## Making the best decisions in a national crisis

# 42 Engineer Regiment

### The Challenge

- Allow critical data to be shared across multiple agencies
- Establish the best locations for temporary hospitals and testing sites

### The Benefits

- Effective multi-agency collaboration
- Well-informed, objective recommendations about the best locations for hospitals and test centres
- Rapid data collection in the field
- Accurate information for government communications

**Throughout the coronavirus pandemic, 42 Engineer Regiment (Geographic) provided a single source of trusted data about all aspects of the national healthcare crisis, as well as specialist geospatial data analysis services. In fulfilling this role the Regiment helped the Government, local authorities and healthcare organisations to make the best possible decisions to protect the NHS and save lives.**

### The Challenge

When COVID-19 reached the UK in early 2020, there was a pressing need for shared data to inform critical decisions. 42 Engineer Regiment (Geographic) was therefore deployed to provide policy makers with a Common Operating Picture (COP) of the rapidly evolving healthcare emergency.

Over a thousand people were involved in planning the UK's response to the pandemic – from the Cabinet Office and national government, healthcare agencies, local authorities, the police and military. 42 Engineer Regiment needed to provide a platform for sharing a single, trusted version of the truth across all these agencies. It also had to be able to analyse this vast reservoir of data, to help the Government make the best possible decisions, including where to set up NHS Nightingale Hospitals and COVID-19 testing centres.

### The Solution

Building on its experience of using geospatial information system (GIS) technology in humanitarian efforts, 42 Engineer Regiment created a secure, web-based data viewer using Esri's ArcGIS Online solution. The skilled team of geospatial analysts identified key data sets to share via the viewer and liaised with numerous organisations to unblock access to additional data, previously not available in the public domain.

Using this invaluable resource, 42 Engineer Regiment then began undertaking a vast amount of multi-criteria decision analysis (MCDA) to give Government policy makers the information they urgently needed to help them make decisions. In particular, the Regiment identified potential sites for COVID-19 testing centres, taking into account local population figures, car parking, transportation access, the size of the site and distance from residential areas. It also evaluated the optimal locations for NHS Nightingale Hospitals, how best to evacuate COVID-19 patients from remote areas such as the Outer Hebrides and how to move mobile testing teams around the country as quickly as possible.

In tandem, the Regiment used Esri's mobile survey solution, Survey123 for ArcGIS, to enable accurate, consistent data to be rapidly collected in the field. Military Assessment Teams (MATs), comprising engineers, medics and logistics experts, used the app when visiting potential sites for Nightingale Hospitals to collect information on everything from potential bed capacity to the feasibility of laying oxygen pipes. All the data was uploaded immediately and automatically from the field to the central viewer, giving planners instant access to the information they needed to make rapid decisions about whether or not to use this site.

42 Engineer Regiment also provided vital geospatial analysis support to the Joint Biosecurity Centre and used Esri's ArcGIS Pro to produce maps showing regional variations in COVID-19 cases and deaths. These maps were used in national COVID-19 briefings and pioneered the use of a colour palate that was suitable for people with colour blindness.
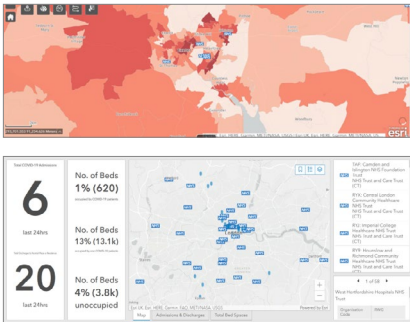
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> ❝ The online GIS platform helped lots of different organisations to work together to make the big decisions about how the UK responded to the pandemic. ❞
>
> Captain Luke Parker, Strategic Command



Data about the health emergency, shared via ArcGIS Online

## The Benefits

### Effective multi-agency collaboration

*42 Engineer Regiment succeeded in creating the UK military's first ever national data platform for sharing real-time, on-demand situational awareness and analysis across multiple agencies. Used by over 1,000 people from the Cabinet Office, local and national government, police, fire service and military, the data viewer improved collaboration and created a single source of data that everyone could trust during the national emergency. According to Captain Luke Parker, a geospatial intelligence expert from Strategic Command, "The online GIS platform helped lots of different organisations to work together to make the big decisions about how the UK responded to the pandemic."*

### Well-informed, objective decision making

*The multi-criteria decision analysis (MCDA) that 42 Engineer Regiment was able to carry out proved critical to the process of shortlisting the most viable and appropriate sites for NHS Nightingale Hospitals and COVID-19 test centres. The Regiment's geospatial analysts were able to accurately pinpoint the locations that would serve the largest proportion of the population, with the required transport access and resources. "Our approach enabled us to provide a data-driven and auditable way of picking the best sites for NHS Nightingale Hospitals and COVID-19 testing centres, based on an objective assessment of the location, facilities and potential of each site," Captain Parker says.*

### Rapid data collection in the field

*The use of a mobile data collection app significantly sped up the process of verifying the suitability of shortlisted locations for NHS Nightingale Hospitals and COVID-19 testing centres, as well as potential overflow morgues. Data collected in the field was instantly visible to everyone, across all agencies involved, within minutes. This speed supported faster decision making and enabled the construction of hospitals to commence with utmost haste, at a time when COVID-19 cases were rising at an exceptional rate. "Using a mobile GIS app for data collection was an effective way for us to confirm the situation on the ground and share this information rapidly," says Staff Sergeant Scott Vickery, 42 Engineer Regiment.*

### Accurate information for government communications

*Trusted by Government, the data viewer was used to produce a wide range of maps for communicating with the general public. Many of the analysis maps created by 42 Engineer Regiment were shared in the media and used on television as part of local and national briefings. 42 Engineer Regiment was, for example, able to conduct research and identify that 96% of the UK population are within 10 miles of a vaccine site. This information was shared by the Government, reassuring people that they would be able to access a vaccine, when they become eligible.*

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