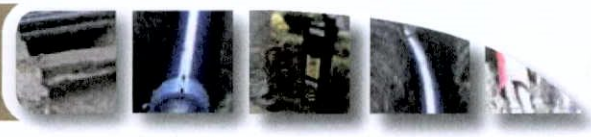


A1.22 Any damage to an electricity cable should be reported immediately to the cable service provider and work should not be undertaken in the vicinity of a damaged cable until the service provider has investigated its condition. (Some cables may automatically 'trip out' when damaged, but these may be re-energised at any time unless the cable service provider is notified of the damage.)

Recommended standards for new underground electricity cable installations on new developments and in existing roads and streets

A1.23 Buried electricity cables may be laid either directly in the ground or they may be installed in impact-resistant ducts or pipes. As a general guideline, new cables should be installed at depths of approximately 450mm in footpaths and driveways and at greater depths of approximately 600mm when installed in road carriageways or grassed areas. However, local conditions may dictate that these depths vary, particularly where pipes and cables cross, or where underground structures or other obstructions are crossed. Depths may also vary at entrances to buildings, beside street furniture and at underground link disconnection boxes. Deviation from the recommended standards outlined above should only occur if local conditions make compliance impracticable. If cables are buried at shallower depths than those recommended, then this should be noted on the record drawings.

The clearance in all directions between underground electricity cables and other services should be approximately 300mm. With the exception of crossing points, services should not be laid above electricity cables. This is because, following installation, continuous access will be required for the repair of faults or the installation of new service connections. These connections are usually jointed live in the case of low-voltage mains cables.

While there is no agreed industry standard in Ireland governing the relative lateral positioning of services in footpaths, general guidance may be found in the UK publication *National Joint Utilities Group (NJUG) Guidelines on the Positioning and Colour Coding of Underground Utilities' Apparatus 2013.* Efforts should be made to comply with this standard, or other equivalent standards of good practice in relation to the positioning of new installations.

Colour marking and strength specification of ducts for underground electricity cables

A1.24 All new underground ducts laid for the installation of electricity cables of 125V or greater must be **RED** in compliance with IS 370:2007 (see Appendix 6) and must carry the warning: **DANGER ELECTRICITY CABLES.** They must also conform to the deformation and impact resistance requirements and all other requirements as set out in the 'Material Specification' (see Section A1.25).

A1.25 Material specification for red uPVC and MDPE ducting for the installation of underground electricity cables

	MAINS CABLE DUCT	HOUSE SERVICE CABLE DUCT
Duct outside diameter (mean)	125.0mm – 125.4mm	50mm
Duct type	uPVC, 6m lengths; Spigot and socket type	MDPE, 6m straight lengths or 50m coils
Duct rating	Normal duty per EN 50086 – 2 specification	750N – EN50086 – 2
uPVC quality	100% virgin material	100% virgin material
Duct colour – outside	Red – BS Type 5252 04E53 – 04E56	Red as for 125mm Minimum 1mm thickness of colour
Duct deformation requirement	Must pass EN50086 – 2 <5% deformation requirement for 450N loading on 200mm sample	Must pass EN50086 – 2 - :1996 <5% deformation for 750N loading on 200mm sample
Impact resistance	Per 50086 – 2 12 samples; 5kg striker: 570mm fall height:>28 Joules – no crack in at least 9 samples	As for 125mm
Duct minimum wall thickness	The larger of the two criteria: (1) Wall thickness to pass 5% deformation /impact requirement above and (2) Minimum wall thickness of 3.8mm (required for cable pulling)	Duct wall thickness based on 750N loading test
Duct end; spigot end	Spigot: plain end bevelled to allow easy jointing of duct on site, minimum thickness of plain end to be 1.3mm, bevel length 5mm	Duct ends bevelled to allow jointing of duct on site
Circumferential mark on plain pipe end for correct push-in distance	Circumferential mark required to indicate correct push-in distance for duct jointing for spigot and socket joints. Location: 105mm – 110mm to suit socket length below	Clear circumferential mark required to indicate correct push-in distance for duct jointing using standard 50mm couplers
Duct ovality including socket	2.00mm max.	1.4mm max.
Eccentricity of socket relative to duct	None allowed and no angle allowed between socket centre line and the duct longitudinal axis to avoid ripping cable sheath during cable pulling	None
Duct inner surface	Smooth, low-friction surface completely free of ripples, sharp edges and protrusions. Friction coefficient <0.28	As for 125mm ducting Friction coefficient <0.28

	MAINS CABLE DUCT	HOUSE SERVICE CABLE DUCT
Legend content:	'DANGER ELECTRICITY CABLES'	'DANGER ELECTRICITY CABLES'
Repetition rate/gap between legend	150mm max gap between adjoining legends	150mm max gap between adjoining legends
Colour of legend, size of lettering	Black NOTE: 3 lines of 20mm @ 120°	Black 2 X 8mm – 10mm height @ 180° apart
Batch No./name of manufacturer and date of manufacture	6mm minimum lettering size	6mm minimum lettering size
Red colour fastness	One year minimum required so as to provide 12-month storage period at builders' providers premises One year outdoor weathering test required or suitable accelerated colourfastness test	One year minimum required so as to provide 12-month storage period at builders' providers premises
All bends for 125MM duct	All angles: radius = 1.2m minimum for 22, 45 and 90° material as per pipe specification above. (3.8mm minimum thickness)	
Bend ovality	2mm max (same as for pipe)	
Couplers for 50mm OD duct		Slip or rubber gasket type with no internal obstructions/sharp edges. A centering ridge is required that does not protrude

Appendix 2: Gas pipelines

A.2.1 General requirements

Natural gas, which is highly flammable, is transported in a network of polyethylene and steel pipes at pressures up to 85 bar. Damage to a gas main may result in large volumes of gas escaping into the atmosphere in an uncontrolled manner. Even if there is no smell of gas, any damage to a gas pipe should be reported, regardless of how minor the damage might appear. An immediate repair may prevent an accident at a later stage due to a stress failure at the location of the original minor damage.

Most underground gas pipes are the property of gas transmission or distribution companies. One notable exception to this is private 'metered' estates, which may have gas piped to users from a bulk liquefied petroleum gas (LPG) tank. In such cases, the service provider should be able to supply the requisite information. Estates that comprise privately owned dwellings do not normally have a site owner or manager. In such circumstances information may be obtained from the LPG supplier, whose name and telephone number (manned twenty-four hours each day) should be displayed in the bulk storage vessel compound. The risks associated with leaking LPG are even greater than those associated with leaking natural gas as it is heavier than air and does not disperse as readily. In addition, it can travel great distances below ground level before accumulating at low levels.

All personnel who are involved in carrying out work near underground gas plant should observe the specific requirements set out by the gas network operator. Network operator staff or representatives must have access to underground and above-ground plant at all times. Unauthorised repairs to gas pipes must not be made. If there is any doubt about the need to carry out repairs, the advice of the relevant gas network operator company should be sought.

Natural gas pipeline infrastructure in Ireland may be categorised as transmission pipeline or distribution pipeline.

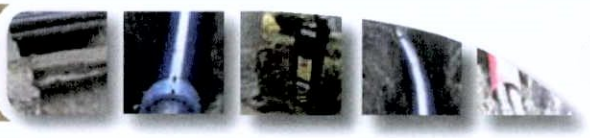
A.2.2 Transmission pipelines

See Section A.2.4 for requirements common to both transmission and distribution pipelines:

Transmission pipelines operate at internal pressures between 7 bar and 85 bar. They are the primary spine pipelines that transfer gas throughout the country. They are constructed from steel with a black or concrete coating and may have marker posts at intervals along their length, particularly at field boundaries and road crossings.

- Transmission gas pipelines are generally between 150mm and 1000mm in diameter and coated in yellow and/or encased in black wrapping.

If a transmission main is identified within ten metres of any intended excavations (including vertical boring), then work must not proceed until the gas network operator has been consulted. See greater distance requirements in relation to special operations in Section A.2.2.7.



The network operator should be consulted before commencement of excavation works within ten metres of any large pressure reduction plant, i.e. above-ground gas installation (AGI) or district regulator installation (DRI), as shown on the map records.

Gas Networks Ireland: 'Dial Before You Dig' enquiries: 1850 427 747.

A.2.2.1 Locating the transmission pipeline: The gas network operator should arrange for locating and marking out of the pipeline as well as for the supervision of the digging of any trial holes necessary to confirm the position of the pipeline.

A.2.2.2 Orientation and location: Where a new service is to cross either above or below an existing transmission gas pipeline, the normal minimum distance between the outside of the pipeline and the service to be installed should be 600mm.

In special circumstances this distance may be reduced at the discretion of the network operator's engineer. At such crossings both the pipeline and the new service should be suitably supported to prevent any future settlement and the back-fill should be packed and consolidated to the satisfaction of the network operator's engineer (see Section A2.2.6).

As a general rule, no new service should be laid parallel to an existing transmission gas pipeline. However, in special circumstances (e.g. motorways) a new service may be laid parallel to an existing pipeline provided that there is adequate clearance (normally 600mm) between them and provided that the service is not laid in parallel either directly above or below the existing pipeline.

A.2.2.3 Cathodic protection: Transmission gas pipelines are cathodically protected. Where a new service is to be laid and similarly protected, the network operator (once notified) is obliged to carry out interaction tests to determine whether its system is adversely affected.

A.2.2.4 Pressure testing: Hydraulic testing of other installations (e.g. high-pressure water mains) should not take place within eight metres of an existing transmission gas pipeline unless precautions have been taken to mitigate the effects of a possible burst. These precautions may include the use of pre-installation tested pipe, sleeving, barriers etc. as agreed with the gas network operator's engineer.

A.2.2.5 Excavation: Where it is necessary to excavate below a transmission gas pipeline, the pipeline must during all stages of the operation be supported to the satisfaction of the gas network operator's engineer. On completion, permanent supports should, if necessary, be constructed to avoid future settlement.

Mechanical excavation by powered tools is not permitted within a distance of three metres and the use of hand-held power-assisted tools should not be permitted within 1.5 metres of a transmission gas pipeline or associated equipment. Consideration may be given to a relaxation of these limits provided that prior notice of the excavating methods to be used is given to the network operator and the safeguards to be employed are agreed between all parties.

To avoid damage during construction work, exposed gas pipelines must be protected as directed by the network operator's engineer.

A.2.2.6 Back-filling: Parties responsible for the new works should give the gas network operator at least forty-eight hours notice of their intention to back-fill under, over or near an existing transmission pipeline. The gas network operator's representative must be in attendance during all back-filling operations and advise on the suitability and degree of consolidation of back-fill material around the pipeline. Any damage to the coating of the transmission gas pipeline, even if minor in extent, must be brought to the notice of the gas network operator so that any necessary repairs may be carried out before back-filling is completed. The gas network operator must make repairs as efficiently and as quickly as practicable.

A.2.2.7 Special operations: *Explosives* must not be used within 400 metres of gas transmission pipelines (30 metres for distribution pipelines), without prior consultation with the gas network operator.

Piling and/or demolition works; the gas network operator must be consulted before any piling is carried out within 15 metres of an existing gas pipeline.

A.2.3 Distribution pipelines

Distribution pipelines operate at internal pressures less than 7 bar. They transmit gas at medium pressure (more than 100 mbar and less than 7 bar) or low pressure (less than or equal to 100 mbar) and are mainly constructed from polyethylene (PE).

The pipeline is predominantly yellow in colour, but may have brown or black stripes. Mains gas pipelines usually run parallel to property in the footpath, grass verge or road and range in size from 63mm to 315mm diameter. Service gas pipelines are connected to mains and run to a meter position at the property and range in size from 20mm to 63mm diameter.

Note: There is a limited use of steel pipes in areas like bridges or where only shallow depths can be achieved Gas Network Ireland: 'Dial Before You Dig' enquiries: 1850 427 747.

A.2.4 Requirements common to both transmission and distribution pipelines

Requirements under A.2.2 take precedence in the vicinity of transmission pipelines.

A safe system of work must always be followed – refer to Section 6.

Work involving piling, demolition, directional drilling, use of explosives or hot works may require special precautions to be taken.

A.2.4.1 Planning and obtaining utility maps: It is imperative that early contact is made with the gas network operator to obtain a gas network map and that this is made available to operatives on site for the duration of any works. The responsible person should ensure that operatives on site understand the map and are continually informed of any updates.

A.2.4.2 Identifying distribution mains and services: Where the presence of gas mains which operate at pressures greater than 7 bar is indicated (i.e. a transmission pipeline), the gas network operator must be consulted before work begins.

The depth of cover from gas distribution mains laid in a roadway is normally 750mm. For those laid in a footway it is normally 600mm. The depth of cover for gas service connections is normally 450mm in both roadways and footpaths. However, at entry points to buildings, the depth of cover for a service connection may be 375mm. It is important to note that these depths are merely a guide and pipes may be found at shallower levels. For example, pipes such as those passing over cellars or in the vicinity of bridge structures may have been laid at shallower levels, or the depth of cover may have been reduced after the pipe was installed due to other works such as road alterations being carried out in the area.

Polyethylene mains may have been inserted into redundant cast iron or ductile iron gas mains. Marker tiles may have been used above gas pipes, for example where they have been laid at a shallow depth in bridge structures or above cellars.

Polyethylene mains may have a coloured plastic marker tape above them. The presence of gas plant may also be indicated by valve boxes and marker posts. Marker posts/plates are sometimes used to indicate the position and size of valves or siphons on gas mains. However, such markers may have been disturbed and should not be relied upon as an accurate indicator of pipe position.

Plans do not normally show the position of service connections. Their existence should be assumed and it may be possible to estimate the probable line of the service connection pipe from the gas meter boxes/cabinets, house entry points, service risers and gas valve covers, or from the point of entry to the premises. Older buildings may have no visible signs of a service, as the service may run directly into the building underground, with the meter fitted internally. In these cases a check should be made inside the building to identify the service route to the meter position.

A.2.4.3 Safe digging practices and avoidance of pipeline impact:

(i) Excavations near gas pipelines: Where gas pipes cross, or are parallel and close to excavations, changes in back-fill may cause differential ground settlement and increased stress in the pipe. Where pipes are parallel and close to excavations, the degree of risk depends on the depth of the excavation, the distance of the pipe from the excavation and the type of soil. If an excavation is likely to affect support for a gas pipe, the gas network operator should be consulted. If gas pipeline or gas plant relocation is necessary, the gas network operator should be contacted to arrange diversion before work begins.

The network operator should be consulted before commencement of excavation works within ten metres of any large pressure reduction plant, i.e. above-ground gas installation (AGI) or district regulator installation (DRI), as shown on the map records.

(ii) Pipe locators: Before excavation, locator devices that use radio frequency detection or transmitter-receiver technology should be used to help locate metallic gas pipes. However, it should be noted that the majority of distribution gas pipelines are made of polyethylene and cannot be traced by such devices. This factor further reinforces the importance of using plans and safe digging practices.

(iii) Road construction work: If road construction work is being carried out close to the top of a gas pipe, the gas network operator should be consulted to give guidance on specific precautions to be taken.

(iv) Mechanical excavators: Mechanical excavators pose the highest risk and **should not** be used within three metres of a gas transmission pipeline or within 0.5 metres of a gas distribution pipeline.

Gas pipes may have projections such as valve housings, siphons and stand pipes and these will not be shown on the plans. In order to allow for these projections, mechanical excavators should not be used within the distances identified above.

(v) Hand-held power tools: Hand-held power tools may damage buried gas pipes and they should be used with care until the exact position of an underground pipe has been determined. They should not be permitted within 1.5 metres of a transmission gas pipeline or associated equipment.

(vi) Hand digging: Plastic gas pipes should be located by hand digging before mechanical excavation begins. It may also be necessary to use this method to locate metallic pipes if their position has not already been determined by a pipe-locating device. The use of hand digging is particularly important for service connection pipes, which will not be marked on plans. The recommended method is to dig a trial trench along the road near the kerb, or on the footpath, where the depth of the service connection pipes is likely to be at its shallowest. Once the position and depth of the pipes have been determined, work may proceed.

(vii) Special operations: *Explosives* must not be used within 400 metres of a gas transmission pipeline (30 metres for a distribution pipeline), without prior consultation with the gas network operator.

Piling and/or demolition works; the gas network operator must be consulted before any piling is carried out within 15 metres of an existing gas pipeline.

(viii) Crossing points: In cases where heavy plant and other machinery may have to cross the line of a gas pipe during construction work, the number of crossing points should be kept to a minimum. These points should be clearly indicated and crossings at other positions along the line of the pipe should be prevented. Where the pipe is not adequately protected by an existing road, crossing points should be suitably reinforced with sleepers, steel plates or a specially constructed reinforced concrete raft. The gas network operator will advise on the type of reinforcement necessary.

(ix) Hot work: If hot work, such as welding or laying hot bitumen, is to be carried out adjacent to gas pipes or installations and there is any risk of that work affecting the integrity of a pipe or pipe surface, the gas network operator should be consulted. Gas pipelines, their protective coating and above-ground plant must be protected against damage by heat transfer, sparks or naked flames.

(x) Uncovering a gas pipe during excavation: If a gas pipe with a damaged wrapping is uncovered during excavation work, the gas network operator should be informed so that repairs may be carried out to prevent future corrosion and leakage.

Pipe restraints or thrust blocks close to gas mains should never be removed.

(xi) Positioning of structures in the vicinity of gas pipelines: Manholes, chambers or other structures should not be built over, around or under a gas pipeline or gas plant. Work should not be carried out that results in a reduction of cover or other protective measures without prior consultation with the gas network operator.

(xii) Use of concrete or other hard material: Concrete or other hard material should never be placed or left under or near any gas pipe as this could cause pipe fracture at a later date. Concrete back-fill or slabbing should not be used within 300mm of a gas pipe or associated connections.

(xiii) Back-filling distribution pipelines after excavation work: If a gas pipe is uncovered during excavation work, the back-fill should be adequately compacted, particularly beneath the pipe itself. This measure is designed to prevent any settlement that could subsequently damage the pipe. The back-fill should comprise fine material or sand and should not contain stones, bricks, lumps of concrete etc. It should be suitably compacted to give comparable support and protection to that provided before excavation. Power compaction should not take place until a 200mm cover of selected fine-fill is in place.

Any protective measures, such as marker tape or marker tiles, should be reinstated.

A.2.5 In the event of damage to a gas pipeline

In the event of damage to a gas pipeline, work should cease immediately and the following precautionary measures should be taken:

- Do not turn any electrical switches on or off (e.g. ignition switches).
- Do not operate any plant or equipment.
- Move people away from and upwind of the affected area.
- Restrict employee and public access to the affected area.
- Prevent smoking, the use of naked flames, the use of mobile phones and other ignition sources in the vicinity of the leak.
- Report the leak/damage immediately to the gas network operator emergency number.
- Provide accurate information on your location and the nature of the incident.
- Do not attempt to repair the damage.
- Do not cover up a damaged main or service pipeline, this may lead to the gas travelling through ducts, sewers, chambers or voids and potentially building up inside a premises or confined space.
- Do not turn off any gas valves in the road or footpath (you may be causing further problems by doing so).
- Assist the gas network operator emergency personnel as required to safeguard life and property.

It is critical that any damage to gas pipelines, even if the pipe does not appear to be leaking, is reported to the gas network operator.

Gas Networks Ireland Emergency Number: 1850 20 50 50.

Appendix 3: Water pipes and sewers

The appropriate records office should be contacted and the location of all sewers, water mains, kiosks, meters and wiring/cable ducting should be determined before any excavation work begins. The location of mains on drawings should be taken as approximate. In general, if there is a sewer or water main (diameter greater than or equal to 300mm) in the vicinity, then the appropriate service provider engineer should be contacted in order to co-ordinate the excavation work.

Mains runs must be marked out before excavation begins.

During excavation, in addition to the safe digging practices previously outlined in this COP, the following precautions should be taken:

- If a water main spans a road cutting or similar excavation, then the main must be adequately braced so that no movement takes place.
- If a pipe anchor is exposed, then excavation must cease and the appropriate engineer must be contacted.
- Fittings (ferrules, air valves and so on) should not be interfered with.
- Excavation in the vicinity of mains must be carried out by hand in order to avoid damage to the pipe.

If the pipe in question is a high-pressure trunk main, then the following additional precautions must be adhered to:

- No personnel should be positioned inside the trench while the mechanical excavator is operating, in case a high-pressure break occurs.
- Continuous inspections are essential in order to determine whether the next excavation level is clear.
- If any leak is discovered, then the service provider must be contacted immediately and the area sealed off to keep it safe and to prevent members of the public from gaining access.

In relation to the installation of new services, in particular gas or electricity services near existing water or sewer mains, the following additional precautions are recommended:

- No new service should be laid above or along the length of an existing water main or sewer.
- Where the new services have to cross a water main or sewer this should be done at right angles as far as is reasonably practical.
- New installations should always avoid blocking access to valves, flanges etc., where subsequent maintenance may be required.
- Where a new service is likely to limit access for future maintenance to the service, contact with the relevant local authority should be made in advance of the works.

Appendix 4: Telecommunications cables

Pre-planned work

A4.1 The cable providers should be consulted wherever possible and all relevant plans obtained. (Note: While most telecommunications cables are owned by Eir, many underground cables are the property of local authorities or private companies.)

A4.2 The representation of underground cables on plans may vary depending on the density of the underground networks (i.e. the number of cables running in close proximity), the scale of the plans and local historical recording conventions. Advice for interpretation should be sought from the issuing office.

Cable-locating devices

A4.3 While using cable-locating devices to locate underground telecommunications cables you must understand the limitations of each operating mode and the need to use both power and radio modes to locate the underground service.

A4.4 Even where a cable-locating device does not give a positive reading, there may still be cables present. Cable-locating devices will not detect fibre optic cables.

A4.5 If a cable that is recorded on a plan cannot be located, appropriate assistance or advice should be sought. If digging has to start before such assistance or advice has been obtained, extra care should be taken to avoid damaging the cable.

Safe digging practices

A4.6 In the vast majority of cases there will be no permanent surface markers to indicate the presence of a buried cable. Frequently, however, the presence of marked communications manhole covers or other street furniture will indicate the presence and general run of telecommunications cables. Even if no cables are shown on plans or detected by a cable-locating device, a close watch should be kept during excavation for any signs that might indicate their presence.

A4.7 Underground telecommunications cables are normally laid at adequate and sufficient depth in trenches but depths should never be assumed. Cables must not be laid just below the surface.

If in doubt the network provider should be contacted.

A4.8 Cables may have been laid in any of a number of different ways. In urban areas steel wire armoured telecommunications cable can be found buried directly in the ground or in ducting of various colours ranging in size from 25 to 100mm, Telecommunications cable may also be found in earthenware or concrete pipes. Occasionally they may be encased in steel pipes. Coloured plastic marker tape may be laid above the ducting.

A4.9 During digging work, a careful watch should be kept for evidence of cables and repeat checks should be made with a cable-locating device to determine more precisely the position of any cable.

A4.10 Any damage to a telecommunications cable should be reported immediately to the cable service provider. No work which involves back-filling around the damaged cable should be undertaken until the service provider has investigated its condition and carried out any required repairs.

A4.11 Recommended standards for new underground telecommunications cable installations on new developments and in existing roads and streets are to be adhered to. However, local conditions may dictate that these depths vary, particularly where pipes and cables cross or where underground structures or other obstructions are crossed. The clearance in all directions between underground telecommunications duct and other services should be approximately 300mm. With the exception of crossing points, services should not be laid above telecommunications duct. This is because, following installation, continuous access will be required for the repair of faults.

A4.12 While there is no agreed industry standard in Ireland governing the relative lateral positioning of services in footpaths, general guidance may be found in the UK publication *National Joint Utilities Group (NJUG) Guidelines on the Positioning and Colour Coding of Underground Utilities' Apparatus 2013*. Efforts should be made to comply with this standard, or other equivalent standards of good practice in relation to the positioning of new installations.

Appendix 5: Suggested job aid for workers on a safe system of work for digging

WORKER JOB AID

Safe System of Work for Digging

These Guidelines apply to all work which involves penetrating the ground at or below surface level.

When working near buried services USE

Maps
CAT
Safe Digging System
Company Policies & Procedures

All 4 complement each other

Always be aware that the depth of cover may be very shallow and that there may be no bricks, warning tape or other protection in place. Always assume that there will be more services than you can find.

BEFORE You Start Digging

- ✓ **Ensure you have appropriate Utility Plans** *Remember:* service connection cables & pipes from *the main to buildings or public lights may not be shown*

Look Out For

Manhole Covers
Valve Covers
Lamp Posts
Houses/Buildings
Meters, Coms. Network
Signs of Previous Digging

→ *Services*

- ✓ **Always use Cable Locator (CAT) to trace all services**
- ✓ **Mark the positions of the cables & pipes** *using waterproof crayon, chalk or paint*
- ✓ **Highlight & Assess the Hazards and ensure all relevant staff are aware of the hazards, especially** when electric cables and/or gas mains are in vicinity of work area.

IMPACT

- **Inspect Site Location. Look for indicators to services**
- **Mark the location of services on the surface before digging**
- **Plans and Maps should be available & used on site before digging**
- **Always assume that there will be more services than you can find**
- **CABLE LOCATOR should always be used (in Power & Radio modes) before starting work and throughout the course of the work**
- **Take Care. Where ever possible hand dig close to buried services. Observe 'SAFE DIGGING PRACTICE'**

Page 2

WORK USING 'SAFE DIGGING PRACTICE'

1. Where ever possible **Hand Dig** near buried services
2. Take special **CARE** using picks, pins or crowbars
3. Wear **Gloves** & other appropriate **PPE** *(Personal Protective Equipment)*
4. Do not use hand held power tools within 0.5 metres of marked position of electricity cables unless the number of services makes it impossible or surface obstructions reduce the space available.
5. Do not use hand held power tools directly over marked line of cable **UNLESS -**
   a) You have already found the cable at that position by careful hand digging beneath the surface AND it is at a safe depth (at least 300mm) below the bottom of the surface to be broken OR
   b) Physical means have been used to prevent the tool striking it.
6. When the surface has been broken out use CAT again to re-confirm position of services. Frequent and repeated use should be made of CAT during the course of the work.
7. Before using a mechanical excavator in the vicinity of electricity cables, trial holes should first be excavated by careful hand digging. Confirm the depth of the cable(s) at the point of work. The excavator should not be operated within a radial distance of 300mm from the cable(s).
8. When using Mechanical Excavator in the vicinity of electricity cables keep everyone clear of bucket while it is digging
9. Where an electric cable is embedded in concrete, arrange for the cable to be SWITCHED OUT before breaking off concrete.
10. Do not use exposed electricity cables as a convenient step or hand hold.
11. Do not handle or attempt to alter the position of an exposed electricity cables (unless under the direction of approved ESB personnel). Extreme care should be taken where joints have been exposed.
12. If an electricity cable, gas pipe or high pressure water mains suffer any damage, however slight, the owner should be informed immediately and people should be kept well clear of the area until it has been made safe by the owner.
13. Backfill around services with sand and use appropriate utility warning marker tape. Do not build into manhole or other structure or encase in concrete.

Appendix 6: Summary of IS 370:2007

Summary of colour code for buried plastics piping

(see Irish Standard 370:2007 – Colour code for buried plastics piping)

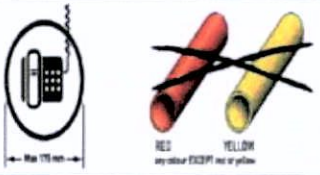
WARNING - This code applies to new installations. All users should be aware that a high proportion of existing underground services are in ducts and pipes which do not conform to the colour requirements set out in I.S. 370:2007.

Public Lighting
(and control cables operating at 125 volts & above)

Storm & Road Drain
smooth external wall duct, corrugated

Telecom / Fibre Optic
smooth external wall duct

Telecom / Fibre Optic
corrugated duct only - Maximum pipe outside diameter 175mm



Gas

Electricity Ducting

Sewer

Buried Potable Water

Street Furniture
signal below 125 volt

NSAI
National Standards Authority of Ireland
Údarás Um Chaighdeáin Náisiúnta na hÉireann

NSAI
Glasnevin, Dublin 9, Ireland
Telephone: +353 1 807 3800
Fax: +353 1 8073838
Email: nsai@nsai.ie
www.nsai.ie

Appendix 7: Useful contacts

ESB Networks

For all emergencies, including any damage to underground electricity cables or plant, call **1850 372 999** (or if you are phoning from outside Republic of Ireland 00 353 21 2382410).

For other ESB Networks queries, including general queries in relation to underground electricity cables, overhead lines, new connections etc., call 1850 372 757, email: dig@esb.ie or see area office addresses at: www.esb.ie/esbnetworks.

For all ESB Networks map records (underground cables, overhead lines and other plant):

(a) Write to Central Site, ESB Networks, St Margarets Road, Finglas, Dublin 11.
(b) Send a fax to 01 638 8169.
(c) Email: dig@esb.ie
(d) Register for access to electronic map records (make arrangements via (a) or (c) above).

All map requests should include the following information: (i) a site map/area map with geographic reference, (ii) a return postal address and (iii) a telephone contact number.

Map records that have been requested as set out above will be delivered by post. Allow up to ten days for delivery.

ESB Networks provides a range of safety material, such as booklets, posters, cab stickers and DVDs addressing the issue of electrical safety. This material is free and may be obtained by calling 1850 372 757 or by email request to: esbnetworks@esb.ie. Some of this material is also available for free download from: www.esb.ie/esbnetworks.

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Gas Networks Ireland 'Dial Before You Dig':	1850 427 747
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