

For over 20 years, Dodd Group (Eastern) Ltd has been closely involved in the original installation and subsequent maintenance and replacement of telemetry systems on Anglian Water's operational sewage and potable water sites.

Although the scope has changed considerably over that period – from 'first-time telemetry' to 'telemetry infrastructure replacement' (upgrade) – a consistent aspect has been the efficient management of multi-site projects, over 2500 sites in the last three years alone.

## SINGLE BOARD REPLACEMENT (SBR)

The largest single element of the framework in recent years has been the planned upgrade of obsolescent outstations on smaller sites (just over 2200 sites since 2007, peaking at a rate of 400 sites per year in 2013/14).

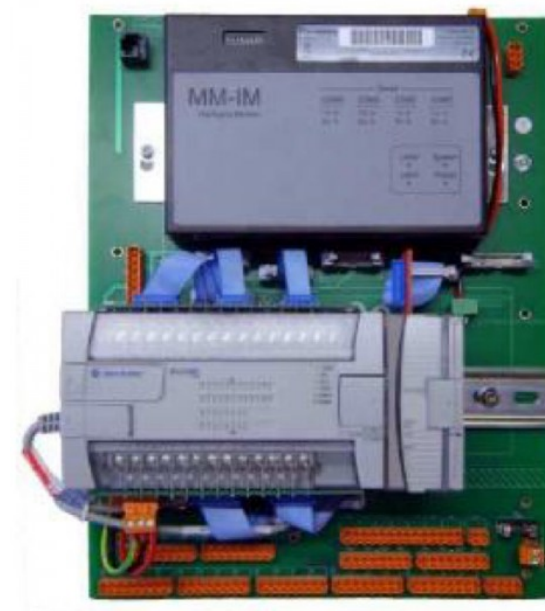
New outstation hardware is mounted on a custom backplane that is pin-for-pin compatible with the original outstation PCBs. This minimises the physical work and downtime on site – the old board is simply replaced with a new one with no disturbance of supply, comms or signal cabling which, in turn, minimises re-commissioning.

In the early years, Anglian Water supplied the site-specific outstation configuration files but Dodd Group now produces and tests these in-house. The current scope of this project includes:

- 'Desktop surveys' of individual sites to extract configuration data
- Configuration of site-specific 'PAK file' creation using bespoke software tools developed by Anglian Water and Dodd Group.
- Hardware preparation.
- Factory acceptance testing of assembled outstations and PAK files.
- Site installation and commissioning.
- 'Top-end' installation and commissioning, including updates/changes to site mimics.
- In addition to the provision of the full service, we typically build and test hardware kits for around 90 sites per year for installation by Anglian Water's own telemetry engineers.

## TELEMETRY INFRASTRUCTURE REPLACEMENT (TIR)

The replacement of obsolescent outstations on larger sites requires a more deliberate



approach to deal with the complexities that arise such as inter-outstation communications, PLC interfaces and operational issues. A detailed site survey provides the basic data against which the most practical solution can be identified and agreed by telemetry and operational staff. PAK files are again prepared by Dodd Group though Anglian Water's automation engineers may assist with bespoke code.

Physical upgrade requirements can occasionally be met by single-board techniques, but usually require the design and build of new outstation and marshalling panels. Typical assemblies are a 900x400x200 or 600x1200x200 steel, wall-mounted enclosures comprising the outstation, a battery-backed-up power supply, a radio or modem, I/O modules and a marshalling box for incoming I/O cables. Larger panels, and bespoke rack- or plate-mounted solutions for incorporation into existing enclosures, are sometimes required.

Thorough factory acceptance tests of the panels and PAK files may include witness tests by Anglian Water's automation engineers and/or operations personnel.

The typical process is:

- 'Desktop surveys' of individual sites to extract configuration data.
- Site surveys and 'knowledge group' meetings.
- Configuration of site-specific 'PAK file' creation using bespoke software tools developed by Anglian Water and Dodd Group.
- Integration of process control code authored by Anglian Water automation engineers.
- Telemetry panel design and manufacture.
- Factory acceptance and witness testing of panels, PAK files and control code.
- Site installation and commissioning.
- 'Top-end' installation and commissioning, including updates/changes to site mimics.

As installation and commissioning often extends over several days, consideration must be given to the maintenance of critical alarms and data throughout the installation period. The solution is to commission the new outstation before it is installed and transfer critical alarms and signals across to it; the redundant equipment may then be removed and the new panel properly installed.

## FIRST-TIME TELEMETRY

Although Dodd Group retains the capability to provide full telemetry, monitoring and instrumentation packages, current requirements are generally limited to the design, manufacture, delivery and occasional installation of telemetry panels for refurbishment

and new build projects by Anglian Water @One Alliance capital projects or private developers.

## UNSUPPORTABLE PLC REPLACEMENT

Managing the physical replacement of obsolescent PLCs and controllers and assisting Anglian Water automation engineers and operations personnel with recommissioning.

## ANTENNA SERVICES

Dodd Group installs and maintains Anglian Water's telemetry antenna systems:

- Maintenance and replacement of existing telemetry antenna systems as reactive (e.g. repairs following vandalism) and planned works (e.g. remediation work on the ongoing UHF Interference Mitigation Project, provision of external antennas for low-power radio systems on District Water Metering sites).
- Telemetry antenna system inspection and test under the UHF Interference Mitigation Project: diagnosing issues on sites with a history of poor comms.
- Replacement of telemetry scanner (node) antennas, typically masts on water towers necessitating truck-mount basket lifts or specialist climbing teams.
- Supply and installation of new antenna systems for framework partners on capital works and developer projects.

## CIVIL WORKS

Dodd Group undertakes minor civils works in-house, e.g:

- Provision of base for 6-12m pole and lattice tower antenna masts
- Cable trenching and ducting.
- Supply and installation of external enclosures and kiosks including plinths.
- Street works qualification registered personnel for non-intrusive and intrusive works on roadside equipment.

## SUPPORT ACTIVITIES:

Dodd Group's developed expertise in the management of high-volume projects includes:

- Planning, programming and reporting of work packages using bespoke MS Access

databases and MS Project.

- Asset management of free-issue telemetry hardware and bought-in stock.
- Liaison with operational managers to obtain site access authorisation.