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Supporting and monitoring tree-planting in Cornwall

Cornwall Council

Cornwall Council has transformed its tree management processes with flexible, easy-to-build ArcGIS apps. Whether it is monitoring the spread of ash dieback disease, watering young saplings or planning locations for new trees in its Forest for Cornwall initiative, the local authority can now operate more cost-effectively and make better decisions to maintain and expand Cornish tree-planting.

The Challenge

- Improve the management and development of Cornwall's urban and rural tree assets

The Benefits

- Cost effective management of ash dieback disease
- More efficient maintenance of young trees
- Improved planning for canopy expansion
- Flexibility to meet user requirements

The Challenge

From native trees such as English oaks and Scots pine to non-native exotic trees including sweet gums, trees of all species play an important role for Cornwall, helping to mitigate the impacts of climate change and improving residents' wellbeing. Cornwall Council manages thousands of mature trees on its land, while also proactively planting and nurturing hundreds of new trees every year, as part of its carbon-absorbing Forest for Cornwall programme, to enrich and expand tree canopy across the region.

Like other landowners in the UK, the council needed to respond to the rapidly spreading ash dieback disease and assess the condition of ash trees. At the same time, it needed a more effective way to find and assess potential locations for new trees and then manage the maintenance and watering of young saplings for at least the first three years after planting.

The Solution

Cornwall Council had been using Esri's ArcGIS technology for more than two decades and the in-house geographic information systems (GIS) team had the skills and software in-house to transform the council's tree management processes.

The GIS team started by using ArcGIS Field Maps to build a mobile solution for inspecting ash trees while in leaf when signs of disease are most evident. Around 25 tree surveyors used this app in the field to locate trees requiring assessment and to record photos and information about canopy condition. All the data collected in the field was instantly uploaded to the council's on-premise ArcGIS Enterprise system and used to update an in-house tree management application.

Next, the GIS team developed a broader tree management solution for use by the council's Forestry Service and separate Forest for Cornwall project team. Spreadsheets of potential planting locations and the locations of young, recently planted trees were transferred to ArcGIS Online, creating a resident-friendly, real-time and editable map of planting opportunities across Cornwall. A series of mobile apps were then built with ArcGIS Field Maps allowing around 13 people within the Forestry Service and Forest for Cornwall teams, and their prime contractor Cormac, to assess planting locations in the field, capture data on tree planting and record tree watering visits.

The flexibility of the ArcGIS system enabled the GIS team to configure the tree management apps slightly differently for the Forestry Service and the Forest for Cornwall initiative, to reflect each team's specific requirements and preferences and to minimise complexity. "Council officers can access the maps and data appropriate to their own role, which keeps the apps focused and simple to use," explains Councillor Martin Worth, portfolio holder for customers at Cornwall Council. "Having been a managing consultant of emerging technology for a UK mobile network back in the early 2000s, it is great to see now how uses for GIS mobile systems have developed and that Cornwall Council is playing a leading role."

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>
> Councillor Martyn Alvey, portfolio holder for environment and climate change at Cornwall Council

Example of a tree with ash dieback showing considerable leaf loss located over a popular cycle route

The Benefits

Cost effective management of ash dieback disease

ArcGIS has played a pivotal role in helping Cornwall Council to manage more than 745 ash trees and carry out in-leaf inspections of trees near public spaces where falling dead branches could have posed a risk to public health. "Without ArcGIS, we would not have been able to undertake the work requirement for ash dieback inspections, something which is vital for our tree risk compliance," says Councillor Martyn Alvey, portfolio holder for environment and climate change at Cornwall Council.

More efficient maintenance of young trees

Through the use of ArcGIS, Cornwall Council has improved the efficiency of its maintenance services for over 1,200 young trees, cared for by the Forestry Service and Forest for Cornwall teams. The ArcGIS apps reinforce an efficient workflow and enable tasks to be shared more evenly throughout teams, reducing the workload on individual officers. The council also has an auditable digital record of its tree planting and early life maintenance, which enables it to improve its reporting to grant providers.

Improved planning for canopy extension

Cornwall Council will use ArcGIS to inform the planting of up to 200 trees a year by the Forestry Service, plus an estimated 400 further trees under the Forest for Cornwall programme in 2024-26. It now has a better understanding of which trees have been planted, in which locations and, over time, will be able to see which species grow best in the Cornish climate. Councillor Alvey says: "We can ensure we are improving biodiversity and helping Cornwall reach its goal to become carbon neutral, by planting the right species in the right place. We can also ensure trees of the same species are well spaced out, so if another disease like ash dieback hits, its spread can be slowed."

Flexibility to meet user requirements

As new demands come in from the Forestry Service and Forest for Cornwall teams, the council's GIS team is able to respond quickly, adapting or extending the functionality in the ArcGIS apps. Councillor Worth says: "The requirements keep growing and changing. Because the ArcGIS solutions we created are not heavily coded and are essentially commercial off-the-shelf products, we can be very flexible and use agile development to deliver exactly what is needed."

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