esri UK

Case study

Tackling London's costly fatberg crisis

Thames Water

The Challenge

- Reduce blockages in London's sewers caused by fat, oil and grease

The Benefits

- An end-to-end process that is successfully reducing fat, oil and grease disposal into sewers
- Accurate, consistent data collected in the field to support education and potential prosecutions
- Clear insight into the status of the programme from real-time dashboards and analysis
- A blueprint for new GIS-led business processes in the future

It costs up to £1 million a month to clear blockages in the Thames Water catchment area, many of which are formed from congealed fat, oil and grease (FOG). Now, Thames Water is tackling the cause of these fatbergs by using a range of ArcGIS solutions to encourage food businesses in London and the Thames Valley to dispose of fat, oil and grease more responsibly.

The Challenge

Every year, Thames Water clears about 80,000 blockages from its underground sewerage network, of which as many as 40% are caused by FOG A significant proportion of the fatbergs that are formed from FOG waste in Thames Water's network can be traced back to 43,000 restaurants and food retailers in London and the Thames Valley. Many of these businesses do not have effective FOG disposal practices and are therefore in breach of UK regulations.

Given the enormous cost of clearing fatbergs, Thames Water decided to launch a proactive programme of education to make food businesses in London aware of their legal obligations and encourage them to dispose of their FOG more responsibly. The utility needed to be able to monitor the progress of this new Network Protection Programme, ensure a consistent approach with all food businesses and collect data to support any prosecutions as a measure of last resort.

The Solution

Thames Water's Technical Information team collaborated with Esri UK's Professional Services team and members of the Network Protection team to build, develop and maintain a solution for the company's new Network Protection Programme. The complete, end-to-end process was created using the company's pre-existing ArcGIS Enterprise and ArcGIS Online platforms, utilising out-of-the box-functionality with no additional software licensing costs.

- Firstly, Thames Water uses ArcGIS Desktop and the Data Interoperability extension for ArcGIS to analyse the locations of fatbergs and flooding incidents and identify hotspots where education initiatives should be prioritised.
- The results of this analysis are then presented on ArcGIS Online in a visual format, allowing Thames Water's employees to see blockage incidents and risks in a visual format, on an interactive map, for the first time.
- Twelve investigators are allocated batches of establishments, in the priority areas, and use Survey 123 for ArcGIS on mobile devices to record details about their visits to each individual business, collect data about current FOG management practices, so that this can be monitored over time and note details about what advisory letters they left with owners.
- When investigators make follow-up visits, they use Explorer for ArcGIS to view existing records on mobile devices and Collector App for ArcGIS record any updates, such as the installation of grease traps.
- If a blockage results in a flood or other issue, Thames Water uses the Workforce App for ArcGIS to direct nearby investigators to the affected area, so they can visit food premises nearby that may have directly contributed to the emergency.
- Back in the office, programme managers use an Esri Operations Dashboard to get real-time oversight of investigators' progress, including the number of visits undertaken per premise.

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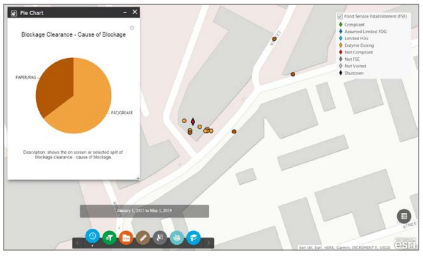
> “ArcGIS is an important tool that is helping us to change behaviour and reduce the amount of fat that is discharged into London’s sewers”
>
> Lauren Makowski, Network Protection Manager, Thames Water



ArcGIS provides clear visibility of the locations of blockages and food businesses with non-compliant FOG disposal practices

The Solution (continued)

- Finally, Thames Water’s analysts use ArcGIS Desktop and the Data Interoperability extension for ArcGIS to model where food businesses have adopted better FOG disposal practices.

“We created a unique and industry-first tool,” says Natalia Syrovatskaya, Data Analyst at Thames Water. “The collaborative approach, working with Esri UK’s Professional Services team, ensured maximum knowledge transfer and produced great results, delivered effectively and expediently.”

The Benefits

Increased adoption of correct FOG disposal practices

The ArcGIS-driven process is having a significant impact on FOG management across the Thames Water region. During the initial pilot, three investigators visited 1,000 food businesses and found that 90% of them did not have effective grease management in place. Following these findings, the team was expanded to twelve, and in 2018 visited over 5000 premises. ArcGIS analysis reveals that if visited three times, 50% of food businesses changed their behaviour and instigated more appropriate FOG disposal practices.

Anticipated reductions in sewer clearance costs

While this initiative is one of several measures that Thames Water is taking to improve the condition of sewers, the organisation believes that the ArcGIS-driven programme will help it to reduce sewer clearance costs. Lauren Makowski, Network Protection Manager at Thames Water says, “ArcGIS is an important tool that is helping us to change behaviour and reduce the amount of fat that is discharged into London’s sewers. This Network Protection Programme, together with Thames Water’s other sewer management initiatives, will undoubtedly contribute to an improvement in the condition of London’s sewers in the long term and reduce the amount of money spent on clearing blockages.”

Efficient collection of accurate data

Using Esri solutions, Thames Water now has a complete, end-to-end process for tackling the mounting fatberg challenge in a highly efficient way. Investigators can work more productively in the field and collect consistent, accurate data that can be used as evidence in prosecutions if necessary. Furthermore, ArcGIS directs them to priority areas so they can focus their time and resources where they will have the greatest impact. Managers can monitor investigators’ progress in real-time and manage the overall programme more effectively, while analysts can study how changes in behaviour have impacted changes in network performance and use this information to monitor the success of the programme.

Valuable guidance from ArcGIS experts

The expertise and guidance provided by Esri UK’s Professional Services team helped Thames Water to build a GIS-led process that precisely meets the needs of the business, as Chris Hinton, Asset Performance Insight Manager at Thames Water explains. “Esri UK’s Professional Services team made us aware of the full range of capabilities of ArcGIS and showed us how we could make best use of out-of-the-box functionality in the ArcGIS platform to achieve our goals, without custom development,” he says. “The consultants have shown us what is possible and we can now put this knowledge to use in other projects too.”

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