

Tree management the 21st-century way



As we move into summer, trees – whether in our bustling city centres, leafy suburbs or rural villages – are looking at their most vibrant. It is easy for the public to take the presence of healthy trees for granted – they are such a familiar part of our national landscape and communities.

Our arboreal natural assets require the same careful year-round management as all other physical assets. Readers who work for local authorities as either officers or contractors will know all too well the increasing priority being given to the recording and monitoring of the quality, volume and type of work being carried out.

Getting Tree SMART

New Forest-based company, KaarbonTech, has developed Tree SMART, a tree management system that records and accesses data using Android and iOS devices. The system enables data to be entered whether the user is sitting at a desk, in a vehicle, in a park or in a field. The teams of arborists at South Gloucestershire and Gloucestershire Council have been using the system and have agreed to share their experience. The software uses Ordnance Survey and other council GIS data sets to provide accuracy and alignment to other systems in use. Phil Dye, arboricultural officer at South Gloucestershire Council, said, "I was impressed how automated the process could be. Traditionally devices to collect this information have been clumsy and slow but this was not the case."

KaarbonTech has designed the software around the requirements of arborists. By removing barriers to sharing data and enabling wireless communication the team were able to better co-ordinate work programmes. Tree SMART is able to integrate with existing systems so that previously held tree preservation data is both retained and enhanced with the addition of GIS location data.

The software records the health and vitality of the tree along with its life stage e.g. newly planted, young, semi-mature, over-mature or veteran. The range of service requests that can be generated include, but are not restricted to, planting, felling and removal of suckers. Pest and disease control can be captured, as can application of fertiliser or installation of a cable brace.

In addition, the team of arborists at South Gloucestershire have been able to update and view the following fields of information using the system:

- Automated calculation of Root Protection Area (RPA).
- Accurate and visual representation of the crown of a tree against the mapping background. Thereby providing enhanced perspective and identifying highway overhang issues and property infringement.
- Species recording now able to be accompanied by photographic and video inspection verification.



Tree crowns on map.

The CAVAT cash valuation, which uses criteria-based formula to determine the monetary value of tree stock, is able to be integrated into the system, which saves the team having to enter data into two different systems and automates the cash valuation based on the user's response to a series of questions.

Growing results

The Tree SMART system builds an easily accessible history of maintenance and inspections records which enables officers to evaluate tree conditions across the area and use visual markers to record and manage safety issues.

The location and size of tree groups can be plotted by fingertip using a touchscreen and viewed at differing scales by zooming in or out according to the user's requirements, all while working offline.

Simon Penfold, arboricultural officer, South Gloucestershire Council, explains, "The simplicity of reporting allows us to quickly identify trees in need of maintenance and allocate them to one of the team.

This reduces the risk of injury to the general public through poorly maintained trees."

The inclusion of pick lists is designed to save time. For example, once the arborist has entered either the first three letters of the species name or provided a brief description, the system will generate a tailored list from which to select. The ability to easily export and share data helps to improve performance monitoring and achieve key performance targets. An additional helpful spin-off is the ability for officers to be able to respond more quickly to enquiries from councillors or the public about specific trees.

Ref	Species	Height (m)	Age Class	Condition (Physiological and structural)	Recommendations	Priority for works	Resurvey
1	Common Ash (Fraxinus excelsior)	2.82	Young	Good	None	3	
2	Populus spp (Populus sp)	4.8	Semi-Mature	Poor	Fell	2	
3	Fraxinus excelsior (Common Ash)	2.58	Semi-Mature	Good	None	3	
4	Common Ash (Fraxinus excelsior)	7.44	Over-Mature	Poor	Fell	4	
5	Common Ash (Fraxinus excelsior)	5.29	Over-Mature	Poor	Fell	5	
6	Malus domestica (Domestic Apple)	2.81	Over-Mature	Poor	Over	3	
7	Fraxinus excelsior (Common Ash)	4.7	Young	Good	None	4	

Practical to use

Time previously lost making phone calls or unnecessary journeys has been reduced. All members of the team have been able to access accurate data and allocated work plans wherever their location. The handheld devices have proved easy to manage outdoors and the uploading of data has been quick and accurate.

The key uses that emerged were:

1. Route navigation takes the teams to the exact location.
2. On site the use of colour markers and easy filtering made it simple to understand the trees requiring work, so saving time.
3. The fact that the system can be used offline and changes simply uploaded once reconnected to the internet meant that lack of mobile coverage was not a hindrance.
4. No more confusion over work boundaries as clear visual display and accurate location data provide clarity.

21st-century toolkit

Mark Entwistle, Managing Director of KaarbonTech, explains, "We view trees as important assets which deserve to be managed, maintained and enhanced. Technology has a positive role to play in managing both man-made and natural assets.

"The ability to inspect group or individual trees with full colour OS mapping, generate automatic valuations and root protection areas is a real step forward. Harnessing technology to improve data recording and analysis of tree stocks is good news for both arborists and the trees they manage."

The skills of the 21st-century arborist look likely to be a combination of the traditional and the technological. The smartphone and tablet seem set to become an essential part of the arborists' toolkit along with rope, harness and chainsaw.

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