

working safely
and
avoiding danger
from
underground services
and other utility
apparatus

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introduction

The guidance in this booklet outlines the potential dangers of working near underground and overhead services and gives advice on how to reduce the risks, primarily focussing on people's health and safety rather than damage to services. The precautions taken to reduce the risks to people's health and safety will, however, generally also reduce the risk of service damage, which can directly or indirectly pose a risk to people's health and safety.

In addition to the risk of serious or even fatal injury, damage to services can result in significant disruption and environmental damage, delay the project and incur considerable costs through repairs and potentially fines for non-compliance with health and safety at work legislation. Following this guidance will help to avoid these costs.

aim

The guidance is primarily aimed at all those involved in commissioning, planning, managing and carrying out work on or near underground or overhead services, as well as the operators of such services.

The guidance is equally useful to private householders and others who, although not necessarily subject to health and safety at work legislation, may place themselves at considerable risk if they cause damage to services.

Jersey has a widespread network of both underground and overhead services. It should never be assumed that services will not be present or that the type of overhead service can be identified; confirmation from the Utility or Service Company should always be sought.

application

The guidance applies to situations where underground and overhead services may be found and disturbed and includes:

- street works
- road works
- excavation, drilling and piling
- the operation of cranes, telescopic materials handlers, fork lift trucks, mobile elevating working platforms and skip vehicles

- demolition and site remediation
- site investigation surveys
- any other construction work which could result in contact with underground services or overhead lines

approach

The guidance is divided into four sections:

- the dangers
- safe systems of work
- precautions for particular services
- arrangements for disconnection of services

definitions

Service(s) means:

Gas, water, sewerage, communication, or electrical service or other service such as a chemical, fuel or refrigerant line.

This includes pipes, cables, overhead lines and equipment associated with the electricity, gas, water (including piped sewage) and telecommunications industries.

Service connection(s) means:

Pipe or cables between distribution mains and individual premises.

Service connections may also be referred to as 'services', 'communication pipes' or 'customer connections'.

Above ground installation(s) means:

All electricity sub-stations, gas pressure reduction stations, meter housings, telecommunications connection cabinets, pumping stations etc.

organisations referred to in this guidance

Utility companies

Jersey Electricity plc
(‘Jersey Electricity’)

Jersey Gas Company Limited
(‘Jersey Gas’)

Jersey Water

States Departments

Transport and Technical Services
(‘TTS’)

the law

The Health and Safety at Work (Jersey) Law, 1989, applies to all work activities. Part 2 of the Law sets out general duties on all those involved with work activities in relation to health and safety at work. Included are manufacturers, designers, employers, the self-employed and employees in respect of persons at work and members of the public.

The Approved Code of Practice, Managing Health and Safety in Construction, ACoP 11, provides practical guidance on the legal duties placed on key parties involved with the design, planning, and management of construction projects.

The Electricity at Work (Jersey) Regulations, 1983, sets out detailed requirements to control health and safety risks from electricity. Included are specific requirements setting out the need to ensure that electrical equipment is not exposed to wet, dirty, dusty or corrosive conditions and the need to ensure that risks are controlled when working near underground electrical cables or overhead lines.

The guidance set out in this booklet will assist persons with duties under the Health and Safety at Work (Jersey) Law, 1989, and the Electricity at Work (Jersey) Regulations, 1983, to meet their legal requirements.

Other legal requirements for persons working on construction sites, for example the Construction Safety Provisions (Jersey) Regulations, 1970, and the Construction (Personal Protective Equipment) (Jersey) Regulations, 2002, may also apply to work carried out involving utility services and equipment. Guidance on meeting these legal requirements is not referred to in this booklet.

Further information on the legal requirements for health and safety may be viewed on www.gov.je/hsi

Reference to the law and regulations is available on the Jersey Legal Information Board website: www.jerseylaw.je

the dangers

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 cable is penetrated by a sharp object such as the point of a tool. Such effects can also occur when a cable is crushed severely enough to cause internal contact between the conductors. Typically injuries are severe burns to the hands, face and body, which are potentially fatal. There is also a risk of electric shock, although this is less likely.

Incidents may also arise from cables that have been damaged but left unreported and unrepaired.

Other nearby services, such as plastic gas pipes, may also be at risk from damaged live electricity cables. This could result in explosions and a greater fire risk.

overhead electricity lines

Inadvertent contact or being in close proximity to overhead

electricity lines with equipment such as scaffold tubes, irrigation pipes, metal ladders or machinery such as cranes and tipping trailers, poses a risk of fire or explosion and electric shock, and burn injuries to anyone touching the equipment or machinery.

Materials, such as wood or plastic, which are normally considered to be electrical insulators, can also become a pathway for electrical current if damp or dirty.

Direct contact with overhead lines is not necessary to cause serious injury or death as electrical current can arc or jump across a gap between the overhead lines and the object.

gas pipes

Damage to gas pipes can cause leaks that may lead to fire or explosion. There are two types of damage:

- damage that causes an immediate leak
- damage that causes a leak some time later

The damage may occur at the time the work is carried out or subsequently; for example, poor backfill compaction or reinstatement may leave a pipe inadequately supported or subject to unequal forces. Similarly, damage to the protective pipe wrapping may lead to corrosion and eventually a leak. The consequences of such damage may take many years to materialise.

Outside of the areas served by mains gas, bulk Liquefied Petroleum Gas (LPG) supplies may be installed, often having buried distribution networks with individual customer connections.

The danger created by damaging a gas pipe with an excavator is much greater than if the damage is done with a hand held power tool (the opposite is true for work near electricity cables). The effects of mechanical damage may not occur at the point of impact, for example:

- damage to a service connection may result in unseen damage to the connection inside the building
- gas from a damaged pipe may travel along the line of a service pipe and into a building, causing a dangerous build-up of gas inside the premises

water pipes, sewers and drains

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 other 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
- damage to, or removal of, thrust blocks can result in sudden loss of containment and the movement of pipe fittings that may travel some distance or cause impact damage

While some sewage is pumped at pressure, sewers are generally gravity-fed. The main risks from damage to a sewer are:

- to the health of persons from contact with raw sewage, and potential exposure to biological hazards such as GE, Lepto and hepatitis
- the potential for ground collapse
- the possibility of environmental contamination and pollution

telecommunication cables and fibre optics

Damage to telecommunication and TV cables may require expensive repairs and can cause considerable disruption to those relying on the system, especially emergency or essential services. The risk of direct personal injury is, however, normally very low but could result in:

- flammable and toxic gases entering cable-carrying ducts, particularly if the duct has been disrupted. Such gases can accumulate in chambers, manholes etc. and pose a risk to operatives who may need to work there

other services

The danger arising from damage to other services depends on the nature of the product being conveyed. Products and their associated risks include:

- flammable liquids and gases – risk of fire and explosion
- fluids at elevated pressure – risk of injury from sudden release of contents
- toxic liquids and gases – risk of poisoning
- inert gases such as nitrogen and argon – risk of asphyxiation

The presence of other services' pipes and cables should always be anticipated.

safe

systems of work

working safely

Safe systems of work to avoid danger from contact with underground services and overhead lines, and danger arising from disruption of such services, have four basic elements:

- planning the work - obtain plans and details of services
- detecting, identifying and marking underground services
- safe excavation/ safe digging practices
- ensuring reinstatement work is carried out correctly

At all stages **THINK** and **REVIEW**

The potential for errors and dangers to arise should be considered at all stages of the work, from planning through to final reinstatement, with formal written risk assessments prepared to assist in working through the process in order to develop a safe system of working. These risk assessments should be coupled, where necessary, with a work permit system.

Risk assessments should take into account all related work activities and identify training and competency needs, as well as the level of supervision required to manage the risks involved to an acceptable level.

Consideration should be given to the guidance contained in this publication when carrying out risk assessments. The Contractor in control of the work should ensure that everyone working on site is aware of the risk assessments carried out for the proposed work and that everyone is also familiar with this publication.

planning the work - obtaining information

Many dangers can be avoided by careful planning before the work starts.

Anyone planning or designing an engineering scheme or construction project should take due account of the potential presence of utility services and make arrangements for their diversion, disconnection or protection at the design stage of the work.

Plans, or other suitable information about all services and above ground installations in the area of the proposed work, should be obtained before work starts.

Jersey Electricity, Jersey Gas, Jersey Water, Drainage Infrastructure TTS and other service operators should provide either up to date, legible plans which show the approximate line and depth (where known) of all their known services in the proposed work area, or other suitable information which achieves the same aim.

Plans vary in scale, content and style and give an indication of the location, configuration and number of services at a particular site. They provide information that should help subsequent tracing by location devices and trial holing, but are rarely drawn accurately to scale and reference points used for dimensions may have changed since the plans were prepared. For various historical reasons utility plans are incomplete and do not normally show service connections.

Plans alone are not sufficient to identify and locate services before starting work. They provide basic information on which to base a site survey before work begins.

The Jersey Utilities Services Map, which is accessible on a secure web site, can be of assistance for emergency work, but the service operators should always

be approached for more detailed information in advance of any planned work.

Access to the Jersey Utilities Service Map web site is subject to the agreement of all relevant service operators. Permission to obtain agreement and details of requirements for accessing the web site can be made by contacting the Manager - Streetworks TTS.

detecting, identifying and marking underground services

The position of any underground services in or near the proposed work area should be pinpointed as accurately as possible using a locating device, in conjunction with up to date service plans and other information which provides a guide to the possible location of underground services, and to help interpret the signal.

Operatives must be trained in the use of locating devices and be competent in their various modes of operation and interpretation of the signals obtained.

The line of any identified services should be noted and marked with degradable waterproof crayon, chalk or paint on paved surfaces such that the marks extend outside of the proposed excavation area. In grassed areas, or on unmade ground, spray marker paints or

shallow wooden pegs may be used to indicate a located service route.

There are many types of locating device available, varying in method of operation, cost and complexity. The principle types are listed below, but all have limitations and selection should be based on the nature of the services to be traced:

- **radio frequency detectors** are receiving instruments that respond to low-frequency radio signals, which may be picked up and re-emitted by long metallic pipes and cables. If radio frequency detection is used, other metallic objects such as abandoned pipes, cables and discarded lengths of metal may re-radiate the signal and results may vary appreciably according to locality, length of the underground cable or pipe and distance from the termination and geographical orientation
- **transmitter/receiver instruments**, where a small portable transmitter or signal generator can be connected to a cable or pipe, or placed very close to it, so that the signal is introduced into it. The receiver, typically the same radio frequency detectors mentioned above, can then detect this signal. Usually

the location of some part of the cable or pipe needs to be already known so that the transmitter can be properly positioned. A direct connection is not required but accuracy will be greatly improved if a direct connection can be made. Some signal generators can be sent along pipes. They can provide useful information in difficult situations where the techniques using hum detectors and radio frequency detectors have not been successful. *Use of signal generators will significantly increase the accuracy of the service location*

- **metal detectors** are conventional detectors which will usually locate flat metal covers, joint boxes etc., but may well miss round cables or pipes
- **ground probing radar** is a method capable of detecting anomalies in the ground. When these anomalies can be plotted into a continuous line it may indicate a cable, duct or pipe. However, this technique alone would not determine the precise nature of the service and it should be supported by information available about

the services present and also, preferably, by the use of other more conventional forms of detecting device. Knowledge of ground conditions is important; for example, false readings are most likely where there are boulders and debris in the ground or where the ground has often been disturbed. Because of equipment costs and the need for specialist training it may be cost-effective to use firms specialising in this technique

- **radio frequency identification device (RFID)** is a system increasingly used to mark or 'tag' new services. These markers can be programmed with information about the particular service and its depth, and this information can be read by detecting devices. The accuracy of the information depends on the marker being properly attached to the service. As a developing system, RFID will often be found on new services so will not necessarily assist with older services. RFID marker systems may require specific detecting tools that may not be compatible with one another

Some instruments use more than one of the technologies listed and may include a depth-measuring facility.

safe excavation/safe digging practices

Excavation work should be carried out carefully and follow recognised safe digging practices. Once a locating device has been used to determine position and route, excavation may proceed, with trial holes dug using suitable hand tools, as necessary, to confirm the position of any buried services. Special care should be taken when digging above or close to the assumed line of such a service.

Hand-held power tools and mechanical excavators are the main causes of damage and they should not be used close to underground services. Advice on appropriate safety margins is given in the relevant sections of 'precautions for particular services'.

Burns are the main injuries that result from damage to live electrical cables or from fire or explosion following a gas leak. Burns are made more severe by the injured person not wearing appropriate clothing. The initial risk assessment should identify whether there is a need to wear additional protective clothing; i.e. arc flash or flame retardant clothing, goggles or face visors to protect the operator against burns.

Additional specific measures should be adopted where trenchless methods are used for installing pipes and cables. Existing services should be exposed by careful trial holing and directional drilling should always be directed away from these services.

overhead electricity lines

Special precautions are necessary for work in the vicinity of overhead electricity lines. Advice on appropriate working practice and safety margins is given in the relevant sections of 'precautions for particular services'.

disconnection of services

Services should be disconnected or otherwise made safe prior to demolition works, or other work that may result in interference, disruption or damage. The section, 'wdisconnection of services' provides details of procedures to be followed for electrical and gas services.

precautions

for particular services

electricity

electricity cables and installations

There is always a possibility of uncovering an underground electricity cable when carrying out any excavation work.

Jersey Electricity has been laying underground electricity cables since the 1920s when it became the only undertaking permitted in the Island to provide the mains electricity supply. However, it is only since the 1950s that large scale records of electricity distribution mains supply cables have been maintained.

Electricity cables may also be uncovered on private property where private networks or sub-mains cables have been installed, or where electric lighting has been provided in a garden. It is also possible that demolition work has been undertaken without following correct procedures thereby leaving a live electrical cable buried under the rubble.

It is possible that anyone carrying out excavation work may come into contact with a live electrical cable of which no record exists. It is essential that all possible measures be taken in order to minimise the risk of severe injury or creating a dangerous situation.

location of electricity cables

Electricity distribution mains and service cables are now normally laid at a minimum depth of 700mm below the surrounding ground level, but older cables may be found at depths of 450mm or less. In certain locations cables may be found at a shallower depth where obstructions have been encountered or where the ground level has been reduced since the installation was carried out.

Current and previous methods of marking electricity cables are displayed within the following table:

circuit designation	current marking method	previous marking method
90kV HV cable	interlocking plastic tiles	interlocking concrete tiles
33kV HV cables	interlocking plastic tiles	grey concrete tiles
11kV HV cables	interlocking plastic tiles	grey or red concrete tiles
400V LV cables	yellow warning tape	grey concrete tiles
400/230V LV service cables	yellow warning tape	grey concrete tiles

(kV: Kilovolt HV: High Voltage LV: Low Voltage V: Volt)

The 90kV and 33kV circuits are of particular importance and all excavations in the vicinity of these cables should be avoided. If this is not possible, Jersey Electricity should be contacted early in the planning stage of the proposed excavation work. Specific guidance entitled 'Notice of Location for 33kV & 90kV Electricity Distribution Cables' is available from Jersey Electricity.

Some 90kV and 11kV cables may have been encased in a Cement Bound Sand (CBS) backfill that must only be removed by competent persons authorised by Jersey Electricity.

In the past, many cables, particularly service cables laid before 1980, may have been installed without any marking. Some service cables on private property were also installed in orange 'Osma' ducting, commonly used for drainage purposes. (This practice is now prohibited by Jersey Electricity).

There may also be situations during the course of work where electrical cables are uncovered, but not identified. It must not be assumed that these cables are another service supply or that they are no longer in use. If in doubt, work should cease and identification of the cable confirmed.

procedure for identifying electricity cables, above ground installations and equipment

In order to find out if there are any records of cables, Jersey Electricity should be contacted during the planning stage of the proposed work enclosing a site plan,

preferably to a scale of 1:500 or greater. If a record of a cable exists, the site plan will be returned with the known cable routes indicated.

It is the Contractor's responsibility to ascertain the exact position of the cable using the procedure set out in the section on 'detecting, identifying and marking underground services'. It should be noted that it may not always be possible to detect a live cable; therefore, the absence of an indication of a cable must not be taken as proof that the cable is not present. Similarly the absence of a signal from a known cable should not be taken as indication that the cable is not live.

Electrical cables are not necessarily installed in straight lines and care should be taken to ensure that deviations from the route of the cable are identified.

The route of the cable should then be clearly indicated with warning notices. Steel spikes or long pegs which could damage the cable should not be used.

Trial excavations dug by hand across the presumed line of the cable, approximately 5 metres apart or as necessary, should be made to locate the route and depth of the cable. When excavating in close proximity to the cable all possible care should be taken.

Mechanical excavators or power tools, other than for breaking paved surfaces, should not be used within 0.6 metres (for LV cables), or 1 metre (for HV cables) of the indicated line of the cable unless prior agreement has been reached with Jersey Electricity.

When power tools are used to break paved surfaces, care must be taken to ensure that penetration of the surface is kept to the minimum required. Only 'bladed' hand tools (shovels or spades, preferably with curved edges) should be used in the anticipated vicinity of the cable. They should not be thrown or spiked into the ground, but eased in with gentle foot pressure. As the digging progresses a careful watch should be kept for indication of the cable and regular checks made with the cable locating device to determine the position of the cable. Cables embedded in concrete or under other difficult obstacles where the use of power tools is necessary, should be made dead or an alternative method of work agreed with Jersey Electricity before the work is commenced.

If at any time during excavations around electricity cables or plant, damage should occur or be uncovered, however insignificant, work around the cable or plant should cease, all personnel should be removed from the vicinity and Jersey Electricity must be contacted immediately.

backfilling around electricity cables

Backfill material adjacent to cables, pipes and ducts must be selected fine material, or sand, and placed to a minimum depth of 150mm below, around and over the pipe or cable. The backfill adjacent to cables and pipes must be well compacted by hand and must not contain stone, bricks or lumps of concrete or tarmac etc. Good compaction is particularly important beneath the duct, pipe or cable to prevent any settlement that could subsequently cause damage. Appropriate tiles or marker tape should be replaced where necessary. Special backfills may be employed on certain 'strategic' circuits that may require replacement by the appropriate service company.

installation of new electricity services for new developments

The Contractor in overall control of the works must keep records on site of all the buried cables and above ground installations installed on a new development, and make sure that this information is passed on to anyone carrying out excavations on the site. It is the Contractor's responsibility to ensure that everyone working on the site is familiar with the precautions and protective measures that need to be taken when working around electricity cables and above ground installations.

By agreement with Jersey Electricity, sub-contractors may install electricity ducts for the installation of cables at a later date. All ducts that are to contain electricity cables must be black and embossed with the wording "ELECTRICITY" and should have yellow Electricity marker tape installed above the line of the duct. Electricity distribution mains or service cables will not be installed in any other type of duct.

Jersey Electricity holds records of the installation of electricity distribution mains and service cables. Therefore, where a sub-contractor is responsible for installing the service duct, he should record and inform Jersey Electricity of any variation in the agreed route and depth.

On sites where the electricity distribution mains and service cables are installed in stages, it is important to record the progress of the work. As soon as electrical cables are laid in position they must be considered as being live and a possible hazard.

The Contractor in overall control of the works is responsible for ensuring that not only his employees, but also those of any other sub-contractor working on the site are not exposed to risk from operations that are being carried

out on the site. It is, therefore, necessary to ensure that anyone carrying out work adjacent to underground or overhead electrical cables is aware of their location and that the necessary precautions are being taken to avoid the exposure of people to unnecessary risk.

precautions to be taken when working in close proximity to overhead lines

More than 100 kilometres of overhead power lines cross the Island.

One of the biggest problems is that people simply do not notice overhead lines, assume they are telephone lines or, if they are aware of the presence of overhead lines, misjudge their position.

The use of equipment, such as scaffolding or the use of metal ladders, and the use of machinery such as cranes, telescopic materials handlers, forklift trucks and mobile elevating working platforms may result in work being carried out in close proximity to overhead electricity services. Before carrying out such work, the area must therefore be checked for any overhead electrical service lines. Do not assume that overhead lines are telephone lines or other communication cables - if in doubt check with Jersey Electricity.

Jersey Electricity must be contacted where any work, movement of equipment, or use of machinery is likely to take place within 10 metres of any overhead electrical cables. In such instances contractors should assess and advise Jersey Electricity of the work which is to be carried out, including the use and movement of equipment and machinery and the arrangements for access to and from the site. In particular, the assessment should include the operation of cranes and lorry mounted cranes used for delivering materials, which is often overlooked.

Protection of overhead lines can be provided by Jersey Electricity. If such shrouding is installed, the Contractor should carry out regular inspections for the duration of the work to ensure that the integrity of the protection is maintained.

Shrouding is provided as a means of temporarily reducing the risk of inadvertent contact with bare overhead lines and must not be considered to be permanent insulation. Although overhead lines may be shrouded this does not mean that they are safe to touch. The effectiveness of any shrouding will depend on the prevailing weather conditions. Surface moisture or water retention through exposure to rain will significantly increase the risk of electric shock, if touched.

The Contractor should ensure that any limitations required by Jersey Electricity for working in the vicinity of overhead lines are strictly adhered to, and that all

persons working on the site are aware of the safety requirements. In particular:

- no scaffolding or other structures should be erected around overhead lines without prior consultation with Jersey Electricity
- materials and equipment, such as ladders, scaffold poles and fittings should not be hung from or leant against overhead lines
- any long material or equipment should be carried horizontally below shoulder level in the vicinity of overhead lines

procedure in the event of damage

Jersey Electricity must be notified immediately, by telephoning the 24 hour emergency number 505050, if the shrouding is damaged or dislodged; work within 3 metres of the area must be stopped. No attempt should be made to repair or replace the shrouding.

In addition, Jersey Electricity should be immediately notified of any damage that is found or caused to overhead lines, poles or associated equipment.

gas

gas services

Gas mains and service pipes may be of cast iron, ductile (SG) iron, steel, or yellow plastic polyethylene (PE) and operate at pressures up to 7 bar (100psi).

Gas is supplied through the mains gas network, and also local LPG (Liquefied Petroleum Gas) supply networks at housing developments or commercial, horticultural and agricultural premises. These LPG supply networks, with either above ground or buried storage vessels, are generally in areas beyond the extent of the mains gas network.

Both mains gas and LPG are heavier than air and can accumulate at ground level or in pits and trenches if allowed to escape.

location of gas services

The usual depth of cover for gas mains is 750mm in the roadway and 600mm in the footway. The usual depth of cover for gas services is 450mm in both roads and footways, and 375mm on private property. The presence of gas pipes laid in trenches may be indicated by a marker tape laid above the main during backfilling. These depths are only a guide as pipes may be found at shallower, or greater, depths due to subsequent work being carried out or obstructions in the ground.

Gas pipes are generally laid directly in the ground via open-cut trenches, but if laid by a trenchless technique such as displacement moling there will be no evidence of ground disturbance or visible trench scars. PE mains may be inserted into redundant metallic mains that may be intact, or split as part of the insertion process. Pipes laid using the two latter methods will not have marker tape covering them.

procedure for identifying gas services

It is important that the location of underground gas pipelines is considered when planning building, excavation, landfill or other such work. Such activities may either cause damage to the pipelines or deny access to them for maintenance purposes. Early contact with Jersey Gas at the planning stage is very important, as it will allow full discussion of proposals to ensure the safety of plant and operatives.

Plans and safe working advice should therefore be obtained from Jersey Gas at the planning stage or, in the event of emergency works, as soon as practicable.

Plans do not normally show the position of individual consumer service connections and their existence should be assessed from the information that is available. It may be possible to estimate the probable line of the service connection pipe from the gas meter position, or from the point of entry into the premises. Gas service pipes may be found in both public and privately owned areas. In some locations, service pipes run above ground for part of their route.

working in the vicinity of gas services

Where heavy plant may have to cross the line of a gas pipe during construction work, defined crossing points should be provided and used. These should be clearly identified and kept to an absolute minimum. Crossing points, other than those where the pipe is protected by an existing road, should be suitably reinforced to a design to be agreed with Jersey Gas.

Where the excavation of trenches adjacent to a gas pipe may affect its support and integrity then consultation with Jersey Gas must take place to agree a satisfactory method of providing support during the work. If this is not possible then it may be necessary to divert the gas pipe before the work commences and this would be undertaken on a rechargeable cost basis. Gas pipes should not, under any circumstances, be used as an anchor or support for other plant or equipment.

PE gas pipes cannot be traced electronically. They should be located by hand dug trial holes before mechanical excavation begins. This will also be necessary for metallic pipes if they have not been successfully located by a pipe-detecting device. This is particularly important for service connection pipes which will not be marked on plans. When the position and depth of the pipes have been determined, work can proceed.

Gas pipes may have projections such as housings, valves, siphons and standpipes that are not shown on plans. To allow for this, mechanical excavators should not be used within 500mm of a gas pipe.

Thrust blocks, pipe supports or restraints should never be disturbed as this may cause sudden failure of the main.

Uncovered gas pipes should be supported to the satisfaction of Jersey Gas and pipes should never be used as an anchor or to give support.

Backfill around gas pipes should be screened sand, quarry dust or other similar fine material, NOT bricks, stones or other hard materials.

Concrete (including foam concrete for reinstatement) backfill should not be used within 300mm of a gas pipe.

Power compaction equipment should not be used over a gas pipe until it has been covered with at least 200mm of suitably compacted fine material.

Other services should not be laid above, below or within 300mm of any gas pipe.

If at any time during excavations around gas pipes damage should occur or be uncovered, however insignificant, work around the pipe should cease, all personnel should be removed from the vicinity and the Jersey Gas Company advised immediately.

other work near gas services

Temporary buildings provided for construction work should not be placed above any gas pipe or within 3 metres of gas mains operating above 75mbar, (medium and high pressure mains).

Buildings or other permanent structures should not be constructed over any gas pipe.

Because of the risks they pose, the following should not be undertaken without consultation with Jersey Gas:

- the use of explosives within 30 metres of any gas pipe
- piling or vertical boring within 15 metres of any gas pipe
- excavation work within 10 metres of any above-ground gas installation; these may be GRP or brick / block built kiosks, or may be an integral part of an existing building or structure
- any work involving deep excavations (1.5 m or more) near a gas pipe
- building a manhole, chamber or other structure over, around, or under a gas pipe
- work which results in a reduction of cover or protection over a pipe
- work which results in a significant increase in cover over a pipe
- tree planting above or near a gas pipe

If welding or other hot working involving naked flames or other possible sources of ignition is to be carried out within 10 metres of exposed gas plant, Jersey Gas should be asked to check the atmosphere before work begins and at regular intervals during the work. Care should be taken that no damage occurs, particularly to plastic pipes or to the protective coatings on other gas pipes.

procedure in the event of an escape of gas

If a gas leak is suspected, repairs should not be attempted. Instead the following action should be taken immediately:

- evacuate everyone from the immediate vicinity of the escape. If it is suspected that gas is entering a building, warn the occupants to leave the building (and any adjacent buildings) until it is safe for them to return
- inform Jersey Gas by telephoning 755555
- prohibit smoking, and extinguish all naked flames and other sources of ignition
- assist Jersey Gas and emergency service personnel, as requested

installation of gas services for new developments

All enquiries regarding the proposed installation of gas services at new developments should be addressed to the Load Development Officer at Jersey Gas.

A large number of incidents and damage to gas pipes occurs on new development sites. It is therefore essential that the Contractor in control of the work maintains accurate and current records of all buried Jersey Gas services. The Contractor should ensure that this information is passed on to anyone carrying out works on site that may create risk of interference damage to Jersey Gas services. The Contractor should also ensure that everyone working on site is familiar with and understands the advice contained in this publication.

Where a Contractor undertakes backfilling and reinstatement of trenches following installation of gas services, they must ensure that the warning marker tape provided by Jersey Gas is installed in the backfill approximately 200mm to 300 mm above the line of the gas service.

water

water mains and service pipes

Jersey Water mains and service connections may be found throughout the Island.

Jersey Water mains may be cast iron, ductile iron, Everite AC, blue MDPE plastic or grey uPVC, and service pipework may be galvanised iron, lead, copper, black PVC or blue MDPE plastic.

Water mains are usually laid at a depth of between 600mm and 900mm depth and service connections between 375mm and 600mm. Local circumstances may have resulted in the mains and service connections being installed at shallower depths. Water services are laid at similar depths to gas mains and care must therefore be taken to distinguish between the different supplies.

The presence of a 'live' water service can usually be determined by a stopcock or meter surface box located near the boundary of the property. Once a disconnection form has been requested the water supply to the property will be turned off by Jersey Water. Work being undertaken in the vicinity of Jersey Water's stopcock should be performed with care. If the water service pipe (downstream of the stopcock) interferes with construction works the pipe should be disconnected from the stopcock to prevent damage to Jersey Water equipment.

working in the vicinity of water services

Although it may be thought that work near underground water pipes is of low risk, there are dangers involved with such work and precautions should include:

- prior to work commencing plans should be obtained from Jersey Water

and services traced using a pipe locator. Safe digging practice should be adopted, especially for trial holes and where hand excavating to locate plastic pipes

- at bends in mains and other locations, some form of end restraint may be used. Under no circumstances should end restraints or the ground supporting them be disturbed as this may cause sudden failure of the main
- exposed water pipes should be supported as necessary and the agreed method of backfilling used

procedure in the event of damage

If a water pipe or its wrapping is damaged, Jersey Water should be informed immediately on the emergency number: 707302.

Unauthorised repairs are prohibited by Jersey Water.

sewers

sewers and drains

Sewers may be found at various locations throughout the Island and may have been laid in different materials and at various depths.

The precautions to be followed in respect of sewers and drains is similar to that for water services, especially in respect of pumping sewers which operate at significant pressures, although this pressurisation may not be continuous.

Information on the TTS network and apparatus should be obtained by contacting the Records Manager, Drainage Infrastructure TTS.

procedure in the event of damage

If a sewer or drain is damaged, Drainage Infrastructure TTS should be informed immediately. TTS contact number: 445509.

Unauthorised repairs are prohibited.

disconnection

of services

There may be a need to disconnect or make services dead for work to be carried out safely.

Contact with the relevant utility services must be made as early as possible to allow them to make the necessary enquiries, plan for the work and, where appropriate, obtain permit approval from the highway authority for any road works, bearing in mind that the timing of such road works will be at the discretion of the highway authority.

Depending upon the classification of the road involved and the extent of the work required to effect the disconnection, 12 weeks' notice could be required in order to obtain the necessary permit to excavate in Main or Parish roads; although this period may be extended depending on seasonal considerations and the possibility of conflict with other proposals. The notification periods required by the Service and Utility companies may therefore be affected by the permit approvals that are required.

electricity

temporary isolation of supply

If an electrical service is required to be made dead by isolation of the main fuse for certain works to be carried out safely, a completed 'Temporary Isolation of Supply' form must be submitted to Jersey Electricity a minimum of 5 working days' before the proposed start date of the work.

Under these circumstances, the incoming supply cable to the main fuse will remain live. If the nature of the work requires this to be made dead, the following disconnection procedure should be used.

disconnection prior to demolition works

Where a building or structure is due to be demolished, the electrical service(s) must be permanently disconnected and removed. A 'Redundant Services' form must be submitted to Jersey Electricity together with a sketch of the site indicating the location of the services to be removed and the area of the proposed works highlighted.

The 'Redundant Services' form must be submitted at least 30 working days prior to the commencement of work. Failure to submit a sketch, as described above, with the 'Redundant Services' form, is likely to result in a delay in disconnection.

Once Jersey Electricity has removed the electrical supply cables from the premise(s) a Certificate of Disconnection will be issued for each individual property.

Until the Certificate of Disconnection has been received, the service termination must be adequately protected against damage or exposure to the elements and no work which may expose persons to risk from coming into contact with a live electrical cable should take place.

Being in possession of a Certificate of Isolation or Disconnection does not exempt the person carrying out work from ensuring that, as far as it is reasonably practicable, persons are not exposed to undue risk. Should any cable or apparatus be inadvertently discovered during work, this must be protected and treated as being live, and Jersey Electricity contacted immediately.

gas

Jersey Gas must be informed at least 15 working days in advance of the proposed demolition to determine whether a service disconnection is required.

The presence of 'live' gas services should always be anticipated. In particular, contractors should be alert for old service pipes which may have been disconnected beneath floor or ground level but are still connected to their parent main.

Jersey Gas issue Disconnection Certificates showing the

disconnection location. They also provide the procedure to be followed in the event of other suspect services being uncovered.

water

Jersey Water should be contacted at least 15 working days in advance of the proposed demolition to determine whether a service disconnection is required.

The presence of a 'live' water service can usually be determined by a stopcock or meter surface box located near the boundary of the property. Once a disconnection has been requested the water supply to the property will be turned off. Work being undertaken in the vicinity of Jersey Water's stopcock should be performed with care. If the service pipe (downstream of the stopcock) interferes with construction works the pipe should be disconnected from the stopcock to prevent damage to the company's apparatus.

sewers

Drainage Infrastructure TTS should be contacted at least 15 working days in advance of the proposed demolition to determine whether a service disconnection is required.

contacts

Jersey Electricity **24hr Emergency service 505050**

Jersey Electricity plc
The Powerhouse
PO Box 45
Queens Road
St Helier
Jersey JE4 8NY

T: 505460
E: jec@jec.co.uk
W: jec.co.uk

Requests for plans should be addressed to the Drawing Office

Jersey Gas **24hr Emergency service 755555**

Jersey Gas Company Ltd
PO Box 169
Tunnell Street
St Helier
Jersey JE4 8RE

T: 755500
E: mains@jsy-gas.com
W: jsygas.com

Requests for plans should be addressed to the Distribution Drawing Office

Jersey Water **24 Hr Emergency response 707302**

Jersey Water
Mulcaster House
Westmount Road
St Helier
Jersey JE1 1DG

T: 707300
E: customerservices@jerseywater.je
W: jerseywater.je

Request for plans should be addressed to the Distribution Department

Transport and Technical Services **Out of hours Emergency service 725351**

Transport and Technical Services
PO Box 412
States Offices
South Hill
St. Helier
Jersey JE4 8UY

T: 445509
E: tts@gov.je
W: gov.je/governmentdepartments/tts

Enquiries in connection with the TTS network and apparatus should be made to the Records Manager, Drainage Infrastructure TTS

Enquiries to obtain access to the Jersey Utilities Services Map should be made to the Manager - Traffic and Streetworks TTS

T: 448690
E: streetworks@gov.je

Health and Safety at Work Inspectorate

Social Security Department
PO Box 55
Philip Le Feuvre House
La Motte Street
St Helier
Jersey JE4 8PE

T: 447300
E: hsi@gov.je
W: gov.je/hsi

references

and further reading

Publications issued by the **Health and Safety at Work Inspectorate** are available on the States of Jersey website: www.gov.je/hsi

Health and Safety in the Workplace: A General Guide HS(g)1

Managing Health and Safety in Construction Approved Code of Practice ACoP 11

Guidance on the Construction (Safety Provisions) (Jersey) Regulations, 1970 S.W.1

Guidance on the Electricity at Work (Jersey) Regulations, 1983 S.W.8

Publications issued by the **Health and Safety Executive** are available on the HSE website: www.hse.gov.uk

Avoiding danger from underground services, reference HSG47

Avoiding danger from overhead lines, reference GS6

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