




NORMAL DEPTH TO THE TOP OF THE CABLE WHEN LAID					<div>WARNING</div> <div>There may have been subsequent alterations to the surface levels. Trial holes must be taken to determine positions and depth of cables. HS (G) 47 Booklet from the Health and Safety Executive – Avoiding Danger from Buried Cables – should be consulted before commencing excavation work. (available from the HSE)</div> <div>WHEN WORKING IN THE VICINITY OF OVERHEAD LINES THE HEALTH AND SAFETY GUIDANCE NOTE G56 SHOULD BE CONSULTED. (AVAILABLE FROM THE HSE)</div>		BASED UPON THE ORDNANCE SURVEY MAP WITH THE SANCTION OF THE CONTROLLER OF H.M. STATIONERY OFFICE. CROWN COPYRIGHT RESERVED.		<div> Scottish & Southern Electricity Networks</div>			
services	l.v.	h.v.	e.h.v.	This copy has been made by or with the authority of Southern Electric Power Distribution plc. pursuant to section 47 of the Copyright, Designs and Patents Act 1988 ('the Act'). Unless the Act provides a relevant exception to copyright, the copy must not be copied without the prior permission of the copyright owner. Template: SIAS NRSWA COL A3 plot			H.V. MAINS RECORD		Grid Ref: TQ30148279			
FOOTPATH	0.40m	0.45m	0.60m	0.75m	Southern Electric Power Distribution plc. Registered in England No. 04094290 Registered Office: No. 1 Forbury Place, 43 Forbury Road, Reading, RG1 3JH		Mapping Services Unit 01256 337294		<div>CHECKED</div>		Scale:	1:1250
ROAD CROSSING	0.60m	0.60m	0.75m	0.90m							Date:	13/06/2018
l.v./services	– up to 1000V.				UNCONTROLLED COPY Subject to Revision Master held at							
h.v.	– over 1000V. to 11,000V.											
e.h.v.	– 22,000V. to 132,000V.											



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services	l.v.	h.v.	e.h.v.	L.V. MAINS RECORD			Grid Ref: TQ30148279			
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Watch it!

Safety advice brought to you by
Southern Electric Power Distribution plc and
Scottish Hydro Electric Power Distribution Ltd

These notes are intended to help all those who have to work in the vicinity of electrical apparatus. Employers have a legal obligation to ensure that their operatives are fully instructed in the correct procedures.

The Electricity at Work Regulations 1989 impose health and safety requirements upon employers, employees and self-employed persons with respect to electricity at work. The regulations impose restrictions on persons being engaged in work activities on or near live conductors.

Regulation 14 requires that: "No person shall be engaged in any work activity on or near any live conductor (other than one suitably covered with insulating material so as to prevent danger) that danger may arise unless:

- ♦ it is **unreasonable** in all circumstances for it to be dead; and
- ♦ it is **reasonable** in all circumstances for him to be at work on or near it while it is live; and
- ♦ suitable precautions (including where necessary the provision of suitable protective equipment) are taken to prevent injury."

The purpose of the regulations is to require precautions to be taken against the risk of death or personal injury from electricity in work activities.

Publications

The Health and Safety Executive have produced a document entitled 'Avoiding Danger from Underground Services', and the Appendix 1 deals specifically with electric cables. Copies are available from HMSO's Accredited Agents and good booksellers, Ref. HS (G) 47.

Copies of Health and Safety Guidance note GS 6 relating to safe working in proximity to overhead lines, are available from HMSO Head Offices of the Federation of Civil Engineering Contractors and the National Federation of Building Trades Employers.

Note

In situations of emergency or danger, or where the advice contained in these notes cannot be followed, you must consult Scottish and Southern Energy plc immediately. Tel. 08457 708090 for southern England or 0800 300999 for Scotland.

Additional copies of these "Watch it!" leaflets can be obtained from our Mapping Services office upon request. Tel. 01256 337294, or Fax 01256 337295.

You must read and accept the following safety notes as part of the contract to receive our network plans. You will have the option to print these and issue them to site staff.

Watch it! - Working in the vicinity of underground cables.

Our plans show the positions and normal depths for the buried cables and pipes at the time when they were installed. However, alterations to road alignments surface levels and buildings may have occurred subsequently without our knowledge. If you discover plant or cables that are not marked or incorrectly marked, then you are required to contact us as soon as possible to give us the opportunity to amend our plans.

These plans show the equipment owned by Scottish and Southern Energy plc. There may be other privately owned plant in the area, which is outside of our control. You should always check with the Local Authority, National Grid Company, Department of the Environment, other Electricity Companies and other utilities before proceeding.

It is not intended that the issue of these plans will absolve either party from their obligation under any of the acts that control digging in the public highways.

Supplies To Properties, etc.

The location of cables supplying individual properties, street lighting, traffic signs, telephone kiosks etc. are not always shown on the plans. You should assume that each property, streetlight etc. will have its own supply cable.

Major Circuits

Where our plans indicate the presence of cables with a voltage exceeding 11,000 volts, you are advised to contact our local depot (telephone number is on the plans), before commencing any excavations within the vicinity of these cables. These major transmission circuits form an extremely important link in Scottish and Southern Energy's network, and damaging or modifying these circuits is a major and costly undertaking. Any development should therefore be designed to allow these circuits to remain undisturbed and accessible in their present location.

For your own and your workmates' safety, please follow the **do's** and **don'ts** listed below:

- ✓ **do** make sure you have plans of the underground cables in the area **before** any excavation work starts. Remember that some cables may not be shown on plans. If carrying out emergency work, excavate as though there are buried live cables in the vicinity.
- ✓ **do** use a cable locator to determine the position of existing cables in the work area. The positions should be marked and tests made as work proceeds. **If in doubt, get advice from your supervisor.**
- ✓ **do** ask for a cable to be made dead if it is buried in concrete.
- ✓ **do** watch for signs of cables as work progresses. Note any marker-tape or cable-cover, which may be exposed.

- ✓ **do** backfill carefully, using stone-free soil around the cables, replacing marker-tapes and / or covers.
- ✓ **do** notify us immediately if you accidentally damage our cables. Arrange to keep people well clear of a cable that has been damaged until we have confirmed it has been made safe.
- ✓ **do** make sure before starting to demolish a building that all cables have been disconnected. We welcome prior notice of the intention to demolish buildings. This enables us to ensure that the site has been made safe electrically.
- ✓ **don't** operate a bulldozer, scraper, dragline or excavator; unless you are satisfied that there are no buried cables in the working area.
- ✓ **don't** use picks, pins, forks or pointed instruments in soft clay or soil when cables are present. Exercise extreme caution where such instruments are used to free lumps of stone, or break up firmly compacted ground. **Never** throw a fork or sharp instrument into the ground.
- ✓ **don't** dig trial holes over the indicated route of the cable. Excavate alongside instead.
- ✓ **don't** use exposed cables as a convenient step or handhold.
- ✓ **don't** handle or attempt to alter the position of any cable.

Remember that a damaged cable may cause extensive loss of supplies, make expensive repairs necessary and cause serious or even fatal injury.

If effective measures are not adopted to protect our equipment, we will take steps to recover the cost of any damage caused. Persons causing damage resulting in loss of supply to customers can be held legally responsible for any claims made by those customers. Promptness in reporting an incident will minimise costs.

In most cases it is not practicable to make cables dead without interrupting supplies to our customers. But given adequate notice, we will wherever possible, give advice regarding special precautions which may be necessary on any site where particular problems are likely to be encountered. The right is reserved to make a charge for this service.

Electricity cables can exist anywhere - under paths or roads, in gardens or driveways, on new housing or industrial development sites or even farmland.

Watch it! - Working in the vicinity of overhead lines

For your own and your workmates' safety, please follow the **do's** and **don'ts** listed below

- ✓ **do** carefully note the position of all overhead lines before commencing work.
- ✓ **do** co-operate with us during planning and sitework stages.
- ✓ **do** follow the advice given in HSE Guidance Note GS 6 when siting barriers, goal posts, bunting etc.
- ✓ **do** keep overhead lines in view when moving scaffolding or machinery and take special care when felling or lopping trees.
- ✓ **do** remember that the raising or slewing of a crane or excavator jib may cause danger when operating near an overhead line.
- ✓ **do** avoid any machinery that is in contact with an overhead line until we confirm that conditions are safe.
- ✓ **do** warn others to keep well clear.

- ✓ **don't** drive a high vehicle below an overhead line when an alternative route is available.
- ✓ **don't** raise the bed of a tipper lorry beneath an overhead line or drive under the line with the body of the vehicle raised.
- ✓ **don't** steady any suspended load until you are satisfied that there is no danger from overhead lines.
- ✓ **don't** handle or use scaffold platforms, poles, pipes or ladders unless they are at a safe distance from overhead lines.
- ✓ **don't** transport long objects beneath overhead lines, unless they are carried in a horizontal position.
- ✓ **don't** approach or touch any broken or fallen overhead lines.

Always remember that:

- Electricity can jump gaps.
- Contact or near contact with a crane jib, scaffold or ladder can cause a discharge of electricity with a risk of fatal or severe shock and burns to any person in the vicinity.

If effective measures are not adopted to protect our equipment, we will take steps to recover the cost of any damage caused. Persons causing damage resulting in loss of supply to customers can be held legally responsible for any claims made by those customers. Promptness in reporting an incident will minimise costs.

In most cases it is not practicable to make overhead lines dead without interrupting supplies to customers. However, provided adequate notice is given, then we will, whenever possible, give advice regarding special precautions which may be necessary on site where specific problems may be encountered. The right is reserved to make a charge for this service.



GIS ELECTRIC SYMBOLS (SOUTH)

	LV UNDERGROUND SERVICE CABLE		POLE
	LV UNDERGROUND MAINS CABLE		POLE MOUNTED TRANSFORMER
	2KV–3.3KV UNDERGROUND CABLE		SUBSTATION
	6.6KV UNDERGROUND CABLE		LINK BOX
	11KV UNDERGROUND CABLE		PILLAR
	22KV UNDERGROUND CABLE		MAJOR PIPELINE
	33KV UNDERGROUND CABLE		ASSUMED ROUTE
	66KV UNDERGROUND CABLE		CROSS SECTION
	132KV UNDERGROUND CABLE		DUCTING
	LV OVERHEAD LINE		FLYING STAY
	2–3.3KV OVERHEAD LINE		PME EARTH
	6.6KV OVERHEAD LINE		NEUTRAL EARTH
	11KV OVERHEAD LINE		OIL/GAS GAUGE
	22KV OVERHEAD LINE		OIL/GAS TANK
	33KV OVERHEAD LINE		BALANCER
	66KV OVERHEAD LINE		REGULATOR
	132KV OVERHEAD LINE		PIT
	FIBRE OPTIC CABLE		SCHEMATIC CONNECTOR
	PILOT CABLE		SUPPLY LOCATION–PROPERTY
	CIRCUIT BREAKER		SUPPLY LOCATION–OTHER
	SWITCH DISCONNECTOR		SUPPLY LOCATION–STREET FURNITURE
	POLE BOX		
	STRAIGHT JOINT		
	TEE JOINT		
	TRIFURCATING JOINT		
	POT END JOINT		
	CAPPED END JOINT		
	SEALING END JOINT		
	SERVICE CONNECTOR JOINT		
	O/H CONNECTOR JOINT		
	WALL BOX JOINT		

	Scottish and Southern Energy plc.		UNCONTROLLED COPY
	DATE:	18/09/2006	Subject to Revision Master held at
	SCALE:	1:500	
			INTERNAL USE ONLY

GUIDE TO INTERPRETING MAINS RECORDS PLANS

PRODUCED BY MAPPING SERVICES



INTRODUCTION

The Health & Safety Executive have produced a document entitled 'Avoiding danger from underground services'. Copies are available from HMSO's accredited agents and good booksellers, Ref HS(G)47, ISBN 0118854925.

WHEN WORKING IN THE VICINITY OF ELECTRICITY CABLES AND OVERHEAD LINES PLEASE FOLLOW THE DO'S & DON'T'S LISTED BELOW.

DO'S

- Do** Make sure that you have plans of the cables in the area before any excavation work starts. Remember that some cables such as service cables may not be shown on the plans. Cables owned by other companies are not shown, e.g. local authorities, Department of the Environment, National Grid Co. etc.
- Do** Make sure that you understand the plans that have been supplied to you. For detailed explanation of the symbols used by Scottish & Southern Energy to display the cable information see Appendices.
- Do** Use a cable avoidance tool (CAT) to determine the position of the existing cables in the work area. The positions should be clearly marked and further tests made as work proceeds. **If in doubt, get advice from your supervisor.**
- Do** Hand dig trial holes over the indicated route of the cable, excavate alongside.
- Do** Ask for a cable to be made dead if it is buried in concrete. Please note that this is likely to be a costly process.
- Do** Watch for signs of cables as work progresses, such as marker tapes or cable covers which may be exposed.
- Do** Backfill carefully using stone free soil around cables, replacing marker tapes and covers.
- Do** Ensure that there is maximum clearance above all cable & joints.
- Do** Notify Scottish & Southern Energy immediately should accidental damage to cables occur however large or small. Arrange to keep people well clear of the cable that has been damaged. Do not backfill an area where cable damage has occurred.

DON'T'S

- Don't** Operate a bulldozer, scraper, dragline or excavator unless you are satisfied that there are no buried cables or overhead lines in the working area.
- Don't** Use picks, forks or pointed instruments in soft clay or soil where cables are present, exercise extreme caution where such instruments are used to free lumps of stone or to break up firmly compacted ground.
- Don't** Use exposed cables as a convenient step or handhold.
- Don't** Handle or attempt to alter the position of any cable.

REMEMBER THAT A DAMAGED CABLE MAY CAUSE EXTENSIVE LOSS OF SUPPLIES, MAKE EXPENSIVE REPAIRS NECESSARY AND CAUSE SERIOUS OR EVEN FATAL INJURY.

IF IN DOUBT ASK SCOTTISH & SOUTHERN ENERGY.

UNDERSTANDING THE CABLE INFORMATION ON THE PLANS

AVERAGE DEPTH OF CABLES:

Footpaths 0.6 metres

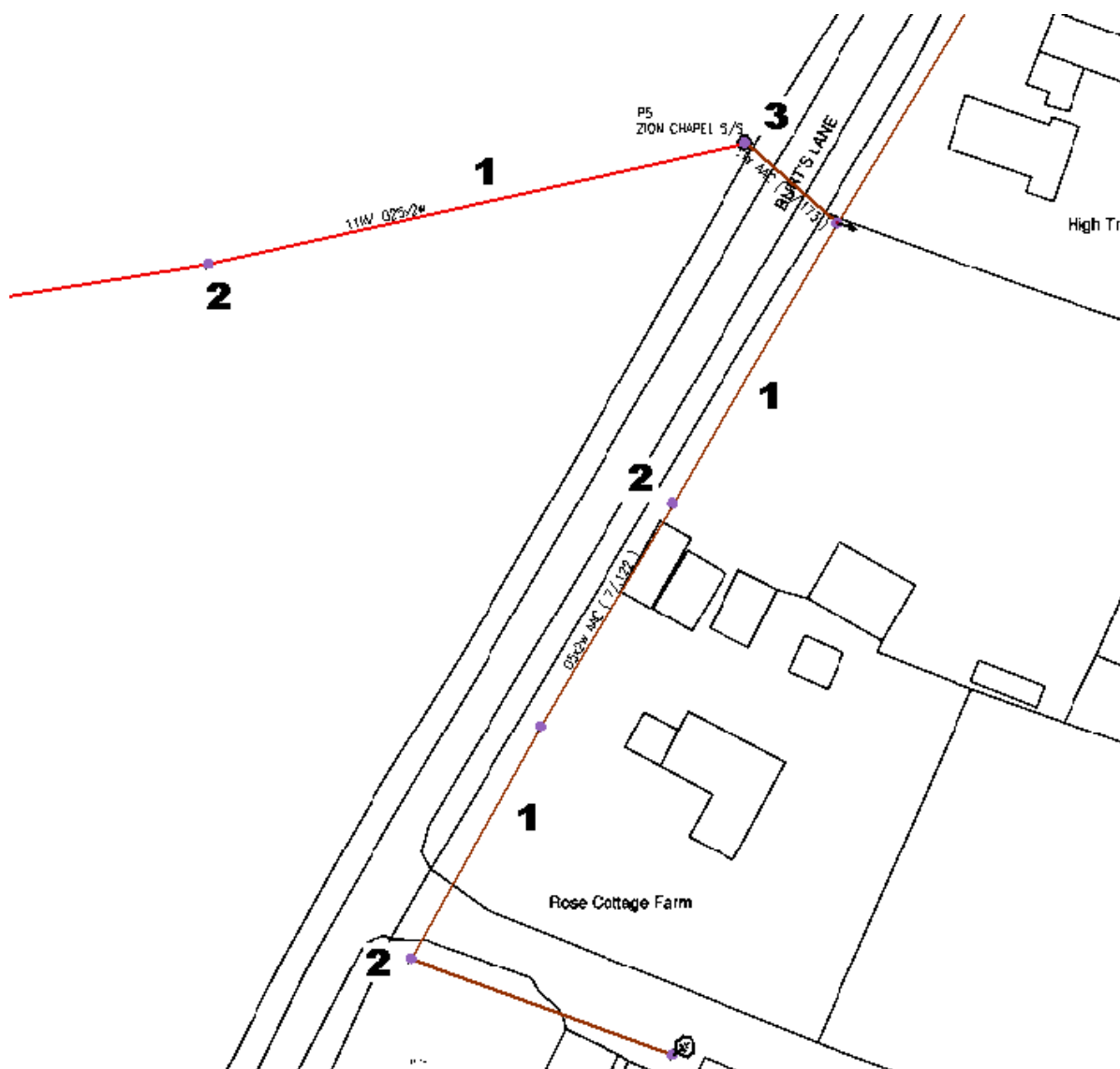
Road Crossings 0.75metres

NB These depths are only approximate, depths may vary. It should also be noted

That surface levels can change subsequent to the cables being laid.

Mains records symbols definitions and examples:

A) Overhead lines & Poles – These are depicted as follows:

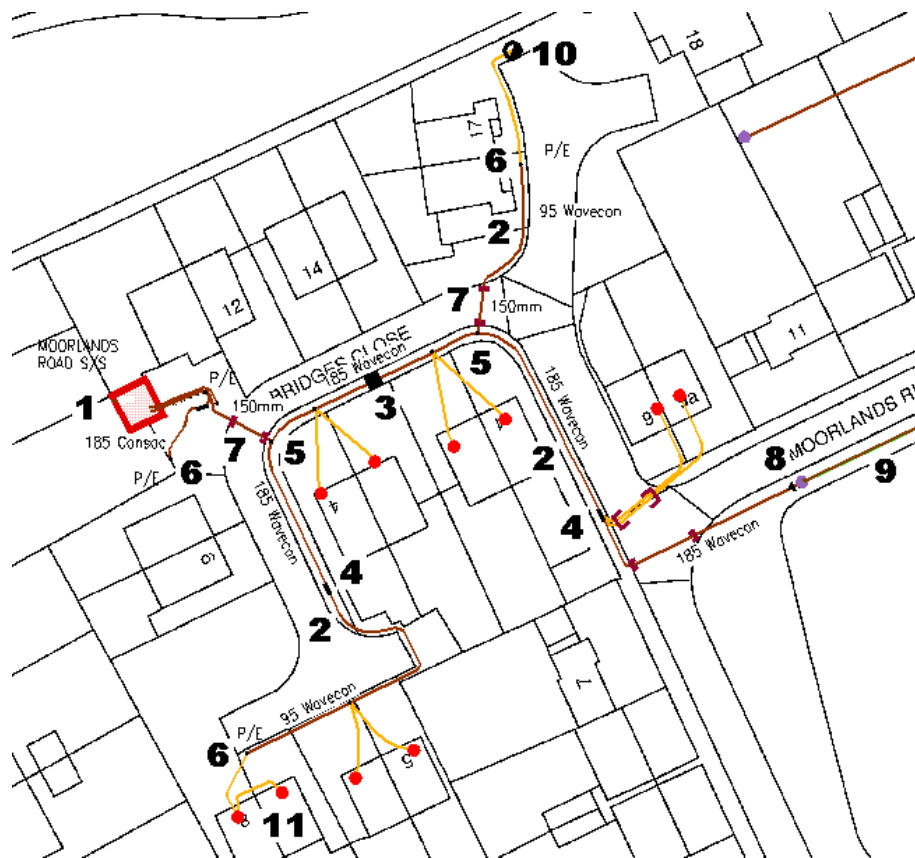


1. Overhead Line – These can be either High Voltage or Low Voltage, colour denotes voltage.

2. Poles.

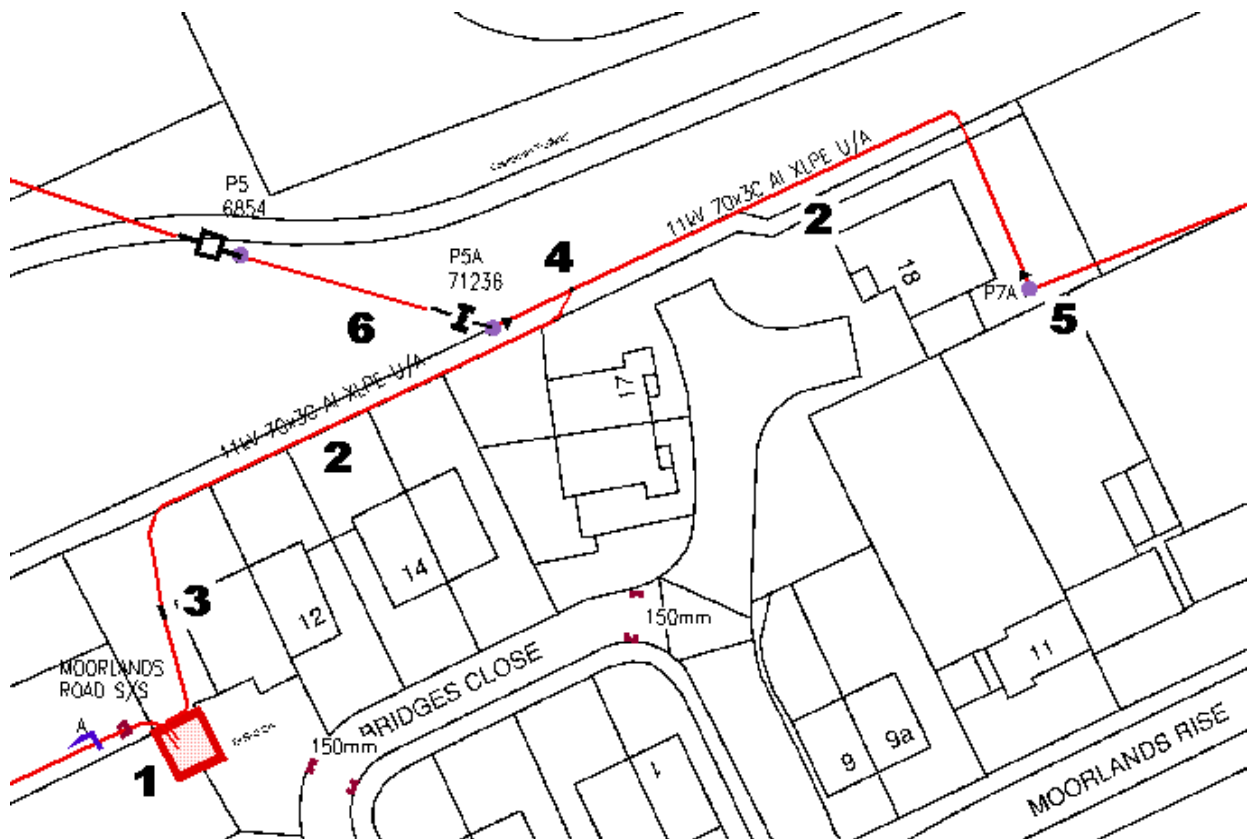
3. Pole Mounted Transformer.

B) Typical example of Low Voltage cable records:



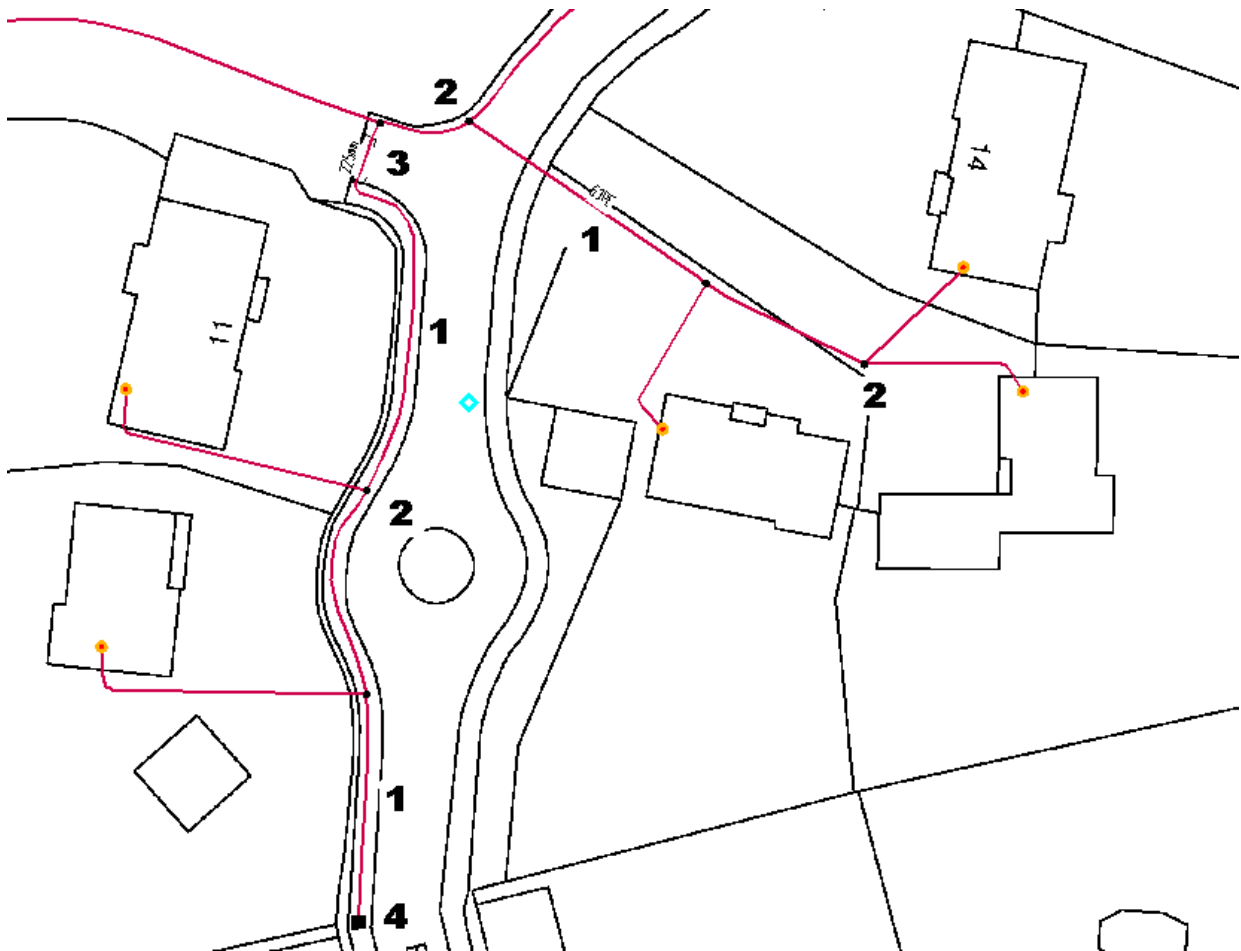
1. Sub Station
2. Low Voltage Underground cable.
3. Link Boxes: This is a box with a manhole cover marked as belonging to Scottish & Southern Energy containing links. Either two or four cables will lead away from a link box.
4. Straight Joint: This is where two separate cables are joined together.
5. Breach Joint: This is where another cable is attached to the main.
6. Pot End: This is the end of the cable. In certain circumstances service cables to properties can be taken from the pot end. These services may not be shown on the plans.
7. Road crossing duct where a cable is routed under a path or road.
8. Cable terminations/Pole Box: Where underground cables are connected to overhead lines
9. Overhead line.
10. Street Lamps.
11. Services to properties: The service cable to an individual property are not always shown on the mains records that Scottish & Southern Energy supply.
In some cases a service can be looped from an adjacent property.
Some services are laid through ducts from the mains to the meter position when laid.

C) Typical example of High Voltage cable record.



1. Sub Station
2. High Voltage Underground cable – Colour denotes voltage.
3. Straight Joint: This is where two separate cables are joined together.
4. Breech Joint: This is where another cable is attached to the main.
5. Cable terminations/Pole Box: Where underground cables are connected to overhead lines
6. Overhead Switch.

D) Typical example of Gas pipe record























































1. Gas Pipes- Colour denotes pressure.
2. Gas joint
3. Road crossing duct where a pipe is routed under a path or road.
4. Connection Point. Position where network is connected to national gas suppliers network.

Further Notes.






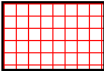


















The various sizes of cables and pipes are shown alongside the routes.

IF IN DOUBT ASK SCOTTISH & SOUTHERN ENERGY











GIS ELECTRIC SYMBOLS (SOUTH)

	LV UNDERGROUND SERVICE CABLE		POLE
	LV UNDERGROUND MAINS CABLE		POLE MOUNTED TRANSFORMER
	2KV-3.3KV UNDERGROUND CABLE		SUBSTATION
	6.6KV UNDERGROUND CABLE		LINK BOX
	11KV UNDERGROUND CABLE		PILLAR
	22KV UNDERGROUND CABLE		MAJOR PIPELINE
	33KV UNDERGROUND CABLE		ASSUMED ROUTE
	66KV UNDERGROUND CABLE		CROSS SECTION
	132KV UNDERGROUND CABLE		DUCTING
	LV OVERHEAD LINE		FLYING STAY
	2-3.3KV OVERHEAD LINE		PME EARTH
	6.6KV OVERHEAD LINE		NEUTRAL EARTH
	11KV OVERHEAD LINE		OIL/GAS GAUGE
	22KV OVERHEAD LINE		OIL/GAS TANK
	33KV OVERHEAD LINE		BALANCER
	66KV OVERHEAD LINE		REGULATOR
	132KV OVERHEAD LINE		PIT
	FIBRE OPTIC CABLE		SCHEMATIC CONNECTOR
	PILOT CABLE		SUPPLY LOCATION-PROPERTY
	CIRCUIT BREAKER		SUPPLY LOCATION-OTHER
	SWITCH DISCONNECTOR		SUPPLY LOCATION-STREET FURNITURE
	POLE BOX		
	STRAIGHT JOINT		
	TEE JOINT		
	TRIFURCATING JOINT		
	POT END JOINT		
	CAPPED END JOINT		
	SEALING END JOINT		
	SERVICE CONNECTOR JOINT		
	O/H CONNECTOR JOINT		
	WALL BOX JOINT		

GIS ELECTRIC SYMBOLS (NORTH)

	FIBRE OPTIC CABLE		LINK BOX
	PILOT CABLE		PILLAR
	6.6/11kV UNDERGROUND CABLE		SUBSTATION
	33kV UNDERGROUND CABLE		WATER PIPELINE
	132kV UNDERGROUND CABLE		OIL PIPELINE
	LOW VOLTAGE UNDERGROUND CABLE		GAS PIPELINE
	6.6/11kV OVERHEAD LINE		SWITCH DISCONNECTOR
	33kV OVERHEAD LINE		CIRCUIT BREAKER
	132/275kV OVERHEAD LINE		SUPPLY POINT
	LOW VOLTAGE OVERHEAD LINE		
	POLES		
	TOWER		
	POLE TERMINATION		
	JOINTS		
	DUCTING		

GIS Gas Symbols

	Medium Pressure Pipe	
	Low Pressure Pipe	
		Gas Ducting
		Gas Supply Point
		Gas Joint
		End Closure
		Pressure Reduction Station
		Gas Utility Connection Point
		Valve

GIS Environmental Guide

Countryside Agency



Areas of Outstanding Natural Beauty (AONB)



National Park

Environment Agency



Borehole



Water Extraction Point



Sensitive Waterway



Source Protection Zone



Vulnerability Zone

Forestry Commission



Access



Ownership

English Heritage/Historic Scotland



Monuments

SEPA



Flood Area



Flood Location

English Nature/Scottish Natural Heritage



Site of Special Scientific Interest (SSSI)



National Nature Reserve (NNR)



RAMSAR



Special Area of Conservation (SAC)



Special Protection Area (SPA)

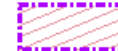


Ancient Woodland

Areas of Concern



Contaminated



Cadmium



Methane



Heavy Metal-Unclassified



Asbestos



Ordnance



Mercury



Restricted Access