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Sweeping clean in Walsall

As the ability to analyse, cross-reference and share diverse datasets becomes ever more essential, Nicola Davies reports on award-winning software that is helping Walsall Council do just that … with some surprising results

Managing drainage and water flow into roadside gullies may seem one of the more traditional and perhaps low-tech roles performed by local government. In fact, the reverse is true: twenty first century highways asset management is high-tech, digital and mobile.

The winner of the 2014 Association of Geographic Information (AGI) award for Best Use of Geospatial for Business Benefit was a highways asset management software package developed by KaarbonTech (www.kaarbontech.co.uk).

Known as 'Gully SMART' the software system uses Ordnance Survey geographical data sets to map and monitor drainage networks and other local authority assets and can be used on handheld Android and iOS devices.

The Dorset-based company designed the software specifically to enable highways staff to combine the use of geographic location data with environmental data sets such as flood zones. This approach has enabled those teams to devise proactive management strategies based on clear data.

The AGI award judges recognised the results achieved in a joint project conducted by KaarbonTech in association with Walsall Council (https://www.walsall.gov.uk) and its contractors, Lafarge Tarmac (www.lafargetarmac.com). The three objectives of the project were to reduce localised flooding, improve maintenance of the gully network, and achieve financial savings for Walsall Council.

Mapping innovation

The Council is responsible for a network of 33,000 gullies and has a workforce deployed across its network to manage and respond to issues.

'Gully SMART' was designed with this kind of work force profile in mind. As such, users access, update and harvest data and create targeted work programmes that respond to identified priorities. In so doing, it marks a departure from reactive asset management. Features of the software include:

- Data capture for teams in the field using voice, video and still photos. GPS ensures accuracy of location against Ordnance Survey mapping.
- A complete inspection history of assets across the authority's network to be downloaded within 15-30 seconds, allowing the user to work with offline for the rest of the day while being easily updated once reconnected.
- Flood zones, road names and ward boundaries are automatically populated and gullies identified for attention are clearly visible on robust handheld Android (& IOS) devices.

The 'Gully SMART' system uses OS MasterMap to map and monitor drainage networks and other local authority assets

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- Collected data to be laid over an OS Mastermap and/or aerial image to both provide perspective and aid analysis.

Implementation

The saying goes that 'the proof of the pudding is in the eating.' KaarbonTech managing director, Mark Entwistle, recalls, "We were mindful of the risks and invested time, putting in place a number of measures to successfully manage them."

The implementation of new technology is not necessarily a smooth process and, unless well managed, has real potential for impacting on productivity during the transition. In this instance, there was also a need to populate the new system with accurate location and condition data.

The fact that 'Gully Smart' runs on familiar handheld Android or iOS devices meant that most technicians. Both technicians in the field and office users required only a two-hour training session prior to using the system.

The system used terminology familiar to staff which aided the transition and assisted the consistent recording of condition and location data. This consistency also helped managers set effective performance targets.

Understanding that data collection would be a repetitive exercise, the system was streamlined to avoid needless answering of the same questions. By minimising button pressing and harnessing the logic and capacity of the smart devices to offer predicted answers, it emerged that the data being entered was giving accurate condition and silt level measurement. Technicians were more likely to answer accurately if there was less repetition for them.

The pre-rollout preparation paid off with improved performance and productivity as teams planned their days more effectively.

'Gully SMART' was introduced in 2013 and within the first nine months of use, 66% of gullies across Walsall had been cleaned. The remainder is now nearing completion.

John Roseblade, Group Manager Highways & Environment, Walsall Council said, "This is exactly the type of innovation we have needed. The intelligence that is being gained enables us to objectively reduce the frequency of cleaning where it is not needed and prioritise problem areas."

Sharing innovation

The ability to share information both with other council departments and relevant external organisations is clearly a key benefit to any modern asset management system. In this instance, the accurate geographical information captured by the 'Gully SMART' system facilitated innovative ways of working with other agencies/stakeholders with a role in asset management.

For example, where field crews are unable to clear gullies due to collapsed pipework or blocked sewers, the accuracy of the recorded location information makes it possible for other agencies – such as

Severn Trent Water - to be alerted and problems to be addressed more quickly.

Areas of excessive leaf fall have also been recorded and shared with colleagues in the Council's 'Clean and Green Team.' This is enabling such areas to receive prioritised road sweeping during the autumn months and before predicted heavy rain.

Automatically associating plotted drainage and the geographical relationship/effect caused by other data sets enables better decision making and a more refined understanding of the network.

Financial efficiency

Local government continues to be challenged by tight budgets and investment in new technology needs to demonstrate value for money. In the case of Walsall, cost reductions were achieved as a result of streamlining work programmes to address the needs of vulnerable gullies before heavy rain rather than reactively.

For example, in an average eight-hour working day, it was found that Walsall Council Highways teams could complete nine emergency gully clean outs. However, proactive planned cyclical cleaning using the 'Gully SMART' system enables 145 cleans to be completed within the same working day.

Planned gully cleaning and maintenance programmes were also seen to be reducing both fuel and time wastage.

Community benefits

The general public, quite rightly, have high expectations of local authorities and it is important to evidence the wider community benefits of new technology. In Walsall, the planned cyclical maintenance programmes reduce the risk of flooding to properties in periods of heavy rainfall. Improved highways drainage also increases safety for road users, e.g. by reducing the risk of accidents due to aquaplaning.

Elected Members enquiring about maintenance work in their wards are able to obtain accurate and location-specific information from Officers, thereby improving wider public perception. This has not gone unnoticed elsewhere, as Mark Entwistle explains: "Our work with Walsall Council and Lafarge Tarmac delivered real, tangible results. As a result, 'Gully SMART' is now being used across highways networks in Surrey, Croydon, Norfolk and Suffolk."

The benefits to asset management of being able to record and analyse data on the desktop or out in the field on a handheld device are clear. The ability to overlay collected data onto highly accurate GIS mapping and combined with environmental data sets adds a new dimension for the digital age.

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