



JSM Group with Non-Intrusive Cable Extraction (NICE)

Winner of the Street Works UK Sustainable Methods award 2017

Street Works UK is the UK industry association representing utilities solely on street works issues. Street Works UK represents some 56 utility companies and contractors engaged in the street works sector, and 18 specialist sub-contractors who provide equipment, materials and services supporting street works activities. Our members represent major contributors to economic growth and work to deliver gas, electricity, water and telecommunications to both individual consumers and UK plc. In order to continue this drive for further improvements within the industry – we have developed the Street Works UK 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

JSM is a utilities service provider that specialises in the delivery of integrated power and telecommunications solutions. Operating through two divisions, Power and Communications, JSM's comprehensive service delivers turnkey solutions, including the design, planning, procurement, project management, construction, commissioning and maintenance of infrastructure networks which extend to EHV network installation, multi-utility, contestable, communications, civil engineering and highways works.

Non-Intrusive Cable Extraction (NICE) and Non Intrusive Tank Extraction (NITE) is an innovative method for removing underground decommissioned fluid filled cables without the need for traditional open cut trenching for the entire length of the cable thus mitigating any environmental risk of leaving the cables buried. NICE has been fully developed by JSM and is patent pending.

Achievements in terms of sustainable development, economy and environment.

Example of estimated savings of using NICE vs Open Cut for 1Km cable route

	Excavate Material (m3)	Reinstatement (type 1, m3)	Tarmac (m3)	Truck Loads (No.)	Excavation cost (£)	Material cost (£)	Fuel (Ltr)	Fuel cost (£)	Carbon (tCO2e)
Traditional Method Open Dig	1,080	900	180	146	18,000	27,000	4,937	6,286	29.31
NICE full capacity (every 50m)	180	120	24	26	3,000	3,600	1,907	1,144	7.15
Savings	900	780	156	120	15,000	23,400	3,030	5,142	22.16

- Reduced carbon footprint with lower emissions at scope 1, 2 and 3 compared to open-dig.
- Simplified cable recovery process, less resource intensive, shortened supply chain leading to a cleaner and simpler project.
- Reduced lorry loads; reduced emissions / carbon savings, less site traffic and road usage. Substantially less muck away /backfill materials transported.
- Less machinery required on site decreases associated costs. Reduced environmental risk, near misses, damage and incidence on site.
- Excavated spoil can be reduced by as much as 80%. Although much of the spoil excavated by JSM is screened internally and reused where allowable. By applying the hierarchy of waste principle, the top consideration is to eliminate and the NICE and NITE methodology addresses this directly.
- The amount of raw and manufactured materials is reduced by minimising excavated and open trench surface area.
- By making the availability to recover cable more accessible and viable there is great potential for energy recovery, as the recovery process draws close to the lifecycle of the cable asset and through 100% recycling of all recovered cable elements the highly energy intensive process of cable asset production (from mining of natural resources to refining and production) is fully recovered.
- Noise, dust, traffic congestion are all products of cable recovery. NICE reduces excavations and nuisance levels of a project. The limited number of small NICE excavations required can be strategically assessed for most appropriate positioning to enhance nuisance reductions and maximise benefits.
- NICE and NITE methodology enables controlled cable oil management to ensure no spills or contamination during removal. Clean controlled process to prevent leached oil loss to the environment as cable ends are capped at both ends in a controlled manner before extraction.
- Reduction in trenches and open excavations removes the potential area open to water intrusion and dewatering needs are reduced. Risk of pollution of dewatering pumping activities is reduced or removed.



- Environmentally sensitive areas such as National Parks, Special Site of Scientific Interest, Conservation Areas, Areas of Outstanding Natural Beauty would all benefit from trenchless technology. As well as being more aesthetically pleasing and less disruptive, all impacts to environmentally sensitive and protected areas are minimised.
- Open excavations and long trenches pose a hazard to fauna. This is overcome by mitigation measures to provide pathways and exit routes across excavations, however this only addresses an effect whereas trenchless technology addresses the cause and keeps the original environment intact.
- With NICE technology being able to undercut topographic features, leaving roughly 80% of the surface untouched giving potential for significant environmental savings.
- The required 12m cutaways roughly every 50m will over the course of 250m save over 200m of natural established mixed land and protect diverse ecosystems. This method protects larger areas of unaltered environment providing greater continuity in the environmental surroundings.
- Benefits for local community, local habitat and environment, protected species impacts are minimised, the client benefits from reduced costs and duration, staff job satisfaction from use of innovation, gaining specialist capabilities, likely to reduce staff turnover, reduction of waste to landfill.
- Longer Term benefits were proven environmentally responsible advancements. Continued effective relationships with the client, the local authority and local communities. Proven use of NICE & NITE capabilities.
- The economic and environmental impact of traditional methods of cable removal have often been a major factor in preventing cable recovery. Traditional buried cable removal can be very destructive and with many cable routes interceding with established ecological habitats and environmentally significant features (trees, hedgerows, watercourse and ponds/lakes) cable removal has not been a particularly favoured option in response to benefit analysis. This has
- resulted in the situation we face of many years of redundant cable left in the ground with potential risk to environment.
- NICE and NITE have been fully developed by JSM. National Grid and Distribution Network Operators (e.g Western Power Distribution, Scottish Southern Energy) benefit from the use of NICE due to its potential to recover the redundant cables (contaminant source to surrounding areas).
- Local communities would benefit from the application of NICE due to its potential to provide cabling solutions, with substantially less alteration of views, noise, pollutants and residential annoyances.
- NICE can be applied to both rural and urban environments and drill head can be adapted to various terrains.