

## Mobile vision brings connectivity and growth

Balfour Beatty Infrastructure Services' (BBIS) highway maintenance business, was established in 1996 and has since expanded to become a leading UK provider of term maintenance and related services working predominantly with the Highways Agency and local authorities.

Based in Basingstoke, Hampshire, BBIS vision is to be 'the UK's leading operator and term maintenance provider, renowned for customer service, respect for people, protecting the environment and for providing best value'.

### The Business Issues

As part of their ongoing commitment to improve safety for their workers and increase customer satisfaction within their highway maintenance operations, there was a requirement for developing a sophisticated Automatic Vehicle Location System (AVLS) which would allow greater flexibility in the services offered. The world of highway maintenance is not a glamorous one. Often even taken for granted, it is in truth an essential part of our everyday lives. It is also a high risk environment for the personnel who work on the roads every day of the year.

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Nigel Gibbons, Operational Systems Manager, BBIS



Providing services such as gully cleansing, road gritting and emergency response teams requires an incredible amount of organisation. Responding to emergency situations demands instantaneous knowledge of your fleet's whereabouts at all times, and analogue radio systems are often slow and unreliable. In addition, the incredible paper trail required to fulfil the legal reporting requirements on the contracts is cost and time-prohibitive. Something needed to be done.

BBIS came to the conclusion that they required a location-based system to help them better manage and supervise the activities of their vehicle crews.

### The Solution

The challenge was to find an AVLS supplier who could provide a reliable system robust enough to deal with the rigours of highway maintenance. "We wanted the system to send the data as close to real-time as possible, so that we could adequately track and move vehicles as required", says Nigel Gibbons, BBIS Operational Systems Manager. "The choice to use APD was an obvious one, we needed an AVLS supplier whose vision went beyond logistics and could work with us to provide mobile data functionality as well as location."



# Balfour Beatty Infrastructure Services

To provide the hardware backbone for the solution, APD implemented their INCA™ GPS-enabled vehicle tracking unit. The INCA unit is fitted to the vehicle and, using GPS technology over a GPRS network, transmits information back to the central Co-Ordinator fleet location management system. The system is flexible and can record different information for the various areas of highway maintenance such as response times, completed routes and spread rates for winter maintenance, and vehicle location markers for Incident Support Units – so that the closest vehicle can be quickly despatched to the emergency site.

**“The ability to download updates over air is fantastic. It means that we can make changes to the systems without having to visit every vehicle, which in itself would cause major operational issues.”**

Nigel Gibbons, Operational Systems Manager, BBIS

How often the data is transmitted back via INCA depends on the vehicle type, but can also be triggered by factors such as speed. For example, when a vehicle gritting the motorway needs to leave the main carriageway to salt a junction, this change in speed will trigger INCA to record data in shorter time intervals so the route the vehicle takes is not lost due to inadequate time references.

“One of the key things for us was the intelligence of the INCA system. For example, we have a large gully cleansing contract in North Yorkshire – it’s a pretty remote area and there are large ‘dead’ areas for communications. The INCA system knows when it has lost communications and will store the logged

information until it regains a connection, so no data is lost.” But BBIS doesn’t just use the system for tracking and logging vehicle activity. The system is also used to provide a record of works carried out. “It was important for us to build a system that went beyond just vehicle location. We needed to implement a complete system that removed the need for paperwork and drastically improved the accuracy of our reporting.” The drivers in the vehicles use robust Gotive handheld devices to log their work record. “The devices needed to be robust enough to withstand the rigours of life on the road, and sympathetic to the working environment and the fact that the driver’s clothing does not lend itself to the use of a fiddly, small device.” Drivers record details of their work as they go using software which BBIS has developed in-house – REDCap (Really Easy Data Capture). This software consists of a series of simple ‘button-press’ and ‘drop down’ menus. The menus are easy to use and are based around how the drivers actually work.

Again, the information collected is tailored to the specific area of highway maintenance. On the gully cleansing route, the Gotives are used to log the type and state of repair of each unit and whether or not a revisit is required at a later date. On general maintenance activities, the Gotive / REDCap software allows the team to log the type of job, record materials used, allocate labour and record if any additional works are required.

“There are countless benefits to us being able to get real-time data on our vehicles, none of which included the ‘Big Brother’ phenomenon.” But the system still met with some early resistance from the drivers. “I think they felt that we were watching over their shoulder to begin with, but once they understood that the system was in place to support their activities as much as anything else, they relaxed and began to see the benefits.”



In fact, the system has the potential to save lives. “A lot of the work our drivers carry out is very dangerous, so we can track if a vehicle is in a particular place for an unusual length of time and we can despatch a team to check everything is ok.”

Once the data is collected it is fed back into APD's Co-Ordinator. The parameters set-up within Co-Ordinator can also alert BBIS to any unusual vehicle activity. “We can see immediately if a vehicle is taken out of its contract area. We assign Geofences to all of our vehicles which activate an alarm at our 24 hour Network Control Centre if they are taken out of a defined geographical boundary. It can also activate an alarm if a vehicle is used out-of-hours. In fact, we have used the system to track and recover several stolen vehicles in the past!”

The functionality within Co-Ordinator allows the BBIS management teams to intelligently interrogate route maps. “Using the information within Co-Ordinator, we can review routes and track where our vehicles have travelled. This allows us to effectively manage the routes and ensure that they are running as efficiently as they can.”

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With their customers governed closely by legislation, it is imperative that BBIS provides accurate and regular reporting. “This is where we needed to be innovative. We needed to take the raw data that APD's systems were providing us and turn this into intelligent data for our customers.” BBIS has also developed its own sophisticated reporting system called HDA (HiMaSSS Data Analysis). From this system they can provide regular reports back to their clients, providing information such as proof of works, vehicle speed reports, time taken to complete work, or notification of faults and problems. “We find that on many occasions we are actually able to deliver more up to date information back to our clients than they had in the first place. This is often evident in our gully cleansing work, where local authorities can often have out of date inventory information. With HDA we can provide them with marked up maps and reports.”

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## The Benefits

### Greater accountability for customers

Reporting is key to the services that BBIS provides. With activities like gully cleansing, general and winter maintenance it is important to be able to provide proof of activity for both SLA and legislative reasons. "A member of the public could try to sue a local authority due to a problem with the drains or a faulty pavement slab. If we can prove that the work has been carried out, it can avoid costly legal disputes and in turn save the local authority money that can be put to good use elsewhere."

### Increasing efficiencies and administrative rationalisation

Having greater visibility of the routes taken to carry out routine tasks can highlight areas in which savings can be made. "If we can see that a traditional route involves a lot of doubling back, we can amend this and increase efficiencies in both time and fuel costs." Eliminating the need for drivers to complete paperwork that has to be then inputted into a central system has had a major impact on the accuracy of data flow. Efforts can now be concentrated on better management and development of the contract rather than focussed on administrative tasks.

### Intelligent data

Having the ability to intelligently interrogate the data collected provides a great value proposition for BBIS. "We can provide detailed reports to our clients whenever they need them, be it on a daily, weekly or monthly basis."

### Improving employee and asset safety

Given the remote locations in which many BBIS drivers work, health and safety has been dramatically improved through the introduction of the vehicle location system. The ability to track vehicles also comes in to play if they are stolen, as being able to recover a vehicle is a massive benefit over the considerable costs of replacing it.

## The Future

As far as BBIS is concerned, this is just the start. The system is currently working in over 800 vehicles, and the company is continuously looking for new ways to enhance their system.

"We found that the system was so advanced that we actually had to wait for handheld technology to catch up so that we had a device that was robust enough to be able to roll out to other areas of the business. But now we have the new Gotive devices we can easily extend the system capabilities to encompass other areas of our business."



**"Getting the drivers used to using the technology was a struggle at first, but now they see the benefits they are constantly providing us with new directions in which to go."**

Nigel Gibbons, Operational Systems Manager, BBIS

## Technology

### APD Solution

In-Vehicle Mobile Information  
INCA Vehicle Location and Tracking  
Co-Ordinator Fleet Management

### Network

GPRS

### BBIS

REDCap and H.D.A software

### Terminals

Gotive: Rugged hand-held devices

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