



# **The avoidance of danger from electrical cables**

Code of Practice



*Guernsey  
Electricity*

## **Notice of Approval**

This Code of Practice has been approved by the Board of Directors of Guernsey Electricity with respect to its duties under the Health and Safety at Work (General) (Guernsey Ordinance 1987 for the purpose of providing practical advice and guidance on the avoidance of danger resulting from contact with Guernsey Electricity's electricity distribution cables.

This Code of Practice is particularly relevant to those engaged in work on construction sites and public thoroughfares but it is also applicable to any work on domestic or private properties where there is a risk of contact with, or damage to, Guernsey Electricity's electricity supply cables.

A handwritten signature in black ink, appearing to read 'Ian Beattie', written in a cursive style.

**Ian Beattie**

Chairman of the Board

# The avoidance of danger from electrical cables

<b>Contents</b>		PAGE N°
<b>1.0.0</b>	<b>Existing Underground Electrical Cables</b>	4
1.1.0	Introduction	4
1.2.0	Background	4
1.3.0	Identification	5
<b>2.0.0</b>	<b>Recommended Procedures</b>	6
2.1.0	Procedure for Demolition Works	6
2.2.0	Procedures for New Sites including Excavations of the Public Highway	7
2.3.0	Exposed Electrical Cables	8
2.4.0	Damaged Electrical Cables	9
<b>3.0.0</b>	<b>The Installation of Underground Electrical Cables on Construction Sites</b>	9
3.1.0	Identification	9
3.2.0	Recording of Installation	9
3.3.0	Responsibility for Operations Undertaken On Construction Sites	10
<b>4.0.0</b>	<b>Work under or adjacent to Overhead Electrical Cables</b>	10
<b>5.0.0</b>	<b>Further Guidance</b>	10

## 1.0.0 **EXISTING UNDERGROUND ELECTRICAL CABLES**

### 1.1.0 **Introduction**

1.1.1 In recent years, Guernsey Electricity has experienced incidents involving damage to electrical cables where persons have been injured or exposed to the risk of serious injury from electric shocks and burns.

Exposure to any live conductors presents a significant risk from potentially fatal electric shocks and burns.

1.1.2 The consequent concern of Guernsey Electricity, with regard to these incidents led to the publication of this Code of Practice.

1.1.3 Contractors and other employers of workmen undertaking construction operations and occupiers of premises where such operations are being carried out, have a legal responsibility under the Health and Safety at Work (General) (Guernsey) Ordinance 1987, and in particular the ACOP "The Organisation & Management of Health and Safety in Construction".

1.1.4 The aim of this Code of Practice is to provide guidance in order that persons are not put at risk and to suggest procedures to be followed to comply with the requirements of the Law.

### 1.2.0 **Background**

1.2.1 In recent years cable records have been computerised and every effort has been made to make them as accurate as possible, however there is always the possibility of uncovering underground electrical cables when carrying out excavation work for example in domestic premises, construction sites, carriageways, unmade ground, or in some cases agricultural fields.

1.2.2 Electrical cables may also be uncovered where individuals have laid an electrical supply to an outhouse which has subsequently been demolished without terminating the electrical supply, or where electric lighting has been provided in a garden which has subsequently been sold for use as a development site. It is also possible that a person has carried out demolition work without following the correct procedure leaving a live electrical cable buried under the rubble.

1.2.3 It is quite possible that persons carrying out excavation work will uncover a live electrical cable for which no records exist. It is therefore essential that all possible measures are taken in order to minimise the risk of injury.

### 1.3.0 **Identification**

1.3.1 Previously it was normal practice to cover low voltage underground cables with bricks or tiles as a method of protection. This practice was discontinued in favour of marker tapes or concrete covers in certain situations.

1.3.2 Low Voltage mains cables are normally laid at minimum depth of 450mm (18 inches) below ground level, however, it has been known for cables to be found at a shallower depth where the ground level has been altered since the original installation was carried out. High Voltage cables (up to 11kV are normally laid at 750mm (30 inches) and extra high voltage cables at 1.0 metres (42 inches).

1.3.3 The present method of marking electrical cables is as follows:-

90kV cables Reinforced plastic stop boards.

33kV cables Interlocking concrete slabs or plastic stop boards, with yellow marker tape above.

11kV cables Concrete blocks or concrete slabs, and yellow marker tape above.

LV cables Yellow marker tape, bricks, concrete covers, plastic stop boards or in ducts in (mains) special situations.

LV cables Yellow tape.  
(services)

**Caution** Subsequent works by other utilities in the vicinity of cables may have damaged or moved the cable marking.

1.3.4 Some electrical cable has been laid using trenchless technologies sometimes referred to as "moleing". Cable laid in this way has no marking tape or covering and may vary in depth and direction. Where this technique has been used, however, this will be shown on our records. There will also be a number of instances where electrical cables are not identifiable. It must not be assumed that these cables are another service supply, that they are no longer in use, or that they are dead. If in doubt, work should cease, until the identification of the cable has been confirmed.

## 2.0.0 **RECOMMENDED PROCEDURES**

2.0.1 It is essential that all foreseeable eventualities are taken into account to prevent risk to persons from coming into contact with live electrical conductors.

2.0.2 In this respect, emphasis must be placed on the pre-planning of measures to be taken. This will also help to ensure that adequate time is given to carry out the researching of records and any other further action that may be necessary prior to commencement of work and to avoid delays on site.

2.0.3 The following procedures relate to the operations, which are found to be the most common cause of damage to cables, etc. that is demolition works, work on new sites and road works. Naturally, the difficulties, which will be encountered, vary with each individual site and the procedure will have to be adapted as necessary.

### 2.1.0 **Procedure for Demolition Works**

(a) Guernsey Electricity must be informed of the proposed work for each building, prior to commencement of work. This process can take a number of weeks depending on the complexity and requirement for road closures; therefore you should allow sufficient time in the construction schedule. Enquiries should initially be made to the Customers Services Department who will refer you to the Electrical Operations Department. Details of the site and the extent of work to be carried out will be requested. You can obtain detail information the demolition site by using the Dial Before You Dig service, which will provide you with plans giving details of other cables or services that may be affected by the work.

(b) Guernsey Electricity will arrange to “cut off” all requested electrical supply cables within the site. Until this has been completed, no work likely to expose persons to the risk of contact with live electrical cables must take place.

The site owner must ensure that any service disconnection, cables and associated electrical equipment that may remain on the site are adequately protected against damage and from exposure to the elements.

Should a temporary Site Electricity Supply be required this should be requested at the same time as a “cut off” request.

#### **Definition**

**Cut Off** – means that the service cable from the main supply is cut off, this include the service head, meter and supply to the building

**Disconnection** – A service disconnection means that the supply to the building is dead, but the service cable, service head and meter are still live.

**NB** Meters, and service head etc. are the property of Guernsey Electricity and any deliberate damage to their equipment will result in a charge being made to the person or company responsible for the damage.

(c) Despite the requested electrical supply cables having been disconnected the onus remains on the Contractor carrying out the work to ensure that persons are not exposed to undue risk.

(d) Should unidentified cables become exposed during the course of the operation, work must stop in the area until these cables have been identified and rendered harmless. Guernsey Electricity will trace any unidentified cables found on site that are not on their records.

## 2.2.0 **Procedures for New Sites, Including Excavations of the Public Highway**

- (a) Contact should first be made with Guernsey Electricity giving them as much notice as possible prior to work commencing. They will also need to know the area affected by the works. For guidance and help for excavations the Company operates a “Dial Before You Dig” service. Information about this service can be found on the internet and by regular adverts in the media.
- (b) All known cable information within the notified area will be provided by Guernsey Electricity and passed onto the requestor.
- (c) The person or company requesting information from Guernsey Electricity has the responsibility to ensure, or arrange for the necessary information to be passed onto those carrying out the work.
- (d) Before work commences the exact location of the cables must be established using the drawings as a guide. One method of detecting a cable is to use a Cable Locating Device which is an instrument specifically designed to locate hidden cables and other underground services without creating a risk to the operator. The ability of these instruments to detect a cable may depend on a number of factors such as the capabilities of the instrument being used, the location and type of cable being detected and the proximity of other services.

These instruments should therefore only be operated by persons who are trained in their use.

It should be noted that there may be a situation where a live electrical cable cannot be detected, this situation must not be taken as proof that a cable is not present OR that a cable present is not live. Electrical cables are not necessarily installed in straight lines and care should be taken to ensure that deviations are identified. Deviations in the route and depth also occur due to disturbance from other services, changes in road and site levels and general subsidence.

- (e) The route of the cable should then be clearly indicated with warning notes, chalk or an aerosol paint marker. Steel spikes or long pegs, which could damage the cable, should not be used.
- (f) In some areas such as on major roads or near substations there may be a very high density of electricity cables. Where this is indicated on the drawings **extreme care** is needed. The proximity of cables can confuse cable detectors and prevent the establishment of an accurate cable location. Hand digging will be necessary within 0.6m of any high density electricity cable grouping.

In order to carry out the work safely in such circumstances more time will be needed. The need for this should be considered at the work planning stage.

- (g) Trial holes, dug across the presumed line of the cable, approximately 5m apart, or as frequently as necessary, should be made to locate 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 0.6m (2ft) of the indicated line of the cable unless prior agreement has been reached with Guernsey Electricity. Where 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. It may be necessary to remove rocks, etc. with a fork or pick but generally speaking only spades, shovels or air knives should be used in the anticipated vicinity of the cable. 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 its exact position.
- (h) Some cables subsequent to being laid may have become embedded in concrete or become buried under other difficult obstacles by other contractors. This practice is to be avoided at all costs as exposing the cable then becomes extremely hazardous to operators. Power tools should only be used if absolutely necessary and only after a full risk assessment has been carried out by the Contractor. It may be necessary to make the cable dead before work can proceed safely or an alternative method of work agreed with Guernsey Electricity.
- (i) In the event of a main or service cable not being located, Guernsey Electricity will provide further assistance in order to identify and locate the position of any particular cable.
- (j) Despite all known information being available the onus is on the Contractor carrying out the work, to ensure as far as reasonably practicable, that persons are not exposed to undue risk and are required to carry out on site risk assessments.

### 2.3.0 **Exposed Electrical Cables**

- 2.3.1 Guernsey Electricity should be informed of all exposed underground cables, to allow inspection by their engineers. It is essential that all exposed cables are suitably protected against damage. Exposed cables of lengths greater than 1m must be supported with slings or props. Where appropriate, cables must be protected by placing timber boards, or other suitable covering over them. Coverings that could cause damage to the cable must not be used, and timber must be inspected to ensure that there are no nails, etc. in the wood.

### 2.4.0 **Damaged Electrical Cables**

- 2.4.1 Should a cable be damaged, however slightly, Guernsey Electricity must be informed immediately and measures taken on site to keep persons well away from the area until the cable has been made safe by the Company. Damaged cables very often remain live and therefore pose a serious danger to any person in their immediate vicinity through electrocution, fire, or explosion.

### 3.0.0 **THE INSTALLATION OF UNDERGROUND ELECTRICAL CABLES ON CONSTRUCTION SITES**

3.0.1 Many of the problems encountered with underground electrical cables have arisen because of the failure to identify and mark the position of existing electrical cables, prior to commencement of work.

3.0.2 It is apparent that the trend in maximising the available land space, particularly in housing developments, has led to all of the utility services being installed in confined spaces, which may give rise to future problems. It is therefore important that electrical cables are installed and recorded in an approved manner, and generally as set out in Guernsey Electricity's "Specification for the Excavation and Reinstatement of Trenches and Cable Laying."

#### 3.1.0 **Identification**

3.1.1 Occasionally the Contractor will carry out the installation of service ducts in preparation for the installation of the electricity cable at a later date. In order to ensure ease of identification and uniformity, service ducts should be overlaid with identifying yellow tape. These ducts should not be used for other purposes.

#### 3.2.0 **Recording of Installation**

3.2.1 Guernsey Electricity has computerised records of the installation of electrical mains supply cables and the position of the joint of the electrical service cable with the electrical supply cable. However, where the Contractor is responsible for installing the service duct, he should notify Guernsey Electricity of any variation in the route and depth agreed with Guernsey Electricity. This will also help to prevent unnecessary delays on site where service duct positions have been altered and cannot be easily traced.

3.2.2 On sites where the electricity supply and service cables are installed in stages, it is important that the site manager or foreman records the progress of the work as it takes place. This is to ensure that the contents of ducts are known to all persons who could be put at risk. As soon as electrical cables are laid in position, they must be considered as being live and a possible hazard. Any variation in the route and depth of ducts installed by contractor must be agreed and recorded by Guernsey Electricity.

#### 3.3.0 **Responsibility for Operations carried out on Construction Sites**

3.3.1 The main Contractor on a construction site is responsible for ensuring that not only his employees, but also those of any sub-contractor working on the site, are not exposed to risk from operations which are being carried out by them. It is therefore necessary to ensure that any sub-contractors carrying out work adjacent to underground electrical cables are aware of the location of the cables and that precautions are being taken to avoid the exposure of employees to unnecessary risk.

#### 4.0.0 **WORK UNDER OR ADJACENT TO OVERHEAD ELECTRICAL CABLES**

4.0.1 Where it is necessary to carry out work in the vicinity of overhead line conductors, Guernsey Electricity should be notified at least 14 days prior to the commencement of such works so that appropriate safety measures can be taken in order to avoid inadvertent contact with live conductors.

4.0.2 Care needs to be taken at access points to any site where heavy plant, i.e. mobile cranes, earth moving equipment etc. may travel under live overhead conductors. The height of ladders and scaffolding equipment also need to be taken into account. Temporary signs must be erected by the Contractor warning of the overhead danger and stating the clearance height to the cable.

#### 5.0.0 **FURTHER GUIDANCE**

5.0.1 It is hoped that this booklet will provide useful guidance to Contractors and planners to enable them to prevent injury to operatives engaged in work that could bring them into contact with Guernsey Electricity's cables. Reference should also be made to the ACOP "The Organisation and Management of Health and Safety in Construction" published by the Health & Safety Executive. Further information or guidance on any of the matters raised in this booklet may be obtained by contacting our free "Dial Before You Dig" service.

September 2011 Rev 8



Before you dig call:  
**241915**



If you damage a cable:  
FREEPHONE **0800 5870285**

To download a site plan:  
<https://www.clickb4udig.gg>

This is a FREE service for the prevention  
of damage to cables



**Guernsey  
Electricity**

North Side  
Vale  
GY1 3AD

[www.electricity.gg](http://www.electricity.gg)  
T | 200700  
In Emergencies  
**0800 5870285**