

Smart Soil Strategies: A Brownfield Development Fable

Sarah Ensoll and Nigel Mather







How did we get here?



## History and Constraints





## Proposed Development



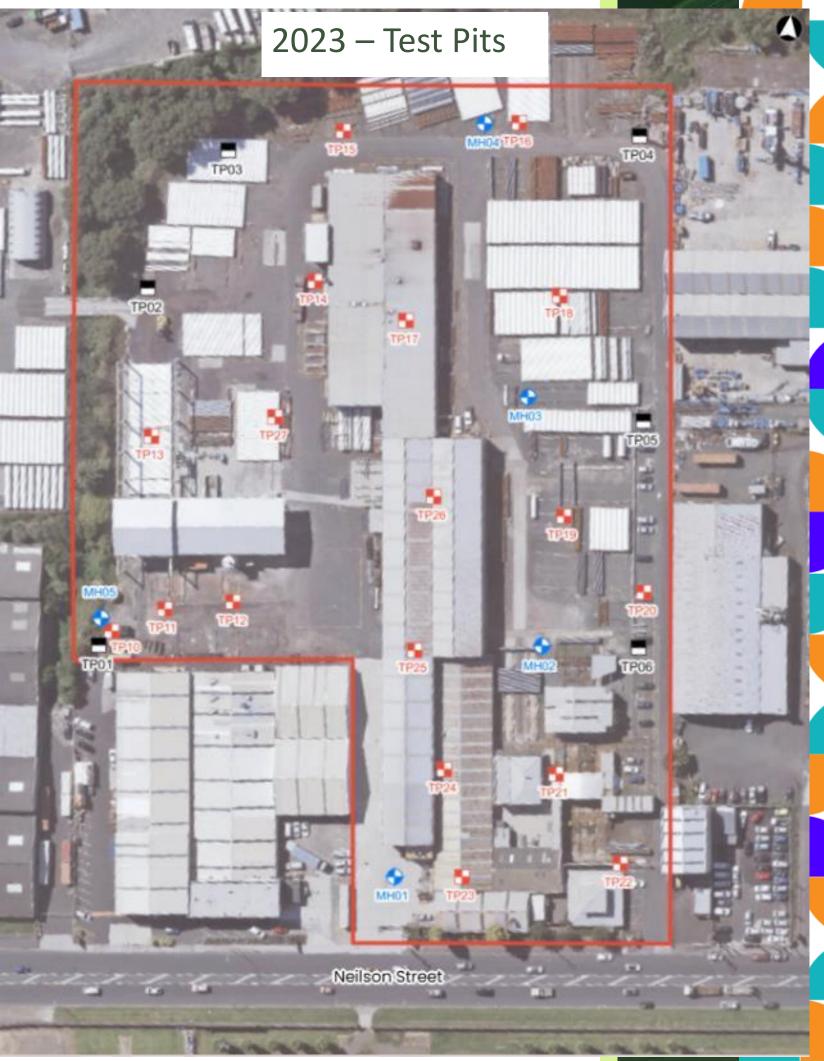


## Intrusive Investigation Summary









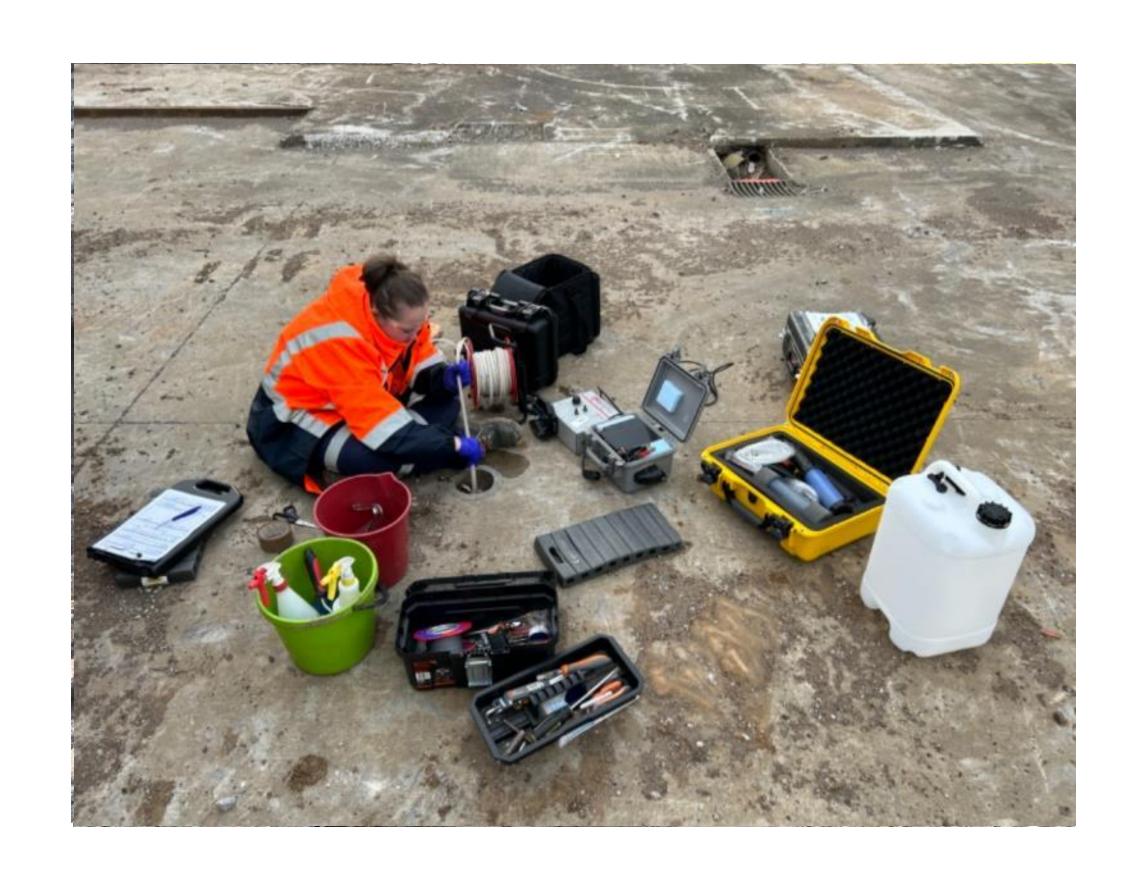
## Intrusive Investigation Summary



Arsenic – 182 mg/kg Heavy Metal (Arsenic) Exceedances above Human Health Asbestos Exceedances PAH and TPH Exceedances above Human Health BaP - 20 mg/kgTest Pit Sample Locations (2022) Machine Borehole Sample Locations (2022) Pyrene – 36 mg/kg Test Pit Sample Locations (2023) Site Boundary FA+AF - 0.675 % w/w Arsenic – 162 mg/kg TPH  $C_{10}$ - $C_{14}$  – 10,500 mg/kg FA+AF - 0.051 % w/w Arsenic – 870 mg/kg 0 25 m 50 m LINZ CC BY 4.0 © Imagery Basemap contributors, GeoMaps Auckland Regional Council 浆SLR Title: Human Health Exceedances Client: Argosy Property Limited 224 Neilson Street, Te Drawn: -Figure No.: 1 Date: Invalid date Proj No: 15583 Scale: 1:1362

## Intrusive Investigation Summary







### Agreed Management Strategy



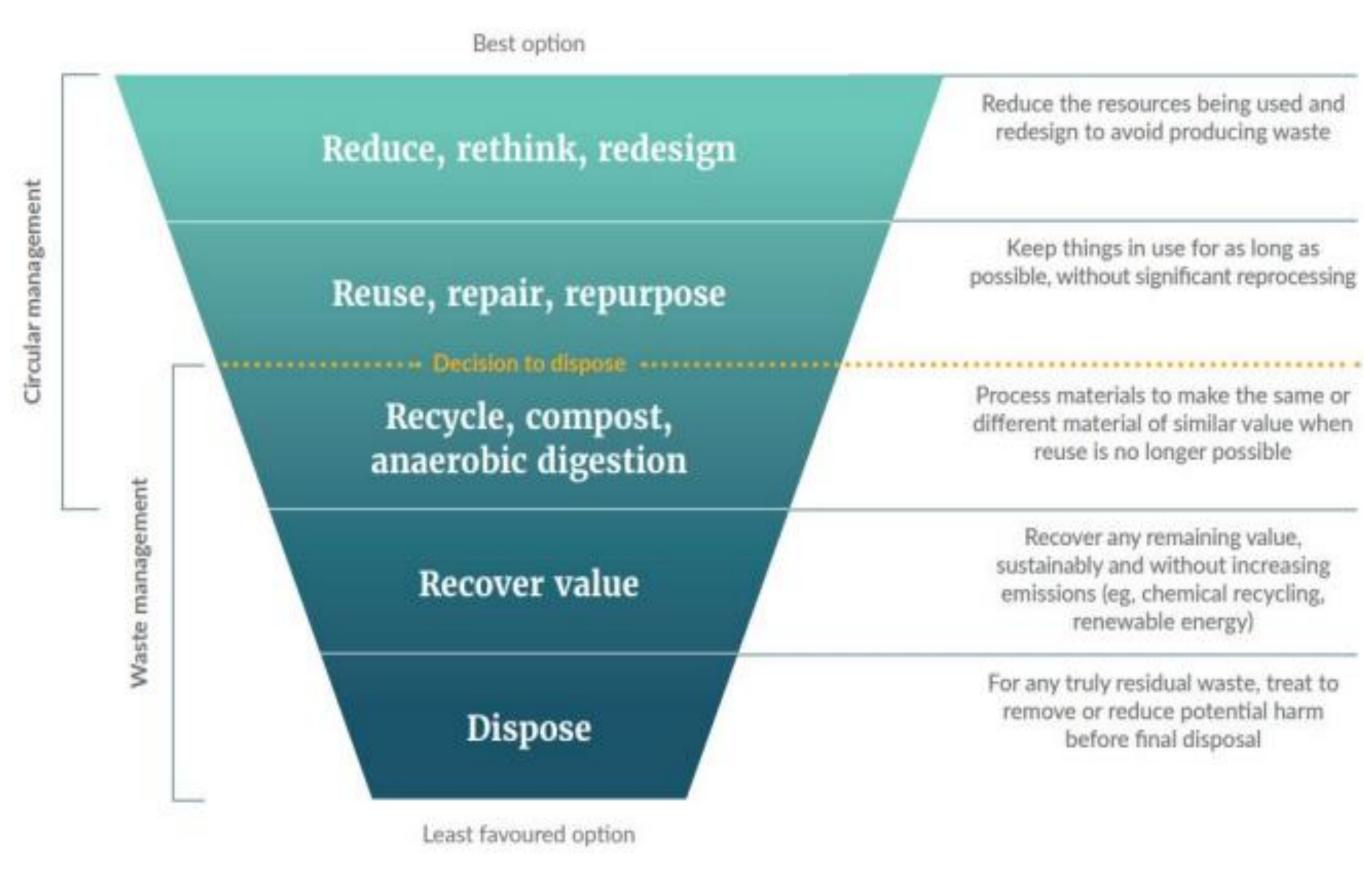
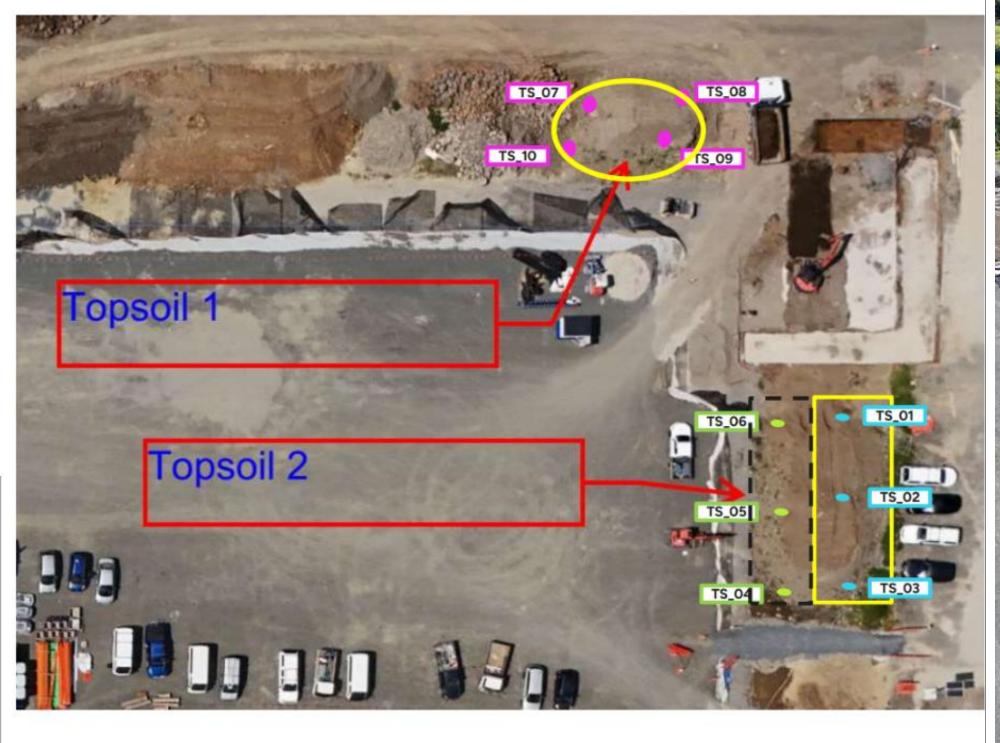




Figure taken from: Ministry for the Environment (2023). Te rautaki para | Waste strategy.

## Construction Monitoring and Ongoing Sampling







#### Stockpile Treatment



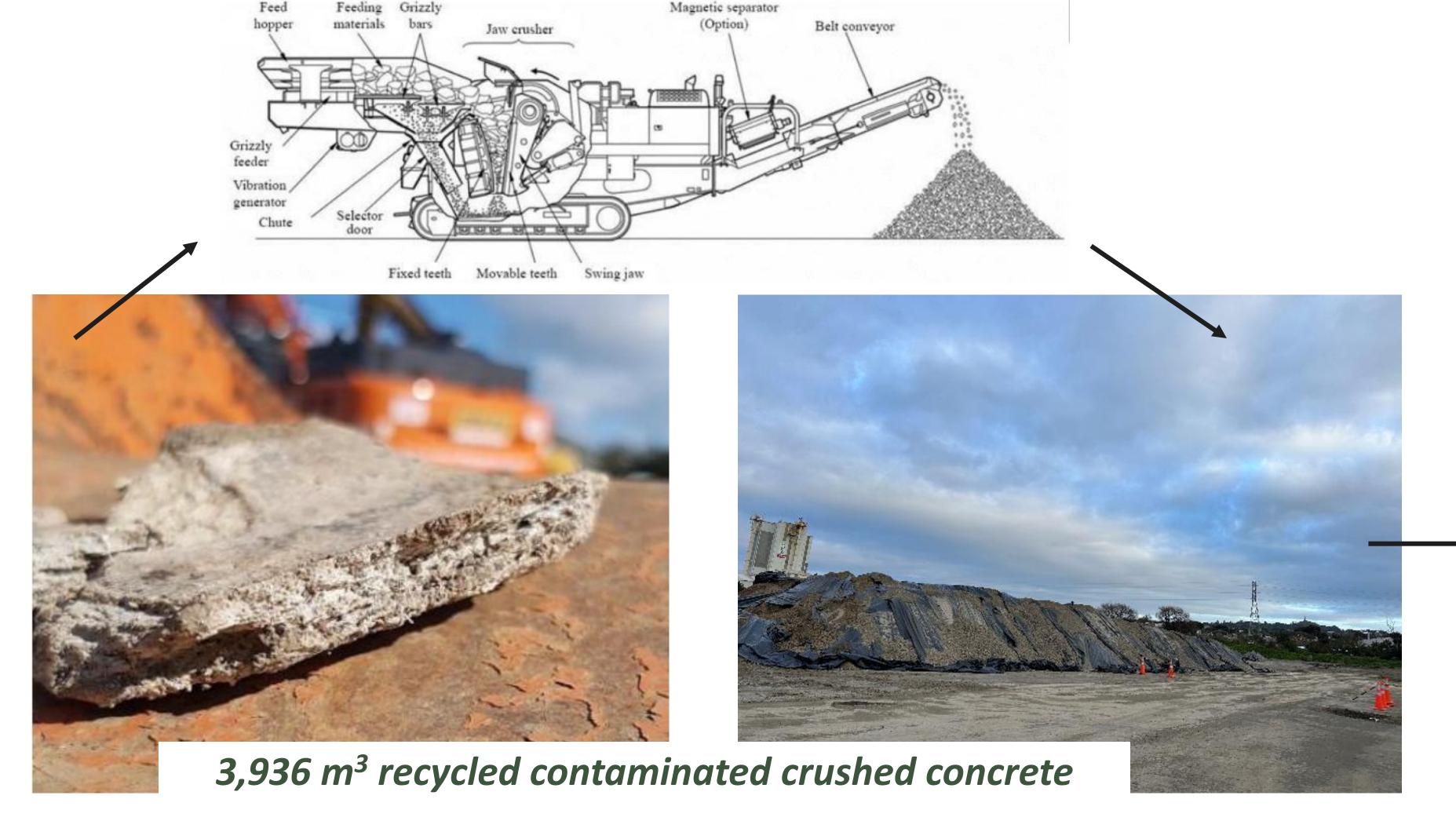




- Lead concentrations of 18,000 mg/kg from a composite sample, and TCLP of 52 g/m<sup>3</sup>.
- Highway Stabilisers conducted a trial of mixing the stockpile with multiple lime and cement mixes, with SPLP analysis conducted on the treated material.
- All mixing and handling of the stockpiled material had to occur under Class B asbestos controls.
- 610 m<sup>3</sup> of stockpiled contaminated fill was treated and re-used.

## Asbestos-Containing Crushed Concrete





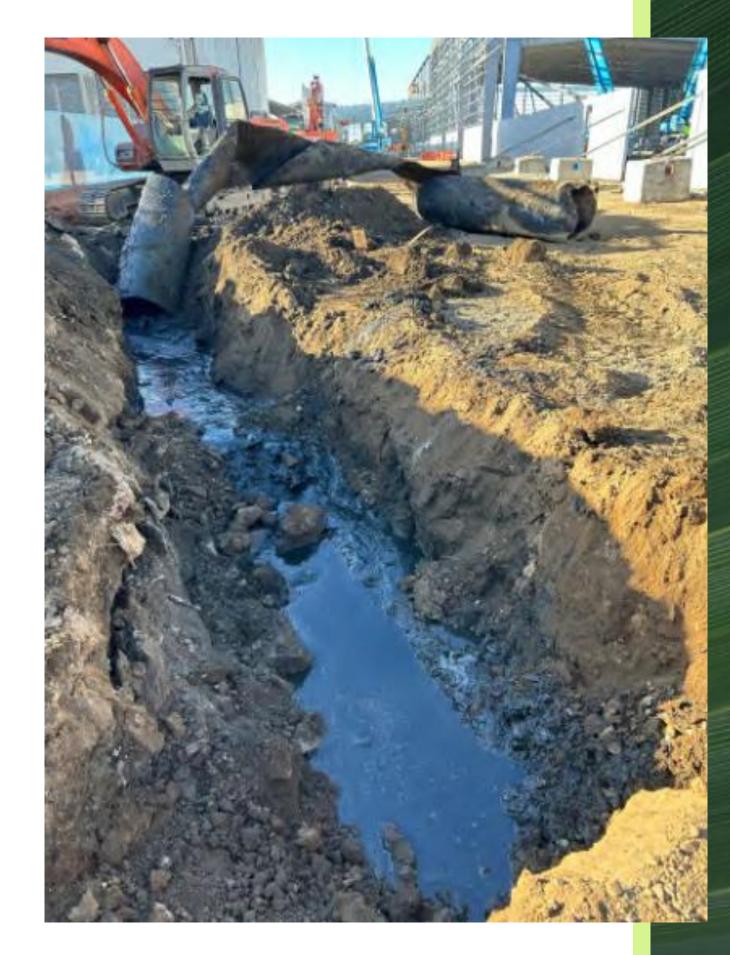


## Unexpected Discoveries









## How did all this help and lessons learnt?





#### Thanks!



# Argosy Property



Nigel Mather
Technical Discipline Manager |
Environmental Services



**Sarah Ensoll** *Senior Environmental Consultant*