

electricity
north west

Bringing energy to your door

Data Management Symbology





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This symbology booklet is a reference guide for the symbols used by Data Management to represent Electricity North West Ltd's assets. They are visible through Power GIS as well as on any associated applications and plots from these systems.

The symbology adopted is contained in Code of Practice CP012.

This booklet is a reference tool only. The relevant Codes of Practice remain the prime documents for future symbology reference.

Images displayed in this booklet are only a pictorial representation of the symbols that appear in each system and as such are not drawn to scale.

Whilst every effort has been made to ensure the accuracy of the contents of this booklet, Electricity North West Limited accepts no responsibility for any errors or omissions contained here in.



General Information

Minimum recording requirements

When changes or additions are made to the Electricity North West network, amended drawings detailing these changes must be sent promptly to Data Management. This is so statutory records can be amended accordingly. Contact details for Data Management can be found on the inside back cover of this booklet.



Penalties/Compensation

Failure to comply with statutory requirements may result in sizeable fines and penalties being levied against Electricity North West Ltd, by the Courts and Regulatory Bodies (Utilities Act 2000) not to mention compensatory claims from third parties.

Why Record?

Under the New Roads and Street Works Act (1994), the Electricity Act (1989), Electricity North West are required to provide the position, depth where appropriate and relevant attributes of all known assets against a geographical background. OFGEM's licence condition 49 states that there is a regulatory requirement to maintain "Mains Records".

Compliance

It is essential Electricity North West be promptly provided with usable drawings of new and / or amended assets from all staff, contractors and suppliers, to ensure regulatory obligations are met. To this end, Data Management will monitor and report on the time scales, quality and compliance of as-constructed drawings received.



Requirements

To enable Data Management to accurately record Electricity North West assets, the following should always be shown on "as-constructed" drawings returned from site.

- The exact location, title, type of job, date of actual work and scheme name if applicable.*
- Drawings must be submitted at a suitable scale to enable a clear and proper understanding of the work carried out (unless a scale has been previously agreed).*
- Measurements taken from permanent features, such as buildings, kerbs, property boundaries, etc.*
- Two dimensions, preferably at right angles, showing X and Y co-ordinates of all associated fittings, such as joints and link boxes.*
- Measurements showing cable runs with additional measurements showing any deviations.*
- Depth of apparatus if abnormal.*
- All duct runs must be shown including the start and end position. Any breaks in the ducts must also be shown.*
- Size and material type together with associated attributes such as type and filling medium of joints, phases connected / colour, size / type and number of ducts.*
- All services must be recorded with the same principles as applied to Mains work.*
- Commission driver, Contractor, Project / Cost code, Jointers Name.*
- SPN required for all assets, if Ellipse applicable.*



Grid Reference conversion



Power GIS uses the standard Ordnance Survey grid coordinate method (i.e. Eastings (X) and Northings (Y)) to describe map position.

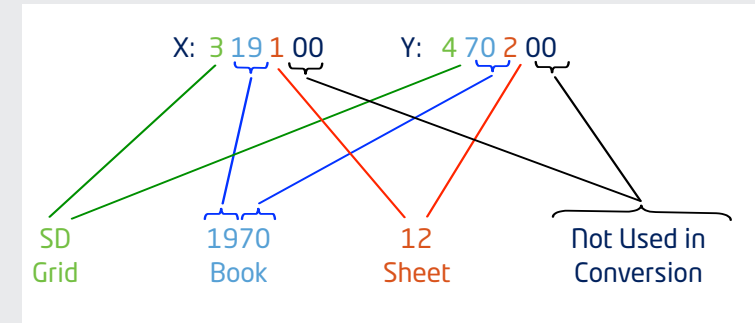
- Previously Electricity North West has used a 'grid reference' to describe map positions. This 'grid reference' was in fact referring to the Grid, Book and Sheet Number, a legacy left from the days of map drawings produced on linen sheets. This 'grid reference' is called the 'mapsheet reference'.
- Although it is still possible to search for an area using the 'mapsheet reference' in Power GIS, there is no facility to ascertain 'mapsheet reference' for a map position. If required, it is possible to perform a conversion from the grid coordinates provided by Power GIS to the 'mapsheet reference' and vice versa.
- The table below displays the conversion of all the Eastings (X) and Northings (Y) to a grid square throughout the Electricity North West geographical area.

Easting (X)	Northing (Y)	National Grid Square
2	5	NX
3	5	NY
3	4	SD
3	3	SJ
4	3	SK
4	4	SE

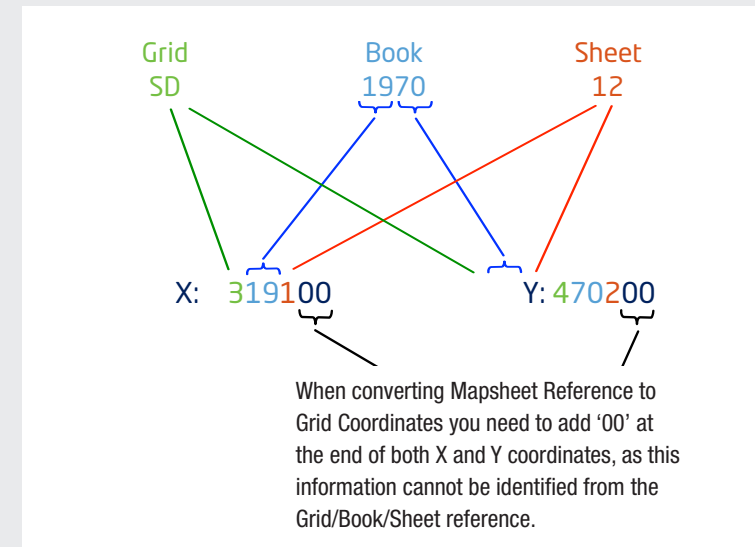


The following two examples show the conversion from grid coordinates to mapsheet reference and vice versa.

Example 1: Grid Coordinate to Mapsheet Reference conversion











Example 2: Mapsheet Reference to Grid Coordinate conversion



Electricity North West voltages

Underground electricity cables and overhead lines are recorded in the GIS database in colour depending on their operating voltage. The colours used are as detailed in the table below.

OPERATING VOLTAGE	COLOUR CODE	LINE COLOUR
132kV	Black	
33kV	Green	
22kV-25kV	Yellow	
11kV	Red	
6kV-6.6kV	Blue	
1kV-6kV	Violet	
LV	Orange	
Unknown Voltage	Brown	







Cables

Symbol colour defined by operating voltage

3x1c 95 SAC XLPE 11	HV Cable
3c 95 SAC XC	LV Cable
35 SAC XC	Service Cable
48fOPUGP	Auxiliary Cable
3c 95 SAC XC	Assumed Route
35 SAC XC OOC	Cable Out of Commission/Unfit for Service





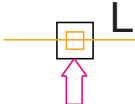
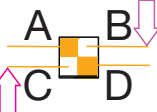

Joints and Terminations

Symbol colour defined by operating voltage

	Closed metered/unmetered service termination
	Open metered/unmetered service termination (cut-out with fuse removed)
	Terminal block
	Wall termination
	Oversheath repair
	Joint

Routes, Cross-sections, Attachments and other Features

Symbol colour defined by operating voltage













	Route (e.g. duct, trough, cable tray, etc.)
	Cross section
	Attachment
	Open point
	2 Way link box (open) Centre block solid colour when closed
	4 Way link box (Ways B and D are open)
	Feeder pillar (ways 1,2,3 are closed, way 4 is open)

Substations and Related Equipment

BARLEY BRIDGE
656404 Substation text name and plant number



















 Substation curtilage

Symbol colour defined by operating voltage







	LV board with 1 incoming linkway and 4 fuseways (way 5 is open)
	Open LV fuseway, breaker or linkway
	Closed LV fuseway, breaker or linkway
	Transformer or auxiliary transformer
	Busbar
	Open isolator (ground mounted)
	Closed isolator (ground mounted)
	Open breaker
	Closed breaker
	Open fuse switch
	Closed fuse switch
	Generator

Overhead

Symbol colour defined by operating voltage

	HV wire - overhead
	LV wire - overhead
	Service wire - overhead
	Overhead termination
	Support cable termination
	Open fuse, link or automatic sectionalising link
	Closed fuse, link or automatic sectionalising link
	Open earth switch, fault thrower or isolator
	Closed earth switch, fault thrower or isolator
	Sectionaliser
	Auto recloser
	Pole mounted transformer
	Lightning arrester
	Tower
	Strut
	Stay
	Wall bracket
	Pole







Flags

	Address seed
	Unusual item marker flag <ul style="list-style-type: none"> • Unusual item • Cable special circumstance
	Asset information <ul style="list-style-type: none"> • Cable with reserved capacity • Non standard neutral colour • Non-standard cable • Cable unusable • Underground to overhead transition
	Records warning marker flag <ul style="list-style-type: none"> • Missing metered service • Data capture query marker • Edge matching problem in this area • Other records warning
600mm 	Depth/height marker flag <ul style="list-style-type: none"> • Depth marker (mm) • Height marker (meters)
	Rising and lateral mains




Fault Indicators

AUD	Audible
FFH	Hand reset
LED	Light emitting
SR	Self reset (electrical reset)
T	Telecontrol
POD	Power outage device
EFI	Earth fault indicator

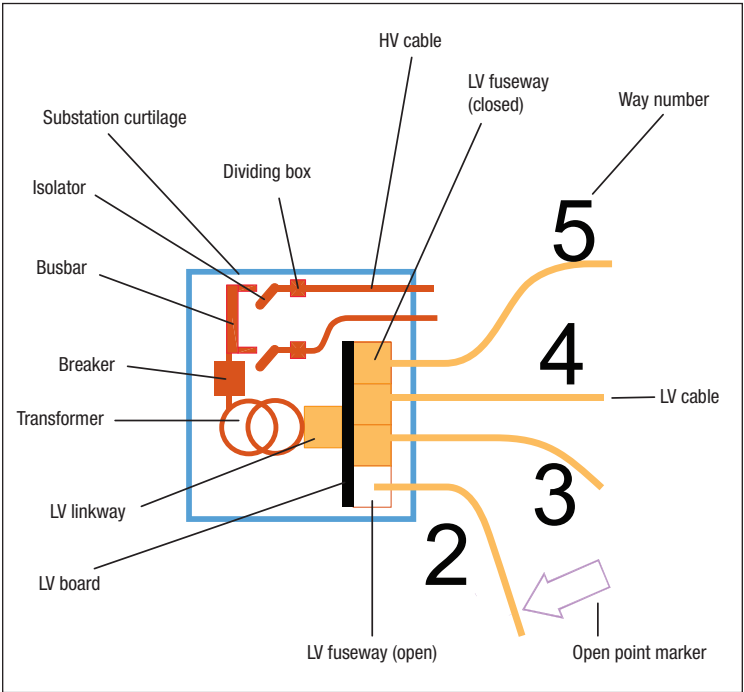
Associated Devices

	Lightning arrester
	Earth
	Earth wire
	Pressure pipe
	Pressure tank
	Small scale embedded generator

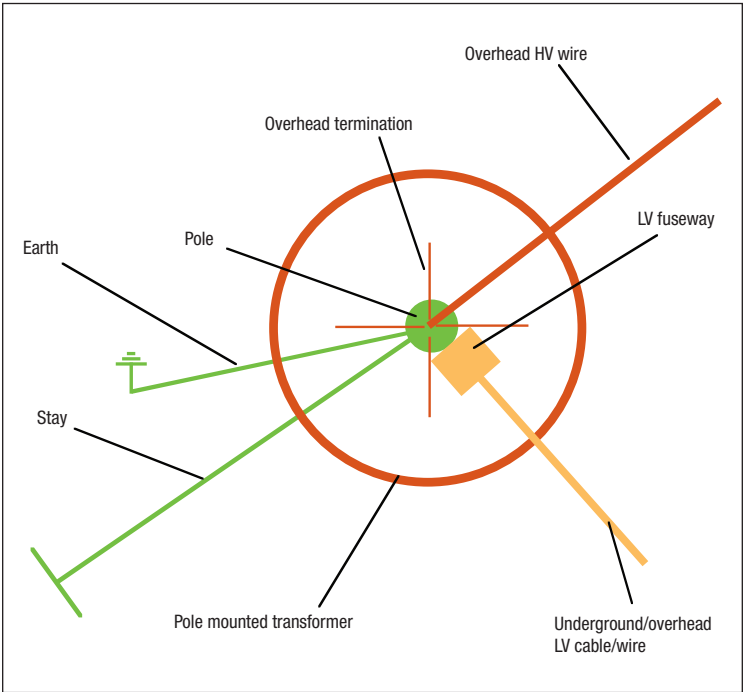
Miscellaneous Symbols

	AP	Object eg access point, draw box, draw box entry, blind box or pit
		Marker post
BFD		Bird flight diverters
CG		Cable guard
		Polygon feature

Example: Unit Substation



Example: Unit Substation



Feature labels commonly found in GIS

Feature	Label	Description
Fuse	FUSE	HV Fuse
	FSL	Fault Sectionalising Link
	RFUSE	Repeater Fuse
Recloser	AR	Auto Recloser
	GVAR	Gas Insulated Vacuum Autorecloser
Sectionaliser	AFS	Sectionaliser
Isolator	ISOL	Pole Mounted Isolator
	M	Motorised Isolator
	MFI	Motorised Fault Interrupting Isolator

Feature	Label	Description
Link	LINK	HV Link
Fault Thrower	FT	Fault Thrower
Transformer	REG	Voltage Regulator
	BAL	Static Balancer
Unmetered Service Termination	SL	Street Light
	SLS	Street Lighting Supply Point
	SLC	Street Lighting Control Lamp
	TS	Traffic Sign
	TCB	Telephone Call Box
	TL	Traffic Light Control Box

Abbreviations commonly found in GIS

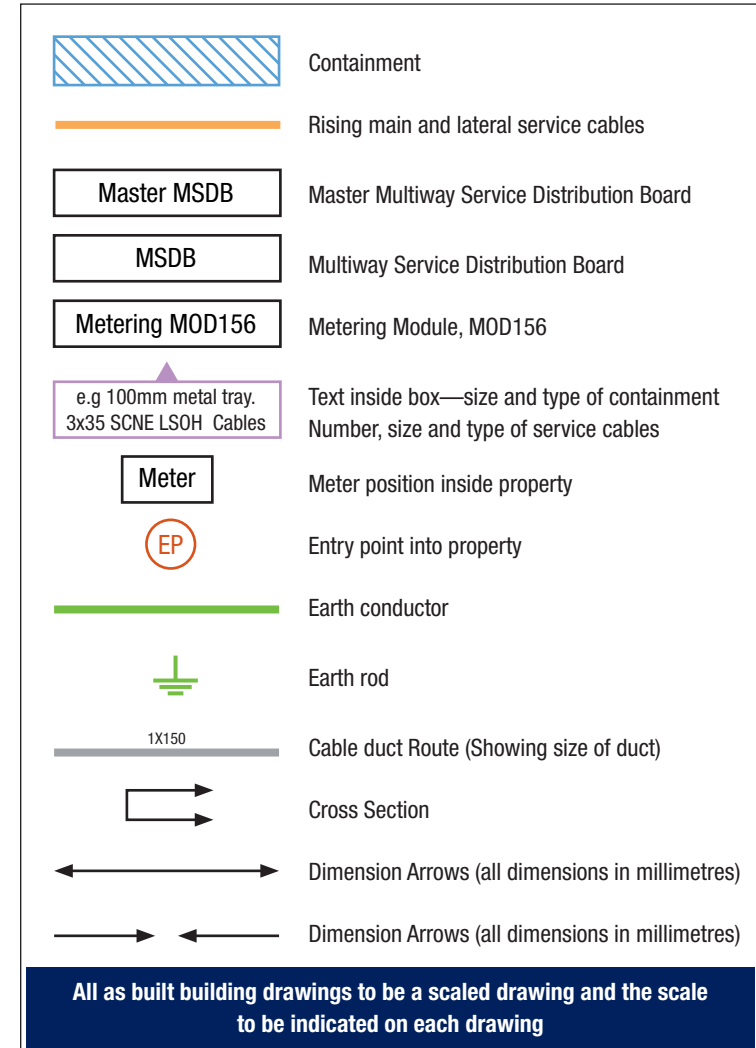
Attribute	Code
Number of Conductors	
Core (the number of cores in an underground cable, e.g. 3c)	c
Telephone pair (the number of pairs in a telephone cable, e.g. 19pr)	p
Other conductor (e.g. the number of wires on an overhead line, 4x)	x
Conductor Material	
Copper Stranded (assumed therefore no code is displayed)	
Copper Solid	Sol Cu
Hard Drawn Copper	Cu
Cadmium Copper	Cd
All Aluminium Alloy Conductor	AAAC
Aluminium Conductor Steel Reinforced	ACSR
Aluminium Conductor Composite Core	ACCC
Stranded Aluminium Core	AC
Stranded Aluminium Wire	AI
Solid Aluminium Core	SAC
Associated Overhead Conductor Type	
Aerial Earth Wire	AEW
Street Lighting Wire	SL
Overhead Line Type	
Electricity North West Ltd specification (denoted by specification number)	ES 400-02
Aerial Bundled Conductor	ABC
BEBS L1	BEBS L1
BS 1320	BS 1320
Compact Covered Conductor	CCC
Tower Double Circuit	Tower DC

Attribute	Code
Underground Cable Type	
LV Paper Insulated Lead Covered Steel Tape Armoured and Served (assumed, therefore no code is displayed)	
HV Paper Insulated Lead Covered Steel Wire Armoured and Served	PLSWS
HV Paper Insulated Lead Covered Steel Tape Armoured and Served	PLSTS
Lead Sheathed and Unarmoured Cables	UA
Aluminium Conductor Steel Reinforced	ACSR
Corrugated Aluminium Sheathed	CAS
Consac	ASN
Gas Pressure	GP
HSL	HSL
Oil Filled	OF
XPLE Split Concentric	XSC
XPLE	XC
Auxiliary Cable Type	
Pilot	P
Telephone	T
Combined Pilot and Telephone	PT
Other	
Out of Commission	OOC
Installed by Third Party Connector (including ENWL Networks)	TP

Standard underground abbreviations - examples

Rising and Lateral Mains Symbology

Component/Description	Label Text
4 core 7/0 67mm pilot	4cP
11kV 3 core aluminium sheath	3c (size) AC AS 11
11kV 3 core corrugated aluminium sheath	3c (size) AC CAS 11
132 kV 3 core, copper conductor, paper insulated, oil filled, lead alloy sheath, PVC oversheath	3c (size) OF 132
Consac	3c (size) SAC ASN
LV copper conductor, paper insulated, lead sheathed, steel tape armoured and served	(no of cores)c (size)
Single core copper, PVC insulated, split concentric neutral and earth	(size) PSC
Single core aluminium, XLPE insulated combined concentric neutral and earth	(size) SAC XC
Single core aluminium, XLPE insulated split concentric neutral and earth	(size) SAC XSC
Solid aluminium conductor, paper insulated, lead sheathed, steel tape armoured and served	(no of cores)c (size) SAC
Waveform	(no of cores)c (size) SAC XC
Polymeric Cables	
11kV and below	3c (size) AC XLPE (voltage)
Singles, 11kV and above	1c (size) XLPE (voltage)
Triplex	3x1c (size) SAC XLPE (voltage)



For any changes or additions to the Electricity North West network.

For any external/third party requests for information.

Please direct your enquiries to:

Aslaid.Drawings@enwl.co.uk



