Earthquake creates a ‘first’ for N.Z. mapping

Graeme Jupp | Cartographer
The Shaky Isles...

Napier, 1931

Inangahua, 1968

Edgecumbe, 1987

1939

1972

2009
NZTopo50 series

- National coverage to a consistent standard
- Scale of 1:50 000; Series released in 2009
- 451 sheets in total (including Chatham Islands)
- Accuracy and currency are high priorities
- Used by New Zealand emergency services
The map in question...

- Sheet BX24
- Originally published in 2009
- Area coverage of 36 x 24 kilometres
- Available in printed and digital formats
High visibility maintenance (1)

Industrial area of Sockburn, Middleton and Riccarton (2000)

Existing topographic features included:
- State highways (red)
- Local roads (orange)
- Large buildings
- Individual buildings
- Residential areas
High visibility maintenance (1)

Industrial area of Sockburn, Middleton and Riccarton (2014)

Topographic features updated included:
- State highways (red)
- Local roads (orange)
- Large buildings
- Individual buildings
- Residential areas
High visibility maintenance (2)

Expanding suburban area of Belfast

Belfast is 10 kilometres north of Christchurch city centre

2000

2014
The calm before the storm...

Christchurch City Centre
November 2010

Christ Church Cathedral
Arts Centre
Setting the scene...

Christchurch City Centre
Extract from BX24
(Edition 1, 2009)

Topographic features prominent in urban areas:
- State highways (red infills)
- Local roads (orange infills)
- Large buildings
- Individual buildings
- Residential areas
Earthquake! February 22, 2011

Property destroyed...
Infrastructure devastated...
185 lives lost
After the earthquake

Christchurch Central Business District, 2013

- Restricted access
- Removal of debris
- Controlled demolitions
- Clearance of entire blocks
The same area in 2010...

Christchurch Central Business District, 2010

2015
The challenge...

How to represent the changes at a scale of 1:50 000

Topographic features most affected:

- Roads
- Large buildings (CBD/industrial areas)
- Smaller (individual) buildings
- Residential areas
- Cliffs (mostly too small at map scale)
An option discounted...

Christchurch City Map
Published by AA maps (2013)

The pink screen denotes earthquake-affected areas
Capturing what remained...

Updating building outlines in Central Business District (buildings were plotted to scale)
The final result...

Looking east across Christchurch

Completed building outlines in Central Business District
(some detail lost with roads)
Compared with 2009 and before...

Looking northwest across Christchurch

Original (generalised) representation of buildings in Central Business District
Avonside & Burwood (2009 edition)

Standard topographic representation:
• Two-lane sealed roads (orange infill)
• Residential areas (grey screen)
• Large and individual buildings (black)

Avonside before the quake (2009)
Updating Avonside & Burwood

Burwood before the quake (2009)

Removal of houses underway (2014)
Red-zoned areas:
- Roads retained; road infills removed
- Representative individual buildings added in lieu of residential area
The future of sheet BX24...

What will become of the red-zoned areas?
• Roads closed to the public
• Restricted access
• Roads to be removed?
A possible future update...

Aerial photographs (2016) with virtually all houses removed, and roads abandoned and closed
The red-zoned areas in the future?

- Nature takes over...
- Removal of roads?
- Future land use?

2009 edition

The map in 2020?
The changing face of Bexley…
The town of Rolleston is 22 kilometres (14 miles) southwest of Christchurch on State Highway 1. It is within easy commuting distance of the city.
The growth of Rolleston (2)

Rolleston
as revised in 2014
(NZTopo50 sheet BX23)

New housing
in Rolleston
Rolleston’s population increased from 1,000 in the 1980s, to 3,800 in the 2006 census, and has reached approximately 11,800 as at June 2015. (Statistics New Zealand)
Questions?