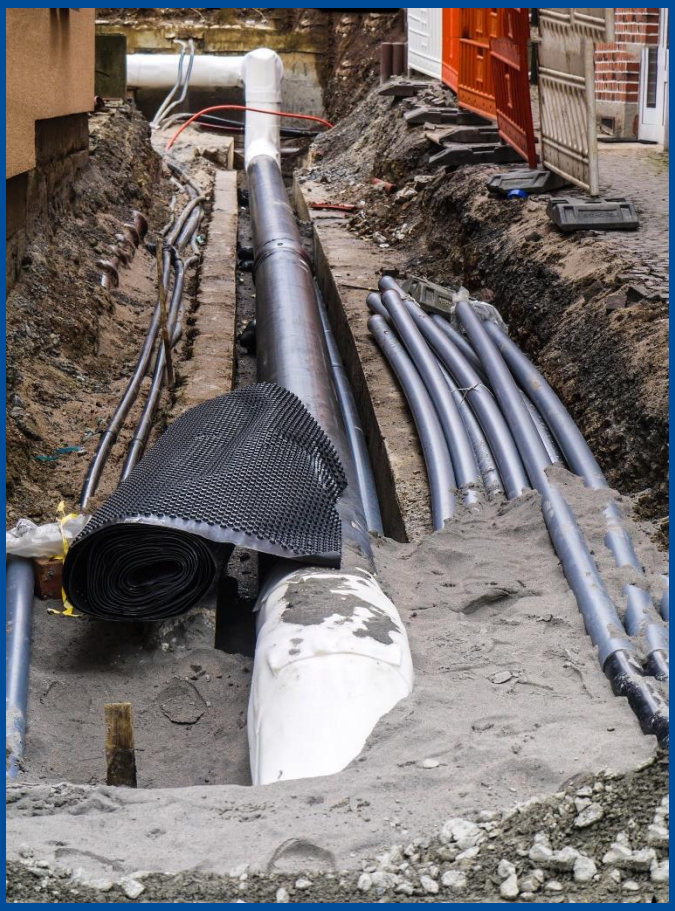
Improving Performance, Reducing Risk.

Underground Services

Guidance Note



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Excavation is a necessary part of most construction projects and with it the possibility of encountering existing underground services. This poses a serious risk.

Every year workers are injured coming into contact with underground services. Potentially fatal - to those carrying out excavation works, and others close by - injuries include severe electrical burns, fractures, head injuries and breathing difficulties caused by toxic fumes.

To prevent accidents and injury, it is vital to gather as much information on existing underground services as possible and undertake thorough investigations before any digging starts on site.

1.	**What types of underground services might you encounter?** Electricity mains, gas mains and distribution pipes, water mains and pipes, telecommunication cables and sewer or foul drainage systems are all common underground services.
2.	**Where do I start?** In the first instance, a desktop study will confirm local service providers. Service providers/owners will be able to supply appropriate drawings, identifying the locations of underground services, on request. It is good practice to combine this desktop study with a physical site investigation to confirm that the drawings are correct.
3.	**What information do I need from service providers?** The service providers/utility companies will be able to confirm the details/locations of their services, with a deadline for response ahead of a pre-commencement site investigation and always prior to the start of any excavation work.
4	**What checks need to take place on site before digging starts?** • All utility service drawings and plans should be checked. • Use pipe and cable locators and mark the ground accordingly. • Check for obvious signs on site (i.e., inspection or valve covers, previous road repair locations).
5.	**What might indicate the presence of underground cables?** Streetlights or illuminated traffic signs which require a power supply would indicate underground electricity cables. Gas meter boxes mark the entry of gas service pipes and therefore the existence of underground pipes. Evidence of any reinstated trenches where previous works have taken place may also indicate the existence of services.
6	**What are safe digging practices for potential underground service locations?** • Dig trial holes with hand tools before any machinery is used. • Using spades and shovels with gentle foot pressure is best practice (no throwing of spike spades or shovels). • Exercise extreme care when using picks, forks, or similar tools. • Excavate alongside an anticipated service pipe/cable to avoid a ‘direct hit’ • Use air pressure digging tools, if possible, to prevent impact damage

	• Assume all services are 'live' unless a proper disconnection notice or permit to work indicates otherwise • When buried services are uncovered, wait for identification before continuing • Support any disturbed cables or pipes if required • Do not use pipes or cables as foot or hand holds when exiting a trench • Label any services found.
7.	**What information needs to be in the works pack to support excavation?** There should be a detailed emergency plan and procedure for the site in case of accidents, explosion, fire, etc. This should contain details of the nearest hospital or accident treatment facility as well as the responsible first aider on site and procedures for treatment.
8.	**Who is responsible for detecting underground services?** The existence of any services – underground or overground – should be advised by the client or landowner as part of pre-construction information. If the client doesn't know, they must commission appropriate surveys**.**
9.	**Who is responsible for obtaining information?** The Principal Designer should take responsibility for finding out relevant information about all services on site. Site exploration works should be commissioned, with accurate site plans drawn up. The client must ensure that the principal contractor has enough time to carry out site surveys and obtain information before construction work starts. The main **principle of prevention** is to avoid risk whenever possible. By knowing where underground services are, you can design to avoid them where possible.
10.	**What if avoiding services is not possible?** For building work, re-siting services away from the work area is a reasonable and practicable way of avoiding risk by requesting that the service operator or owner achieve this with plenty of notice to undertake. Other options could be repositioning or redesigning structures to ensure that services are avoided or arranging for the supply to be disconnected while work takes place. If none of these are possible, then ground beams could be used to bridge/span the services while work takes place.
11	**Do live electric cables need to be turned-off for work to take place safely?** Yes, overhead or underground cables with an electricity supply will need to be 'dead' for work to take place safely. Contact the relevant electricity company as early as possible to allow them to isolate supplies in the area you are working. Plan the project schedule to allow sufficient time to accommodate this activity. If the cable cannot be turned off, an alternative safe way of carrying out work needs to be planned.
12	**Do gas pipelines require any special treatment?** The location of underground gas pipelines is vitally important when planning building, excavation, landfill or other works that will disturb the ground. Suitable arrangements should be made with the gas company, before work is undertaken, to prevent damage to pipelines and ensure access for maintenance purposes. Even perimeter fencing or walls and temporary road access onto the site may affect underground services, so early identification and planning are important for risk management to enable safe construction work

13	**Once services are exposed how can they be identified?** Water pipes, electricity cables and telecommunication cables are often covered in black plastic, so if a black plastic pipe is uncovered, assume there is a live electricity cable present. Iron and steel water and gas pipes look very similar, so if uncovered treat as a gas pipe. Always treat continuously welded steel pipes as if they contain a hazardous or high-pressure fluid.
14	**What depth are underground cables usually laid?** Underground services will **usually** be found in trenches **between 450mm and 1 metre** from the ground surface, although high-voltage cables may be laid deeper than this. **But** cables can also be found at shallower depths, so **never make assumptions**.
15	**Other than incidental markers, eg. Streetlights, are there any signs to watch out for overground?** There are not usually any permanent formal markers indicating the presence of cables underground. **Even where no cables are shown** on plans, they may still be present, and be live. **Caution should be exercised** with any digging and a close eye kept for any signs indicating their presence.
16	**Do contractors have a duty of care to share information?** All contractors have a duty to share information with those who need it, so if a contractor finds out about underground services, they must share this information through the Principal Contractor – who must ensure that this information is included in the construction phase health and safety plan for the project. To ensure that future risks are managed, information about residual underground and overhead services should be clearly recorded in the health and safety file for the project.
17	**What responsibility do designers have in relation to underground services?** Designers have a duty to reduce or 'design out' any risks arising from potential damage to underground services. Risk can be avoided by re-siting services away from the site, re-positioning or redesigning structures to avoid services during the works, disconnecting power/supply or using ground beams to bridge the services. Once risks have been reduced as far as possible or practical in the design, information about any remaining risk should be clearly provided to those carrying out the work on working drawings.

For more information on Health & Safety guidance and training, to arrange dedicated Health & Safety training for your business or speak to us about ongoing H&S support, please contact Jon Rensink on 07785 425295 or email jr@danielconnal.co.uk

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