

Case Study: High Voltage Cable Strike With Excavator



The above image clearly demonstrates the impact on the underground ScottishPower network, when an excavator came into contact with a high voltage cable, no ScottishPower cable records or cable locator on site.

The contractor's task was to ascertain ground conditions prior to construction of proposed flats. The contractor had taken a former colleagues advice (word of mouth) that there was no underground utility apparatus on site, despite a ScottishPower sub-station being situated only 12 metres from the point of damage to the cable. Fortunately on this occasion no injuries were sustained to the operatives.

The high voltage cable was running through the site, for the project to move forward the high voltage cable required to be deviated out with the proposed foundations locations. If the project had been planned professionally the cable strike would not have occurred. Lack of planning on development projects will increase the possibility of serious injuries to operatives and greatly increase cost to projects.

Prior to any excavations taking place cable records should always be consulted.

All SP Energy Networks cable record enquiries are to be directed to the relevant Data Management team.

All Cable Record enquiries should be addressed to:

SP Energy Networks (North)

Data Management
(Correspondence)
55 Fullerton Drive
Cambuslang
Glasgow G32 8FD

t: 0141 567 4155 or 0141 567 4455

e: Requestforplansscotland
@scottishpower.com

SP Energy Networks (South)

Data Management
(Correspondence)
North Cheshire Trading Estate
Prenton Way
Prenton
Birkenhead CH43 3ET

t: 0151 609 2373

e: Requestforplansmanweb
@manweb.co.uk

All Cable Deviation Requests /Service Alterations enquiries should be addressed to:

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SP Energy Networks (South)

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PO Box 290
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Emergency contact

In an emergency, or if there is any damage to SP Energy Networks cables or plant, call the appropriate number:

SP Energy Networks North

Central & Southern
Scotland

0845 272 7999

SP Energy Networks South

Cheshire,
Merseyside
& North Wales

0845 272 2424





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Case Study: HV Cable damaged on construction site



The above images, highlight a situation which happens all too frequently on construction sites. The task for the site contractors was to excavate a track for an HV cable deviation.

Site management/contractors were aware of the route of the existing HV cable (trial holes had been carried out), however the operatives still came into contact with the cable. Many people in the construction industry are unaware of the power that can be unleashed when contact has been made with an HV cable. The effect of an HV cable on the human body could be described as having your internal organs cooked from the inside-out.

To avoid personal injuries operatives should always adhere to HSG47

HSG47: Avoiding danger from underground electricity cables

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Case Study: Cable strike with excavator



The above image demonstrates the result of an excavator coming into contact with an HV cable (11,000 volts).

The operatives on site had been supplied with cable records and proceeded to excavate the required spoil from around the cables in a safe manor (HSG47) ready for the cables to be worked on. Overnight there was a rain storm with the excavation filling with water, the cable strike occurred when the excavator was used in an attempt to remove the excess water with the excavator bucket. The correct course of action should have been to use a water pump to drain the water from the excavation.

Prior to starting work around underground electrical cables take five minutes to risk assess the possible consequences of your actions

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Case Study: HV wired armoured cable strike (non- adherence to HSG47)



The above image demonstrates a situation where an HV wire armoured cable was damaged with a JCB excavator. The excavations were taking place to divert a utility; site manager had utility records on site and proceeded to tool-box talk the operatives prior to excavations taking place. Site manager highlighted the presence of cables at the locus to the contractor. The cable routes were clearly marked on the ground, however because the ground conditions were difficult, the contractor decided to carry out excavations with a JCB machine without trial holes taking place to locate line and depth of the cables. An assessment of the ground conditions should have taken place with a safe system of work-method statement implemented to avoid contact with ScottishPower Plant.

Adherence to HSG47 advised.

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Case Study: Cable strike to HV cable with 360° track excavator



The above image clearly highlights an HV cable strike which took place when a track excavator pulled the cable from the ground.

The task was to conduct excavations to install an astroturf pitch for a school. No ScottishPower cable records on site the client/contractors were unaware the HV cable was present at this location. ScottishPower underground cables can be found in many unlikely locations including, football pitches/golf courses/racing tracks/forests. To avoid contact with electricity cables, records should always be obtained prior to excavations commencing.

Prior to any excavations taking place cable records should always be consulted.

All SP Energy Networks cable record enquiries are to be directed to the relevant North or South Data Management team.

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Cheshire, Merseyside & North Wales

0845 272 2424





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Case Study: Cable strike to 11kV wire armoured cable



The above image highlights a cable strike to an 11,000 volt cable.

The task was to locate a coal seam by excavating with a JCB excavator on grassland. A trial hole was to be excavated at another location; however the planned trial hole was abandoned due to the possibility of damaging tree roots. The above cable strike location was chosen as an appropriate area to locate the coal seam. Contractors on site had access to cable records, however on relocating to this proposed area the cable records were not consulted prior to machine excavations taking place.

Prior to any excavations taking place cable records should always be consulted.

All SP Energy Networks cable record enquiries are to be directed to the relevant North or South Data Management team.

Always assume cables are live.

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Case Study: High Voltage Cable Strike (Excavating To Install Lamp Column)



The above image highlights a high voltage cable strike incident which caused serious burns to the operative. The task for the contractor was to carry out excavations to install street-lighting columns. The operative came into contact with the high voltage wired armoured cable with a pneumatic gun at a depth of 600mm. The cable was encased in a wooden trough with a concrete tile placed on top, however one of the contributing factors of this dangerous occurrence was the size of the excavation that took place was only wide enough to install a lamp column. Extensive trial hole excavations are required to confirm the location of all utilities prior to commencing with the core project.

**Strict Adherence To HSG47 Prior To Undertaking
All Excavation Projects**

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should be addressed to:**

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Case Study: High Voltage Cable Strike With Pneumatic Gun (Operative Injured)



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The above image highlights a situation which has occurred on numerous occasions. The task for the operatives was to excavate for the installation of a lamp post. The contractors operating for the local authority did not have ScottishPower Energy Networks cable records on site and the cable avoidance tool calibration was out of date. On this occasion the operative sustained serious burns and was hospitalised, contact was made with the high voltage cable at a depth of 600mm with a pneumatic gun; (ScottishPower Energy Networks recommended depth for high voltage cables in the footpath). It is not always possible to place a lamp post at a preferred location, due to the presence of underground apparatus. Cable records should always be sought and consulted prior to undertaking excavations.

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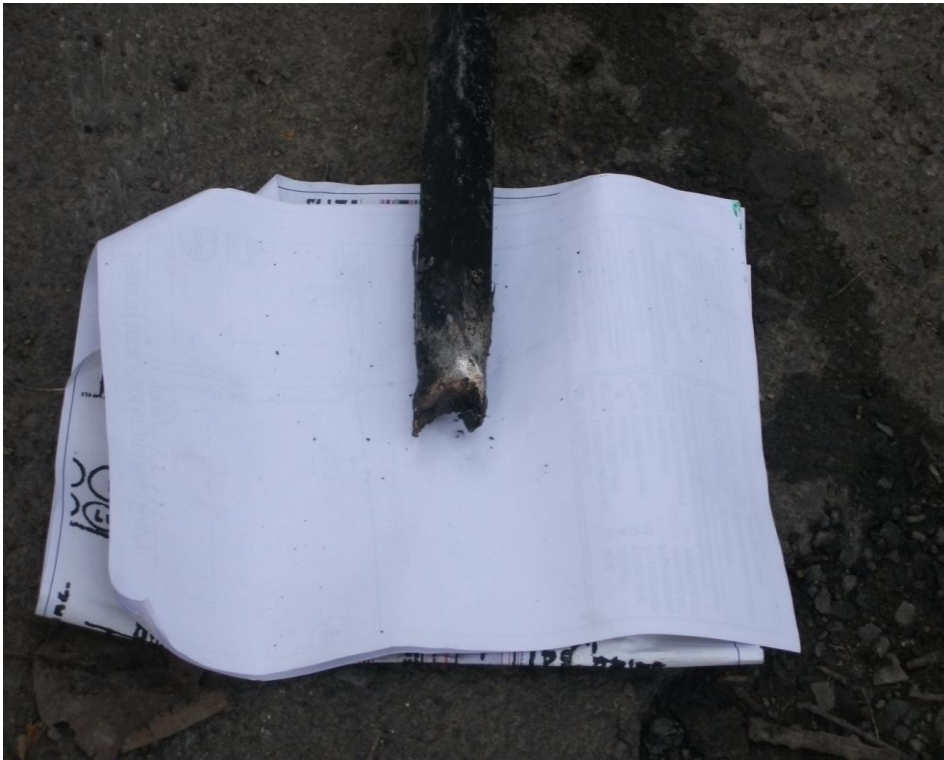
0845 272 2424



Plan the Project:

0141 567 4455 (North) 01516 092 373 (South)

Case Study: Pneumatic Gun Point Tool Direct Contact With High Voltage Cable



The above image highlights the consequences when a pneumatic gun point tool came into contact with a high voltage cable. It is clear to see that the point of the tool has been burnt away it should come as no surprise to everyone that the operative involved in this incident, sustained serious burns, was hospitalised and will not return to normal work duties for quite some time. Prior to carrying out excavations a risk assessment should always be undertaken and a safe system of work implemented to ensure the safety of operatives. The size of the excavation whether it is large or small should not mitigate the need to ensure the correct procedures are implemented both prior to and during excavations.

**Risk Assessment And A Safe System Of Work
Required Prior To Penetrating The Ground**

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Case Study: Partially Overturned Excavator Whilst Attempting To Cross Excavated Track



Excavator partially overturned

The above image highlights an incident where an excavator partially overturned whilst crossing over an excavated track, in the process of attempting to recover the situation, damage to 2 high voltage cables occurred when the excavator tracks came into contact with the underground electrical network. Prior to crossing an open track with an excavator a risk assessment is recommended to establish the ground conditions at the locus for stability. To ensure best practice when an excavator is required to cross over a track, there should be a designated crossing point, which has previously been backfilled to ensure safe passage.

Prior to excavators being utilised a risk assessment and a method statement are required to eliminate all the possible risk.

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Case Study: Damage To Oil Filled 33,000 Volt Cable With Mechanical Excavator



The above image demonstrates a 33,000 volt oil filled underground cable which was damaged with a mechanical excavator

The task for the operatives carrying out the excavations was to install a new drainage system. Fortunately on this occasion no injuries occurred to the operatives, oil filled cables are extremely expensive to repair, specialist cable jointers were required to carry out the necessary jointing work. The 33,000 volt cable was clearly highlighted on ScottishPower Energy Networks cable records, to avoid striking underground cables operatives need to take responsibility for their actions and take time to plan the sequence of events required to see the project to a successful conclusion.

**Plan The Project - Adherence To HSG47 –
The Ability & Experience to Interpret
ScottishPower Cable Records –
Cable Locator/Genny –
Trial Holes – Type Of Excavator –
Use All The Tools At Your Disposal**

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