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Case study

Adopting an intelligence-led approach to highways maintenance

Ringway

The Challenge

- To improve the efficiency of cyclical maintenance services by making more intelligence-led planning decisions

The Benefits

- £250,000 freed up for reinvestment
- Improved operational efficiency in the field
- Informed, collaborative decision making
- Live information for intelligent asset management

Ringway has significantly improved the cost efficiency of its highways maintenance activities by using ArcGIS to collect and analyse data on services such as gully clearance. In one county alone, the company's use of ArcGIS has freed up £250,000 of budget for other public services, halved the time required for data collection in the field and enabled it to work more collaboratively with its client.

The Challenge

Ringway is responsible for looking after over 50,000 kilometres of roads in the UK. Working on behalf of local and strategic highway authorities, including National Highways and Transport for London, it undertakes a range of specialist highway maintenance services ranging from clearing gullies and filling potholes to managing vital highways infrastructure and assets.

The Solution

Ringway used Esri's ArcGIS suite of tools to build a series of apps, which were initially deployed in Hertfordshire and have since been rolled out to other parts of the country. All the ArcGIS solutions were developed through a collaborative internal development process, involving GIS professionals from Ringway Hertfordshire, the Ringway ICT department, operational teams from other Ringway divisions and clients.

Field-based teams in nine Ringway divisions currently use ArcGIS Field Maps to collect data on their tablets about cyclical services such as gully clearance, grass cutting and bin emptying. With just a few clicks, employees can enter data while doing their jobs, so no additional time or cost is associated with data collection. In the case of gully clearance, crews record whether each gully is 25%, 50%, 75% or more full, and this information is visible instantly on a centralised dashboard, hosted on ArcGIS Enterprise. Managers can then monitor the progress of gully clearance activities and ensure that client-specific key performance indicators (KPIs) are being met.

Using ArcGIS Pro, Ringway then analyses the geo-referenced data collected and other external data, to gain insight into where and when services are most needed. Returning to the example of gully clearance, Ringway analyses gully data alongside data on flood zones and public reports of floods. If a gully is typically full of silt and in a flood plain, it is moved to a six-month cleaning regime. If it is historically always nearly empty and no issues have been reported, it is moved to a two-year cycle. In this way, Ringway can ensure time and money isn't wasted cleaning gullies at a frequency that is unwarranted, while providing regular cleaning for gullies that need it and building resilience into the asset management regime so that severe weather events and hotpots are proactively managed to benefit residents.

Ringway has also created a Virtual Operations Hub based on ArcGIS Online that brings data from multiple sources together in one place, in an easy-to-view format, for the first time. Shared with clients, the fully interactive, map-based solution gives everyone the same accurate view of highways assets, planned and historic works and relevant external data.

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> “ArcGIS Online gives us and our clients added intelligence so we can all plan our activities in a smarter, location-based way to keep the road network free of disruption.”

Rob Payne, Service Development and Communications Manager, Ringway Hertfordshire

Ringway’s Virtual Operations Hub, built with ArcGIS Online, showing the status of gullies

The Benefits

£250,000 freed up for reinvestment

By conducting geospatial analysis with ArcGIS, Ringway has identified cost efficiencies of hundreds of thousands of pounds that its clients across the UK can gain by adopting a more intelligence-led approach to planning cyclical maintenance services. In Hertfordshire, where Ringway cleans over 100,000 gullies a year, the team has been able to move 19,000 assets from an 18-month to a 24-month gully emptying cycle. Combined with the operational efficiency highlighted below, this has allowed £250,000 of budget allocated to gully clearing to be released to fund other council priorities, in this county alone.

Improved operational efficiency in the field

As ArcGIS Field Maps is easier to use than Ringway’s previous mobile data capture solution, the time required to collect data in the field has halved. Consequently, field-based teams can now complete more tasks in a working day. Rob Payne, Service Development and Communications Manager for Ringway Hertfordshire, has observed that the six gully clearing crews working in Hertfordshire each clear two extra gullies per working day, as a result of using ArcGIS Field Maps. “We can clear around 1,320 more gullies in Hertfordshire, each year, in the same time, with the same resources,” he estimates.

Informed, collaborative decision making

The development of the Virtual Operations Hub has enabled Ringway and its clients to collaborate more effectively and make more informed decisions. With visibility of the same shared data, Ringway and council employees can see opportunities to coordinate activities and deliver programmes efficiently. They can, for example, deliver new road works in tandem, which is more cost effective for the client and also more convenient for road users. “ArcGIS Online gives us and our clients added intelligence so we can all plan our activities in a smarter, location-based way to keep the road network free of disruption,” Payne says.

Live information for intelligent asset management

Using ArcGIS Dashboards, managers at Ringway can see progress against targets, in real time, and move crews around to help achieve deadlines. They can see how many potholes are awaiting filling and where road surfaces are degrading quickest and use this live information to make more intelligent decisions about how best to manage assets on behalf of clients. “Our ArcGIS Dashboards give managers live information so they can keep a finger on the pulse of our services,” Payne explains. “I can now answer people with clarity and surety.”

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