

Saving £13 million while improving car journeys

Highways England

The Challenge

- Improve visibility of project information across multiple directorates

The Benefits

- £13 million cost saving from one initiative
- Ongoing operational efficiencies
- Reduced disruption for road users
- Effective collaboration with partners
- Improved health and safety



In less than two months, Highways England developed an Esri ArcGIS web app in-house that gives its 4,700 employees a clear visual picture of all current and planned roadworks. The solution is now creating cost savings and operational efficiency improvements for Highways England, while at the same time improving journeys for road users and providing more transparent information for partners.

The Challenge

Every year, Highways England manages hundreds of separate projects along 4,300 miles of motorways and A-roads, ranging from day-to-day maintenance to major road widening, bridge strengthening and tunnelling schemes. These projects are managed and undertaken by different specialist teams across multiple directorates.

Employees typically had no visual overview of the road projects that teams in other directorates were planning and no easy way of discovering where and when these projects would take place. As a result, it was difficult for them to coordinate their activities and schedule roadworks optimally to take advantage of potential cost efficiencies, as well as minimise inconvenience for road users.

The Solution

To address this challenge, Highways England decided to develop a map-based app to display all current and planned roadwork projects, from all directorates and all six regions of England. Starting in the South East Region, the organisation used Esri's ArcGIS Desktop solution to plot the locations of roadworks on interactive maps and include relevant project details. It also used ArcGIS Desktop to draw in roadworks along the actual curved shape of roads and added a time-slider function to allow users to view projects by date.

After developing this prototype solution, Highways England seconded one member of staff to the project from each of its six regions, for just one month, and the app was expanded to include all current and planned roadworks across all directorates for the whole of England. At the end of the month, the solution was published on ArcGIS Online using ArcGIS Web AppBuilder and made available to key teams in all regions. A simplified version of the app was also produced, with reduced functionality, and published on Highways England's intranet using ArcGIS Enterprise where it can be viewed by all of the organisation's 4,700 employees. The launch of the solution received very positive feedback, with one user commenting that, "It is probably the most useful thing I have received in eleven years at Highways England."

Critically, the development of this solution was entirely cost neutral, as it was built in-house by Highways England's own staff using the organisation's existing ArcGIS license. "All the tools we needed for our solution were provided out-of-the-box as part of the ArcGIS platform," says Chris Spencer, South East Lead for Intelligence and Performance Analysis at Highways England. "We built the solution, by ourselves, without needing any expensive or time-consuming software development, and that is something that we are very proud of."

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“ ArcGIS is transforming the way that Highways England shares information internally and creating opportunities for significant cost efficiencies. ”

Chris Spencer, South East Lead for Intelligence and Performance Analysis, Highways England



ArcGIS displays the locations, type and sequence of planned highway works

The Benefits

Multimillion pound cost savings

The ArcGIS web app gives Highways England a clear oversight of all current and proposed projects, across all directorates, for the first time, which enables teams to better understand the wider implications of different schemes. Using the solution, employees identified that planned works to improve technology on an A-road in Berkshire would be rendered unnecessary by other traffic management initiatives that were being introduced on other neighbouring roads by different teams. As a result, Highways England was able to cancel the technology project, making an internally-verified cost saving of £13 million.

Ongoing operational efficiencies

Highways England now expects to be able to make ongoing operational efficiencies by using the ArcGIS web app to schedule programmes of work much more effectively. For example, in one recent initiative, Highways England saved £250,000 by rescheduling line-painting on a section of the M4 so that it could take place when it was due to be resurfaced later that year. “ArcGIS is transforming the way that Highways England shares information internally and creating opportunities for significant cost efficiencies,” Spencer says.

Reduced disruption for road users

Use of the new ArcGIS web app is also proving instrumental in helping Highways England to minimise unnecessary disruption for road users. In the example above, the decision to reschedule line-painting on the M4 avoided the need for two sets of road works on the same stretch of motorway and therefore reduced inconvenience for customers. Spencer comments, “Many factors influence people’s experience on the roads, but I believe our use of this ArcGIS web app will contribute to improvements in the experience had by road users and, in time, improve Highways England’s KPIs for customer satisfaction.”

Effective collaboration with third parties

Highways England can now work more transparently and effectively with partners, by giving them access to its ArcGIS web solution. For instance, in the South East Region, Highways England is using the ArcGIS web app to share information with the Kent Corridor Coordination Group, a partnership with Kent County Council, Medway District Council and other local organisations. The partners use the app to take into account Highways England’s plans when scheduling smaller roadworks on nearby B roads or in urban areas and planning diversion routes to improve traffic flow around the local area.

Improved health and safety on the roads

Over time, Highways England expects its use of the ArcGIS web app to contribute to improvements in employee health and safety from fewer roadworks. “Safety is a number one priority for Highways England,” Spencer explains. “When we avoid the need for works or combine works together, we reduce the number of days when workers are exposed to danger on the road. When we reduce time on roads, we reduce risks.”

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