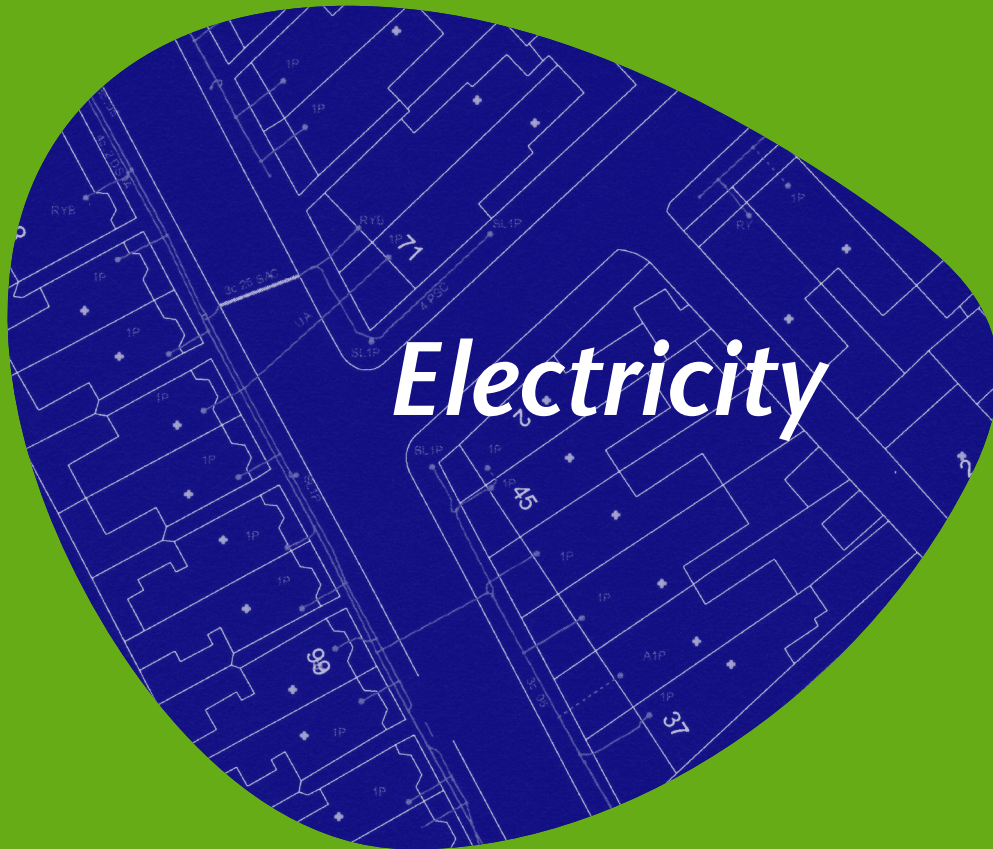


Guide for recording underground assets



New Roads and Streetworks Act

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1. Why record underground assets?

All steps indicated within this guide should be followed in order to provide a consistently high level of asset information to enable fast and accurate recording of underground assets as per the **New Roads and Street Works Act 1991**.

If a specific drawing style is not indicated in this guide, all the techniques mentioned herewith should be followed to collate a correct record of the assets being recorded.

Under this act United Utilities is statutorily obliged to record all underground assets.

Section 79, Chapter 22 of the New Roads and Street Works Act 1991 states:

An undertaker shall record the location of every item of apparatus belonging to him as soon as is reasonably practicable after-

- **placing in the street or altering its position**
- **locating it in the street in the course of executing any other works**
- **under regulation 15 of the Electricity Safety, Quality and Continuity Regulations 2002, United Utilities are obliged to make and keep records of all our underground equipment, whether under a road or street, or not**

This guide is version controlled, therefore the latest version should be used at all times in conjunction with the specific details held within any formal contract agreements. The latest copy of the current guide can be found on the United Utilities intranet.

2. Details to record

This guide has been developed in response to the New Roads and Street Works Act 1991.

United Utilities requires that the position of any underground apparatus **placed, moved or uncovered** during works must be surveyed to an accuracy of **+/- 0.1 metre (100mm)**.

To enable Data Maintenance to accurately record United Utilities assets the following should always be taken into account when producing “as constructed” drawings returned from site.

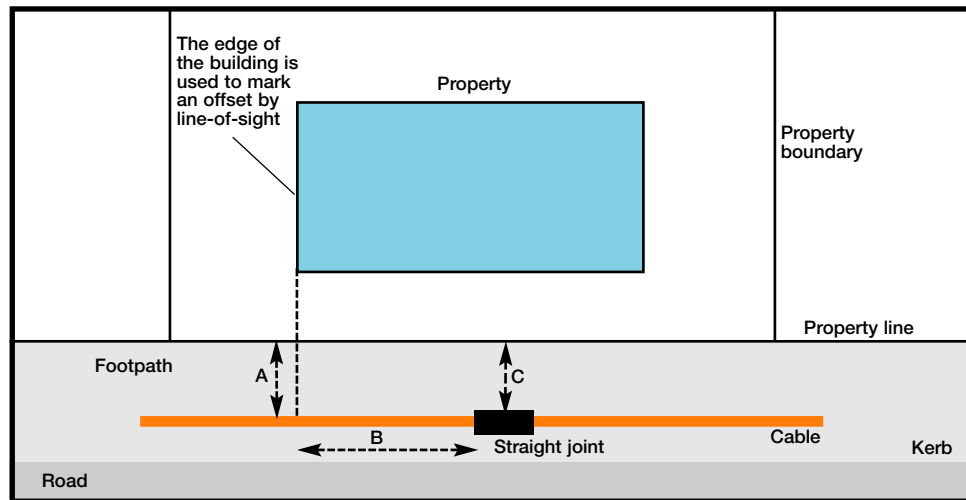
- All drawings must be legible.
- All drawings must include the exact location of the work, Ordnance Survey Grid Reference, title, type of job, and dates of actual work. Streets must be named and house numbers or plot numbers shown.
- Measurements should be taken from permanent features which are, or would be shown on an Ordnance Survey map, such as buildings (gable ends) kerb lines, walls, bridges etc.
- Dimensions MUST NOT be measured from trees, gates posts, sheds, bay windows, letter boxes, lamp posts, manhole covers, gullies etc.
- The type of each joint must be indicated.
- Cable sizes and types must be indicated.
- The phase connection of each single-phase service must be indicated.
- Each joint must be located with two dimensions at right angles, eg from the kerb and from the end wall of a building.
- Sufficient measurements must be made to show the route of each cable accurately, including additional measurements as necessary to show deviation from straight lines.
- The size and type of any ducting must be indicated, showing which ducts are in use. The positions of the ends of ducting, including any breaks in the run of ducting, must be shown with measurements. Where more than one duct has been laid in the same trench, a vertical cross section drawing must be included.
- The position of all road crossings must be indicated with sufficient measurements (at least two) to locate the ends of the ducts.
- The depths of cables must be indicated, where these vary from the standard depths.
- All drawings must be to a suitable scale (1:250, 1:500, 1:1250, 1:2500).
- All drawings must show North Point.
- All details of any non-standard work undertaken must be provided.

3. Measuring methods

There are currently two methods of measurement for recording United Utilities assets known as triangulation and offset. The offset method is the preferred method of recording for Asset Data Records (ADR).

The offset method entails taking two measurements approximately at right angles to each other from fixed points to the asset to accurately locate its position.

Offset method



Note: Record offset measurement from centre of link box repair to centre line of the cable.

Record your measurements like this:

1st measure	A	1.5 metres
2nd measure	B	14.2 metres
3rd measure	C	1.6 metres

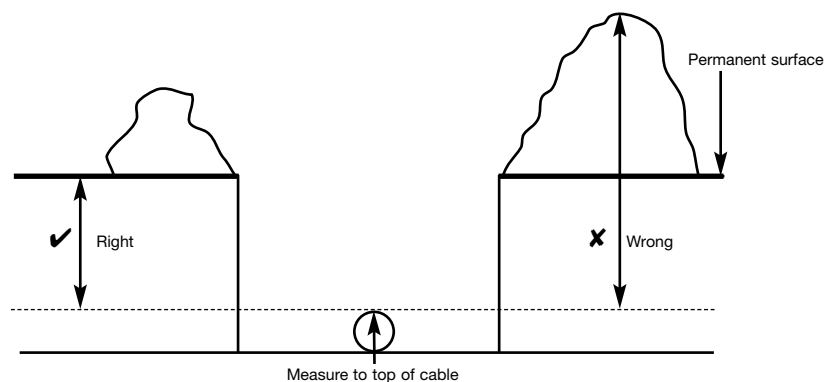
Remember:

- Use a standard 30 metre fibre tape / wheel measure and do not measure over humps of earth or from tops of walls.
- Always get permission before measuring on private land.
- Do not measure from trees, telephone boxes, letter boxes, lamp posts, manhole covers, gullies, front doors or bay windows – as they are not marked on maps or are prone to being moved without warning.
- Measure at no more than twenty metre intervals, and at the point where the cable changes direction.
- Always mark up your measurements in metres.
- Always measure from a permanent feature which is, or would be shown on an Ordnance Survey map to enable clear and concise understanding of the completed work.
- United Utilities reserves the right to reject any “as constructed” drawings which do not meet the criteria set out above.

4. Recording depth

- Depth must be recorded to an accuracy of $\pm 0.05\text{m}$.
- If a permanent surface does not exist, such as on a new housing estate: record the final finished depth measured from the kerb line or back footpath line.
- Where a permanent surface does exist, such as when cables are laid in an existing road, record:
 - the specified depth of cable
 - the depth at where there are major deviations, such as when cables go under other buried apparatus, tree roots, or at the position of horizontal bends.
- Mark depth on the map at the point at which you measured it.

Remember!



5. Requirements for updating records for overhead lines and substations

Substation sites

- Geographical position of the site with respect to Ordnance Survey map background
- Boundary of site
- Location and external dimensions of any buildings or compounds

HV Equipment

- Topographical layout in substation
- HV switch name
- Operating voltage
- Outdoors or indoors
- Ground, pole or other mounting
- Plant file reference (MAMs)
- Nominal rating
- Status - open or closed
- HV metering or not
- Control authority (*optional*)
- Reporting region (*optional*)
- Ops restrictions (*optional*)
- Ownership
- Installer / connector

Transformer

- Geographical position in substation
- Type of transformer
- Rating
- Transformer number
- Infeed / outfeed voltages
- Ground, pole or other mounting
- Indoors or outdoors
- Plant file reference (MAMs)

Low voltage equipment

- Geographical position in substation
- Type of LV board
- Outdoors or indoors
- Ground, pole or other mounting
- Plant file reference (MAMs)
- Circuit names
- Switch status – open or closed
- LV way numbers

Notes

There may be a need for additional details at Grid or Primary substations.

A copy of the scheme drawing and commissioning forms may provide a substantial amount of the above detail.

6. Example sketches

Overhead lines

- Poles / towers
- Geographical position of the pole / tower position
- Type of pole / tower
- Pole / tower construction material
- Pole / tower number
- Pole / tower plant file reference (MAMs)
- Number and position of all pole stays
- Details of all earthing conductors attached to pole including material, size and length

Conductors

- Type of conductor
- Conductor material
- Number of conductors
- Operating voltage
- Type of insulation
- Jumper positions and whether they are open or closed

Pole mounted equipment

- As for equipment in substations

Services

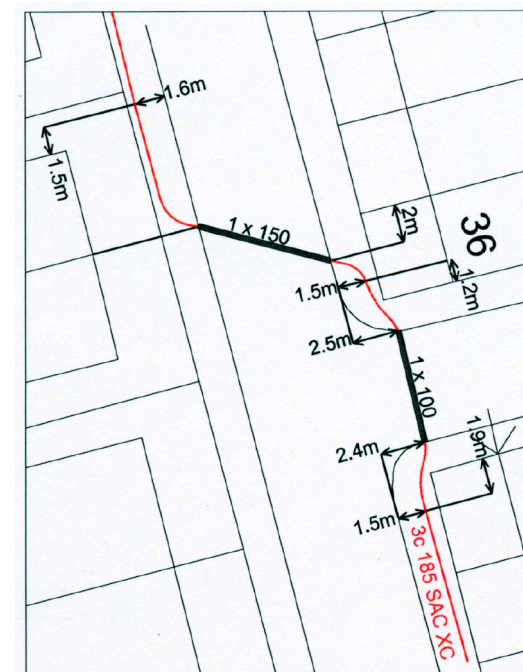
- Basically captured as underground cables but with some exceptions
- If aerials then the following is needed
 - Route of aerials
 - Start point (whether pole or building)
 - Type of conductor
 - Conductor material
 - Number of conductors
 - Operating voltage
 - Type of insulation

a) Mains: services in existing built up area

PLEASE NOTE: Dimensions are not shown on the Live GIS System

Always show:

- measurements from kerb lines, gable ends etc
- measurements to ends of road crossings and ducting
- road and street names
- cable and duct sizes and types
- house or plot numbers

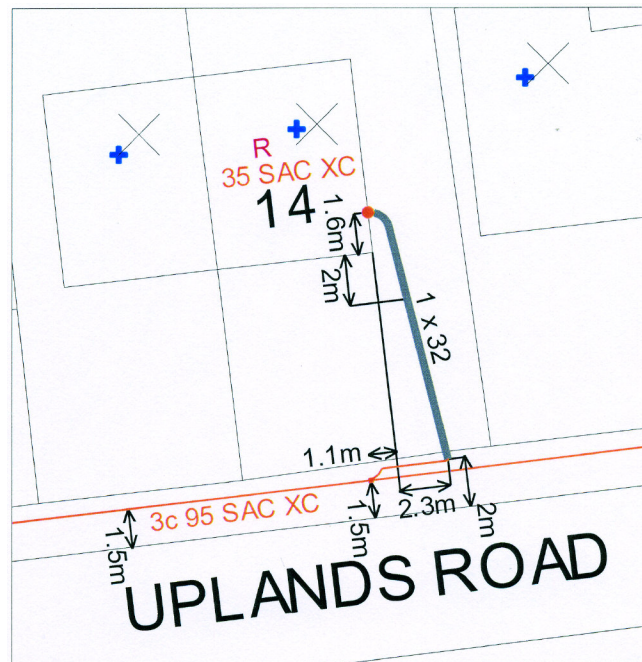


b) Sketch of jointing

PLEASE NOTE: Dimensions are not shown on the live GIS system

Always show:

- new phase colour
- mains and cable size and type
- plot or house numbers
- road or street names
- adjacent plots, houses or landmarks
- breaks in ducting or deviations
- joint positions

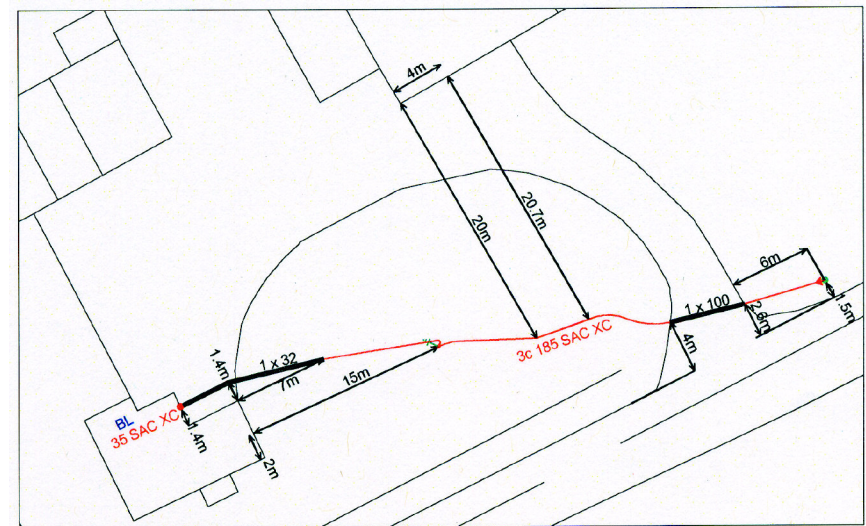


c) Mains: services and jointing

PLEASE NOTE: Dimensions are not shown on the live GIS system

Always show:

- mains and service cable size and type
- plot or house numbers / names
- road or street names
- adjacent plots, houses or landmarks
- breaks in ducting or deviations

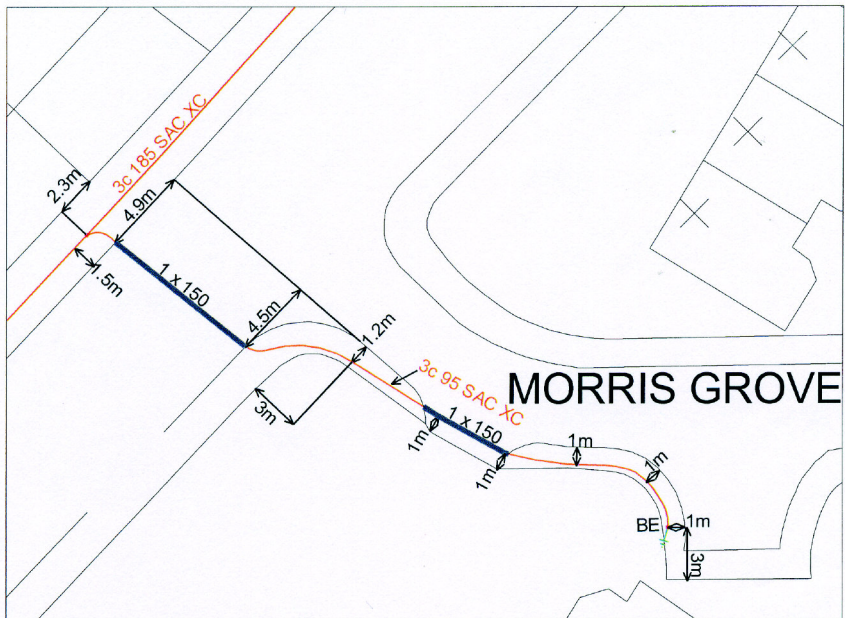


d) Mains

PLEASE NOTE: Dimensions are not shown on the live GIS system

Always show:

- mains and service cable size and type
- road or street names
- adjacent plots, houses or landmarks
- breaks in ducting or deviations





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