Closing the Loop

Using A.I to Detect Contamination in Recycling Bins

Troy Leedham

CANTERBURY BANKSTOWN

“Five years”

Where we were:
Manual processes

Education

Manual process

High risk

Contamination

Ongoing issue

~30%

Outcome

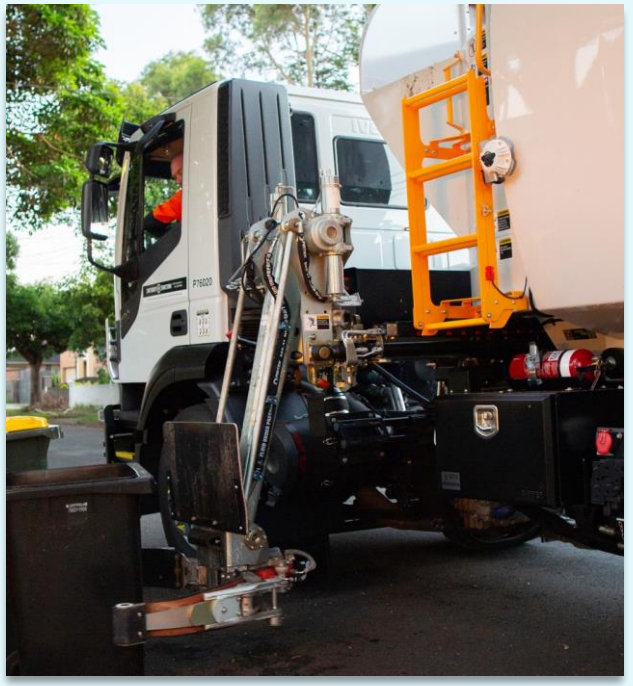
Contract issues

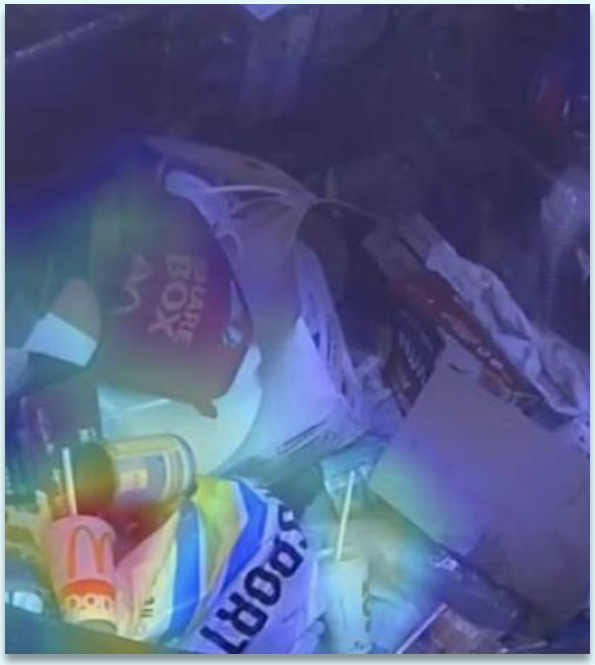
Landfill

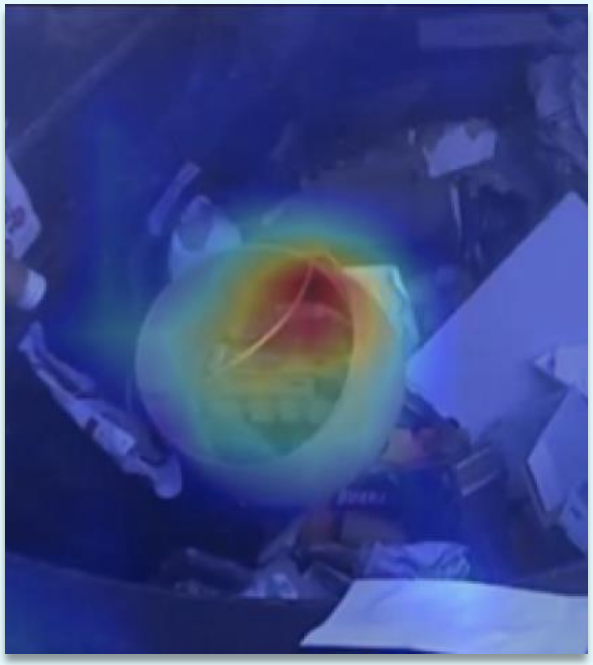
Closing the Loop

Closing the Loop: Problem solved?

- GPS
- Cameras
- Driver reporting
- Lots of new data







Solving the problem: Artificial Intelligence

- Vendor built POC
- Amazon Web Services
- Not automated
- Proved concept

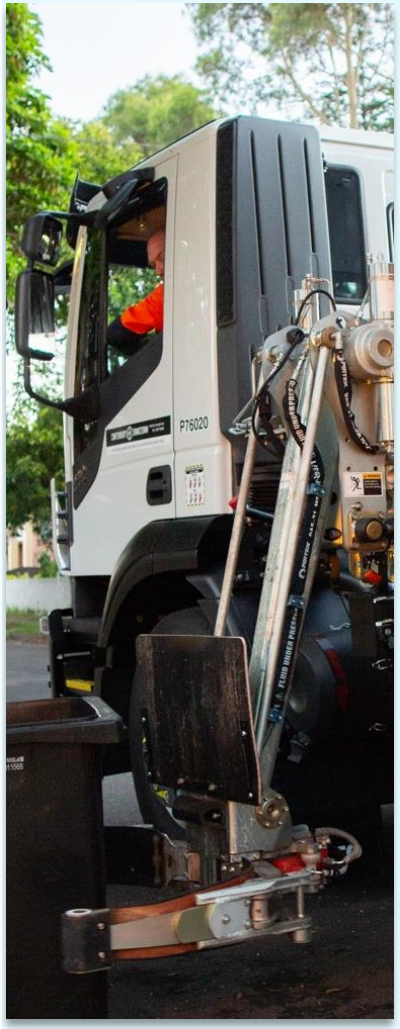
Progressing A.I: Building a new POC

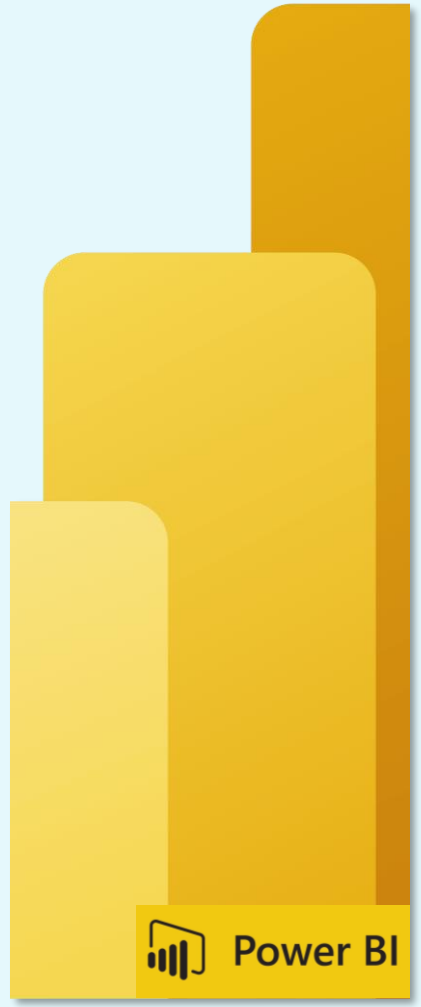
- Microsoft PowerApps
- A.I builder
- Built a new POC
- 80%+ accuracy

Progressing A.I:
Moving to production

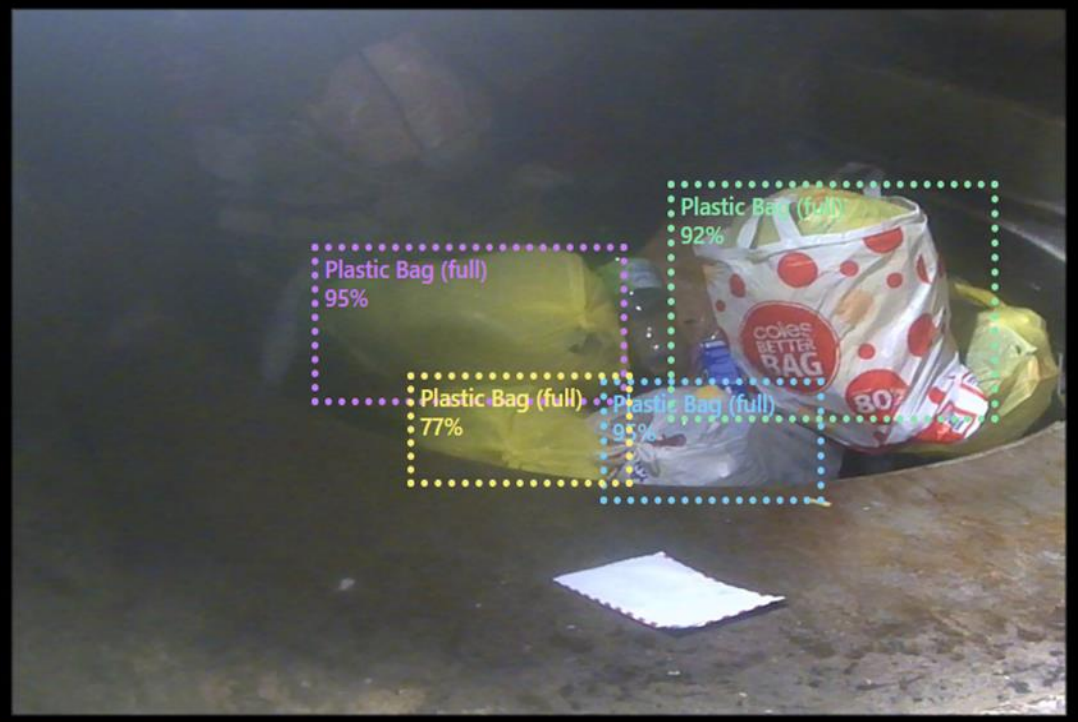
- Tagged 4,000+ images
- Two categories
- Fully automated
- 90,000 bins / 2 weeks

Progressing A.I:
How does it work

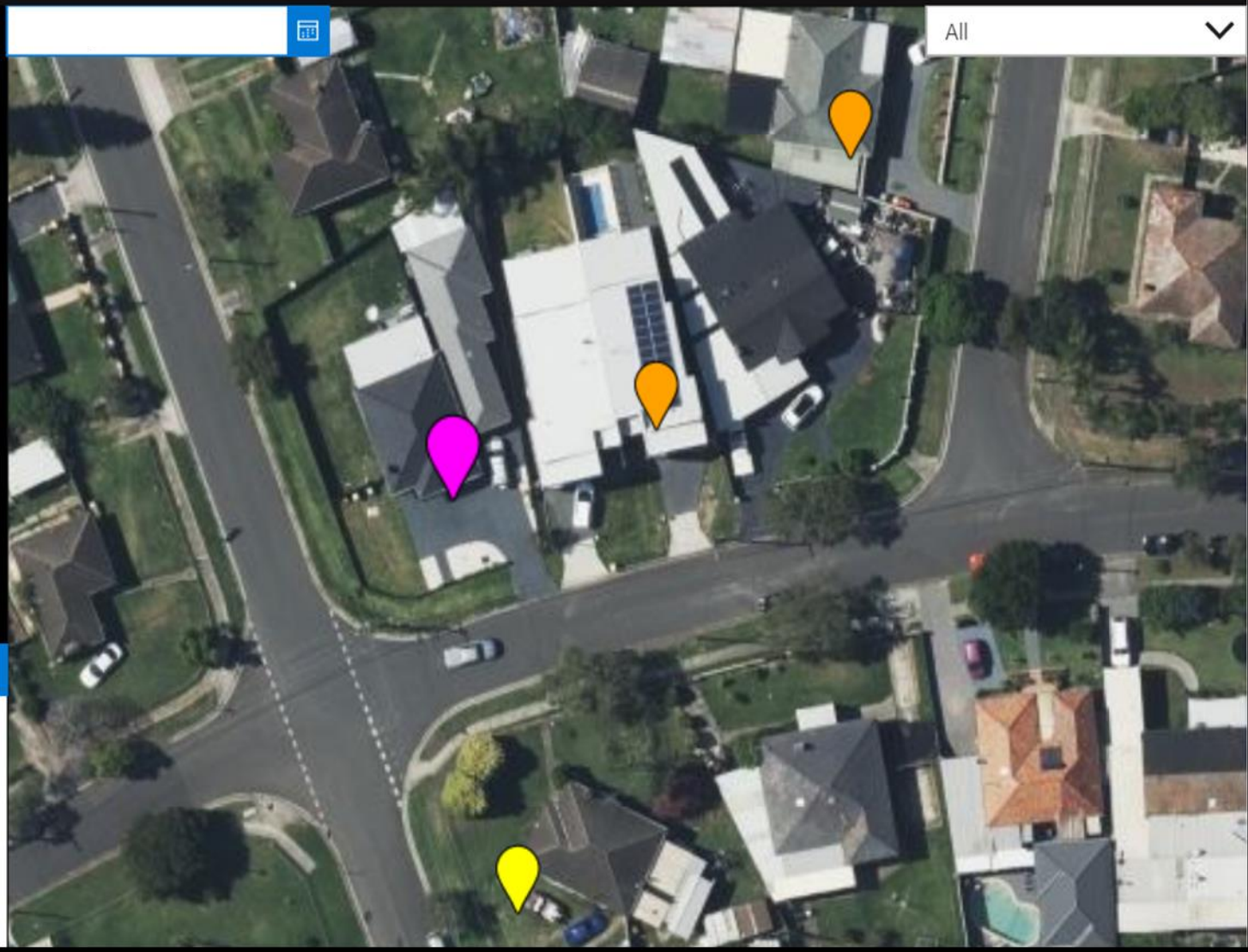




Power Apps | Contamination AI FrontEnd



R6: 2023-03-20T04:07:14
[redacted] **Villawood NSW 2163**
No. Contaminants: 4



Home

Contamination Details

Contamination Report

Heat Map

Recycling AI Heat Map

9/9/2022 — 3/14/2023

Street

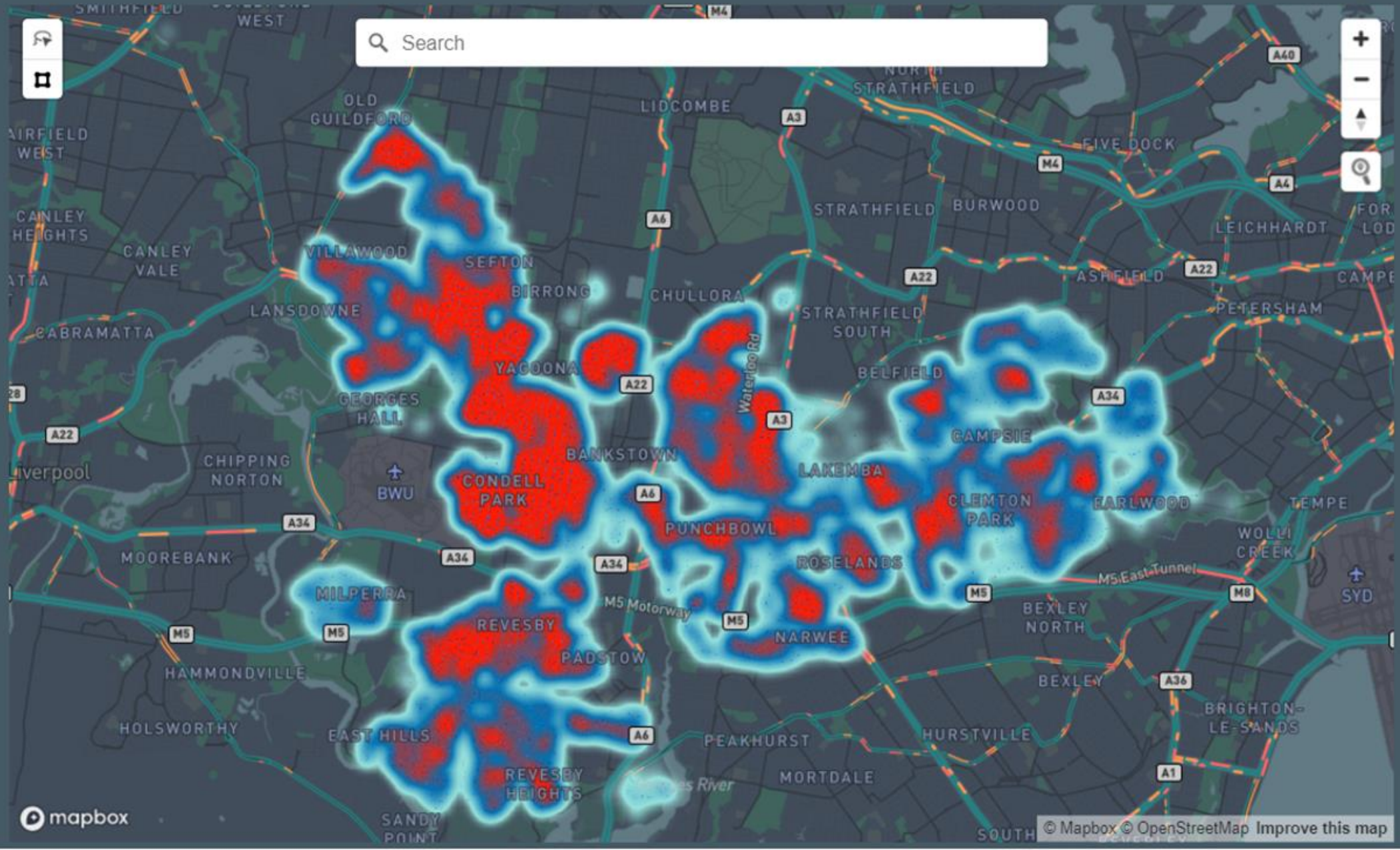
(Blank)
1/01/1900
1/122 Bonds Rd
1/156 Bonds Rd
1/192A Kingsgrove Rd
1/43 Broadarrow Rd

Suburb

Ashbury
Bankstown
Bass Hill
Belfield
Belmore

Contaminant Type

Plastic Bag (full)
Soft Plastic



Progressing A.I: Future roadmap

- Training A.I model
- Refine education
- Tenders

Artificial Intelligence: Summary

- Live data
- Targeted education
- Automated processes
- Reduced risk
- Improved safety
- Increased inspections

“Fixe weeks”

CANTERBURY BANKSTOWN

troy.leedham@cbcity.nsw.gov.au