



electricity
north west

Bringing energy to your door

Data Management Guide for recording underground assets

New Roads and Streetworks Act

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Version control log

This page details any amendments and revisions to the Asset Guide

Revision Number and Date of Issue	Description of amendment
Issue Draft 001 – 18th February 2010	First issue of Asset Guide
Issue 02 – 22nd July 2010	Revised to omit United Utilities references
Issue 03 – 27 July 2010	Addition of new as-laid drawing form and section outlining requirement for Comm and Decomm Drivers

Should you require clarification of any points or have any recommendations for future inclusion please contact:

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Why record underground assets?

In compliance with current legislation, Electricity North West are obliged to keep accurate records of all underground assets against a map background

The major reasons for recording can be split into two categories. (This document should be read in conjunction with Codes of Practice012).

Current legislation

The **New Roads and Street Works Act 1991**, section 79, Chapter 22, as amended by the **Street Works Records Act 2002**, states that Electricity North West, as undertaker shall record the location of every item of apparatus belonging to them as soon as is reasonably practicable after –

- Placing it in the street or altering it's 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, Electricity North West, are obliged to make and keep records of all our underground equipment, whether under road or street, or elsewhere.

Business benefit

Accurate records of underground apparatus are crucial for the safe and the efficient operation of our networks. We exchange records with other utility companies and issue them to contractors who operate in our area.

A standard format reduces operational problems, prevents accidents and saves costs.

All the steps that are indicated within this guide must be followed in order to provide a consistently high level of asset information, to enable fast and accurate recording of underground assets.

This guide is version and date controlled and future versions will be circulated as appropriate.

The latest copy can be found on the Electricity North West Intranet site.

If you have any queries regarding this guide and future updates please contact:

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Details to record

Electricity North West require 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 Management to accurately record assets, the following should always be taken into account when producing “as constructed” drawings returned from site. Data Management reserve the right to reject “as constructed” drawings which do not meet the criteria set out below:

- 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. Street 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, gate posts, sheds, bay windows, letter boxes, lamp posts, manhole covers, gullies etc.
- The type of each joint must be indicated.
- Cable cores, sizes, material and type must be indicated.
- Auxiliary cable type, No of cores/fibres/pairs must be indicated.
- The phase connection of each single-phase service must be indicated.
- A Commission or Decommission driver must be indicated on all work instructions. See section on page seven of guide.
- All drawings should include a unique project/cost code.
- Each joint must be located with two dimensions at right angles, e.g. 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, type and colour of any ducting must be indicated, showing which ducts are in use. The positions of the ends of ducting, include 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.



Details to record

- 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.
2. The minimum details required for a Cross Section are as follows:
 - Location of cross section
 - Viewing direction of the cross section
 - Number of/size/material and colour of ducts
 - Which ducts have cable in and which are empty
 - Depth from surface to top of ducts
 - No of cores/pairs/fibres, core size and construction material, cable type and voltage of all cables – including pilots including any out of commission cables
 - Depth from surface to cables when not in duct
 - General notes – e.g. Laid under tiles

Requirements for a cross section

1. A Cross Section drawing is required when a two dimensional drawing is not deemed adequate e.g. more than 1 duct or more than 1 cable on top of each other or where cables cross over each other.
3. A Cross Section drawing is also required when a cable is laid on a route where there is an existing cross section. In these cases the relationship between the new cable and those shown on the existing cross section is required .



Measuring methods

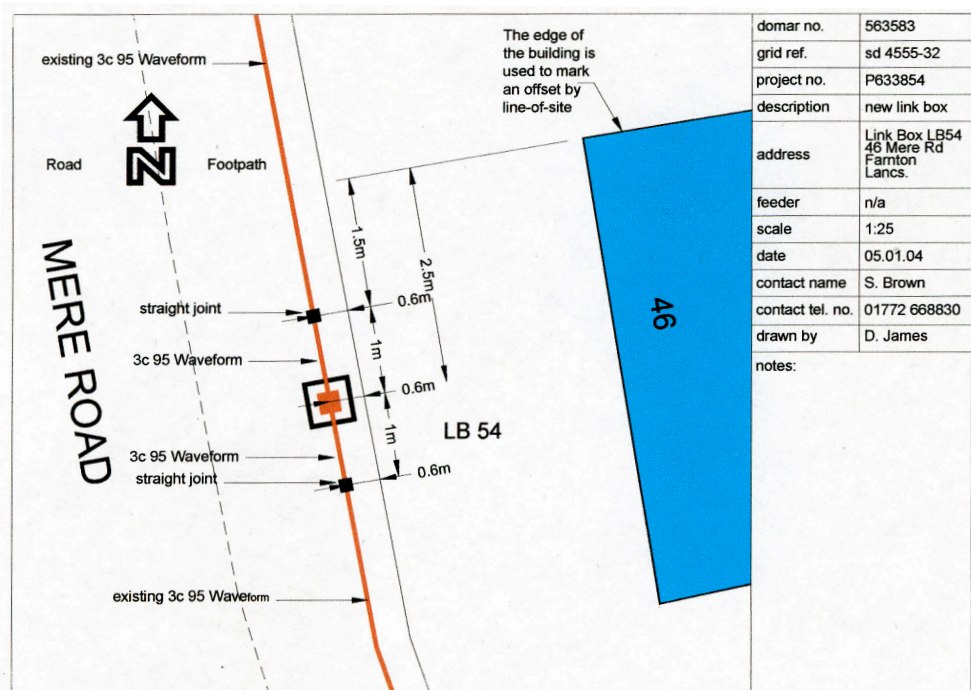
There are currently two methods of measurement for recording Electricity North West's assets known as triangulation and offset.

The offset method is the preferred method of recording for Data Management.

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

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



Measuring methods

Remember

- Use a standard 30 metre fibre tape/ wheel measure and do not measure over humps of earth or from tops of walls.
- Always obtain permission before measuring on private land.
- Do not measure from tree roots, telephone boxes, letter boxes, lamp posts, manhole covers, gullies, front doors or bay windows, they are seldom marked on maps and are prone to being moved without warning.
- Measure at no more than twenty metre intervals and at the point where the cable changes direction, size or material.
- 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

Commission and Decommission Drivers

In all instances where a new cable is installed, or a cable is disconnected, removed or re-connected to the network, Electricity North West are required to provide a reason why this cable has been affected.

The necessity to record this information relates to Ofgem's definition of Capital Expenditure (Capex).

This reason is known as either a Commission or Decommission driver.

This information should be included on all work instructions, minor or major.

Each piece of work should also have a unique project/cost Code (Acct Code) on any work instruction, minor or major.

Where this information has been omitted Data Management reserve the right to reject the drawing,

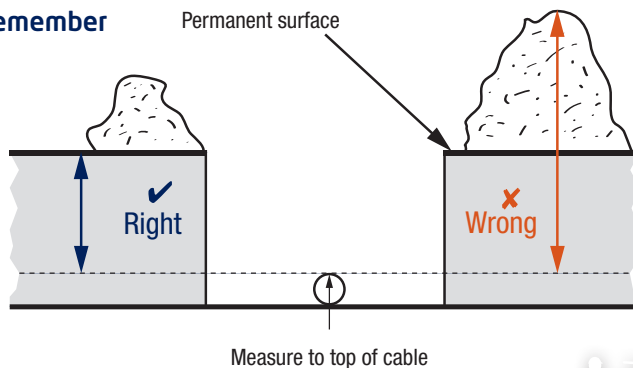
Relevant boxes have now been made available to record this information on the new 'As-Laid Drawing Form'. Please see following page. If different driver codes are required for different parts of the job, it is good practice to illustrate these on the actual drawing with the codes written by the cables in question.

Recording depth

The following points outline when it is necessary to record depth, and how this should be recorded.

- Depth must be recorded if different from 450mm LV and 600mm HV, for 33KV and above, depths must be recorded at all times
- Depth must be recorded to an accuracy of ± 0.05 metres
- Depth should be recorded in metres, to two decimal points
- If a permanent surface does not exist, such as on a new housing estate: record the final finished depth, measure 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:
 1. The specified depth of cable
 2. 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
- For a small excavation or opening, record the depth of the apparatus uncovered at that point
- Measure from the permanent surface level to the top of the cable where possible, as shown in the sketch below
- Record the date when the depth is measured

Remember



The submission of new records from the field should be returned to Data Management with the completed As Laid Drawing form.

Definitions for Commission/Decommission Drivers

Code	Driver	Definition
A	Demand Connections (DNO)	Assets built by us
B	Demand Connections (ICP)	Assets built by 3 rd parties.
C	Diversions	Replacement or upgrade of existing assets in respect of performing diversion work.
D	Reinforcement (P2/6)	Assets installed/replaced to reinforce network to provide additional network capacity.
E	Reinforcement (Fault Levels)	Assets installed/replaced to reinforce network to prevent the fault level of the network equipment or prevent equipment fault levels from being exceeded.
F	ESQCR	Assets installed/removed to comply with ESQCR regulations.
G	Asset Replacement	Old assets replaced by new ones because the old ones were worn out.
H	Asset Replacement (Consequential)	Old assets replaced by new ones because another associated asset needed to be replaced and it was sensible to change this one at the same time.
I	Asset Refurbishment	Planned replacement of assets to restore the asset to its original condition (or modern equivalent spec)
J	Rising and Lateral Mains	Investment undertaken on ENW owned cable or higher systems in multi occupancy buildings.
K	VA (Within Nat Park or AONB)	Assets installed/replaced to enhance visual amenity within National Park or Area of Outstanding Natural Beauty.
L	VA (Outside Nat Park or AONB)	Assets installed/replaced to enhance visual amenity outside National Park or Area of Outstanding Natural Beauty.
M	Generation Connections (DNO)	Assets built/replaced by us for generation purposes.
N	Generation Connections (ICP)	Assets built by 3 rd parties for generation purposes.
O	Low Carbon Networks	Costs incurred specifically to build networks with a low carbon impact.
P	Faults	Reactive replacement of an asset following its functional failure.
Q	NTR	Non Trading Rechargeable (Work on an asset that was at the request of a third party, i.e. a service alteration)
R	Other	Assets installed/replaced for any reason not defined by this list eg 3 rd party damage to our equipment, transfer of sitg after fault
S	Dismantlement (use for Decommission only)	Assets removed from network for any reason not defined by this list, but not replaced.

Additional Comments

Confirmation of Drawings received by Data Management (to be signed upon receipt)		
Signature		
Print Name		Date Received



Requirements for updating records at overhead lines and substations

The following section shows the information that is required to accurately record each electricity asset.

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

Transformer

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

HV equipment

- Topographical layout in substation
- HV switch name
- Operating voltage
- Outdoors or indoor
- Ground, pole or other mounting
- Plant reference (CRMS)
- Nominal Rating
- Status – open or closed
- HV metering or not
- Ownership
- Installer/Connector

Low voltage equipment

- Geographical position in substation
- Type of LV board
- Outdoors or Indoors
- Ground, pole or other mounting
- Plant Reference (CRMS)
- Circuit Names
- Switch status – open or closed
- LV way numbers



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 reference (MAMS)
- Number and position of the poles and stays
- Details of all earthing conductors attached to pole including material size and length

Pole mounted equipment

- As for equipment in substations

Services

- Basically captured as underground cables but with some exceptions
- If aerals then the following is needed
 1. Route of aerals
 2. Start point (whether pole or building)
 3. Type of conductor
 4. Conductor Material
 5. Number of conductors
 6. Operating voltage
 7. Type of insulation

Conductors

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



Example sketches of marking up records

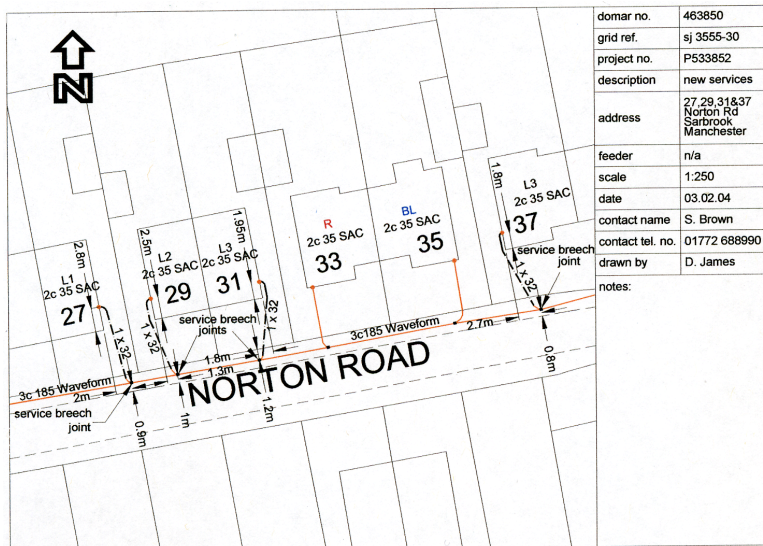
Mains and services in existing built up area

PLEASE NOTE:

Dimensions are not shown on the live GIS system unless 'not to scale'

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
- Phase colours (red, yellow, blue or L1, L2, L3 as appropriate)



Example sketches of marking up records

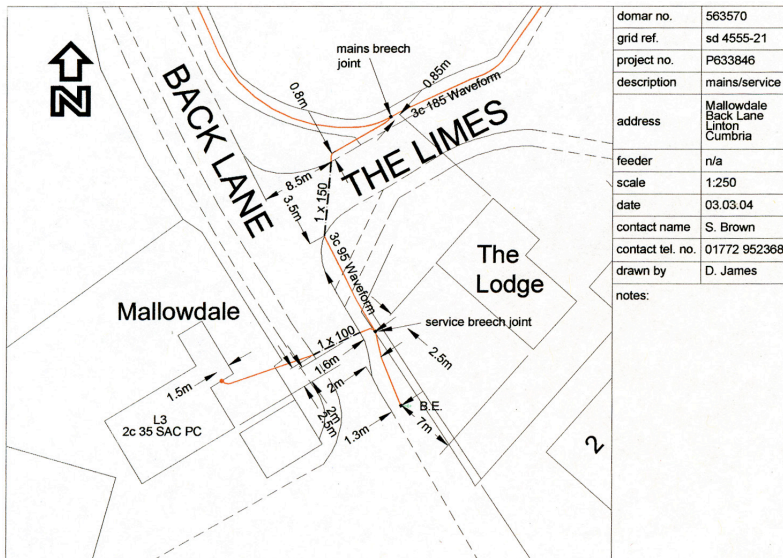
Mains, services and jointing

PLEASE NOTE:

Dimensions are not shown on the live GIS system unless 'not to scale'

Always show:

- New phase colours (red, yellow, blue or L1, L2, L3 as appropriate)
- 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



Example sketches of marking up records

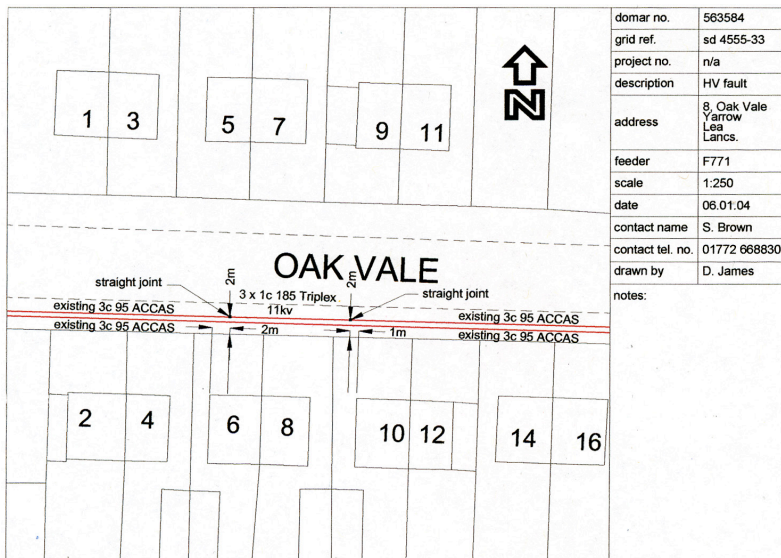
HV fault

PLEASE NOTE:

Dimensions are not shown on the live GIS system unless 'not to scale'

Always show:

- Main and size type
- Road or street names
- Breaks in ducting or deviations
- All joint positions
- Feeder title/number



Example sketches of marking up records

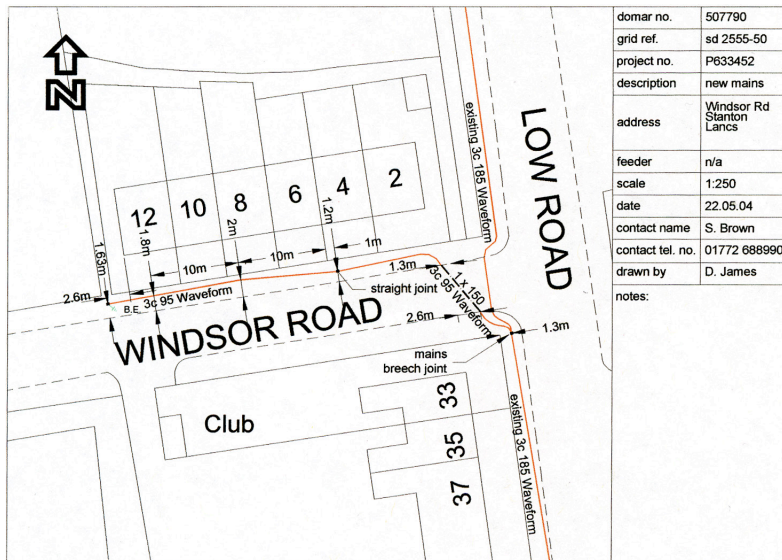
Mains

PLEASE NOTE:

Dimensions are not shown on the live GIS system unless 'not to scale'

Always show:

- Mains cable size and type
- Road or street names
- Adjacent plots, houses or landmarks
- Breaks in ducting or deviations



Example sketches of marking up records

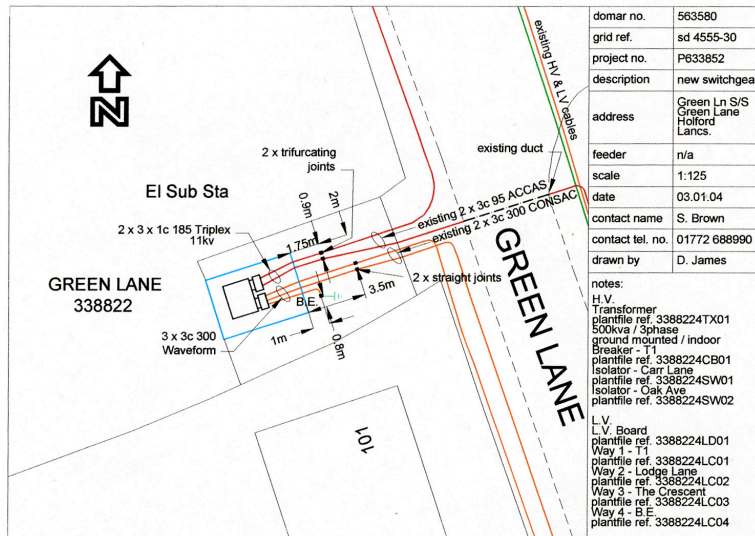
Switchgear change

PLEASE NOTE:

Dimensions are not shown on the live GIS system unless 'not to scale'

Always show:

- Mains cable size and type
- Road or street names
- All joint positions
- Substation name
- LV way details/open points
- HV details
- Position of all equipment within the substation



Example sketches of marking up records

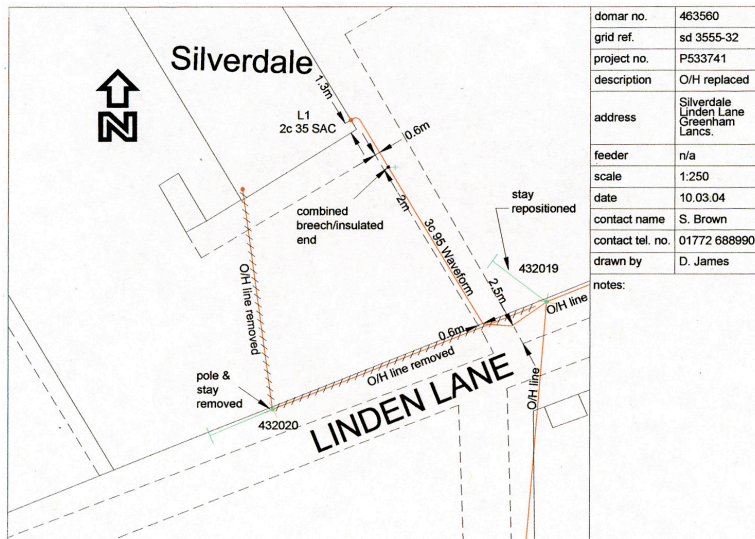
Overhead replacement/service

PLEASE NOTE:

Dimensions are not shown on the live GIS system unless 'not to scale'

Always show:

- Mains cable size and type
- Road or street names
- New phase colours (red, yellow, blue or L1, L2, L3 as appropriate)
- Breaks in ducting or deviations
- Details of any overhead equipment removed
- Pole numbers
- All joint positions





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