

Ground penetration (protection of underground services)

Underground services on University Property

This guidance document defines the procedures and working practices to be followed to protect underground services and persons working in the vicinity of them on University property. The University Campuses are crisscrossed with underground services including electricity cables, communications cables (which include both wired and fibre optic circuits), gas mains, water mains, foul and surface water drainage. Contact with these services can have a serious or even fatal consequences to staff and contractors and can also cause serious disruption to the University's core business.

These procedures apply to the following work activities involving ground penetration to a depth of more than 300mm

- Excavation;
- Trenching;
- Digging;
- Vertical or horizontal drilling/ boring;
- Driving of metal piles into the ground;
- Use of spikes to stabilise temporary structures such as Marquees etc.
- Tree felling & 'stump grinding'.

Routine grounds maintenance work, carried out in established cultivated areas e.g. planting, turning over soil etc. is not covered by these procedures.

Ground Penetration Permit

Contractors and University Departments must obtain an 'Estate Office Ground Penetration Permit' prior to any excavation; trenching; digging; vertical or horizontal drilling/boring; driving of metal piles into the ground, or use of spikes to stabilise temporary structures such as Marquees tree felling & 'stump grinding' etc. to a depth of more than 300mm. The permit must be available for inspection at the work site for the duration of the work activity. If you engage the services of a contractor to carry out this type of work, you will need to inform them of these requirements. A request for a Ground Penetration Permit must be made via the Estate Office Helpdesk giving at least 'two weeks' notice prior to the start of any works on site.

Helpdesk contact details <https://estateshelpdesk.nottingham.ac.uk> or Phone: 0115-9516666

Identifying underground services

On receipt of a request for a Ground Penetration Permit Estate Office staff will conduct a desktop review of existing service drawings, followed by a physical inspection of the site, looking for indicative signs such as inspection hatches, reinstated excavations, street lights, telecoms boxes, building structures etc. which may indicate the likely presence of underground services. A ground scan survey using non-invasive detection tools will also be undertaken by either a competent contractor or a member of the Estate Office team. Where the proposed works are taking place within the landscaped environment, the Estate Office Grounds Section will be consulted to assess any impact on flora and fauna.

Identified underground services will be clearly marked with paint or wooden pegs on the ground. Please note that an 'Estate Office Ground Penetration Permit' is time limited due to the difficulty in maintaining the integrity of paint markings or marker pegs over extended time periods. Where necessary the Contractor or University Department will also be issued with a copy of the Services drawing for the site identifying all known services.

A Ground Scan will typically only detect signals produced by live electrical services. Plastic water and gas pipes, plastic and/or clay drainage pipes and fibre optic cables are unlikely to be detected by basic Ground Scanning techniques. Because of this the 'Ground Penetration Permit' does not guarantee that all the services on the site of the proposed work have been identified. It is important that any Excavation; Trenching; Digging; Vertical or horizontal Drilling/ Boring; driving of spikes into the ground is undertaken with caution in the knowledge that additional, previously unknown, services may be discovered during the work. Powered excavation techniques should not be used within 1000 mm of known services. Appropriate exploratory 'safe-dig' methods may include, use of hand digging, trial holes, air/vacuum excavation techniques supported by supplementary ground scans as required throughout the excavation activity.

When utilising a mechanical digger a 'Banksman' must be employed to observe the digging operation and warn the digger driver should any previously unidentified services be unearthed. Any damage caused to underground services must be notified to the Estate Office Helpdesk immediately to ensure repairs are undertaken.

Previously unknown services

In the event of previously unknown services being discovered these must be reported to Estate Office staff immediately so that identification and further investigations can be undertaken to assess any increased hazards associated with the works. The newly discovered services will then be updated on the Master Services plan, prior to any reburial work.

Further guidance

HSE Avoiding danger from underground services HSG47-
<http://www.hse.gov.uk/pUbns/priced/hsg47.pdf>