

# Akatore Fault source for Dunedin ground motion simulations



Briar Taylor Silva's  
Masters thesis

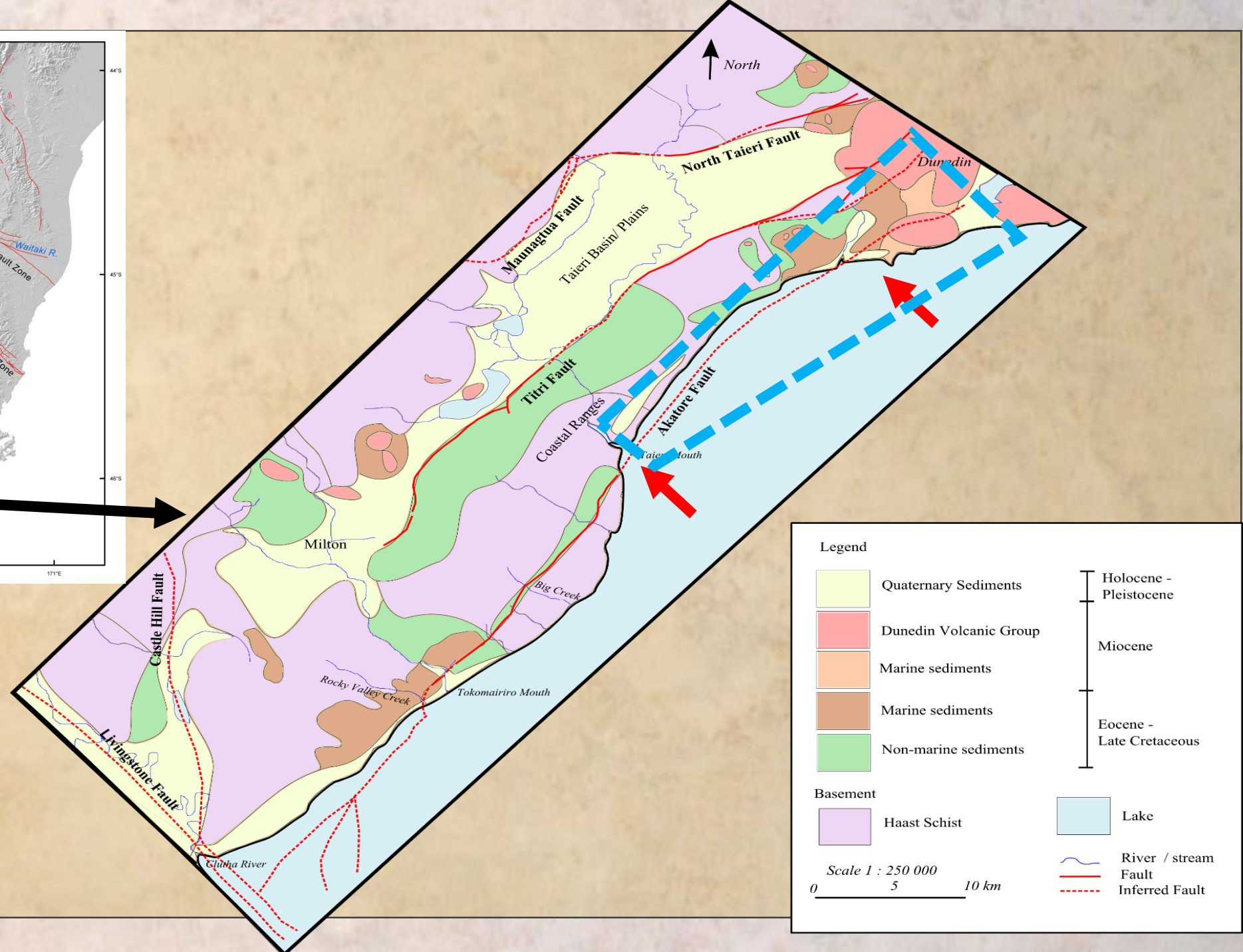
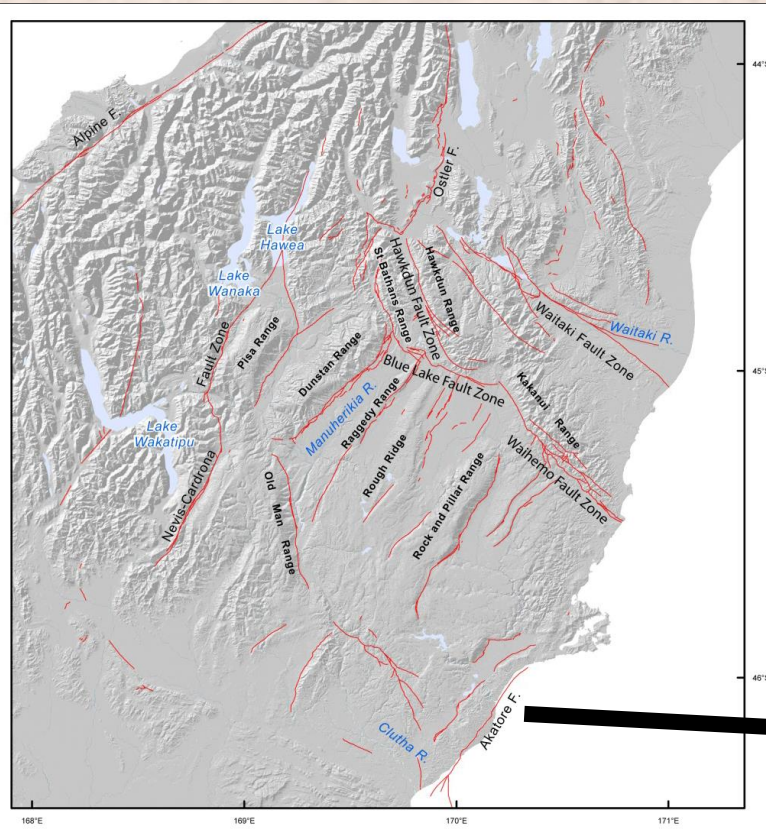
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**Legend**

	Quaternary Sediments	Holocene - Pleistocene
	Dunedin Volcanic Group	
	Marine sediments	Miocene
	Marine sediments	
	Non-marine sediments	Eocene - Late Cretaceous
	Haast Schist	
	Lake	

**Basement**

Haast Schist

River / stream

Fault

Inferred Fault

Scale 1 : 250 000

0 5 10 km

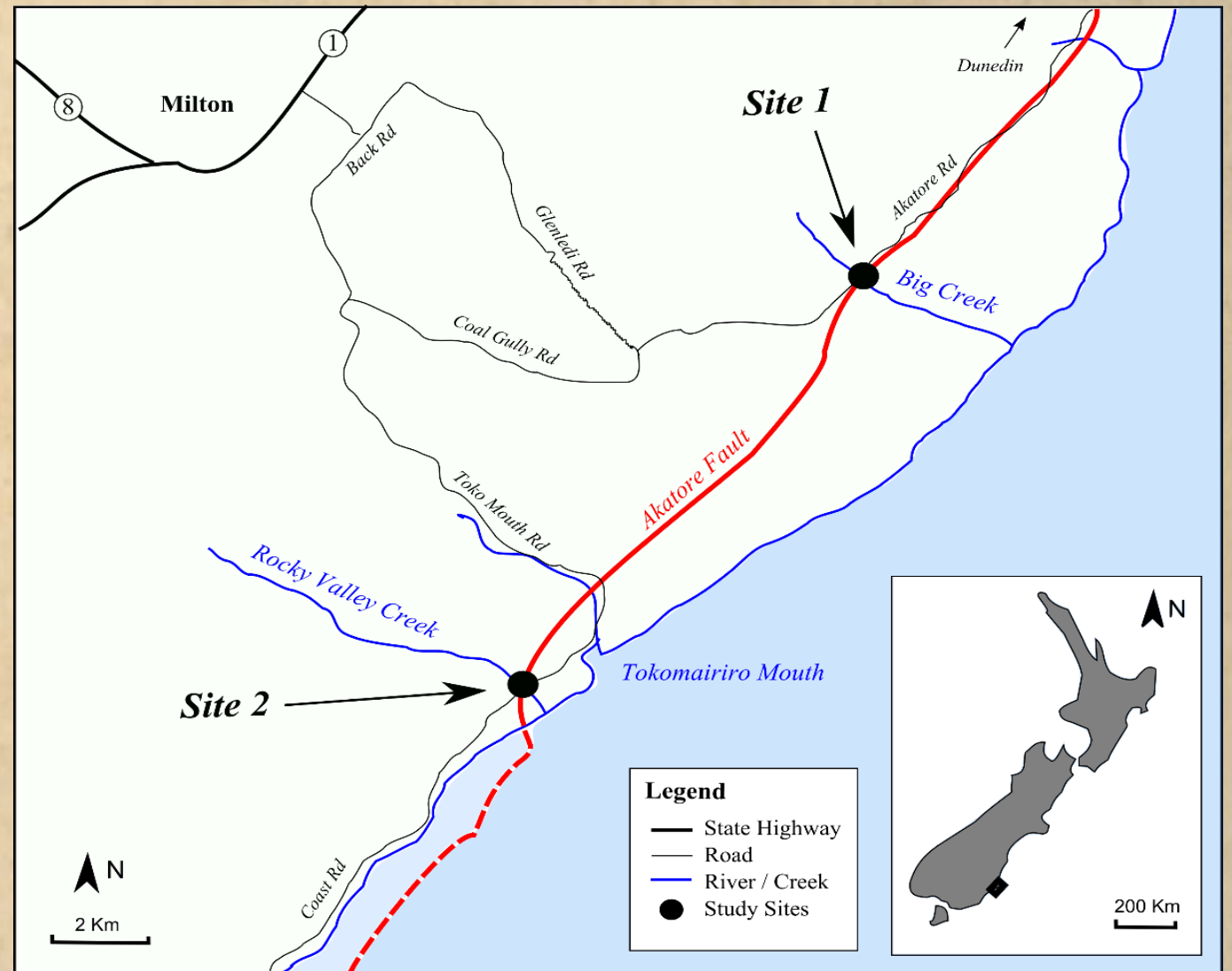


# Akatore Fault



# Trench Sites

- Big Creek and Rocky Valley Creek
- Antecedent gorges
- Fault periodically dams drainage
- Ideal for paleoseismic studies



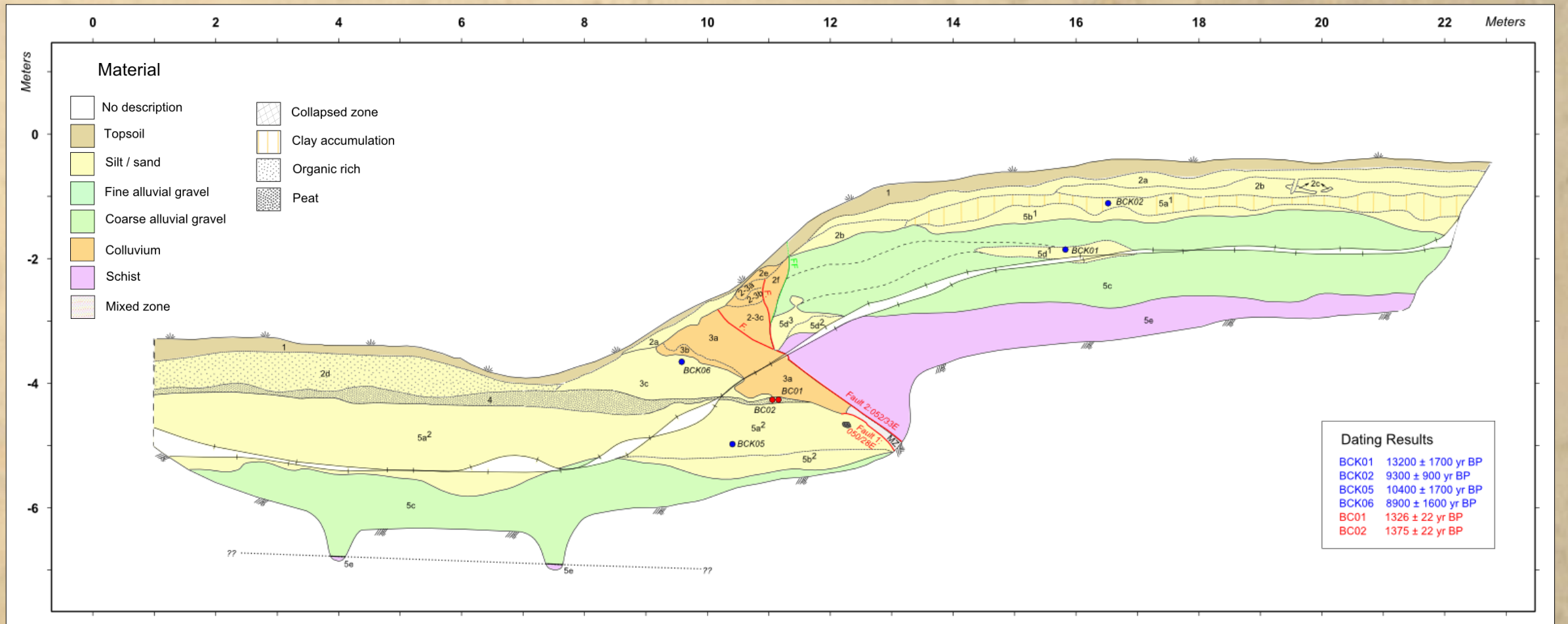


# Big Creek Trench





# Big Creek Trench Log (north wall)



## Key findings

- 3 Holocene earthquakes
- Two events between  $1300 \pm 20$  and  $780 \pm 22$  yr, and an additional event between  $10,400 \pm 1,700$  and  $1300 \pm 20$  yr BP.
- No events in the previous 110,000 years
- 5 m of dip slip, 1 – 2 m per event  $\rightarrow$  Mw~7
- Holocene max slip rate of 3.8 mm/yr  $\geq$  10 x greater than the long term slip rate
- Anomalously active for a fault in the Otago region



# Dunedin ground motion simulations

- Existing geological and geophysical data compilation in progress
- Development of a 3D shear wave velocity model for modelling Akatore Fault ground motion simulations for Dunedin city
- Geophysical survey scheduled for late July/early August: South Dunedin and close to CBD

