



## NJUG CASE STUDY

### CASE STUDY 2: Coring & Vacuuming Excavation Techniques

The National Joint Utilities Group (NJUG) is the UK industry association representing utilities on street works issues. The thirty-eight utility companies<sup>1</sup> we represent 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 six main principles:

1. Safety is the number one priority
2. Damage to underground assets is avoided
3. Utilities work together and in partnership with local authorities to minimise disruption
4. Utilities deliver consistent high quality
5. Utilities maximise the use of sustainable methods and materials
6. Street works in the UK are regarded as world class

This case study is an example of NJUG delivering on these principles and turning the Vision into a reality.

#### Overview:

National Grid has been working on a new technique called Keyhole Technology. It is a process that is already in use in the USA to carry out gas repairs and re-instate road surfaces. As a means to share best practice, two specialist trucks were shipped from the USA along with a team of mechanics to train their UK counterparts. The reduction in time should assist in minimising disruption to the public, as well as reducing costs. This technique results in savings in materials and landfill charges and demonstrates how sharing best practice can potentially deliver benefits to business and reduce the environmental impact of the work we undertake.

This case study is an example of delivering on a number of the Vision principles including, delivering consistent high quality and maximising the use of sustainable methods and materials.

- Keyhole is 80% smaller than the conventional utility cut - More aesthetically pleasing with less damage to the road system
- Precision core cutting - avoids collateral damage to road - no excavators, jackhammers or over cuts from road saws
- No temporary patching - replaced core exactly matches composition of original road
- Reinstates road to original weight bearing capacity and helps reduce congestion
- Over 50 cores successfully completed as part of the UK trial
- 90% success rate in locating and repairing leaks
- Reduced repair time and significant environmental benefits
- Positive response from Transport for London (TFL) and several highways authorities

---

<sup>1</sup> NJUG's current members are Energy Networks Association (representing electricity and gas), Water UK (representing all water and wastewater companies), National Grid, Openreach, Virgin Media and THUS, a Cable and Wireless Business. Our associate members are Clancy Docwra, Skanska McNicholas, Balfour Beatty, Morrison, Morgan Est, NACAP, PJ Keary, First Intervention, Carillion and Enterprise. Including members through trade associations, NJUG represents thirty-eight utility companies.

**Case Study:**

The technology works by drilling an 18 or 24 inch hole through the road surface to allow access. The repair is then carried out using long-handled tools. Once the work has been completed the original road surface can be replaced, halving the normal time required for excavation and reinstatement. The full process consists of:

1. Utilising the Core Truck, an 18” diameter plug is removed from the road surface and placed safely to one side for later re-use. The core truck is then removed from site and the vacuum truck is brought onto site.



2. The vacuum truck utilises a 4” diameter suction hose to remove material from the excavation. The road sub-base is broken up using an air lance which fires compressed air at high velocity into the ground. The compressed air does not damage any other utilities plant which may be in the excavation.



3. Once the main has been exposed, repairs can be carried out using long handled tooling



4. The excavated material (if deemed suitable) is used for reinstating the excavation. The excavation is reinstated in layers which are each compacted to a level determined by an electronic compaction monitor.



5. The previously removed road plug is bonded back into the road surface using a specially developed cement based product. Depending on ambient temperature the road is ready for traffic within 1 to 2 hours.

