# The IT for a Smart City Revolution

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The presentation will provide an overview of LSSL's digital transformation journey, it will cover:

- **Where LSSL started**

- **Drivers for Digital Change**

- **Progress made so far**

- **Underground Refuse Systems & Fill Sensor Technology**

- **Future Opportunities**

Where we started – Outdated Collection Methods & Outdated Technology
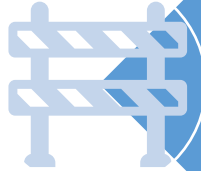
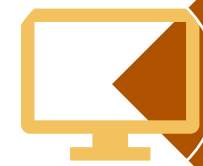**Poor Infrastructure**

Pen & Paper Rounds & Processes

Waste Presentation Issues

Limited Business Intelligence & Unoptimised Rounds

Resource Intensive Collection Methods

No InCab System

Inefficient Schedules

Poor Response Times & Poor KPI Performance

Why go Digital? The Drivers for Change in a Refuse & Recycling Service

**Local Authority Budget Pressures**

Best Value & Doing More with Less

Changing Customer Expectations

Climate Emergency

Enabled by New Technologies & Opportunities

Digital Transformation Progress within LSSL

Over the past 6 years, LSSL has introduced a number of IT systems and innovative technologies in order to improve business intelligence, achieve emissions targets, streamline operational delivery and increase customer satisfaction.
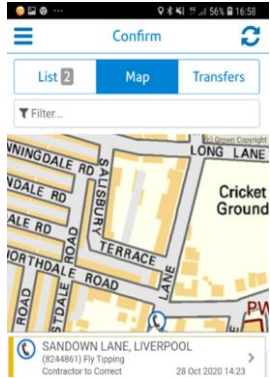
| 2017	2018	2019	2020	2021	2022
LSSL commenced the roll-out of the Confirm Connect mobile working solution. Confirm Connect introduced an end-to-end digital job flow process across all service areas. This replaced the previous paper-based approach, removing double-handling and significantly improving customer response times.	LSSL utilized Webaspx's route mapping & round optimization software to digitize and redesign its street cleansing service. Rebalancing and sequencing the rounds allowed LSSL to generate operational efficiencies without reducing cleansing frequencies.	LSSL implemented Bartec's Collective 'InCab' software on its Refuse & Recycling service. Collective enables LSSL to offset unjustified missed bin enquiries, reducing the high costs associated with return visits and provides live telematics and round status data allowing operational supervisors to remotely manage their crews.	LSSL introduced the Confirm Workzone job scheduling application. Workzone enables LSSL's operational supervisors to schedule work to teams based on real-time location and capacity data. LSSL also adopted an agile working approach to meet the challenges of the COVID19 pandemic.	LSSL implemented SafetyFirst's iAuditor solution in order to digitize its safety inspection and toolbox talks process. Creation of a digital monitoring suite in the refuse collection depot to enable supervisors to track crew progress throughout the working day.	Launch of LSSL's new website In the process of implementing a fleet management system to oversee everything from daily vehicle checks to repairs and maintenance. Introduction of the on-demand 'text to collect' clinical waste service. Underground Refuse Systems & Fill Level Sensors

How InCab Technology Supported the Alleyway Programme
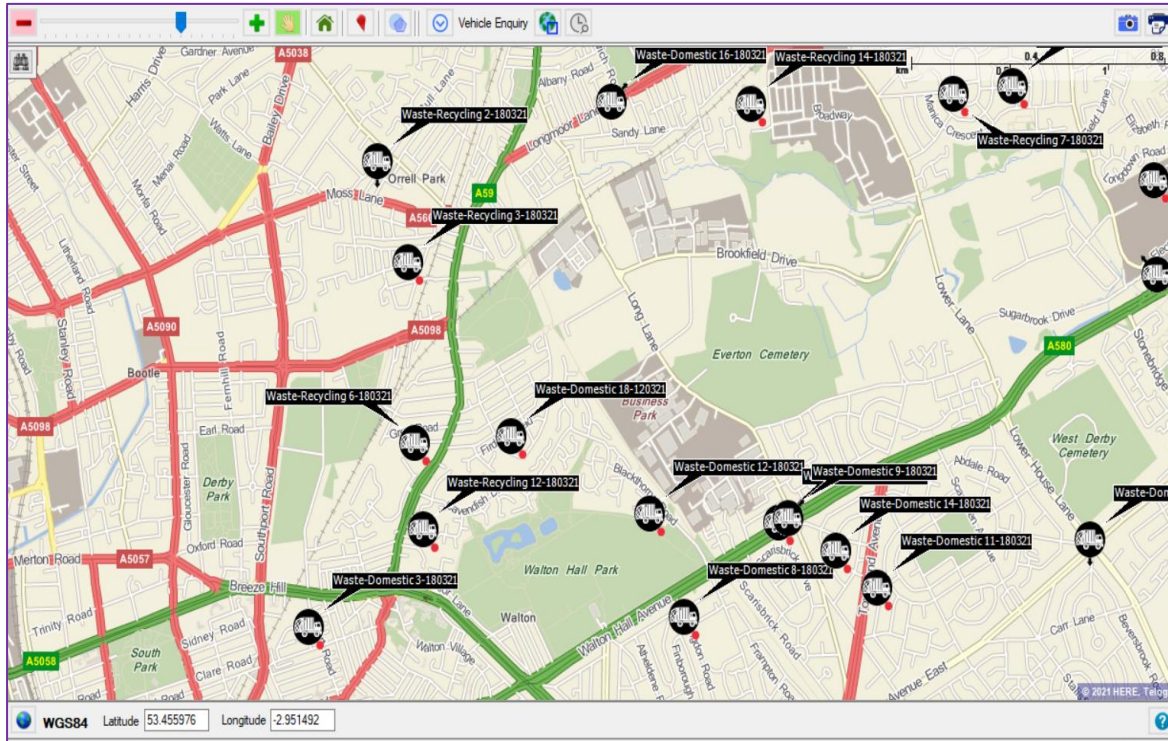
From the monitoring suite, supervisors can:

- Track the crews with live & historical snail trail data
- Access live round completion updates
- View maps & optimise rounds
- Push out messages, notifications and jobs to crews
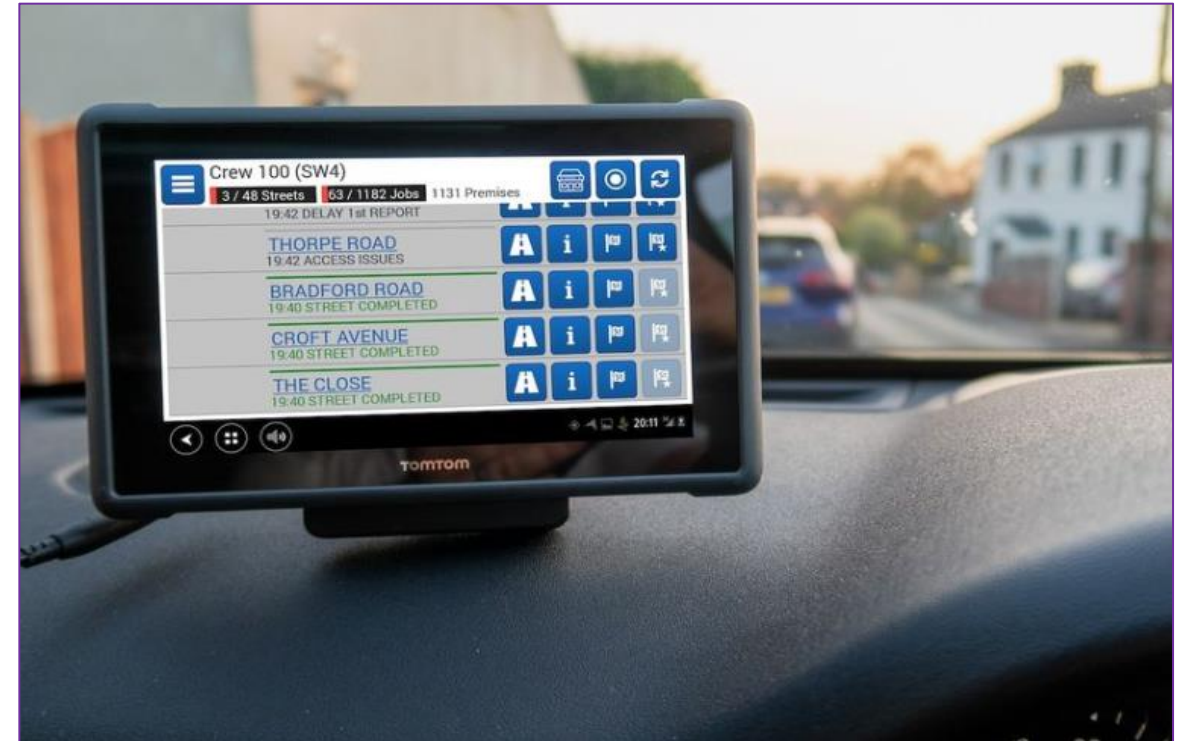
From their InCab units the crews can:

- Navigate round their patches
- Evidence the bins they have emptied
- Report defective containers and fly tipping next to bins for quick resolution by support teams
- Do away with paperwork

Key Benefits Achieved So Far:

- End-to-end digital job flow process, over 40k jobs now assigned and completed electronically each year, including damaged bins, bin deliveries and fly tipping.

- 70k bins electronically reported by the crews as non-presented or contaminated each month, reducing the number of return visits and supporting APSE top quartile performance for missed bins

- Round reduction & optimisation – contributed towards 2.75m of efficiency savings passed back from LSSL to LCC

- Most recently, 12k Clinical waste journeys removed annually through the introduction of an on-demand solution reducing overspend.

Next Steps - Underground Refuse Systems & Fill Sensor Technology

Underground bins installed in 7 locations

Sensors are fitted to the underside of the column inside the bins and are sealed to protect the device from liquids

They work on ultrasonics to take a 360° reading and communicate data back via the mobile phone network

Fill level readings are taken every 20 minutes and data returned every 12 hours unless containers start rapidly filling

URS – Key System Benefits

Rather than visiting on a predetermined schedule, the sensors will tell us how full the bins are currently and then use historical data to predict how quickly they will fill to capacity. This provides the following benefits:

- Maximising the capacity of the containers and number of collections
- Avoiding overfill
- Removing the time and cost of handling missed collection complaints
- Releasing operational hours to deploy staff on other tasks
- Reducing collection miles driven, fuel consumption, vehicle wear & tear
- Providing proof of collection
- Accurate waste volume reporting and recycling performance data
- Asset tracking
- Automated collection route planning and optimisation

How we use URS – Alerts & Urgent Work
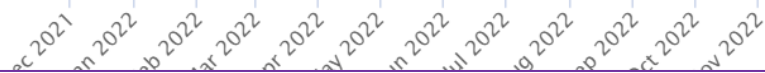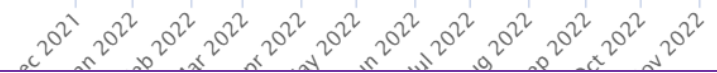
The system displays a Dashboard displaying any bins in urgent need of collection

The system highlights collections due today, tomorrow and in 2 days based on current fill level and historical data

It also shows collections made per day and volume of waste collected

How we use URS – Map of Sites

Sites 5

Search

Sort by
Date when full

FILTER

Show fill up rate

+ ADD SITE

Moss Grove
Moss Grove, Liverpool, England
42%   54%   6 days

Arundel Units
Arundel, Liverpool, L43RS
30%   24%   9 days

Leopold
Leopold Road, Liverpool, L7 8SP England
59%   10 days

Maria Road
Maria Road, Liverpool, L91EQ England
33%   14 days

Battenberg
Battenberg Street, Liverpool, L7 8RS England
29%   25%   19 days

Map   Satellite

The system displays a map of all assets with a sensor fitted

It shows the current fill level at each site split between residual and recycling bins

It also shows when we will need to visit each site based on the current fill level and historical data

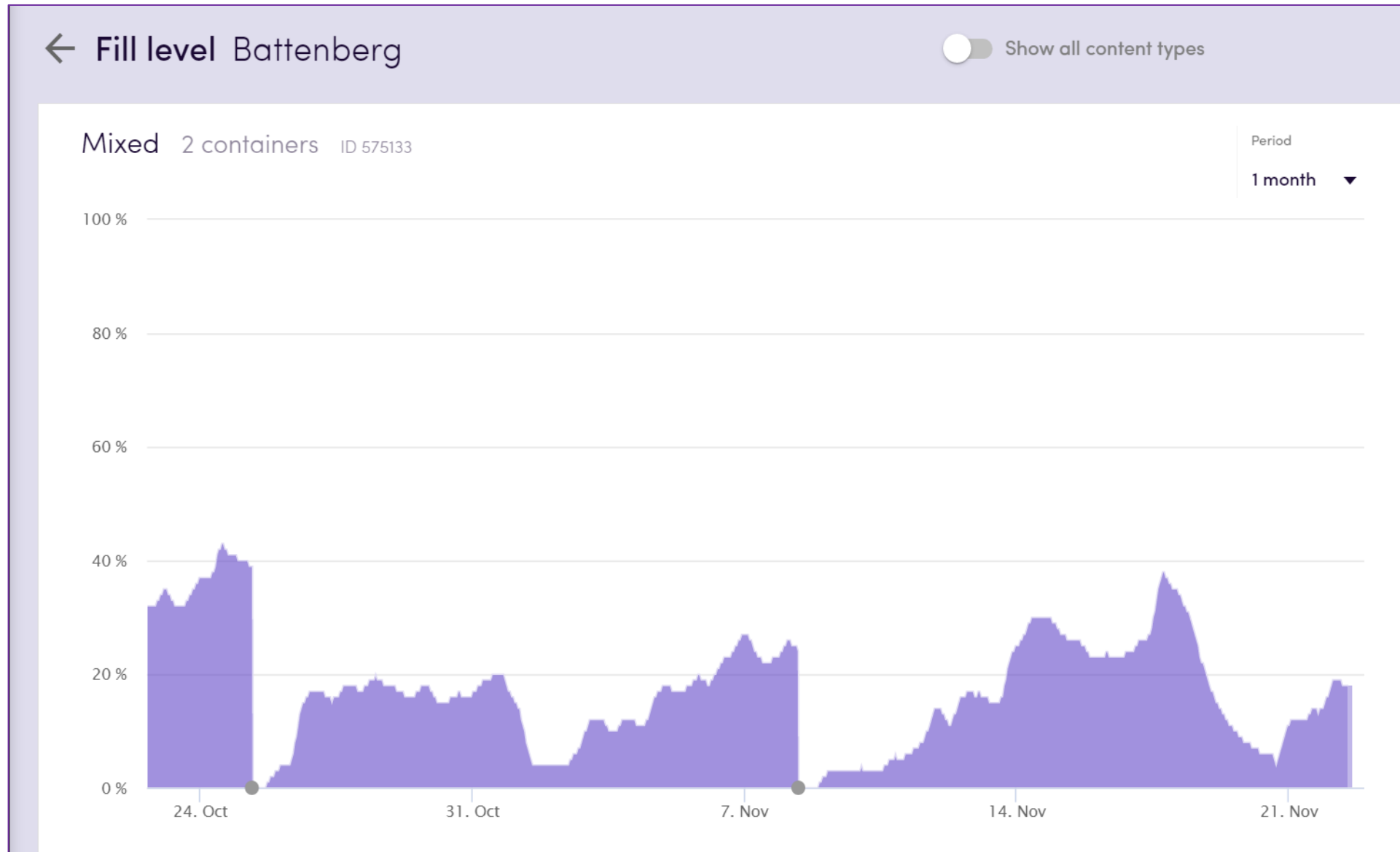# How we use URS – Overview of Historical Collections

The system displays an overview of all collections that have taken place recently

It provides a date and timestamp of when each collection happened

It highlights the volume of waste collected and how full the bin was before the collection took place

How we use URS – Fill Level Reports

The system creates a fill level profile for each site showing how quickly the bin fills up

It also shows how full the bin was when emptied.

We are still getting used to the system but this site is routinely only 25%-40% when we empty meaning we could be going much less frequently!

URS – Future Opportunities

We are only at the start of our journey with URS technology but are beginning to identify future opportunities e.g. Access Control Systems. These provide the following benefits:

- Residents are provided with a unique access card/fob
- The back-office can control who is able to use the bins and which bins they can access
- Resident deposit behavior is captured, allowing us to identify good and bad disposal habits
- Potential to target residents with low levels of recycling participation with communication campaigns
- Opening times for each site can be set and we have the ability to lock the unit when full