

# Table-based solution to replace paper site surveys



## Design of a table-based solution to replace paper site surveys on the Birmingham Highways Maintenance and Management Services contract

The Birmingham Highways Maintenance and Management Service (BHMMS) pavement design team completes approximately 1,200 site surveys each year. Traditionally the process involves printing off A3 copies of general arrangement drawings and A4 core reports, before marking them up on site with preliminary design information. These drawings are then drafted by CAD technicians into detailed designs that are issued to the client for approval.

Printing generates carbon emissions (through the use of electricity, paper and ink cartridges); we calculated that each carriageway site survey generated 810g CO2 and each footway site survey generated 396g CO2. We decided to produce a site survey design process which would eliminate all unnecessary printing.

We developed a solution to the problem of unnecessary printing using a tablet and an application. Our simple system allows designers to complete a semi-detailed design on site. The general arrangement drawings are uploaded onto the tablet in PDF format, before designers overlay the PDF with free text using a built-in stylus.

Engineers can use the tablet to take 'geo-tagged' photographs; these can be merged with the PDF output file to detail significant highway defects or hazards. Engineers can use different thicknesses and weights of pen, and can colour code regular hazards (eg blue for BT columns, green for overhanging trees and red for any associated works to kerbs).

The new tablet solution has saved money and reduced our environmental footprint by eliminating unnecessary printing. We anticipate an annual carbon emissions saving of 330kg CO2 and a reduction in paper waste of 10,000 A4 sheets a year.

The solution creates further benefits by allowing users to:

- Hold all general arrangements and core report PDFs in a simple, electronic format
- Complete design actions on site, eg taking photographs, highlighting hazards and colour coding surveys
- Combine general arrangements for larger schemes into one accessible document (avoiding delays on site as users try to determine scheme extents)
- Avoid the situational difficulties of using paper, eg adverse weather conditions
- Draft notes in layers similar to a CAD set up (enabling engineers to create different layers for treatments, materials, hazards, items to order etc).

## Environmental benefits:

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