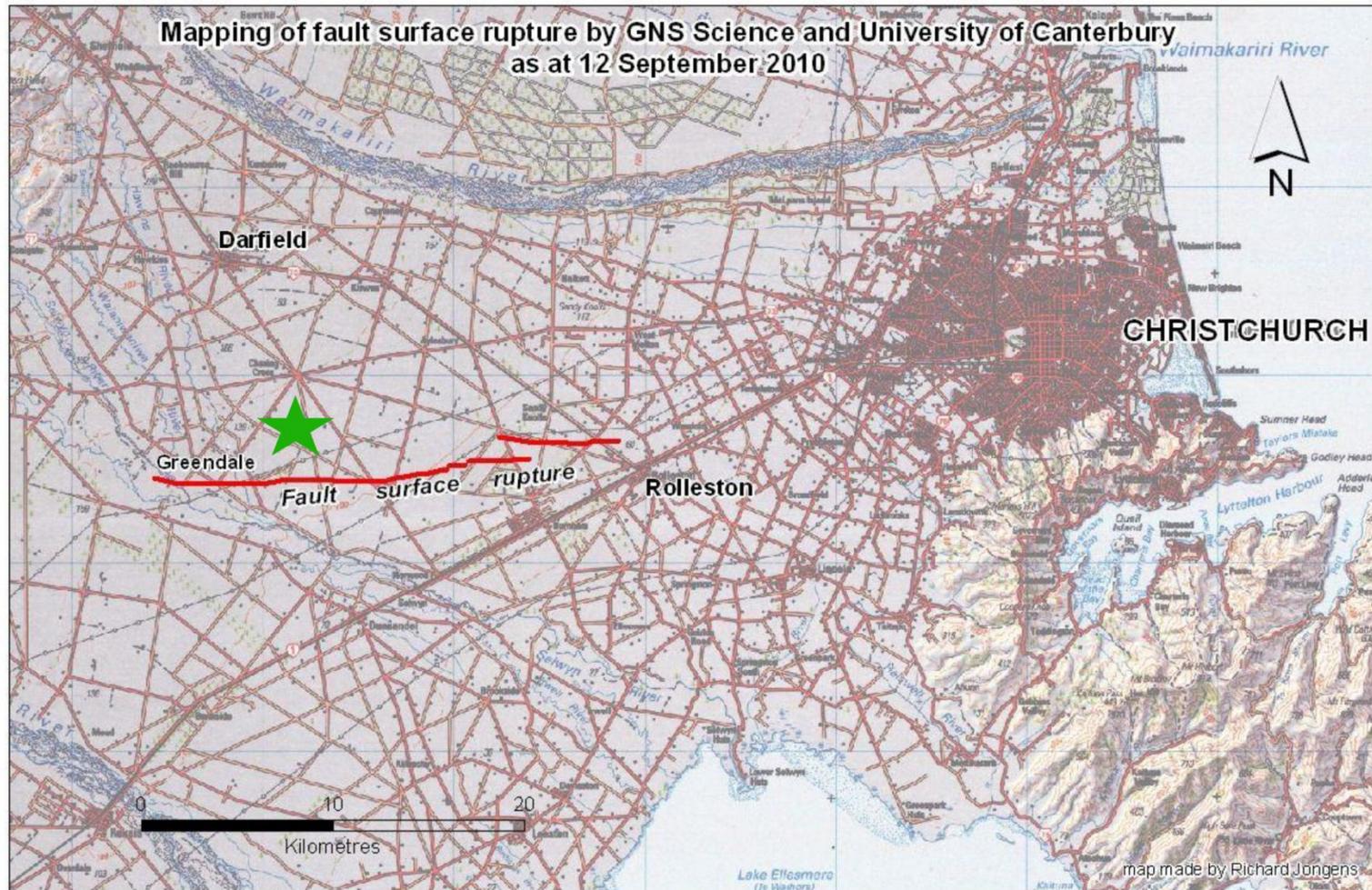




KEEPING A CITY MOVING
THE TRANSPORT PLANNING, TRAFFIC MANAGEMENT &
COMMUNICATIONS DURING THE CHRISTCHURCH REBUILD

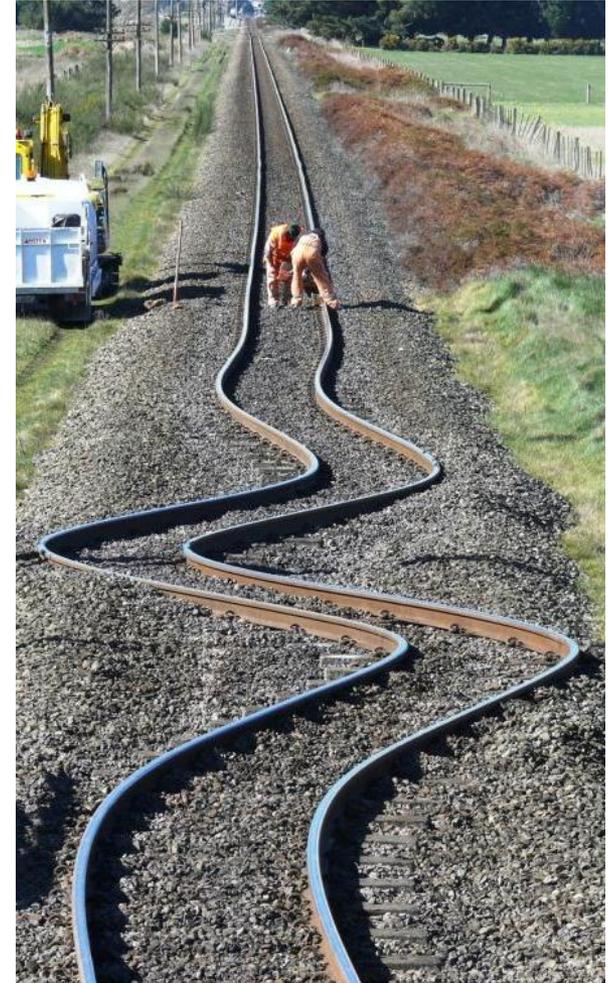
ANGUS BARGH, TRESCA FORRESTER, KERSTIN RUPP, KEVIN WESTENENG

Darfield earthquake: 4 Sept 2010, 7.1 magnitude

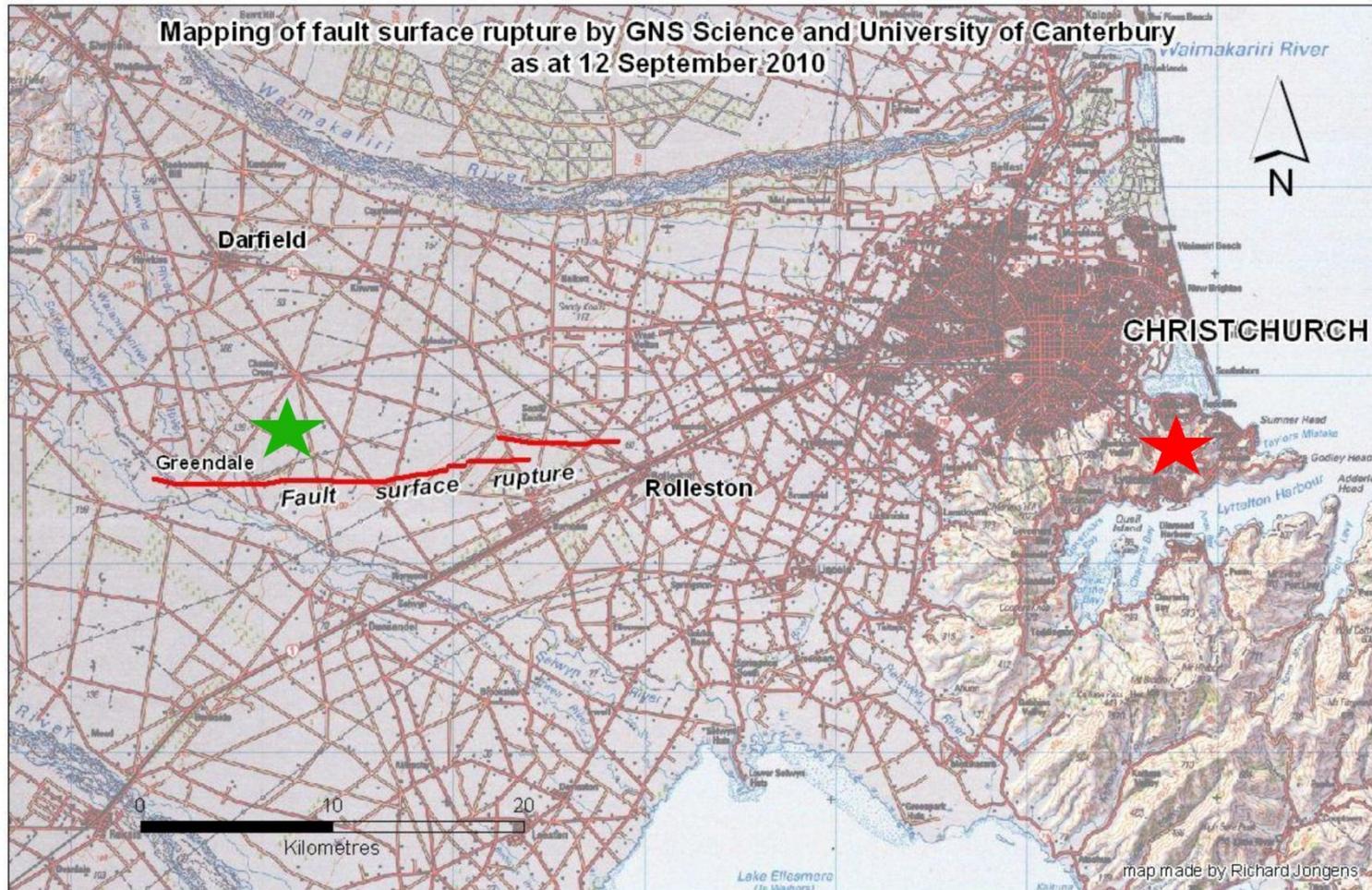


Sept 4 2010, 40km W of Christchurch, Mw 7.1, Depth 10km

Darfield earthquake: 4 Sept 2010, 7.1 magnitude



Christchurch earthquake: 22 Feb 2011, 6.3 magnitude



Feb 22 2011, 7 km SE of Christchurch, Mw 6.3, Depth 5 km

Christchurch earthquake: 22 Feb 2011, 6.3 magnitude



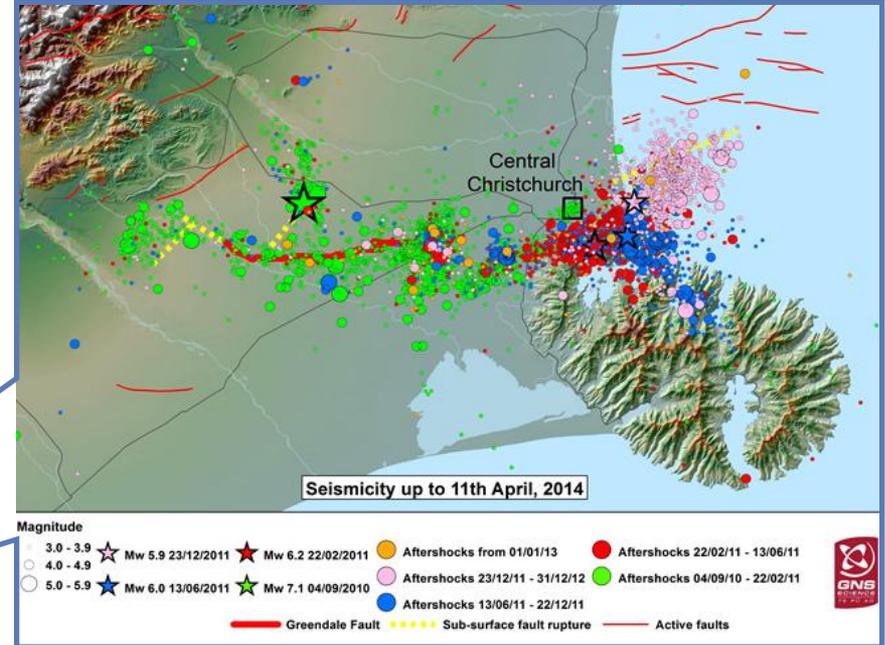
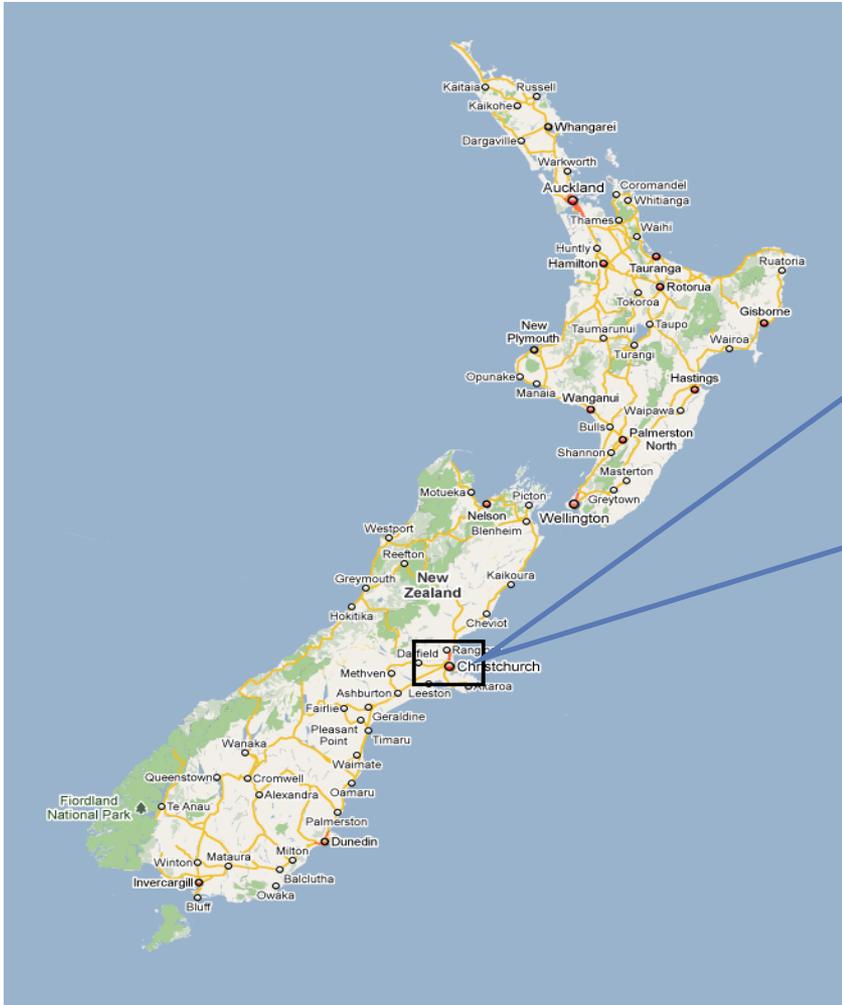
Christchurch earthquake: destruction



Christchurch earthquake: destruction



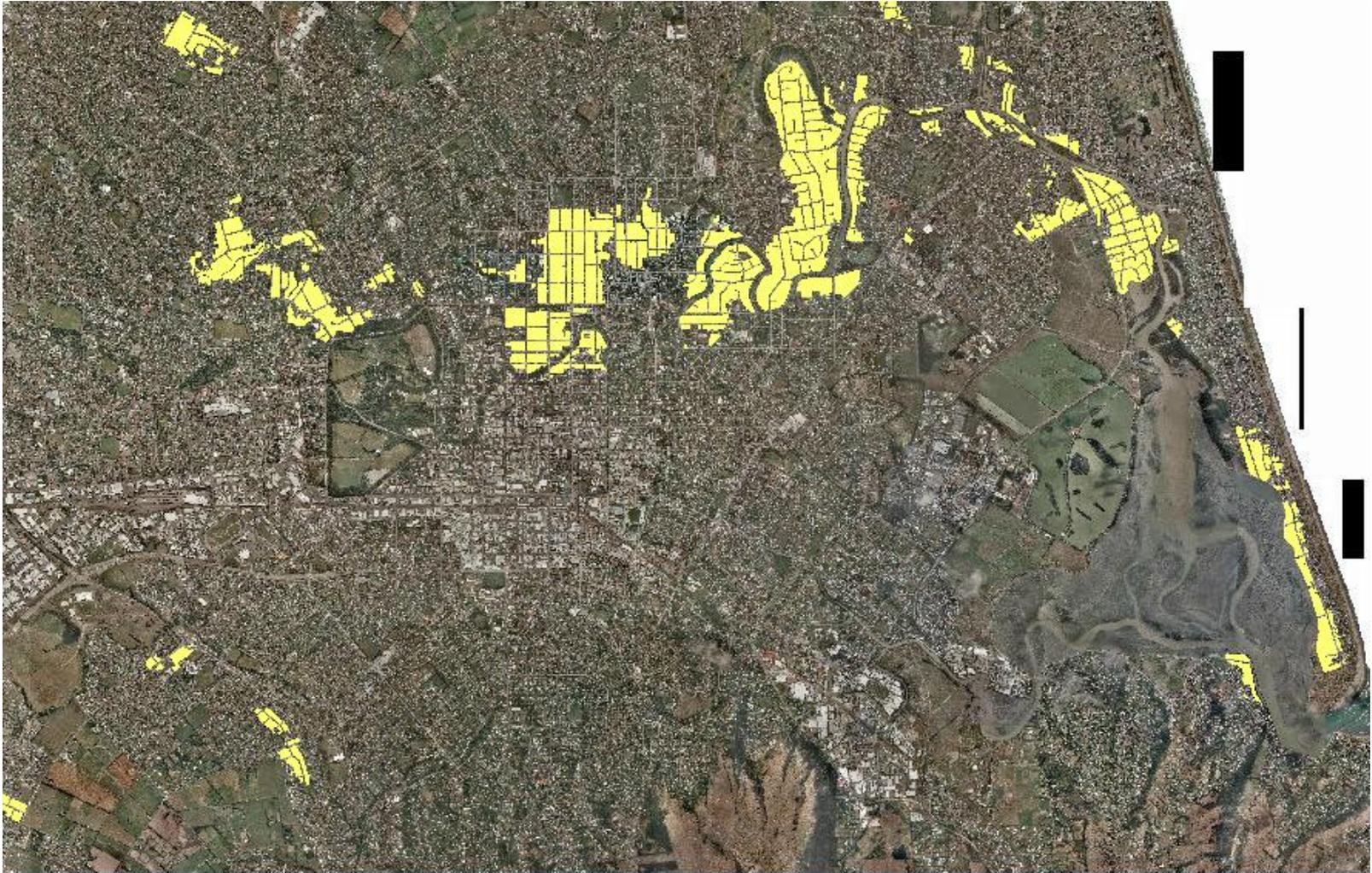
Quake and aftershock maps



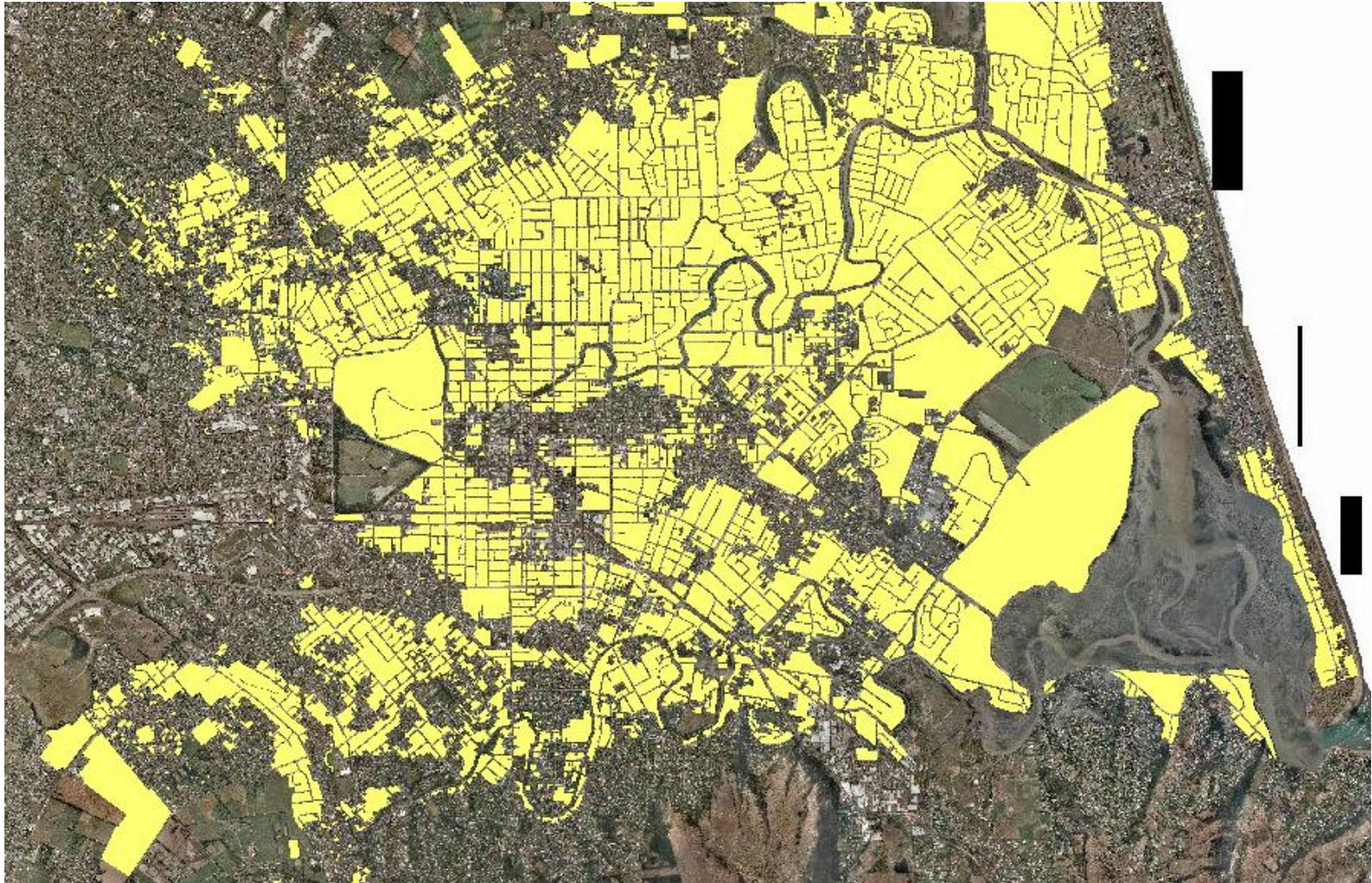
Christchurch

- Population: ~350,000
- Total Area: ~1,425 km²
- Since Sep 2010: >13,000 quakes

Christchurch earthquake: liquefaction (Sept 2010)



Christchurch earthquake: liquefaction (Feb 2011)



Christchurch earthquake: liquefaction (Feb 2011)



322,000 tonnes...

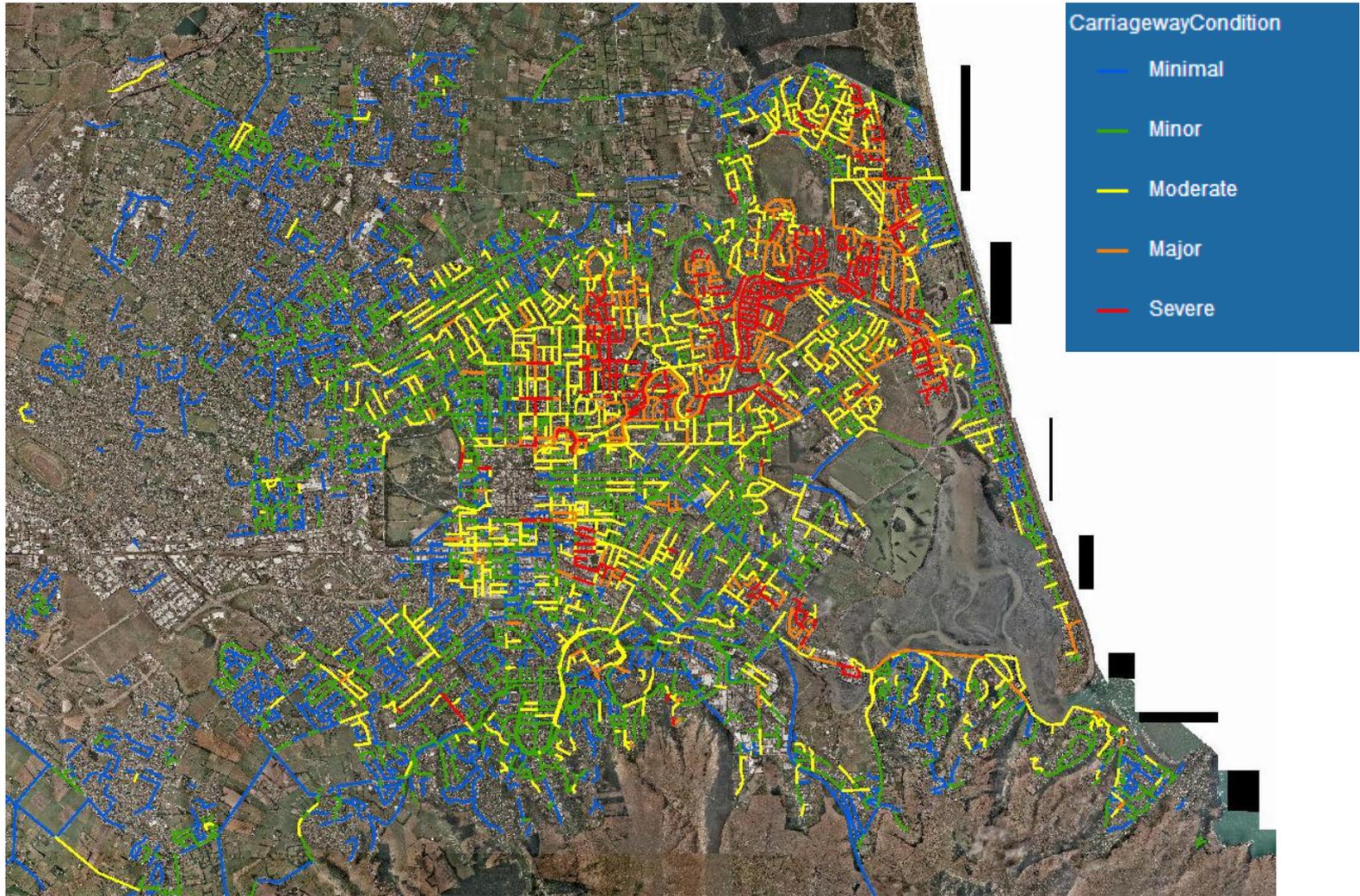
Bridges



Roads



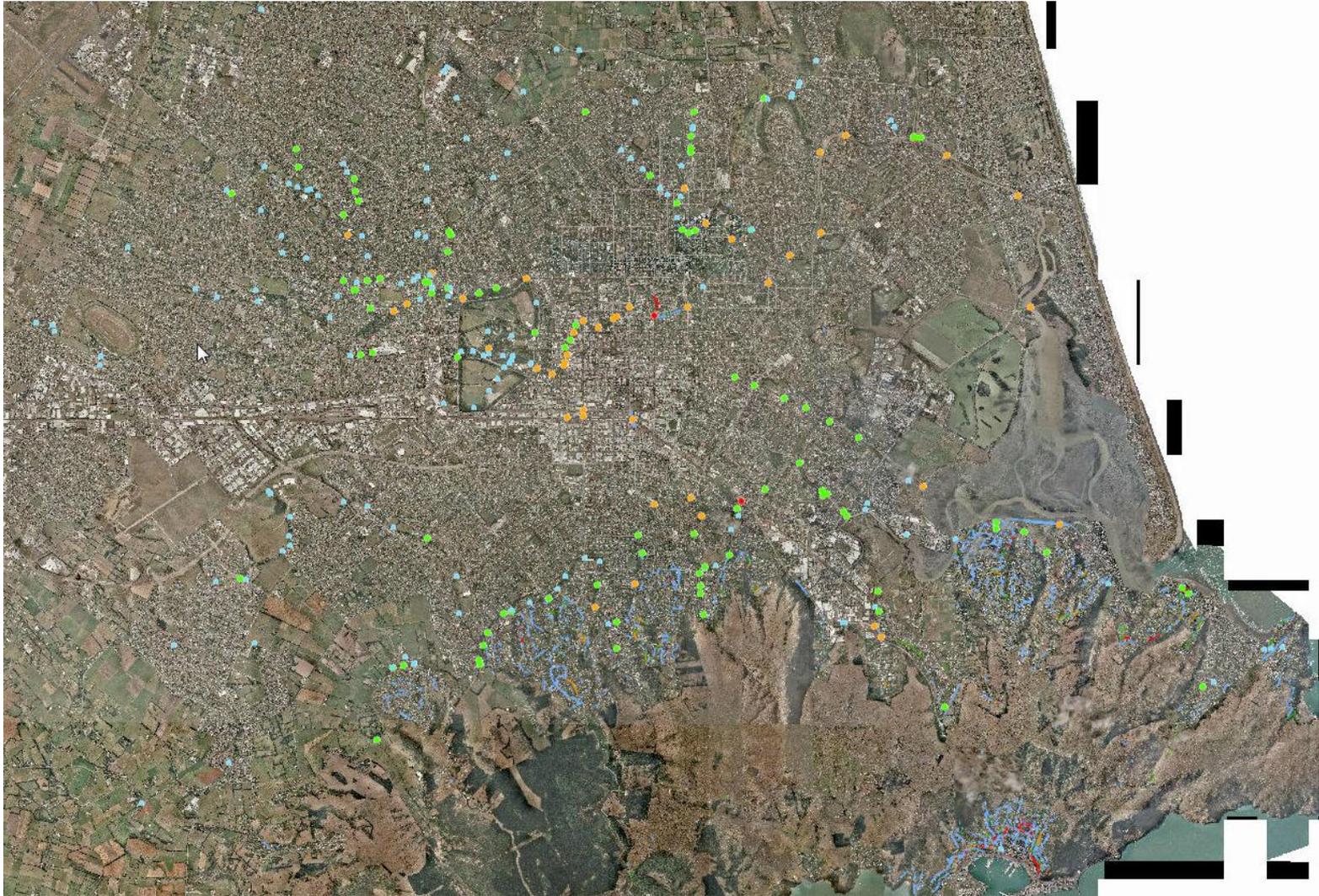
Magnitude of pavement damage



Wastewater & stormwater damage



Structures damage



Work to be done

Asset Type	Length/No (approx)	Damage (approx)
WW Reticulation	1,600km	40%
WW Pump Stations - repair	165	35%
Pump Stations – new / decom.	30 / 10	
WW Lift Stations – new	65	
WS Reticulation	2,850km	2%
WS Pump Stations & Reservoirs	220	35%
SW Reticulation	330km	10%
SW Pump Stations - repair	38	20%
Pump Stations - new	3	
RD Carriageway	11,672,000m ²	10%
RD Bridges/Culverts	225	65%
RD Retaining Walls	490	45%

Work to be done - CBD

Asset Type	Length/No (approx)	Damage (approx)
Wastewater	65km	75%-90% >TL
Storm Water	55km	30%-50% >TL
Water Supply	75km Mains, 50km Submains	10% >TL
Roading	65km	35% Severe/Major 45% Moderate 20% Minor/None

SCIRT – The Infrastructure Delivery Model

Post Sept 2010:

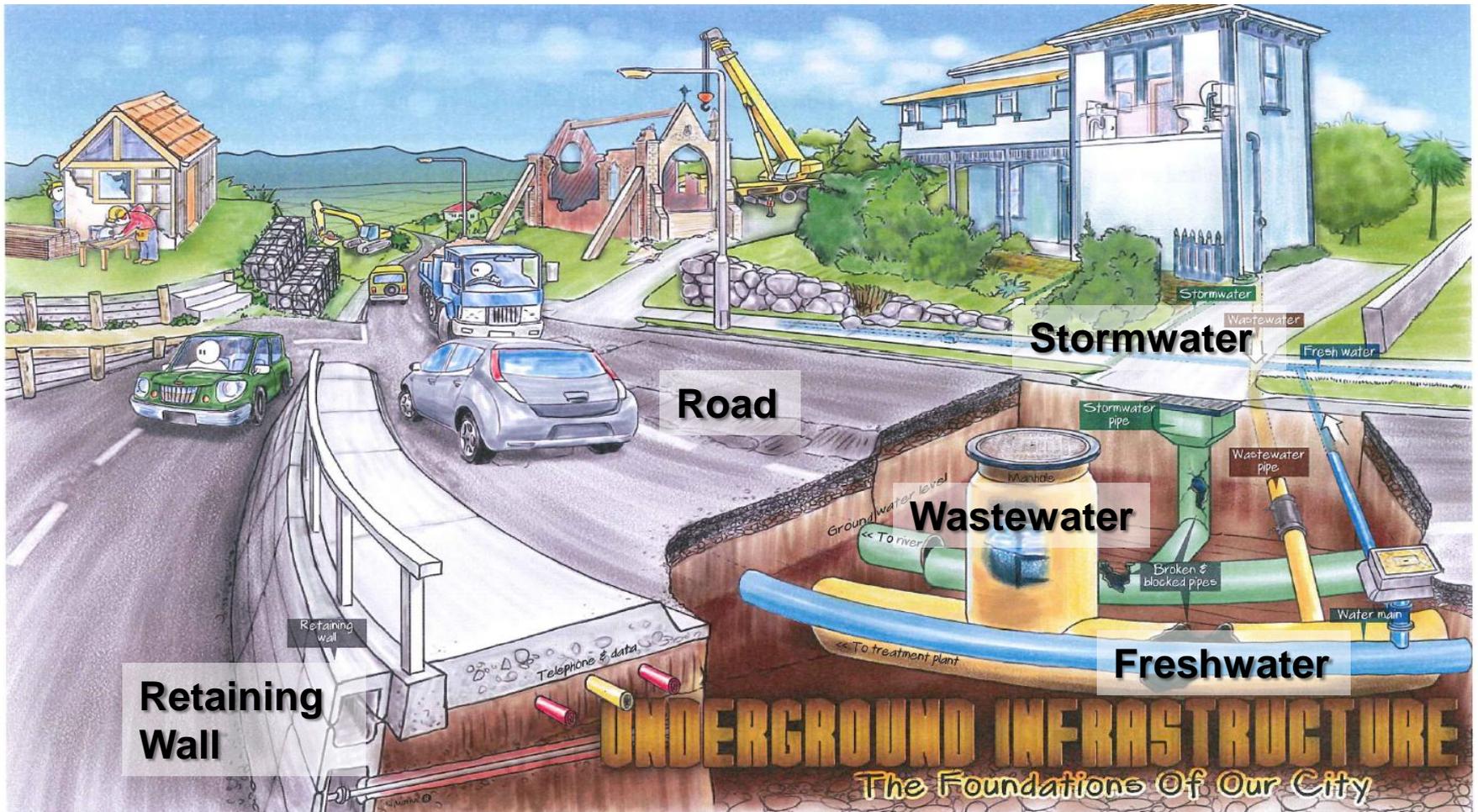
IRMO – 4 Contractor Led Design-Build consortia each assigned a geographical area to rebuild all infrastructure.



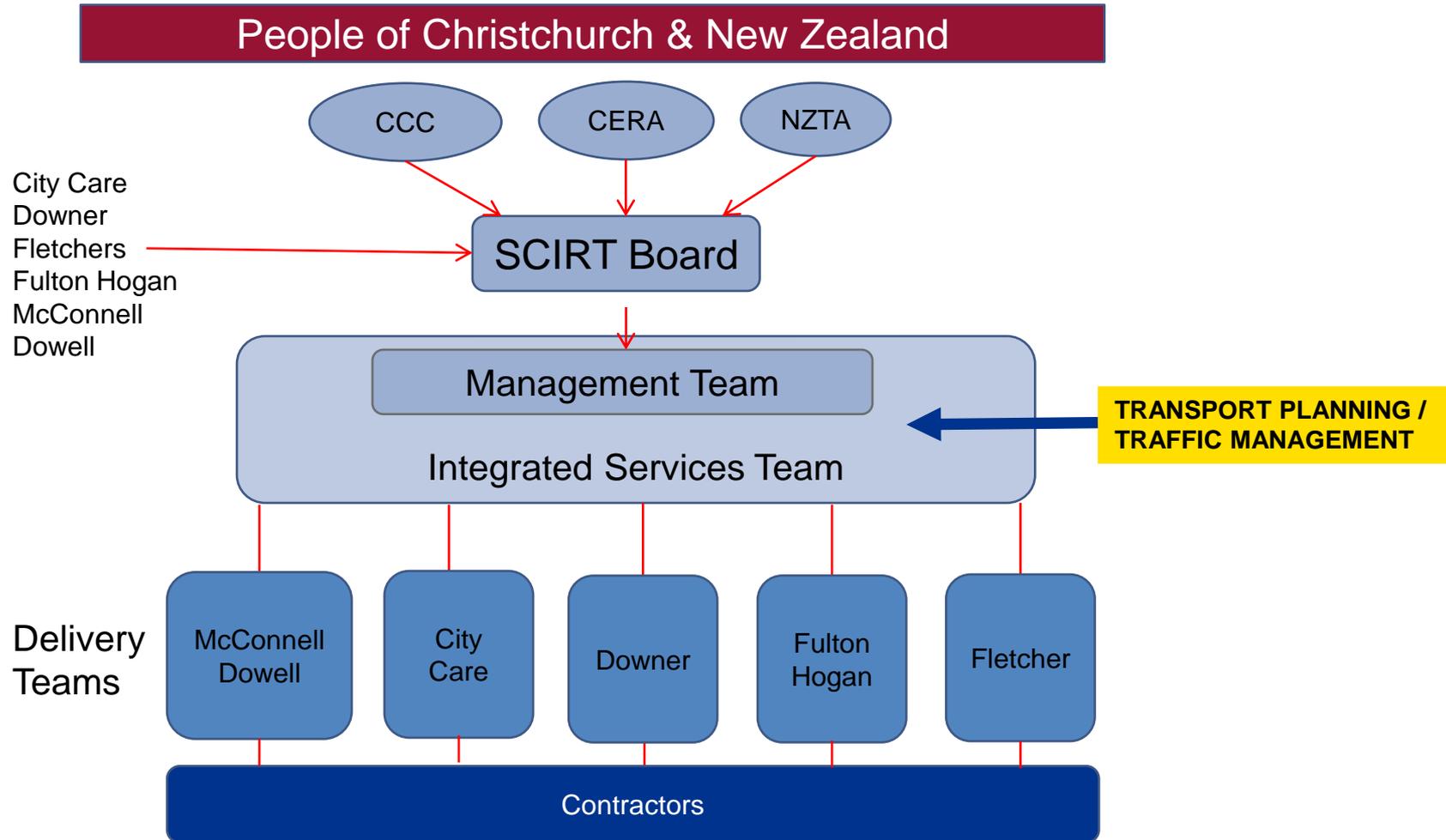
Post Feb 2010:

SCIRT established by an Alliance Agreement between 3 Owners and 5 Contractors and took over from IRMO Sept 2011.

SCIRT is rebuilding the city's horizontal infrastructure



SCIRT team structure



SCIRT transport team

Transport planners:

- Scheduling
- Impact assessment
- Economic assessment
- Communication strategies
- Traffic management strategies

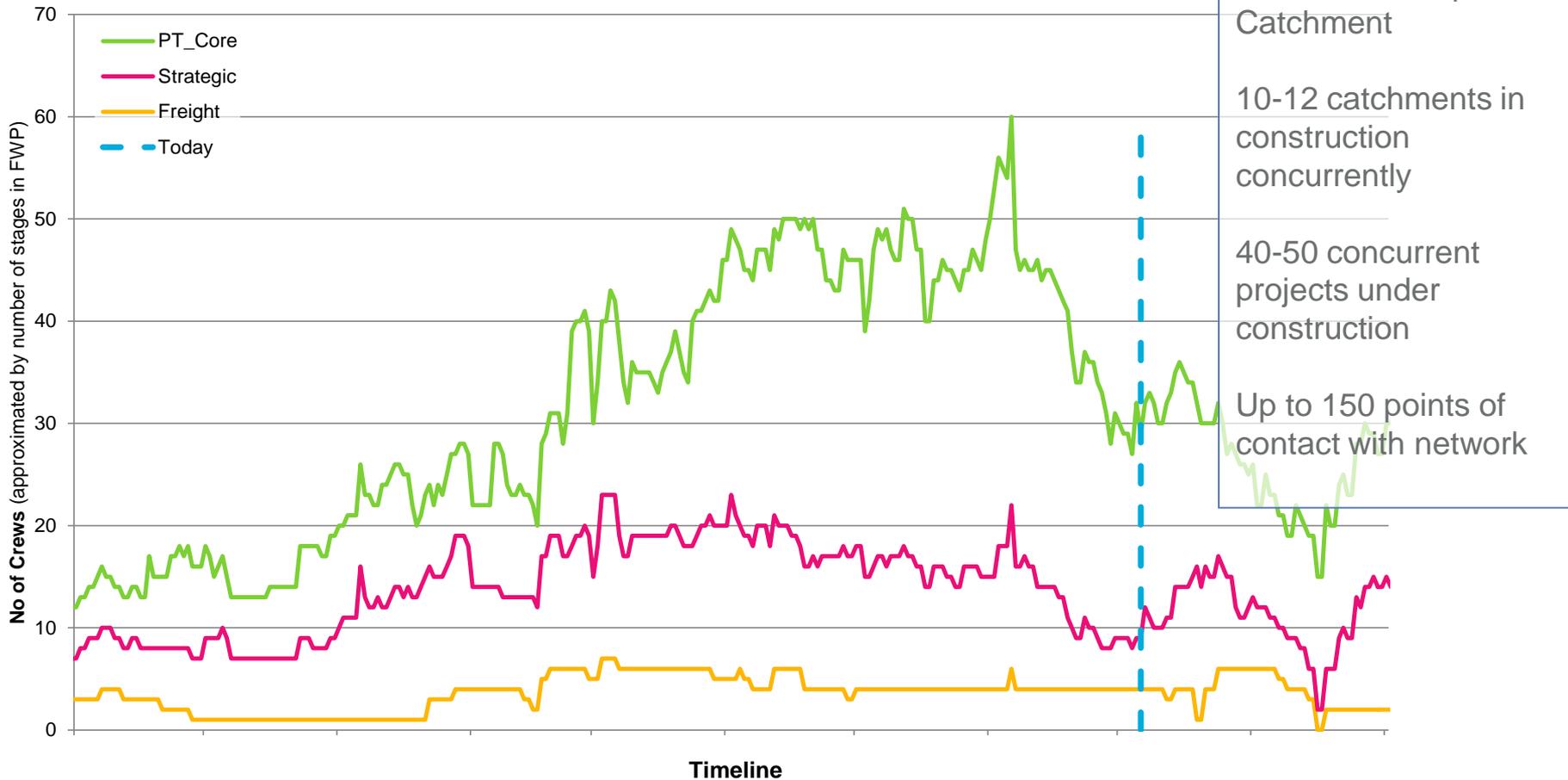
Traffic managers:

- TMP approvals
- Site compliance
- Cycle, VMS strategies
- Speed management
- Traffic management strategies

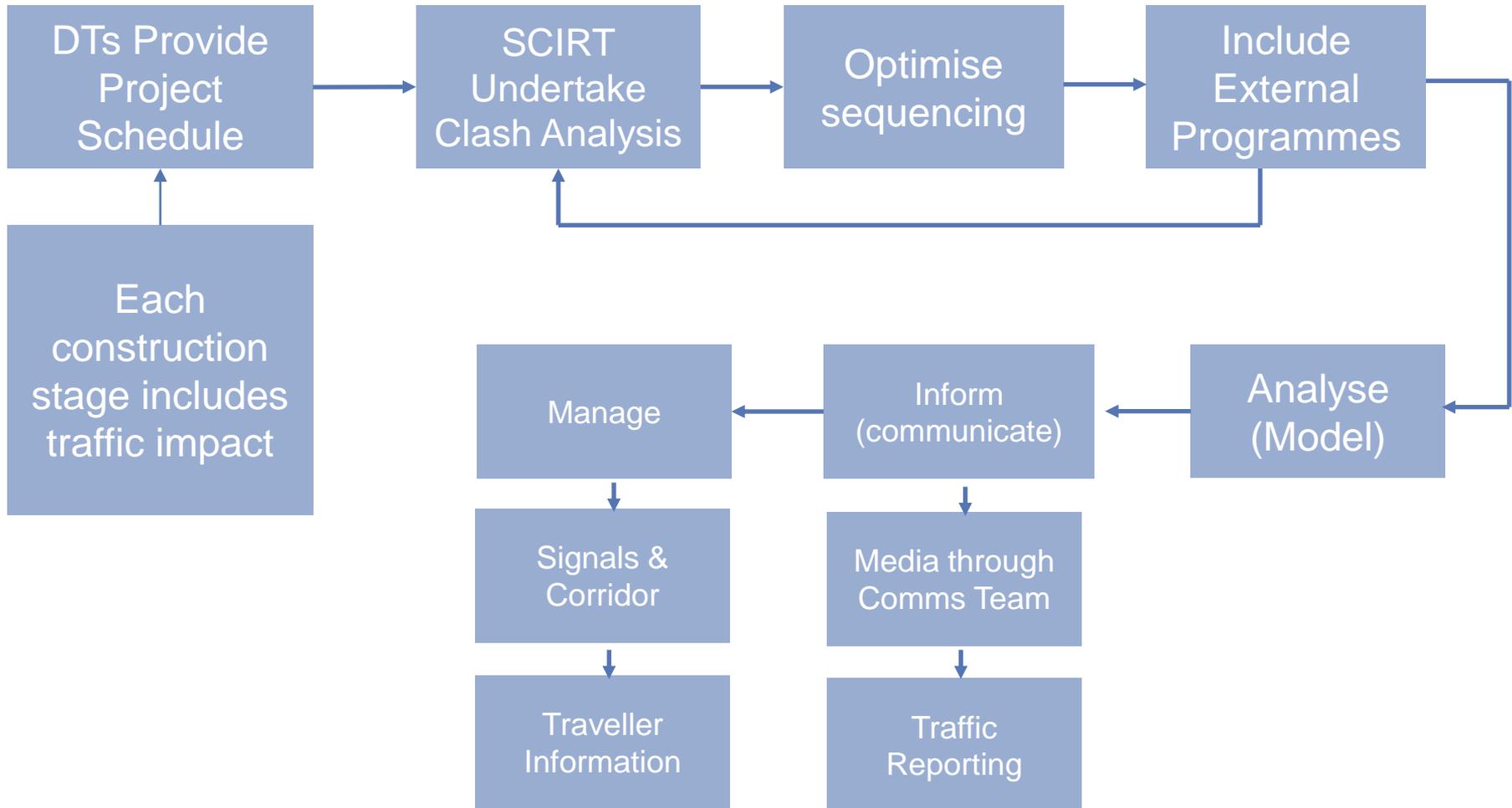


Why is transport planning so important?

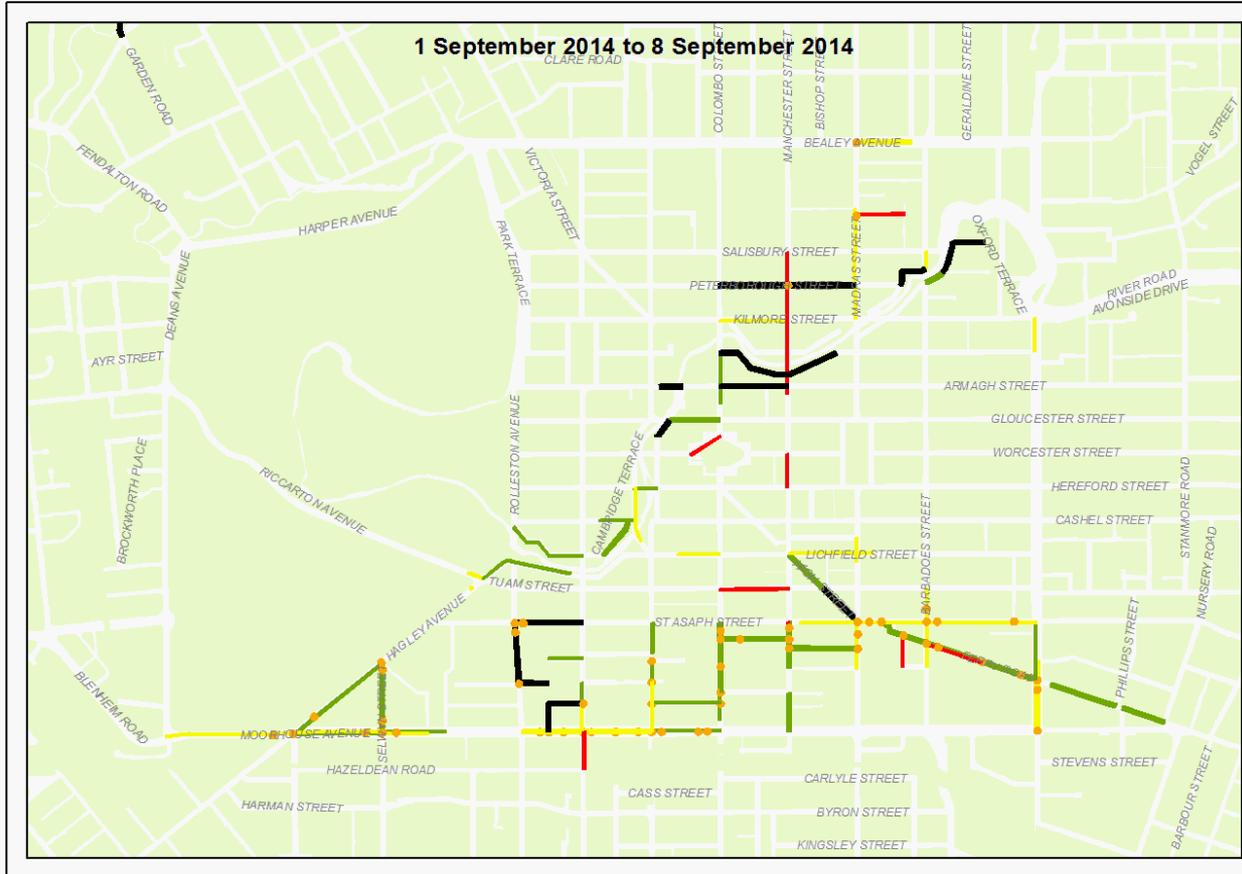
Number of crews on the ground by network hierarchy



Making it Happen



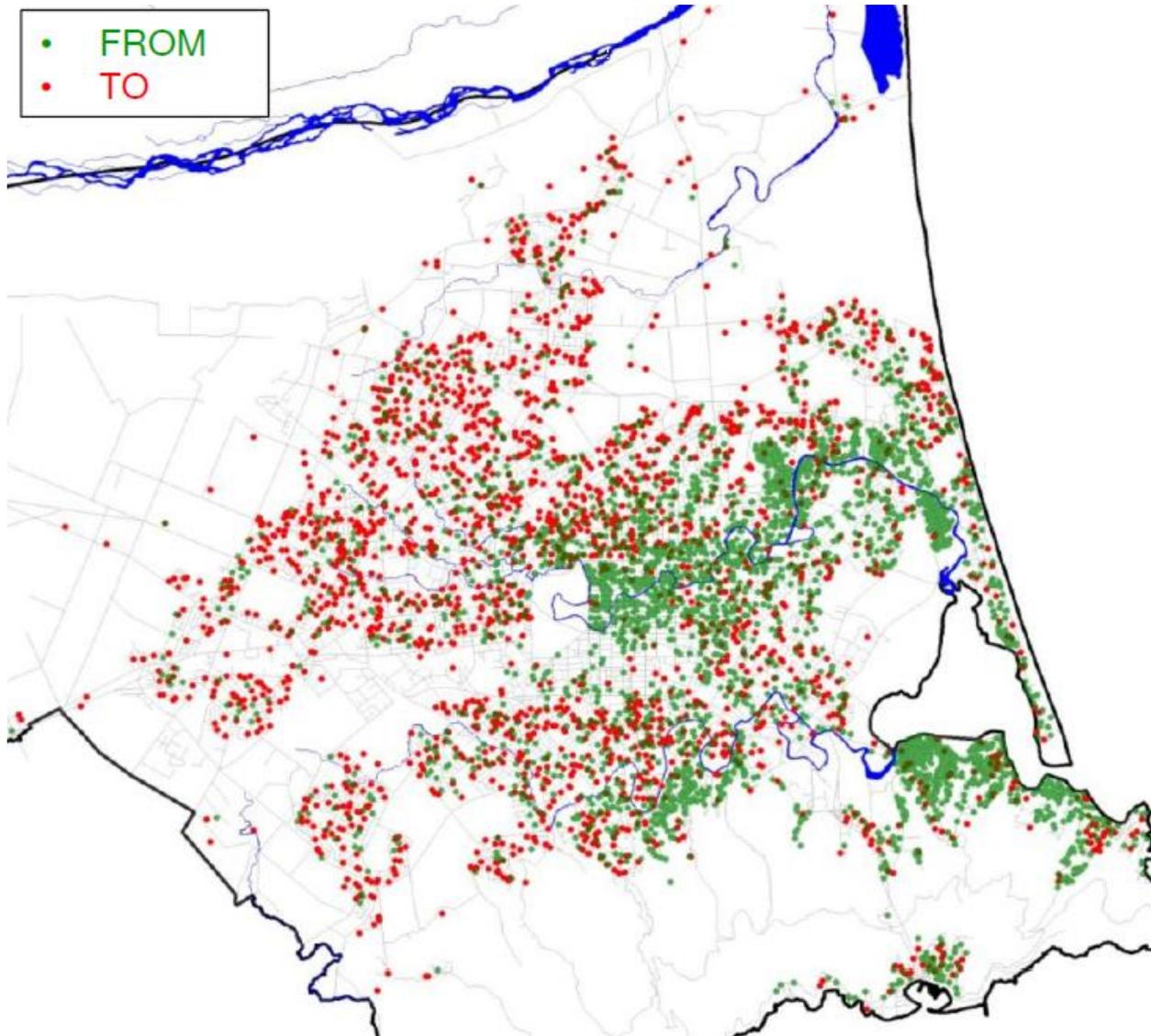
Snapshot of central city works – GIS viewer



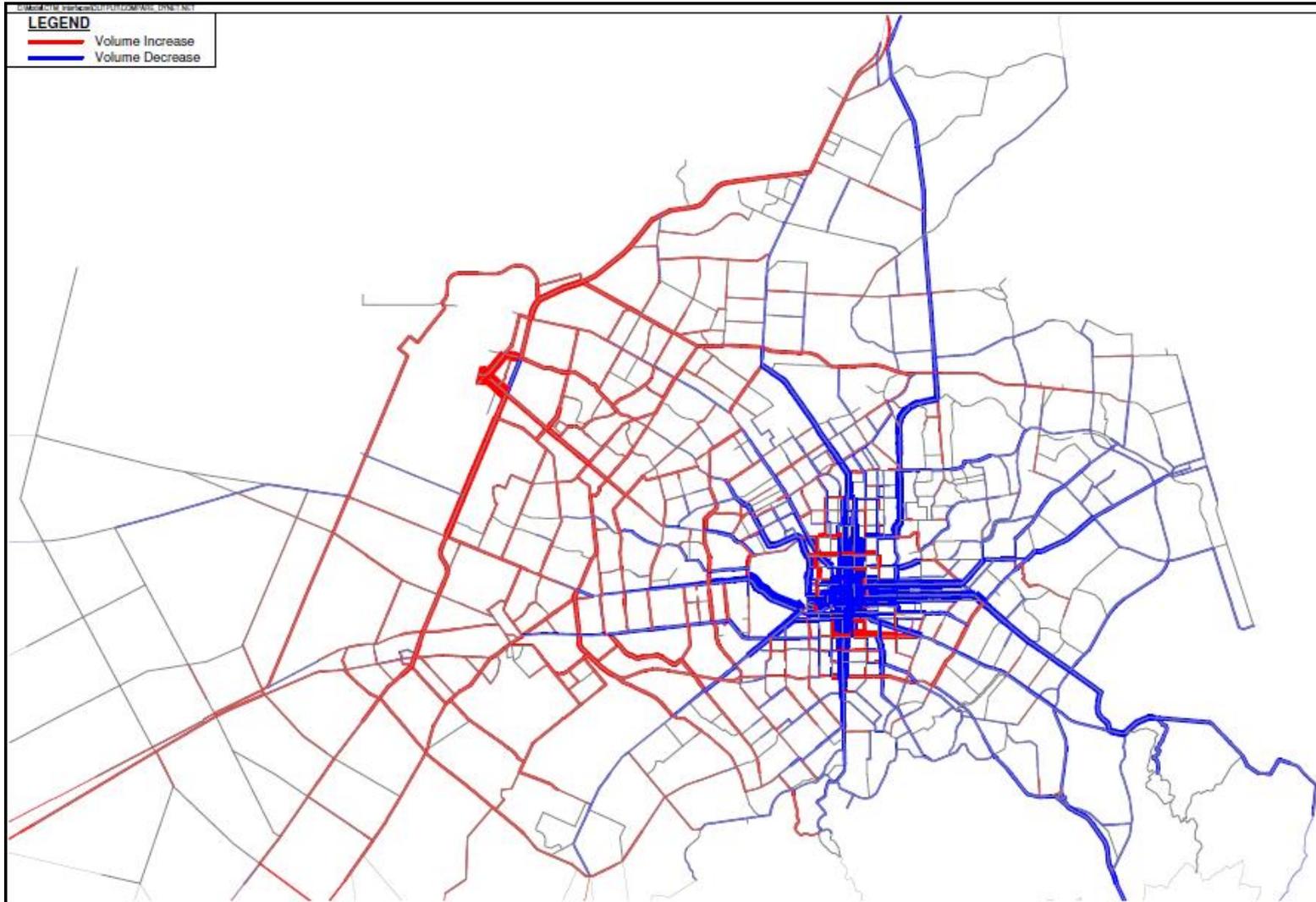
Transport planning tools

- Christchurch Assignment and Simulation Traffic (CAST) SATURN model and economics assessment tool
- Traffic Impact Management (TIM) model
- Long term traffic impact dashboard
- Project approvals and scheduling Gantt chart
- Impedance tool

CAST (post-earthquake)



CAST (post-earthquake)



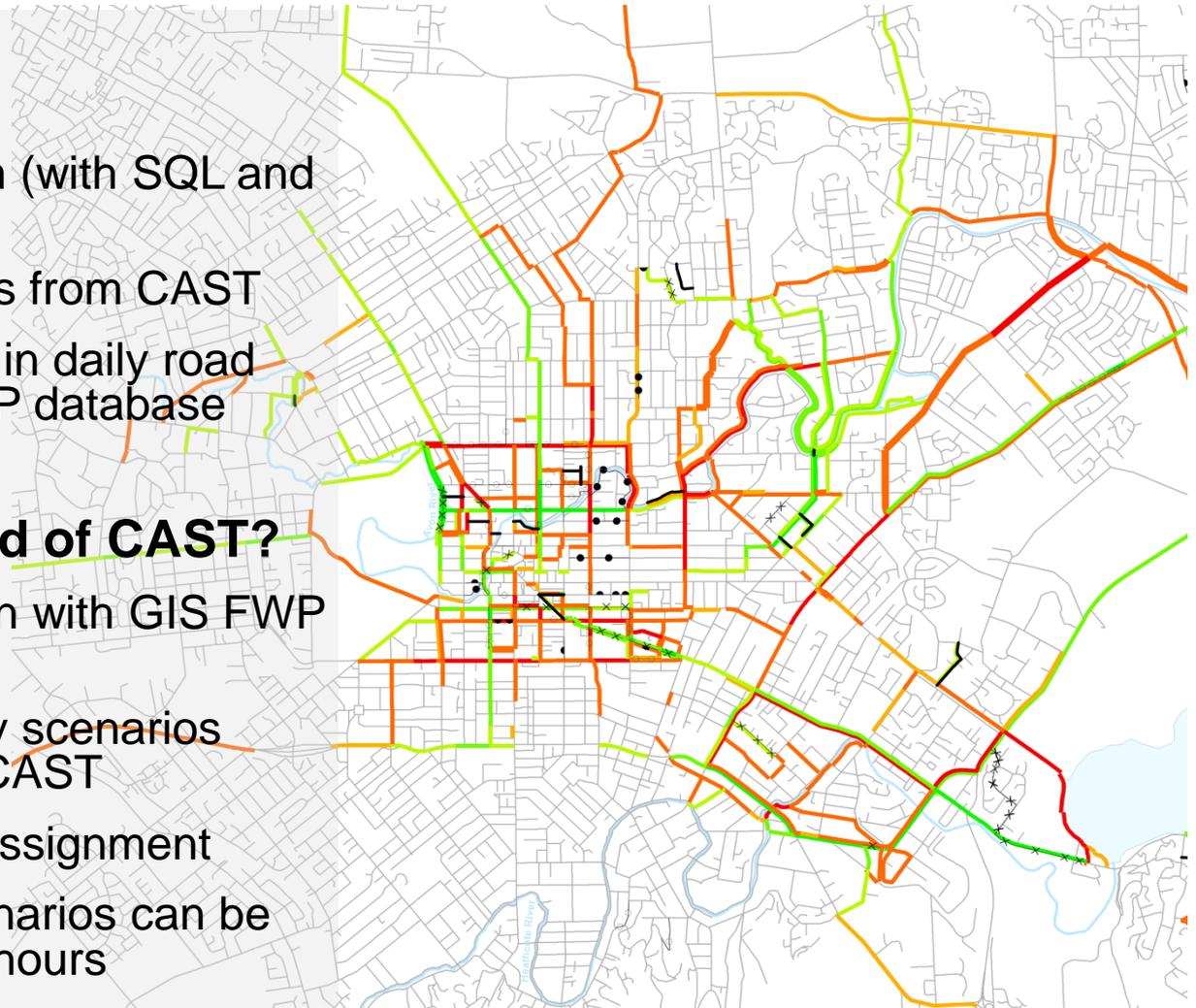
TIM model

How does it work?

- SQL Server platform (with SQL and Python scripting)
- Uses assigned paths from CAST
- Automatically reads in daily road works from GIS FWP database

Why use this instead of CAST?

- Seamless integration with GIS FWP database
- Ability to model daily scenarios much quicker than CAST
- Not an equilibrium assignment
- Weeks worth of scenarios can be carried out in a few hours



Long term traffic impact dashboard

Sort Confidential

Last Updated 20/03/2015 11:45:27 a.m.

Traffic Impact: For the Week Beginning 23/03/2015

Forward Works Program Summary	Rather Construction	MacDow	City Care	Downer	Fulton Hogan	Total
Number of Projects in A&A (in construction)	12	16	21	27	24	100
Number of Projects in S&A	7	1	1	14	13	36
% of Projects in F&P	50%	88%	71%	52%	58%	53%
Number of Stages in F&P	172	118	70	114	68	542
Number of Significant Stages in F&P	332	63	142	258	90	885
Full closure on roads with more than 5,000cpd (two-way)	4	0	2	4	0	10
One-way closure on roads with more than 10,000cpd (two-way)	7	24	12	18	1	62
Lane closure on roads with more than 12,500cpd (one-way)	0	0	0	0	0	0
Key work on strategic route	313	391	128	238	81	851
Number of Bus Routes Affected	12	12	8	23	7	62
Bus Routes With Full Closure or One-way Closure	12	12	8	23	7	62
Bus Routes With Any Road Works	12	12	8	23	7	62

LEGEND

Strategic routes? Strategic routes are defined as routes that have significant impact on the network and full closures are not recommended

Net Lane Impact Impact to number of lanes on route compared number of through lanes

Max % Dem/ Cap Maximum volume to capacity ratio by segments along route

Through lanes Minimum number of lanes available on route from start to end

Impact on demand Impact of road works to vehicles (analysed by individual route segments)

no impact

LOW less than 35% of max demand impacted by works

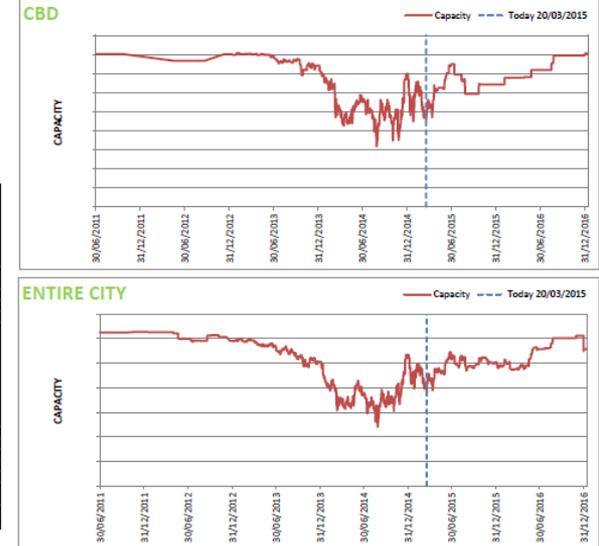
MEDIUM 35 - 75% of max demand impacted by works

HIGH more than 75% of max demand impacted by works

North/South Routes	Strategic route?	NORTHBOUND						SOUTHBOUND								
		Through lanes	Route Capacity	Max Veh Demand	Net Lane Impact	Max % Dem/ Cap	Impact on demand	Through lanes	Route Capacity	Max Veh Demand	Net Lane Impact	Max % Dem/ Cap	Impact on demand			
Montrose St (Bealey Ave to Moorhouse Ave)	YES	3	2800	1792	-1	89%	-	89%	YES	2	2800	1838	-1	128%	-	128%
Durham St/Cambridge Tce (Bealey Ave to Moorhouse Ave)		1	800	573	0	48%	0	48%	YES	1	800	415	0	R.Closure	0	35%
Colombo St (Bealey Ave to Moorhouse Ave - exclude Cathedral Sq)		1	1200	564	-1	R.Closure	-1	R.Closure	YES	1	1200	622	0	63%	0	63%
Manchester St (Bealey Ave to Moorhouse Ave)	YES	2	3400	1724	-1	121%	-1	121%	YES	2	3400	1639	0	48%	0	48%
Madras St (Bealey Ave to Moorhouse Ave)		2	3400	1635	0	44%	0	44%	YES	2	3400	1987	0	42%	0	42%
Fitzgerald Ave (Bealey Ave to Moorhouse Ave)	YES	2	3400	1635	0	44%	0	44%	YES	2	3400	1987	0	42%	0	42%
Total		8	11600	6268					8	11600	6261					

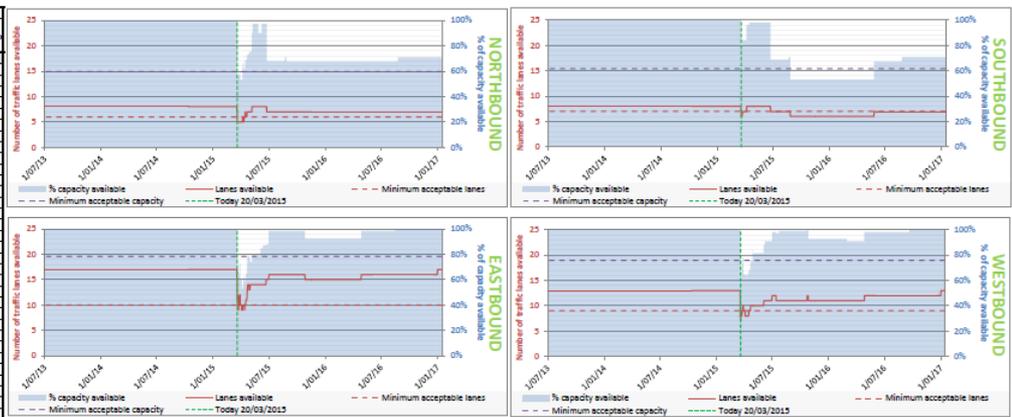
East/West Routes	Strategic route?	EASTBOUND						WESTBOUND								
		Through lanes	Route Capacity	Max Veh Demand	Net Lane Impact	Max % Dem/ Cap	Impact on demand	Through lanes	Route Capacity	Max Veh Demand	Net Lane Impact	Max % Dem/ Cap	Impact on demand			
Hughes Ave (Moorhouse Ave to Oxford Tce)	YES	3	2800	1409	-1	R.Closure	-1	R.Closure	YES	2	2800	1565	0	63%	0	58%
Bealey Ave (Park Tce to Fitzgerald Ave)	YES	2	2800	748	0	27%	0	27%	YES	2	2800	1565	0	63%	0	58%
Salford St (Park Tce to Barbados St)	YES	2	2800	748	0	27%	0	27%	YES	2	2800	1565	0	63%	0	58%
Wilmore St (Park Tce to Fitzgerald Ave)		1	1200	1717	-1	R.Closure	-1	R.Closure	YES	1	1400	1767	0	64%	-1	R.Closure
Newstead St (Bealey Ave to Fitzgerald Ave)		2	1400	1409	-1	R.Closure	-1	R.Closure	YES	1	1400	1327	0	47%	-1	R.Closure
Oxford Tce/Lichfield St (Riccarton Ave to Fitzgerald Ave)		1	1200	1024	-1	R.Closure	-1	R.Closure	YES	1	1200	1120	-1	R.Closure	-1	R.Closure
Team St (Riccarton Ave to Fitzgerald Ave)		1	1200	1024	-1	R.Closure	-1	R.Closure	YES	1	1400	1327	0	47%	-1	R.Closure
St Asaph St (Bealey Ave to Fitzgerald Ave)		1	1200	1024	-1	R.Closure	-1	R.Closure	YES	1	1400	1327	0	47%	-1	R.Closure
Moorhouse Ave (Deans Ave to Fitzgerald Ave)	YES	3	3400	1821	-1	57%	-1	57%	YES	3	3400	2245	0	96%	-1	96%
Total		13	12600	10542					10	11400	9234					

Capacity and Value of Time: From Mid 2011 to End of 2016



Critical Routes Weekly Summary (for 31 weeks, starting from current week)

Week	Starting Day	Number of Traffic Lanes - with F&P				% Drop in Number of Traffic Lanes			
		CBD (NB)	CBD (SB)	CBD (EB)	CBD (WB)	CBD (NB)	CBD (SB)	CBD (EB)	CBD (WB)
Without F&P		8	8	13	13				
01 18/03/2015	5	4	9	7	49	25	30%	47%	46%
11 25/03/2015	7	10	9	45	29	36%	12%	41%	31%
12 04/04/2015	5	7	9	8	45	29	36%	12%	41%
13 04/04/2015	5	8	8	46	29	36%	12%	47%	38%
4 13/04/2015	8	8	10	8	47	25%	9%	41%	38%
5 22/04/2015	7	11	10	10	50	20	13%	9%	24%
6 28/04/2015	7	13	10	10	50	20	13%	9%	24%
7 05/05/2015	7	14	10	10	50	20	13%	9%	24%
8 13/05/2015	8	14	10	10	51	20%	9%	18%	23%
9 20/05/2015	8	14	10	10	51	20%	9%	18%	23%
10 27/05/2015	8	14	10	10	49	20%	9%	18%	23%
11 03/06/2015	8	14	10	10	49	20%	9%	18%	23%
12 10/06/2015	8	14	11	10	49	20%	9%	18%	23%
13 17/06/2015	7	14	11	10	49	20%	9%	18%	23%
14 24/06/2015	7	15	11	10	50	20	13%	12%	15%
15 01/07/2015	7	15	12	10	50	20	13%	13%	15%
16 07/07/2015	7	16	11	10	50	20	13%	13%	15%
17 14/07/2015	7	16	11	10	50	20	13%	13%	15%
18 21/07/2015	7	16	11	10	50	20	13%	13%	15%
19 28/07/2015	7	16	11	10	50	20	13%	13%	15%
20 04/08/2015	7	16	11	10	50	20	13%	13%	15%
21 11/08/2015	7	16	11	10	50	20	13%	13%	15%
22 18/08/2015	7	16	11	10	50	20	13%	13%	15%
23 25/08/2015	7	16	11	10	50	20	13%	13%	15%
24 01/09/2015	7	16	11	10	50	20	13%	13%	15%
25 08/09/2015	7	16	11	10	50	20	13%	13%	15%
26 15/09/2015	7	16	11	10	50	20	13%	13%	15%
27 22/09/2015	7	16	11	10	50	20	13%	13%	15%
28 29/09/2015	7	16	11	10	50	20	13%	13%	15%
29 06/10/2015	7	16	11	10	50	20	13%	13%	15%
30 13/10/2015	7	16	11	10	50	20	13%	13%	15%
31 20/10/2015	7	16	11	10	50	20	13%	13%	15%



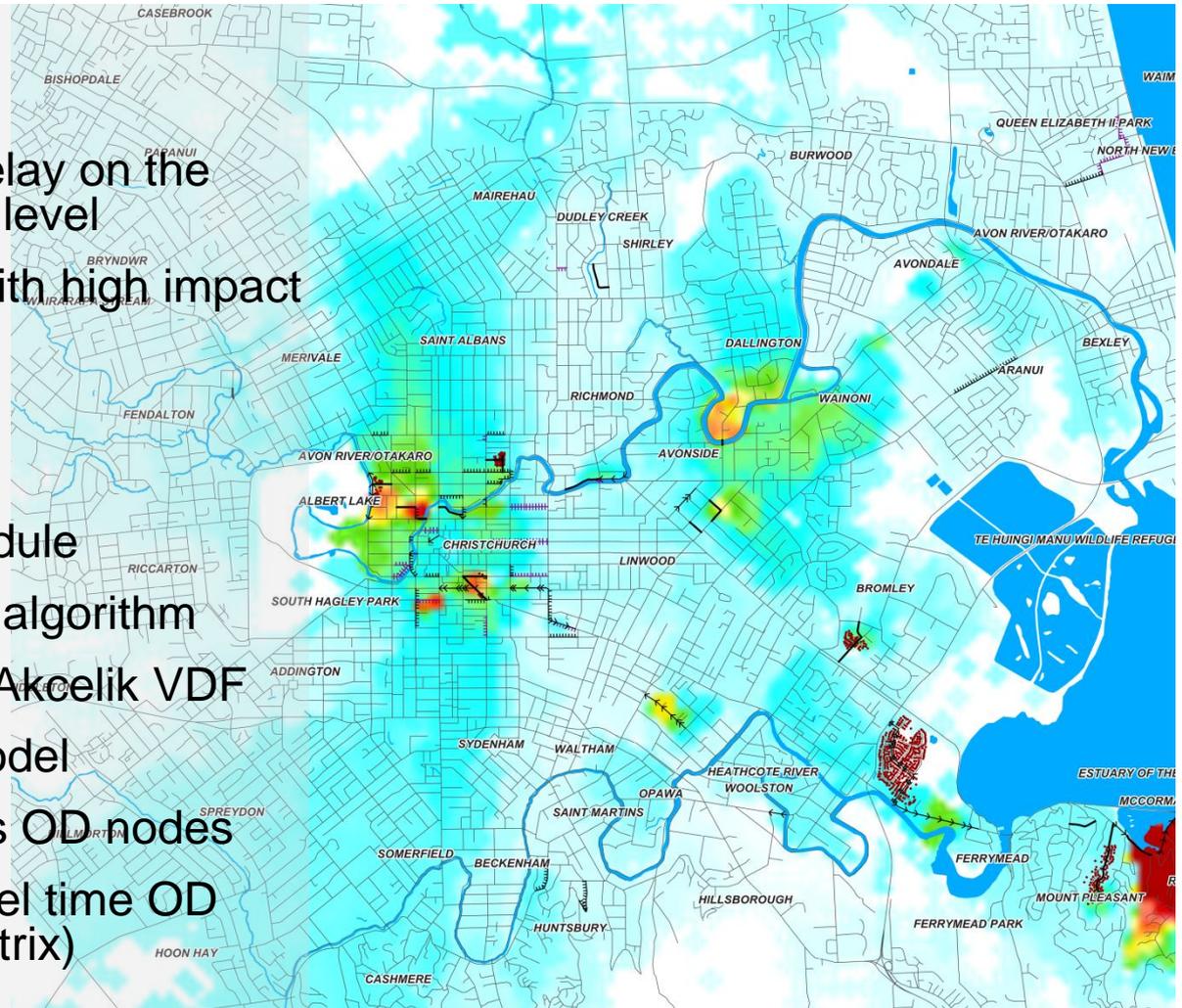
Impedance tool

Purpose

- To assess average delay on the network at a property level
- To determine areas with high impact due to road works

How does it work?

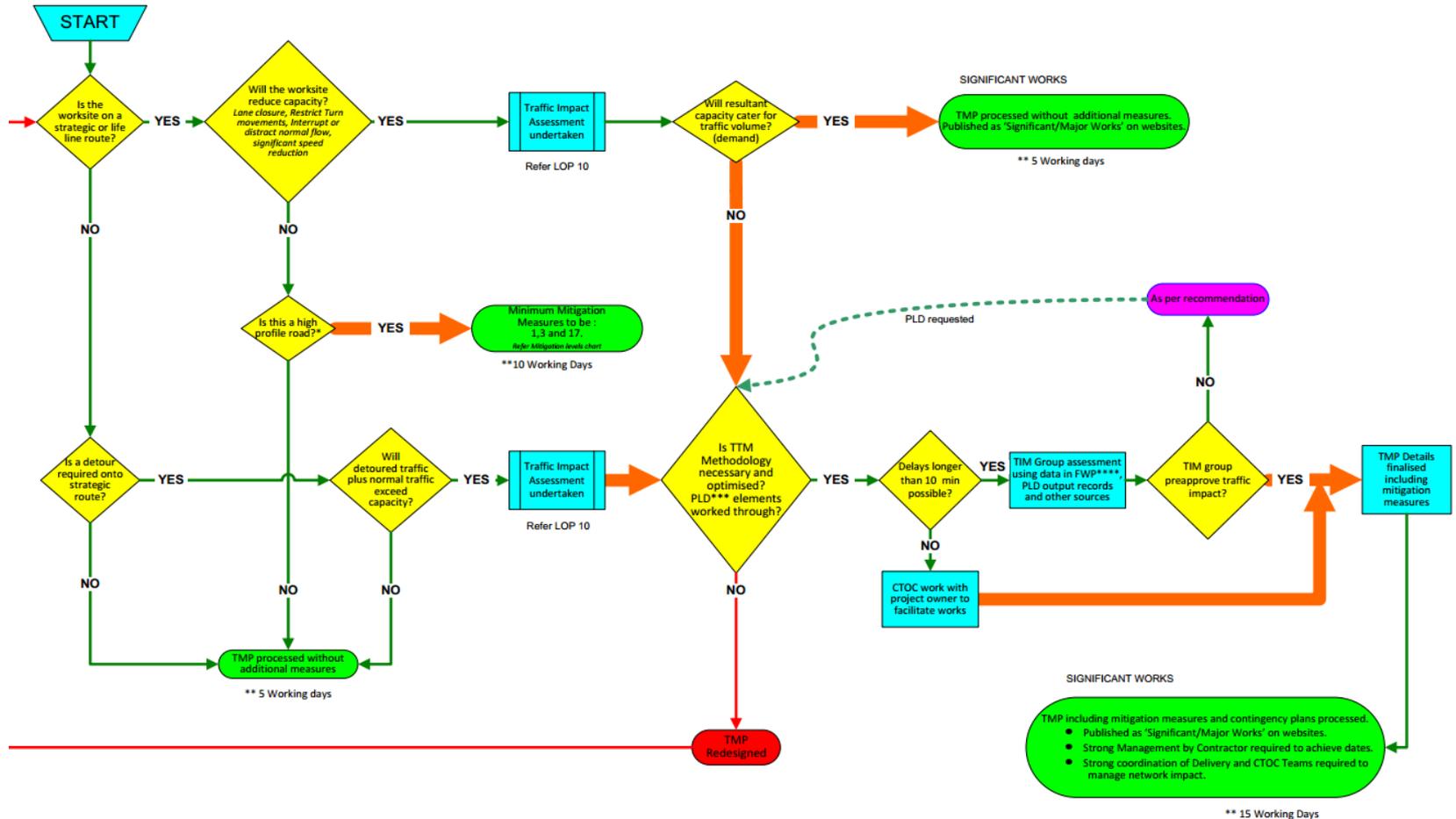
- NetworkX Python module
- Dijkstra shortest path algorithm
- Link and intersection Akcelik VDF
- Volumes from TIM model
- Uses property data as OD nodes
- Develop average travel time OD matrix ($\sim 170,000^2$ matrix)



TRAFFIC MANAGEMENT



CTOC - Significant Works Identification (SWIF)

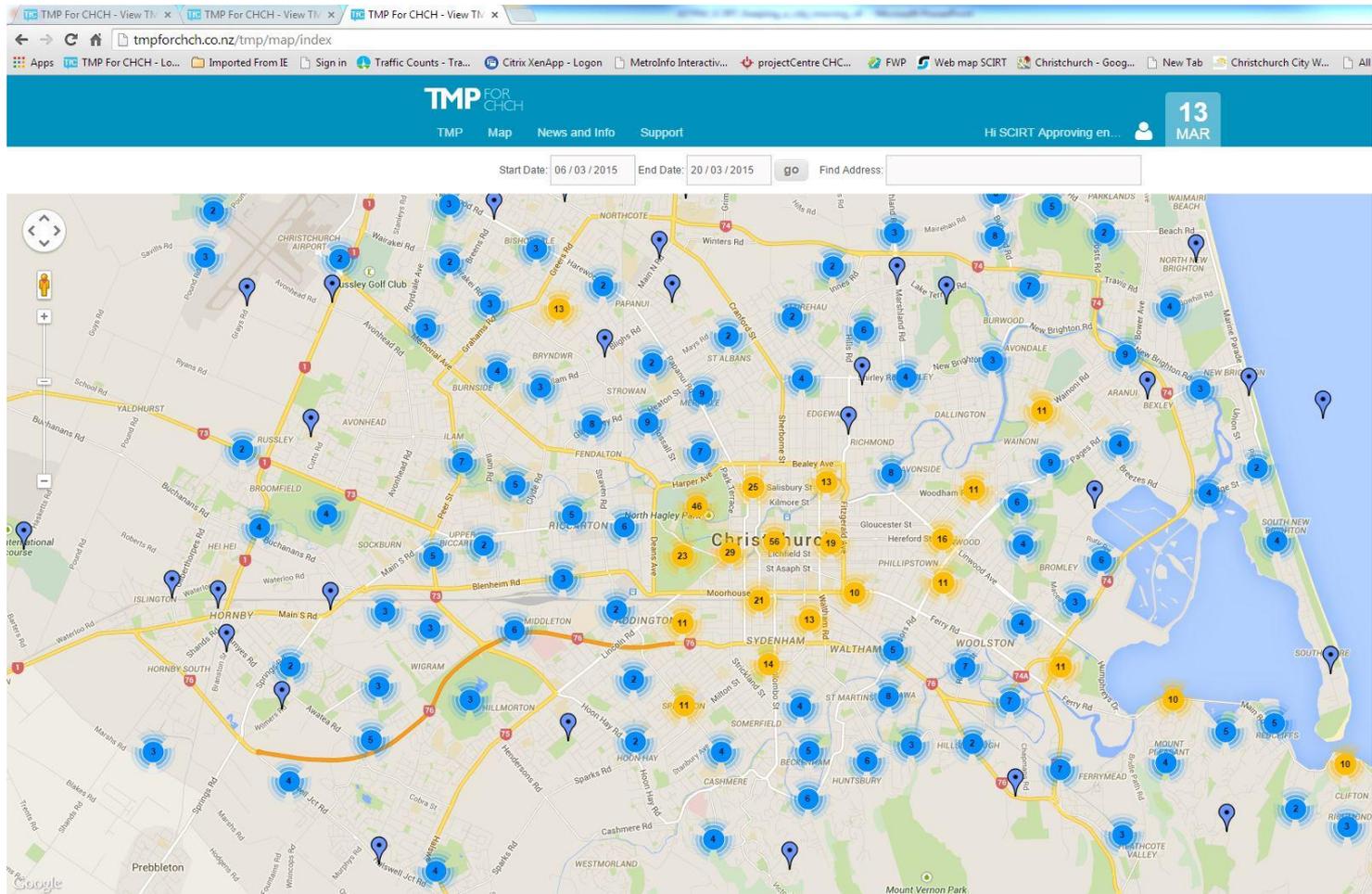


* Roads highly visible by influential stakeholders and general public
e.g. Arterial roads beside Government agency offices, Main Road to Sumner.
** Working days indicated are minimum timeframes required for CTOC processing of TMPs
*** Project Level Discussion
**** Forward Works Programme administered by Land Information New Zealand
→ Involve CTOC representative in concept / detailed TTM development

Traffic management statistics

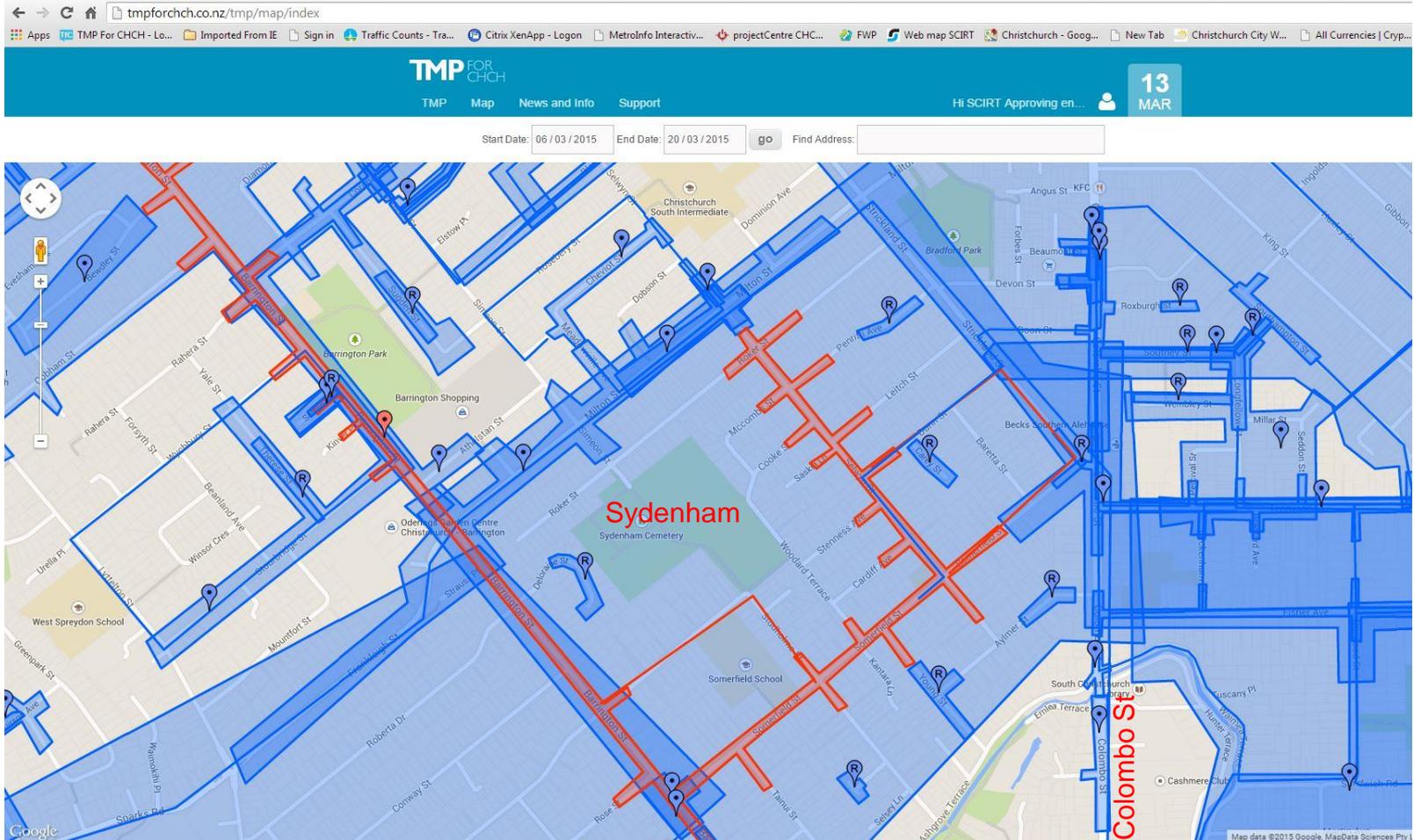
- ~250 traffic management personnel and associated people
- ~150 work sites
- 24/7 operation
- > 3,050 TMPs submitted and processed
- > 6,750 revisions
- Approx processing times for TMPs:
 - 1.5 days SCIRT
 - 5 days CTOC

Current activity 'on-the-ground'



- 20% of all plans sent into CCC are SCIRT's
- SCIRT work affects approx 80% of the network

Current activity 'on-the-ground'



Creation of polygon to show the extent of the Traffic Management Plan

Traffic management plans

Site set up as per
Table 1- Site Sign Spacing & Distances



Site photos



Rewarding Our People



COMMUNICATIONS



Communications – Where, What, How and So What?

9 March 2015

Works Notice – Somerfield Street, Strickland Street, Colombo Street, Somerfield— Wastewater repair

What	Wastewater repair
Where	Somerfield Street, Strickland Street, Colombo Street and Tennyson Street, Beckenham
When	Starting Monday 16 March 2015 for about three weeks

What we are doing:

- As you may know, Downer is repairing the PS20 sewer main. As part of this work we will be lining four sections of the sewer main around the Somerfield Street, Strickland Street and Colombo Street intersection and at the Colombo Street and Tennyson Street intersection.
- The work will start on Monday 16 March 2015 and will take about three weeks.
- The work will be done in two stages.

Stage One

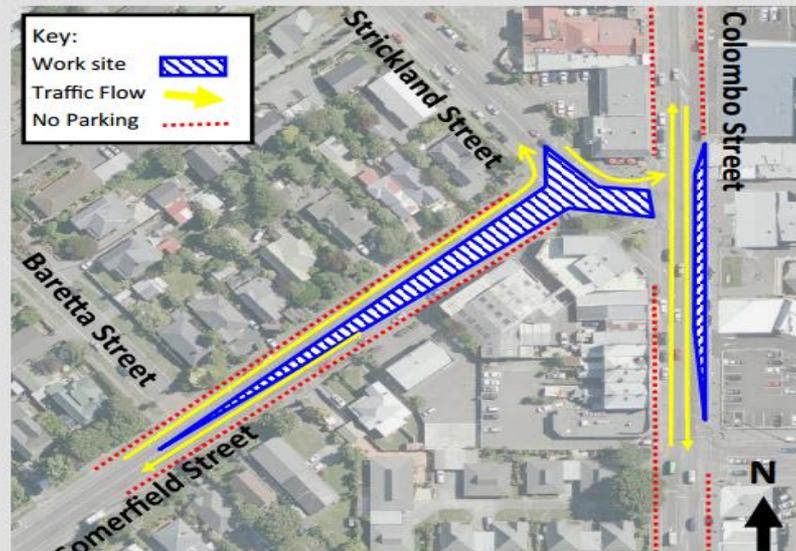
What: We will be working on Somerfield Street and within the Somerfield Street, Strickland Street and Colombo Street intersection.

There will also be a work site on Colombo Street.

When: 16 March 2015 for about two weeks, subject to weather and onsite conditions.

Traffic:

- Two way traffic will be maintained on Somerfield and Colombo Streets.
- ⇒ There will be no entry to Strickland Street from Colombo Street.



SCIRT – Keeping Stakeholders and Communities informed



The Christchurch Transport Operations Centre (CTOC)

- Christchurch City Council (CCC), New Zealand Transport Agency (NZTA), Environment Canterbury (E-can) Alliance
- All CTOC Partners seeking to make best use of existing network and enable the rebuild
- One Network
- One of three TOCs – Auckland (ATOC) & Wellington (WTOC)

CTOC Traveller Information



What is Traveller information?

- Relevant, reliable and timely information so road users can make smarter choices.
- Allows better decisions on when, where, how and even if people travel.

What makes Christchurch (CTOC) special?

- One Network Approach
- Road works – orange is the new black
- Collaborative working relationship with SCIRT
- Central City Rebuild
- An Accessible City – changing the central city roading network
- Congestion – spatial patterns have changed



How did we do it?



APPROX JOURNEY TIME (MINS)	
AIRPORT	12
BELFAST	22
SYDENHAM	12
LYTTELTON	25

TFC @TransportChCh · Oct 17
 Lincoln Road/Whiteleigh Ave - MAJOR works Sat 18th Oct - expect delays more - ow.ly/CSsBC #chchtraffic ^TF

SCIRT @SCIRT_info · Mar 13
 Ferry Rd detour Sun night, Park Tce 1 way Mon nite and more #chchtraffic @rebuildchch bit.ly/1DddYnZ @ChristchurchCC @TransportChCh

[Details](#)

Transport for Christchurch – a website born

www.tfc.govt.nz

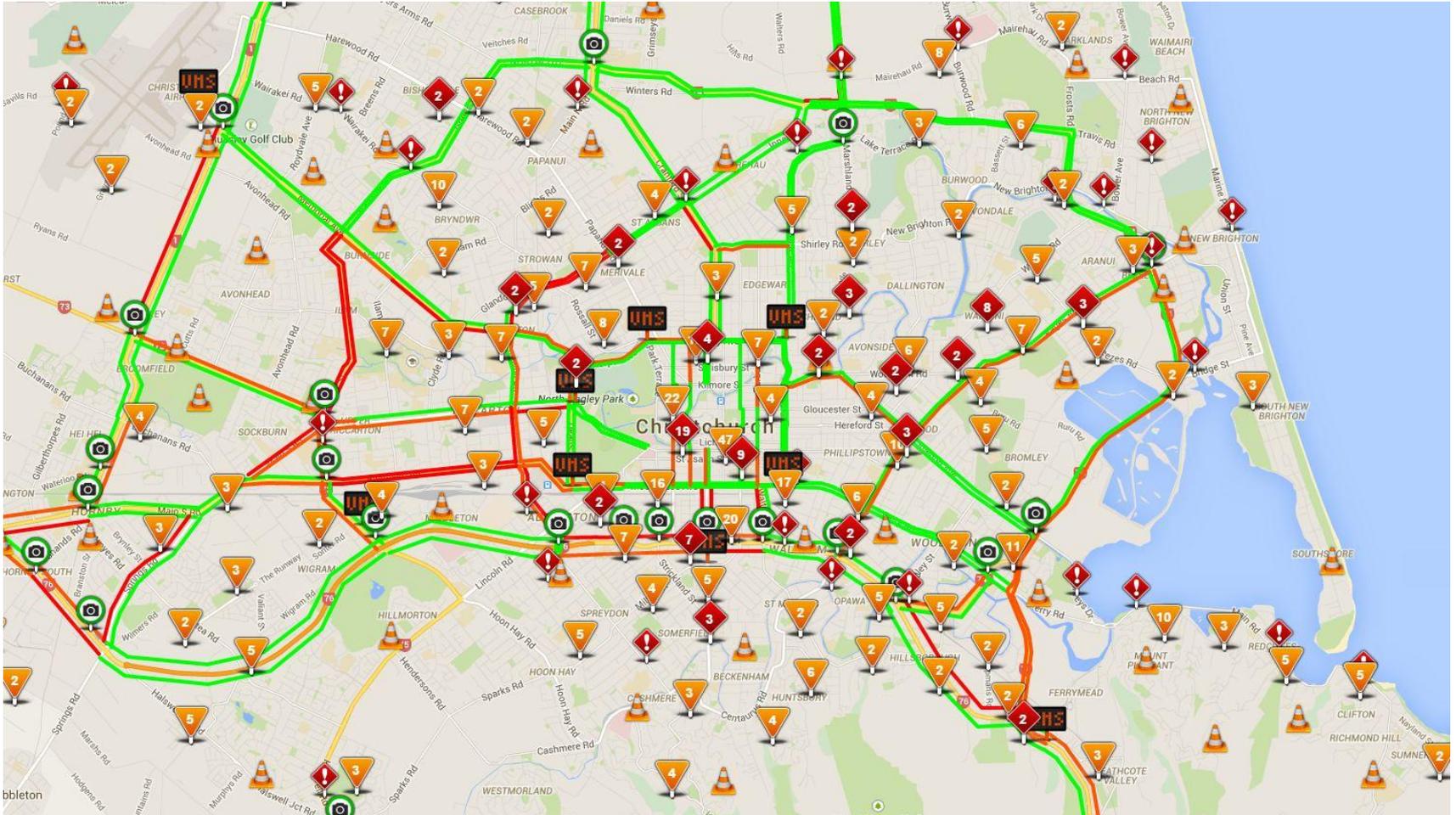
The screenshot displays the Transport for Christchurch website interface. At the top, the logo 'Transport for Christchurch' is accompanied by icons for various transport modes: car, bus, train, motorcycle, pedestrian, and bicycle. Below the logo is a navigation menu with links for Home, Map, Roadworks, Cycling, News and events, Travelling around, About us, and Contact us. Social media icons for RSS, Facebook, and Twitter are also present.

The main content area is divided into two sections. On the left, a 'LATEST TRAFFIC UPDATES' sidebar lists recent road closures and events with their respective timestamps:

- Cranmer Square West closed between Kilmore and Armagh Streets – week commencing 6 January (54 mins ago)
- Salisbury Street between Park Tce & Montreal St closed in week commencing 6 January (3 hours ago)
- Durham Street north closure at Bealey Avenue in the week commencing 6 January (3 hours ago)
- Barbadoes Street lane reductions off peak hours – commencing in the week 6 January (4 hours ago)
- Bus detours commencing 6 January (5 hours ago)

On the right, a map of the Linwood area shows various roadworks and events marked with icons. A 'Key' legend in the bottom right corner of the map area identifies the icons: a red exclamation mark for Major Roadworks, a red exclamation mark with a road sign for Roadworks, and a blue exclamation mark for Events. The map also shows road names like Linwood Ave, Gloucester St, and Ferry Rd, along with landmarks like Wilding Park and Linwood Cemetery.

The Challenge – how do you communicate this?



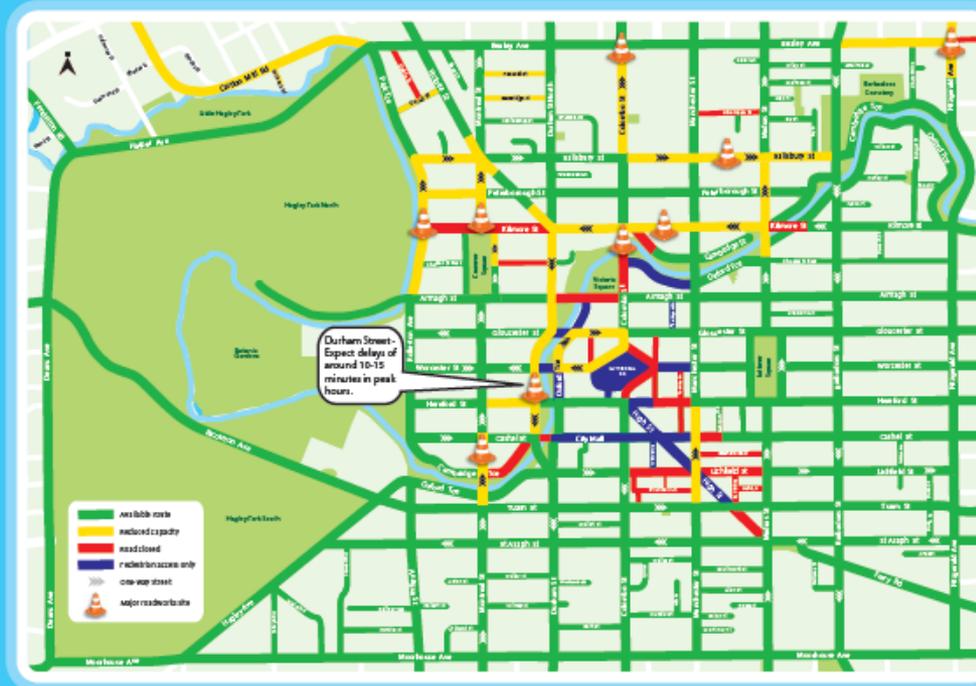
Thinking outside the box



VMS – Network strategies

Printed Press – CBD Maps weekly

Keeping Christchurch Moving



The Christchurch City Council, NZ Transport Agency and Environment Canterbury are working together to minimise delays and ensure you are informed about what is happening on our roads.

This map outlines significant road works and expected traffic flows within the Four Avenues from 3 - 10 Aug.

We're rebuilding the city so you should expect some disruptions during your journey. Plan your trip to minimise delays.

For information on bus detours contact Metroinfo on 3668855 or visit metroinfo.co.nz

For further information visit www.transportforchristchurch.govt.nz or download the iPhone or Android app ChchTraffic

Disclaimer: The preparation and provision of the information provided has been made in good faith compiled from a number of sources. All due care has been taken to ensure that the information is as accurate as possible and up to date. We cannot guarantee the information provided is 100% accurate and are not liable for any errors and omissions. Information provided current as at 1 August 2013.



www.transportforchristchurch.govt.nz

Environment Canterbury Regional Council

NZ TRANSPORT AGENCY

Christchurch City Council

SCIRT
Rebuilding Infrastructure

Keeping Christchurch Moving

Gayhurst Road bridge closing this week

Road users who use the Gayhurst Road bridge as part of their daily journey will need to allow extra time from next week when the bridge closes for demolition work to begin.

Scheduled for the week of Monday 26th May, the closure will go in once the temporary footbridge, which is currently under construction, is open.

Some roads leading to the bridge will also have restrictions, including closures during the anticipated year long closure.



DETOUR ROUTES:

Southbound detour:

McBratneys Rd – River Rd – North Avon Rd – Stanmore Rd – Swanns Rd – Avonside Dr – Woodham Rd – Gloucester Street.

Northbound detour:

Ngarimu St – Woodham Rd – Avonside Dr – Swanns Rd – Stanmore Rd – North Avon Rd – River Rd – McBratneys Road.



A two-metre wide temporary footbridge for pedestrians and cyclists will connect Locksley Ave with Avonside Drive.

Access to the footbridge will be via Rupert Place on the northern side of the river and between Gloucester and Ngarimu on the southern side.

We suggest allowing extra travel time for journeys due to the detours required as part of the bridge closure.



The restrictions in place starting next week are:

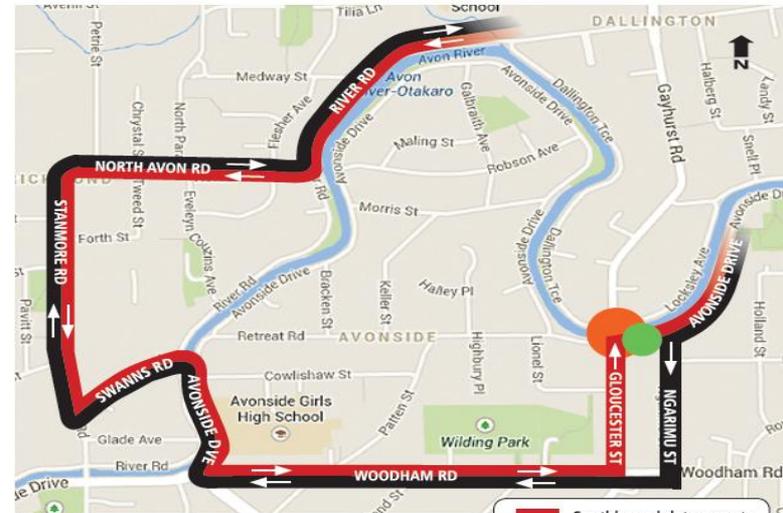
LOCKSLEY AVENUE – CLOSED from Gayhurst to approximately 15 Locksley Avenue

GAYHURST ROAD – CLOSED from Rupert Place to Gayhurst Bridge

DALLINGTON TERRACE – CLOSED at the Gayhurst Rd intersection

AVONSIDE DRIVE – CLOSED west of Gloucester Street intersection

AVONSIDE DRIVE – EASTBOUND only from Gloucester Street to Ngarimu Street.



- █ Southbound detour route
- █ Northbound detour route
- Pedestrian/cyclist bridge
- Bridge under repair



MetroBus users who use Route 510 should check www.metroinfo.co.nz for updates on detours for this route.



FURTHER TRANSPORT INFORMATION:

For up to date traffic information please visit www.transportforchristchurch.govt.nz

Social Media – instant communication

SCIRT @SCIRT_info · 54m
Wainoni Road - Aranui - vacuum wastewater system installation *Update*
strongerchristchurch.govt.nz/work/activity/...
#chch



TFC @TransportChCh · 2h
Park Terrace-southbound closure implemented after morning peak hrs today- Bealey Ave to Kilmore St-ow.ly/KmkmQ ^KG



SCIRT @SCIRT_info · Mar 11
Main Road - Redcliffs - storm water repairs
strongerchristchurch.govt.nz/work/activity/... #chch



Transport for Christchurch

Posted by Hootsuite [?] · 9 March at 07:12 · 🌐

Bealey/Madras Street - reduced lanes on both Bealey and Madras Street, delays in peak times - use Montreal St. ^TF



Boost Post



Did it work? March 7 2014

Black Monday – 7th March

THE PRESS
press.co.nz

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Traffic hell on central city streets

SARAHUSHE OGDONOR

Last updated 16:37 07/03/2014

330 Likes 327 Tweets 17 Shares

AT A STANDSTILL. Cars backed up along Moorhouse Ave near Hagley Park. *Kix Hargreaves*

Opinion poll
How is your morning commute?
 Terrible and seems to be getting worse
 Bad, but it has been like this for a long time
 OK

The evening rush hour has begun with congestion bringing some central city streets to a standstill.
Traffic congestion this morning was as severe for those heading into the central city that gridlocked passengers were forced to leave buses and walk while locked-in motorists crossed pavements to escape.
Officials warn congestion could worsen over coming months with 40 separate crews currently digging up roads within the central city.

Big Wednesday is \$5.5M retail prices. PLAY NOW!

News Headlines

- Police seek jewellery owner
- Whaka's best hot proceeds in Otago?
- Conviction inhibits sea level rise
- Submitters question scheme in ECan water plan
- Sometimes a smile can make all the difference
- Helping displaced kids is a laughing matter
- Raiders in rift, say Mid Canterbury migrants
- Address ready to run for the otago
- Motorman rescued from seaquill attack
- Childhood centres in complaints to stay secret
- First stage of transport rework begins
- Red-zone homes in sceptical blaze
- Convicted businessman seeks early release
- Rebuild paves way for city upgrade

At Facebook

in the know
www.intheknow.org.nz

For answers to your questions about the Canterbury residential rebuild and repair process visit intheknow.org.nz

Find out more!

- 25,000 hits
- 335 comments
- “we are in a rebuild, this is expected”
- “manage the work programme better”
- “more cycle, PT etc trips”
- “poor historic planning therefore insufficient capacity”

Collaborative Media

Christchurch traffic jam today, jam tomorrow

SARAH-JANE O'CONNOR AND SHELLEY ROBINSON

Christchurch traffic woes to ramp up this winter

SHELLEY ROBINSON



Radio

The Breeze – weekly live traffic updates with James Daniels



What has it led to?

APPROX JOURNEY TIME (MINS)

MOORHOUSE AVE via DURHAM ST	7
MOORHOUSE AVE via BARBADOES ST	10
MOORHOUSE AVE via FITZGERALD AVE	9

UHS

Ensors Rd	2
Sydenham	7
Barrington	10
Main South	19

B6-S1
11/03/15 12:28

< BACK 11/03/2015 12:28 msg=12/9/1 SAY AGAIN

DON'T GET CAUGHT OUT IN TRAFFIC during the cricket.

www.tfc.govt.nz

What next for Traveller information?

- **How do we learn from this?**
- **Resilient Transport Network**
- **Customer Research**
- **Enhancing Technology – limitless possibilities**
- **Travel Demand Management**

Legacy

SCIRT objectives

- Best for communities
- Open to new ways and perspectives
- Developing our people

Many tools and processes developed set a precedent to the way it will be done in the future...

SCIRT progress so far

WASTEWATER 	353 km pipe (54%) repaired/replaced
	60 pump stations (59%) repaired/replaced
STORM WATER 	14 km of pipe (52%) repaired/replaced
	4 pump stations (33%) repaired/replaced
FRESH WATER 	51 km of pipe (74%) repaired/replaced
	64 pump stations and reservoirs (88%) repaired/replaced
ROADING 	483, 776 sq m of road (37%) repaired/replaced
	102 bridges/culverts (68%) repaired/replaced
	75 retaining walls (35%) repaired/replaced

88% of design is complete



60% of construction is complete



88% of Central City Work is complete



65% of the whole SCIRT programme is complete



KEEPING A CITY MOVING

THANK YOU

ANY QUESTIONS?

ANGUS BARGH, TRESKA FORRESTER, KERSTIN RUPP, KEVIN WESTENENG