

Near Surface Site Characterisation

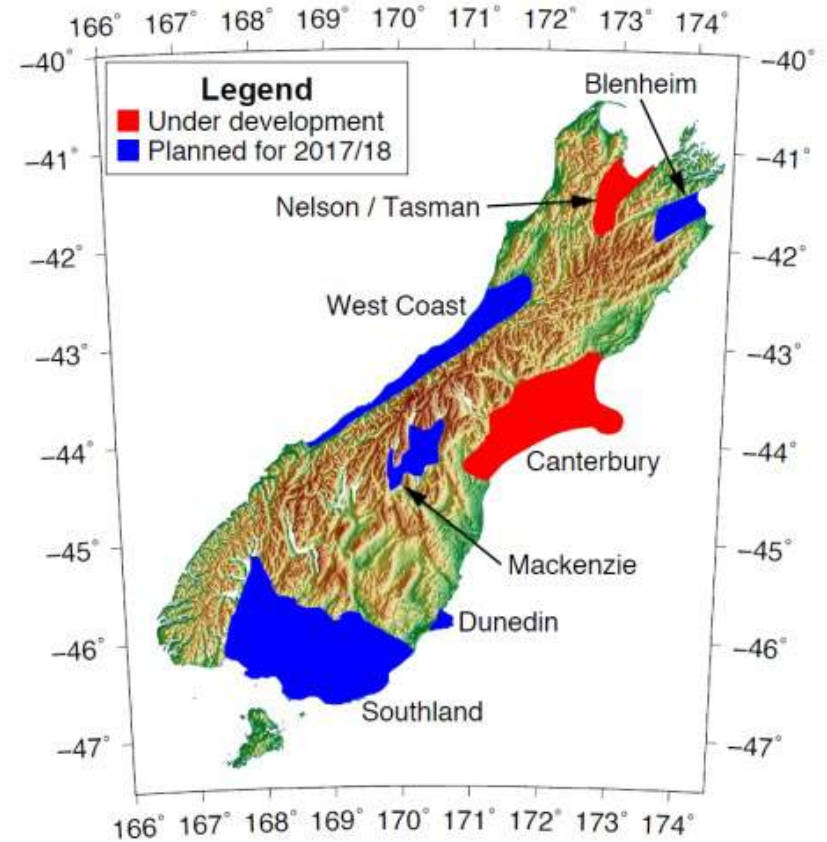
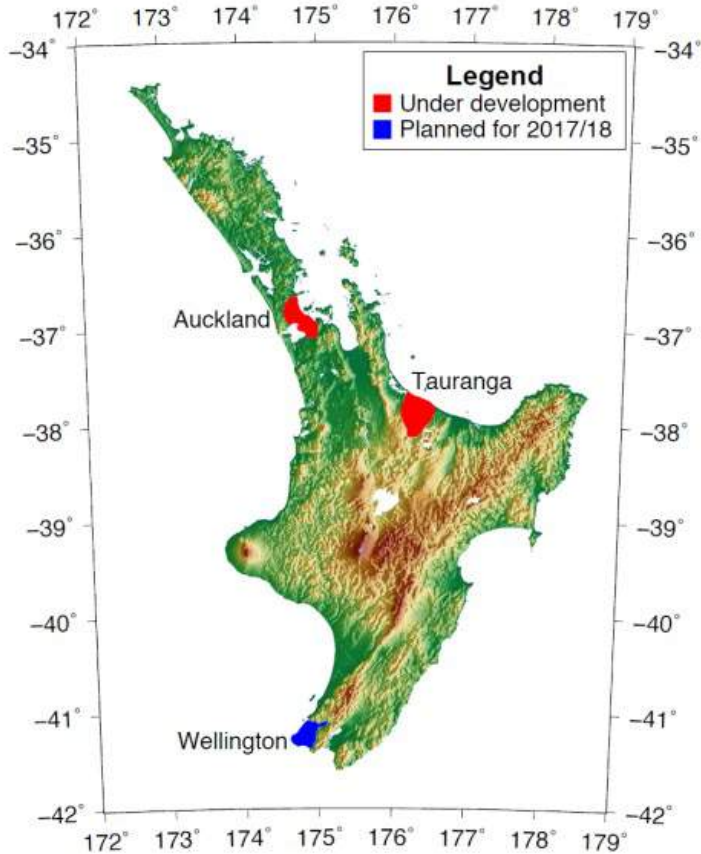
Geotechnical & geophysical characterisation of New Zealand regions

Liam Wotherspoon

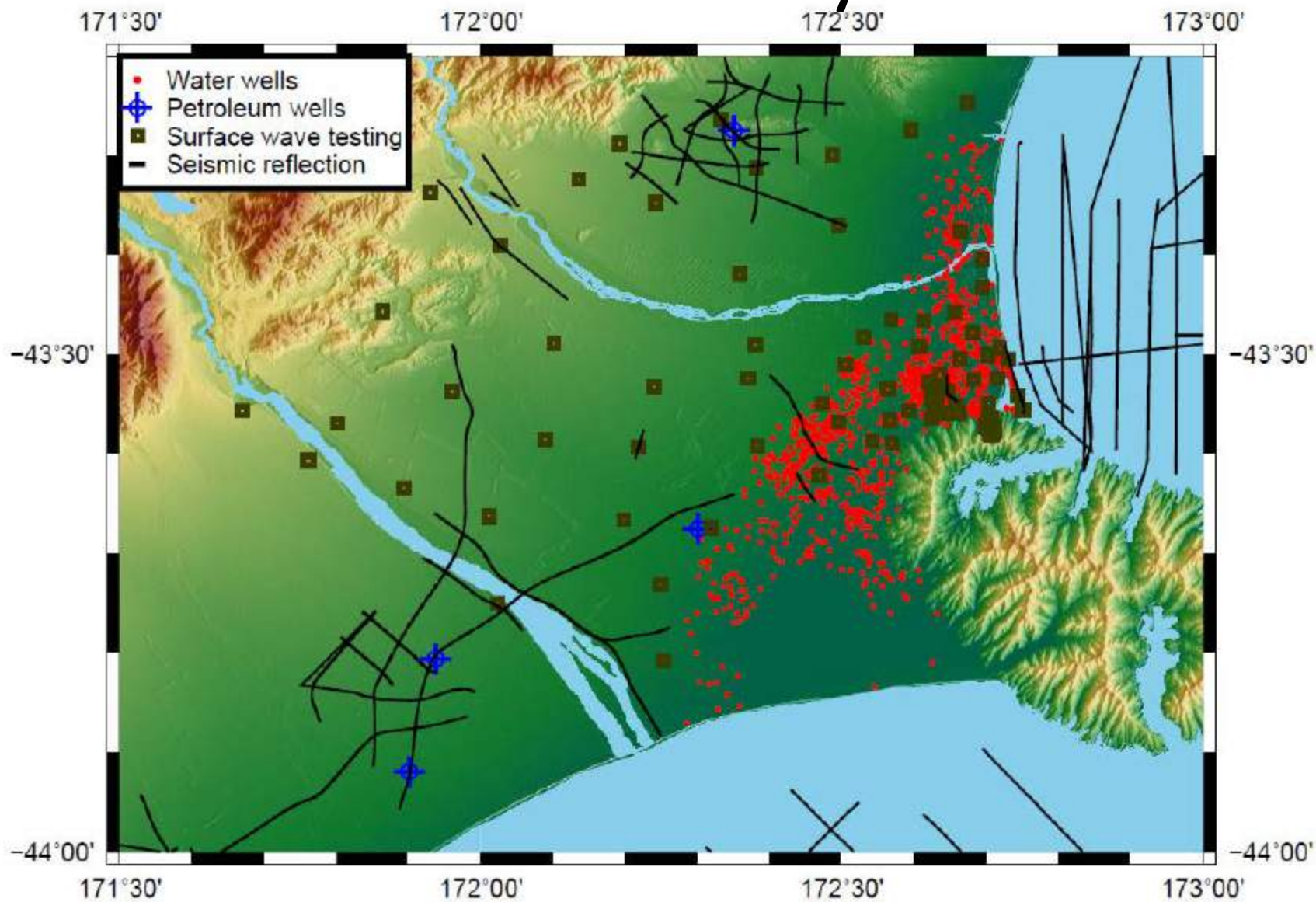
Summary

- **Aim:**
 - Detailed regional characterisation
 - Coarser level national characterisation
- **Outputs feed into:**
 - Improved site subsoil classification
 - Dynamic site metrics (e.g. T_0 , V_{s30})
 - Velocity models for GM simulation

Overview



Canterbury



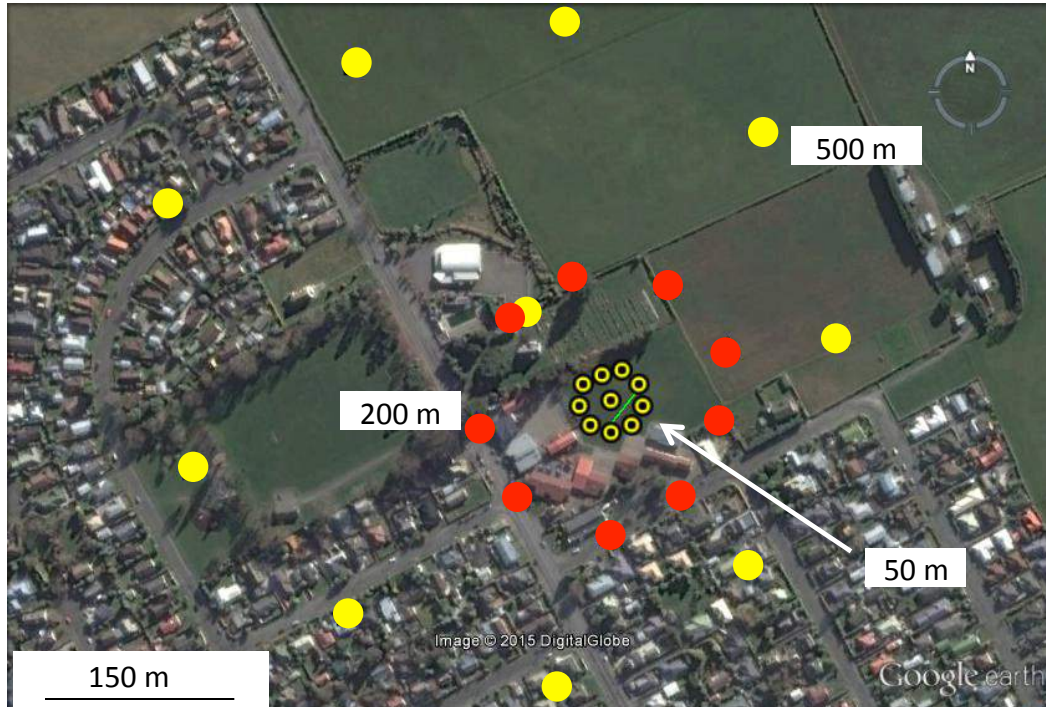
Canterbury



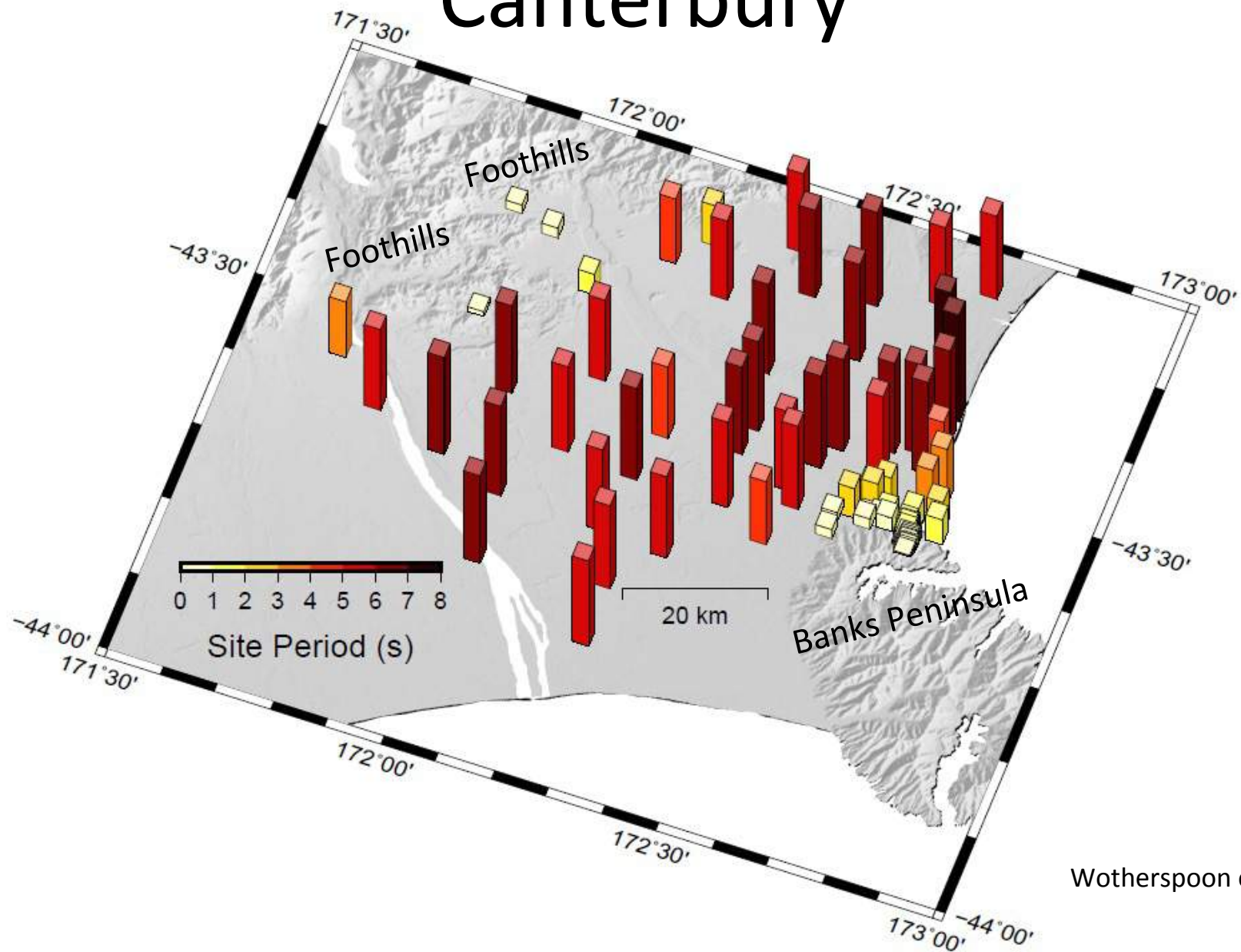
Broadband seismometers
(20 s period +)



Canterbury

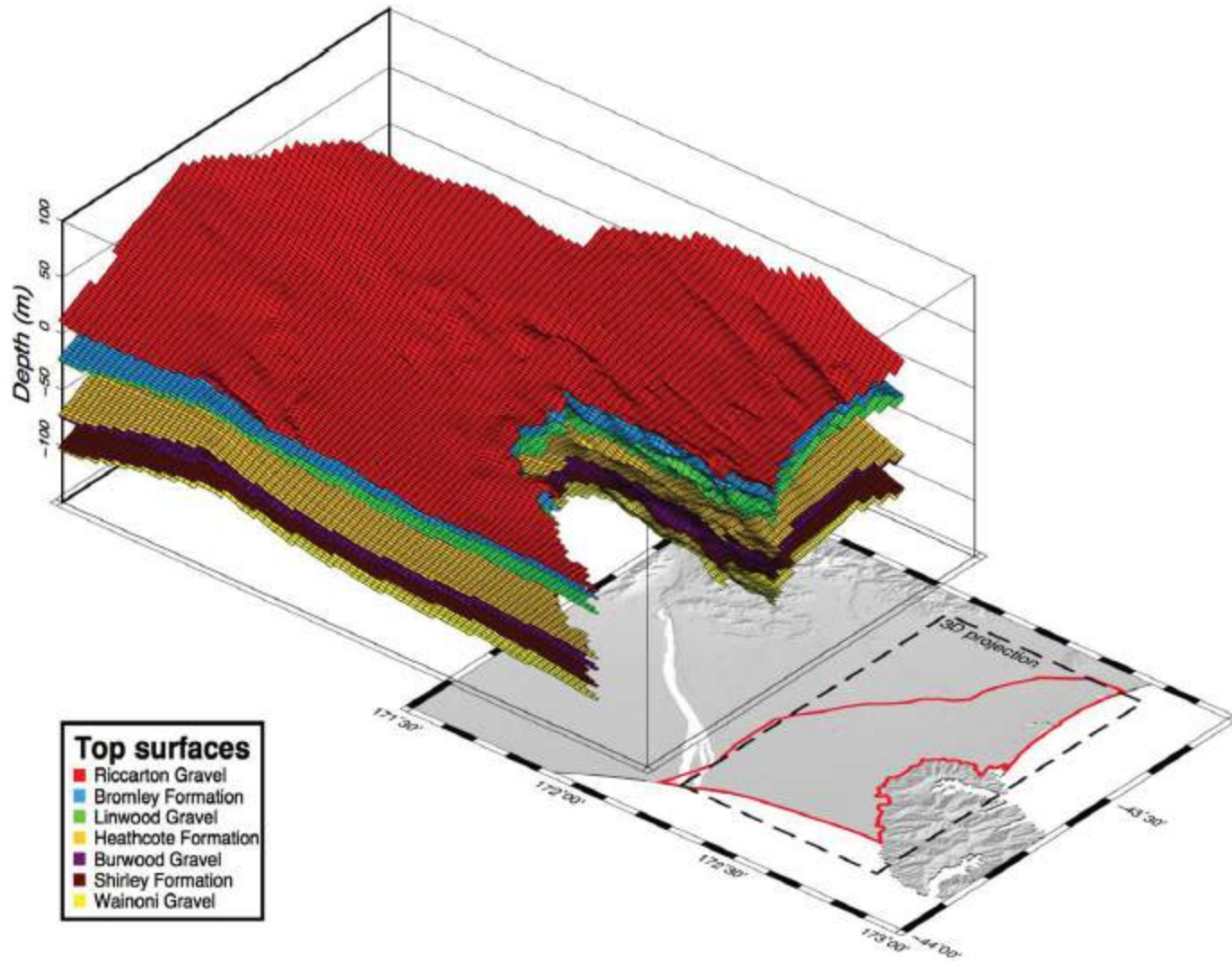


Canterbury



Wotherspoon et al (2015)

Canterbury



Canterbury

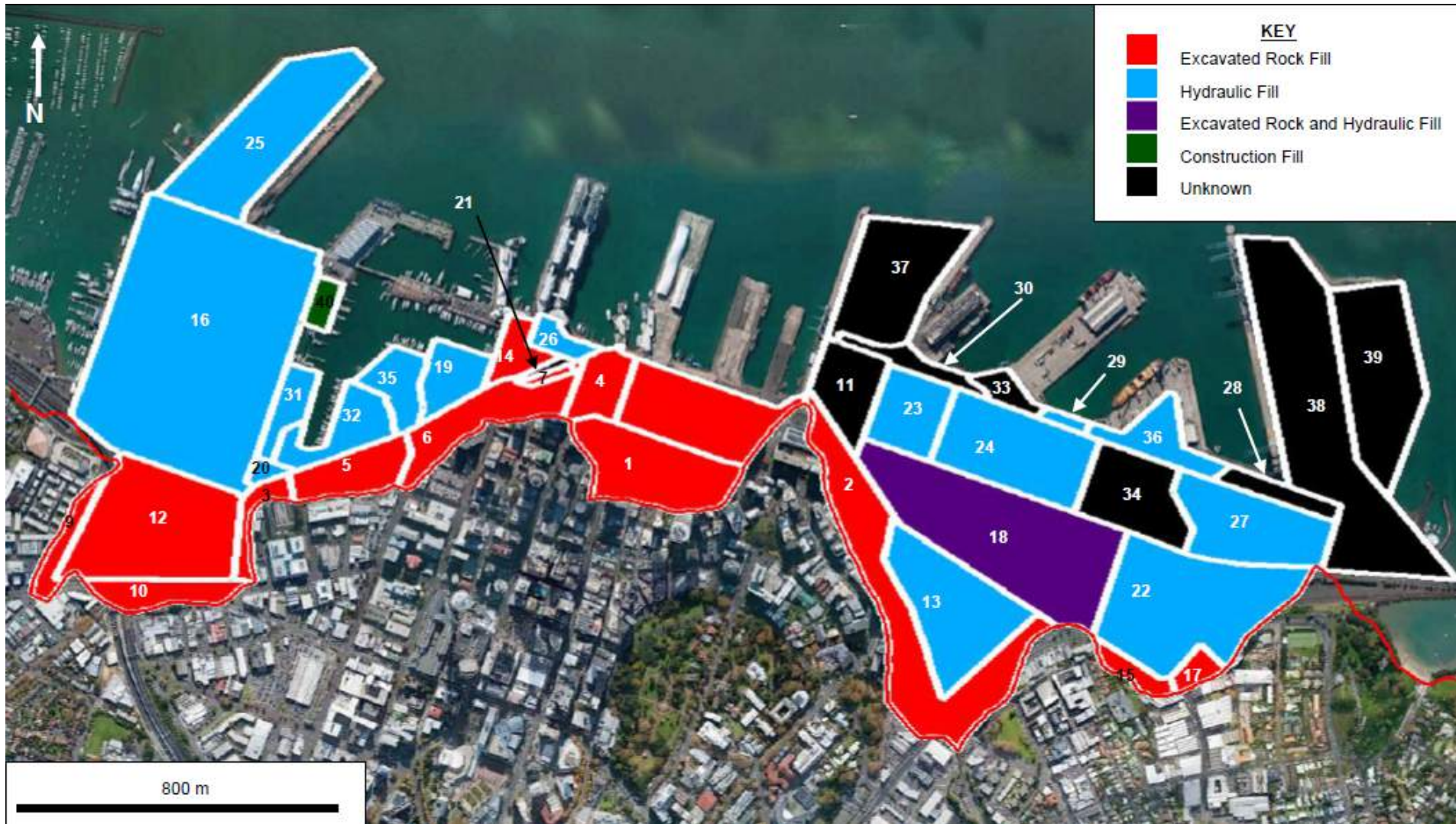
- Improved site subsoil classification
- Dynamic site metrics (e.g. T_0 , V_{s30})
- Velocity models for GM simulation



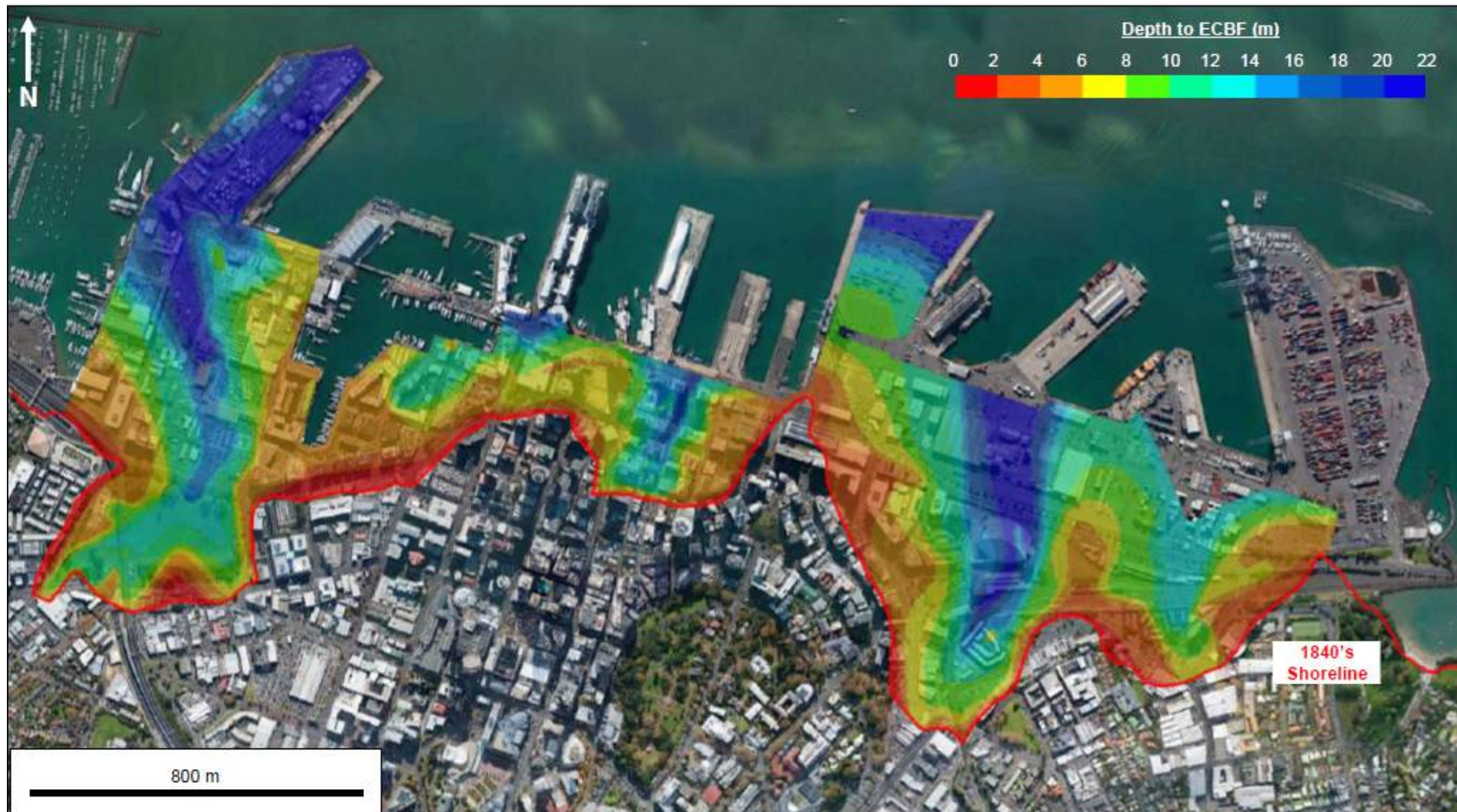
Poster # 005, 006, 011, 015, 016

- Planned:

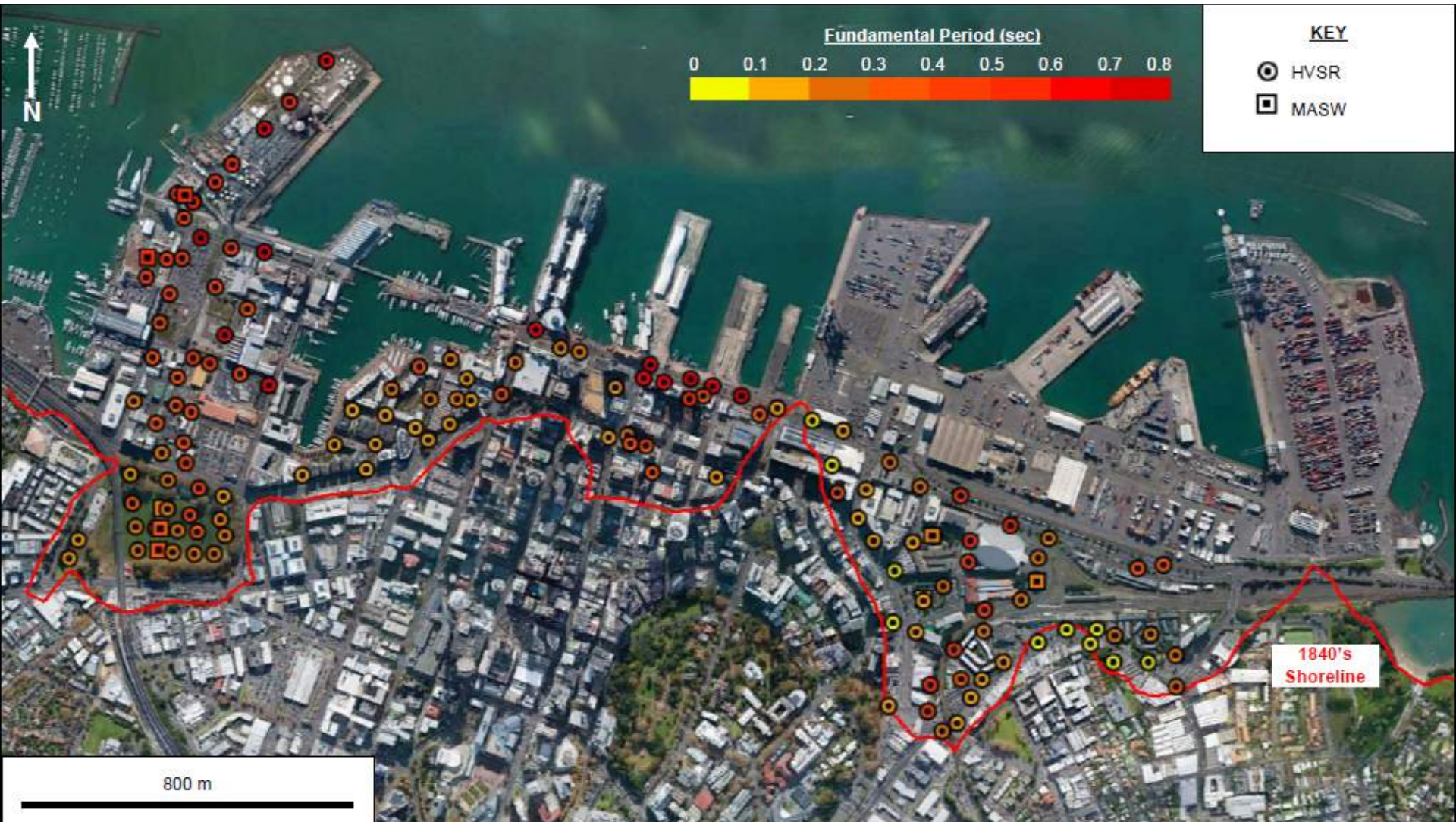
Auckland -CBD



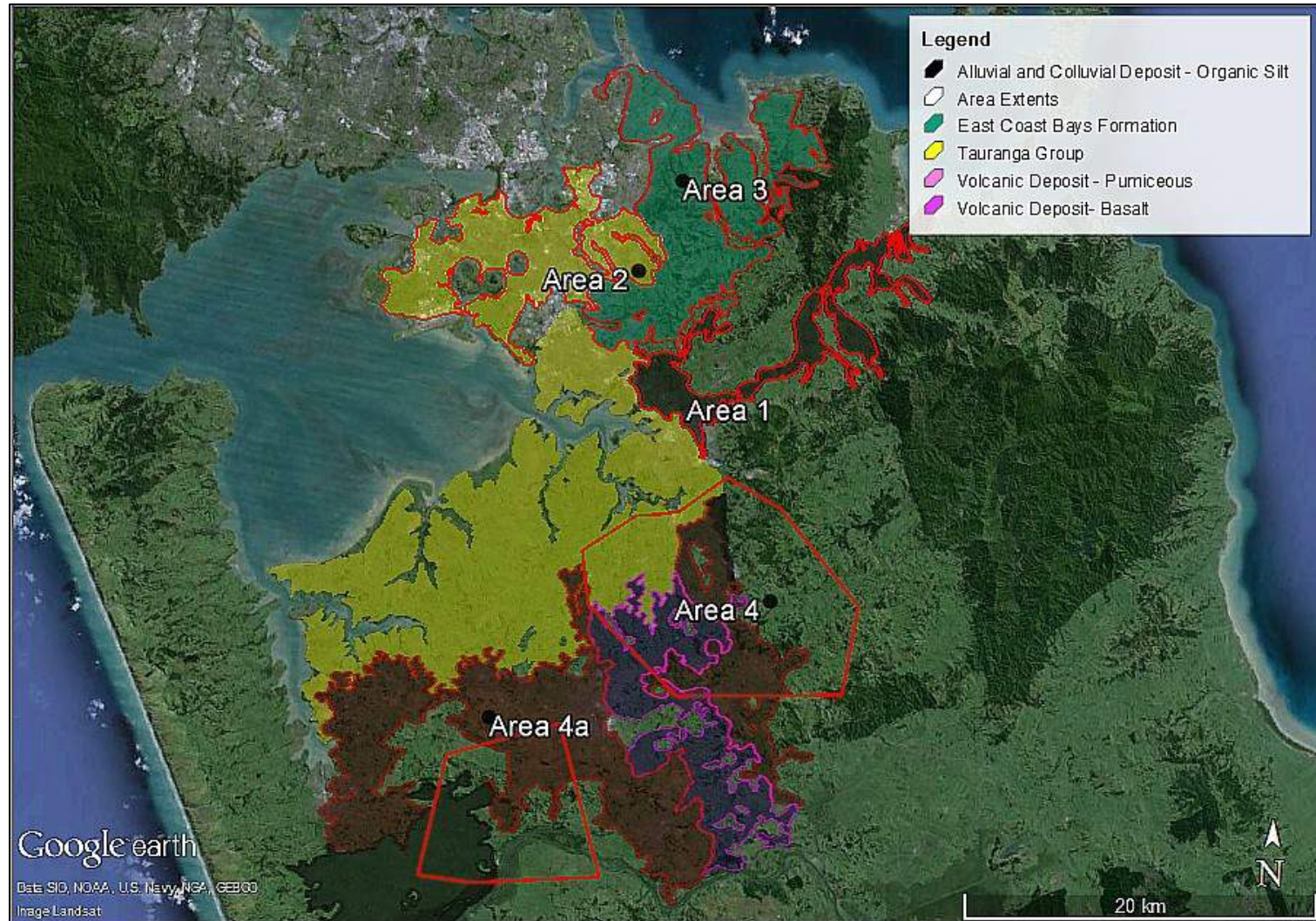
Auckland -CBD



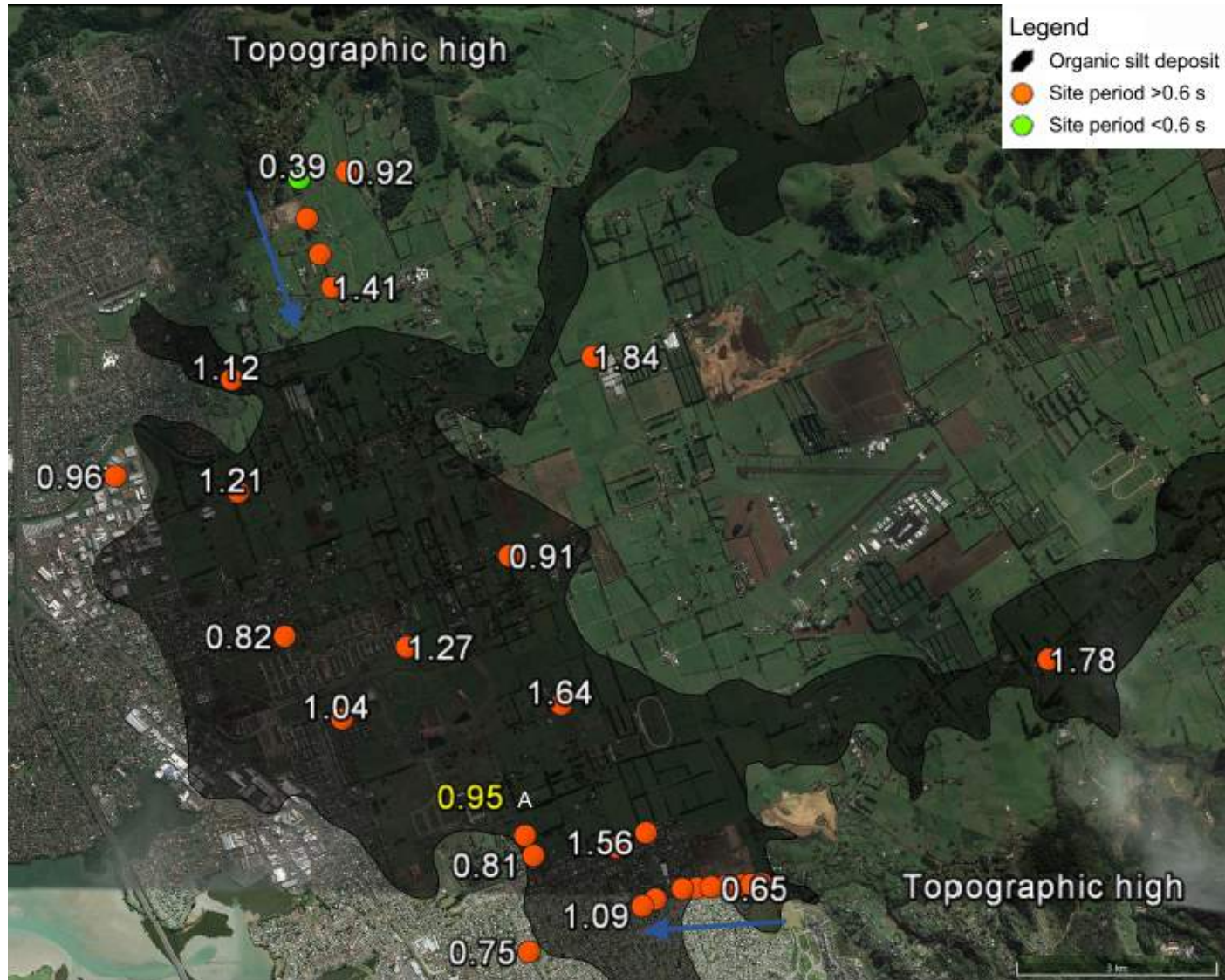
Auckland -CBD



Auckland



Auckland – Organic Silts



Auckland – Surficial Basalts

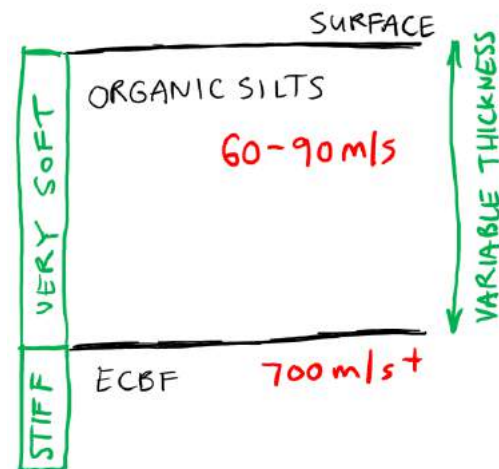
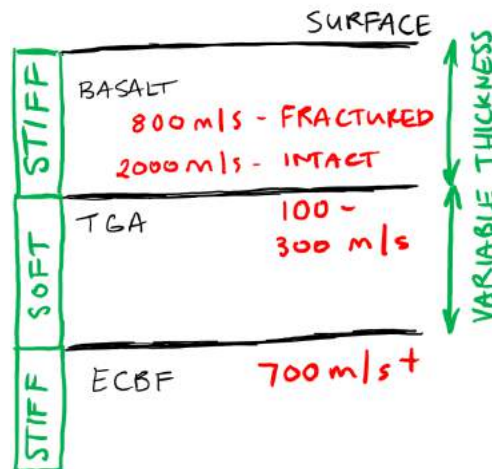


Auckland

- Improved site subsoil classification ✓
- Dynamic site metrics (e.g. T_0 , V_{S30}) ✓
- Velocity models for GM simulation

Poster # 007, 010

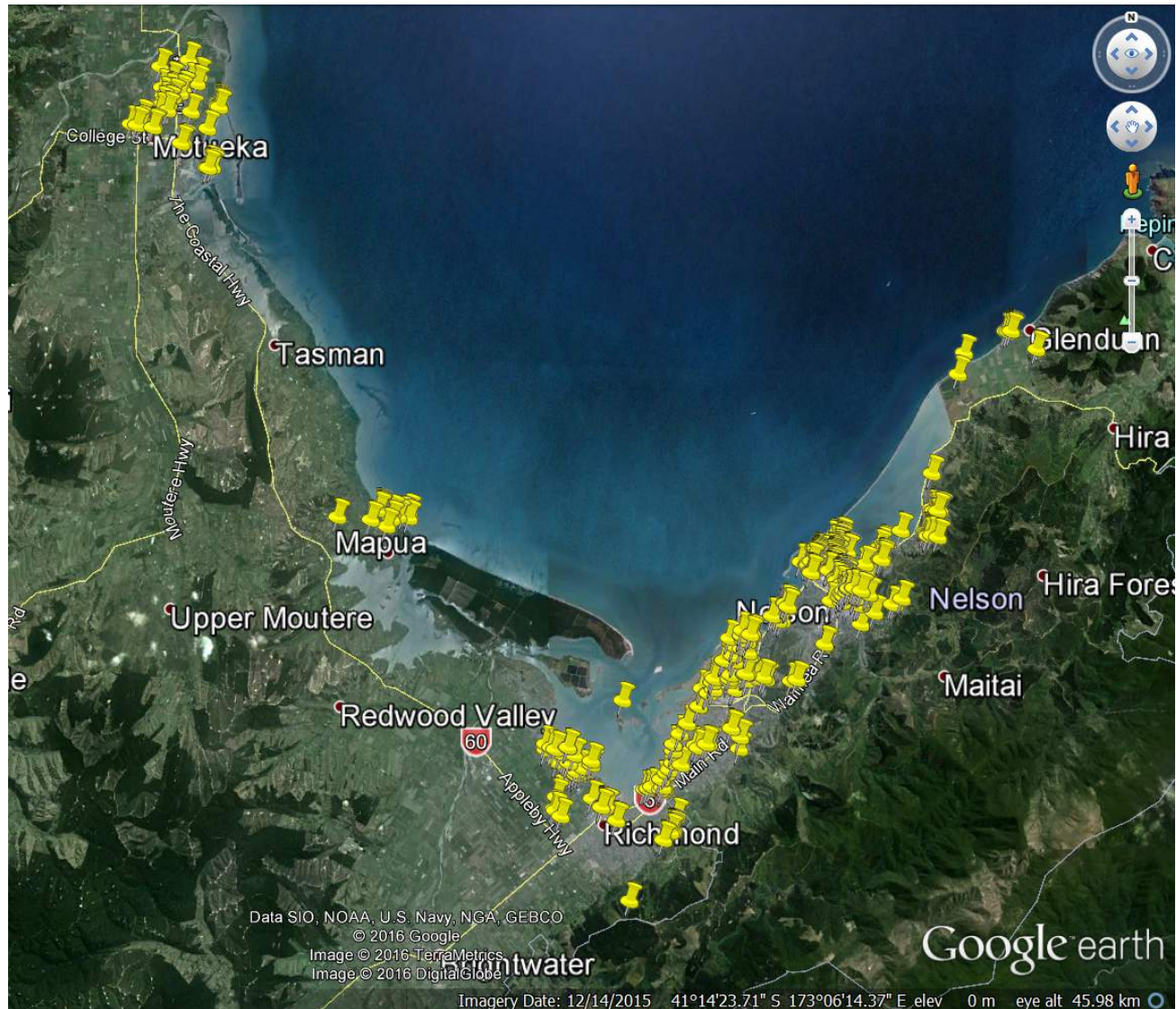
- Planned:
 - Site characterisation and site response



Nelson/Tasman



Nelson/Tasman



Nelson/Tasman

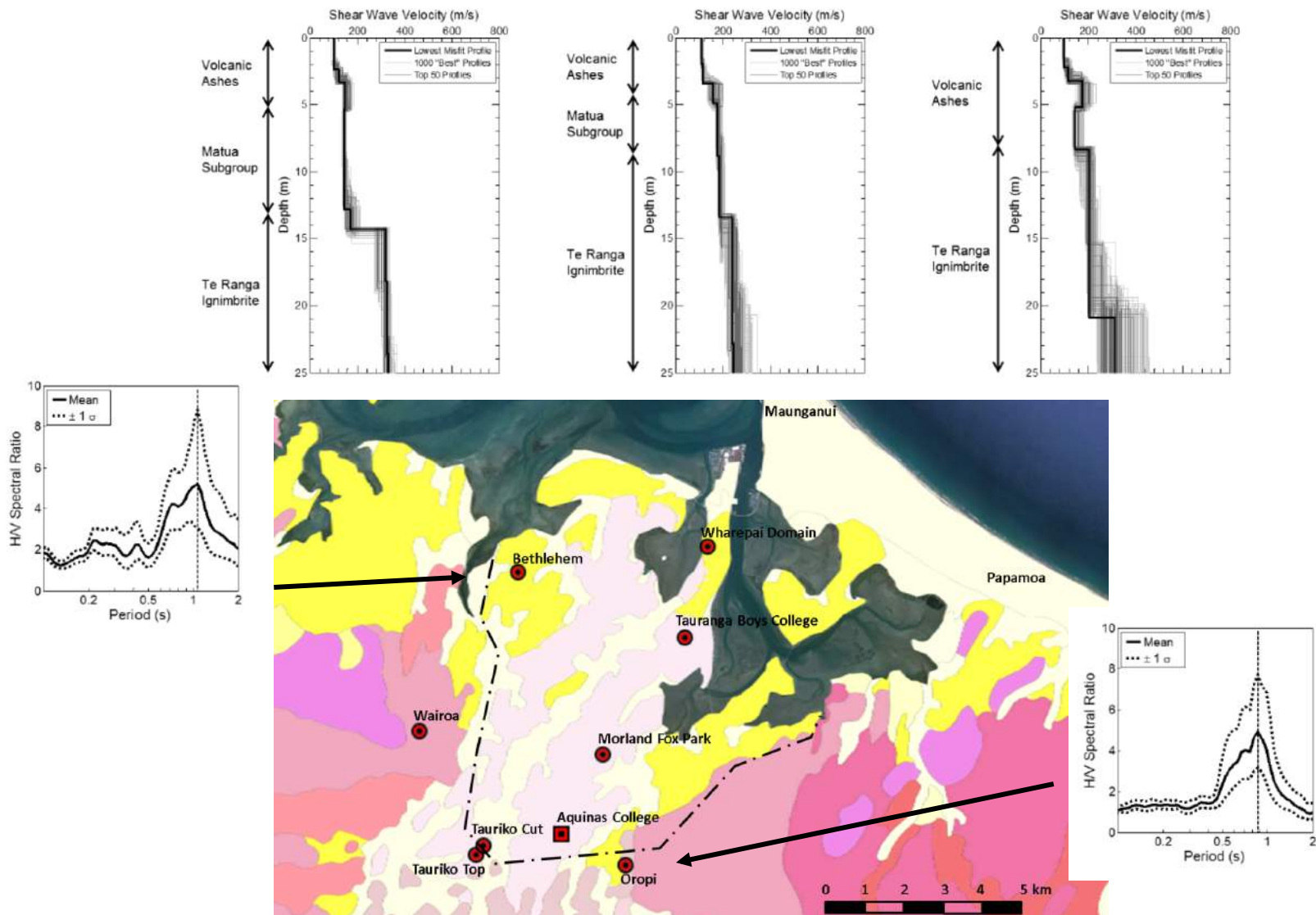
- Improved site subsoil classification
- Dynamic site metrics (e.g. T_0 , V_{s30})
- Velocity models for GM simulation



Poster # 013

- Planned:
 - Regional T_0 and V_s characterisation
 - Seismic reflection reinterpretation
 - Basin model development

Tauranga



Tauranga

- Improved site subsoil classification
- Dynamic site metrics (e.g. T_0 , V_{s30})
- Velocity models for GM simulation
- Planned:
 - Regional T_0 and V_s characterisation
 - Subsurface investigation



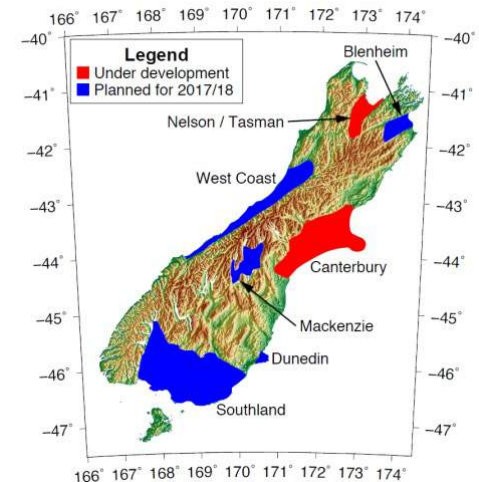
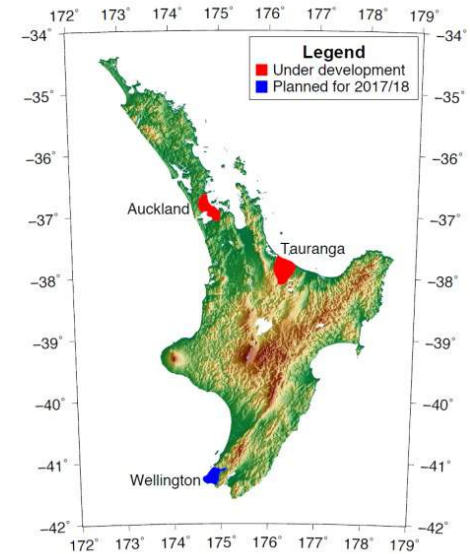
National

- Coarser level assessment
 - V_s30
 - Model refinement using measured data

Poster # 009

Planned Studies

- **Wellington** – Expand It's Our Fault characterisation of the Wellington Basin
- **Dunedin** – Feed into regional seismic hazard studies
- **Canterbury Plains** – broaden the regional coverage provided by the existing Canterbury data
- **West Coast** – Inform regional impact studies as part of RNC
- **Mackenzie** – water supply and hydroelectric generation facilities
- **Southland** – inform regional studies
- **Blenheim** – Wairau Valley basin characterisation



Wellington



Other studies

- Liquefaction assessments
 - Canterbury
 - Whakatane
 - Auckland
 - Wellington