APSE Waste and Recycling Seminar 2024
Nottingham Race Course
17th October 2024

REEN

Newcastle City Council's Journey to Digitisation using Bin Sensor technology

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Love it. Own it.
Get the job done.

STREAMLING WASTE MANAGEMENT


BUSINESS AS USUAL?
OR
EMBRACE CHANGE?
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So where does it *START?*

Depends on *what you are trying to achieve*…

Pure Science: Starts with a research grant!

Public Services: Understanding Public Need & Benefits

Business: Conceiving a Business Case

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Key Challenges in Waste Collection

COST – PUBLIC SERVICE SO THEREFORE UNDER COST PRESSURE

PUBLIC HEALTH

LOCAL ECONOMY

WASTE REDUCTION

STREETSCAPE

PUBLIC AND WORKFORCE SAFETY

CARBON FOOTPRINT

PUBLIC ACCEPTANCE

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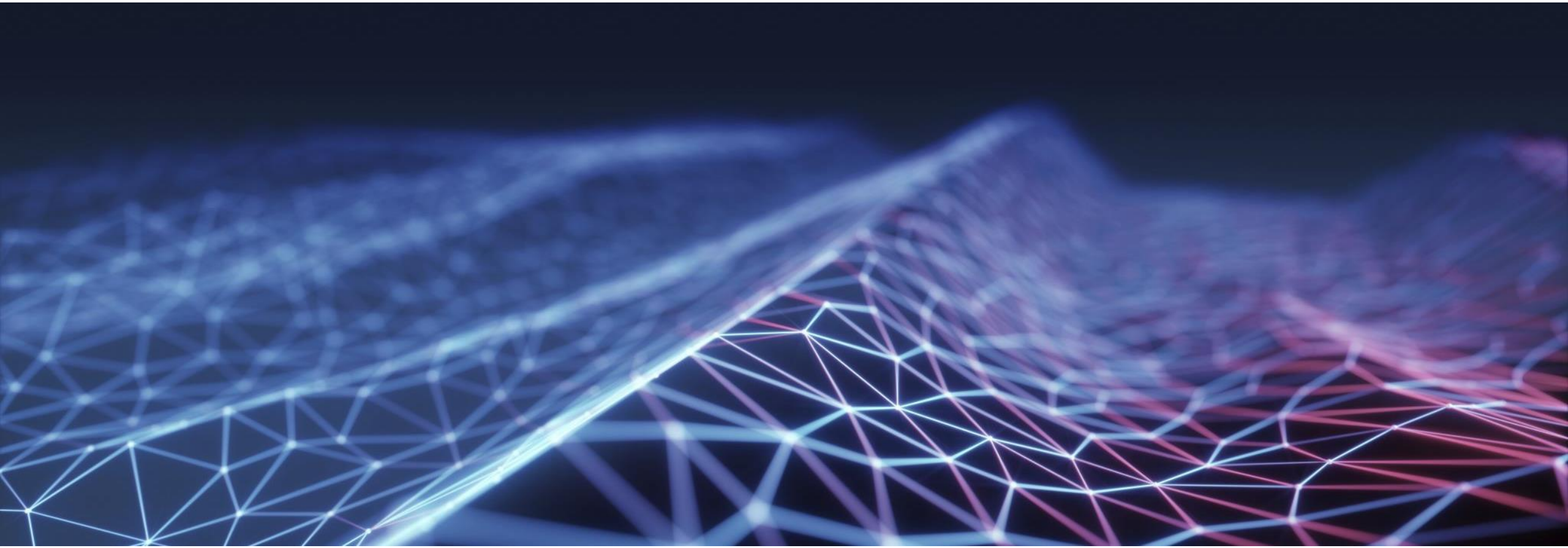
How Can We Address These Concerns?



How Innovation and Technology is creating better refuse collection

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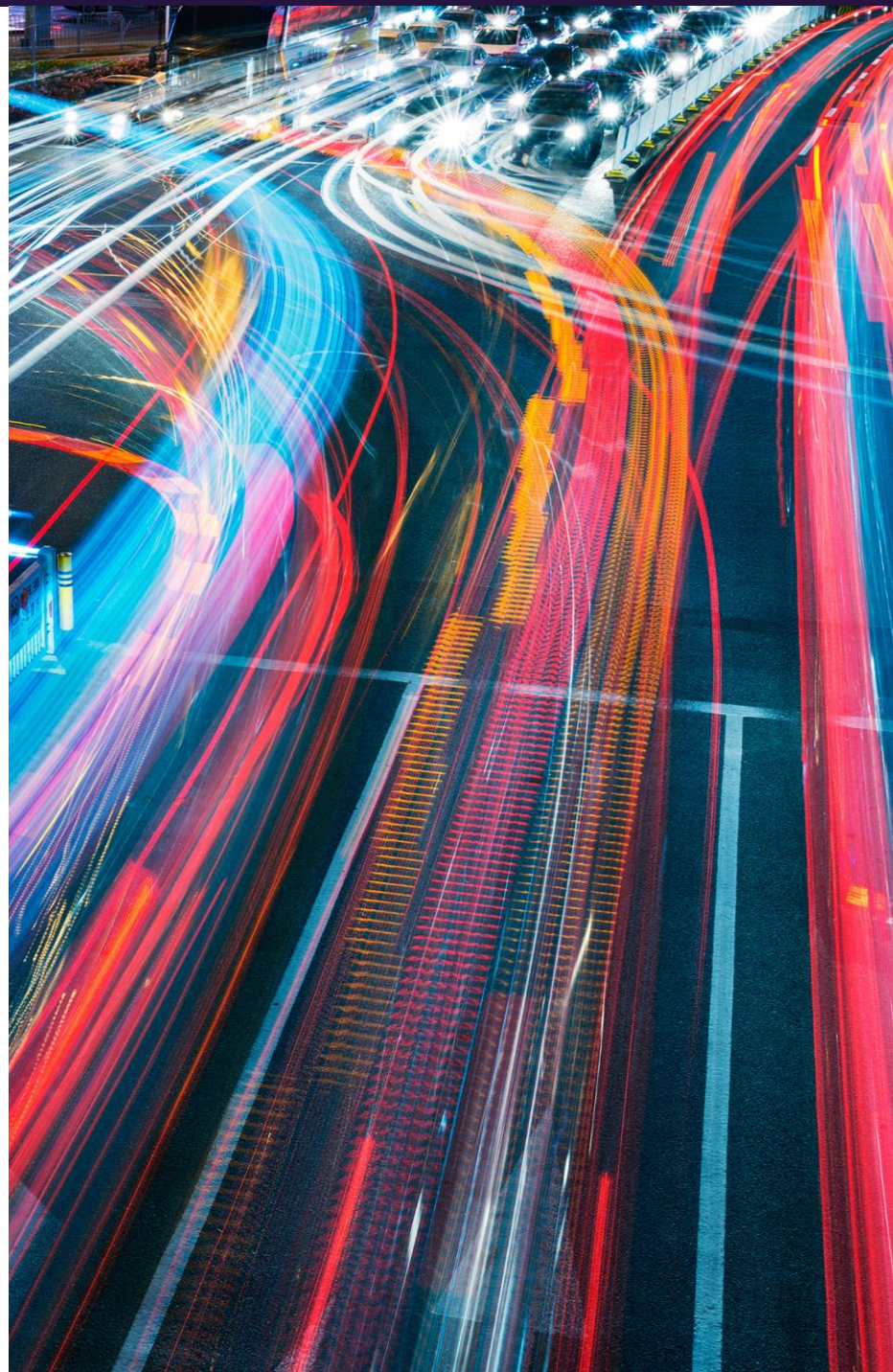
What drives *Change?*

- Understand Demand better than the customer
- Understand the Value Chain
- Think Deeply about what might Add Value
- Use Existing Tech Innovatively
- Develop tech with a Purpose and Goal
- Link up with others for Synergy



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Reduce *Wasted Work*

- Move away from static frequencies?
- Overfull bins
  - ➢ Create cleansing demand
- Underfilled bins
  - ➢ Waste of effort, money and carbon
- So, what do we need to change this ?
  - ➢ *Bin Sensors!*

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Unlocking Greater Efficiencies

- Reactive work -> Intrinsically inefficient
  - Calls for better, *proactive* planning
- Dynamic routing based accurate predictability
  - Based on *which* bins are full and *when?*
- Ability to skip bins that don't need emptying but only if this more efficient than collecting them anyway
- Bottom line - Better
  - Use of *DATA*
  - *COMMUNICATION*

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REEN - WHO ARE WE?

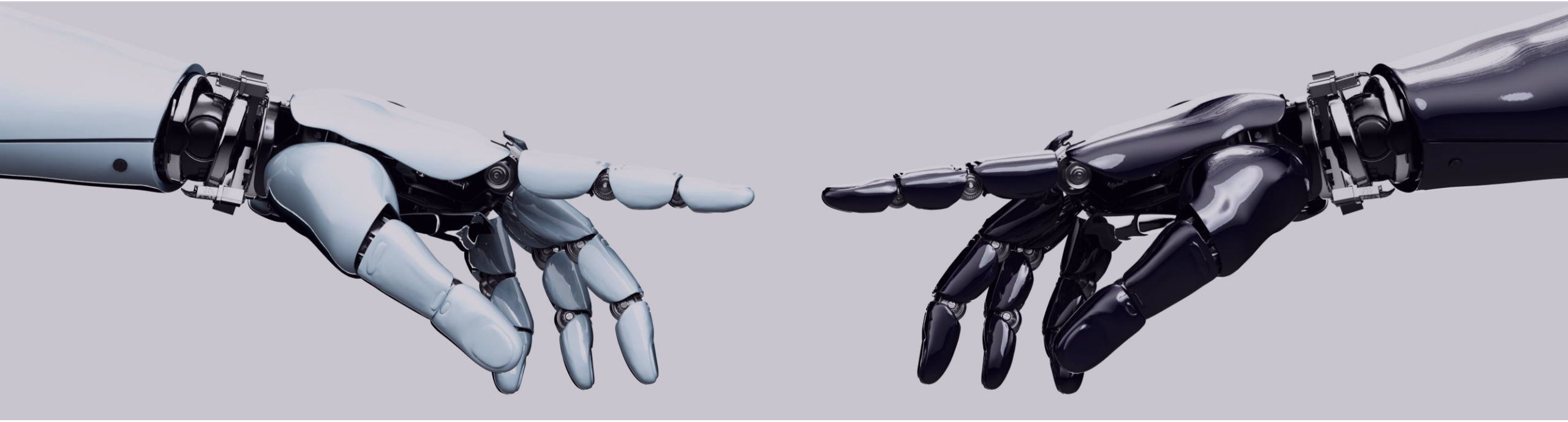
- REEN is a technology company that streamlines the collection and transport of waste.
- With intelligent IoT sensors, and cloud-based tools, REEN uses data to allow waste containers to come to life and help customers to be more profitable and sustainable by

Improving operational efficiency with generated routes based on container fill levels

Maximising waste collection while reducing driving & CO2 Emissions

Maximising resource allocation

Technology meets *Needs*



Reduces the Amount of Work:

Fewer bin lifts

Reduces Wasted Work:

Bins that don't need lifting

Reduces Carbon Footprint:

Bin lifts
Journeys
Miles Driven

Improves Safety:

Less manual handling
Cleaner environment

Makes it User Friendly:

Cleaner
Efficient
Transform relationship with waste disposal

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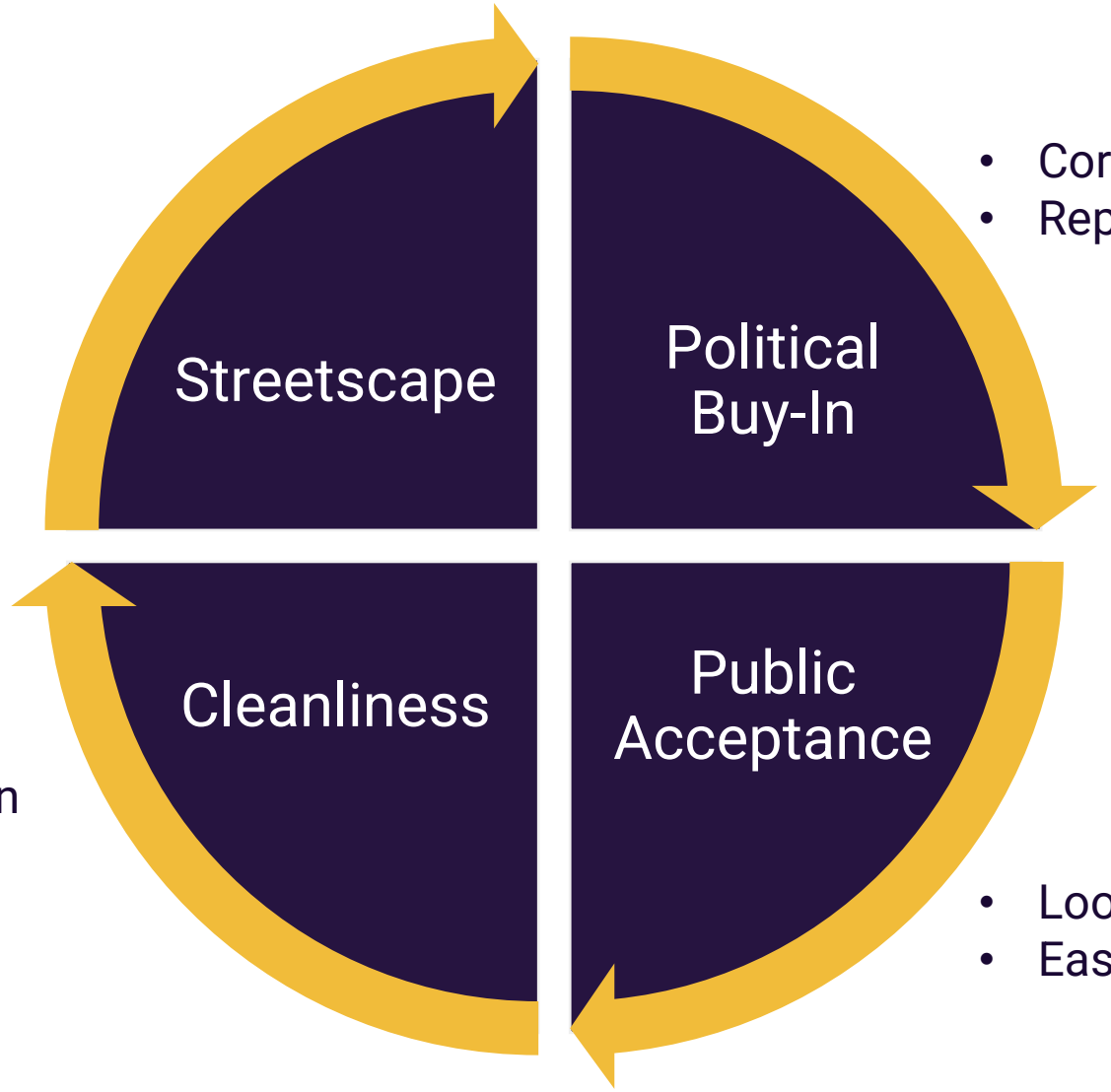
What else do we need to *meet other requirements*?

- Bigger Bins
- Underground Bins?



- Corporate Priorities
- Reputational Issues

- Overfilling bins
- Pest infestation

- Looks acceptable
- Easy to use

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Issues faced by Newcastle City Council

OVERFLOWING BINS

COMPLAINTS FROM RESIDENTS

PRESSURES FROM CABINET TO CLEAN UP AND IMPROVE CITY STREETS & IMAGE

FAILING TO ACHIEVE GOALS DESPITE INCREASED BIN SERVICING FREQUENCY

RESOURCE HEAVY BIN COLLECTION OPS:

12 TEAMS AND 12 VEHICLES

1900 PUBLIC LITTER BINS TO MANAGE

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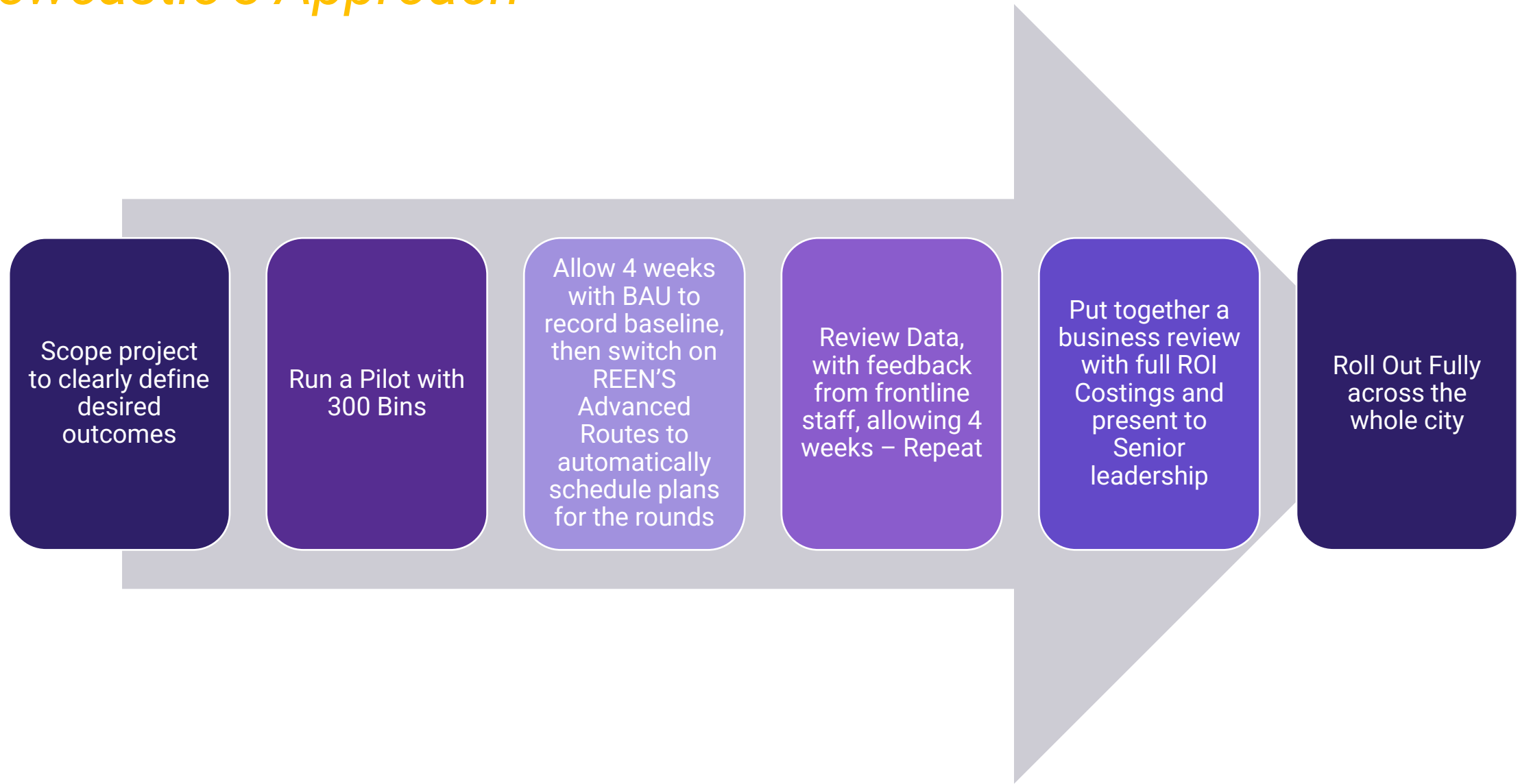
Newcastle's Approach



What Newcastle's Streetscence collections look like today

Service capacity analysis

CONTENT TYPE	WEEKLY NEED	WEEKLY ALLOCATION
East (Team 4) Mixed Waste		39 h
East 1 Mixed Waste		39 h
East 2 Mixed Waste		39 h
West 1 Mixed Waste		39 h
West 2 (North) Mixed Waste		39 h
West 2 (South) Mixed Waste		39 h

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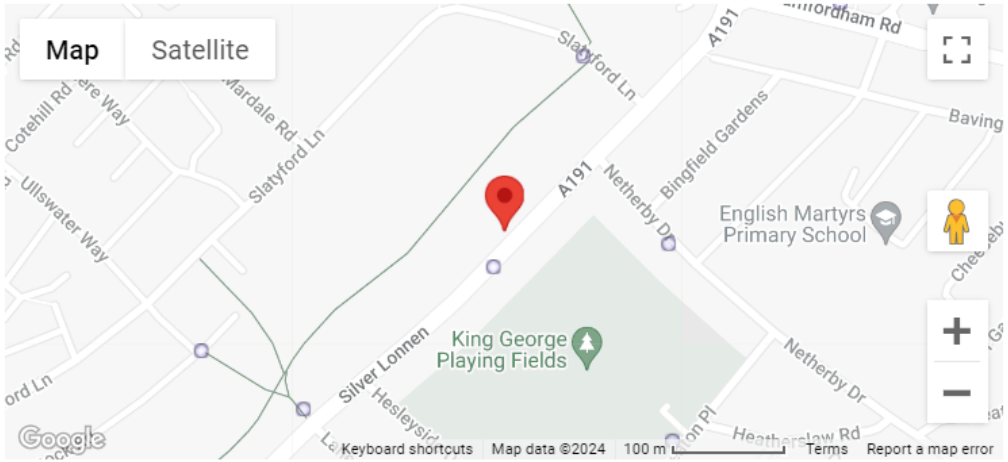
What Newcastle's Streetscence collections look like today



NAME	LB0229 SILVER LONNEN (bus stop next to numbers 92 & 94)
ADDRESS	Silver Lonnen
POSTAL CODE	NE5
CITY	Newcastle upon Tyne
REGION	England
AREA	West Fenham
SITE TYPE	Container
LOCATION	54.987971, -1.672426

West 1 Mixed Waste ID 540260
1 container
78%
Full on Nov 12, 2024 (in 27 days)

Total volume 0.2 m³
Fills up every 181 days
Collects 0 m³ per month
(2 times per year)

Wybone Pyramid
Mixed 1
78%

SCHEDULE — ADD SCHEDULE

SCHEDULED VISITS — ADD SCHEDULED VISIT

LATEST COLLECTION — SEE COLLECTION HISTORY

20 days ago Sept 26, 2024 9:53 AM	Fill level 78%	✓ Collected 0.2 m³
2 months ago — as planned Aug 19, 2024 12:53 PM	Fill level 69%	✓✓ Collected 0.2 m³

NEXT COLLECTION

In 6 days Oct 22, 2024	88% full Forecast	SHOW PLAN

SHOW FILL LEVEL GRAPH

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What Newcastle's Streetscence collections look like today

Future plans

Content type: All

DATE	CONTENT TYPE	SITES	VEHICLE	DURATION	ROUTE LENGTH	STATUS
Fri Oct 11, 2024	West 1 Mixed Waste	64	West 1 - Iveco 5.5t side loader 99%	6h 36min 94% 6:00 AM - 12:36 PM	47 km	PREDICTED
Fri Oct 11, 2024	East 1 Mixed Waste	63	East 1 - Iveco 5.5t side loader 98%	5h 45min 82% 7:00 AM - 12:45 PM	40 km	PREDICTED
Fri Oct 11, 2024	East 2 Mixed Waste	37	East 2 - Ford 3.5t side loader 73%	4h 33min 65% 7:00 AM - 11:33 AM	31 km	PREDICTED
Fri Oct 11, 2024	East (Team 4) Mixed Waste	26	East (Team 4) - Vauxhall 3.5t side loader 45%	3h 16min 47% 7:00 AM - 10:16 AM	29 km	PREDICTED
Fri Oct 11, 2024	West 2 (South) Mixed Waste	29	West 2 (South) - Ford 3.5t side loader 59%	3h 30min 50% 7:30 AM - 11:00 AM	32 km	PREDICTED
Fri Oct 11, 2024	West 2 (North) Mixed Waste	28	West 2 (North) - Vauxhall 3.5t side loader 55%	4h 5min 59% 7:30 AM - 11:35 AM	49 km	PREDICTED
Mon Oct 14, 2024	West 1 Mixed Waste	49	West 1 - Iveco 5.5t side loader 94%	4h 49min 60% 6:00 AM - 10:49 AM	24 km	PREDICTED
Mon Oct 14, 2024	East 1 Mixed Waste	60	East 1 - Iveco 5.5t side loader 85%	7h 11min 90% 7:00 AM - 2:11 PM	43 km	PREDICTED
Mon Oct 14, 2024	East 2 Mixed Waste	39	East 2 - Ford 3.5t side loader 98%	4h 45min 59% 7:00 AM - 11:45 AM	31 km	PREDICTED
Mon Oct 14, 2024	East (Team 4) Mixed Waste	34	East (Team 4) - Vauxhall 3.5t side loader 69%	3h 42min 46% 7:00 AM - 10:42 AM	31 km	PREDICTED
Mon Oct 14, 2024	West 2 (South) Mixed Waste	27	West 2 (South) - Ford 3.5t side loader 61%	3h 26min 43% 7:30 AM - 10:56 AM	30 km	PREDICTED
Mon Oct 14, 2024	West 2 (North) Mixed Waste	40	West 2 (North) - Vauxhall 3.5t side loader 87%	4h 38min 58% 7:30 AM - 12:08 PM	48 km	PREDICTED
Tue Oct 15, 2024	West 1 Mixed Waste	51	West 1 - Iveco 5.5t side loader 94%	5h 33min 70% 6:00 AM - 11:33 AM	37 km	PREDICTED

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NEWCASTLE CITY COUNCIL

REEN Solution:
- CMS Volume Sensors
- Advanced Routes for Street Scene Collections

Project Details:
- 1200+ Bins
- Reduce Fleet

Results Achieved:

50%

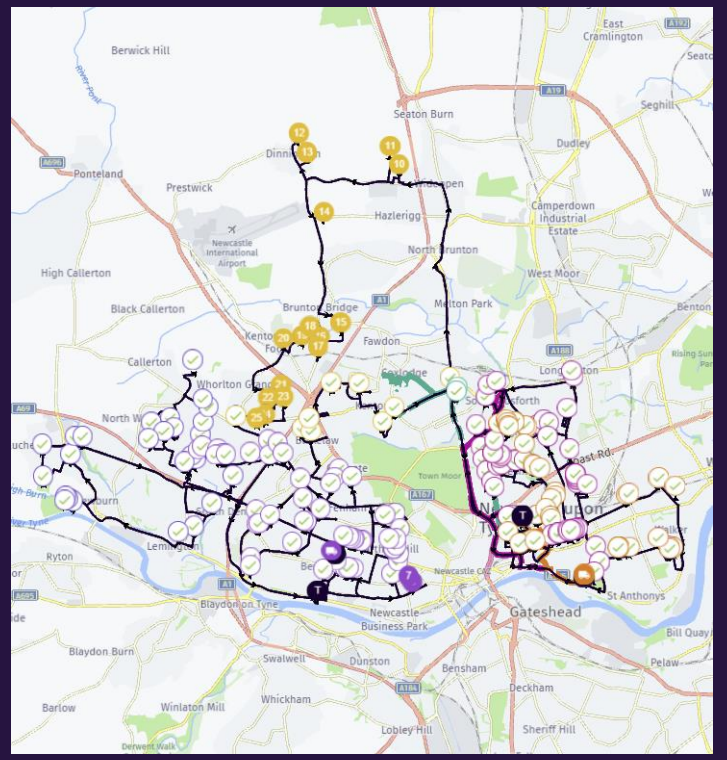
REDUCTION IN RESOURCES FOR COLLECTIONS

50%

REDUCTION IN FLEET & CO2 EMISSIONS

51%

REDUCTION IN COMPLAINTS



STREAMLINING WASTE MANAGEMENT

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SO, WHAT WILL YOU DO?

CARRY OUT BUSINESS AS USUAL?

OR

EMBRACE TECHNOLOGY TO HELP YOU ACHIEVE YOUR GOALS?

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STREAMLING WASTE MANAGEMENT

Thank you!

Love it. Own it.
Get the job done.

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