

# National Grid UK Electricity Transmission plc

## NATIONAL SAFETY INSTRUCTION 2 and Guidance

### EARTHING HIGH VOLTAGE EQUIPMENT

#### NSI 2 – Appendix A10 – Number of Portable Primary Earths Per Phase

##### DOCUMENT HISTORY

Issue	Date	Summary of Changes / Reason	Author(s)	Approved By (Title)
12	Jan 2023	Ninfield & Richborough updates	Safety Rules Team	Director of Asset Operations Matt Staley
13	Feb 2023	Coventry & Market Harborough updates	Safety Rules Team	Director of Asset Operations Matt Staley
14	May 2023	Burwell, Oldbury & Bridgwater Updates	Safety Rules Team	Director of Asset Operations Andy Richardson
15	March 2024	Warley, Sundon S/S & Puriton East & West CSE Compounds update	Safety Rules Team	Director of Asset Operations Ro Quinn
16	May 2024	Addition of Earthing requirements for 7.9kV nodes	Safety Rules Team	Director of Asset Operations Ro Quinn
17	Oct 2024	Bramford 33kV nodes & 13kV, East Claydon 15kV	Safety Rules Team	Director of Asset Operations Kate Grant
18	Nov 2024	Monk Fryston 33kV nodes & 13kV	Safety Rules Team	Director of Asset Operations Kate Grant
19	Feb 2025	Enderby 33kV nodes & 13kV	Safety Rules Team	Director of Asset Operations Kate Grant

##### KEY CHANGES

##### To Issue 19

Site	Amendments (In red font in tables below)
Enderby	Enderby 33kV nodes require 1 earth per phase and Bramford 13kV Substation Equipment requires 2 earths per phase.

NSI 2 Appendix A.10 – Number of Portable Primary Earths Per Phase

Substation	400kV		275kV		132kV	66kV	56kV	33kV	22kV	20.5kV	16kV	14kV	11kV
	Excluding Line end Equip	Line end Equip	Excluding Line end Equip	Line end Equip									
Aberthaw			1	2	1								
Abham	1	2			1								
Acton Lane						1			2				
Aldwarke			2	2				2					
Alverdiscott	1	2			1								
Amersham	1	2			1								
Aust CSE	2	2											
Axminster	1	2			1								
Baglan Bay			1	2									
Barking	3	3	1	2	1			2					
Beddington	1	2	2	2	1								
Berkswell			1	2	1								
Bicker Fen	2	2			1								
Birkenhead			1	2	1								
Bishops Wood			1	2	2								
Blyth	1	2	2	2	2	1							
Bodelwyddan	2	2			1								
Bolney	2	2			2			(32): 2					
Botley Wood	2	2			1								
Bradford West	1	2	2	2	1								
Braintree	1	2			2								
Bramford	2	2			2			1				(13):2	
Bramley	2	2			1								
Bredbury			2	2	1								
Brelston Green CSE	1	2											
Bridgwater	1	2	1	2	2								
Brimsgate			2	2	2								
Brinsworth	2	2	2	2									
Briton Ferry North CSE			1	2									
Briton Ferry South CSE			1	2									
Bulls Lodge	1	2											

Substation	400kV		275kV		132kV	66kV	56kV	33kV	22kV	20.5kV	16kV	14kV	11kV
	Excluding Line end Equip	Line end Equip	Excluding Line end Equip	Line end Equip									
Burwell	2	2			2			1					
Bushbury			1	2	1								
Bustleholm	1	2	2	2	1								
Camblesforth						1							
Canterbury North	2	2			1								
Capenhurst	2	2	2	2	2			2					
Capenhurst D					1								2
Cardiff East			1	2	2								
Carrington	3	3	2	2	2								
Cellarhead	2	2			2								
Chafford Hundred East CSE	3	3											
Chafford Hundred West CSE	3	3											
Chessington			2	2	1								
Chesterfield			2	2	1								
Chetney Marsh CSE	3	3											1
Chickerell	1	2			1								
Chilling CSE	2	2											
Cilfynydd	2	2	1	2									
City Road	3	3			2								
Cleve Hill	2	2											
Connahs Quay	3	3			2								
Coryton South	2	2											
Cottam	2	2											
Coventry			1	2	1			1					
Cowbridge			1	2									
Cowley	2	2			2			1					
Creyke Beck	2	2	2	2	2								
Culham Jet	2	2											
Daines	3	3											
Damhead Creek	3	3											
Deeside	3	3											
Deeside Power CSE	3	3											
Didcot	2	2											

Substation	400kV		275kV		132kV	66kV	56kV	33kV	22kV	20.5kV	16kV	14kV	11kV
	Excluding Line end Equip	Line end Equip	Excluding Line end Equip	Line end Equip									
Dinorwig	2	2											
Drakelow	2	2	2	2	1								
Drax	3	3			1	2							
Dunford Bridge CSE	2	2											
Dungeness	2	2	1	2									
Ealing			2	2		2							
East Claydon	2	2			2						(15):4		
Eaton Socon	2	2			2								
Eggborough	2	2											
Elland			2	2	1								
Elstree	3	3	2	2	2								
Eltham					1								
Enderby	2	2			2			1				(13):2	
Exeter	1	2			2								
Fawley	2	2			2								
Feckenham	2	2	1	2		2							
Ferrybridge A			1	2		1							
Ferrybridge B			1	2	2								
Ferrybridge c	2	2	1	2									
Ferrybridge EAST CSE	2	2											
Ferrybridge WEST CSE	2	2											
Ffestiniog			1	2									
Fiddlers Ferry			1	2	1								
Fleet	2	2			2								
Flintshire Bridge	2	2	(251) 1										
Fourstones			1	2				1		2			
Frodsham	2	2	1	2	1								
Garth CSE	2	2											
Grain	3	3			1								1
Grange						2							
Grangetown			1	2		1							
Gravesend CSE	3	3											
Grendon	2	2			2								
Greystones A & B			1	2		2							

Substation	400kV		275kV		132kV	66kV	56kV	33kV	22kV	20.5kV	16kV	14kV	11kV
	Excluding Line end Equip	Line end Equip	Excluding Line end Equip	Line end Equip									
Grimsby West	1	2			1								
Gwent Y Mor					2								
Hackney	3	3	2	2	2	1							
Hams Hall	2	2	2	2	2								
Harker	2	2	1	2	1							3	
Hartmoor			1	2		1							
Hartlepool			2	2									
Hawthorn Pit	2	2	2	2		1							
Hedon			2	2									
Hemsworth CSE			2	2									
Hendon					2								
Heysham	2	2			1								
High Marnham	2	2	1	2				1					
Highbury	3	3											
Hinkley Point	2	2	1	2									
Horseshoe Point CSE	3	3											1
Humber Refinery	2	2											
Hurst			2	2	1								
Hutton	2	2			1								
Imperial Park	1	2						2					
Ince					1								
Indian Queens	1	2			2								
Iron Acton			1	2	2								
Ironbridge	2	2			1								
Iver	1	2	2	2	2	1							
Jordanthorpe			1	2				1					
Keadby	2	2			2								
Kearsley	2	2	2	2	2			2					
Kemsley	3	3			1								
Kensall Green	3	3											
Killingholme	2	2											
Kingsnorth	3	3			1								
Kirkby			2	2	1								
Kirkstall			1	2	1								

Substation	400kV		275kV		132kV	66kV	56kV	33kV	22kV	20.5kV	16kV	14kV	11kV
	Excluding Line end Equip	Line end Equip	Excluding Line end Equip	Line end Equip									
Kitwell			1	2	1								
Knaresborough			1	2	1								
Lackenby	2	2	1	2		1							
Lady Lane CSE	2	2											
Laleham			2	2	2								
Landulph	1	2			2								
Langage	1	2											
Lea Marston					2								
Legacy	2	2			1								
Leighton Buzzard	3	3											
Leiston	2	2			2								
Lewingdon Wood CSE	3	3											
Lister Drive			2	2	1								
Little Barford	2	2											
Littlebrook	3	3	2	2	2								
Littlebrook/West Thurrock CSE Compounds	3	3											
Llanwern								1					
Lodge Road B						2							
Lovedean	2	2			1								
Loxton CSE	2	2											
Macclesfield	2	2	1	2				1					
Mannington	1	2			2								
Marchwood	2	2											
Margam			1	2		2							
Market Harborough	1	2							(25): 1				
Medway	3	3			1			1					
Melksham	2	2	1	2	2								
Middleton	2	2											
Mill Hill			2	2	2								
Minety	2	2			1								
Monk Fryston	2	2	2	2				1				(13):3	
Moulsford Down CSE	3	3											
Nechells			2	2	1								
Nechells East					1								

Substation	400kV		275kV		132kV	66kV	56kV	33kV	22kV	20.5kV	16kV	14kV	11kV
	Excluding Line end Equip	Line end Equip	Excluding Line end Equip	Line end Equip									
Necton	2	2											
Neepsend	1	2	2	2				1					
New Cross A & B			2	2	2	2		1				3	
Newby CSE	2	2											
Newhouse CSE	2	2											
Ninfield	2	2			1		2	(32): 2					
North Hinksey CSE	3	3											
North Hyde			1	2		2							
Northfleet East	2	2			1								
Norton	2	2	2	2	2								
Norton Lees			1	2				1					
Norwich Main	2	2			2								
Norwich					2								
Norwich Trowse					2								
Nunthorpe CSE	3	3											
Nursling	1	2			2			1				2	
Ocker Hill			1	2	1								
Offerton			2	2				1					
Oldbury	1	2	1	2	1							(13): 3	
Oldbury-on-Seven					1								
Osbaldwick	1	2			1								
Padiham	2	2			1								
Patford Bridge	2	2											
Pelham	3	3			1							3	
Pembroke	2	2			1								
Penisarwaun CSE	2	2											
Penn	1	2	2	2	2								
Penrhos					1								
Pentir	2	2			1								
Pentre Mawr CSE	2	2											
Penwortham	2	2	2	2									
Penwortham East					2								
Penwortham West					2								
Perry Bar CSE			2	2									
Pitsmoor			2	2				1					

Substation	400kV		275kV		132kV	66kV	56kV	33kV	22kV	20.5kV	16kV	14kV	11kV
	Excluding Line end Equip	Line end Equip	Excluding Line end Equip	Line end Equip									
Poppleton			1	2				1					
Port Ham					2			3					
Pudding Mill Lane	3	3											
Puriton East CSE		2											
Puriton West CSE		2											
Pyle			1	2	1								
Rainhill			2	2	1								
Rassau	1	2			1								
Ratcliffe-on- Soar	2	2	1	2	2								
Rayleigh Main	2	2			2								
Rayleigh Local					2								
Redbridge			2	2				1					
Rhigos	1	2											
Richborough	1	2			1			(32): 2					
Rochdale	1	2	2	2	2								
Rocksavage	2	2			1								
Rowdown	1	2	2	2									
Rugeley	1	2			1								
Rye House	2	2			1								
Ryhall	1	2											
Salt End North			2	2	1								
Salt End South			2	2									
Saltholme			2	2	1								
Sandford	2	2			1								
Seabank	2	2			2								
Sellindge	2	2	(270): 1	(270): 1	1								
Sheffield City			2	2				1					
Shrewsbury	1	2			1								
Shurton	2	2											
Singlewell	2	2											
Sizewell	2	2			2								
Skelton Grange			1	2	2								
South Hinksey CSE	2	2											
South Humber Bank	2	2											
South Manchester			2	2	1								
South Shields			2	2				1					



Substation	400kV		275kV		132kV	66kV	56kV	33kV	22kV	20.5kV	16kV	14kV	11kV
	Excluding Line end Equip	Line end Equip	Excluding Line end Equip	Line end Equip									
Spalding North	2	2											
Spennymoor	1	2	2	2	1								
St Asaph					2								
St Marylebone					1								
St Johns Wood	3	3	2	2	1						2		
Stalybridge	1	2	2	2	2								
Stannah	2	2			2								
Staythorpe	2	2			1								
Stella North					2								
Stella South					2								
Stella West	2	2	2	2	2								
Stocksbridge	1	2				2							
Stoke Bardolph	2	2			1								
Sundon	2	2			2			1					
Sutton Bridge	2	2											
Swansea North	1	2	1	2	2								
Taunton	1	2			1								
Templeborough			2	2				1					
Thornton	2	2											
Thorpe Marsh	2	2	2	2		2							
Thurrock Cable CSE	3	3											
Thurcroft			2	2		1							
Tilbury	3	3	2	2	1								
Tilbury CSE	3	3											
Tinsley Park			1	2				1					
Tod Point			1	2		1							
Tottenham			2	2	1								
Trawsfynydd	1	2	1	2	2								
Tremorfa			1	2				2					
Tynemouth			1	2	1								2
Upper Boat			1	2	1			2					
Urenco													2
Uskmouth			2	2	1			1					
Walford CSE	1	2											
Walham	1	2			2								

Substation	400kV		275kV		132kV	66kV	56kV	33kV	22kV	20.5kV	16kV	14kV	11kV
	Excluding Line end Equip	Line end Equip	Excluding Line end Equip	Line end Equip									
Walpole	2	2			2			1				(13):2	
Waltham Cross	2	2	2	2									
Warley			2	2	1			1				(13):2	
Washway Farm			1	2	1								
Watford South			2	2	1								
Wern CSE	2	2											
West Boldon			2	2		1							
West Burton	2	2			1								
West Ham	3	3			1								
West Melton			2	2	2								
West Thurrock	3	3	2	2				1					
West Weybridge	1	2	2	2	1								
Whitegate			2	2	1								
Whitson	2	2	2	2				1					
Willenhall			1	2	1								
Willesden			2	2	1	1							
Willington			1	2	2								
Willington East	2	2			2								
Wilton			2	2									
Wimbledon	3	3	2	2	2			2					
Wincobank			2	2				2					
Winterbourne Abbas North CSE	2	2											
Winterbourne Abbas South CSE	2	2											
Witton CSE			2	2									
Woodhead CSE	2	2											
Wood Lane CSE	2	2											
Wylfa	1	2			1								
Wymondley	2	2			2								
<b>Additional Notes</b>													
All 25kV Trackside s/s	1 PPE Per Phase												
All 25kV Primary s/s	1 PPE Per Phase												
All 13kV tertiary fed B/B	3 PPE Per Phase												
All HVDC	1 PPE Per Phase												
All 7.9kV nodes	5 PPE Per Phase												
Version 19 - Feb 2025													