

Drainage Asset Management

MANAGE	FIND	FIX	REPORT
Early Contractor Involvement	CS 551 Drainage Surveys	UV Lining	CD 535 Asset Data
Value Management reports	GPS (Asset Inventory) Surveys	Trenchless Structural Relining	WinCan Quality Assurance
Collaborative planning	Robotic Total Station	Trenchless Patch Repairs	GIS Processing
Desktop surveys	Topographical Surveys	De-Scaling & Encrustation Removal	CAD / BIM Modelling
Analytical Data Analysis	CCTV Condition Inspection	High Pressure Root Cutting	Survey Reporting
Drainage Viewer 2 - Flood Management GIS	SmartView - Portable CCTV camera	Jetting, Gully Sucking & PCD Emptying	Remediation Proposals
Project management	SmartScan - GPR Filter Drain Surveys	Open Cut Repairs & Full Length Renewals	Catchment Area Identification
Roadspace management	CleverScan - Laser Chamber Scanner	Chamber & Catch Pit Repair & Refurbishment	DDMS Shapefile Creation
Emergency call outs	Flow Monitoring	Drainage Ditch Re-Profiling	DDMS Shapefile Round-tripping
DDMS Shapefile consolidation			Drainage Viewer 2 - Data Interrogation



DRAINAGE ASSET MANAGEMENT

Carnell provide specialist maintenance and support services that help ensure the safety and integrity of the UK’s infrastructure. For over 25 years, major public and private sector customers have relied on us for cost effective, sustainable innovations that help the successful operation and maintenance of their network assets.



Improving value through innovation
www.carnellgroup.co.uk

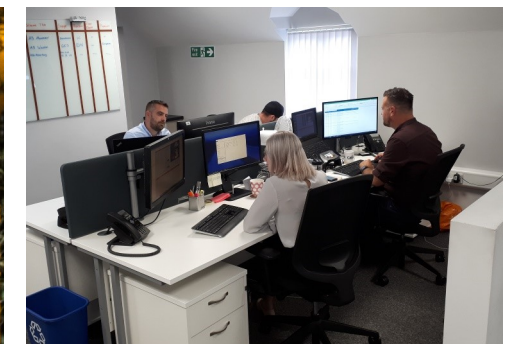
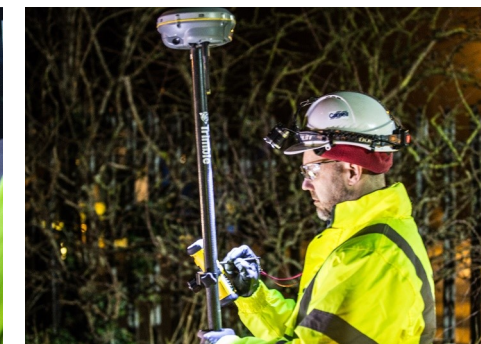
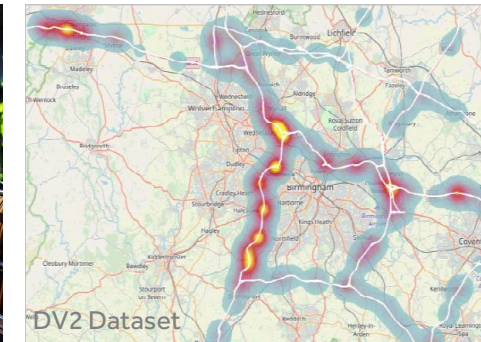


Improving value through innovation

Drainage Asset Management

Carnell offer a comprehensive range of drainage investigation services which provide greater insight into asset attributes and condition. Using this knowledge, Carnell can assist with the asset management process so that infrastructure managers meet the legislative and maintenance challenges.

Through investment in to the latest technologies and development of our experienced in-house teams, Carnell provide the most reliable and complete technical surveys solution for Highways England.



BENEFITS

Carnell deliver the UKs most comprehensive highways drainage survey and remediation services:

- Extensive knowledge of the highway network and assets.
- All data captured to the current Highways England **CD 535 & CS 551** standards.
- Added value through Early Contractor Involvement.
- In-house teams both on-site and in-office.
- Innovative techniques which improve value.

GPS Asset Inventory Surveys

Our GPS surveyors use the latest Spectra Precision Mobile Mapper (MM60) kit and ERSI Collector software. This provides high accuracy and a 'live-stream' instant upload to Arc GIS Online, improving reliability, speed and quality of data, its processing and output.

CCTV Condition Surveys

Our fleet of survey vehicles are equipped with MiniCam equipment for accurate assessment of any size of pipe. Latest WinCanVX software provides the added functionality of shapefile round-tripping. All our rig managers are experienced in highways drainage and trained to OS19x.

Jetting / Pre-cleansing

We supply a flexible resource that 'jet and suck' to either pre-cleanse pipework in advance of surveys, or provide routine / reactive maintenance including emptying Pollution Control Devices.

Technical Services Team

We have an in-house team that QA and process WinCan and GIS data to CD 535. Survey reports including CAD drawings can be fully customised to client spec. Supporting them, our GIS Development team create programmes to automate processes for improved speed and value.

Drainage Viewer (DV2)

Our online portal uses ArcGIS to provide efficient and intuitive mapping, logging all asset data including video, photos and condition for interrogation and analysis. This asset management tool can use client datasets such as pavement condition and SES.

Early Contractor Involvement

Our drainage and remediation experts can provide Value Management advice and help build schemes alongside HE drainage teams. We second our staff in a number of areas to provide flexibility.

CS 551 Drainage Surveys

PIPEWORK & CHAMBER DEFECTS CCTV
The traditional HADDMS survey using GPS, Jetting & CCTV to determine all asset inventory and detailed condition.

PRIORITY ASSETS

Surveys of unknown outfalls (for each catchment), culverts & balancing ponds through desk study and walkover survey.

ALL ASSETS CONNECTIVITY

A 'quick assessment' of the condition and drainage layout, using SmartView.

FILTER DRAIN CONDITION BY GPR

Reporting sediment levels in the filter media using our SmartScan vehicles.

LASER PIPEWORK GEOMETRY

Logging the internal profile of pipework alongside a CCTV survey.

VALIDATION

Determining whether drainage inventory information on DDMS represents a true record of visible surface point assets.

FloodPrevent (proactive maintenance)

Working with Highways England we developed a targeted approach based on network intelligence. DV2 identifies areas of poor / missing condition data at flooding hotspots. A proactive maintenance programme is then developed which supports the 3D Value Management (VM) stage-gate process. Lean surveys provide an optimum balance of detail, outputs and pipe-cleansing, to deliver cost savings.

Find & Fix (remediating critical defects)

Where persistent flooding events are reported by the client, we use DV2 to interrogate the drainage condition data to identify the problem and potential solutions for the structural defects. Survey teams are mobilised and once remediation proposals are approved, the remediation team fix the safety-critical defects using trenchless techniques.

No-Dig Remediation

Our Remediation Team use trenchless techniques to deliver safe and less-disruptive pipework remediation. We can provide proposals following surveys or deploy a 'find & fix' service working with camera survey teams. Depending on the structural defect, the methods used include: UV pipe lining, CiPP lining or patching, robotic cutting and Flail jetting.

Ditch & Soil Sample Surveys

Condition survey of ditches including , silt levels, cross-sectional profile and collection of soil samples to provide LoW and EWC information.

CleverScan

We have two chamber laser scanners to undertake safer, quicker, more detailed inspections of catchpits and manholes. Outputs allow the client to view the chamber in a high-resolution video format and 3D point cloud.