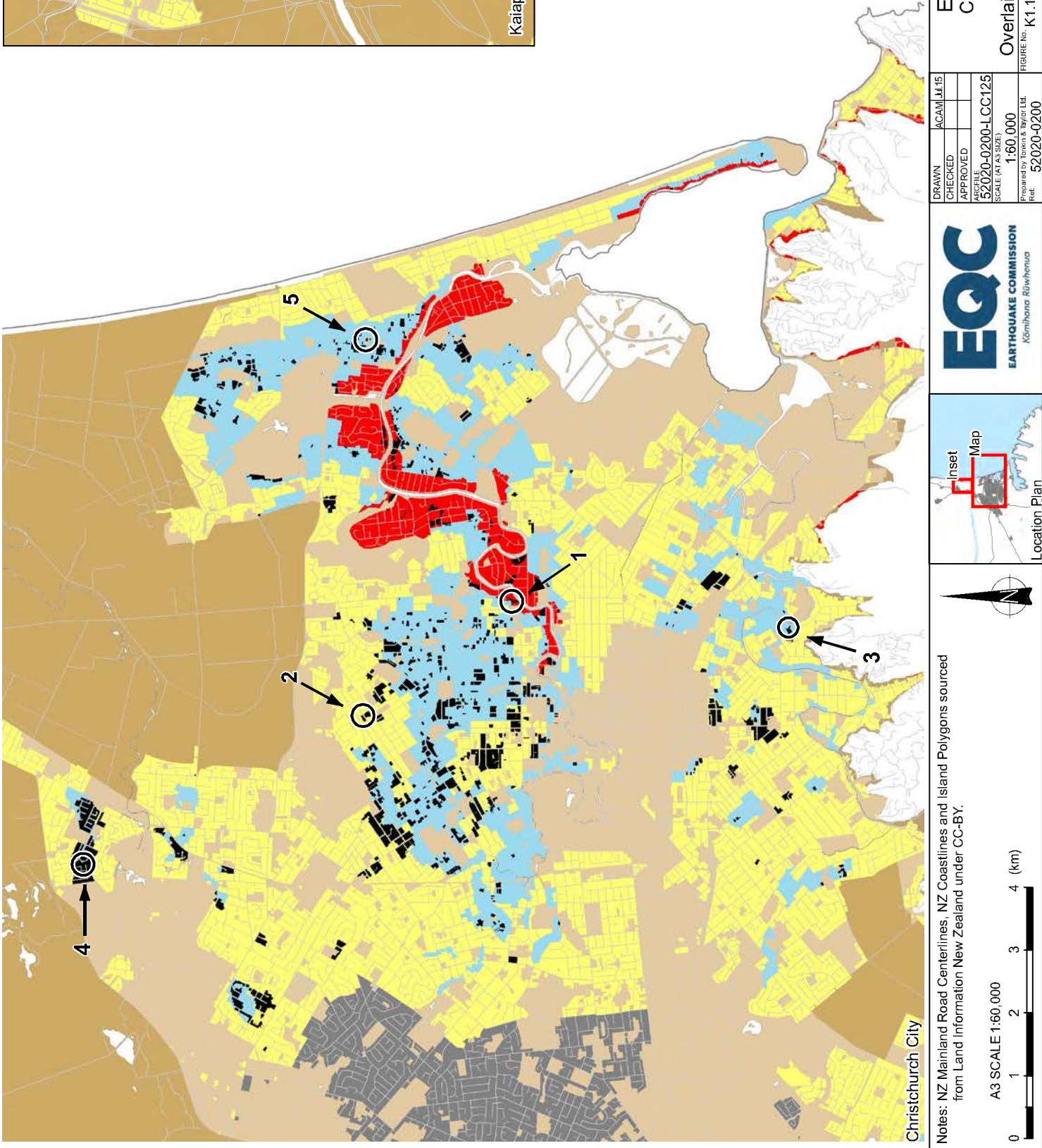
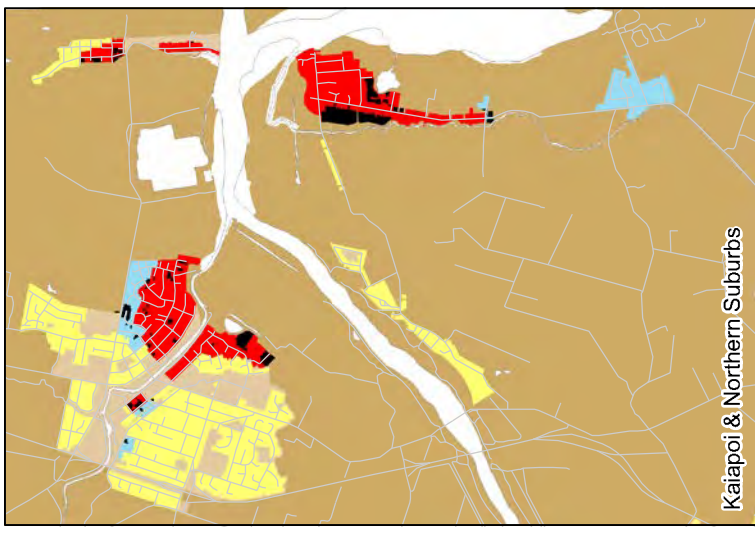


**Appendix K: Maps used for the Regional  
Assessment of ILV**

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## Appendix K1 - Maps used for Regional Assessment of ILV

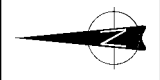
- **Figure K1.1 – MBIE Technical Category Map**
- **Figure K1.2 – Ground Surface Elevation Map Post-June 2011/Post-Dec 2011 DEM**
- **Figure K1.3 – Total Elevation Change – Pre-Sept 2010 to Post-June/Post-Dec 2011**
- **Figure K1.4 – Liquefaction Related Elevation Change – Pre-Sept 2010 to Post-June/Post-Dec 2011**
- **Figure K1.5 to K1.8 – Land Damage Observations After the September 2010, February 2011, June 2011 and December 2011 Events**
- **Figure K1.9 to K1.11 – Depth to Ground Water Contour: 15<sup>th</sup>, 50<sup>th</sup> and 85<sup>th</sup> Percentile Surface**
- **Figure K1.12 – Depth to Ground Water Contour: Difference Between the 15<sup>th</sup> and 85<sup>th</sup> Percentile**
- **Figures K1.13 to K1.17 – Median Normalised CPT Tip Resistance ( $q_{c1N}$ ) at 1m intervals: Depth 0m to 5m**
- **Figures K1.18 to K1.22 – Median Soil Behaviour Type Index ( $I_c$ ) at 1m intervals: Depth 0m to 5m**
- **Figure K1.23 – Depth to First Hard Layer Greater than 0.5m Thick**
- **Figures K1.24 to K1.26 – Sensitivity of LSN to PGA: PGA=0.28 to 0.32g;  $M_w = 6.0$**
- **Figures K1.27 to K1.29 – Sensitivity of LSN to  $P_L$ :  $P_L = 15^{th}, 50^{th}$  and  $85^{th}$  percentile**
- **Figure K1.30 to K1.31 – Liquefaction Susceptibility Criteria Banded by the Soil Behaviour Type Index: Depth 0m to 5m and Depth 5m to 10m**
- **Figure K1.32 to K1.33 – Comparison of Fines Content Banded by the Soil Behaviour Type Index: Depth from 0m to 5m and 5m to 10m**
- **Figures K1.34 to K1.39 – Sensitivity of LSN to  $C_{FC}$  and  $I_c$  Cutoff:  $C_{FC} = 0$  and  $0.2$ ;  $I_c$  Cutoff = 2.4, 2.6 and 2.8**



**LEGEND**

- Worked example locations
- Property Assessment**
  - Stage 2 assessment required
- MBIE Technical Categories**
  - Red Zone
  - TC3
  - TC2
  - TC1
  - N/A

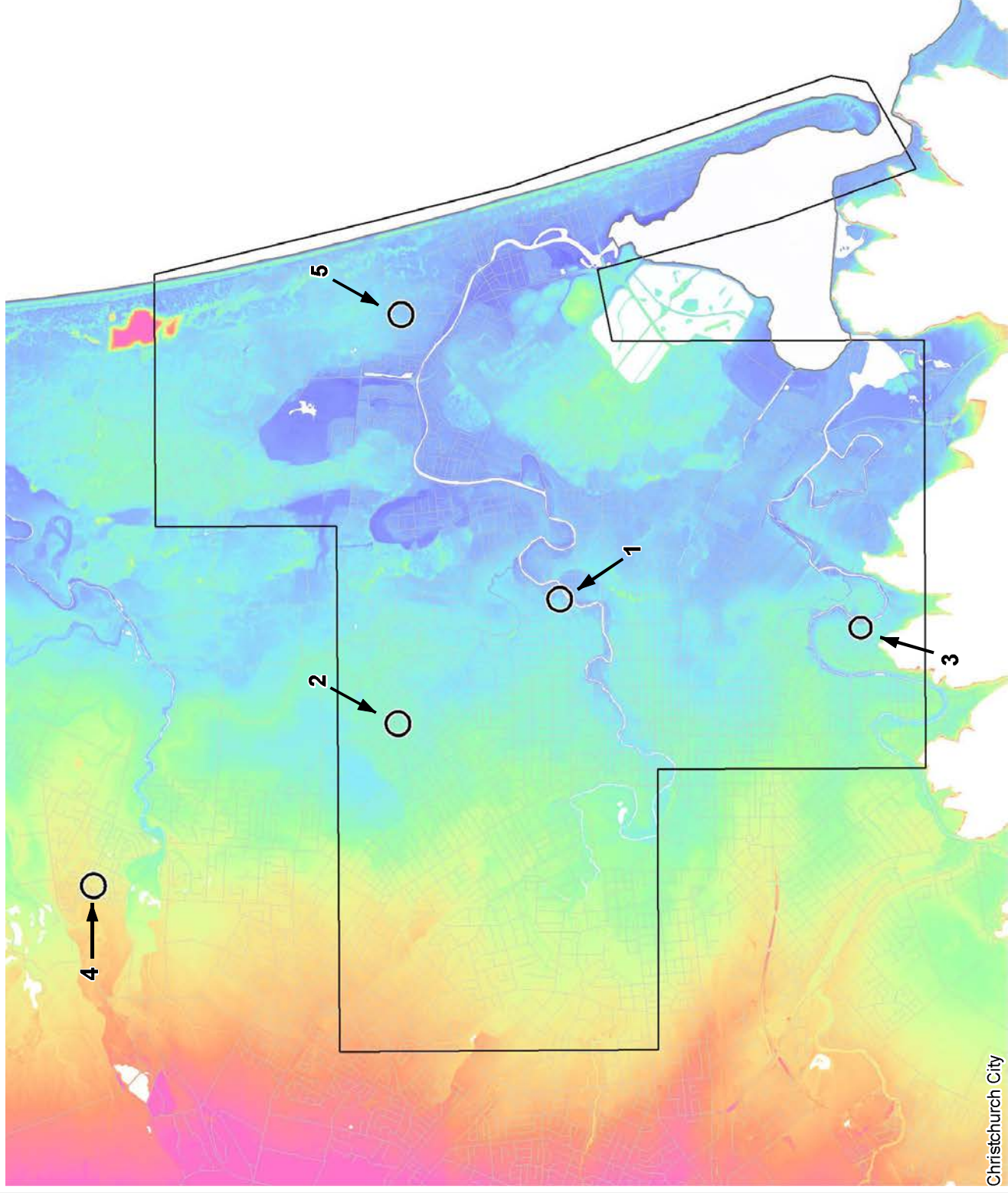
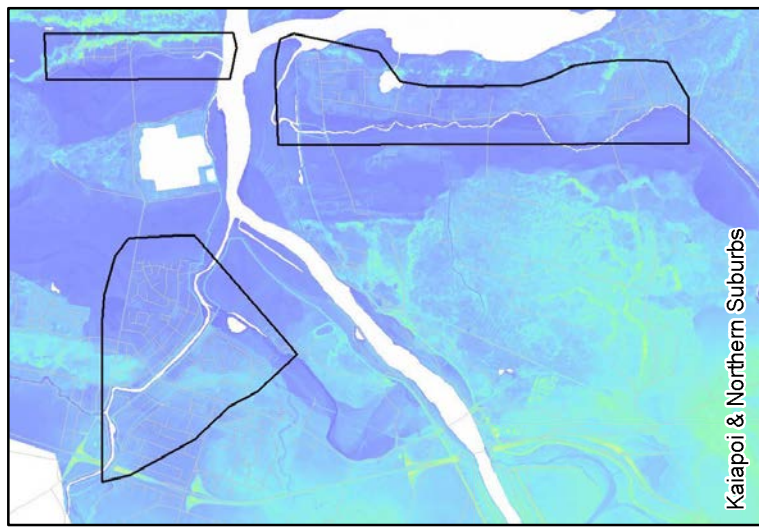
DRAWN	ACAM/JH/15
CHECKED	
APPROVED	
ARGFILE	52020-0200-LCC125
SCALE (AT A3 SIZE)	1:60,000
Prepared by	Tatini & Tejari, Ltd.
Ref:	52020-0200



Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)



**LEGEND**

- Worked example locations
- Post December 2011 DEM Extent

**Post June 2011 Ground Elevation (m RL)**

High : 24  
Low : 0

**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Ground Surface Elevation Map  
 Post-June 2011/Post-Dec 2011 DEM

DRAWN	ACAM	Aug 15
CHECKED		
APPROVED		
PROJECT	52020-0200-LCC126	
SCALE (AT A3 SIZE)	1:60,000	
Prepared by	Terra & Taylor Ltd	
Ref	52020-0200	

**EQC**  
 EARTHQUAKE COMMISSION  
 Kōwhiriwhiri Aitua

**Location Plan**

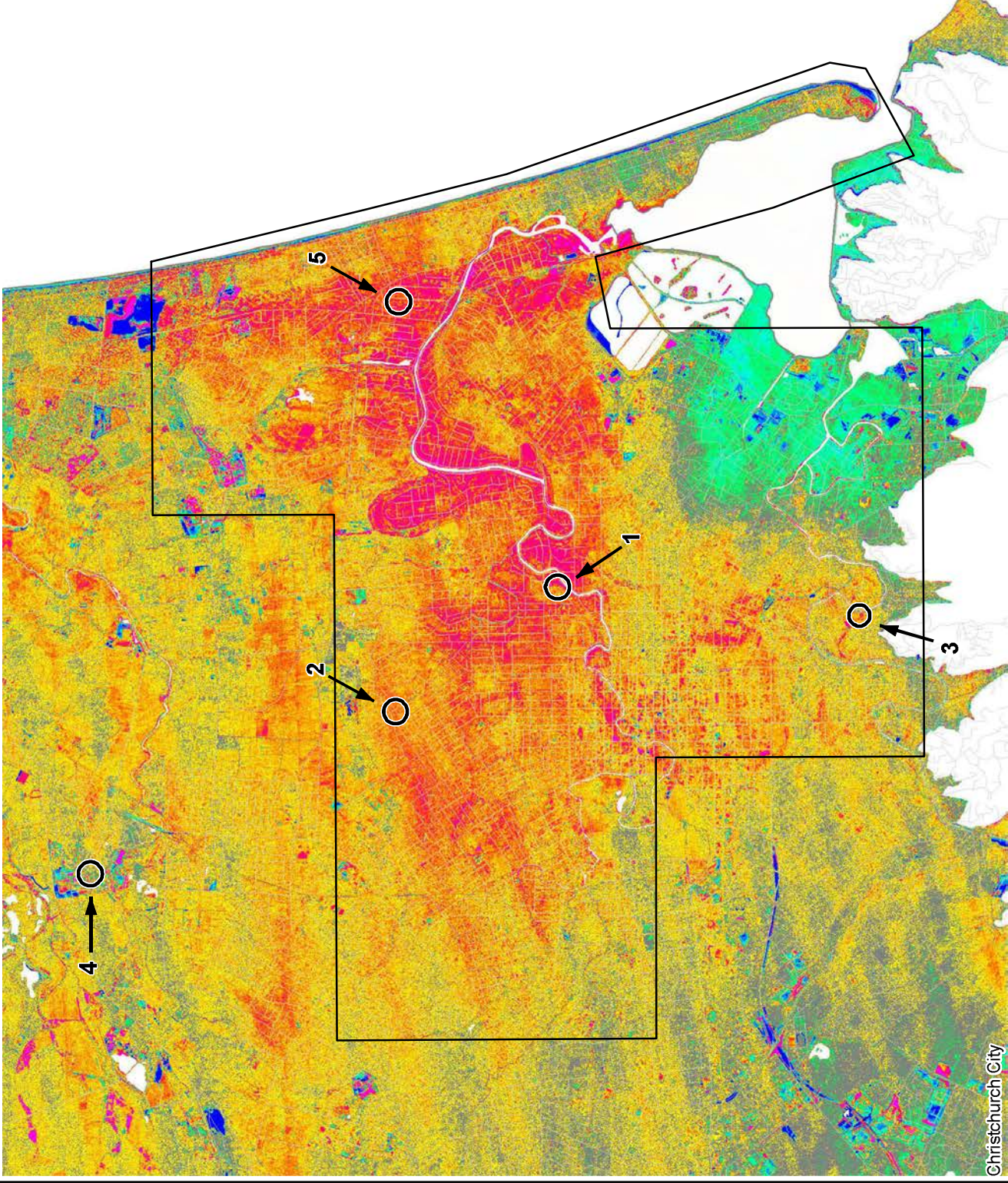
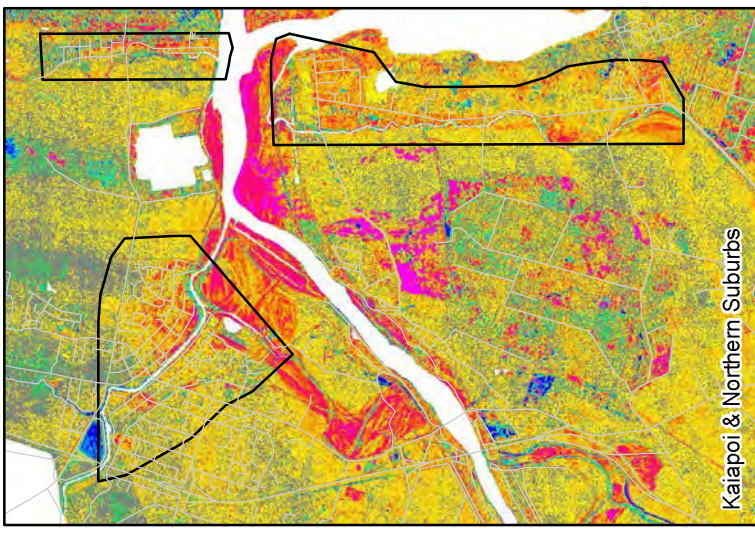
**Notes:** NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)

Date: 7/08/2015 Time: 10:28:23 a.m.

FIGURE No K1.2  
 Rev. 0



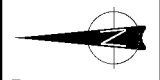
**LEGEND**

- Worked example locations
- Post December 2011 Difference DEM Extent

**Elevation Change (m)**

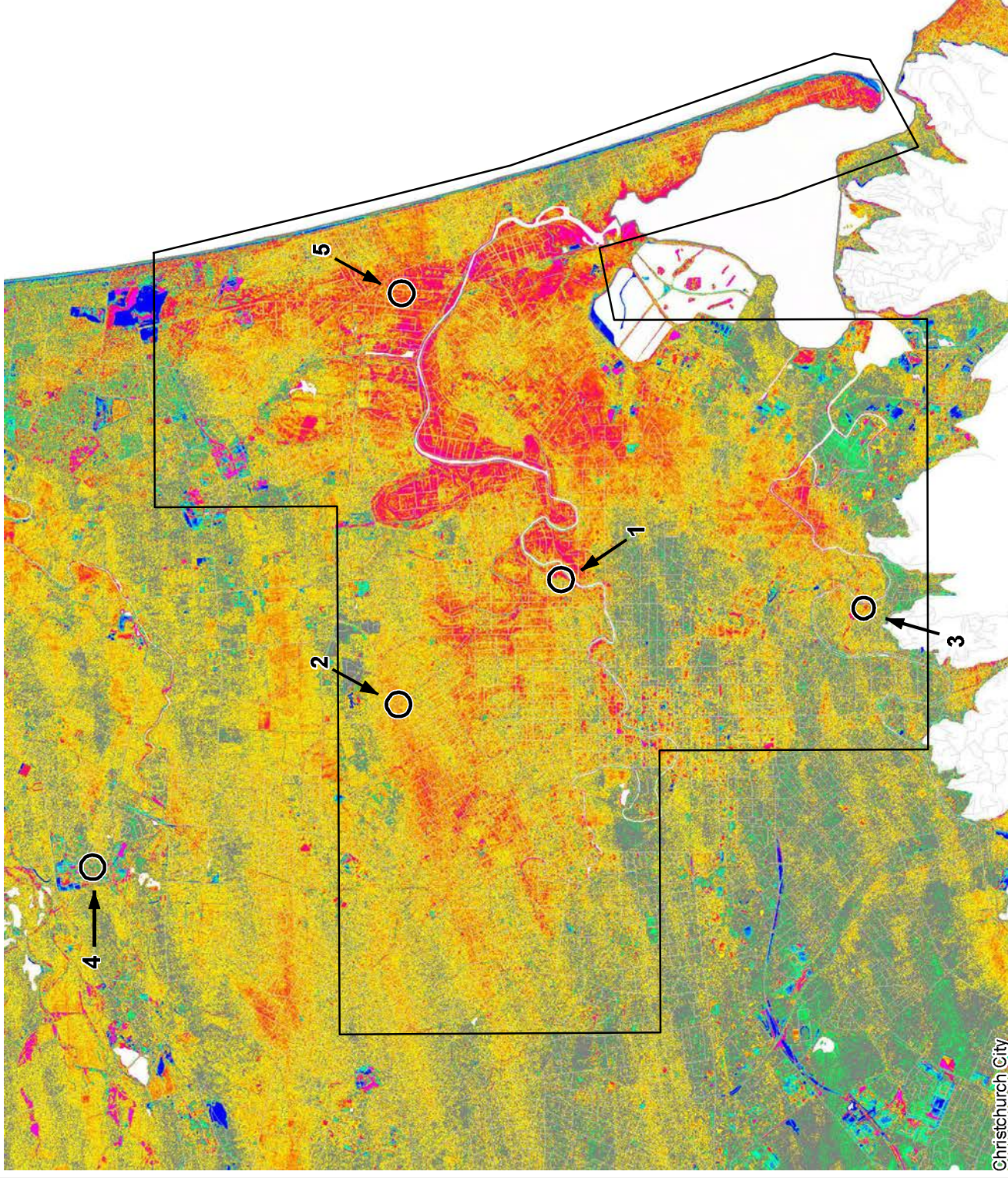
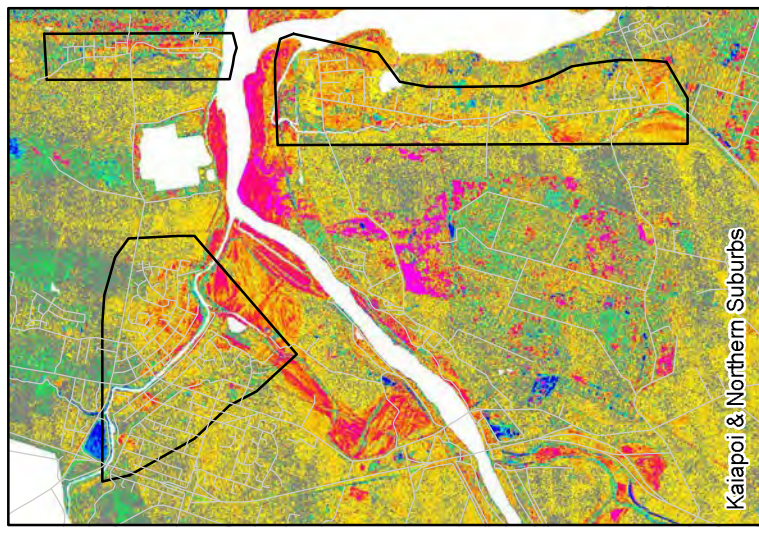
< -1.0	+0.1 - +0.2
-1.0 to -0.5	+0.2 - +0.3
-0.5 to -0.4	+0.3 - +0.4
-0.4 to -0.3	+0.4 - +0.5
-0.3 to -0.2	+0.5 - +1.0
-0.2 to -0.1	< +1.0
+0.1 to +0.2	

DRAWN	LNL	Aug 15
CHECKED		
APPROVED		
PROJECT	52020-0200-LCC128	
SCALE (AT A3 SIZE)	1:60,000	
Prepared by	Terra & Taylor Ltd	
Ref	52020-0200	



Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY. LiDAR supplied by AAM Brisbane (AAM) flown 6-9 July 2003, 21-24 July 2005 and 6-11 February 2008, and New Zealand Aerial Mapping (NZAM) 18 and 20 July, 11 August, 25-27 August and 2-3 September 2011, and 17-18 February 2012.

0 1 2 3 4 (krt) A3 SCALE 1:60,000



**LEGEND**

- Worked example locations
- Post December 2011 Difference DEM Extent

**Elevation Change (m)**

< -1.0	+0.1 - +0.2
-1.0 to -0.5	+0.2 - +0.3
-0.5 to -0.4	+0.3 - +0.4
-0.4 to -0.3	+0.4 - +0.5
-0.3 to -0.2	+0.5 - +1.0
-0.2 to -0.1	< +1.0
-0.1 to +0.1	

**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Liquefaction Related Elevation Change - Pre-Sept 2010 to Post-June/Post-Dec 2011 Event

FIGURE No. K1.4

DRAWN	LNL	Aug 15
CHECKED		
APPROVED		
PROJECT	52020-0200-LCC129	
SCALE (AT A3 SIZE)	1:60,000	

Prepared by: Tetrah & Taylor Ltd  
 Ref: 52020-0200

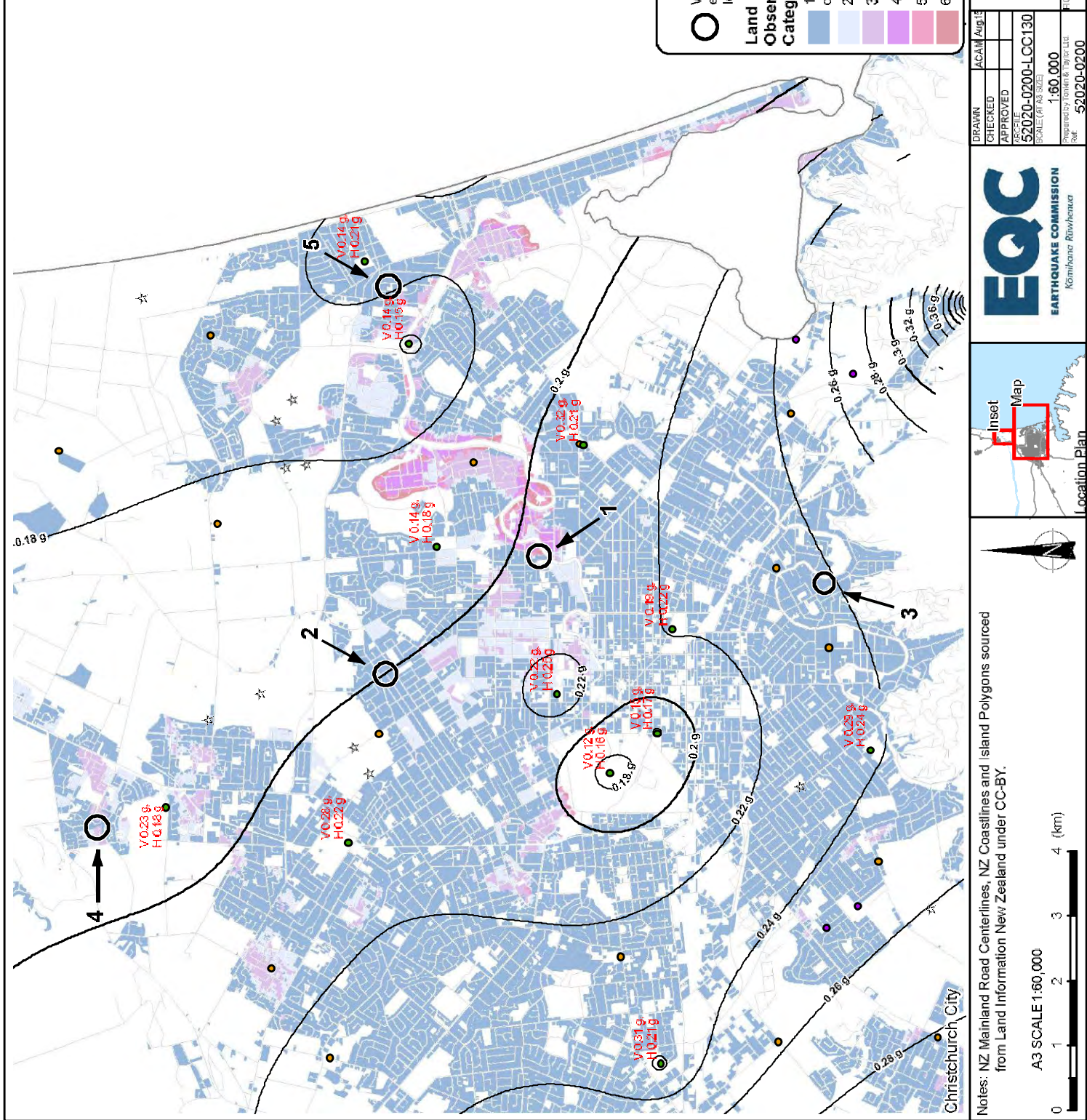
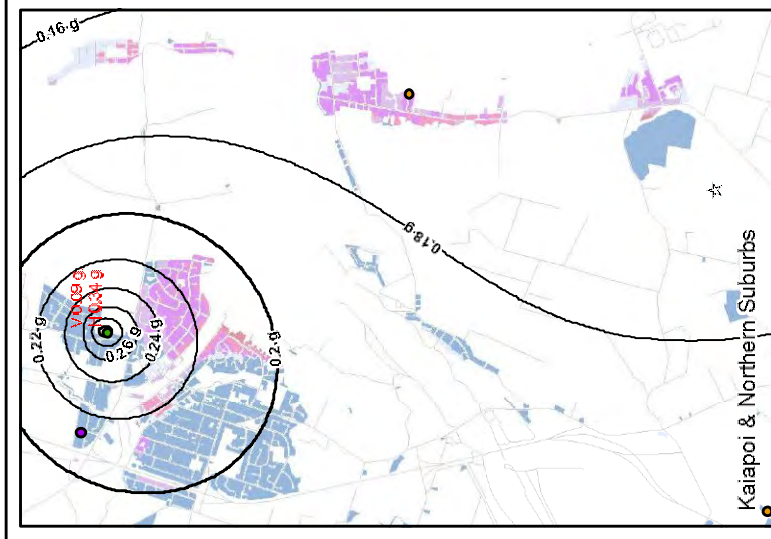
**EQC**  
**EARTHQUAKE COMMISSION**  
 Kōwhiriwhiri Atiwhenua

Inset Map  
 Location Plan

Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY. LiDAR supplied by AAM Brisbane (AAM) flown 6-9 July 2003, 21-24 July 2005 and 6-11 February 2008, and New Zealand Aerial Mapping (NZAM) 18 and 20 July, 11 August, 25-27 August and 2-3 September 2011, and 17-18 February 2012.

0 1 2 3 4 (kmt)  
 A3 SCALE 1:60,000

Date: 7/08/2015 Time: 9:53:53 a.m.



**LEGEND**

**Worked example locations**  
 ○

**Land Damage Observation Category**

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

**PGA contours (g)**

- Major
- Minor

**Station Location and Maximum PGA Readings (g)**

- Vertical acceleration
- Horizontal acceleration

**Piezometer Locations**

- monitoring well
- EOC monitoring well
- CCC monitoring well
- ☆ Drawdown analysis piezometer

DRAWN	ACAM/AJL
CHECKED	
APPROVED	
PROJECT	52020-0200-LCC130
SCALE (AT AS SIZE)	1:60,000
Prepared by	Tommy & Taylor, Ltd.
Ref.	52020-0200
FIGURE No.	K1.5
Rev.	0

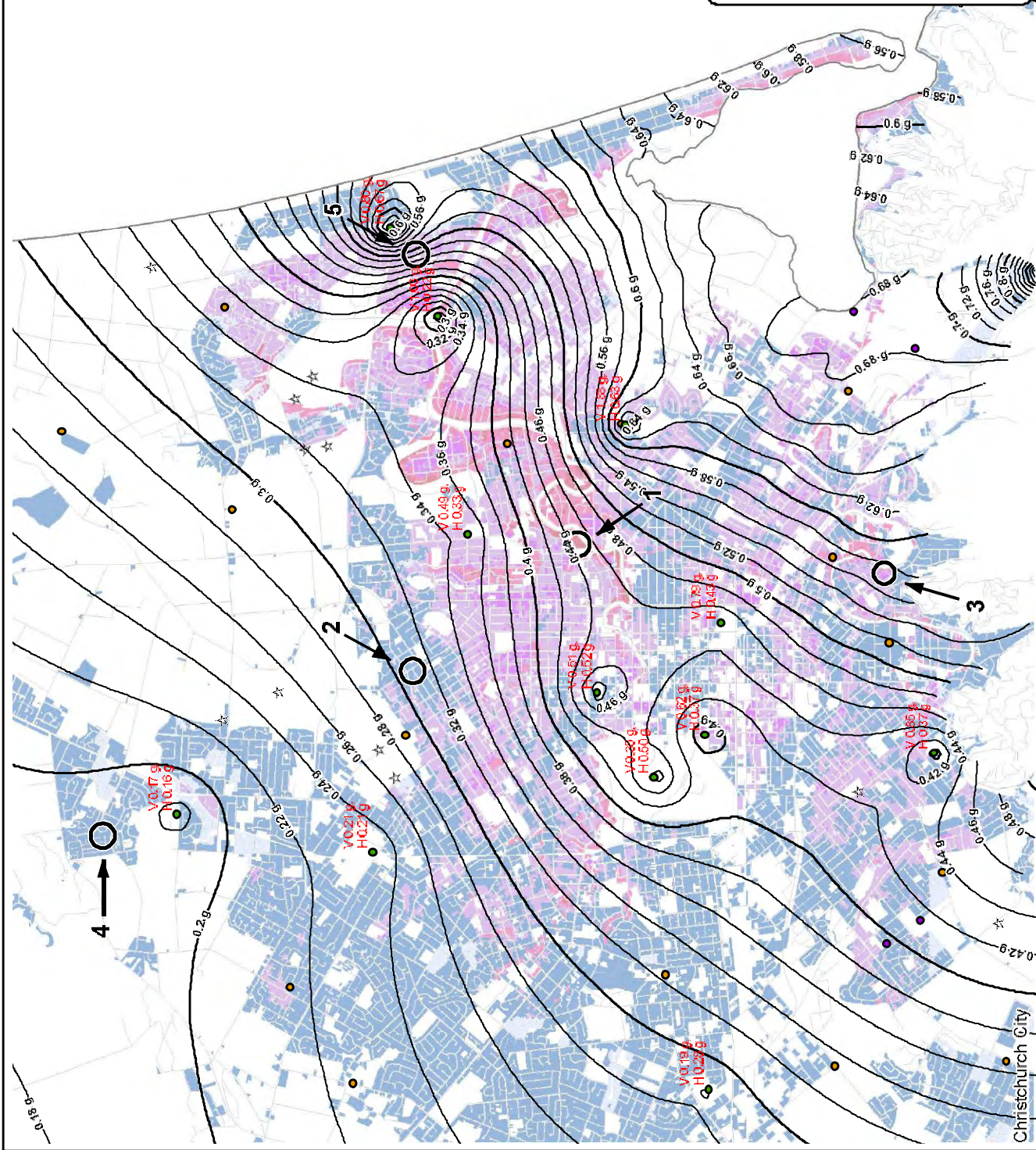
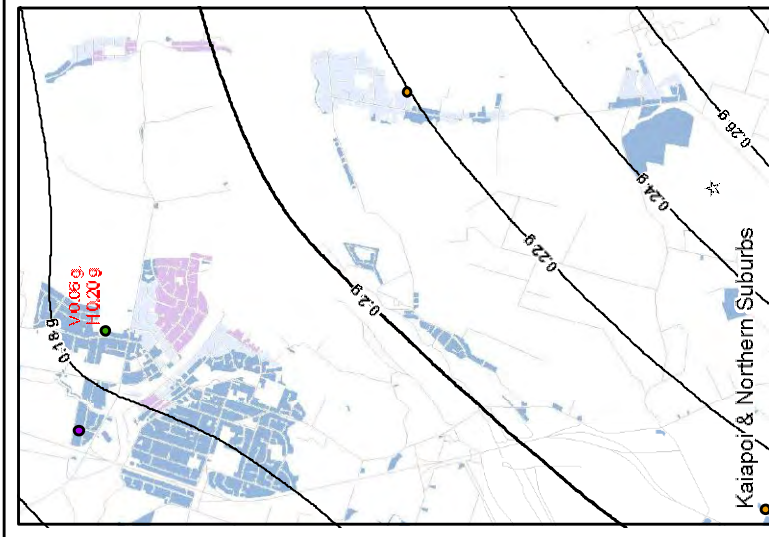


Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)

Location Plan



**LEGEND**

**Worked example locations**  
 ○

**Land Damage Observation Category**

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

**PGA contours (g)**

- Major
- Minor

**Station Location and Maximum PGA Readings (g)**

- Vertical acceleration
- Horizontal acceleration

**Piezometer Locations**

- ECAN monitoring well
- EQC monitoring well
- CCC monitoring well
- Drawdown analysis piezometer

DRAWN	ACAM/AJL
CHECKED	
APPROVED	
PROJECT	52020-0200-LCC131
SCALE (AT A3 SIZE)	1:60,000
Prepared by	Tehani & Taylor Ltd.
Ref.	52020-0200

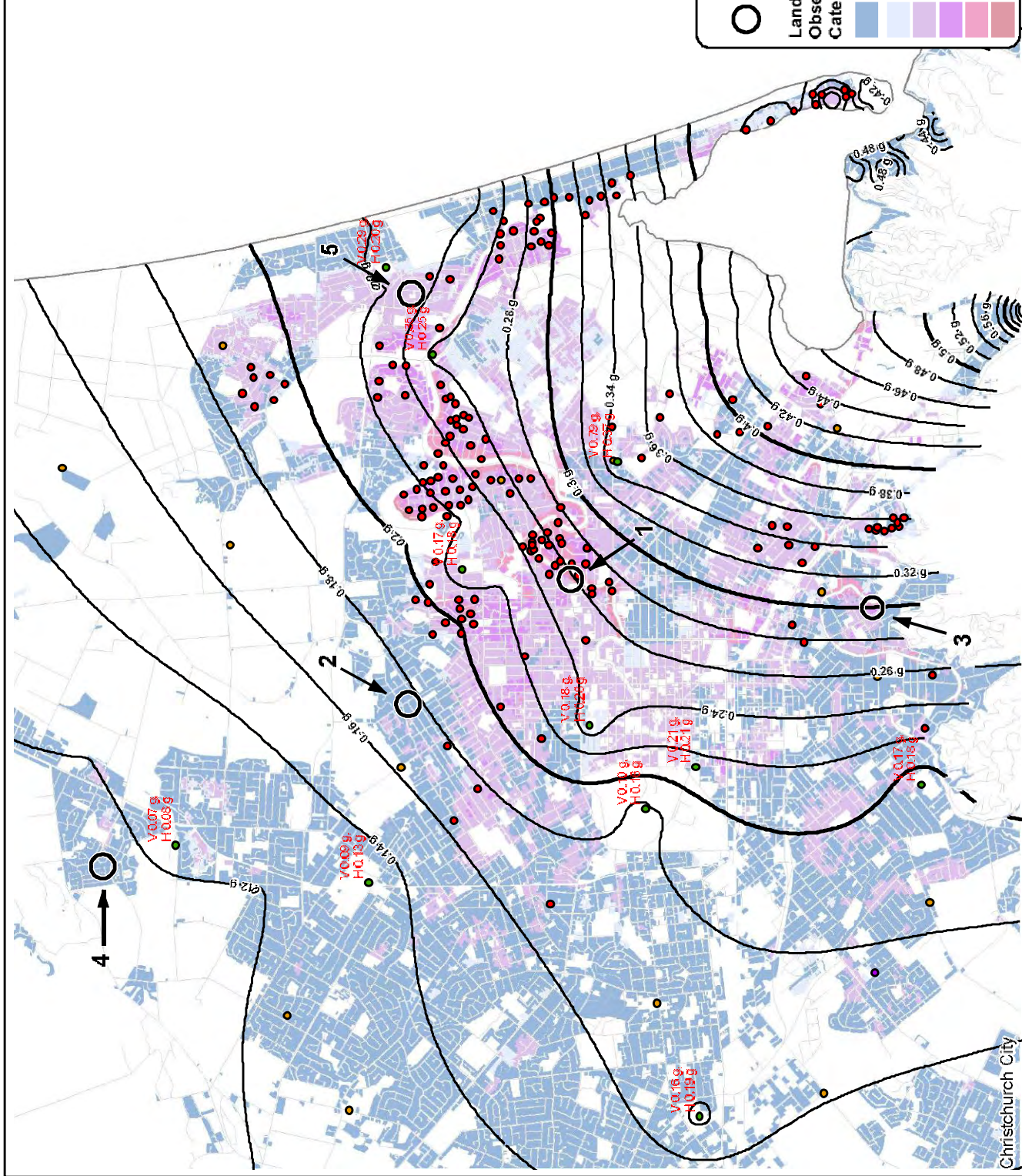
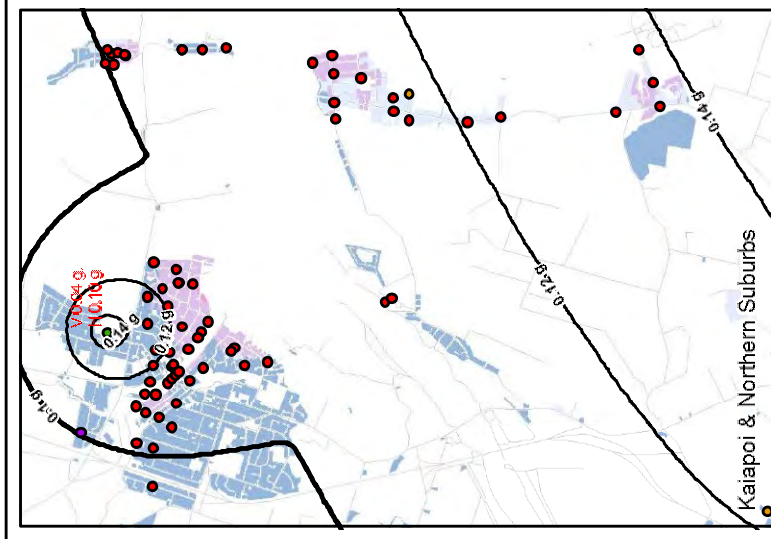


Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)





**LEGEND**

**Worked example locations**

- Major
- Minor

**Land Damage Observation Category**

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

**PGA contours (g)**

- Major
- Minor

**Station Location and Maximum PGA Readings (g)**

- Vertical acceleration
- Horizontal acceleration

**Piezometer Locations**

- ECan monitoring well
- EQC monitoring well
- CCC monitoring well
- Drawdown analysis piezometer

DRAWN	ACAM/AJL
CHECKED	
APPROVED	
PROJECT	52020-0200-LCC132
SCALE (AT AS SIZE)	1:60,000
Prepared by	Tommy Taylor Ltd.
Ref.	52020-0200



Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)



**LEGEND**

**Worked example locations**  
 ○

**Land Damage Observation Category**

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

**PGA contours (g)**

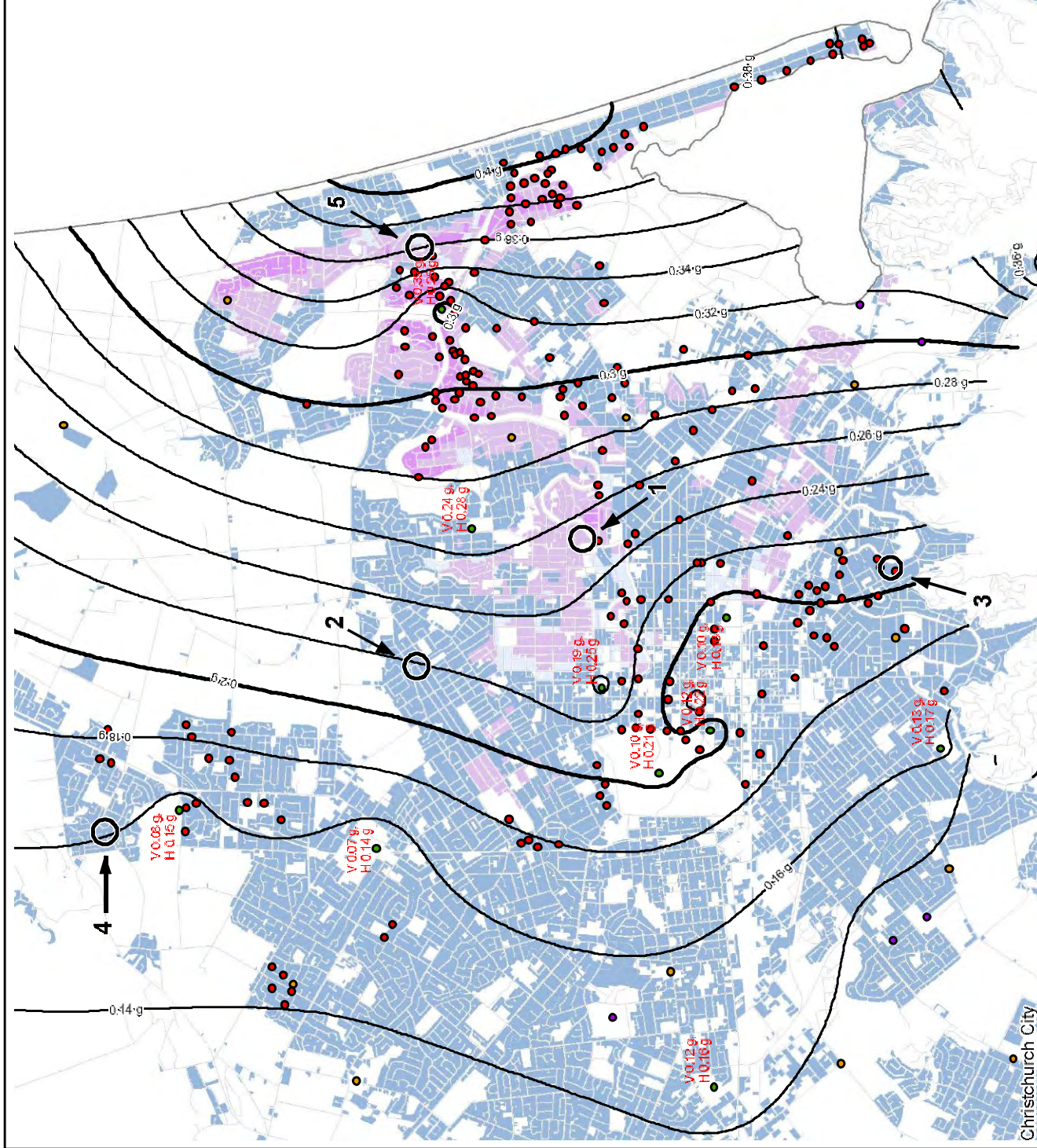
- Major
- Minor

**Station Location and Maximum PGA Readings (g)**

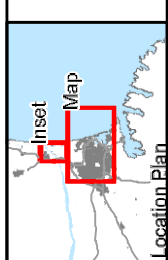
- ECan monitoring well
- EQC monitoring well
- CCC monitoring well
- Drawdown analysis piezometer

**Vertical acceleration, Horizontal acceleration**

- 



DRAWN	ACAM/AJL
CHECKED	
APPROVED	
PROJECT	52020-0200-LCC133
SCALE (AT AS SIZE)	1:60,000
Prepared by	Tommy Taylor, LLC
Ref	52020-0200

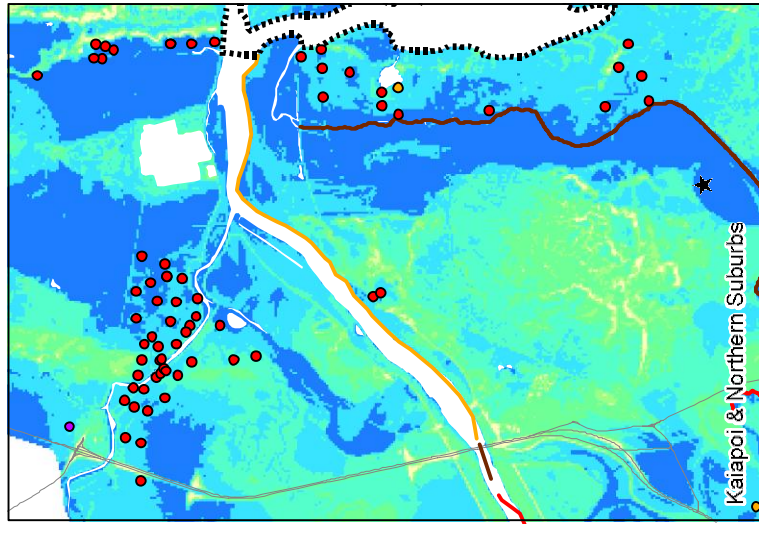


Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)

FIGURE No. K18



**LEGEND**

Worked example locations

**Monitoring Wells**

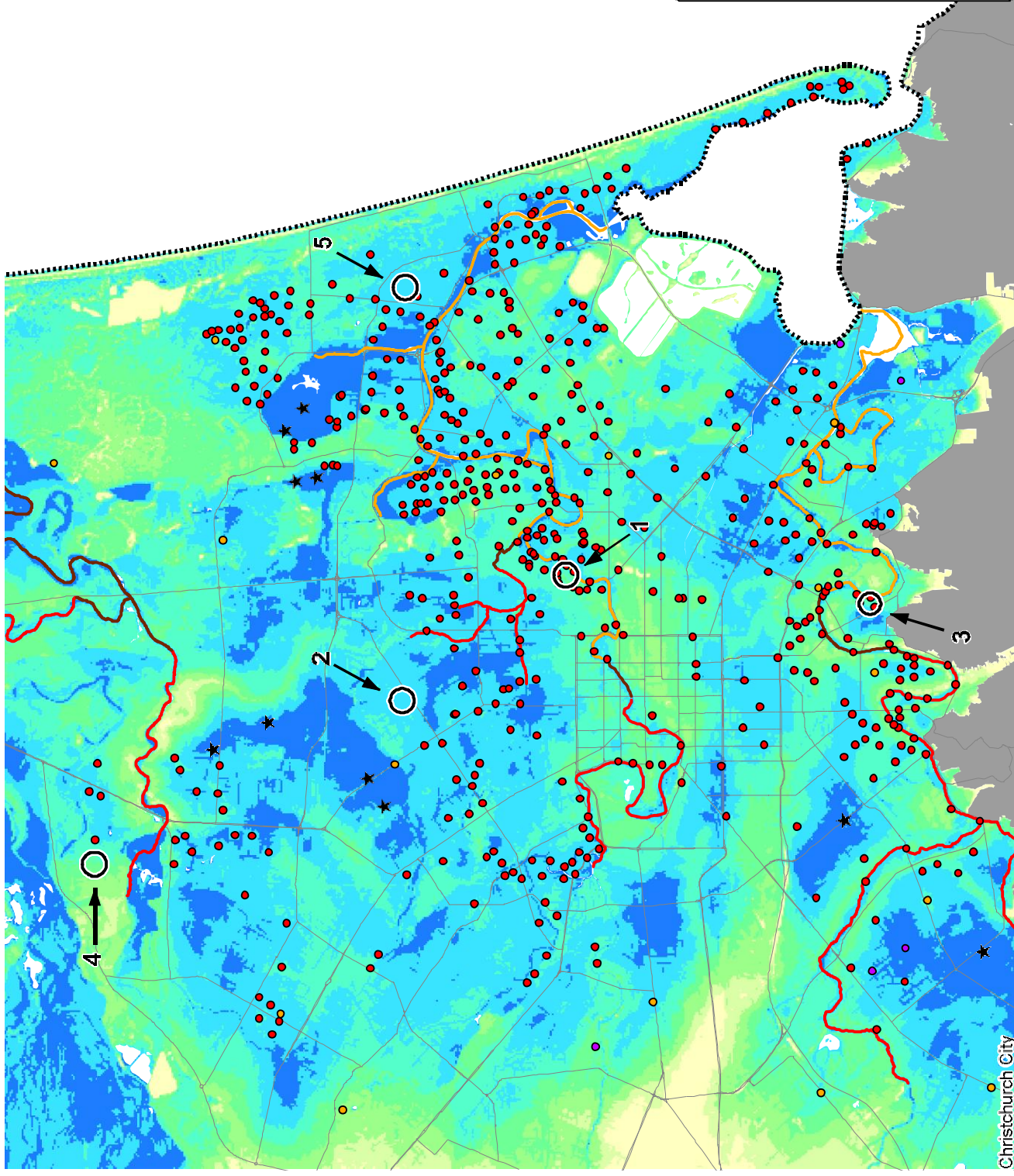
- EQC Monitoring Well  $\geq 12$  Data Readings
- EQC Monitoring Well  $< 12$  Data Readings
- EQCan Monitoring Well  $\geq 12$  Data Readings
- EQC Monitoring Well  $< 12$  Data Readings

**Other Analysis Data**

- Coast
- Transitional
- Tidal
- Non Tidal
- Drawdown Points

**Depth to Ground Water (m)**

- 0 - 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- 5 - 6
- 6 - 7
- No Data



**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Depth to Ground Water Contour:  
 15th Percentile Surface

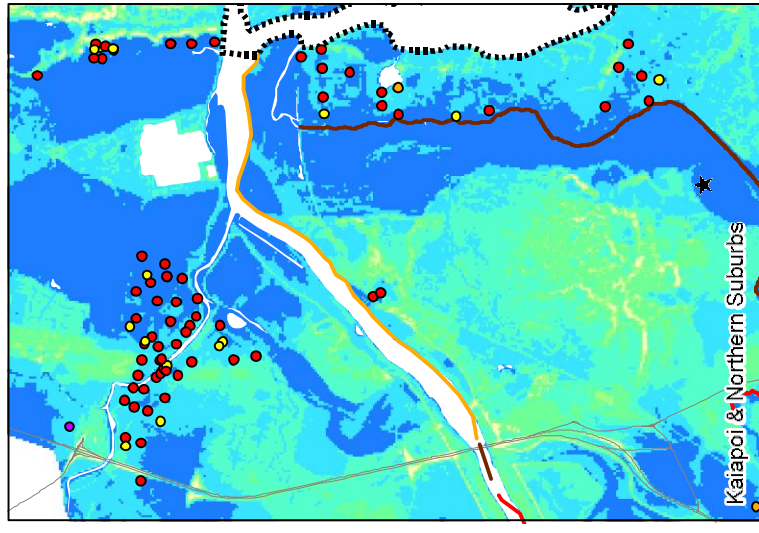
FIGURE No. K19

DRAWN	ACAM JUL16
CHECKED	
APPROVED	
PROJECT	52020-0200-LCC134
SCALE (AT A3 SIZE)	1:60,000
Prepared by	Terralink International Ltd.
Ref	52020-0200



Notes: Road Database supplied by Terralink International Ltd.  
 Contains data sourced from Land Information New Zealand under CC-BY.  
<http://creativecommons.org/licenses/by/3.0/nz/>  
 A3 SCALE 1:60,000

0 1 2 3 4 (km)



**LEGEND**

Worked example locations

**Monitoring Wells**

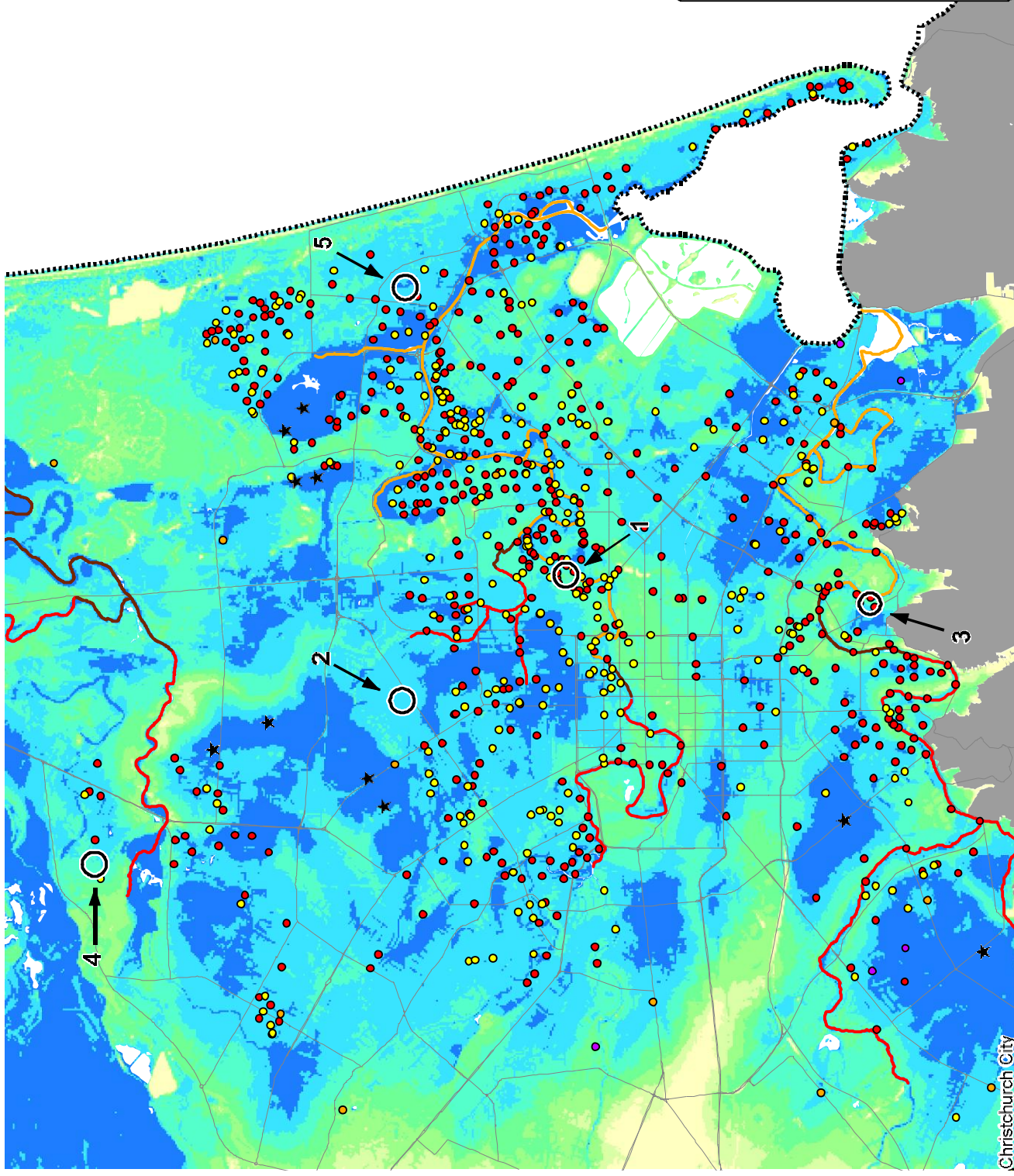
- EQC Monitoring Well  $\geq 12$  Data Readings
- ECan Monitoring Well  $< 12$  Data Readings
- CCC Monitoring Well

**Other Analysis Data**

- Coast
- Transitional
- Tidal
- Non Tidal
- Drawdown Points

**Depth to Ground Water (m)**

- 0 - 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- 5 - 6
- 6 - 7
- No Data



**EQC**  
EARTHQUAKE COMMISSION  
Kōwhiri Rauwharua

**EARTHQUAKE COMMISSION**  
CHRISTCHURCH CITY & KAIAPOI  
Depth to Ground Water Contour:  
50th Percentile Surface

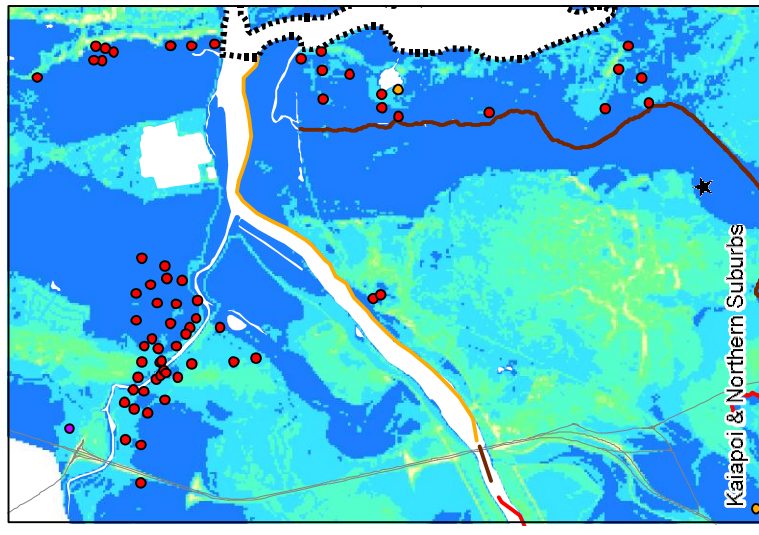
FIGURE No: K1.10

DRAWN	ACAM JUL16
CHECKED	
APPROVED	
PROJECT	52020-0200-LCC135
SCALE (A3 SIZE)	1:60,000
Prepared by Terrain International Ltd	
Ref	52020-0200

Notes: Road Database supplied by Terralink International Ltd.  
Contains data sourced from Land Information New Zealand under CC-BY.  
<http://creativecommons.org/licenses/by/3.0/nz/>  
A3 SCALE 1:60,000

0 1 2 3 4 (km)

Inset Map  
Location Plan



**LEGEND**

Worked example locations

**Monitoring Wells**

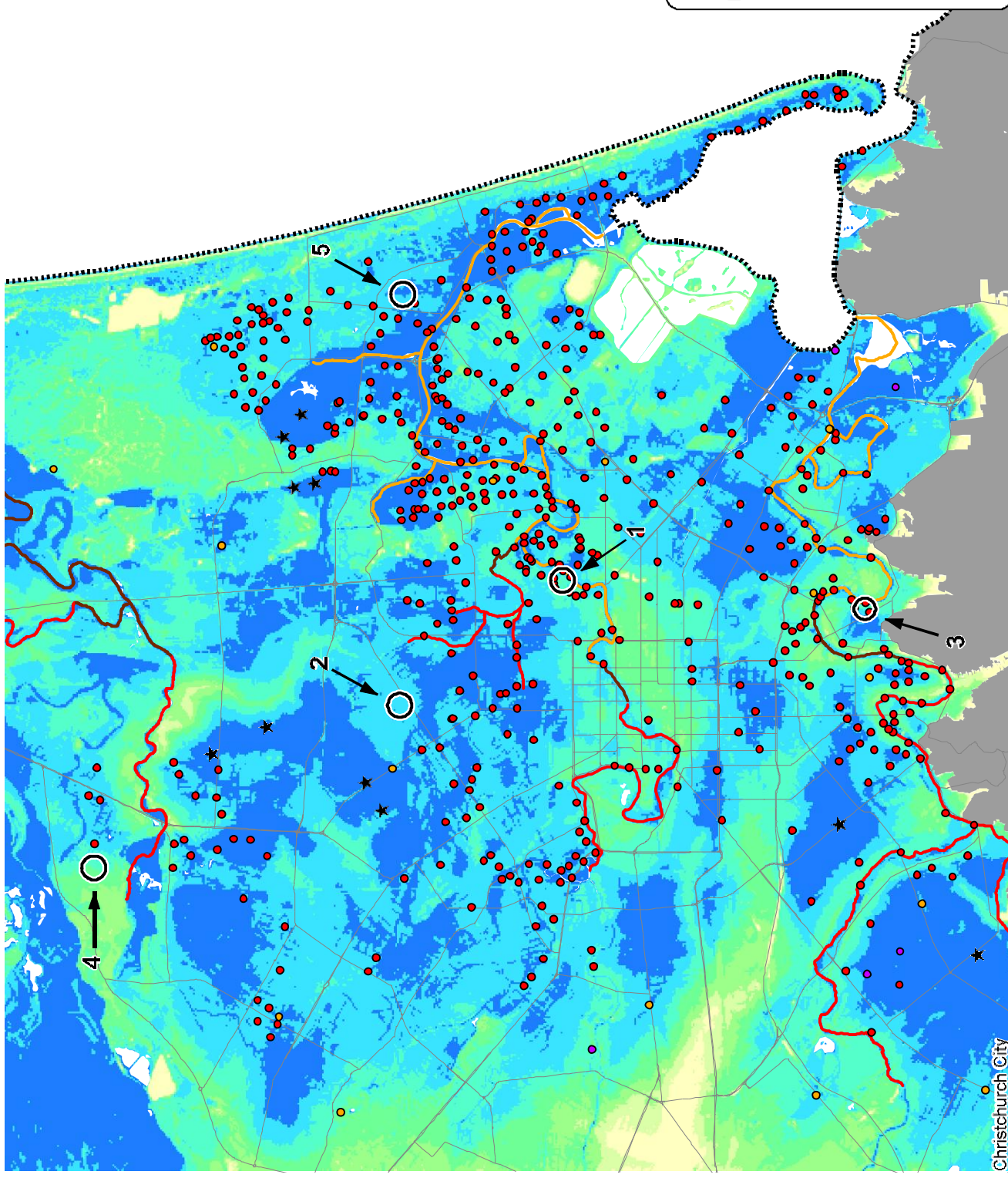
- EQC Monitoring Well  $\geq 12$  Data Readings
- EQC Monitoring Well  $< 12$  Data Readings
- EQCan Monitoring Well
- CCC Monitoring Well

**Other Analysis Data**

- Coast
- Transitional
- Tidal
- Non Tidal
- Drawdown Points

**Depth to Ground Water (m)**

- 0 - 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- 5 - 6
- 6 - 7
- No Data



**EQC**  
EARTHQUAKE COMMISSION  
Kōwhiri Rauwharua

**EARTHQUAKE COMMISSION**  
CHRISTCHURCH CITY & KAIAPOI  
Depth to Ground Water Contour:  
85th Percentile

Notes: Road Database supplied by Terralink International Ltd.  
Contains data sourced from Land Information New Zealand under CC-BY.  
<http://creativecommons.org/licenses/by/3.0/nz/>  
A3 SCALE 1:60,000

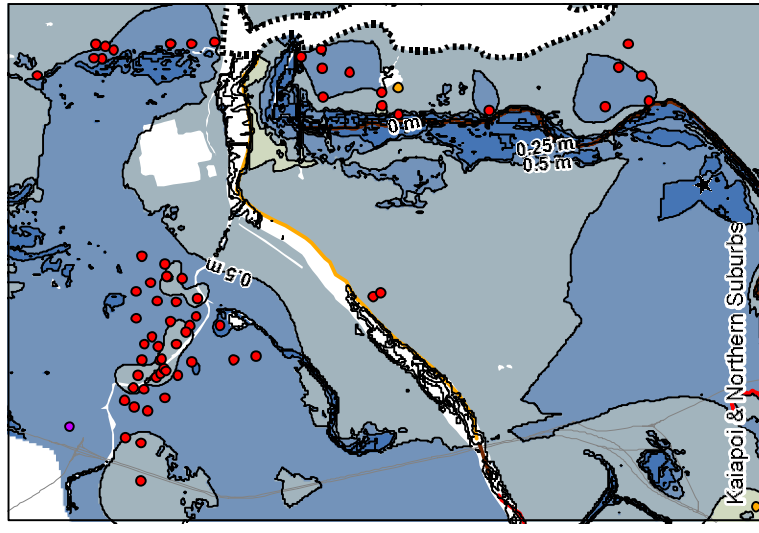
Scale bar: 0 1 2 3 4 (km)

Inset Map: Location Plan

DRAWN	ACAM JUL16
CHECKED	
APPROVED	
PROJECT	52020-0200-LCC136
SCALE (AT A3 SIZE)	1:60,000
Prepared by Terrain in Teke Ltd.	
Ref	52020-0200

FIGURE No: K1.11

REV: 0



**LEGEND**

Worked example locations

Other Analysis Data

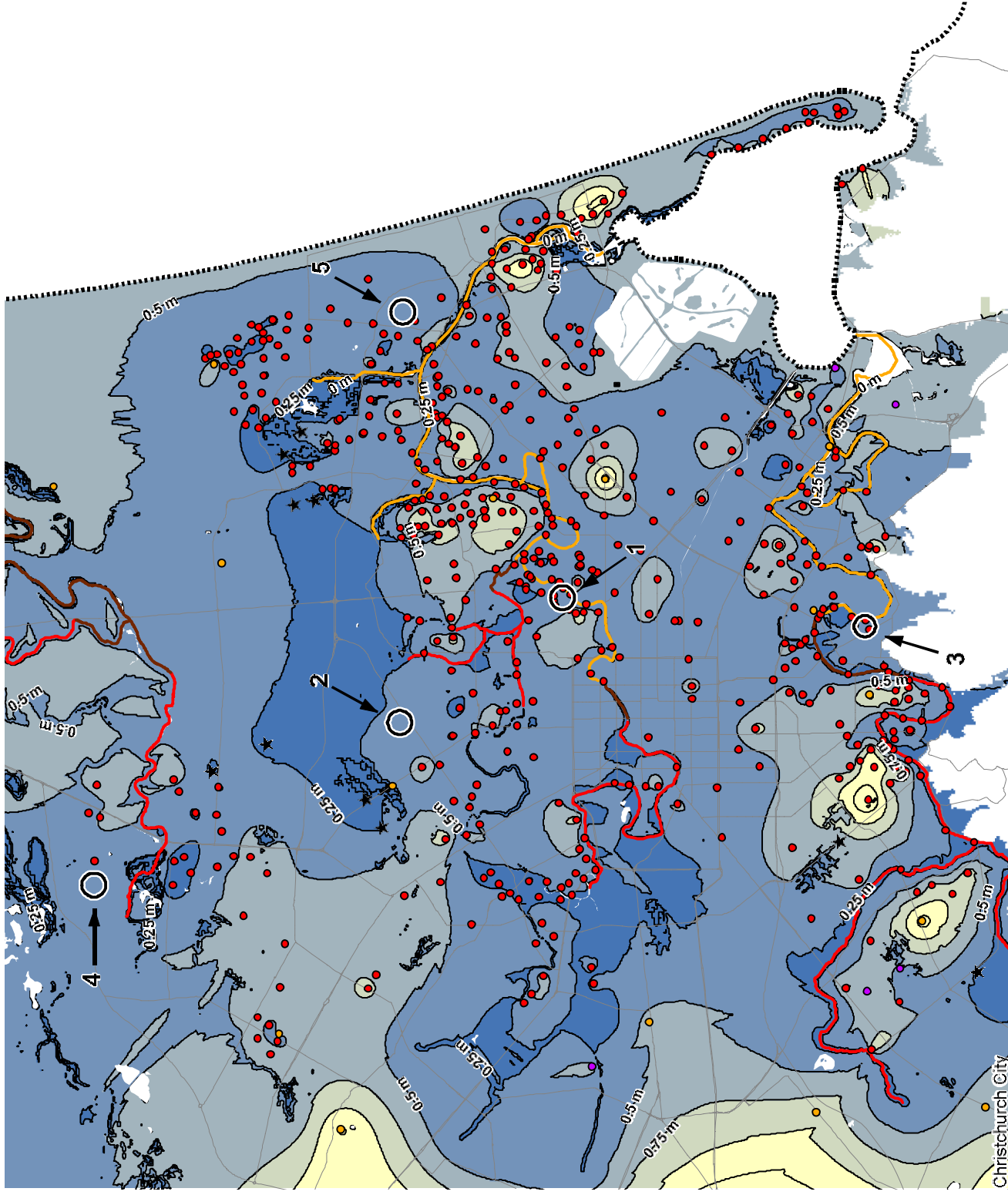
- Coast
- Transitional
- Tidal
- Non Tidal
- ★ Drawdown Points

Difference (m)

- 0 - 0.25
- 0.25 - 0.5
- 0.5 - 0.75
- 0.75 - 1.0
- > 1.0

Monitoring Wells

- EQC Monitoring Well ≥ 12 Data Readings
- ECan Monitoring Well
- EQC Monitoring Well < 12 Data Readings
- CCC Monitoring Well



**EQC**  
EARTHQUAKE COMMISSION  
Kōwhiri Rauwharua

Notes: Road Database supplied by Terralink International Ltd.  
Contains data sourced from Land Information New Zealand under CC-BY.  
<http://creativecommons.org/licenses/by/3.0/nz/>  
A3 SCALE 1:60,000

0 1 2 3 4 (km)

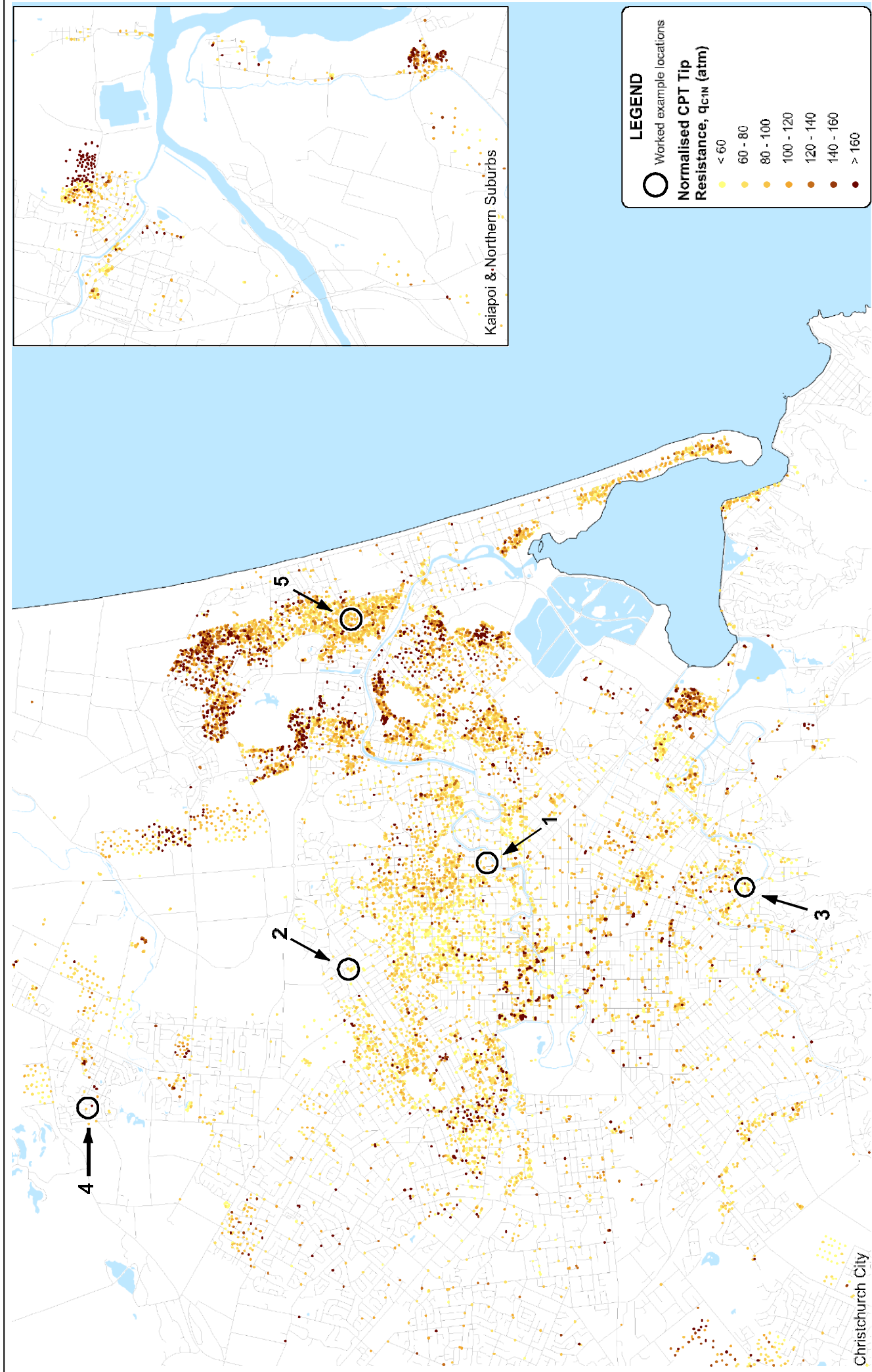
Inset Map  
Location Plan

DRAWN	ACAM JUL15
CHECKED	
APPROVED	
ASSET ID	52020-0200-LCC137
SCALE (AT AS SIZE)	1:60,000
Prepared by	BOBBI WILSON/CLM
Ref	52020-0200

FIGURE No. K1.12

EARTHQUAKE COMMISSION  
CHRISTCHURCH CITY & KAIAPOI  
Depth to Ground Water Contour: Difference  
Between the 15th and 85th Percentile

Rev. 0



**LEGEND**

- Worked example locations
- Normalised CPT Tip Resistance,  $q_{c1N}$  (atm)
  - < 60
  - 60 - 80
  - 80 - 100
  - 100 - 120
  - 120 - 140
  - 140 - 160
  - > 160

**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Median Normalised CPT Tip Resistance  
 ( $q_{c1N}$ ): Depth 0 m to 1 m

FIGURE No: K1.13

DRAWN	ACAM	JUL15
CHECKED		
APPROVED		
AS-FILE	52020-0200-LCC138	
SCALE (AT A3 SIZE)	1:60,000	

Prepared by: BEYON & PARTNER LTD.  
 Ref: 52020-0200

**EQC**  
**EARTHQUAKE COMMISSION**  
 Kōwhirianga Rauwharua

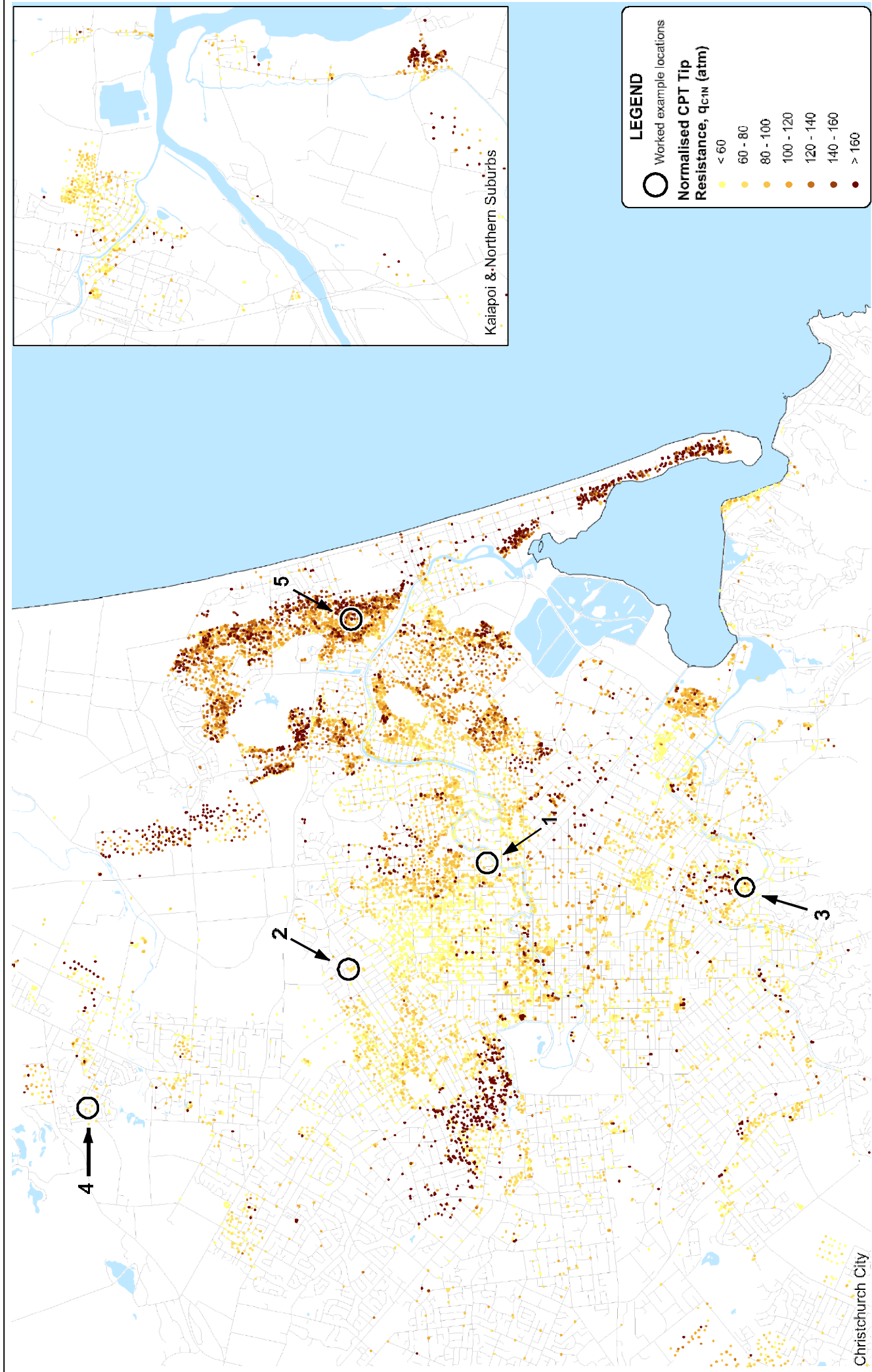
Inset Map  
 Location Plan

Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000  
 0 1 2 3 4 (km)

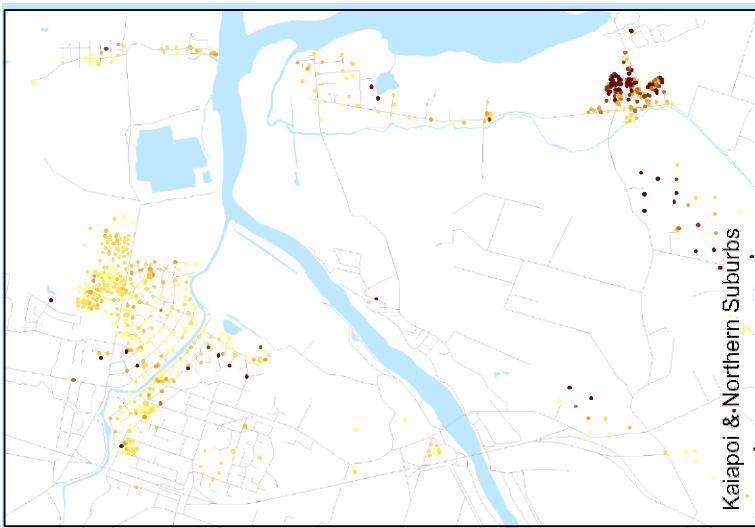
Christchurch City

Kaiapoi & Northern Suburbs



**LEGEND**

- Worked example locations
- Normalised CPT Tip Resistance,  $q_{c1N}$  (atm)
  - < 60
  - 60 - 80
  - 80 - 100
  - 100 - 120
  - 120 - 140
  - 140 - 160
  - > 160



**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Median Normalised CPT Tip Resistance  
 ( $q_{c1N}$ ): Depth 1 m to 2 m

FIGURE No: K1.14

DRAWN	ACAM	JUL15
CHECKED		
APPROVED		
AS-FILE	52020-0200-LCC139	
SCALE (AT A3 SIZE)	1:60,000	
Prepared by	TECHNICAL SERVICES UNIT	
Ref:	52020-0200	

**EQC**  
**EARTHQUAKE COMMISSION**  
 Kōwhiri Rauwharua

Inset Map  
 Location Plan

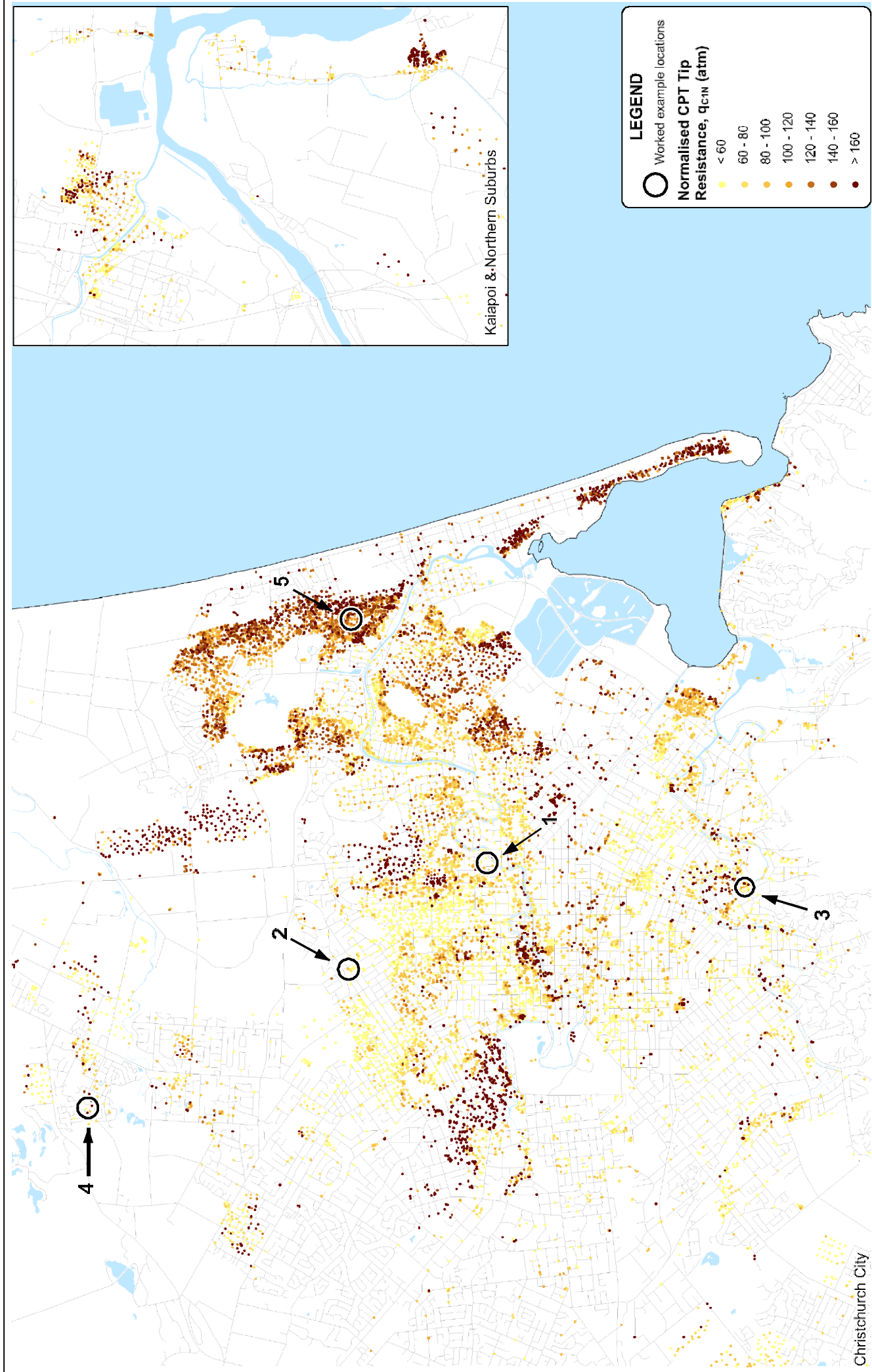
Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)

Date: 20/07/2015 Time: 11:32:14 a.m.





**LEGEND**

- Worked example locations
- Normalised CPT Tip Resistance,  $q_{c1N}$  (atm)
  - < 60
  - 60 - 80
  - 80 - 100
  - 100 - 120
  - 120 - 140
  - 140 - 160
  - > 160

**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Median Normalised CPT Tip Resistance  
 ( $q_{c1N}$ ): Depth 2 m to 3 m

FIGURE No: K1.15

DRAWN	ACAM	JUL15
CHECKED		
APPROVED		
AS-FILE	52020-0200-LCC140	
SCALE (AT A3 SIZE)	1:60,000	

Prepared by: TERRACON CONSULTING LTD.  
 Ref: 52020-0200

**EQC**  
**EARTHQUAKE COMMISSION**  
 Kōwhiri Rauwharua

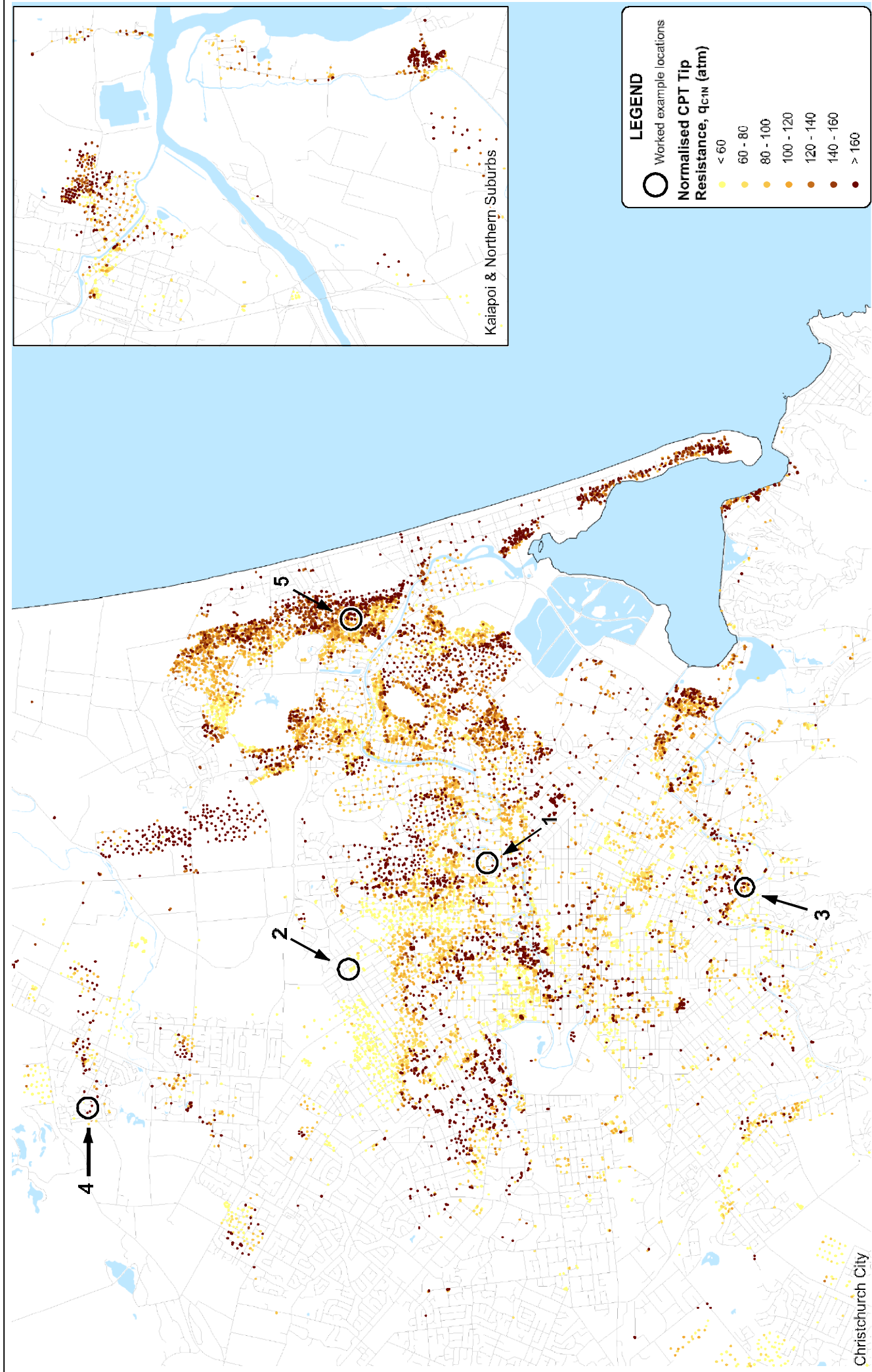
Inset Map  
 Location Plan

Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

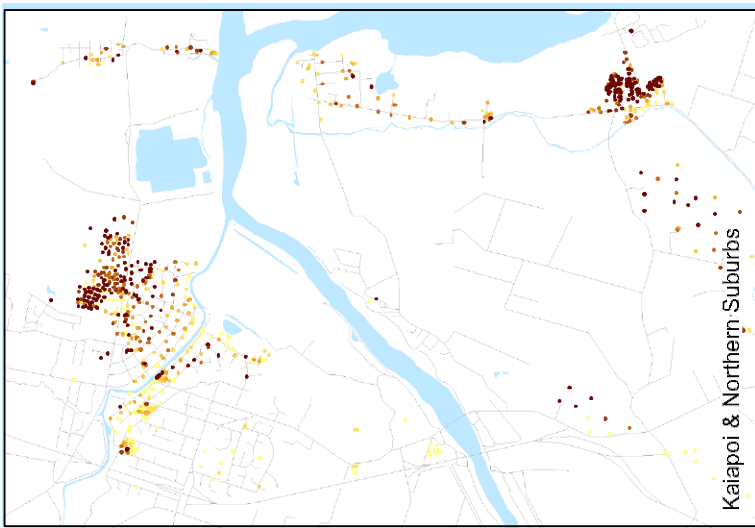
0 1 2 3 4 (km)

Date: 20/07/2015 Time: 11:40:29 a.m.



**LEGEND**

- Worked example locations
- Normalised CPT Tip Resistance,  $q_{c1N}$  (atm)
  - < 60
  - 60 - 80
  - 80 - 100
  - 100 - 120
  - 120 - 140
  - 140 - 160
  - > 160



**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Median Normalised CPT Tip Resistance  
 ( $q_{c1N}$ ): Depth 3 m to 4 m

FIGURE No: K1.16

DRAWN	ACAM	JUL15
CHECKED		
APPROVED		
AS-DRAWN	52020-0200-LCC141	
SCALE (AT A3 SIZE)	1:60,000	
Prepared by	TECHNICAL SERVICES UNIT	
Ref:	52020-0200	

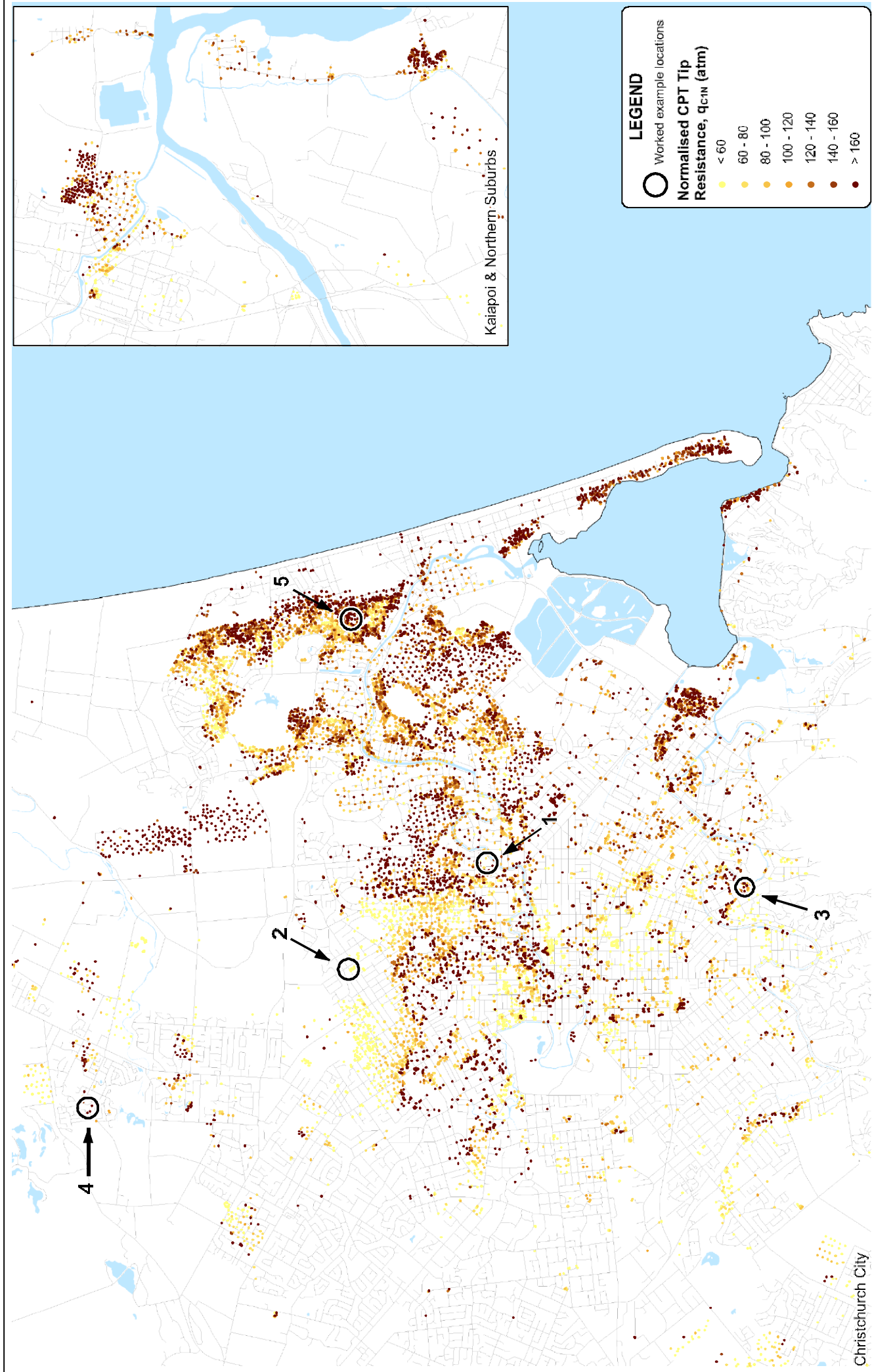
**EQC**  
**EARTHQUAKE COMMISSION**  
 Kōwhiri Rauwharua

Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

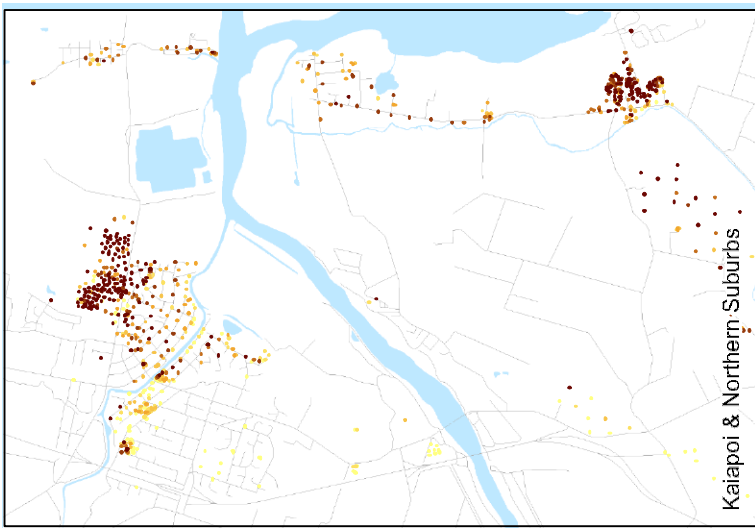
0 1 2 3 4 (km)

Inset Map  
 Location Plan



**LEGEND**

- Worked example locations
- Normalised CPT Tip Resistance,  $q_{c1M}$  (atm)
  - < 60
  - 60 - 80
  - 80 - 100
  - 100 - 120
  - 120 - 140
  - 140 - 160
  - > 160



**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Median Normalised CPT Tip Resistance  
 ( $q_{c1M}$ ): Depth 4 m to 5 m

FIGURE No: K1.17

DRAWN	ACAM	JUL15
CHECKED		
APPROVED		
AS-FILE	52020-0200-LCC142	
SCALE (AT A3 SIZE)	1:60,000	
Prepared by	TECHNICAL SERVICES UNIT	
Ref:	52020-0200	

**EQC**  
**EARTHQUAKE COMMISSION**  
 Kōwhiri Rauwharua

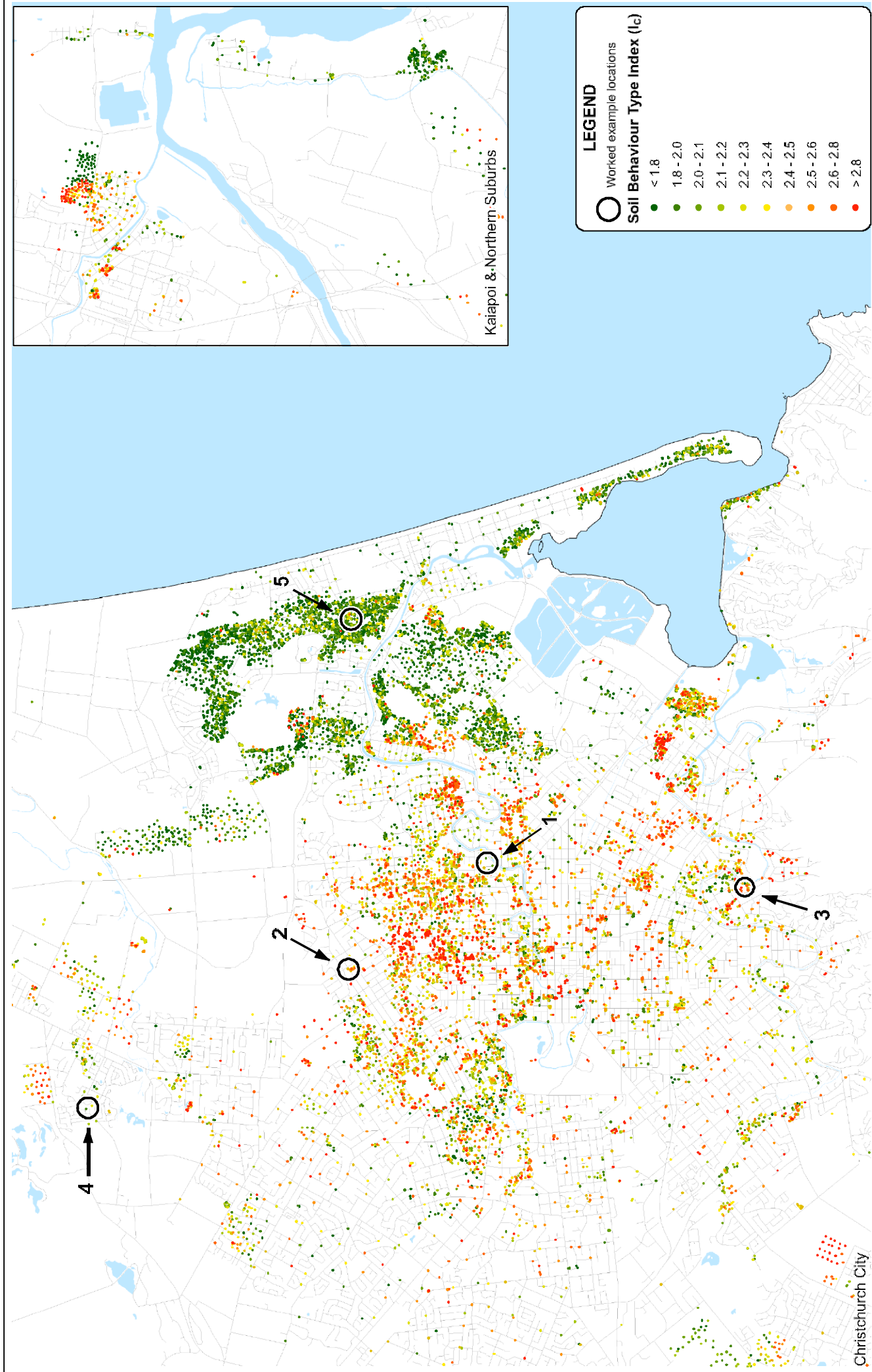
Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)

Inset Map

Location Plan



**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
**Median Soil Behaviour Type Index (I<sub>c</sub>):**  
**Depth 0 m to 1 m**

FIGURE No: K1.18

DRAWN	ACAM	JUL15
CHECKED		
APPROVED		
AS-FILE	52020-0200-LCC143	
SCALE (AT A3 SIZE)	1:60,000	
Prepared by	TERRACON ENGINEERING LTD.	
Ref:	52020-0200	

**EQC**  
**EARTHQUAKE COMMISSION**  
 Kōwhirianga Rauwharua

**Location Plan**

**Notes:** NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)

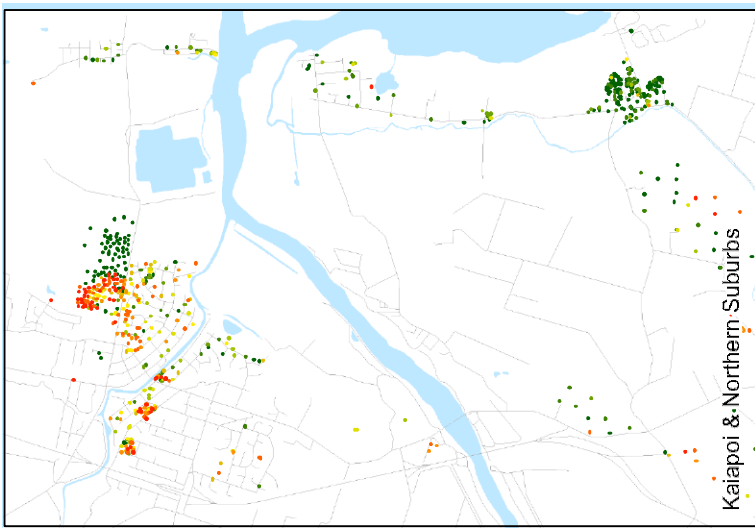
Date: 20/07/2015 Time: 11:40:55 a.m.

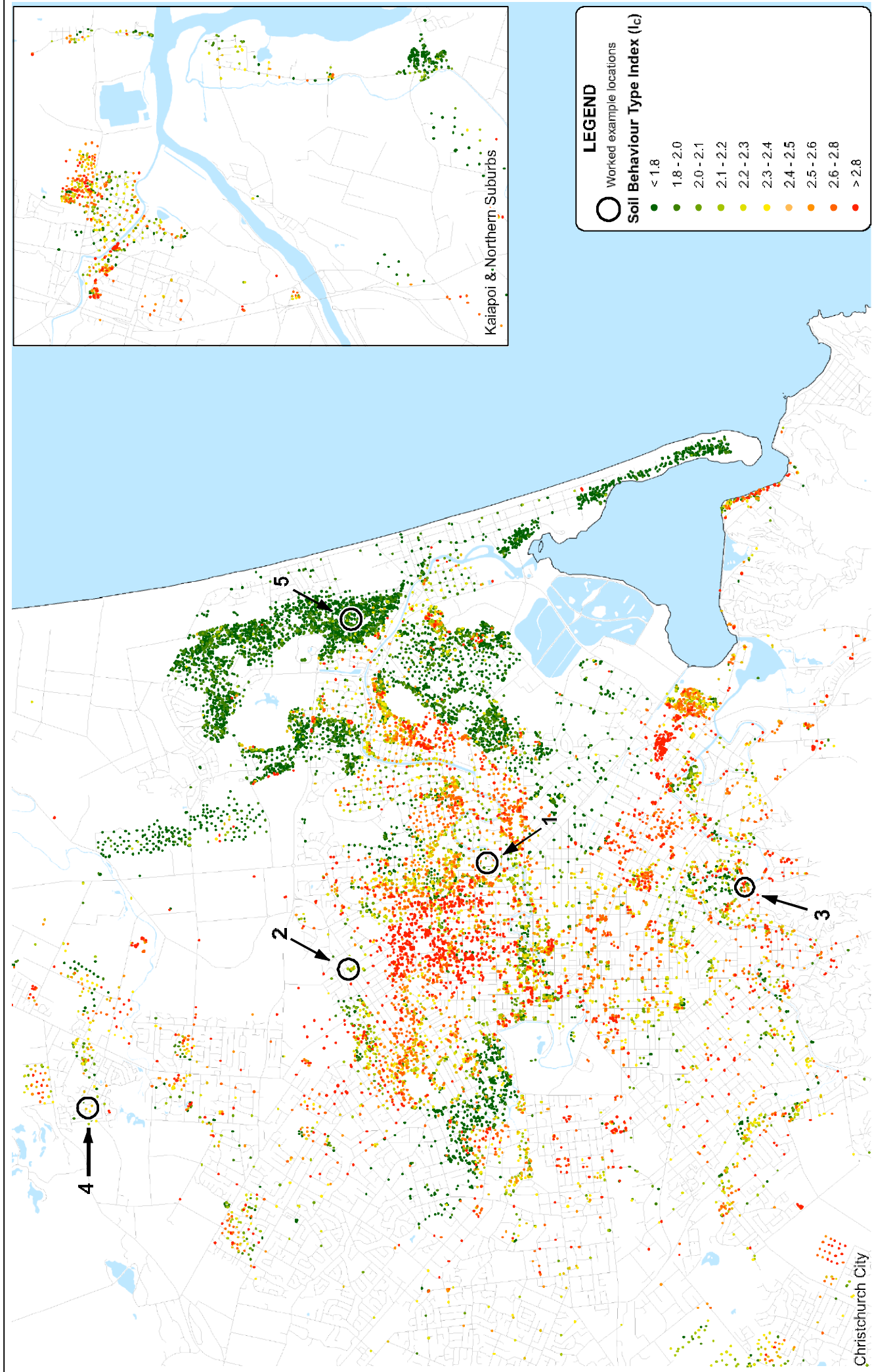
**LEGEND**

○ Worked example locations

**Soil Behaviour Type Index (I<sub>c</sub>)**

- < 1.8
- 1.8 - 2.0
- 2.0 - 2.1
- 2.1 - 2.2
- 2.2 - 2.3
- 2.3 - 2.4
- 2.4 - 2.5
- 2.5 - 2.6
- 2.6 - 2.8
- > 2.8





**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
**Median Soil Behaviour Type Index (I<sub>c</sub>):**  
**Depth 1 m to 2 m**

FIGURE No: K1.19

DRAWN	ACAM	JUL15
CHECKED		
APPROVED		
AS-FILE	52020-0200-LCC144	
SCALE (AT A3 SIZE)	1:60,000	

Prepared by: TERRACON ENGINEERING LTD.  
 Ref: 52020-0200

**EQC**  
**EARTHQUAKE COMMISSION**  
 Kōwhirianga Rauwharua

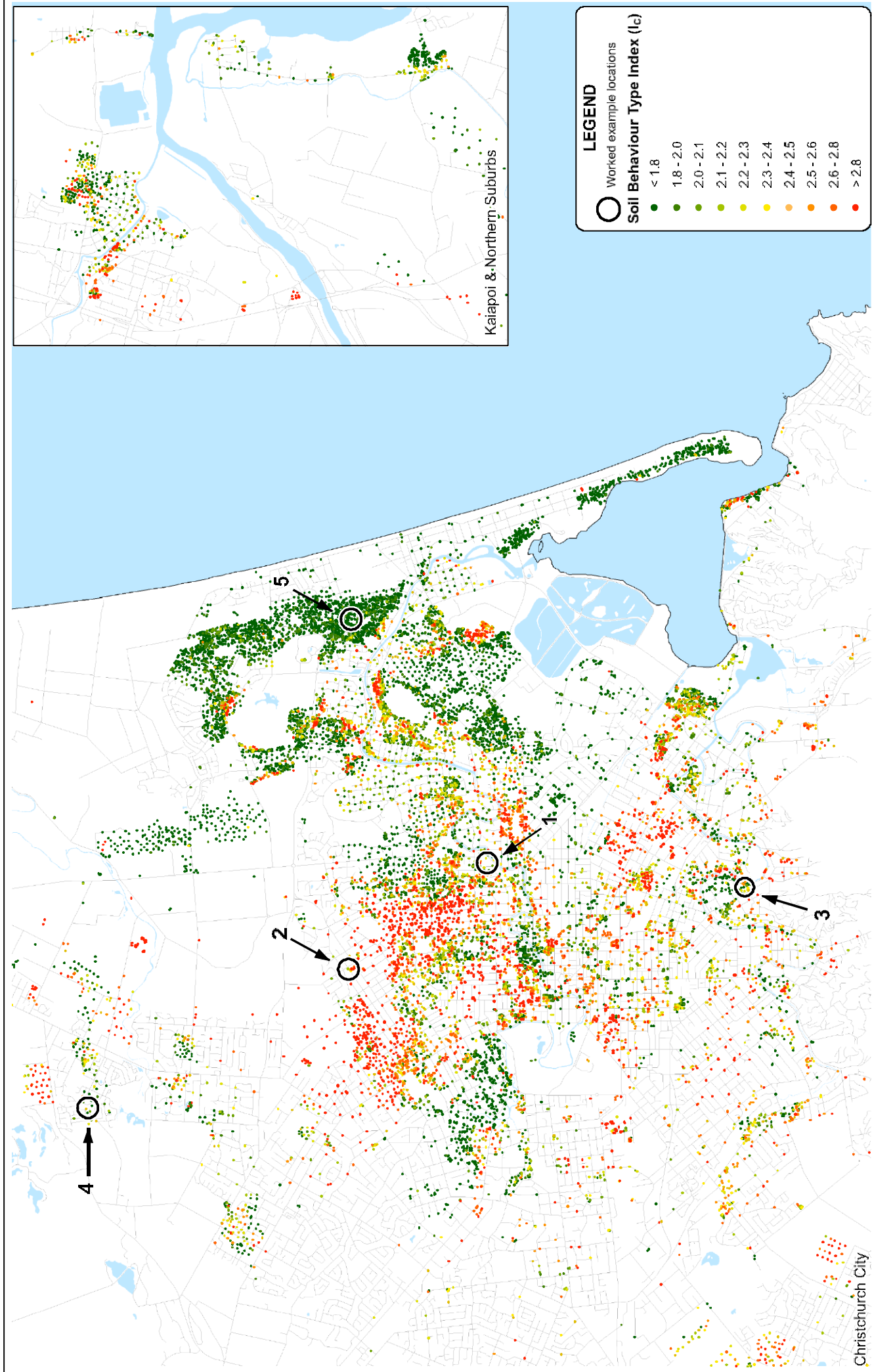
Inset Map  
 Location Plan

Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)

Christchurch City



**LEGEND**

Worked example locations

**Soil Behaviour Type Index (I<sub>c</sub>)**

- < 1.8
- 1.8 - 2.0
- 2.0 - 2.1
- 2.1 - 2.2
- 2.2 - 2.3
- 2.3 - 2.4
- 2.4 - 2.5
- 2.5 - 2.6
- 2.6 - 2.8
- > 2.8

**EQC**  
EARTHQUAKE COMMISSION  
Kōwhiri Rauwharua

**EARTHQUAKE COMMISSION**  
CHRISTCHURCH CITY & KAIAPOI  
Median Soil Behaviour Type Index (I<sub>c</sub>):  
Depth 2 m to 3 m

FIGURE No. K1.20

DRAWN	ACAM	JUL15
CHECKED		
APPROVED		
AS-FILE	52020-0200-LCC145	
Prepared by	TERRACON CONSULTING LTD.	
Scale	1:60,000	
Ref:	52020-0200	

Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

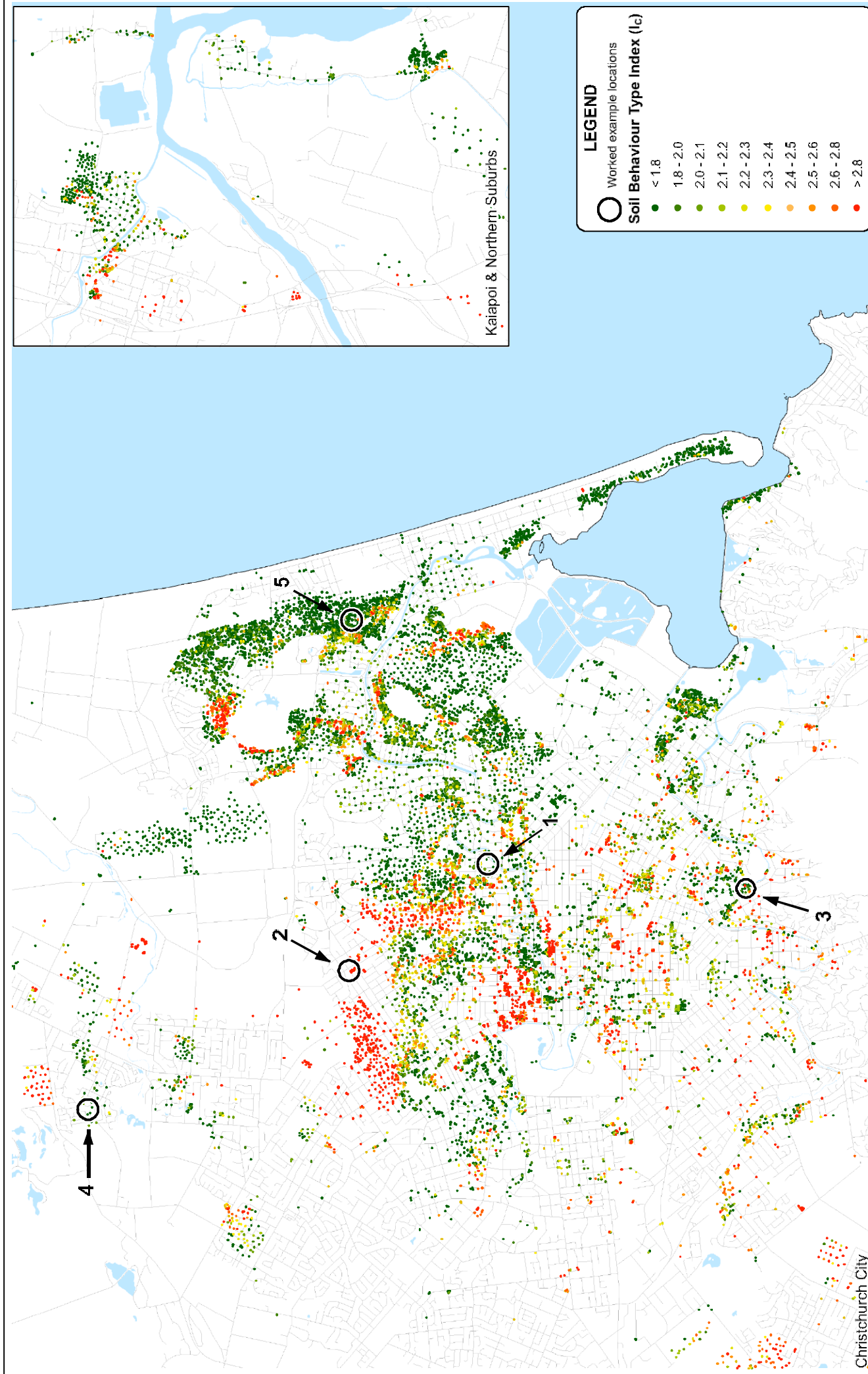
A3 SCALE 1:60,000

0 1 2 3 4 (km)

Inset Map  
Location Plan

Christchurch City

Kaiaipoi & Northern Suburbs



4

2

1

3

5

Christchurch City

Kaipoi & Northern Suburbs

**LEGEND**

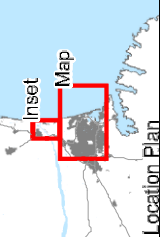
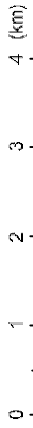
○ Worked example locations

**Soil Behaviour Type Index (I<sub>c</sub>)**

- < 1.8
- 1.8 - 2.0
- 2.0 - 2.1
- 2.1 - 2.2
- 2.2 - 2.3
- 2.3 - 2.4
- 2.4 - 2.5
- 2.5 - 2.6
- 2.6 - 2.8
- > 2.8

Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

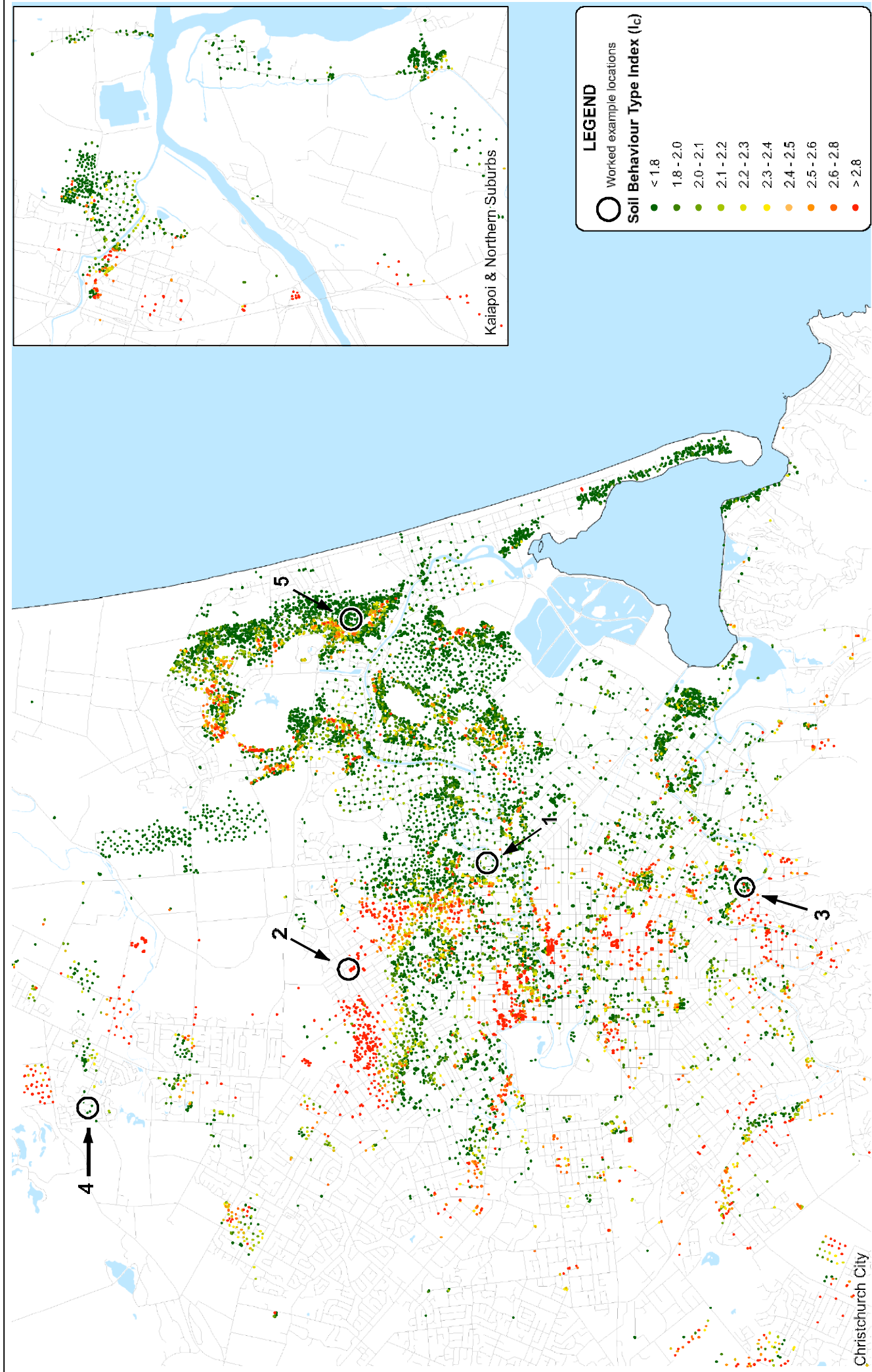
A3 SCALE 1:60,000



DRAWN	ACAM	JUL15
CHECKED		
APPROVED		
AS-FILE	52020-0200-LCC146	
SCALE (AT A3 SIZE)	1:60,000	
Prepared by	BOBBI & TONY LTD.	
Ref:	52020-0200	

**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
**Median Soil Behaviour Type Index (I<sub>c</sub>):**  
**Depth 3 m to 4 m**

FIGURE No: K1.21



**LEGEND**

○ Worked example locations

**Soil Behaviour Type Index (IC)**

- < 1.8
- 1.8 - 2.0
- 2.0 - 2.1
- 2.1 - 2.2
- 2.2 - 2.3
- 2.3 - 2.4
- 2.4 - 2.5
- 2.5 - 2.6
- 2.6 - 2.8
- > 2.8

**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
**Median Soil Behaviour Type Index (IC):**  
 Depth 4 m to 5 m

FIGURE No: K1.22

DRAWN	ACAM	JUL15
CHECKED		
APPROVED		
AS-FILE	52020-0200-LCC147	
SCALE (AT A3 SIZE)	1:60,000	

Prepared by: BEYON & PARTNER LTD.  
 Ref: 52020-0200

**EQC**  
**EARTHQUAKE COMMISSION**  
 Kōwhiri Rauwharua

Inset Map  
 Location Plan

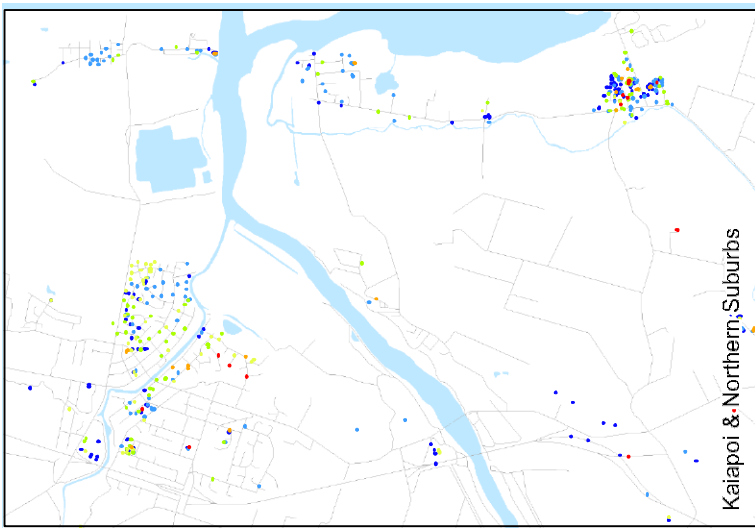
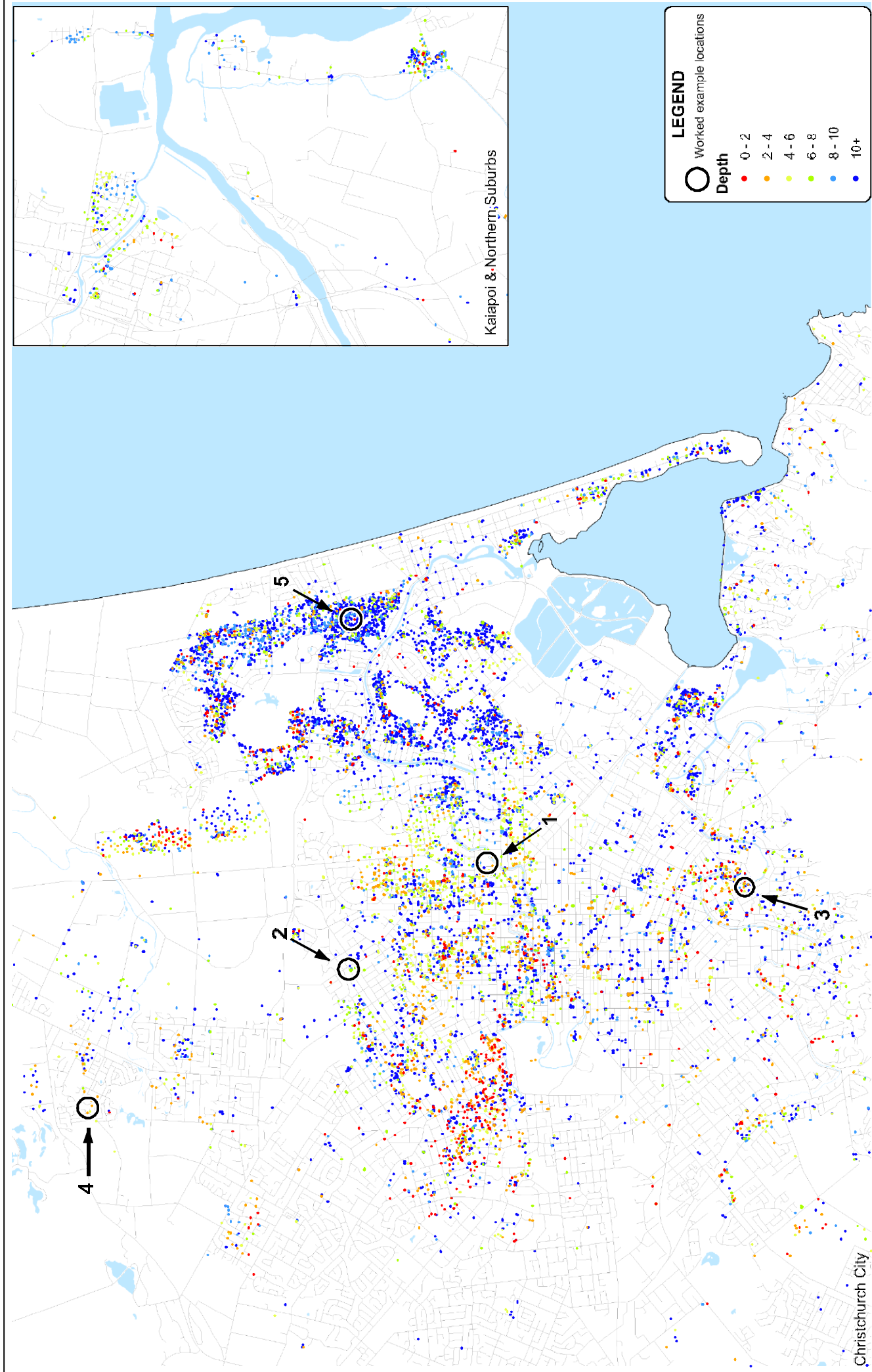
Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)

Date: 20/07/2015 Time: 11:46:54 a.m.





**LEGEND**

Worked example locations

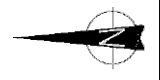
Depth

- 0 - 2
- 2 - 4
- 4 - 6
- 6 - 8
- 8 - 10
- 10 +

**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Depth to First Hard Layer  
 Greater Than 0.5 m Thick

FIGURE No. K1.23

**EQC**  
**EARTHQUAKE COMMISSION**  
 Kōwhiri Rauwharua



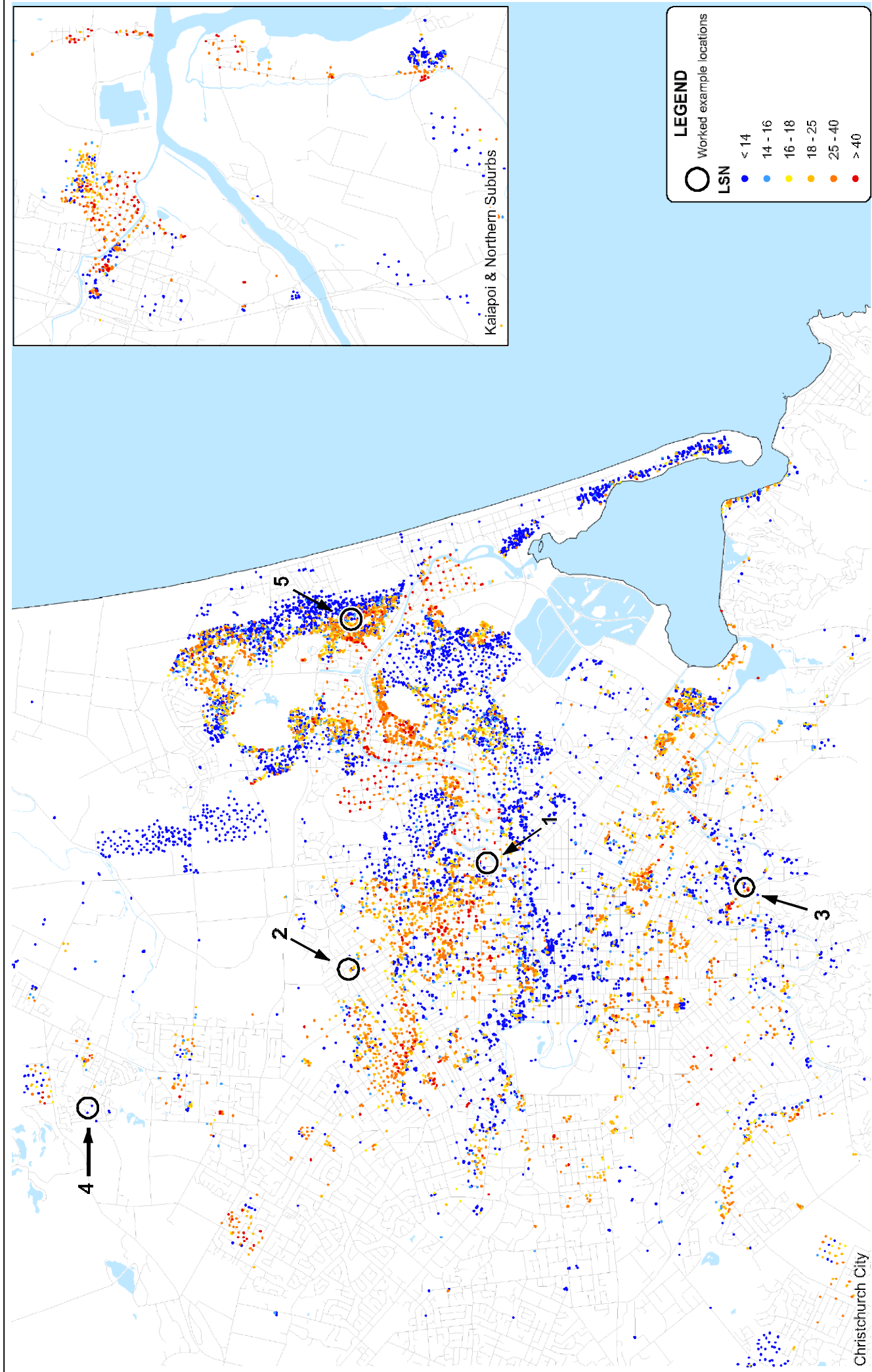
Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)

Location Plan

DRAWN: JACAN JUL15  
 CHECKED: [ ]  
 APPROVED: [ ]  
 ASH/FILE: 52020-0200-LCC148  
 SCALE (AT A3 SIZE): 1:60,000  
 Prepared by: BEYON & NEALE LTD.  
 Ref: 52020-0200



**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Sensitivity of LSN to PGA:  
 PGA = 0.28; Mw = 6.0

FIGURE No. K1.24

DRAWN	ACAM	JUL15
CHECKED		
APPROVED		
AS-FILE	52020-0200-LCC149	
SCALE (AT A3 SIZE)	1:60,000	

Prepared by: BEYON & PARTNER LTD.  
 Ref: 52020-0200

**EQC**  
**EARTHQUAKE COMMISSION**  
 Kōwhiri Rauwharua

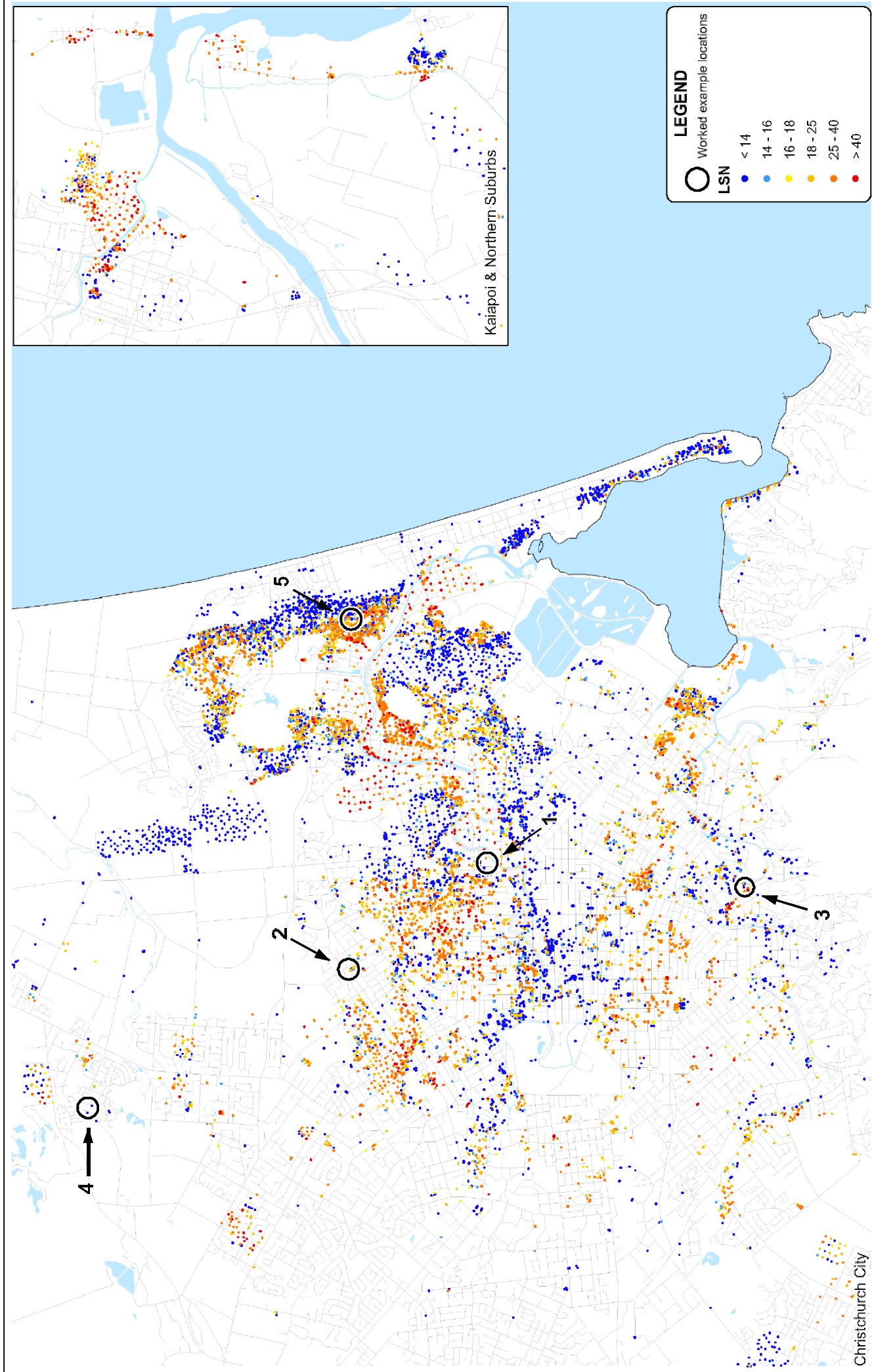
Inset Map  
 Location Plan

Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000  
 0 1 2 3 4 (km)

Christchurch City

Kaiapoi & Northern Suburbs



**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Sensitivity of LSN to PGA:  
 PGA = 0.3; Mw = 6.0

FIGURE No. K1.25

DRAWN	ACAM	JUL15
CHECKED		
APPROVED		
PROJECT	52020-0200-LCC150	
SCALE (AT A3 SIZE)	1:60,000	
Prepared by	BROWN & CALVERT LTD.	
Ref:	52020-0200	

**EQC**  
**EARTHQUAKE COMMISSION**  
 Kōwhiri Rauwharua

Inset Map  
 Location Plan

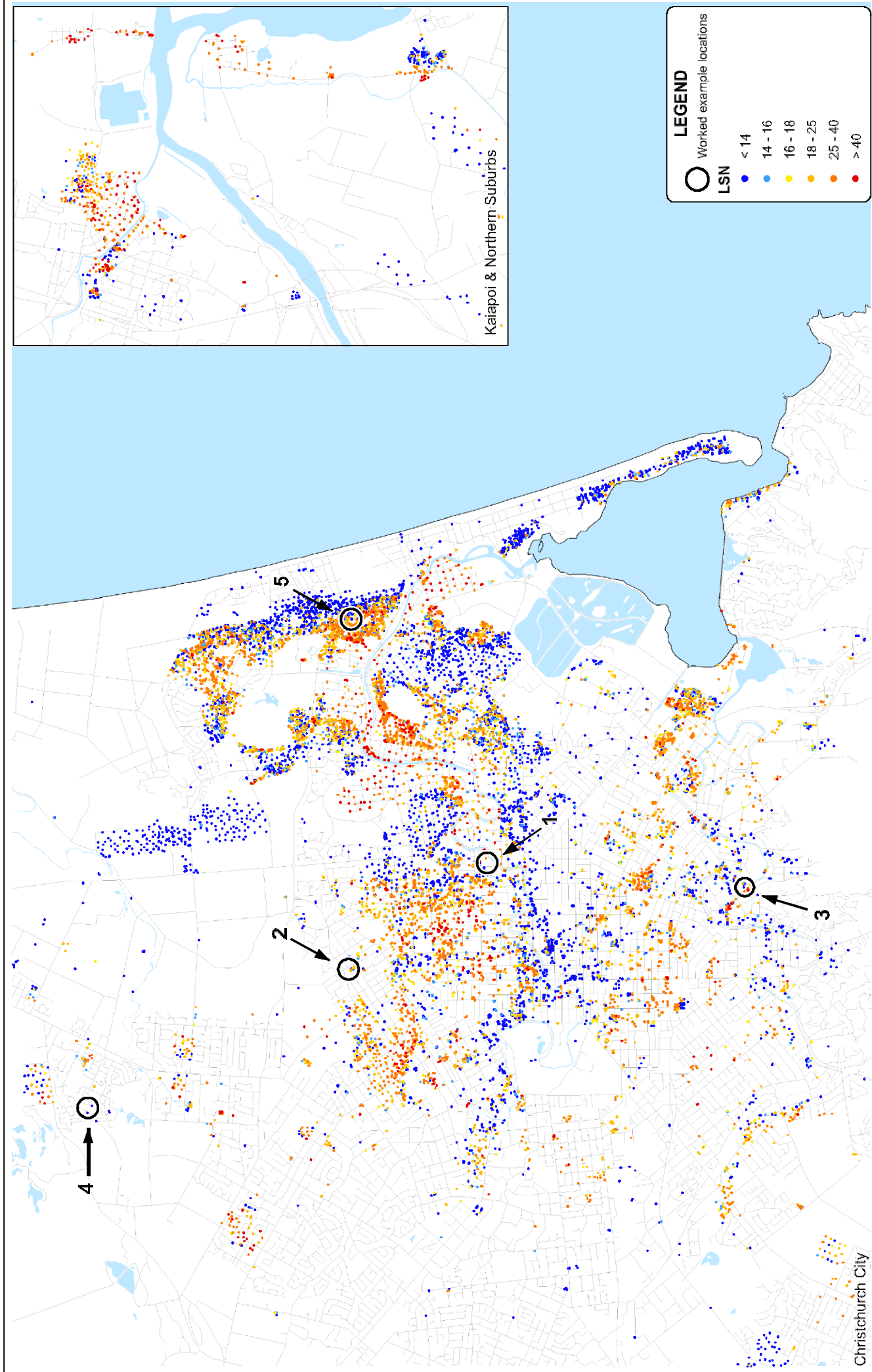
Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)

Christchurch City

Kaiapoi & Northern Suburbs



**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Sensitivity of LSN to PGA:  
 PGA = 0.32; Mw = 6.0

FIGURE No. K1.26

Drawn: ACAM JUN 15  
 Checked: [ ]  
 Approved: [ ]  
 Project: 52020-0200-LCC-151  
 Scale: 1:60,000  
 Prepared by: BEYON & PARTNER LTD.  
 Ref: 52020-0200

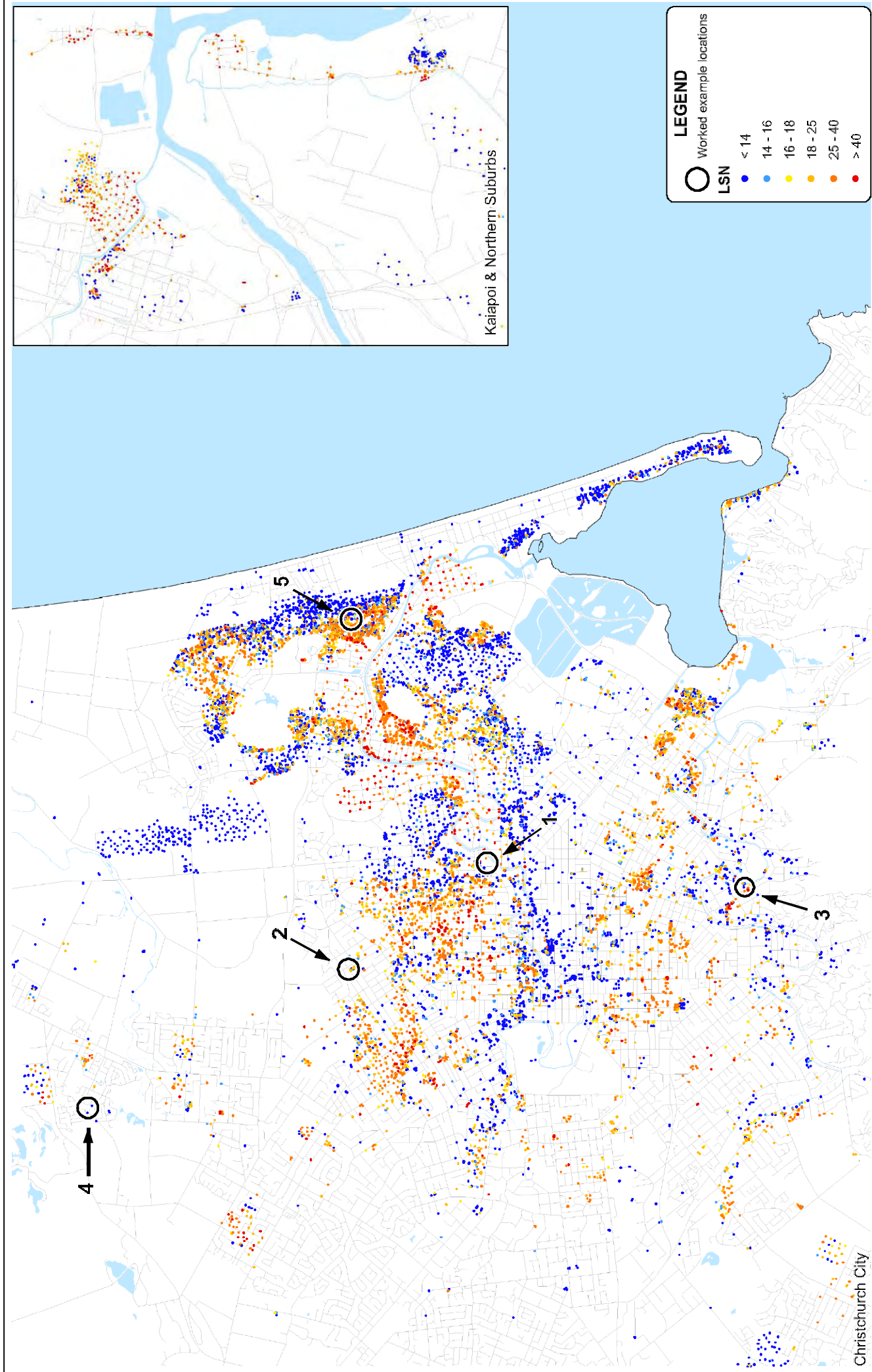
**EQC**  
**EARTHQUAKE COMMISSION**  
 Kōwhiri Rauwharua

Inset Map  
 Location Plan

Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000  
 0 1 2 3 4 (km)

Date: 20/07/2015 Time: 12:00:20 p.m.



**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Sensitivity of LSN to P<sub>L</sub>:  
 P<sub>L</sub> = 15th percentile

FIGURE No. K1.27

DRAWN	ACAM	JUL15
CHECKED		
APPROVED		
AS/SCALE	52020-0200-LCC152	
SCALE (AT A3 SIZE)	1:60,000	

Prepared by: BEYON & PARTNER LTD.  
 Ref: 52020-0200

**EQC**  
**EARTHQUAKE COMMISSION**  
 Kōwhiri Rauwharua

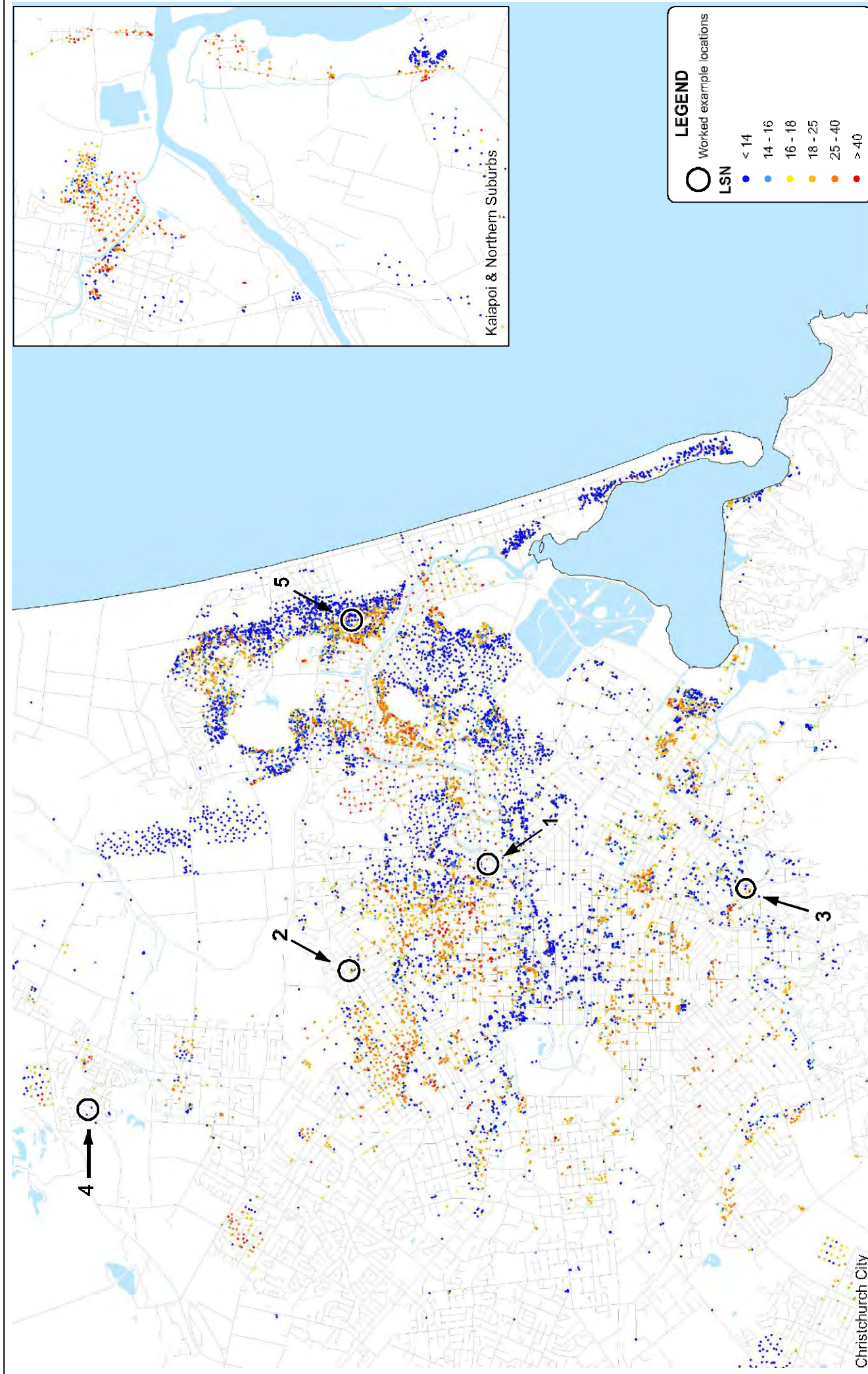
Inset Map  
 Location Plan

Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000  
 0 1 2 3 4 (km)

Christchurch City

Kaipoi & Northern Suburbs



**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Sensitivity of LSN to  $P_L$ :  
 $P_L = 50$ th percentile

FIGURE No. K1.28

DRAWN	ACAM	JUL15
CHECKED		
APPROVED		
AS-FILE	52020-0200-LCC153	
SCALE (AT A3 SIZE)	1:60,000	

Prepared by: BEYON & PARTNER LTD.  
 Ref: 52020-0200

**EQC**  
**EARTHQUAKE COMMISSION**  
 Kōwhiri Rauwharua

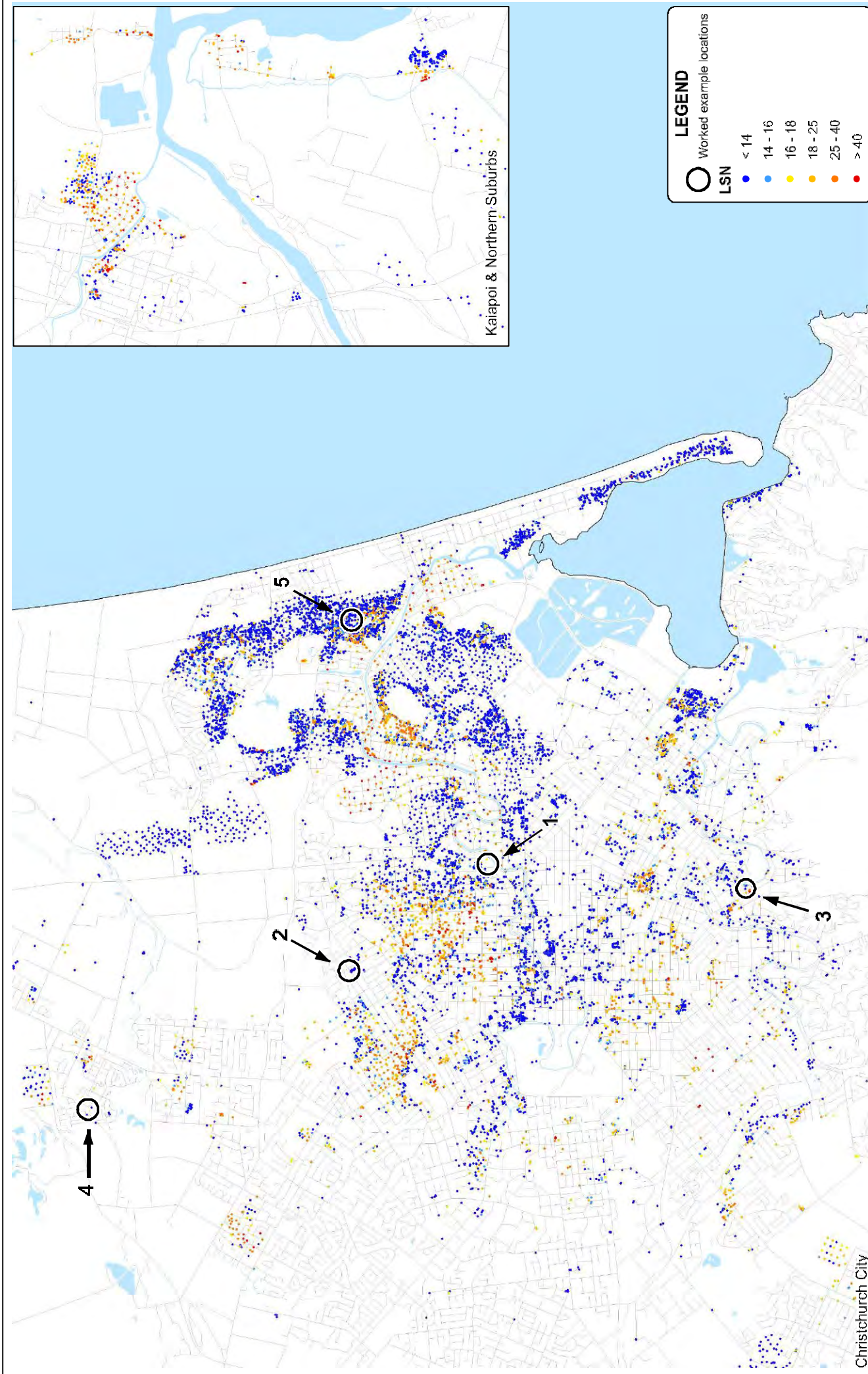
Inset Map  
 Location Plan

Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)

Date: 20/07/2015 Time: 12:00:48 p.m.



**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Sensitivity of LSN to  $P_L$ :  
 $P_L = 85\text{th percentile}$

FIGURE No. K1.29

DRAWN	ACAM	JL/15
CHECKED		
APPROVED		
AN-FILE	52020-0200-LCC154	
SCALE (AT A3 SIZE)	1:60,000	
Prepared by	TERRACON ENGINEERING LTD.	
Date:	5/20/20-0200	

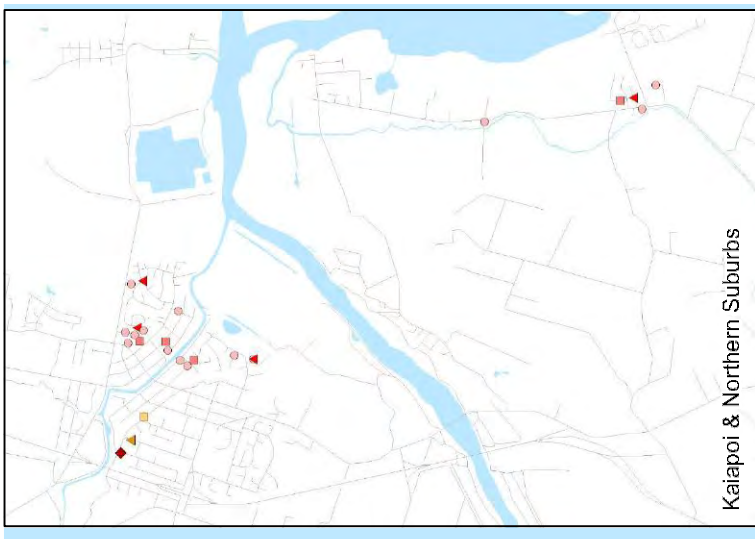
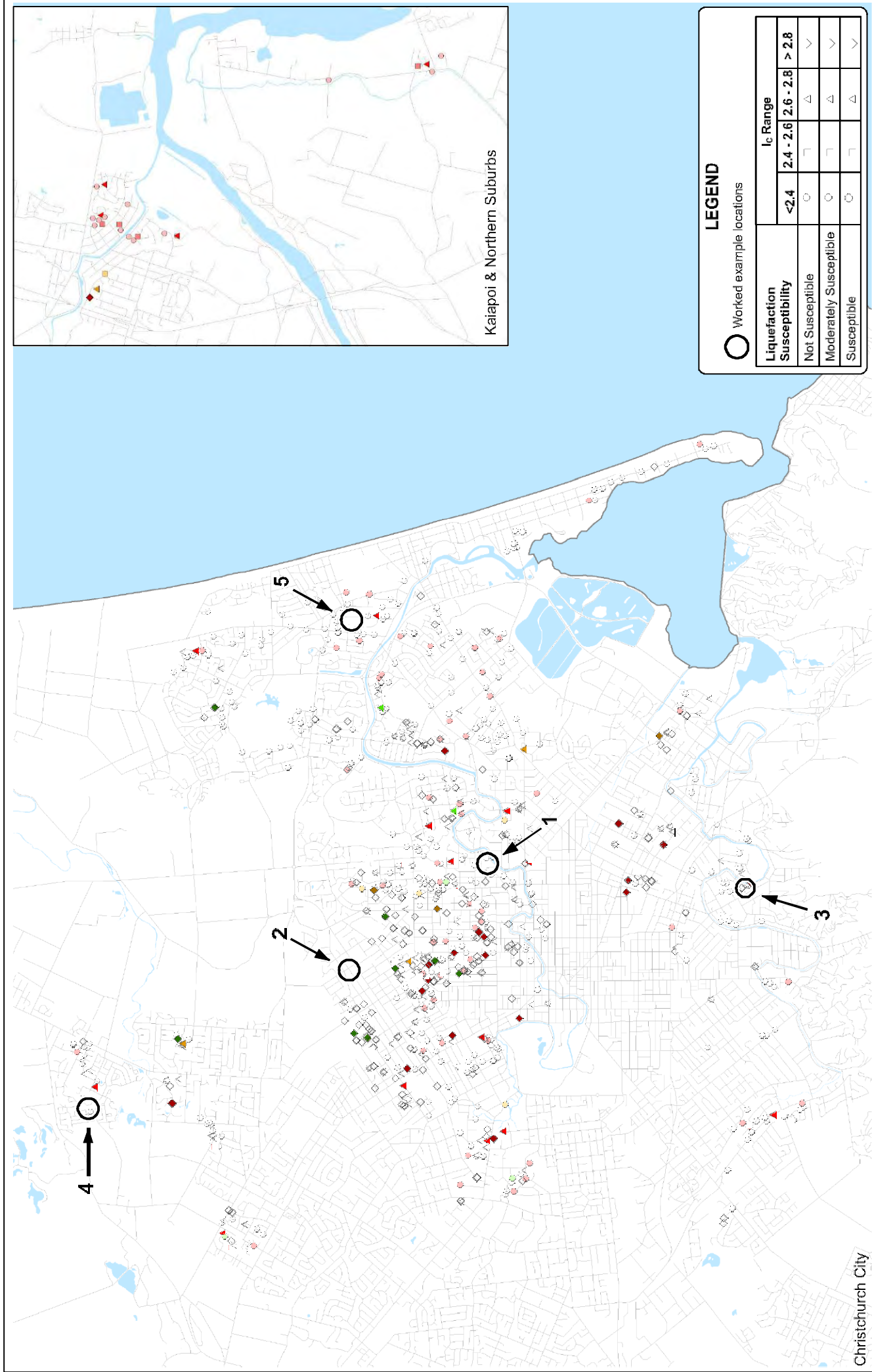
**EQC**  
**EARTHQUAKE COMMISSION**  
 Kōwhirianga Rauwharua

Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)

Inset Map  
 Location Plan

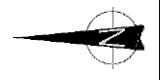


**LEGEND**

○ Worked example locations

Liquefaction Susceptibility	Ic Range		
	<2.4	2.4 - 2.6	2.6 - 2.8 > 2.8
Not Susceptible	○	□	△
Moderately Susceptible	○	□	△
Susceptible	○	□	△

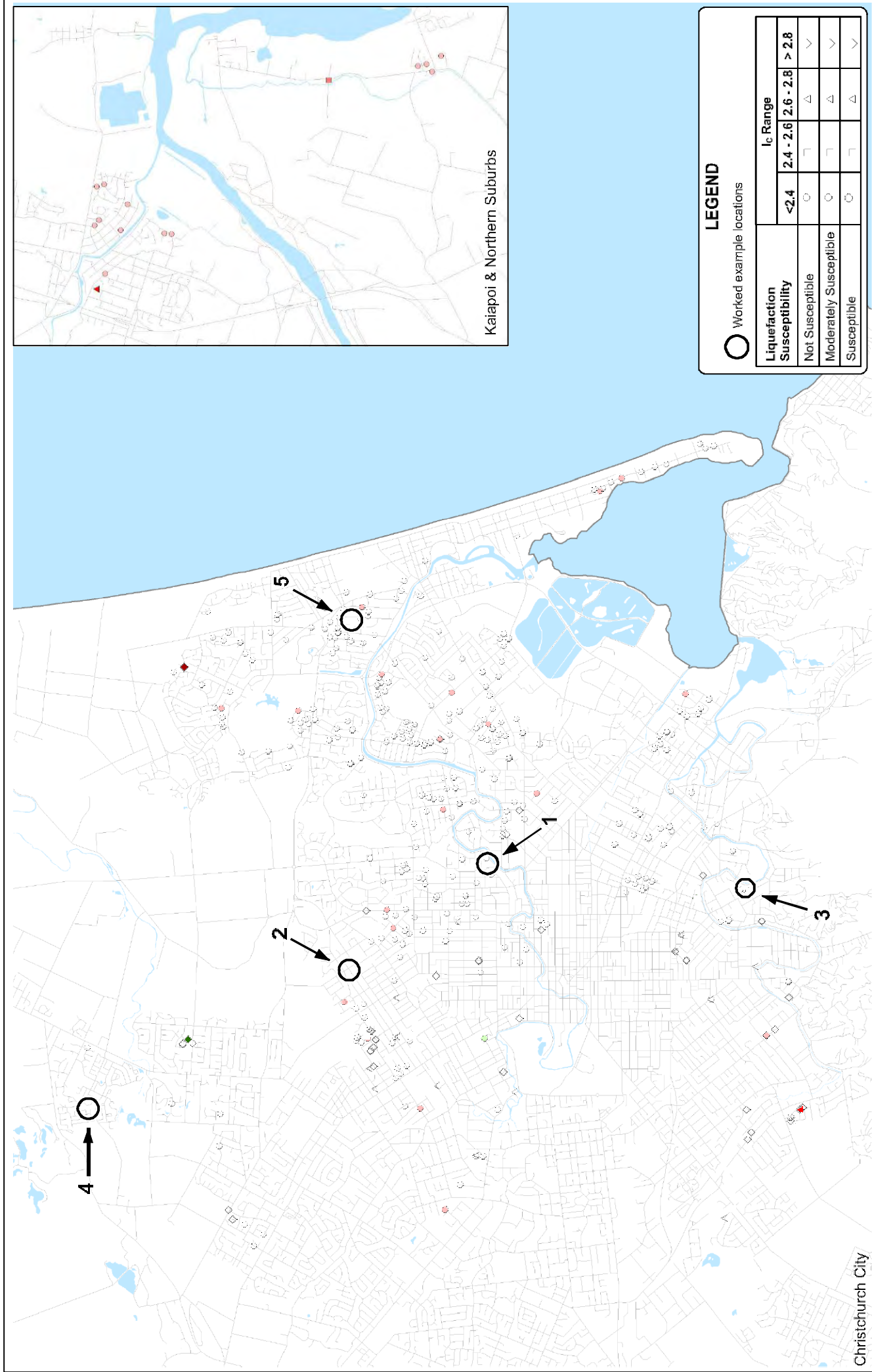
DRAWN: [ ]  
 CHECKED: [ ]  
 APPROVED: [ ]  
 PROJECT: 52020-0200-LCC155  
 SCALE (AT A3 SIZE): 1:60,000  
 Prepared by: BEVIN & PARTNERS  
 Ref: 52020-0200



Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.  
 A3 SCALE 1:60,000  
 0 1 2 3 4 (km)

**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Liquefaction Susceptibility Criteria Banded  
 by the Soil Behaviour Type Index: Depth 0 m to 5 m





**LEGEND**

○ Worked example locations

Liquefaction Susceptibility	Ic Range		
	<2.4	2.4 - 2.6	2.6 - 2.8 > 2.8
Not Susceptible	○	□	△
Moderately Susceptible	○	□	△
Susceptible	○	□	△

**EQC**  
EARTHQUAKE COMMISSION  
Kōwhirianga Rāwharua

**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
**Liquefaction Susceptibility Criteria Banded**  
**by the Soil Behaviour Type Index: Depth 5 m to 10 m**

FIGURE No. K1.31

Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)

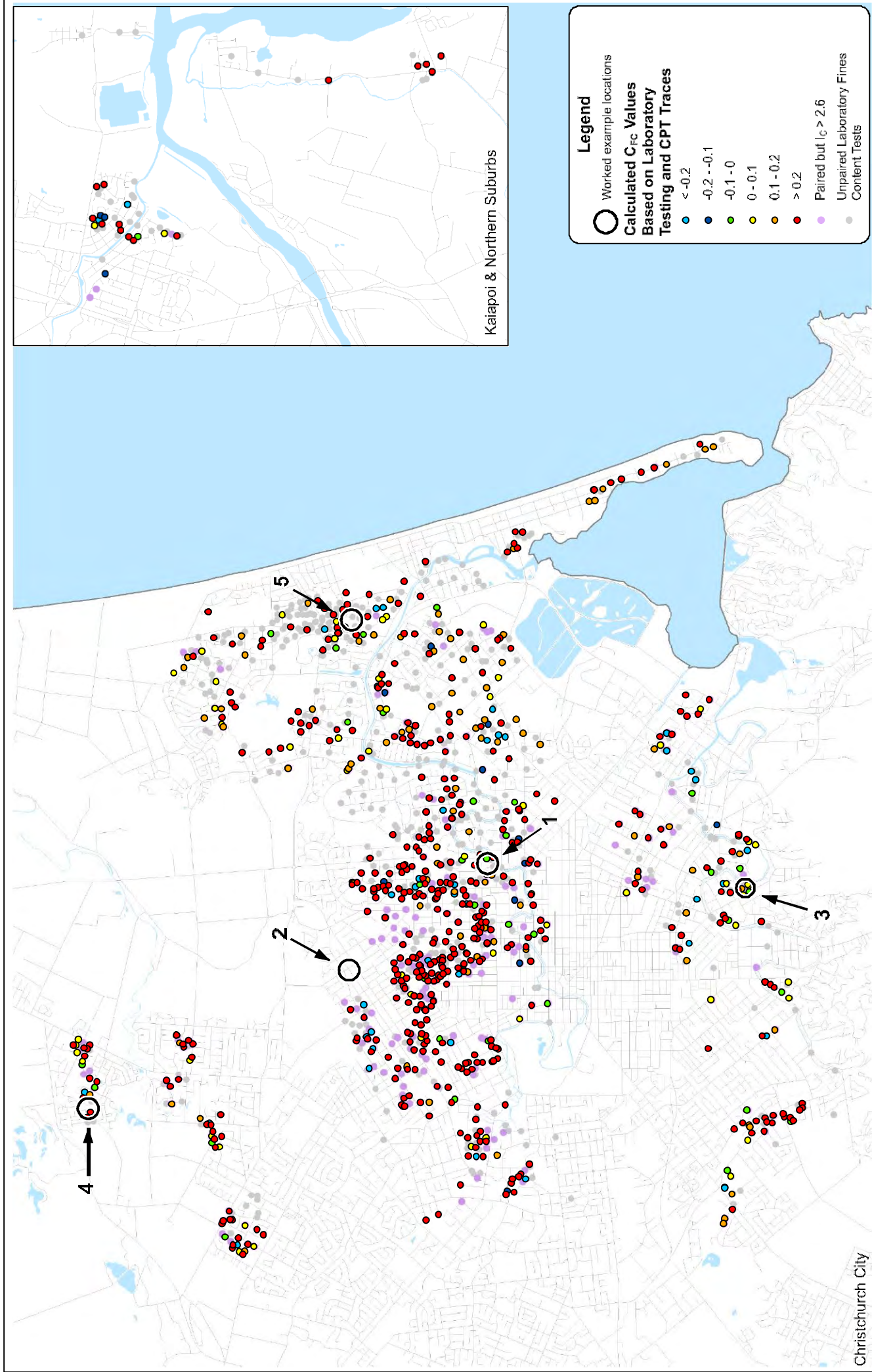
DRAWN: [ ]  
CHECKED: [ ]  
APPROVED: [ ]  
PROJECT: 52020-0200-LCC156  
SCALE (AT A3 SIZE): 1:60,000  
Prepared by: BEVIN & THOMPSON  
Ref: 52020-0200

Christchurch City

Location Plan

ACAM: [ ]  
JUL15

REV: [ ]  
Q



**Legend**

- Worked example locations
- Calculated  $C_{fc}$  Values Based on Laboratory Testing and CPT Traces
  - < -0.2
  - 0.2 - -0.1
  - 0.1 - 0
  - 0 - 0.1
  - 0.1 - 0.2
  - > 0.2
- Paired but  $I_c > 2.6$
- Unpaired Laboratory Fines
- Content Tests

**Notes:** NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)

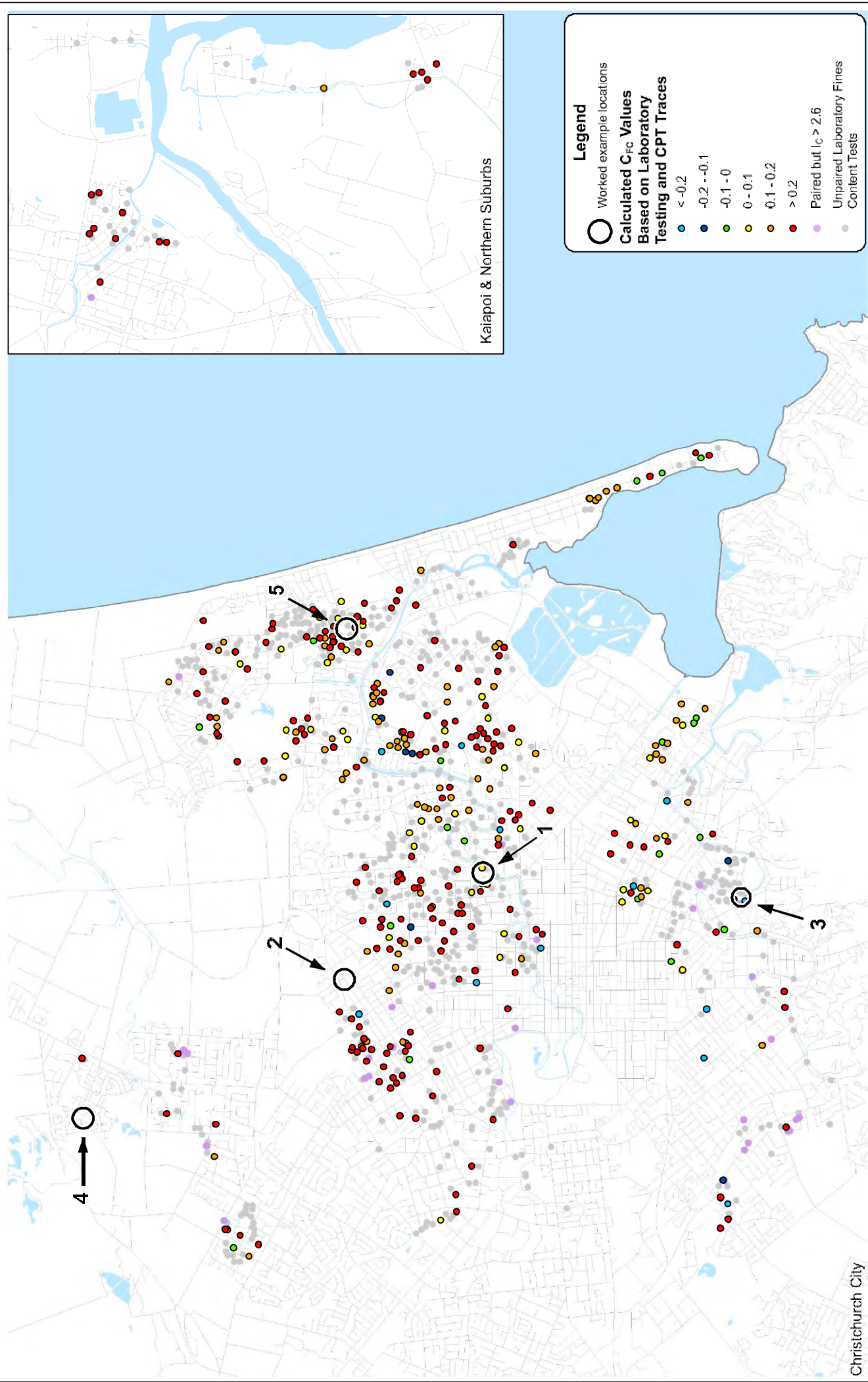
**EQC**  
EARTHQUAKE COMMISSION  
Kōwhiriwhiri Rauwharua

**EARTHQUAKE COMMISSION**  
CHRISTCHURCH CITY & KAIAPOI  
Comparison of Fines Content Banded by the Soil Behaviour Type Index: Depth from 0 m to 5 m

FIGURE No. K1.32

DRAWN	ACAM	JUL 15
CHECKED		
APPROVED		
PROJECT: 52020-0200-LCC157		
SCALE (AT A3 SIZE): 1:60,000		
Prepared by BOBBI & TRAVIS LTD.		
Ref: 52020-0200		

REV. 0



**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Comparison of Fines Content Banded by the Soil  
 Behaviour Type Index: Depth from 5 m to 10 m

FIGURE No. K1.33

DRAWN	ACAM	JUL 15
CHECKED		
APPROVED		
PROJECT: 52020-0200-LCC158		
SCALE (AT A3 SIZE): 1:60,000		
Prepared by: BEVIN & TRAPLOTT		
Ref: 52020-0200		

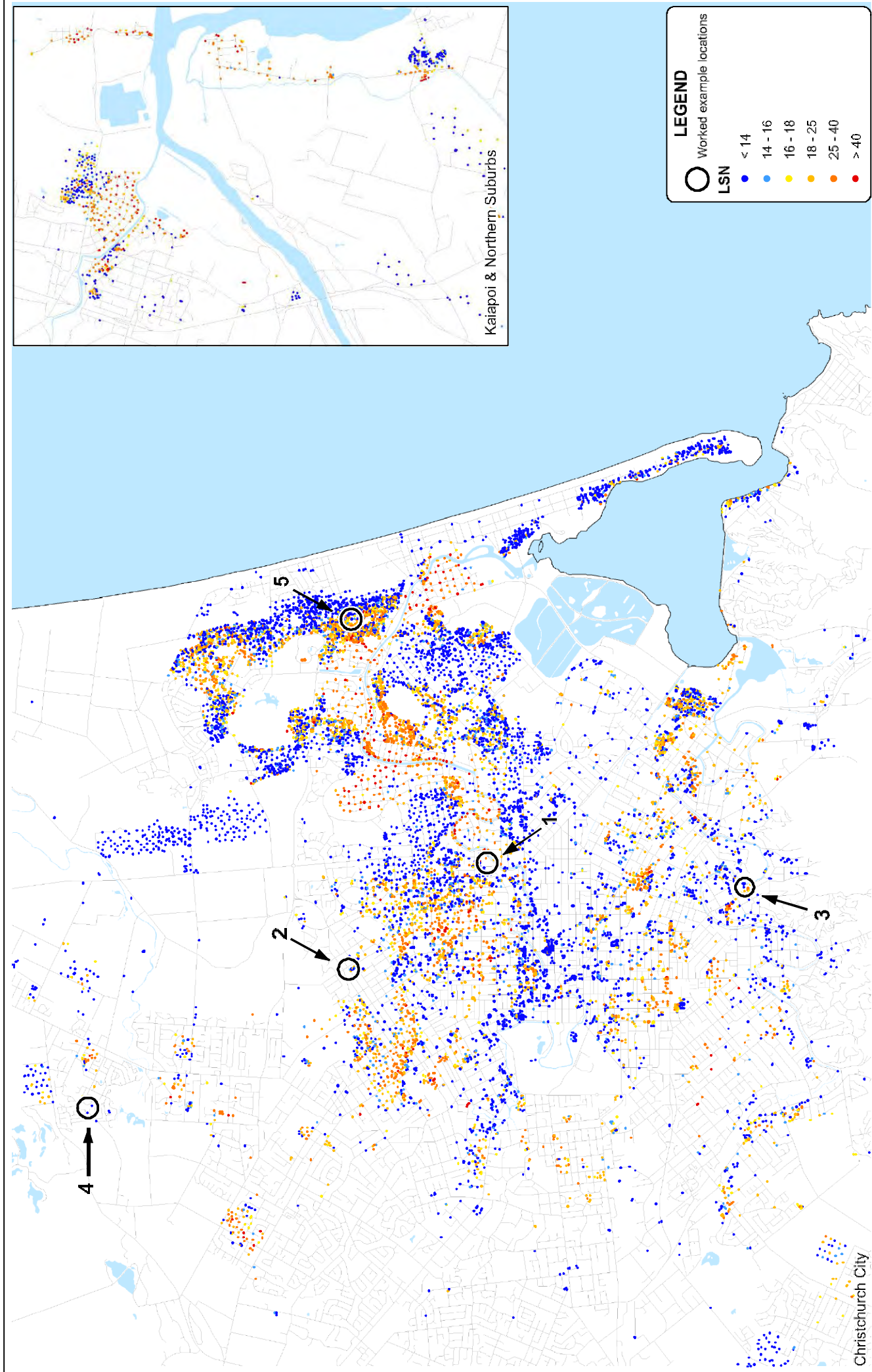
**EQC**  
**EARTHQUAKE COMMISSION**  
 Kōwhirianga Rāwhiriwhia

Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)

Inset Map  
 Location Plan



**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Sensitivity of LSN to  $C_{FC}$  and  $I_c$  Cutoff:  
 $C_{FC} = 0$ ;  $I_c$  Cutoff = 2.4

FIGURE No: K1.34

DRAWN	ACAN/JUL15
CHECKED	
APPROVED	
AS-FILE	52020-0200-LCC159
SCALE (AT A3 SIZE)	1:60,000

Prepared by: BEYON & PARTNER LTD.  
 Ref: 52020-0200

**EQC**  
**EARTHQUAKE COMMISSION**  
 Kōwhiri Rauwharua

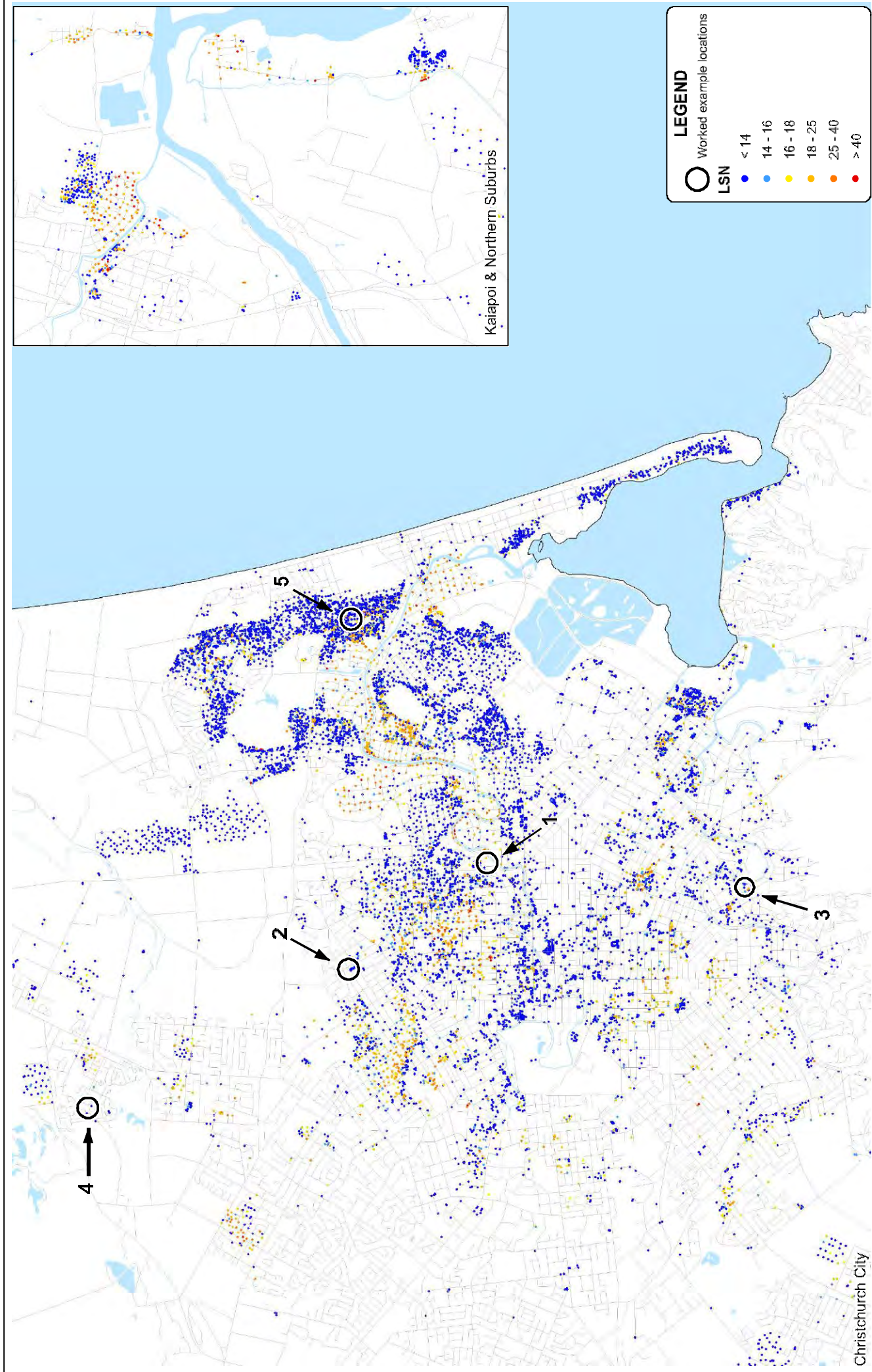
Inset Map  
 Location Plan

Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000  
 0 1 2 3 4 (km)

Christchurch City

Kaiapoi & Northern Suburbs



**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Sensitivity of LSN to  $C_{FC}$  and  $I_c$  Cutoff:  
 $C_{FC} = 0.2$ ;  $I_c$  Cutoff = 2.4

FIGURE No: K1.35

DRAWN	ACAM	JUL15
CHECKED		
APPROVED		
AS-BUILT	52020-0200-LCC160	
SCALE (AT A3 SIZE)	1:60,000	

Prepared by: BEYON & PARTNER LTD.  
 Ref: 52020-0200

**EQC**  
**EARTHQUAKE COMMISSION**  
 Kōwhiri Rauwharua

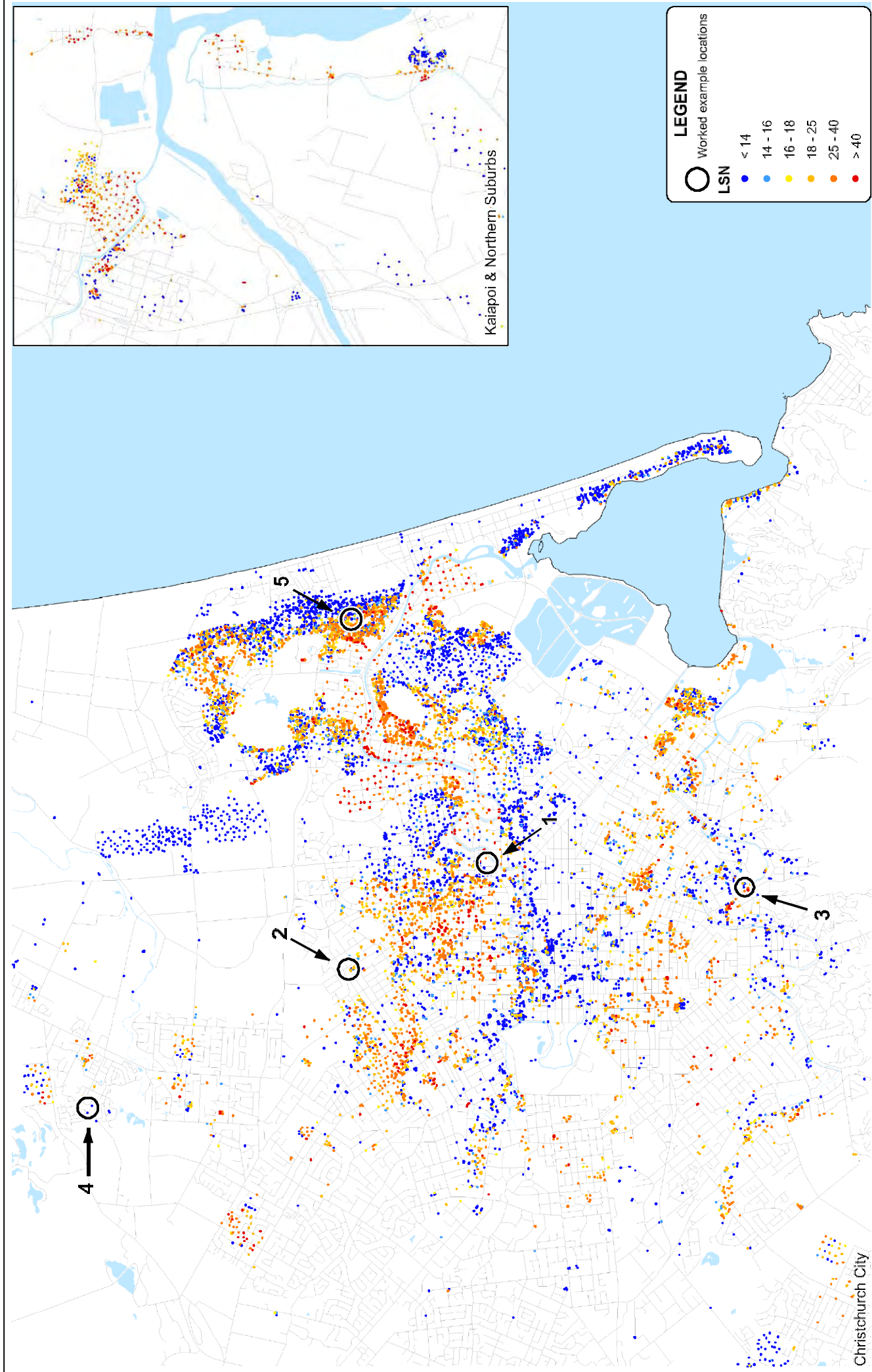
Inset Map  
 Location Plan

Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000  
 0 1 2 3 4 (km)

Christchurch City

Kaiapoi & Northern Suburbs



**LEGEND**

Worked example locations

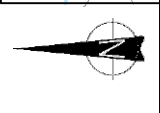
○

**LSN**

- < 14
- 14 - 16
- 16 - 18
- 18 - 25
- 25 - 40
- > 40

**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Sensitivity of LSN to  $C_{FC}$  and  $I_C$  Cutoff:  
 $C_{FC} = 0$ ;  $I_C$  Cutoff = 2.6

DRAWN	ACAM	JUL15
CHECKED		
APPROVED		
AS-FILE	52020-0200-LCC:161	
SCALE (AT A3 SIZE)	1:60,000	
Prepared by	BROWN & CALVERT LTD.	
Ref:	52020-0200	



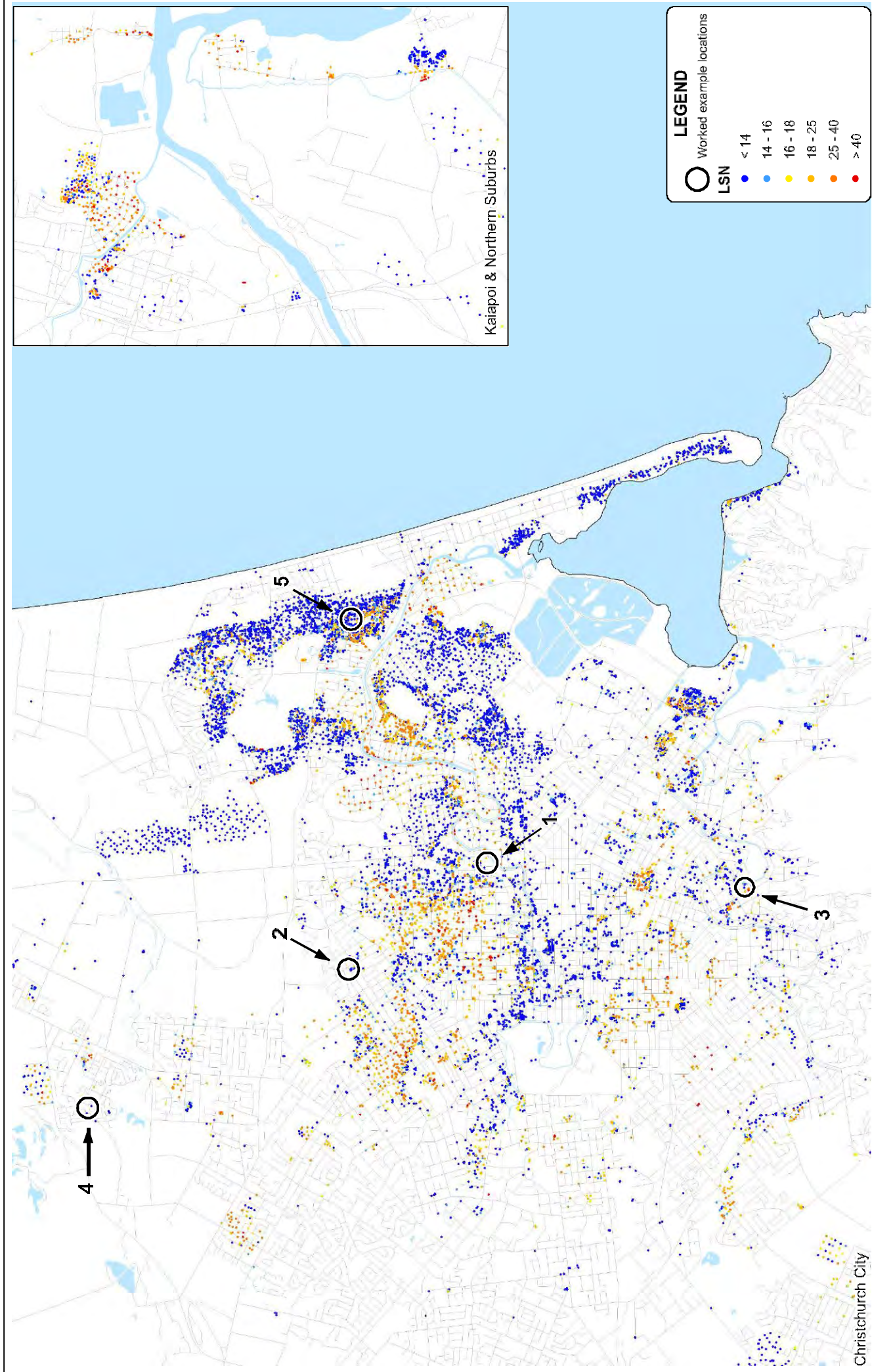
Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)

Christchurch City

Location Plan



DRAWN	JACM	JT/15
CHECKED		
APPROVED		
PROJECT <b>52020-0200-LCC162</b>		
SCALE (RT AS SHOWN) <b>1:60,000</b>		
Prepared by: <b>TRAVIS &amp; TRIP/TLM</b> Ref: <b>52020-0200</b>		



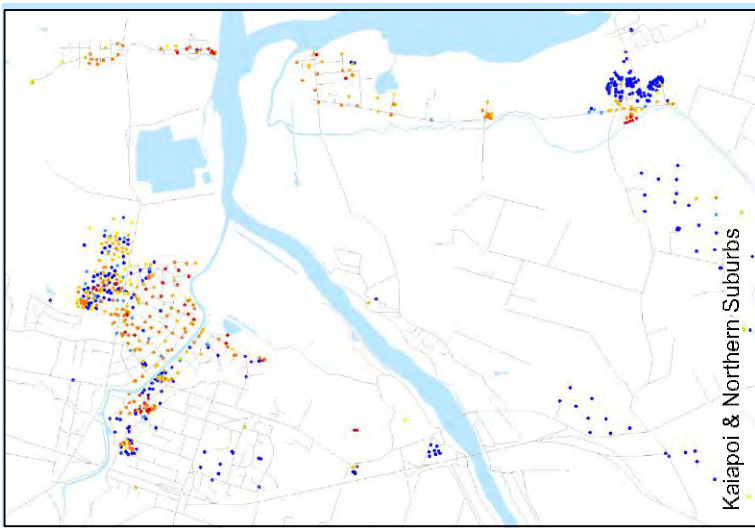
Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

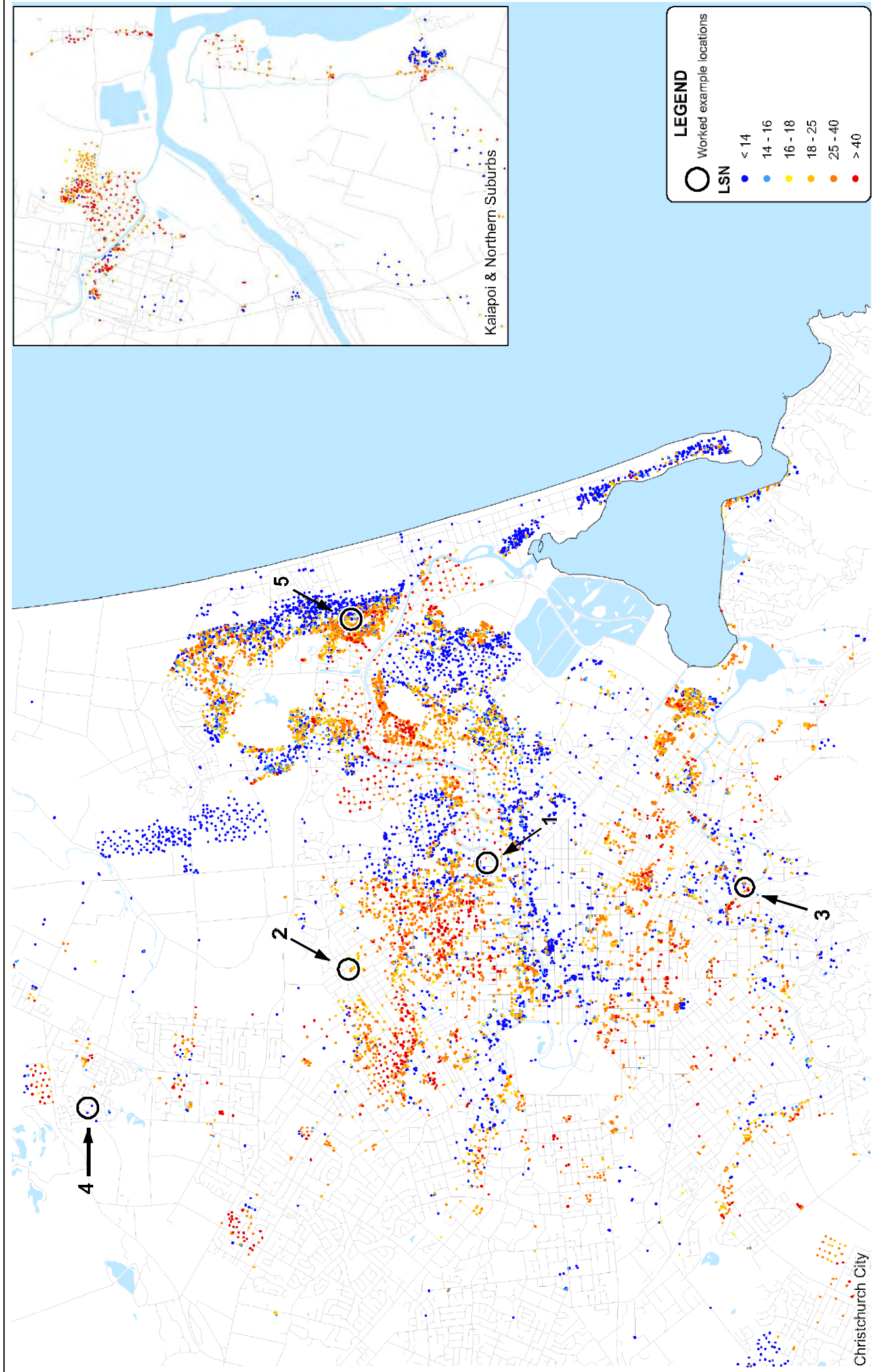
A3 SCALE 1:60,000

0 1 2 3 4 (km)

**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Sensitivity of LSN to  $C_{FC}$  and  $I_C$  Cutoff:  
 $C_{FC} = 0.2$ ;  $I_C$  Cutoff = 2.6

FIGURE No. **K1.37**





**LEGEND**

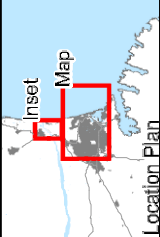
Worked example locations

LSN

- < 14
- 14 - 16
- 16 - 18
- 18 - 25
- 25 - 40
- > 40

**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Sensitivity of LSN to  $C_{FC}$  and  $I_c$  Cutoff:  
 $C_{FC} = 0$ ;  $I_c$  Cutoff = 2.8

DRAWN	ACAM	JUL15
CHECKED		
APPROVED		
AS-FILE	52020-0200-LCC163	
SCALE (AT A3 SIZE)	1:60,000	
Prepared by	BROWN & CALVERT LTD.	
Ref:	52020-0200	

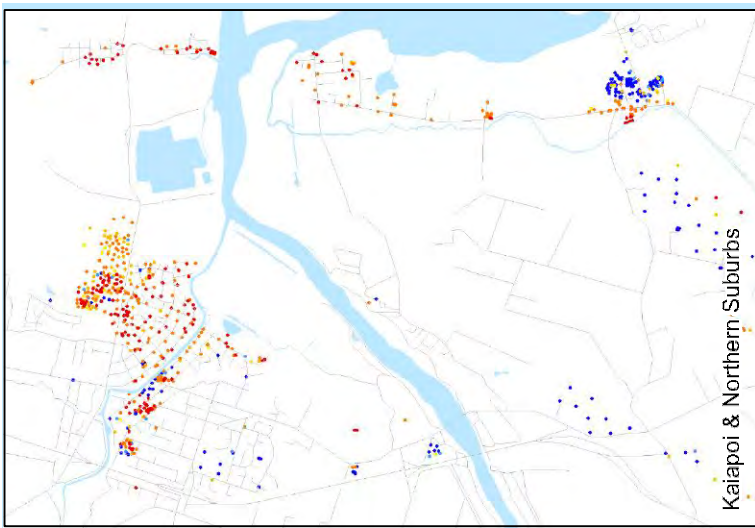


Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

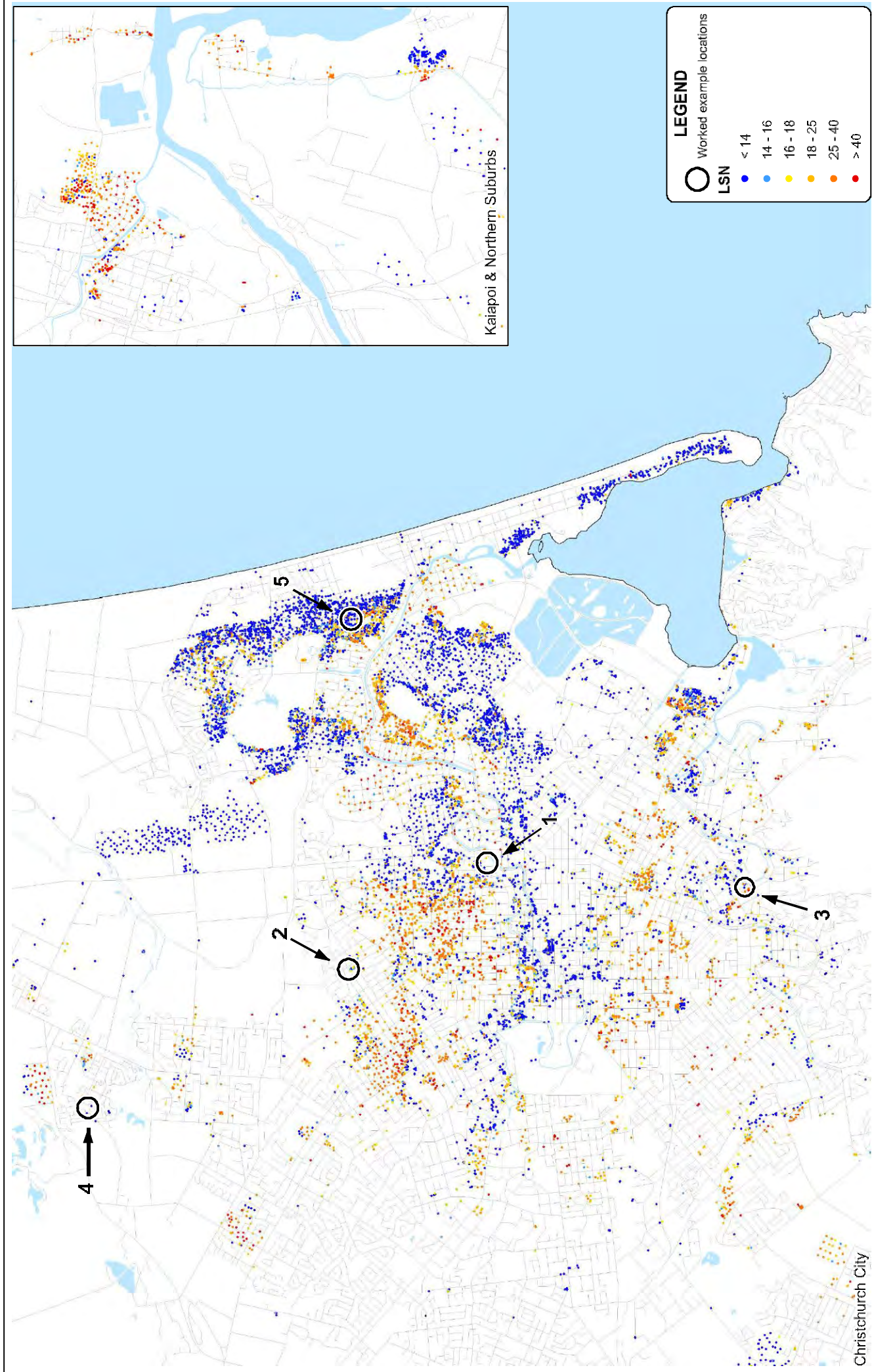
A3 SCALE 1:60,000

0 1 2 3 4 (km)

Location Plan







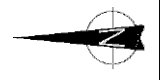
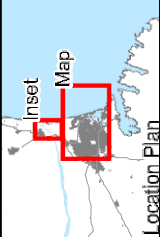
**LEGEND**

Worked example locations

LSN

- < 14
- 14 - 16
- 16 - 18
- 18 - 25
- 25 - 40
- > 40

DRAWN	ACAM	JUL15
CHECKED		
APPROVED		
AS-FILE	52020-0200-LCC164	
SCALE (AT A3 SIZE)	1:60,000	
Prepared by	BROWN & CALVERT LTD.	
Ref:	52020-0200	



Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)

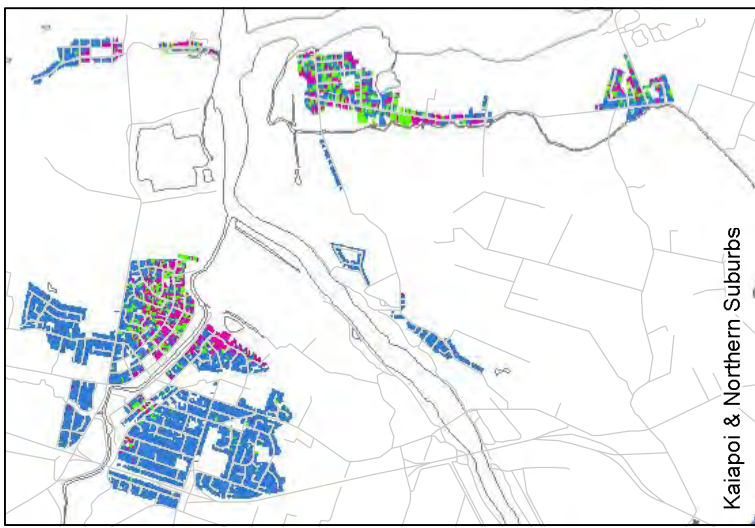
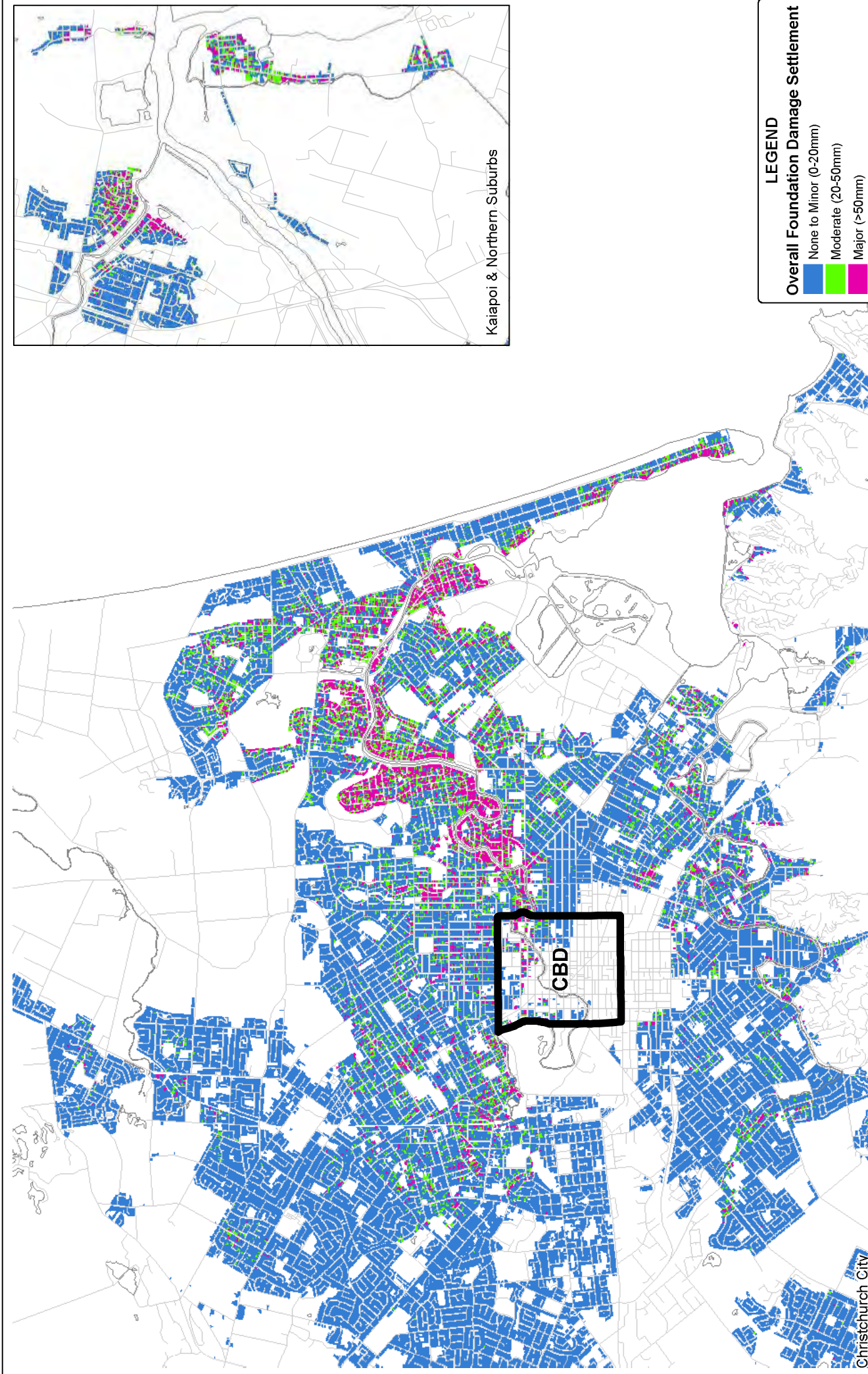
Christchurch City

EARTHQUAKE COMMISSION  
 CHRISTCHURCH CITY & KAIAPOI  
 Sensitivity of LSN to C<sub>FC</sub> and I<sub>C</sub> Cutoff:  
 C<sub>FC</sub> = 0.2; I<sub>C</sub> Cutoff = 2.8

FIGURE No: K1.39

## **Appendix K2 – Additional Maps Relevant To the ILV Assessment Process**

- **Figure K2.1 – Overall Differential Foundation Settlement**
- **Figure K2.2 – Building Damage Ratio (BDR)**
- **Figure K2.3 – Liquefaction Severity Number**
- **Figure K2.4 – Change in Liquefaction Severity Number**
- **Figure K2.5 – Automated ILV Model (BI2014)**
- **Figure K2.6 – Liquefaction Vulnerability**



**LEGEND**

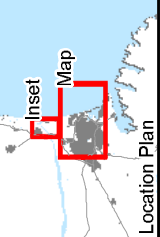
**Overall Foundation Damage Settlement**

- None to Minor (0-20mm)
- Moderate (20-50mm)
- Major (>50mm)

**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
**Overall Differential Foundation Settlement**

FIGURE No. K2.1

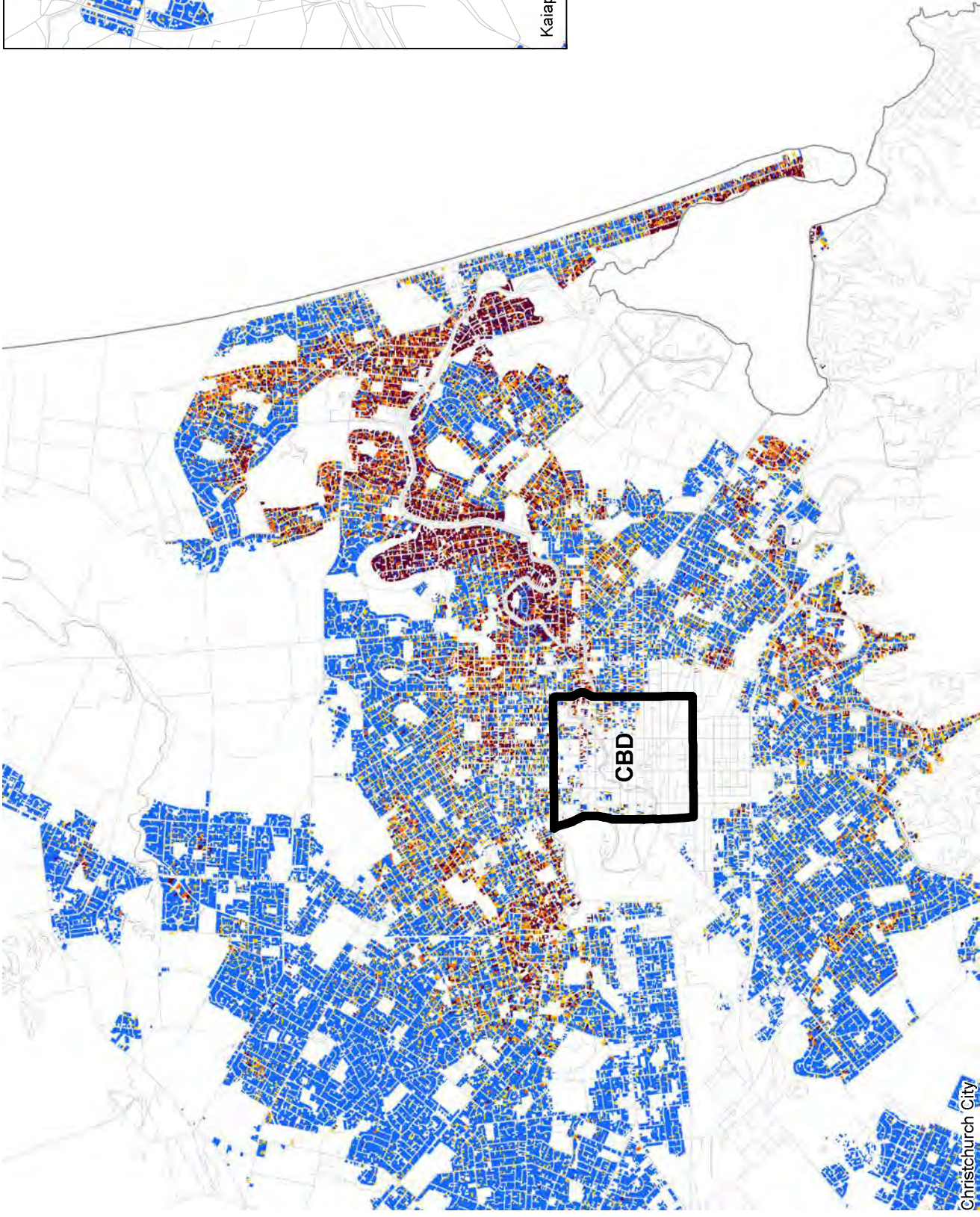
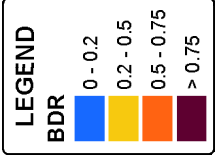
DRAWN	ACAM/Aug.15
CHECKED	
APPROVED	
AS FILE	52020-0200-LCC170
SCALE (A3 SIZE)	1:60,000
Prepared by Tohin & Taylor Ltd	
Ref	52020-0200



Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (km)



**EQC**  
EARTHQUAKE COMMISSION  
Kōwhiriwhiri Rūwhiriwhiri

**EARTHQUAKE COMMISSION**  
CHRISTCHURCH CITY & KAIAPOI  
Building Damage Ratio (BDR)

FIGURE No. K2.2

Rev. 0

DRAWN	ACAM/Aug.15
CHECKED	
APPROVED	
PROJECT	52020-0200-LCC171
SCALE (A3 SIZE)	1:60,000
Prepared by Tohin & Taylor Ltd	
Ref.	52020-0200

Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

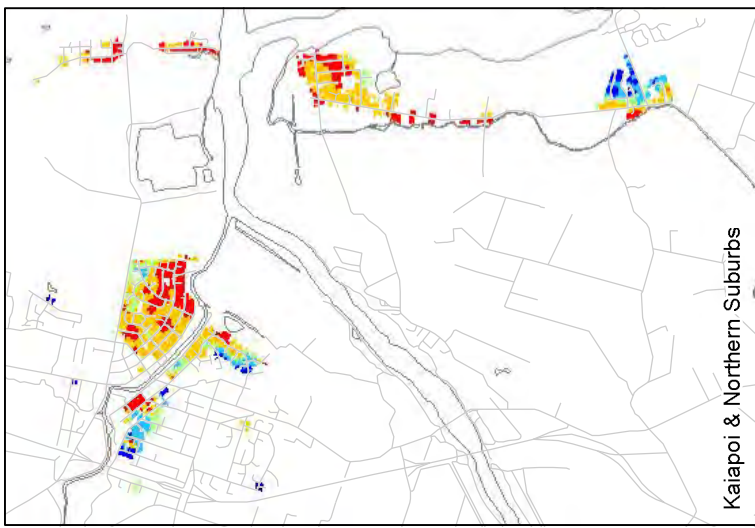
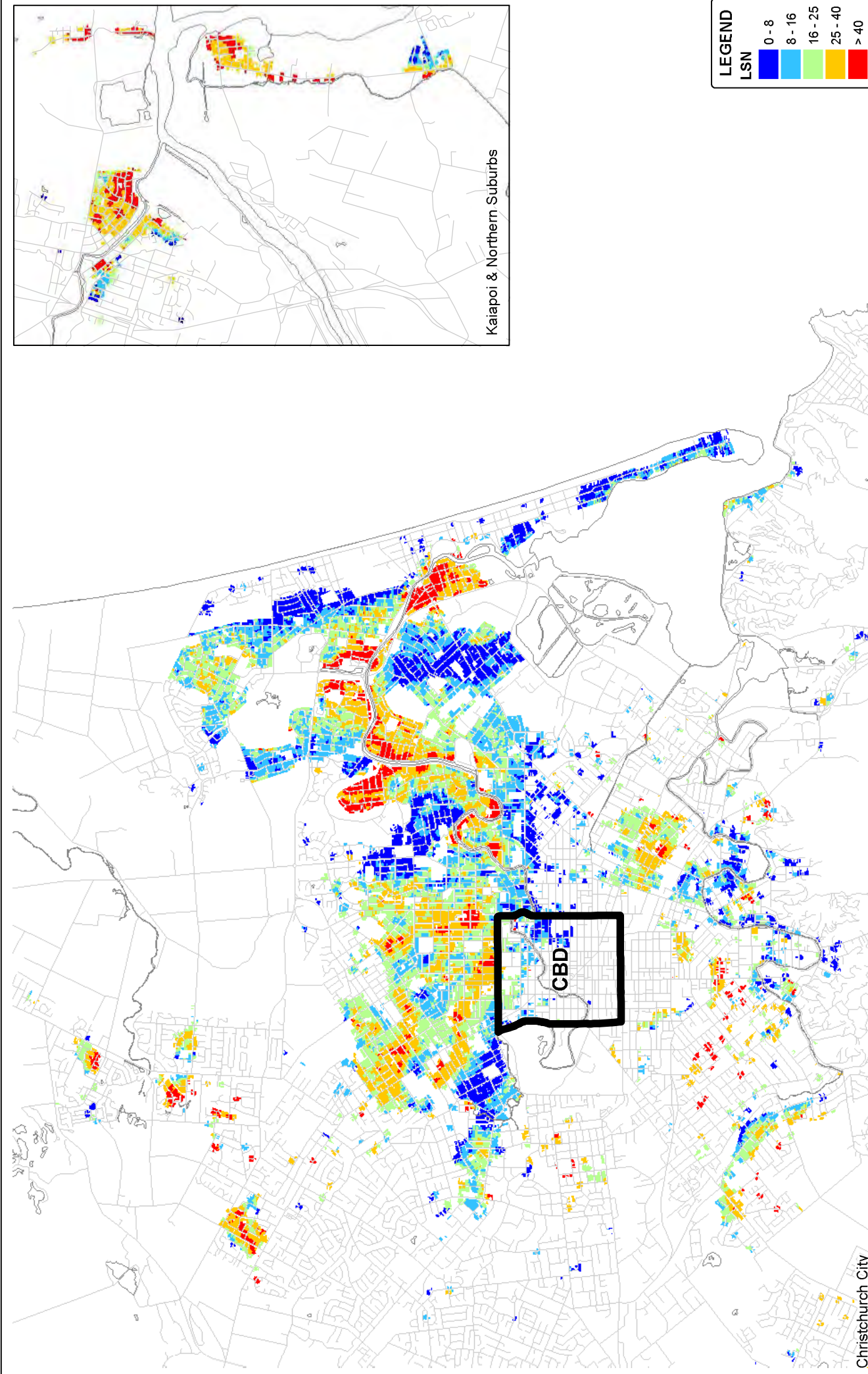
A3 SCALE 1:60,000

0 1 2 3 4 (km)

Inset Map

Location Plan

Date: 25/08/2015 Time: 8:18:15 a.m.



**LEGEND**

LSN	Color
0 - 8	Blue
8 - 16	Light Blue
16 - 25	Light Green
25 - 40	Yellow
> 40	Red

**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
 Liquefaction Severity Number

**EQC**  
 EARTHQUAKE COMMISSION  
 Kōwhiriwhiri Rūwhēnua

**Location Plan**

**Inset Map**

**Notes:** NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

**A3 SCALE 1:60,000**

0 1 2 3 4 (km)

**Scale:** 1:60,000

**Prepared by:** Tohin & Taylor Ltd

**Project:** 52020-0200

**Article:** 52020-0200-LCC172

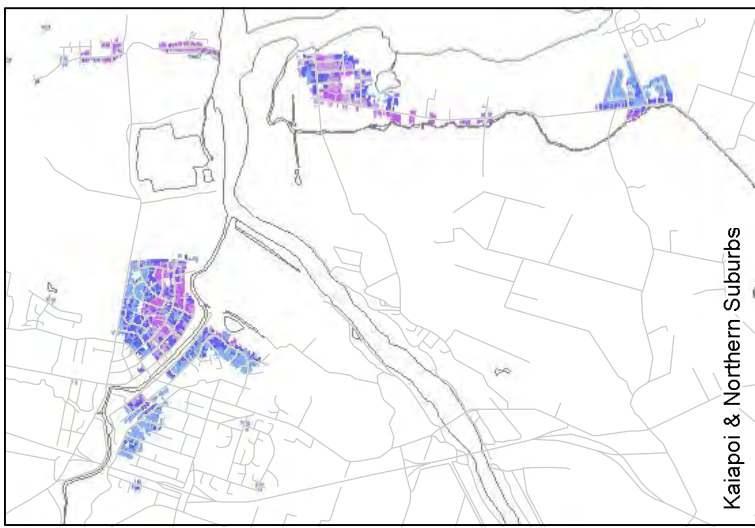
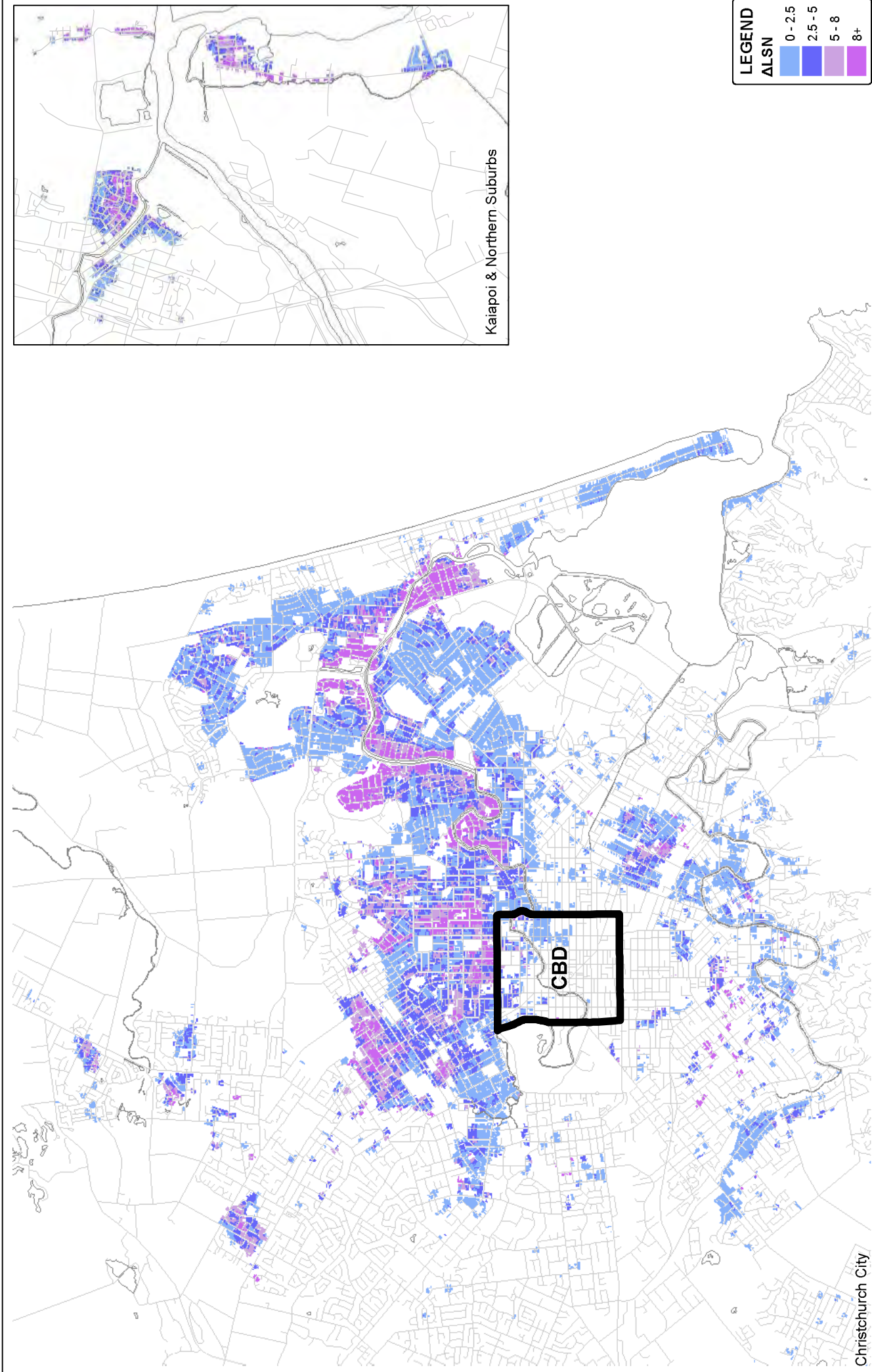
**Scale:** (at A3 size)

**ACAM/Agg. LE**

**DRAWN**  **CHECKED**  **APPROVED**

**FIGURE No:** K2.3

**Rev:** 0



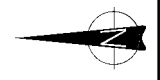
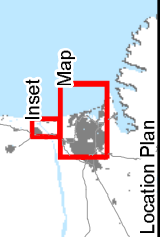
**LEGEND**

ALSN	Color
0 - 2.5	Light Blue
2.5 - 5	Medium Blue
5 - 8	Purple
8+	Dark Purple

**EARTHQUAKE COMMISSION**  
**CHRISTCHURCH CITY & KAIAPOI**  
**Change in Liquefaction Severity Number**

FIGURE No. K2.4

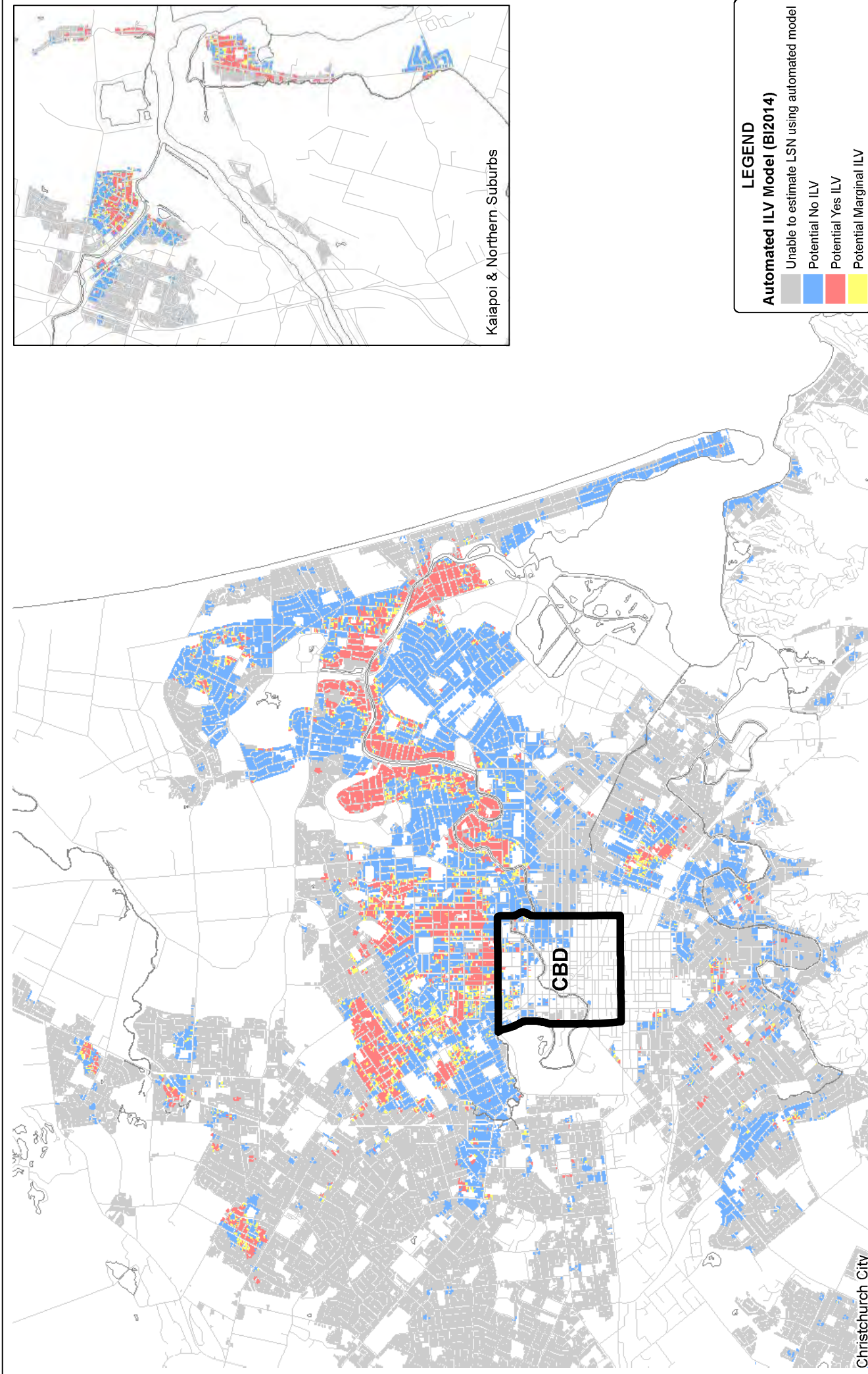
DRAWN	ACAM/Aug.15
CHECKED	
APPROVED	
AS FILE	52020-0200-LCC173
SCALE (A3 SIZE)	1:60,000
Prepared by Tohin & Taylor Ltd	
Ref	52020-0200



Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

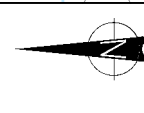
0 1 2 3 4 (kM)



Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

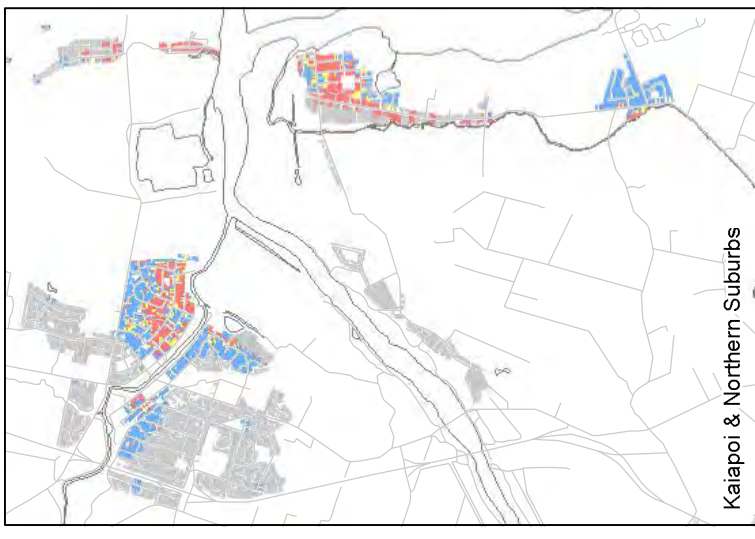
0 1 2 3 4 (kmt)



DRAWN	ACAM/Aug.14
CHECKED	
APPROVED	
AS FILE	52020-0200-LCC174
SCALE (A3 SIZE)	1:60,000
Prepared by Tohin & Taylor Ltd	
Ref	52020-0200

EARTHQUAKE COMMISSION  
CHRISTCHURCH CITY & KAIAPOI  
Automated ILV Model (Bi2014)

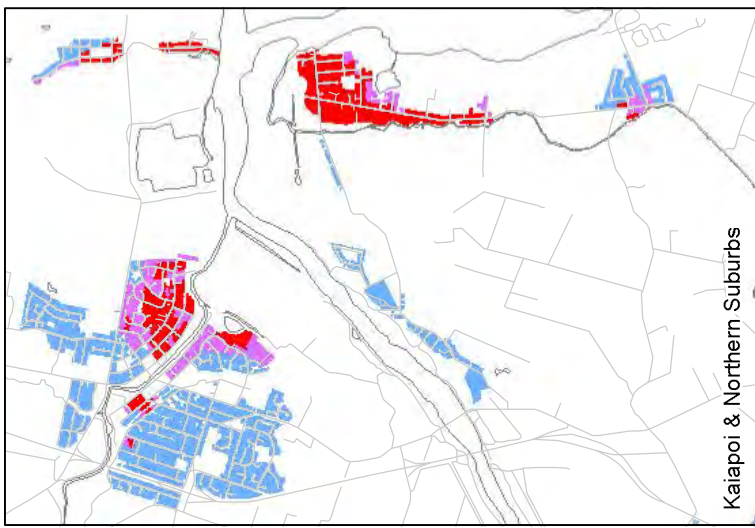
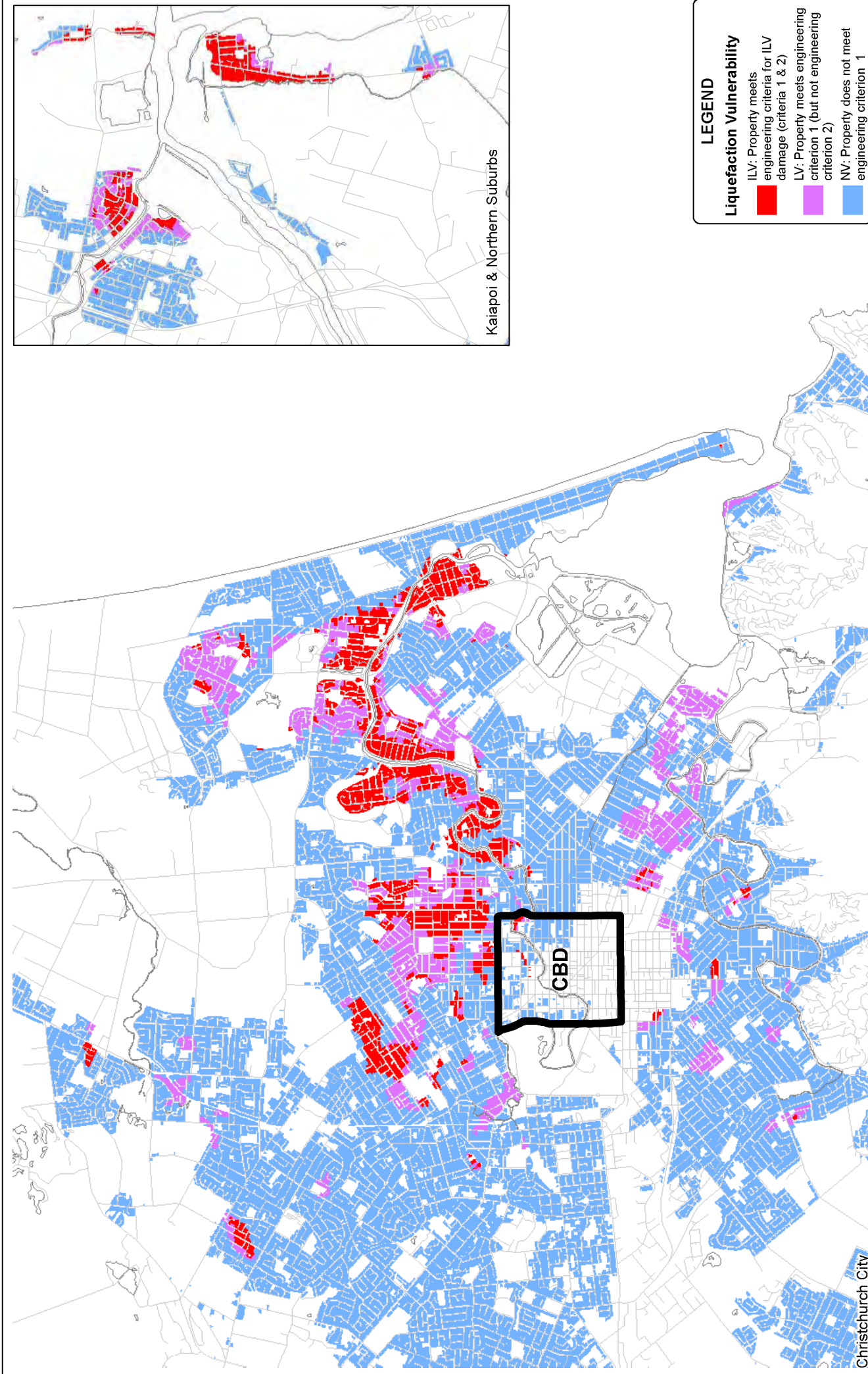
FIGURE No. K2.5  
Rev. 0



**LEGEND**

**Automated ILV Model (Bi2014)**

- Unable to estimate LSN using automated model
- Potential No ILV
- Potential Yes ILV
- Potential Marginal ILV

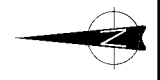
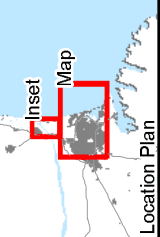


**LEGEND**

**Liquefaction Vulnerability**

- ILV: Property meets engineering criteria for ILV damage (criteria 1 & 2)
- LV: Property meets engineering criterion 1 (but not engineering criterion 2)
- NV: Property does not meet engineering criterion 1

DRAWN	ACAM/Aug.15
CHECKED	
APPROVED	
AS FILE	52020-0200-LCC175
SCALE (A1 A3 SIZE)	1:60,000
Prepared by	Toplan & Taylor Ltd
Ref	52020-0200



Notes: NZ Mainland Road Centerlines, NZ Coastlines and Island Polygons sourced from Land Information New Zealand under CC-BY.

A3 SCALE 1:60,000

0 1 2 3 4 (kmt)

Christchurch City

Kaiapoi & Northern Suburbs

**EARTHQUAKE COMMISSION**  
CHRISTCHURCH CITY & KAIAPOI  
Liquefaction Vulnerability

FIGURE No. K2.6

Rev. 0