


OPERATIONAL MAINTENANCE PROCEDURE			 UNIVERSITY OF <b>LINCOLN</b>
Subject:  PERMIT TO DIG	E&CS019	Rev.5	
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	Owner: C Harrison		

**TO BE READ IN CONJUNCTION WITH E&CS21 PERMIT TO WORK  
AND E&CS23 AUTHORISING PERSONS PROCEDURES**

## 1.0 PURPOSE

The purpose of this procedure is to assist the University of Lincoln Estates and Campus Services in discharging the Health and Safety responsibilities by avoiding danger from underground services.

It applies to **all excavations** that are 300mm or deeper anywhere on the University campuses.

## 2.0 GENERAL

2.1 This procedure should be read in conjunction with the guidance set out in HSG47 "avoiding danger from underground services" 3<sup>rd</sup> edition 2014. Any person undertaking excavation work must be familiar with both documents and understand how the work is to be carried out.

If you are in any doubt consult Chris Harrison, either by email at [charrison@lincoln.ac.uk](mailto:charrison@lincoln.ac.uk) or by phone on 01522 837062 or mobile 07599966483 for further clarification.

2.2 Underground services are widespread; **assume they are present** unless you have been shown otherwise.

2.3 Damage to underground services can cause fatal or severe injury as well as significant disruption and environmental damage; it can also have a significant effect on University of Lincoln core business and incur considerable costs.

2.4 Incidents may arise from cables, connections and terminations which have been damaged but left unreported and unrepaired, or which have deteriorated with age.

See section 6 for further details on the risks associated with each individual underground service type.

## 3.0 WORKING SAFELY

A safe system of work has **three** basic elements;

- ✓ planning the work
- ✓ detecting, identifying and marking underground services
- ✓ safe excavation/safe digging practises

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### 3.1 Plan the work

- 3.11 Obtain service drawings from Estates and Campus services or where none are available from the Utilities providers (contact details are shown in appendix B).
- 3.12 Carry out a desktop survey to ascertain the likelihood of services or structures below ground level in that area, record the details in writing on your risk assessment.
- 3.13 Survey the site to identify the services and other underground structures. Record the location of any services found, inform Estates and Campus Services if in a different location than shown on plans.
- 3.14 Review/assess the planned work to avoid disturbing services where possible.
- 3.15 Allow sufficient time and provide sufficient resources to do the work safely.


### 3.2 Emergency work

Where it is not possible for those undertaking the work to obtain information, as may be the case when emergency work has to be undertaken, the work **must** be carried out as though there are underground services present in the area.

### 3.3 Use and Limitation of plans

- 3.31 Plans alone are not sufficient to identify and locate services before starting work. They provide basic information on which to base a thorough site survey before work begins.
- 3.32 Plans can give an indication of the location, configuration and number of underground services at a particular site and should help subsequent tracing by detecting devices or locations. However, they are not always drawn accurately and even to scale and, even if they claim to be, you should not rely on them to obtain distances or depths. For example, errors may have been made during drafting, or reproduction may have changed the scale, especially if the plan was obtained from a microfiche slide or digital map. Accuracy may be further limited because;

Be aware that the position of reference points (eg the kerb line) may have changed since the plans were drawn;

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Re-grading of the surface may mean that the depths shown are now incorrect;

Services particularly cables, may have been moved without the knowledge of their owners/operators.

The routes of older services in particular may not have been recorded, so the absence of records should never be taken as proof that the area in question is free of underground services.

The University rarely carried out quality checks when underground services were being laid, they may not be covered correctly or even at the depths you would expect to see them.

#### **4.0 YOUR DUTIES AS AN AUTHORISING PERSON**

University Project Managers (Clients) have a duty to make reasonable enquires about underground services and pass relevant information to the designer(s) and contractor(s).

Our own files and other records are not guaranteed to be 100% accurate and may contain errors as they have been copied over the years and original reference points or depths may have been altered as new surface coverings are installed or levels reduced.


A client who is either unable or unwilling to obtain this information must **allow** the contractor sufficient time and resources to do so instead.

Clients need to consider how contractors have addressed the risks from underground services.

#### **5.0 DETECTING UNDERGROUND SERVICES**

There are different levels of survey; the level of survey required will depend upon the nature of the work site, some congested urban locations will require a more detailed survey than some brown and green field sites. The decision on the level of survey required should be by an informed decision based on the likelihood of underground services being present, based on the information obtained for the worksite.

All of our known underground services are listed on the plans listed in references section 7.1 Gas, Water and Electric services and 7.2 for drainage.

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### 5.1 Desktop study

This involves interrogating and considering the current service held by the E&CF department and checking the likelihood that any services are in the area that you plan to excavate or penetrate the ground.

### 5.2 Desktop study and site investigation

This involves using the information from the desktop study to assist a physical inspection of the site (looking for physical signs such as inspection hatches, reinstated excavations, street lights and telecom boxes) and a survey using detection tools as listed in section 6.

### 5.3 Physical identification of the services

In addition to the above, this involves taking steps to detect and identify the underground services through trial holes to verify their location, depth and identity; it may also involve passing a tracing device through a pipe or tunnel.

## 6.0 RISKS FROM UNDERGROUND SERVICES

### 6.1 Electricity cables


Injuries are usually caused by the explosive effects of arcing current, and by any associated fire or flames that may result when a live cables insulation is compromised.

Typically, injuries are severe – potentially fatal – burns to hands, face and body; electric shock is possible but less likely.

### 6.2 Gas pipes

Damage to gas pipes and connections can cause leaks that may lead to fire or explosion.

Be aware that the risk from leaking liquid petroleum gas (LPG) is greater than from a natural gas leak as it is heavier than air.

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### 6.3 Water pipes and sewers

Although damage to water pipes is less likely to result in injury, the following may occur:

A jet of water from a main can be of sufficient pressure and intensity to injure a person. It may also contain stones or hard objects ejected from the ground around the pipe.

Leaks of water from underground pipes can affect adjacent services and reduce support for other structures.

While some sewage is pumped at pressure, sewers are generally gravity-fed and the risks from damage to a sewer are to the health of workers from exposure to raw sewage, the chance of ground collapse and the possibility of environmental contamination and pollution.

### 6.4 Telecommunication cables

Damage to telecommunication and TV cables may require expensive repairs and can cause considerable disruption to those relying on the system; however the risk of personal injury to workers is very low.

### 7.0 REFERENCES

More detailed information can be found in any of the freely available documents shown below.

The Gas Safety (Management) Regulations 1996

The Pipelines Safety Regulations 1996


New Roads and Street Works Act 1991

Electricity safety Quality and continuity Regulations 2002

HSG47 Avoiding danger from underground services (3<sup>rd</sup> edition) 2014

E&CS21 - Permit to Work system

E&CS23 - Permit to Work Authorising people

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**7.1 Gas Safety Case (E&CS50)**

**7.2 Gas, water, electric and data service route plans**

BR-000-ES-0001(-) North East Quadrant External Mains Services  
 BR-000-ES-0002(-) South East Quadrant External Mains Services  
 BR-000-ES-0003(-) South West Quadrant External Mains Services  
 BR-000-ES-0004(-) North West Quadrant External Mains Services

**7.3 Drainage route plans**

BR000 M5 0001 - Brayford NE  
 BR000 M5 0002 - Brayford SE  
 BR000 M5 0003 - Brayford SW  
 BR000 M5 0004 - Brayford NW