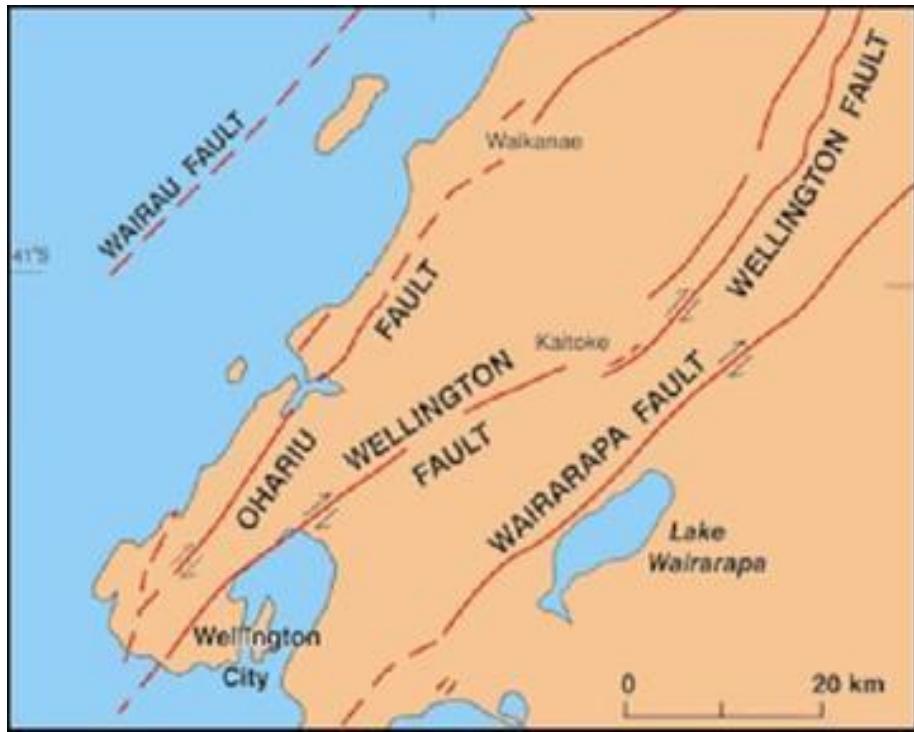




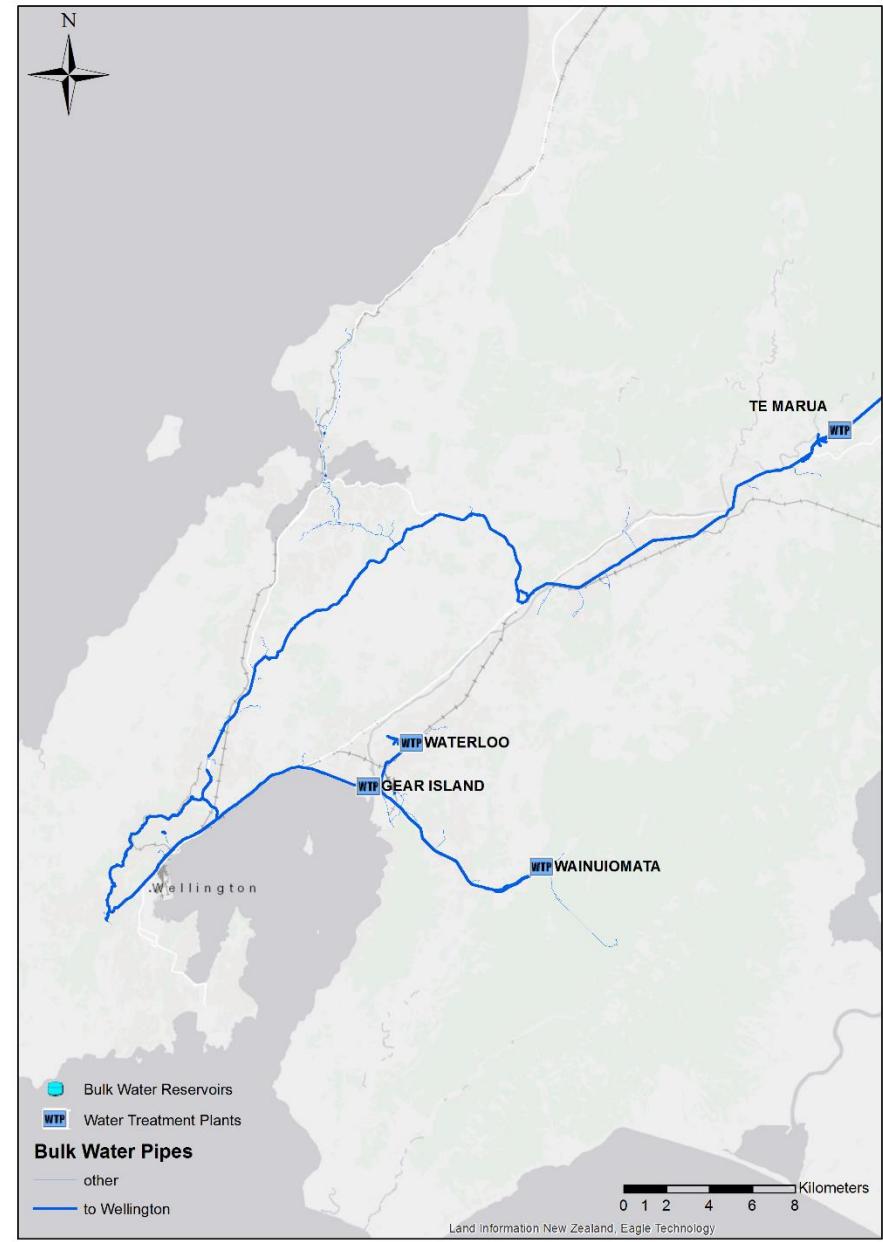
Masters Thesis
Water pipe repair-
times post
earthquake



Context



(GNS Science, n.d.)

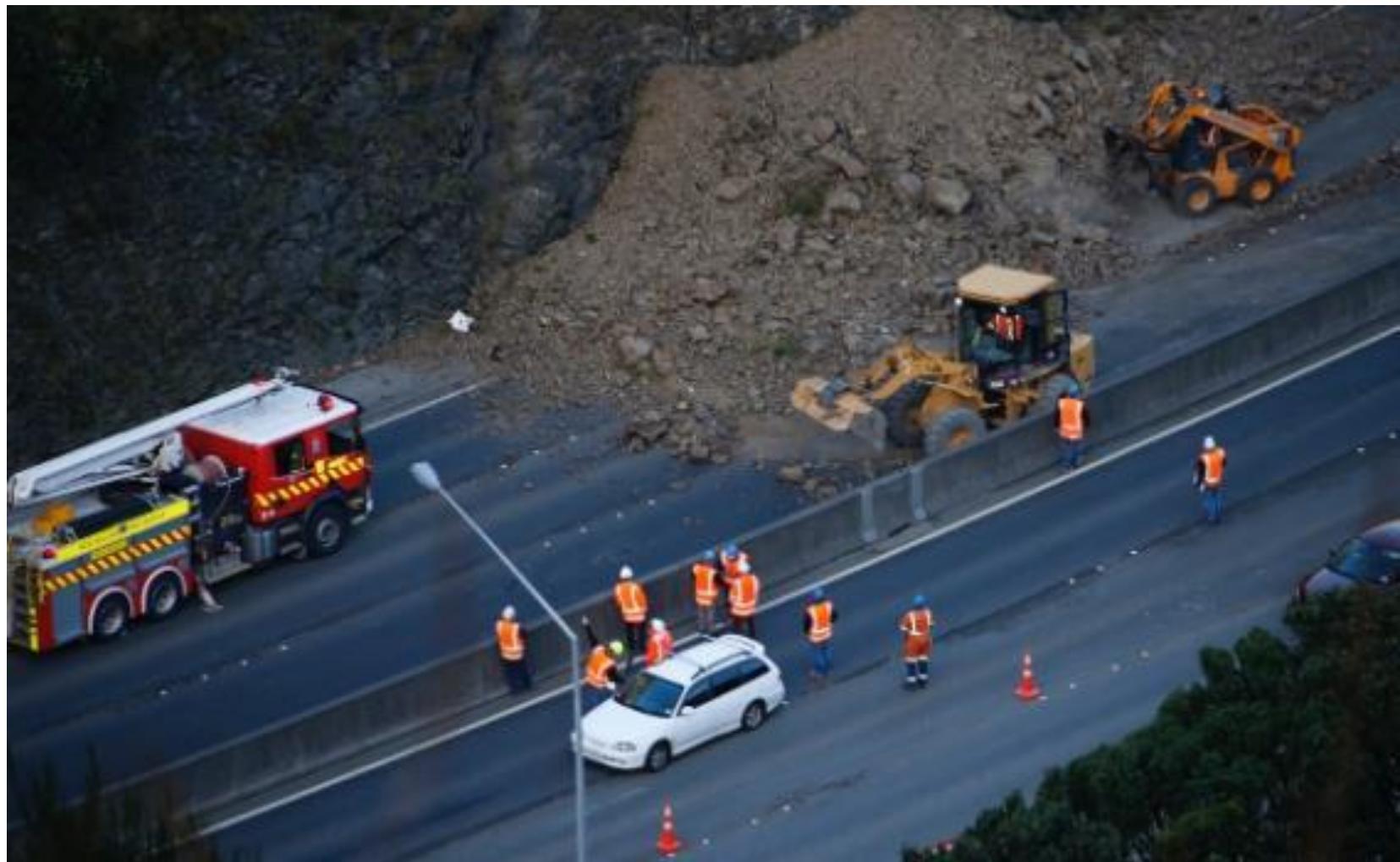




(Hancox & Perrin, 2010, p22)



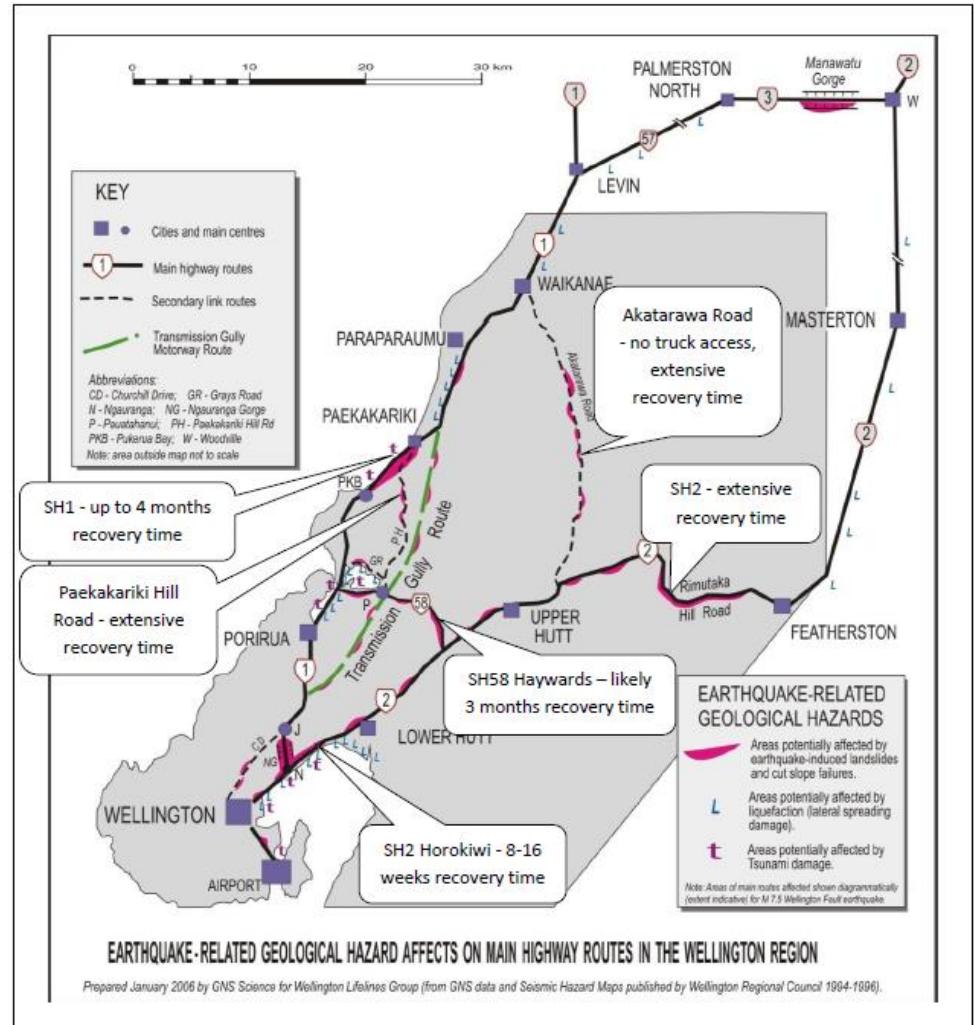
Otago Daily Times. (Feburary 22, 2016)



(Ford, 2017)

Factors Raised

•Road access



(Mowll, 2012)

Factors Raised

- Road access
- Pipe diameters
- Topography
- Staff Inexperience
- Repair Coordination



Factors Raised

- Road access
- Pipe diameters
- Topography
- Staff Inexperience
- Repair Coordination
- Competition for equipment
- Politics



New Zealand Defence Force, 2017

Factors Raised

- Road access
- Pipe diameters
- Topography
- Staff Inexperience
- Repair Coordination
- Equipment acquisition
- Politics
- Reservoir damage
- Hazards
- Environmental impacts and regulations



Model Calculation

- *Pipe Failure Probability =*

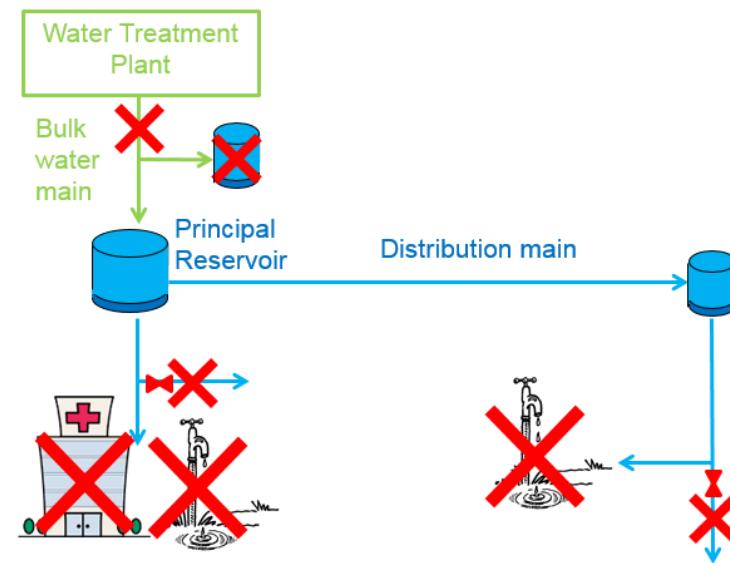
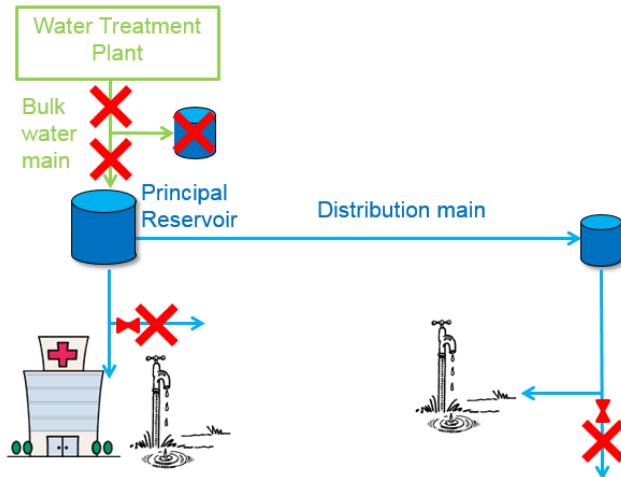
$$\frac{\left(\left(\frac{(-40)}{1600 \times 10^{(MMI-0.6)}} \right) \times SM \times LIQ \times LS \times Segment\ length \right)}{(Redundancy\ factor)}$$

1000

Results

Source	Total (original model)	Inspection	Oddball pipes	Staff logistics	Total	Landslides and access	Grand totals
Kaitoke	53	0.1	1	3	56	28	84
Wainuiomata	81	4	0.5	10	94	98	192
Waterloo	65	4	0.3	8	76	98	174
Gear Island	61	4	1.6	7	73	98	171

Current and future work



Conclusions

1. Local factors have a significant impact adding up to 13 days (111 days when incorporating land sliding)
2. Need for in-depth research, like that being conducted currently by WWL.

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