



Tonkin & Taylor

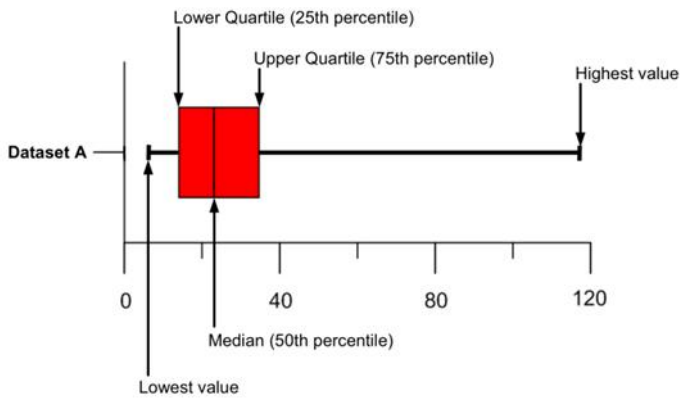
Appendix K: Observed Liquefaction performance at approximately 100 year PGA

ENVIRONMENTAL AND ENGINEERING CONSULTANTS

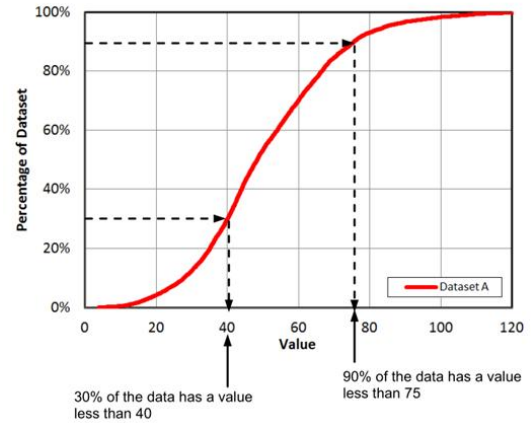


KEY

Box and Whisker Plots








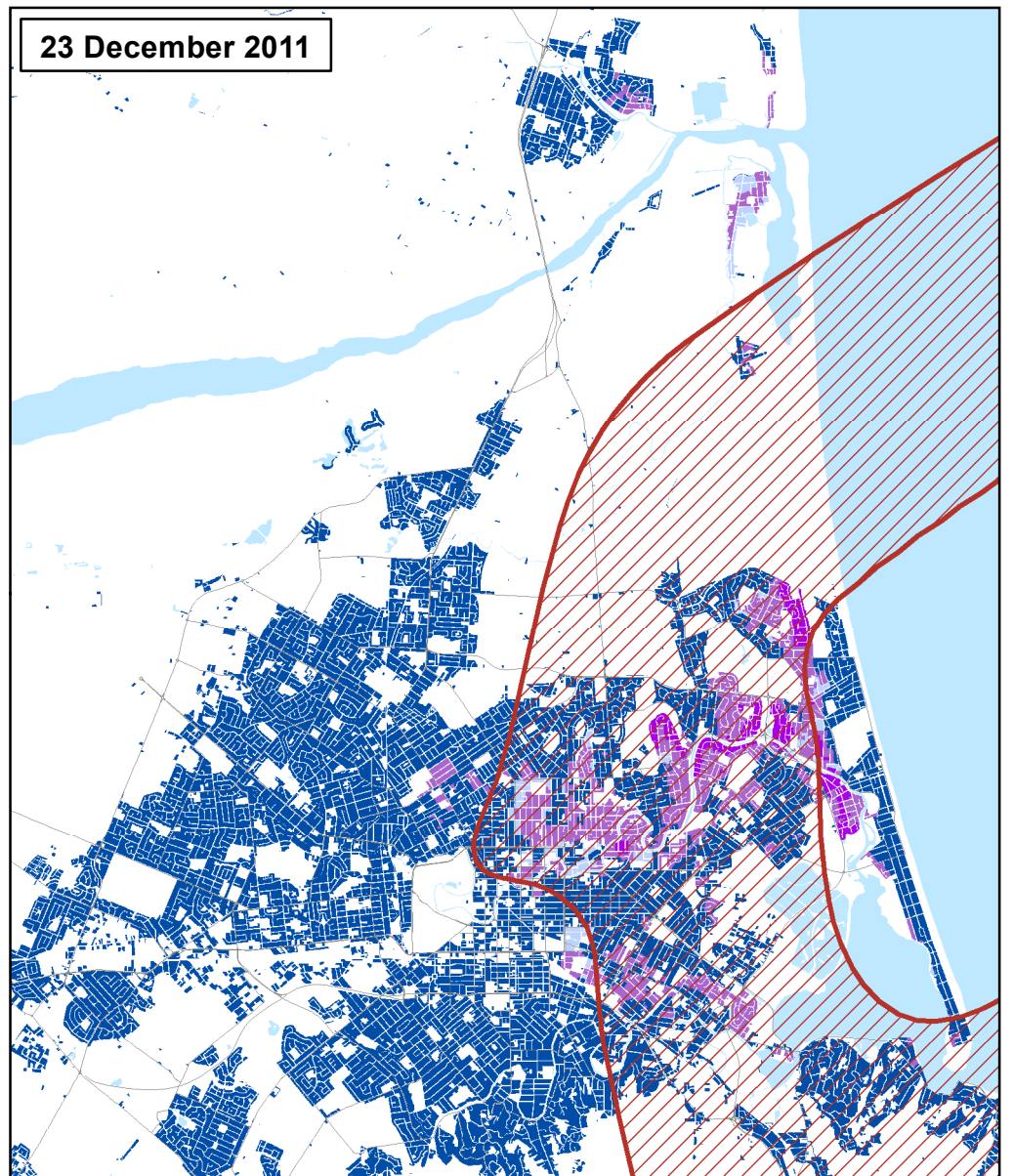
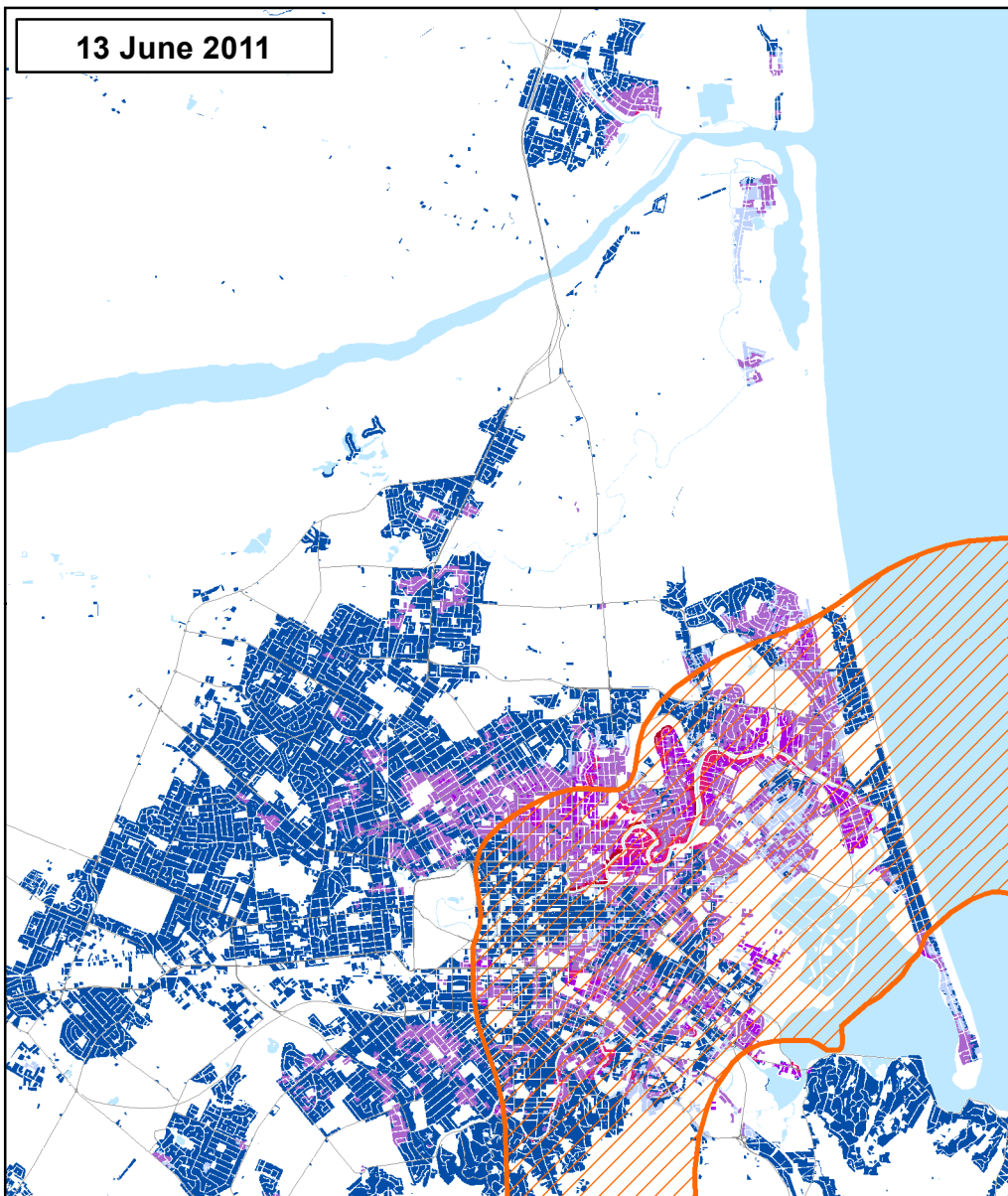
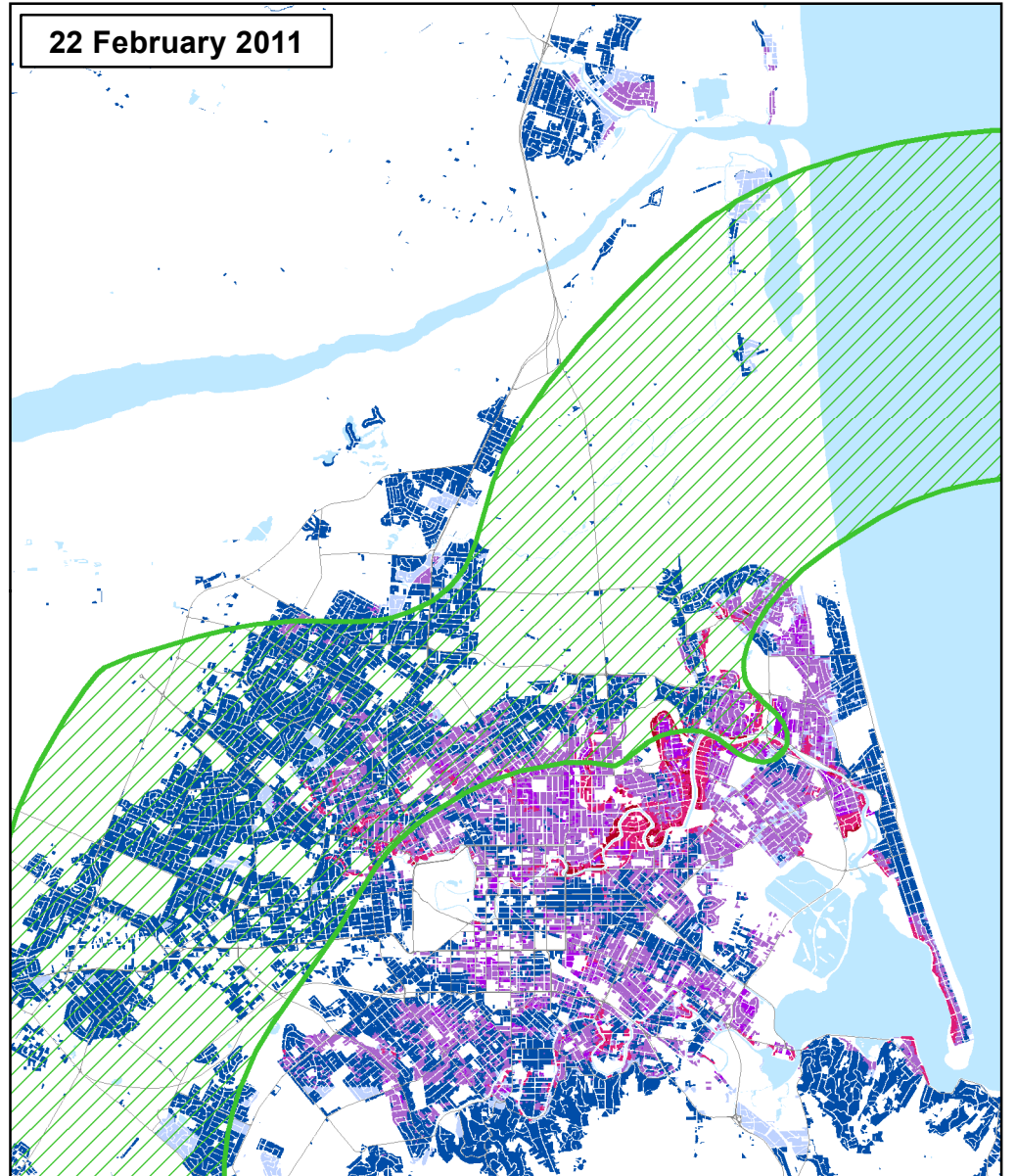
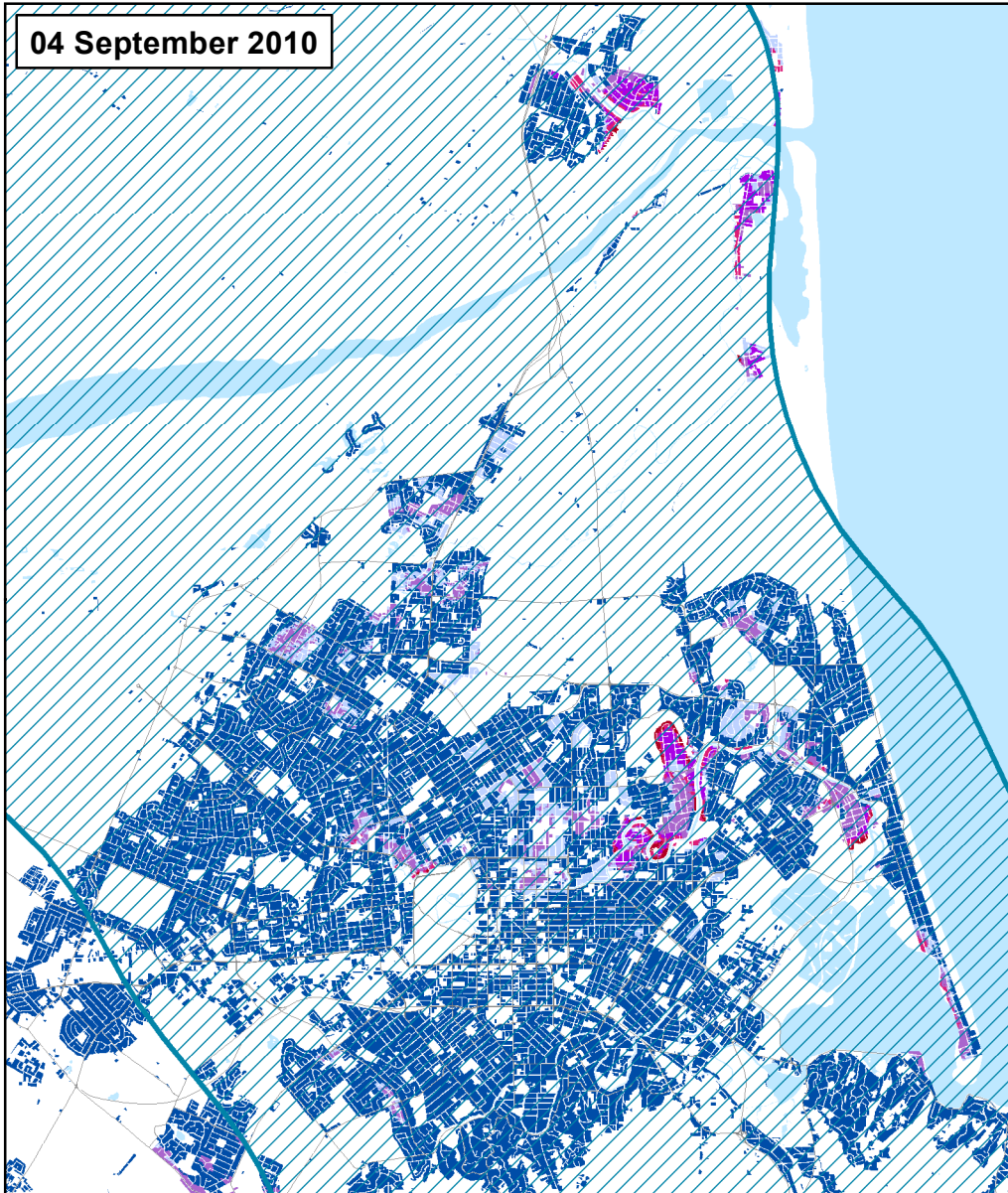
Cumulative Frequency Plot



LEGEND



Observed Vulnerability Index



	N/A	Site did not experience UoC PGA (normalised to M7.5) between 0.15g and 0.25g in any of the four main earthquakes in the Canterbury Earthquake Series.
	No Observed Vulnerability	Site experienced UoC PGA between 0.15g to 0.25g in one to four earthquakes, and no consequential effects of liquefaction were observed in these events (only none to minor liquefaction observation category).
	Minor Observed Vulnerability	Site experienced UoC PGA between 0.15g to 0.25g in three to four earthquakes, but consequential effects of liquefaction were observed for only one of these events.
	Moderate Observed Vulnerability	Site experienced UoC PGA between 0.15g to 0.25g in two to four earthquakes, and consequential effects of liquefaction were observed in about half of these events.
	Major Observed Vulnerability	Site experienced UoC PGA between 0.15g to 0.25g in one to four earthquakes, and consequential effects of liquefaction were observed in either 75% or all of these events.



LEGEND

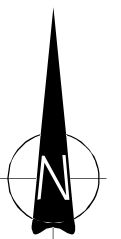
Magnitude Weighted PGA

-  Sept - 0.15 to 0.25g
-  Feb - 0.15 to 0.25g

-  Jun - 0.15 to 0.25g
-  Dec - 0.15 to 0.25g

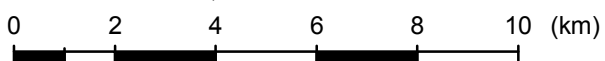
Land Damage Index

-  1 - None Observed
-  2 - Minor
-  3 - Moderate
-  4 - Major
-  5 - Severe
-  6 - Very Severe



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A3 SCALE 1:150,000

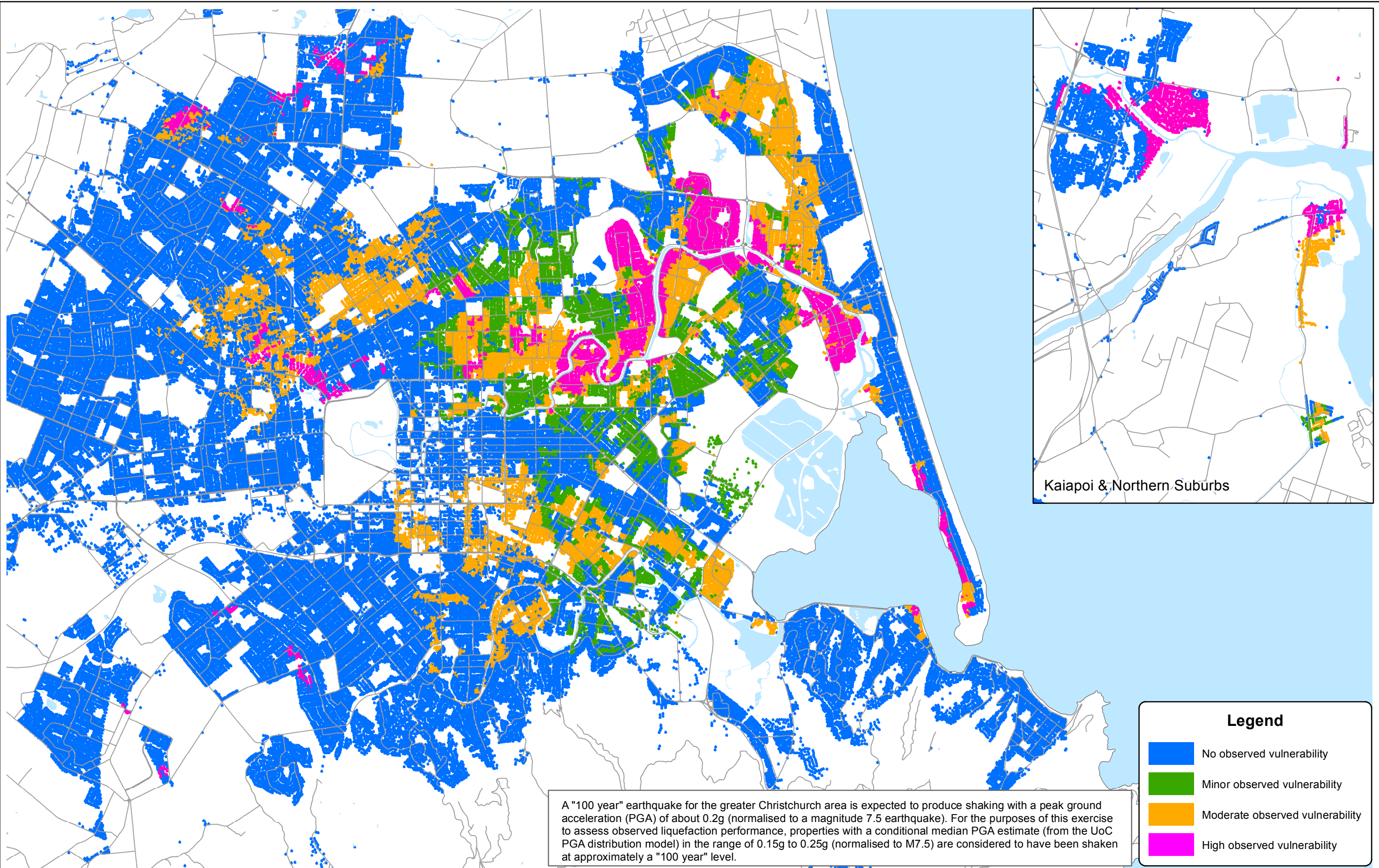


DRAWN	JEL	Feb.13
CHECKED		
APPROVED		
ARCFILE	52020-0200-PGA28.mxd	
SCALE	(AT A3 SIZE)	
Prepared by	Tonkin & Taylor Ltd	
Ref.	52020-0200	

EARTHQUAKE COMMISSION
CHRISTCHURCH CITY & KAIAPOI
Areas Which Experienced a Magnitude Weighted
PGA Between 0.15 - 0.25g for the Four Main Events

FIGURE No. Figure K1

Rev. 0

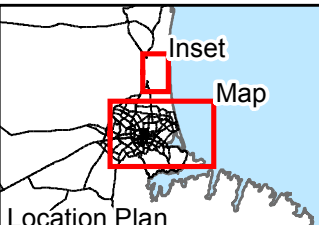
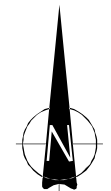
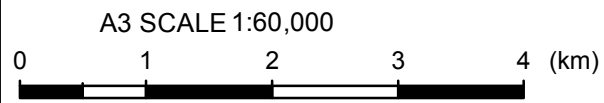


A "100 year" earthquake for the greater Christchurch area is expected to produce shaking with a peak ground acceleration (PGA) of about 0.2g (normalised to a magnitude 7.5 earthquake). For the purposes of this exercise to assess observed liquefaction performance, properties with a conditional median PGA estimate (from the UoC PGA distribution model) in the range of 0.15g to 0.25g (normalised to M7.5) are considered to have been shaken at approximately a "100 year" level.

Legend

- No observed vulnerability
- Minor observed vulnerability
- Moderate observed vulnerability
- High observed vulnerability

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DRAWN	CXP	Feb.13
CHECKED		
APPROVED		
ARCFILE 52020-0200-LDF44		
SCALE (AT A3 SIZE) 1:60,000		
Prepared By Tonkin & Taylor Ltd. Ref. 52020-0200		

EARTHQUAKE COMMISSION
CHRISTCHURCH CITY & KAIAPOI
 Observed Liquefaction Performance at
 Approximately 100 year PGA (Magnitude Weighted)

FIGURE No. Figure K2

Rev. 0

Date: 28/02/2013 Time: 8:54:30 a.m.



