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Case study

Collecting litter efficiently and sustainably

City of Doncaster Council

The Challenge

- Improve the efficiency of litter collections from around 2,500 bins

The Benefits

- Over 110 hours saved annually
- Faster action to repair damaged bins
- Reduced carbon footprint from lower mileage
- A better quality of service for citizens

City of Doncaster Council has freed up over 110 hours a year with a new ArcGIS-based workflow for managing litter collections. It is also reducing unnecessary journeys to minimise the council's carbon footprint, while improving the quality of the litter collection service for local citizens.

The Challenge

In the South Yorkshire city of Doncaster there are around 2,500 litter bins on busy shopping streets, in quiet residential areas and throughout parks. Emptying these bins daily, weekly, or twice weekly, and maintaining their condition, is a major undertaking for City of Doncaster Council, involving seven teams and over a dozen vehicles.

For many years, council employees, known as bin runners, received a print out of the bins that they needed to empty in their area. The litter bins were not listed by location, making it easy for the bin runners to miss one or drive routes that were much longer than necessary. In addition, the council used to complete time-consuming, yearly audits of all its bins, to capture data about their condition and record any repairs needed.

The Solution

The entire process for managing litter bins in Doncaster has now been completely transformed using a suite of solutions from Esri's ArcGIS system. Instead of printing paper lists for bin runners, the Street Scene Team at City of Doncaster Council now uses ArcGIS Workforce to allocate up to 4,000 daily assignments to specific bin runners. Using ArcGIS Workforce on their mobile devices, the bin runners can sort the bins by proximity, enabling them to plan their routes more intelligently and reduce their drive times.

Integrated with ArcGIS Workforce is a mobile survey solution, created with ArcGIS Survey123, that allows the bin runners to capture data every time they visit a bin, including information on whether the bin is full, empty, damaged or overflowing. If trade waste is present, images can be taken and passed on to the council's enforcement team. "Bin runners can complete the surveys in seconds, so it has a minimal impact on the time they need to empty their allotted bins in a shift," explains David McDermott, Digital Spatial Developer at City of Doncaster Council.

Initially, bin runners also used an ArcGIS QuickCapture app to improve the accuracy of the council's litter bin data in its asset management system. They could record bins that were not there, bins that were in different places or bins that were on the ground but not in the system. This app was used extensively in the first few weeks to improve street scene data, but is now rarely needed, as all bins have been verified.

Finally, the council has created an ArcGIS Dashboard, known as the Litter Bin Command Centre, which gives supervisors a real-time overview of litter bin collections and the data to inform changes to the service. As McDermott explains, "Our ArcGIS Dashboards give the Street Scene Team the opportunity to evidence its decision making, change the frequency of collections or install larger bins where needed. The dashboards also help supervisors to monitor and resolve issues, such as bins that cannot be emptied due to access obstructions."

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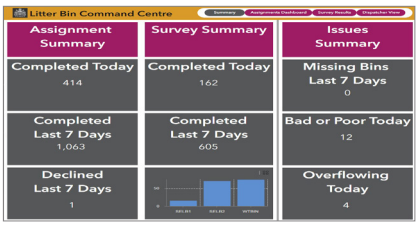
> “ArcGIS has given us the space and the capacity to look at other more strategic parts of the operation.”

Stefan Boodt, Street Scene Supervisor, Northwest Area, City of Doncaster Council



Supervisors can get live, daily statistics at a glance from the Litter Bin Command Centre

The Benefits

Over 110 hours saved annually

By eliminating the need to conduct an annual audit, over 110 hours of staff time have been freed up every year, which can be spent on more value-adding activities to improve services. Thirteen people used to spend around nine days conducting the audit, during a six-week period, whereas now audit data is collected daily and is visible in real-time. “ArcGIS has given us the space and the capacity to look at other more strategic parts of the operation,” says Stefan Boodt, Street Scene Supervisor, Northwest Area, City of Doncaster Council.

Faster action to repair damaged bins

With the live capture of data, managers can see which bins have been emptied and which bins need repair, at any time. Equally, when local councillors report issues with bins, supervisors within the council’s Street Scene Team can look on the ArcGIS Dashboard, see which bin runner is nearest and quickly direct them to check the bin in question for damage, overflow or misuse. “ArcGIS makes our operations more streamlined,” Boodt says. “If a bin is damaged, we can action it significantly quicker.”

Reduced carbon footprint from lower mileage

Using the evidence collected with ArcGIS, the Street Scene Team can identify opportunities to reduce the frequency at which it empties bins and change bin types to eliminate unnecessary journeys and reduce the council’s carbon footprint. At one location, City of Doncaster Council has changed the type of bin collected by a specialist refuse collection vehicle (RCV) to a regular double bin which can be incorporated into an existing route. This avoids sending the RCV on a single 20-minute round trip, thereby saving around 260 miles of travel and eight and a half hours of bin runner time per year.

A better quality of service for citizens

Since the introduction of the ArcGIS-based system, the number of complaints about missed bins has been steadily declining because bin runners know exactly where to go. “In the city centre area, we used to get eight to twelve reports of missed bins per week, but now it is rare to even get one,” Boodt says. “We are experiencing similar improvements in other regions too and providing a better quality of service across the city than we were this time last year.”

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