

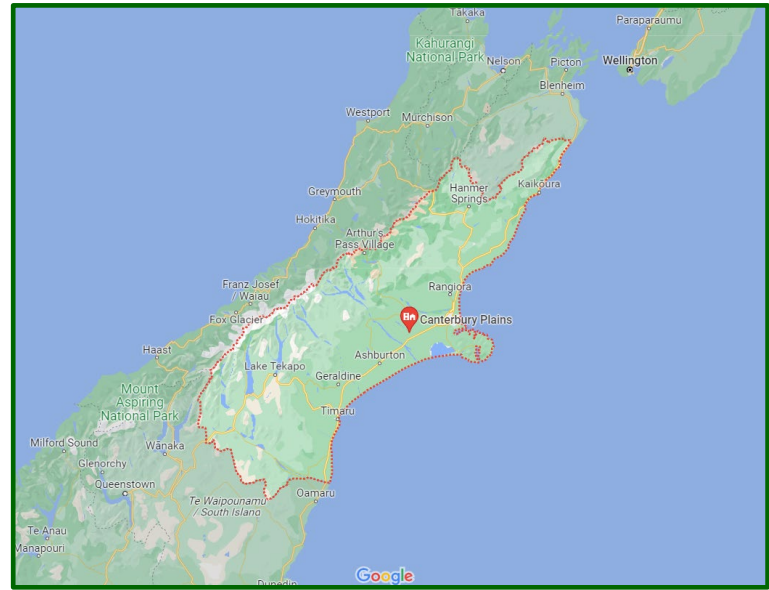
PAINT THE TOWN RED

The problem with exposure to residential lead



Residential Lead - Canterbury Dataset

By Nicola Peacock



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The problem with exposure to residential lead

Data source

- Data is from the last nine years of DSI investigations carried out by Momentum Environmental Ltd for clients and involves 116 sites
- Sites where the NESCS test of 'more likely than not' has determined that HAIL I could apply due to risk of lead paint contamination
- Sites where the client has agreed to pay for a DSI
- Sites which involve a current or former residential building and which may or may not also include other ancillary buildings

Likelihood of HAIL I

- HAIL I states: Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment
- The NESCS users guide indicates the test for more likely than not is that there is a more than 50 percent likelihood of a hazardous activity or industry having occurred.
- As a SQEP we have to determine when there is a more than 50 percent chance that the lead paint will have been released in sufficient quantity to cause a risk to human health.

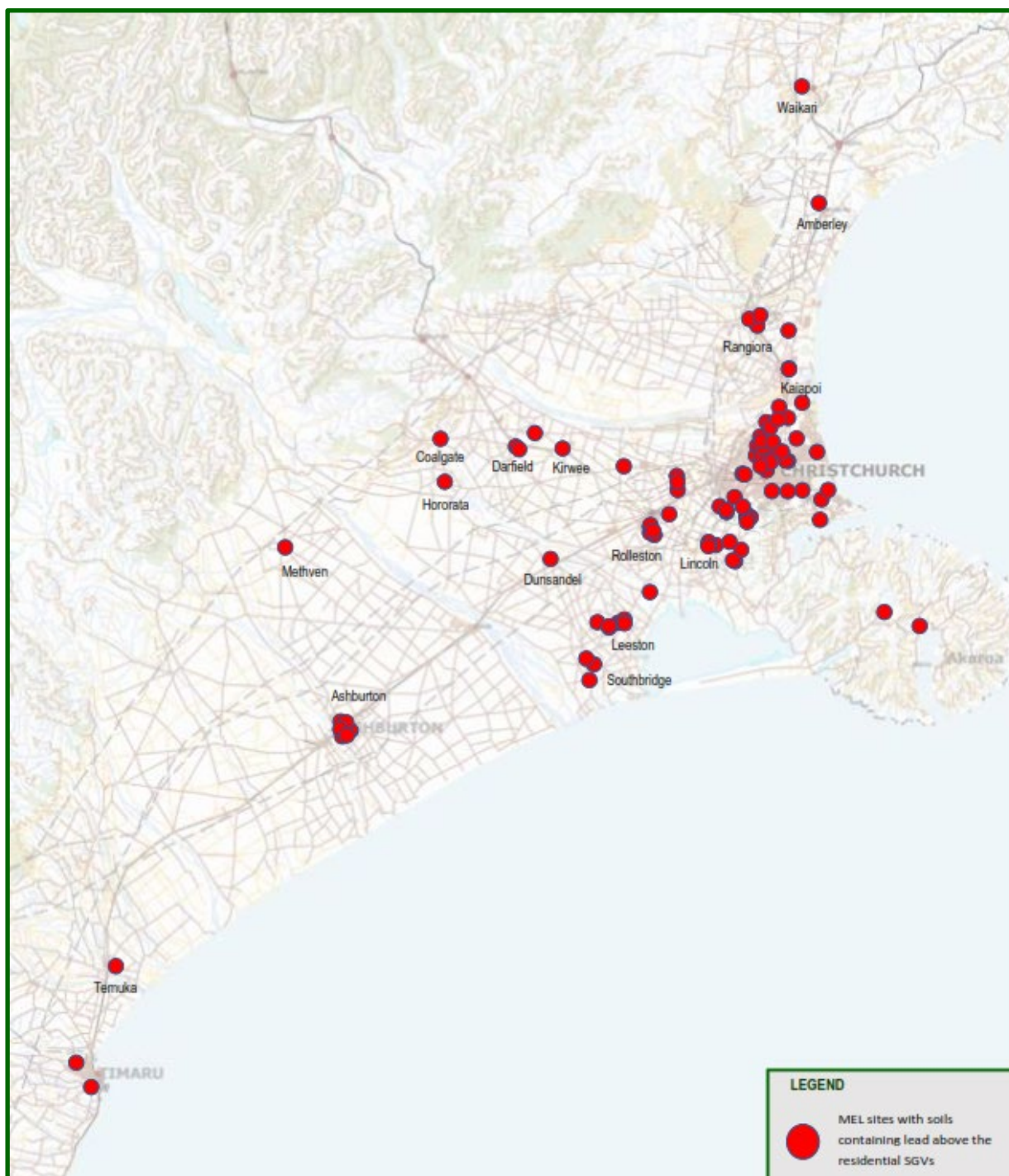
Limitations of data set

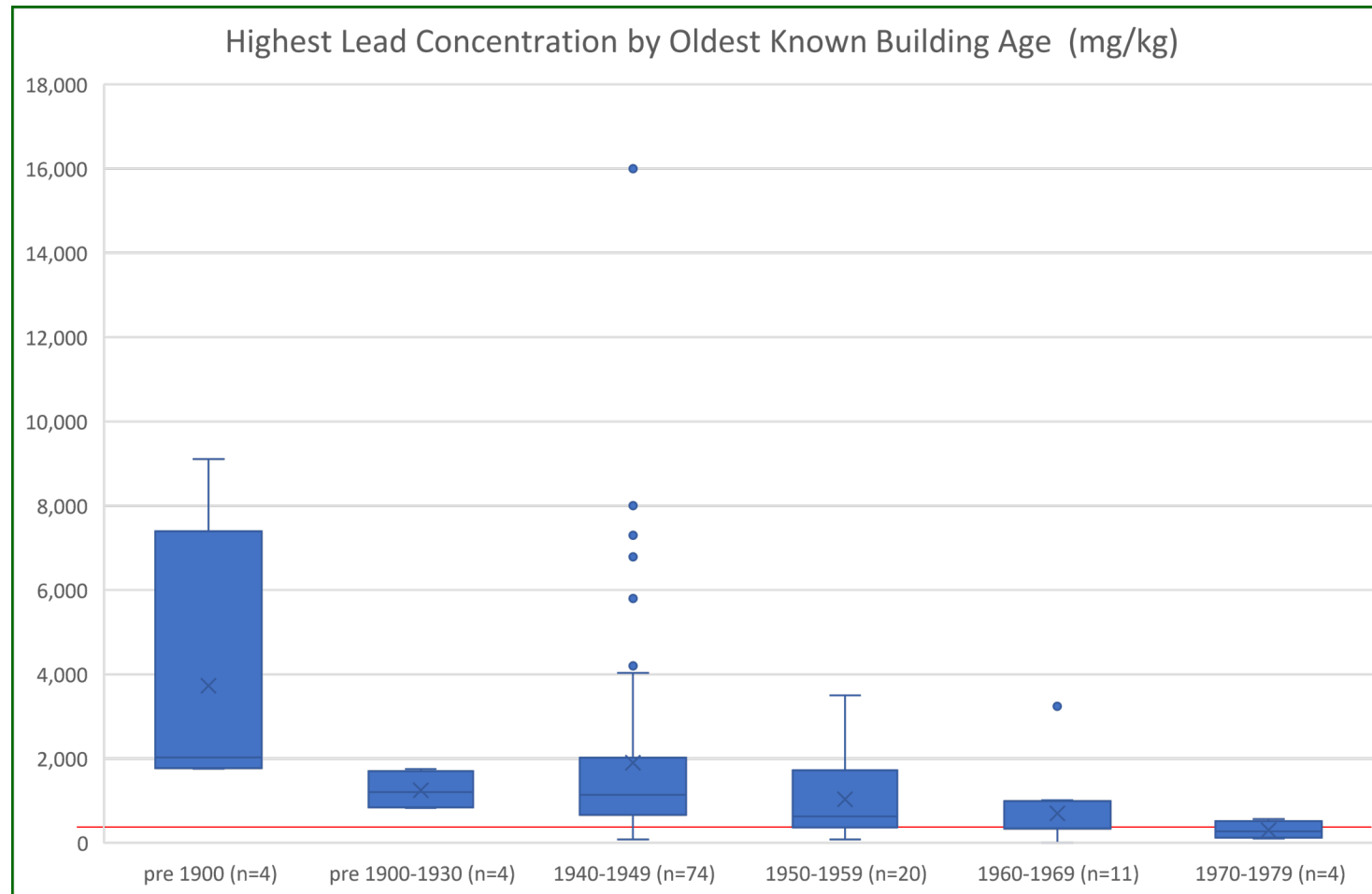
- Obviously the way this data set has been sourced and analysed involves personal judgement – ie should the site be investigated in the first place, and interpretation of data which has not been collected for the purposes of detailed statistical analysis
- It is skewed to sites with older buildings – it is more difficult to justify expenditure to a client for say a 1970's building
- The availability of historic aerials mean the accurate dating of buildings older than the earliest available aerial is reliant on other historical knowledge (therefore some results could relate to older buildings)

Investigation Methodology

- Judgemental sampling involving stepping out samples from buildings, typically with first sample at around 0.5-1m from wall and then 2-3m increments outwards
- Extra sample locations when required, e.g. where there are data gaps between buildings, near future lot boundary lines, or to delineate extent
- Combination of lab and XRF testing (with full regression analysis undertaken each time)
- Samples typically at surface, 250mm, and taken at 500mm if XRF indicates a need

Locations of Sites





(n=116; red line = NESCS 'residential 10% produce' SCS of 210mg/kg)

Summary of Typical Findings

- For the standard ¼ acre (1000m²) section of the pre 1940's, it is not uncommon to find more than half of the unbuilt area affected by lead levels over 210mg/kg
- Lead levels in a 3m halo around the dwellings on these older sites would typically be in the order of 400-1000mg/kg
- Many older sites had halos from the fences and ancillary buildings that merged with the dwelling halo
- Arsenic and asbestos were common co-contaminants
- Affected areas in 1960's and 70's buildings were generally limited to small localised areas such as below a window

Takeaway Message

Where there are or have been buildings on an undeveloped site older than 1940's there is a very high chance that lead levels will be high enough and widespread enough to pose a risk to human health in a residential use.