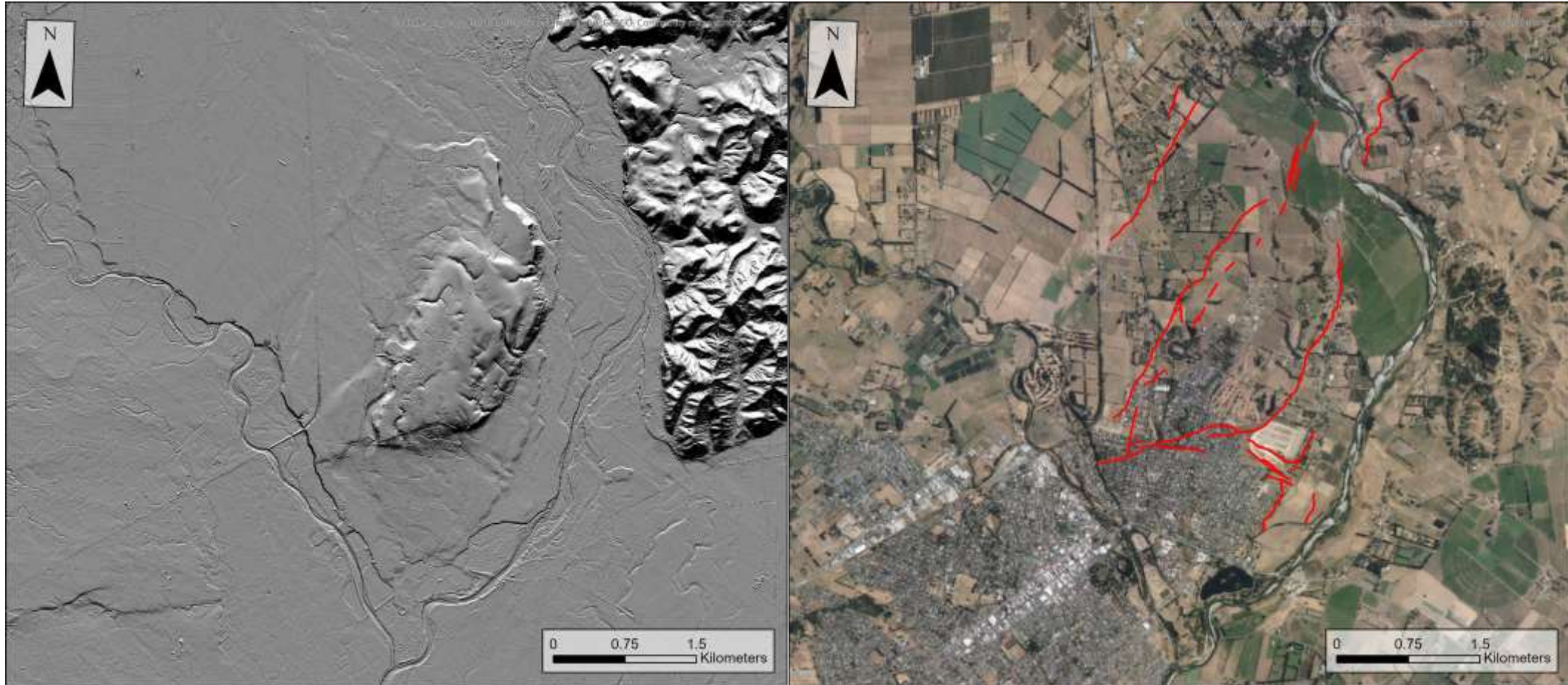
Research aims

- 1) Investigate newly mapped faults using Ground Penetrating Radar (GPR).
- 2) Develop estimates of slip rate based upon geomorphology
- 3) Locate sites for future paleoseismic work

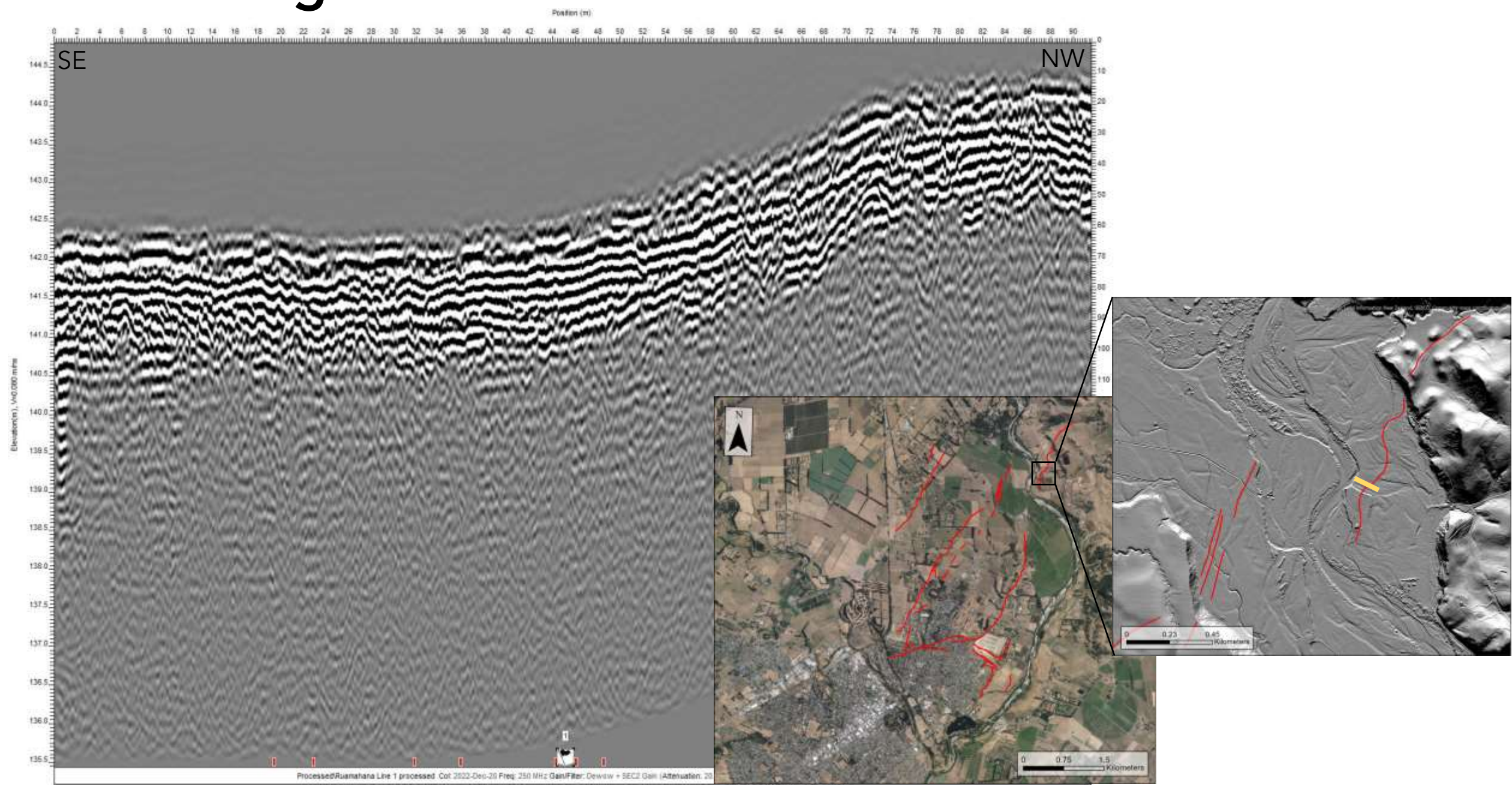


Ruamahanga fault

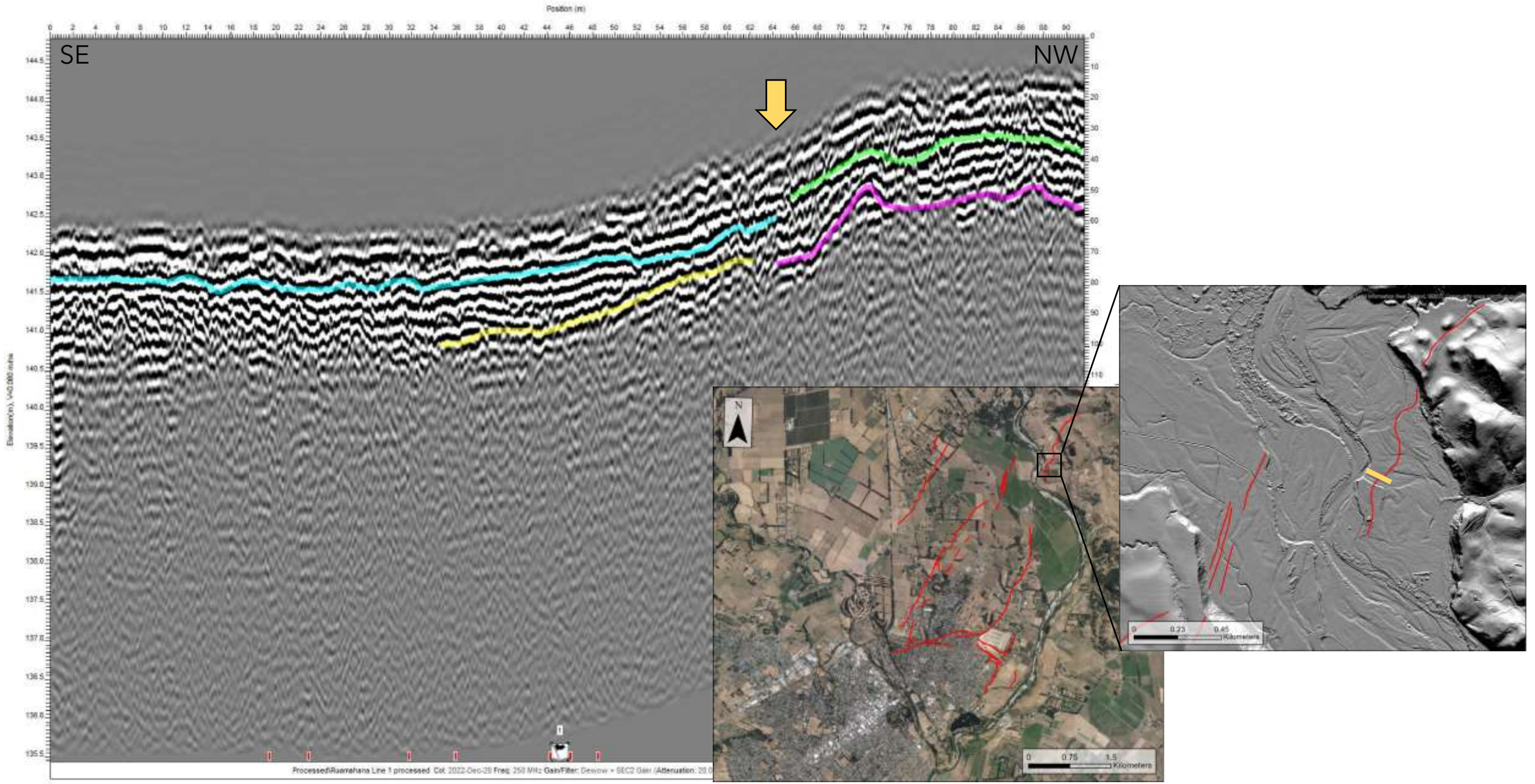
- Dextral strike-slip and reverse traces
- RI Class II (>2000 to ≤ 3500 years)



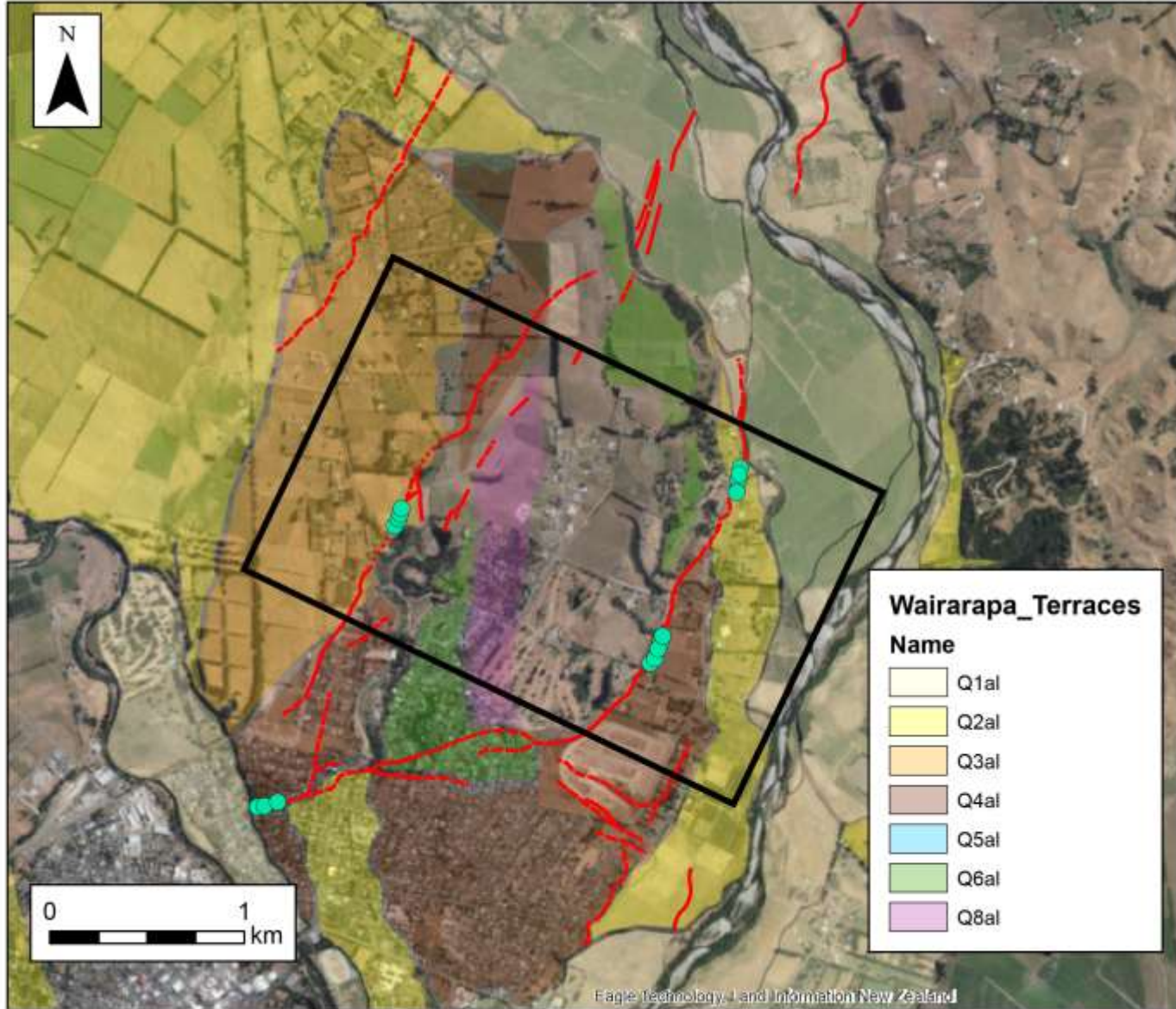
Ruamahanga Fault



Ruamahanga Fault



Ruamahanga Fault



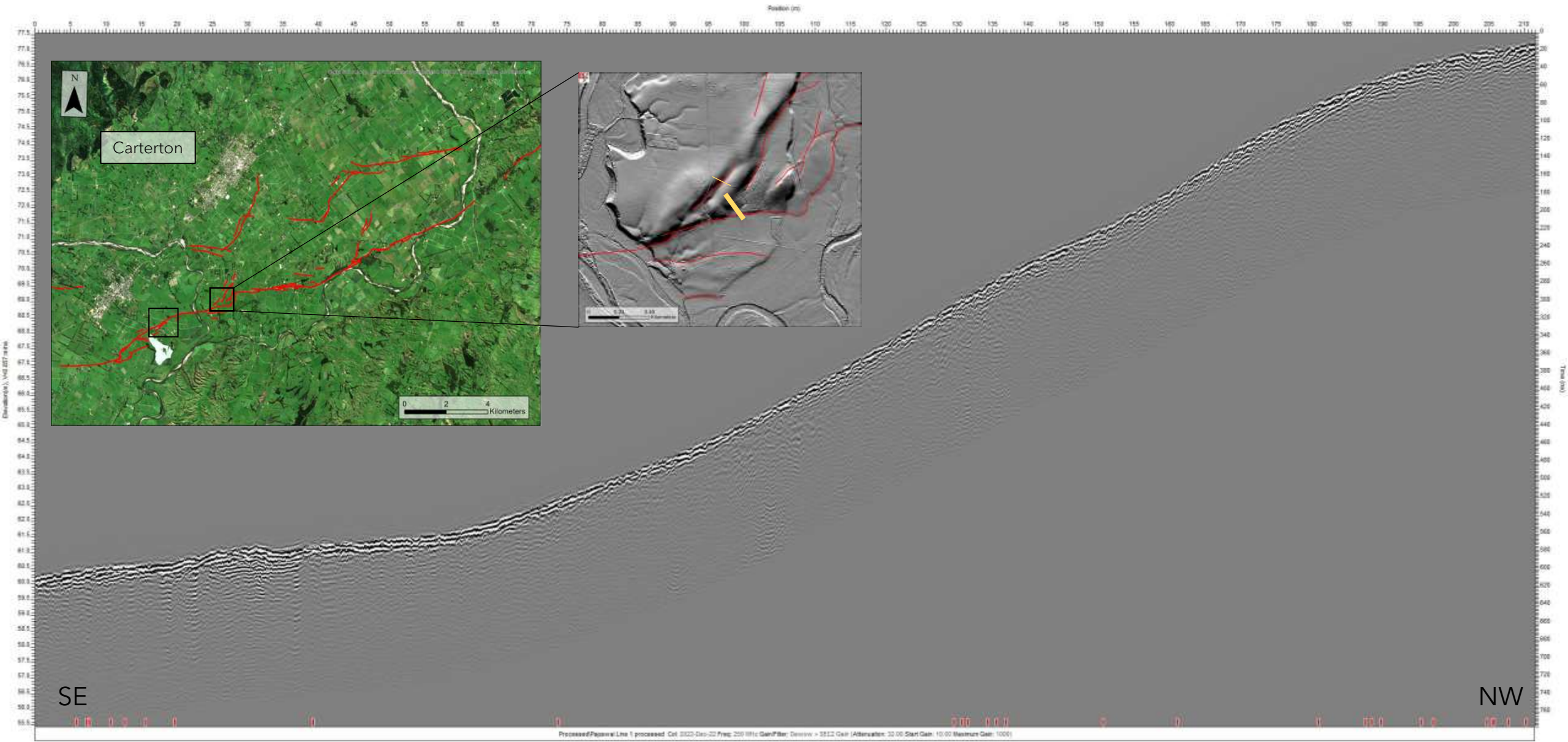
Vertical slip rate:
 0.7 ± 0.4 mm/yr

Pāpāwai fault

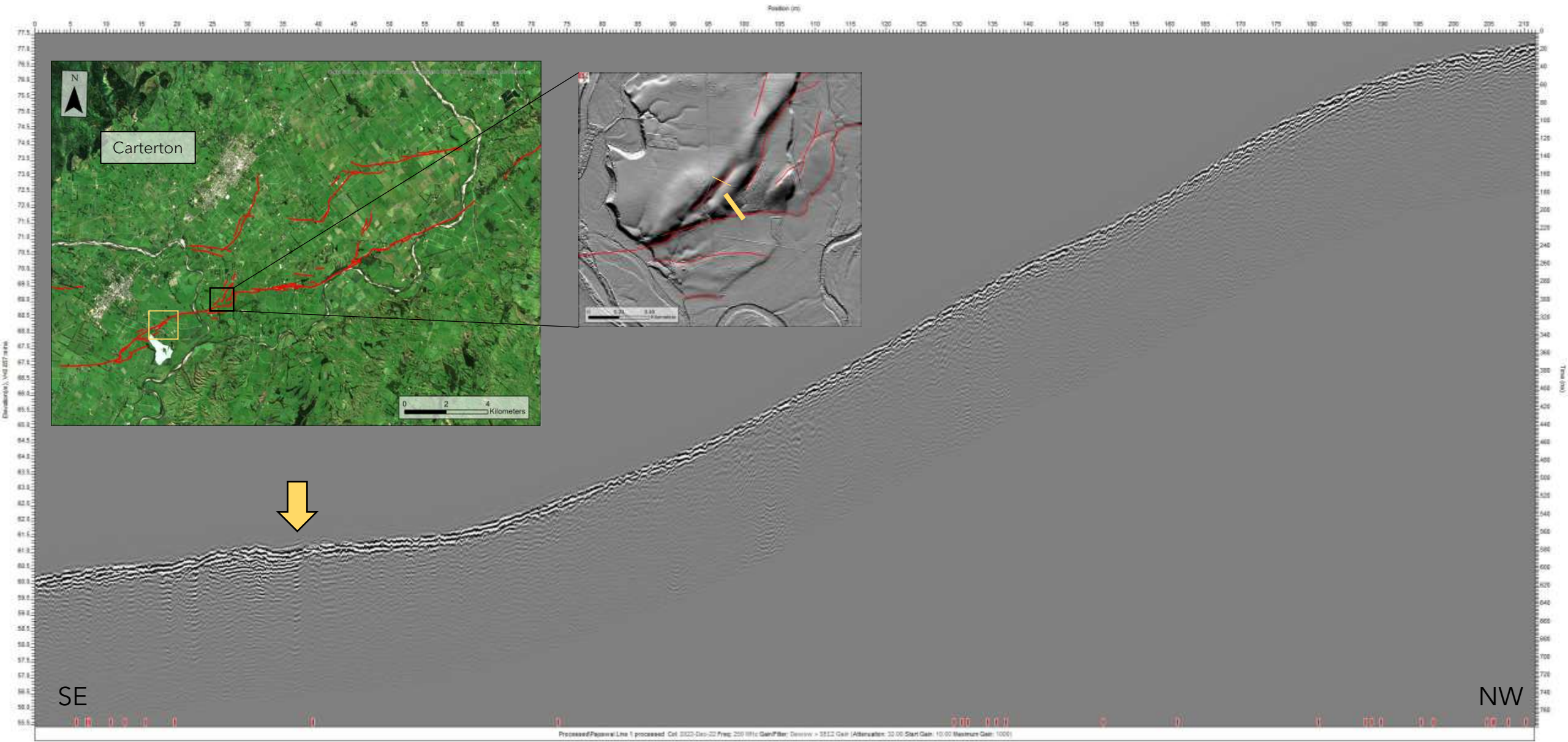
- Dextral strike-slip and reverse traces
- RI Class II (>2000 to ≤ 3500 years)



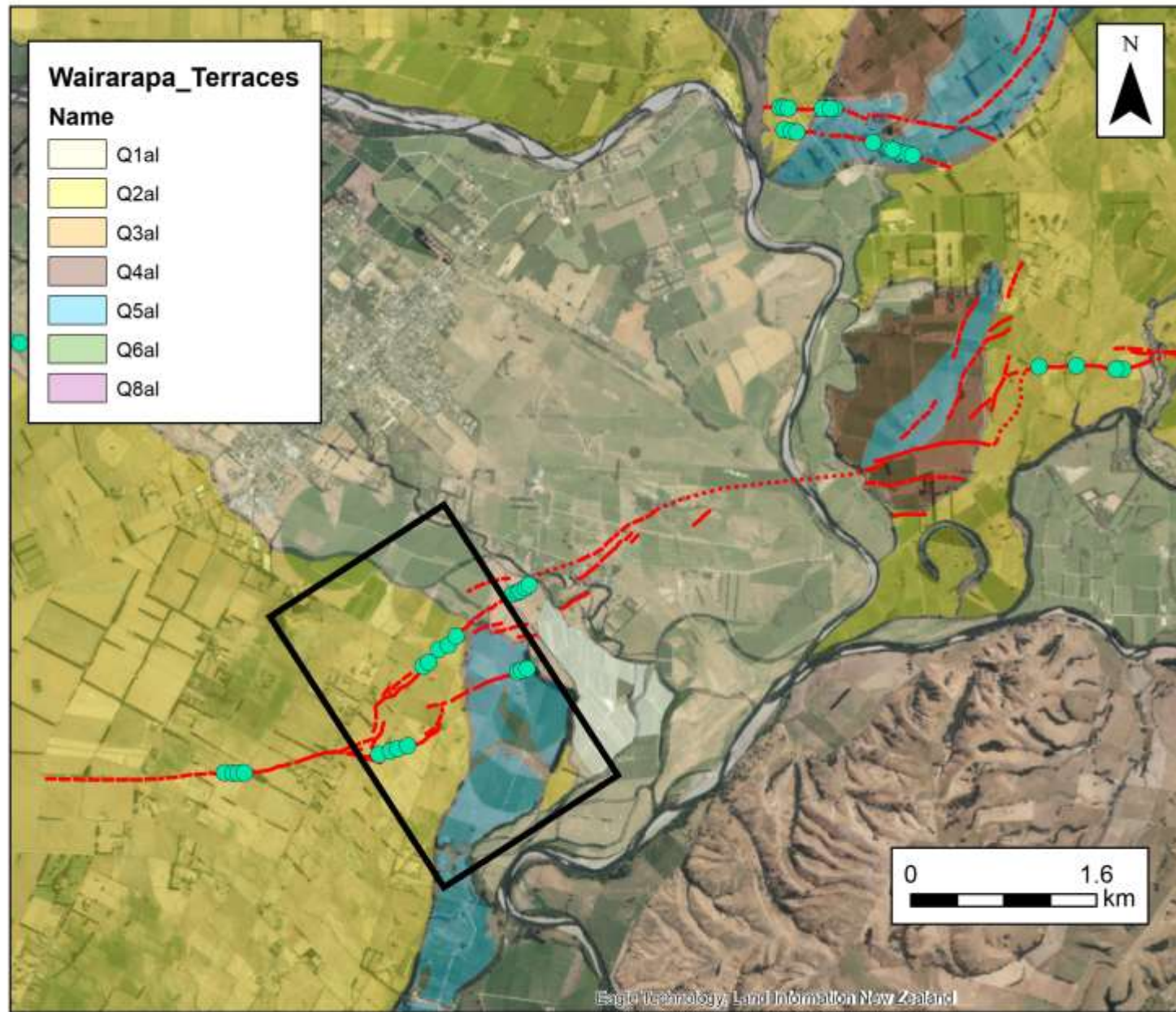
Pāpāwai fault



Papawai fault



Pāpāwai Fault



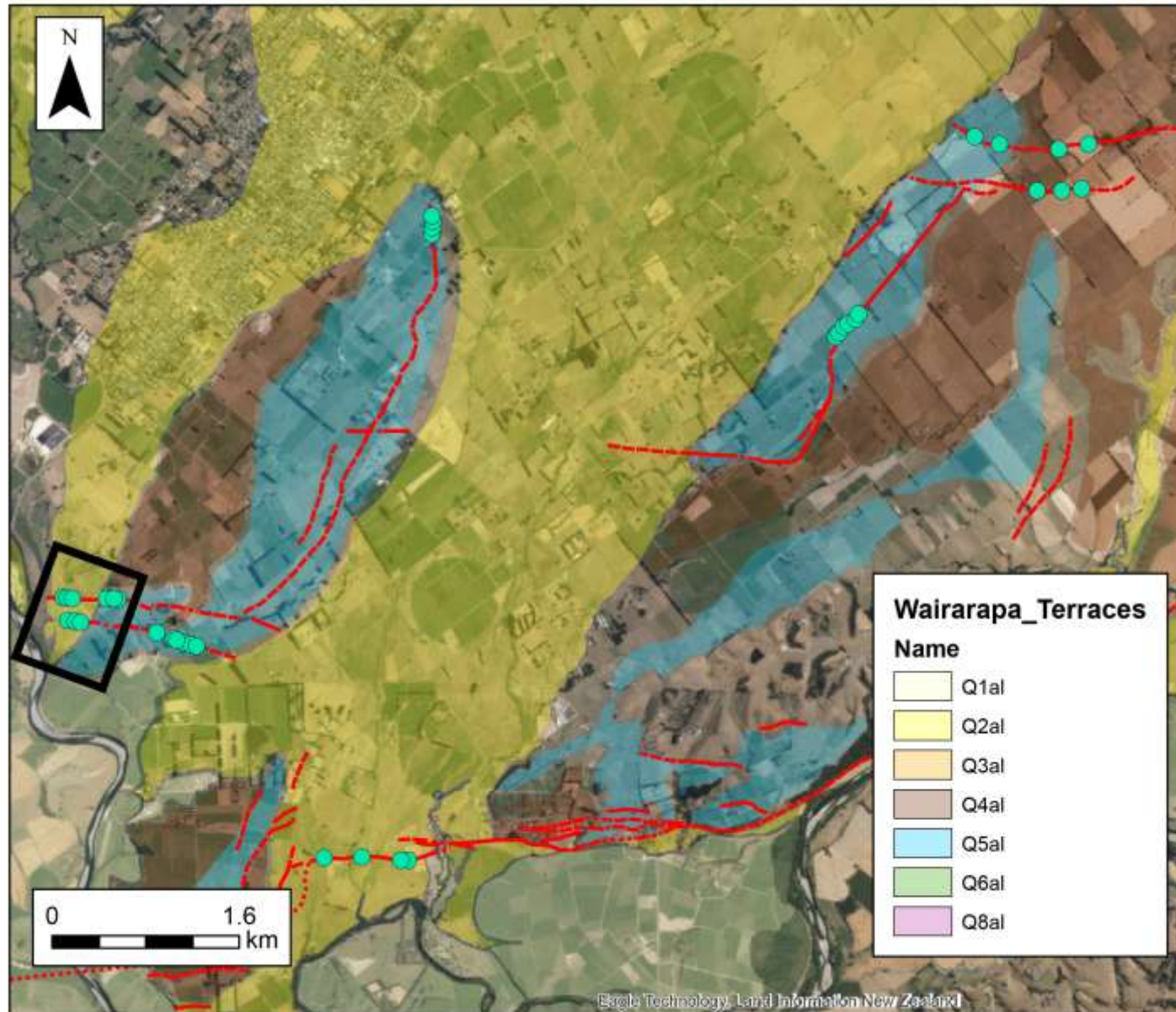
Vertical slip rate:
 0.4 ± 0.1 mm/yr

Carters Line fault

- Strike-slip and reverse traces
- RI Class II (>2000 to ≤ 3500 years)



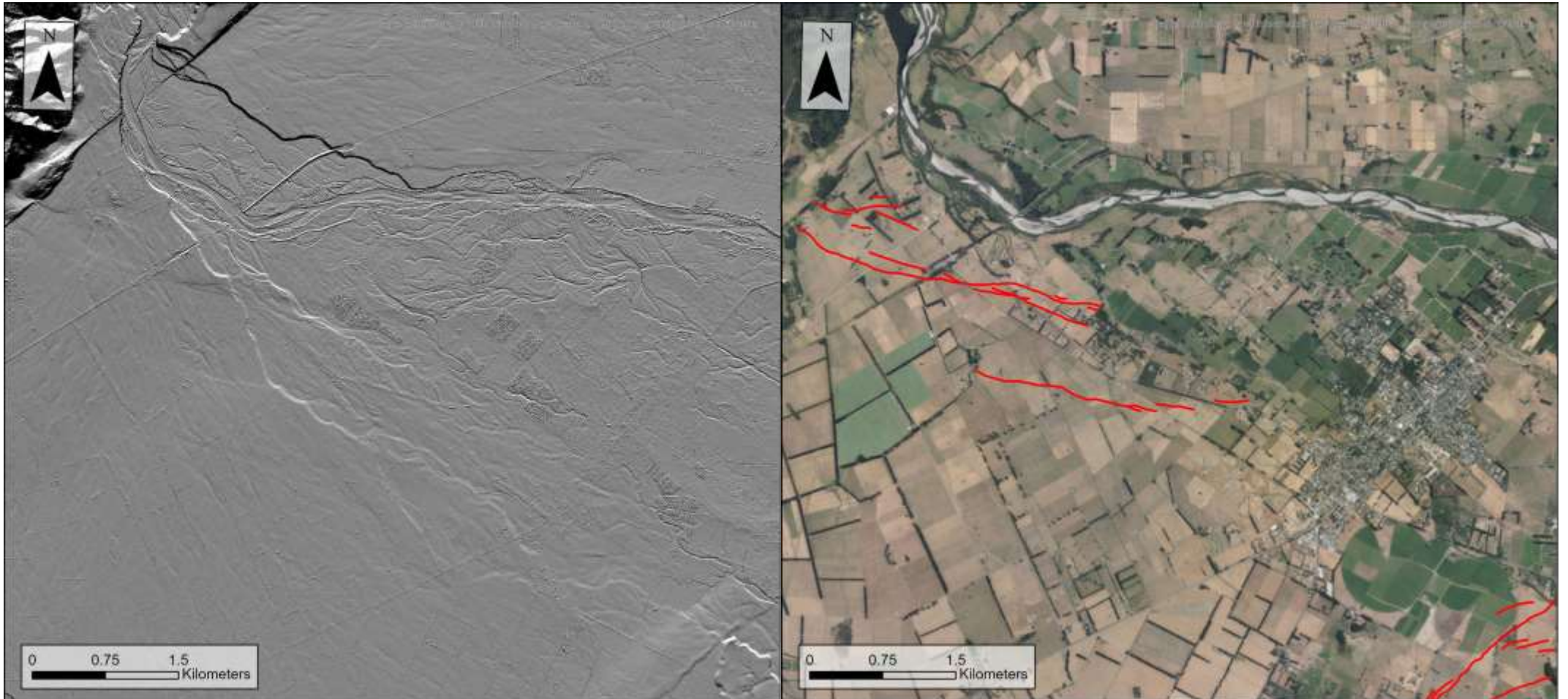
Carters Line Fault



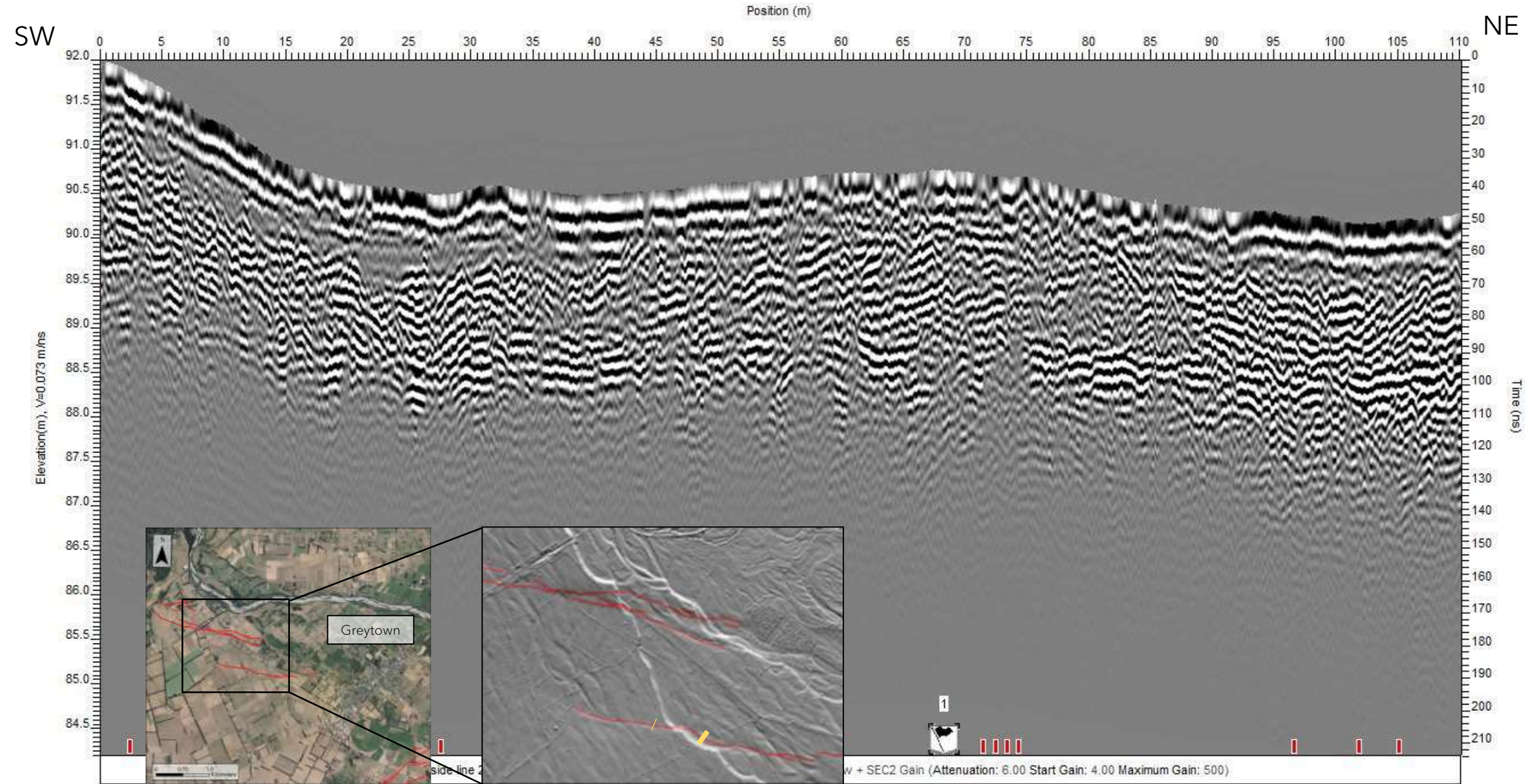
Vertical slip rate:
 0.2 ± 0.07 mm/yr

Woodside fault

- Predominantly strike-slip
- RI Class III (>3500 to ≤ 5000 years)



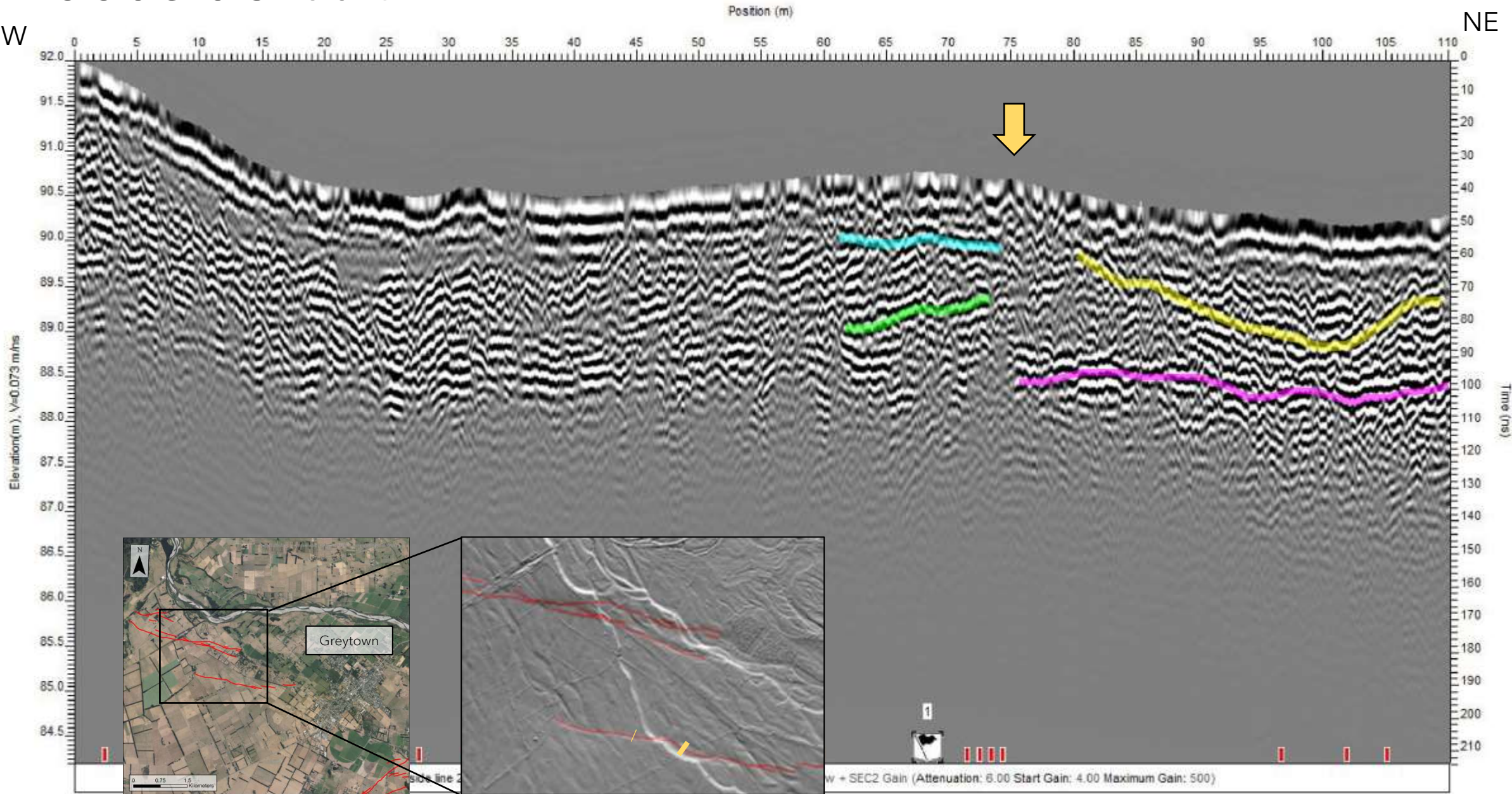
Woodside fault



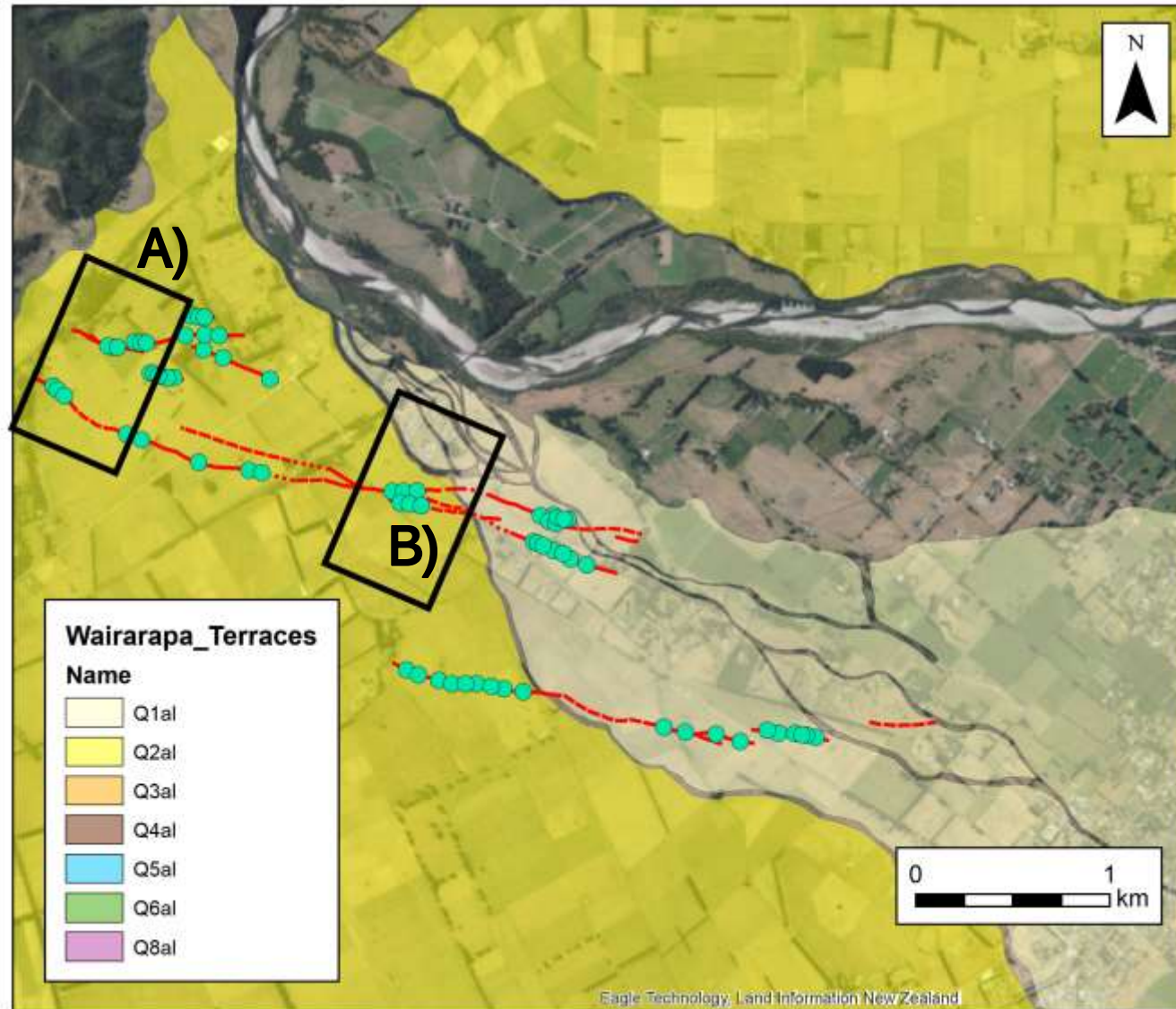
Woodside fault

SW

NE



Woodside Fault



Vertical slip rate:

A) 0.2 ± 0.1 mm/yr

B) 0.1 ± 0.06 mm/yr



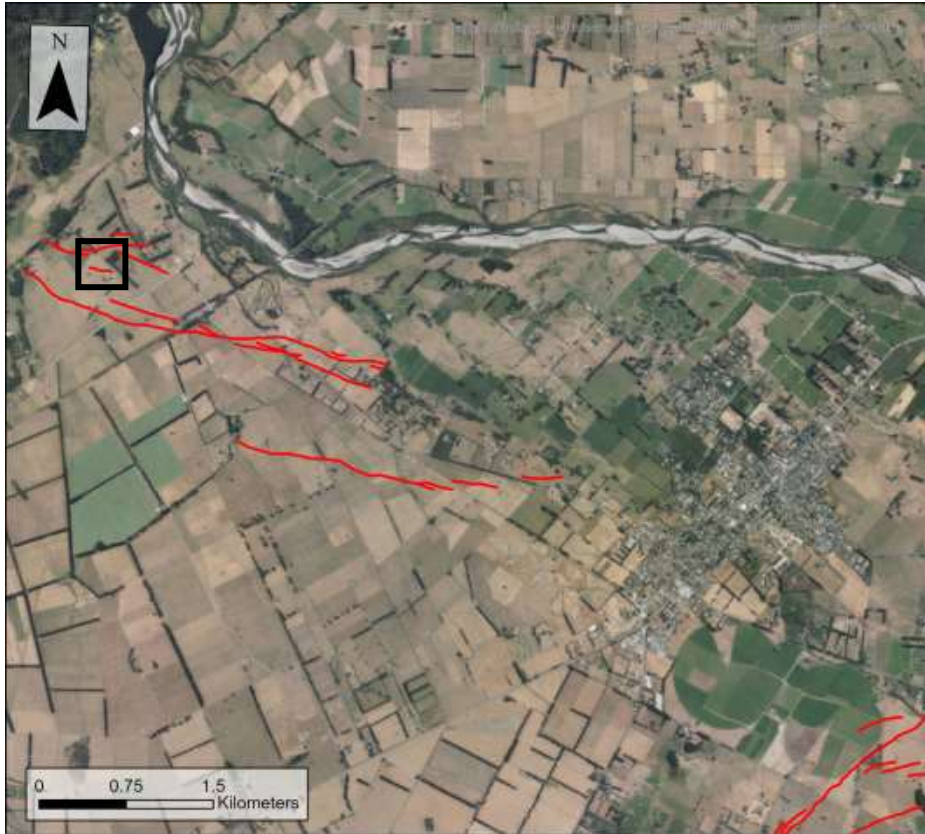
Reconnaissance

- Assessing offset surface ages
- Scouting sites for future trenching or pits



Future trench site

- Promising site along a western strand of the Woodside fault
- Possible trench site to investigate paleoearthquake timing



Conclusions and future work

- Four new faults, the Ruamahanga, Pāpāwai, Carters Line, and Woodside faults, were mapped in the Wairarapa District
- GPR profiles were collected across these faults due to their gentle expression in the topography. Most show evidence of disturbance in the vicinity of the mapped fault
- Vertical slip rates have been measured on these faults ranging from 0.1 – 0.7 mm/yr. Horizontal slip rates will also be estimated.
- Slip rates will be used to revise estimates of recurrence interval and may effect the RI Class of these faults
- A possible paleoseismic trenching site has been identified on the Woodside fault with the potential for good paleoearthquake age control