



CASE STUDY NUMBER 78: Morrison Utility Services – Avoiding Underground Asset – A Multi-Strand Approach to Minimising Risk

Winner of the Avoid Damage to Underground Assets Award

The National Joint Utilities Group (NJUG) is the UK industry association representing utilities solely on street works issues. The 43 utility companies and 16 utility contractors we represent are major contributors to economic growth and work to deliver gas, electricity, water and telecommunications to both individual consumers and UK plc. NJUG members need to continue to drive forward further improvements. We have therefore developed the NJUG Vision for Street Works, which revolves around seven main principles:

- Safety
- High Quality
- Minimise Disruption
- Keep the Public Fully Informed
- Sustainable Methods and Materials
- Avoid Damage to Underground Assets
- Innovation

This case study is an example of the street works sector delivering on these principles and turning the vision into reality.

Overview

Morrison Utility Services (MUS) established a robust, multi-faceted approach to avoiding utility damage and cable strikes during street works activity. This strategy incorporates:

- Work planning
- Comprehensive training and instruction on plans
- Use of leading cable/pipe locating tools
- Safe digging practices
- An insistence on appropriate utility plans
- An emphasis on behavioural and process safety

Utility and cable damages are continually monitored, with all strikes investigated and the appropriate technical/behavioural recommendations implemented.

Across the organisation, utility damages and cable strike performance is benchmarked contract by contract. This data reveals that, despite turnover rising year on year, damage to underground assets has reduced by 71% between 2007 and 2014, leading to less lost time from work and increased productivity.



Case study

Minimising risk: MUS plans and designs all street works projects in collaboration with clients and partners, minimising risks by adhering to safety through design, encouraging the designer to consider all safety hazards and establishing step by step processes to eliminate them where possible.

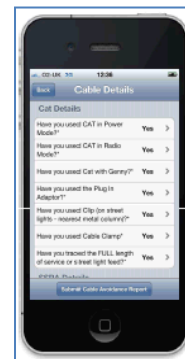
Competency: All frontline operational staff undertake comprehensive safety inductions and receive regular toolbox talks. At least one member of each team will have a NRSWA certificate, a mandatory element of which is the use of cable locating equipment, and all key support staff are fully conversant with the correct way to locate and safely expose a buried service.

Innovating to Avoid Damages: MUS deploys innovative, safe and proven methods to avoid contact with underground assets. These include:

Vacuum Excavation	An effective, efficient and safe excavation method. Particularly suited to high utility congestion areas (i.e. larger cities, substations etc).
Air Lances	Easily deployed to reduce potential risk to our workforce by avoiding potential contact with live utilities.
Live/Dead Insertion Techniques	Enabling redundant pipes to be utilised for the carriage and housing of newly installed assets, protecting and prolonging the lifecycle of the asset whilst reducing the need for excavations/ hand digging.
Directionally Drilling / Moling Techniques	Allowing for the insertion of assets, whilst avoiding the requirement to manually hand excavate.
Water Jetting	Another innovative method that aims to protect our workforce and buried utilities.
High Risk Plant/Utilities	(e.g. HV/EHV electric cables, high and intermediate pressure gas pipes) – Pre-streetworks consultation with plant owners to seek assistance in marking out, safe working practices, permitted construction methods and works boundaries.
Through-Bore Hydrant (TBH)	MUS has actively developed no dig/zero interruption streetworks techniques. The TBH has facilitated in-pipe potential including pipe condition surveys, NDT, flow monitoring, leak detection and pinpointing. Going forward, this potential could include in-pipe mains repairs.
Water Siren	Fitted to an outside tap to assist in the accurate location of a customer supply/communications pipe, saving on abortive and potentially hazardous excavation and keeping excavation sizes down.
Ground penetrating radar	Used to accurately locate apparatus, differentiate between material type and identify lead/non-lead pipes.
CAT 4+	The MUS cable avoidance tool of choice, providing greater accuracy, incorporating a strike alert facility (and downloadable data) for shallow apparatus. An effective management tool to assist with training, investigations and audits.
Assessments	Targeted service avoidance competency assessment achieved through the engagement of “Cognisco” knowledge and understanding v confidence assessments.
Specialist surveying	Engaging specialist surveyors to undertake electromagnetic surveys and mark up plant.
GIS systems	Linked to rugged laptops and hand-held devices and used to assist in identifying apparatus.

Continued Improvement: In conjunction with their partners and clients, MUS continually looks to develop new technology, training and operating methods to reduce cable strikes e.g.:

- Underground Service Damage Reduction Plans (trials with Yorkshire Water) offering an end-to-end process safety approach to cable strike reduction.
- The development of a cable avoidance iPhone app (trials with National Grid).
- Using buried plant profiling on the Western Gas Alliance (MUS/Amec/WWU) contract where a route profile of buried plant is mapped prior to excavation to inform decisions on excavation route and techniques.



Industry Leading: MUS is actively involved in numerous safe dig/utility strike avoidance groups/working groups/charters (e.g. National Grid Cable Avoidance Group, Energy Networks Association’s Utility Strikes Avoidance Group - USAG).