Lessons learned from one of New Zealand's most challenging civil engineering projects: rebuilding the earthquake damaged pipes, roads, bridges and retaining walls in the city of Christchurch 2011 - 2016.

# Datasync summary

**Story:** SCIRT and Red Cross Collaboration

**Theme:** People and Culture

A document which summarises the outcomes of the SCIRT/New Zealand Red Cross Datasync project collaboration.

This document has been provided as an example of a tool that might be useful for other organisations undertaking complex disaster recovery or infrastructure rebuild programmes.

For more information about this document, visit www.scirtlearninglegacy.org.nz

## RCNZ and SCIRT – datasync project

### Background

Project came about as a result of RCNZ and SCIRT collaboration project to see how can two organisations working in the disaster recovery space work better together for future types of projects. Following on from a design thinking workshop in New Brighton a number of specific projects were set up to see what could be done, Datasync is one of those projects.

Red Cross Outreach Recovery team have a number of datasets from different stages of door knocking on the streets to check in on people and see what the issues were. As part of the datasync project one of these spreadsheets was supplied and used as an example of what could be done,

The door knocking results spreadsheet contains 53298 records of home visits which were carried out after Feb 2011 earthquake. The data was collected by volunteers going door to door, they had forms that they filled out and returned to an office where administrators entered it into a master spreadsheet.

To represent the spreadsheet as a visual map with the first step was to understand what was in the data. The spreadsheet contained MESH block reference, Ward, Street name, Suburb and a predefined set of questions including how many people lived there, if they had access to water, if they needed clothing, if they had any support networks or needed access to a support network, if anyone had a disability or needed access to medication as well as when the medication would run out.

The following data was used to add location and summarise the data to different levels
1. Statistics NZ MESH block data
2. Localities from NZFire
3. Road cl name from the LINZ cadastral dataset

The MESH block references in the spreadsheet was not going to work as a unit to summarise the data to as 46,281 of the record were attributed to Addington – this issues could have been caused by a copy/paste error or maybe Addington is first on the list MESH blocks.

The suburb was also supplied as a unit to summarise data by. The main issue with the suburb was what the actual suburb is versus what one people thought they were in.

Street names could be used the main issues with street names are using the correct street name and the road extension. Streets could also extend across several suburbs so a check needed to be built in for this as well.

As part of the process localities were assigned to suburbs based on
1. if the majority of the road was in one locality that locality was assigned
2. for longer roads if it crossed several localities and if the segment of road in that locality made up more than 0.2% of the total length then that locality got assigned to that road. This meant that a more refined representation of the data could be achieved for these roads.

## Outputs

Several file formats were created and all of them in Mt Pleasant Coordinate system.
1. ESRI .gdb file
2. ESRI .shp file
3. Data graphic file .txt can be easily added to the SCIRT GIS Viewer – right click on the text file to get details of numbers of houses visited on a street or in a locality.
4. Spreadsheet updated with the street names and localities calculated for this project.

## Results

1. Spreadsheet could be graphically represented on a map – once the initial limitations/issues with the data were understood.

   A total count of the number of homes visited was calculated which was further broken down into how many were at home and not at home.

### Data summarised to locality
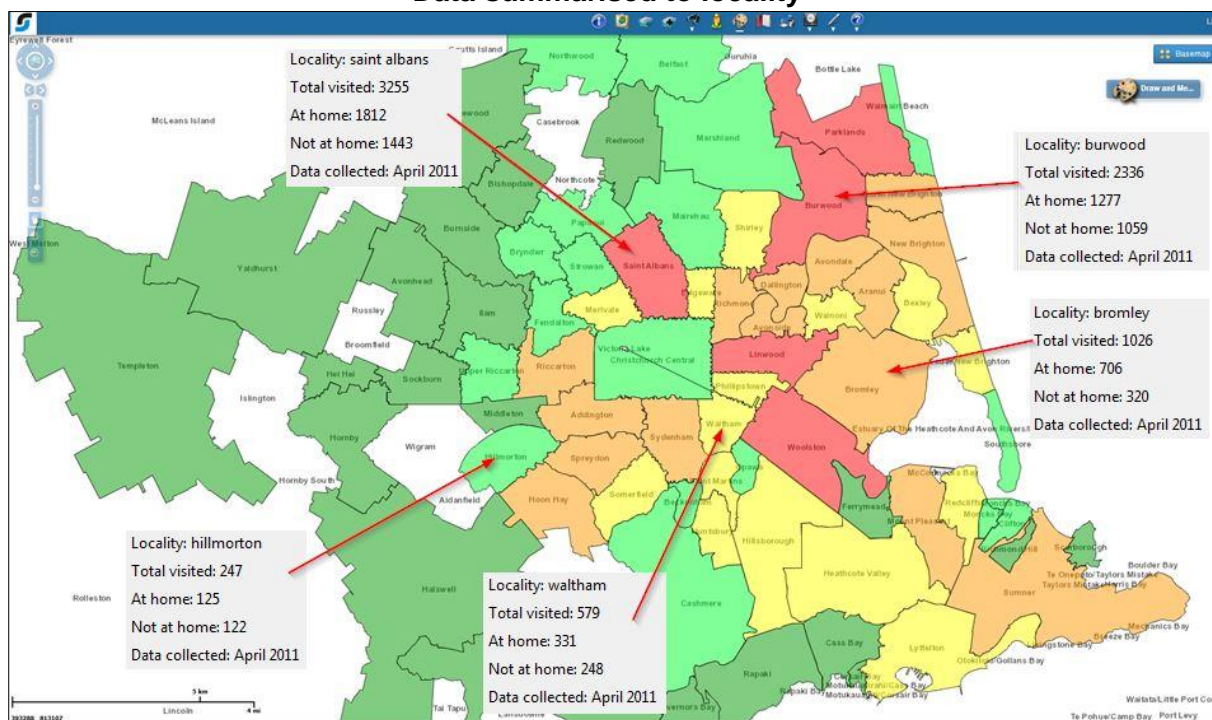


The colour shading on this map is just split into 5 different classes.
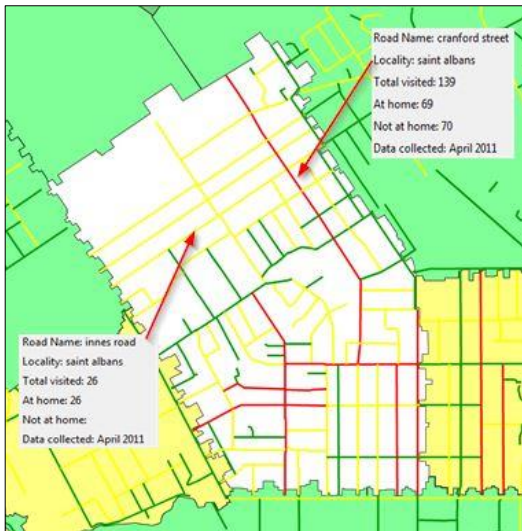**Green1: 1-100**
**Green2: 101-500**
**Yellow: 501-1000**
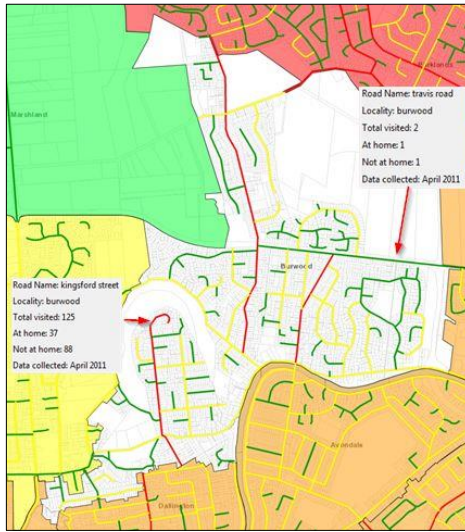**Orange: 1001-2000**
**Red: 2000+**

How could this be useful? At this level it gives a pretty big picture city wide of how many people have been visited and the areas that have been visited.

**Data summarised to street**

**St Albans**                                      **Burwood**



Road Name: cranford street
Locality: saint albans
Total visited: 139
At home: 69
Not at home: 70
Data collected: April 2011

Road Name: innes road
Locality: saint albans
Total visited: 26
At home: 26
Not at home:
Data collected: April 2011

Road Name: travis road
Locality: burwood
Total visited: 2
At home: 1
Not at home: 1
Data collected: April 2011

Road Name: kingsford street
Locality: burwood
Total visited: 125
At home: 37
Not at home: 88
Data collected: April 2011

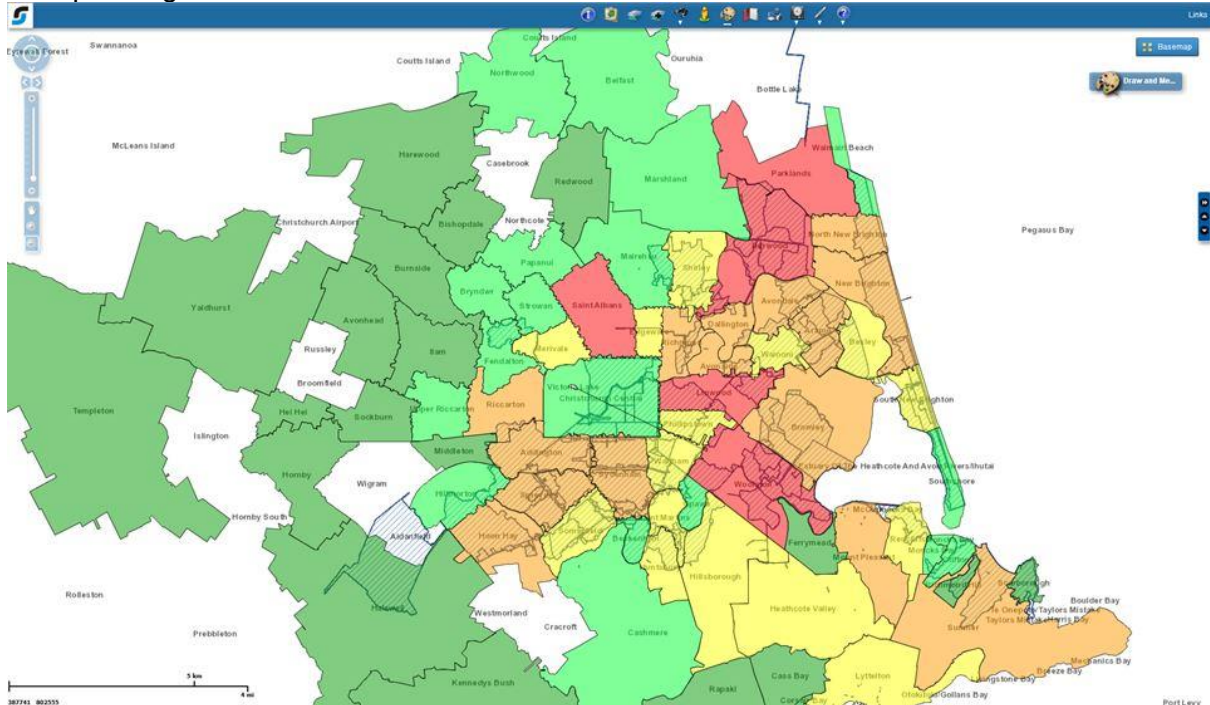The colour shading on this map is just split into 3 different classes.
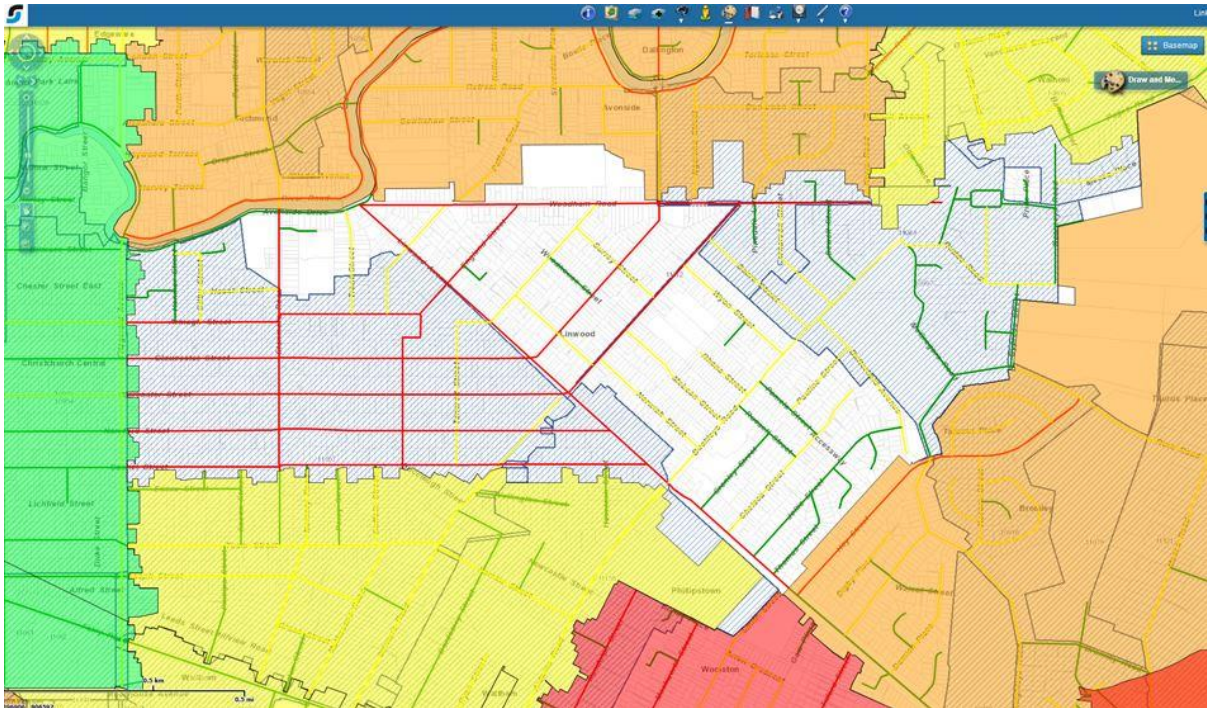**Green: 1-25**
**Yellow: 26-100**
**Red: 101-346**

How could this be useful? At this level it gives a pretty good idea of what streets have been visited.

Incorporating other datasets



Locality data overlaid with SCIRT project areas in construction

Street level data overlaid with SCIRT project areas.

## Benefits
Extent of the Outreach Coverage from April 2011 can be visualised. This would be useful for both Red Cross and SCIRT particularly for project planning and seeing what areas/streets have/have not been visited.

## Lessons learnt
The key to representing the data is to be able to understand the data, how it was collected and being aware of any limitations to the data is important.

Understanding the sensitivity of the data is also important as it may influence what you do/don't do with the data. For this phase of the project just the numbers of houses visited/not visited has been represented but it would be possible to go one step further and represent the other aspects of the data.

Recording details to an address point dataset would give a potentially better spatial location of data; it could also mean that if there were particular issues in a community that it would be easy to identify them and then make sure that this was taken into account if there were particular works going on in an area. It could help avoiding frustrations on the owners side by knowing if they have been visited, to know which ones to go back to and to know which ones maybe don't want you to come back.

## Next steps
- Is this data useful? Put a plan with timelines in place for the next stage?
- Think about how if SCIRT had had some of this data at project planning stage would anything have been done differently?
- What other datasets are there from Red Cross and what could be done with them?
- How many data sets use street name/address as locators – maybe put some checks around how these are recorded?
- What is on the Resource Management System how is it set up, how can we pass data/can we pass data?
- Supply data sources to Red Cross as needed to integrate with resource Management System?