



- NOTES:**
- THE FOLLOWING INFORMATION IS OBTAINED FROM THE PROJECT DESIGN DRAWINGS:
 - POLE LENGTH AND STRENGTH.
 - SPECIAL FOUNDATION REQUIREMENTS.
 - POLE EMBEDMENT DEPTH.
 - PHASE CONDUCTOR SIZE.
 - STAY REQUIREMENTS.
 - DEVIATION ANGLE.
 - ASSESSED EARTHING REQUIREMENTS.
 - THE MAXIMUM LINE DEVIATION ANGLE TO BE CONSTRUCTED ON THIS ARRANGEMENT IS TO BE DETERMINED BY THE LINE DESIGNER.
 - STAYS TO BE INSTALLED SO THAT THE STAY WIRE CLEARANCE FROM THE PHASE CONDUCTORS COMPLIES WITH THE STATUTORY REQUIREMENTS.
 - THE LOAD AND DEVIATION ALLOWABLE ON THE EYEBOLT IS TO BE DETERMINED FROM DRG. 520324.
 - LONGROD INSULATORS TO BE USED TO TERMINATE CONDUCTORS UNDER NORMAL CONDITIONS.
 - POLES SHALL BE DRILLED AND DRESSED ON SITE. DRILLINGS TO BE TREATED WITH APPROVED PRESERVATIVES.
 - USE THE ANGLE TYPE CONDUCTOR TIE ARRANGEMENT AS SHOWN ON DRG. 514038.
 - ALL BOLTS AND EYEBOLTS PASSING THROUGH TIMBER ARE TO BE COATED WITH GRAPHITE GREASE.
 - BI-METALLIC CLAMP TO BE INSTALLED WITH COPPER CONDUCTOR BELOW ALUMINIUM CONDUCTOR SO THAT COPPER SALTS DO NOT WASH ONTO ALUMINIUM CONDUCTOR.
 - EYEBOLTS ARE TO BE INSTALLED IN THE DIRECTION OF THE OVERHEAD CONDUCTORS.
 - THE INSULATED HIGH VOLTAGE DROPPER CABLES ARE TO BE TREATED AS BARE CONDUCTORS WITH THE MINIMUM SAFE WORKING DISTANCE SPECIFIED IN THE ELECTRICAL SAFETY RULES BEING MAINTAINED WHILE WORKING ON ENERGISED MAINS.
 - ALL SIGNAGE TO BE CONNECTED TO THE POLE IS TO BE BENT AROUND THE POLE BEFORE SECURING.
 - REFER TO NS158 FOR REQUIREMENTS REGARDING DISTRIBUTOR LABELLING AND SUBSTATION NUMBER PLATE.
 - ENSURE ALL GROUND CLEARANCES DETAILED IN NS220 ARE MAINTAINED.
 - INSULATION TO BE INSTALLED OVER 'U' BOLTS. CUT 25mm 'V' IN CONDUIT UNDER FIBREGLASS COVER TO DRAIN ANY WATER.
 - SECURE THE TRANSFORMER KICKPLATE TO THE POLE USING AN M12 BOLT.
 - SECURE THE TRANSFORMER MOUNTING BRACKET USING M12 BOLTS THROUGH THE HANGING STRAPS.
 - THE HIGH VOLTAGE EARTH CONSISTS OF TWO 70mm² PVC INSULATED COPPER EARTH LEADS THAT RUN FROM THE TRANSFORMER DOWN OPPOSITE SIDES OF THE POLE TO SEPARATE EARTH ELECTRODES WHICH MUST ALSO BE ON OPPOSITE SIDES OF THE POLE. BOTH OF THE LEADS ORIGINATE FROM THE EARTH RETURN (ER) BUSHING AND AN EARTH STRAP TO THE EARTH STUD.
 - JOIN THE BARE EARTH CONDUCTORS TO THE INSULATED EARTH CONDUCTORS AS CLOSE AS POSSIBLE TO THE FIRST ELECTRODES.
 - USE THE 130mm BOLT SUPPLIED WITH THE HV DROPOUT FUSE TO ATTACH AN EARTH STIRRUP TO THE DROPOUT FUSE.
 - REFER TO NS122 SECTION 10.3 FOR LV FUSE & HV DROPOUT FUSE LINK SPECIFICATION OPTIONS.
 - POLE STEPS ARE TO BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF NS128.
 - IF REQUIRED, AN ALTERNATE 12.7kV SWER OVERHEAD CONSTRUCTION MAY BE USED. REFER TO SWER OVERHEAD STANDARD CONSTRUCTIONS FOR SUITABLE OPTIONS.
 - ENSURE BURIED EARTH CONDUCTORS ARE CENTRED UNDER CABLE PROTECTION COVER.
 - THE EARTH CONDUCTORS ATTACHED TO THE POLE ARE TO BE FIXED WITH SADDLES AT INTERVALS NOT GREATER THAN 450mm.
 - PROVIDE WATER BLOCKING USING MEDIUM WALLED MASTIC LINED BLACK HEATSHRINK OVER BARE LUG BARREL AND CABLE INSULATION.
 - LV FUSEBASE IS TO BE ANGLED 15° TOWARDS THE CENTRE OF THE POLE.
 - REFER TO DESIGNER SAFETY REPORT D21234222 FOR ATYPICAL HAZARDS ASSOCIATED WITH THIS STANDARD CONSTRUCTION.

ITEM	DESCRIPTION	DRG. No	STOCK CODE	NO/LV CONNECTION	WITH LV CONNECTION	
90	STEP - POLE - SCREWIN (SEE NOTE 22)	250144	185198	AIR	AIR	
89	LUG - COMPRESSION, TINNED COPPER (M12 HOLE) (TO SUIT 10mm ² Cu CABLE)				1	
88	HEATSHRINK - MEDIUM AND THICK WALL, MASTIC LINED (SEE NOTE 26)				AIR	
87	SCREW - SET, M12x25mm, HEX, STAINLESS STEEL	515467	44693		2	
86	ARRESTER - SURGE, LV, 500V, 9kA		H31893		1	
85	SADDLE - 40mm, DOUBLE SIDED, GALVANISED		H6290		2	
84	CONDUIT - 40mm, FLEXIBLE, PVC		H8919		AIR	
83	COVER - LV BUSHING		H22032		4	
82	LUG - COMPRESSION, LONG BARREL (M12 HOLE) (TO SUIT 95mm ² Cu CABLE)		151050		3	
81	CABLE - 37/178(95mm ²) COPPER, 1C, 0.6/1kV, PVC INSULATED, BLACK		59584		AIR	
80	FUSE - LINK, LV (SEE NOTE 21)				1	
79	FUSEBASE & CARRIER - LV, 630A, SINGLE CIRCUIT (SEE NOTE 27)	117077	95522		1	
78	CROSSARM - 2700x150x100mm, ITEM B, HARDWOOD	566345	176221		1	
77	BOLT & NUT - M16x130mm, HEX, GALVANISED	515466	46979		2	
76	BRACKET - MOUNTING, LV FLAT SHACKLE, GALVANISED	514379	H17762		4	
75	INSULATOR - SHACKLE, REEL, TYPE SH LV2	514407	78182		2	
74	DEADEND - PREFORMED (TO SUIT CONDUCTOR)		514098		2	
73	SIGN - DANGER, EARTHING SYSTEM (AS APPROVED BY NETWORK EARTHING) (SEE NOTE 12)	520145		1	1	
72	SIGN - DANGER, HIGH VOLTAGE (SEE NOTE 12)		H47012	2	2	
71	COVER - CABLE, PROTECTOR, 150mm WIDE (SEE NOTE 24)		151084	AIR	AIR	
70	CONDUCTOR - 192/14(70mm ²) COPPER, HARD DRAWN (SEE NOTE 19)		176140	AIR	AIR	
69	CONNECTOR - COMPRESSION, PROFILE C, COPPER (70mm ² TO 70mm ² CONDUCTOR)		177942	AIR	AIR	
68	CONNECTOR - COMPRESSION, PROFILE 6, COPPER (70mm ² CONDUCTOR TO 015mm ROD)		H31899	AIR	AIR	
67	COUPLER - EARTH ELECTRODE (TO SUIT 015mm ROD)		H31849	AIR	AIR	
66	ELECTRODE - DRIVEN EARTH, Ø15x1800mm		H31831	AIR	AIR	
65	LUG - COMPRESSION, COPPER, Ø12mm HOLE (TO SUIT 70mm ² CABLE)		74831	10	11	
64	SADDLE - 34" DOUBLE SIDED, GALVANISED (SUIT 20mm WATER PIPE)		PURCHASE	8	12	
63	PIPE - 20mm, WATER, GALVANISED, 4000mm LONG		PURCHASE	2	3	
62	SCREW - #12x45mm, SELF DRILLING		175567	AIR	AIR	
61	SADDLE - 12mm, DOUBLE SIDED, GALVANISED (SEE NOTE 25)		176694	AIR	AIR	
60	CONDUCTOR - 192/14(70mm ²) COPPER, PVC COVERED, BLACK (SEE NOTE 18)		185230	AIR	AIR	
59	CLAMP - PARALLEL GROOVE, BI-METALLIC (TO SUIT ALUMINIUM OR GALVANISED STEEL CONDUCTOR) (SEE NOTE 9)			1	3	
58	TIE - CONDUCTOR, HIGH VOLTAGE, SUPPORT ARRANGEMENT (SEE NOTE 7)	514038		1m	1m	
57	INSULATOR - 1122kV, AERODYNAMIC, (22450) & PIN ARRANGEMENT	513967		1	1	
56	BOLT & NUT - M12, HEX, GALVANISED (LENGTH TO SUIT POLE)	515466		1	1	
55	COVER - FIBREGLASS (FOR TRANSFORMER MOUNTING BRACKET)	566374	176661	1	1	
54	CONDUIT - 25mm, FLEXIBLE, PVC (SEE NOTE 15)		H8919	AIR	AIR	
53	BOLT - 'U', 16mm, ROUND (Ø35mm)	514409	H39524	2	2	
52	BOLT - 'U', 16mm, ROUND (Ø33mm)	514409	H39516			
51	TRANSFORMER - SWER, ISOLATING, 100kVA, 11kV/12.7kV, STRAP HUNG (SEE NOTES 16 & 17)	224388	H121251	1	1	
50	ARRESTER - SURGE, 12.7kV, 10kA, POLYMERIC		H31877	1	1	
49	ARRESTER - SURGE, 11kV, 10kA, POLYMERIC		H11948	2	2	
48	NUT - M12, HEX, STAINLESS STEEL	515467	8667	1	3	
47	WASHER - SPRING, M12, STAINLESS STEEL	518082	143869	1	3	
46	WASHER - FLAT, M12, STAINLESS STEEL	518081	49429	2	6	
45	SCREW - SET, M12x40mm, HEX, STAINLESS STEEL	515467	45146	1	1	
44	LUG - 35mm ² , TINNED COPPER, HEAVY DUTY (M12 HOLE) (UTLUX CG355DM12) (TO SUIT 11kV COPPER LDPE CABLE)		PURCHASE	1	1	
43	COVER - BUSHING HV		H21958	3	3	
42	TIE - CABLE, 38Ø7.6mm, BLACK		59907	6	6	
41	LUG - 16mm ² , TINNED COPPER (M12 HOLE) (TO SUIT 11kV COPPER LDPE CABLE)		H110270	6	6	
40	CABLE - 11kV, 16mm ² (71/70), COPPER, LDPE INSULATED (SEE NOTE 11)		6205	AIR	AIR	
39	KIT - TERMINATION, HEATSHRINK (FOR HV DROPPER LUGS)		152207	1	1	
38	KIT - LUG, HEAVY DUTY (TO SUIT 35mm ² 11kV COPPER LDPE CABLE) (10 Tx SET)		H125252	1	1	
37	CABLE - 11kV, 35mm ² (191/53), COPPER, LDPE INSULATED (SEE NOTE 11)		H14578	AIR	AIR	
36	LUG - COMPRESSION, BI-METALLIC (M10 HOLE) (TO SUIT ALUMINIUM OVERHEAD CONDUCTOR)	514053		2	2	
35	NUT - M10, HEX, STAINLESS STEEL	515467	H39401	4	4	
34	WASHER - SPRING, M10, STAINLESS STEEL	518082	50120	4	4	
33	WASHER - FLAT, M10, STAINLESS STEEL	518081	49411	8	8	
32	BOLT - M10x40mm, HEX, STAINLESS STEEL	515467	46596	4	4	
31	CLAMP - LV, SUSPENSION		H113472	2	2	
30	NUT - M16, NYLOC, HEX, STAINLESS STEEL		177122	2	2	
29	WASHER - FLAT, M16, STAINLESS STEEL	518081	H39621	4	4	
28	SCREW - SET, M16x40mm, HEX, STAINLESS STEEL	515467	H38413	2	2	
27	INSULATOR - 1122kV, LONGROD, 70kN (CLEVIS/TONGUE)		150375	2	2	
26	PLATE - TWISTED, 170x50x6mm, GALVANISED		151086	176901	2	2
25	WASHER - CONICAL, M16, GALVANISED	518082	H39647	2	4	
24	WASHER - FLAT, M16, GALVANISED	518081	177994	2	4	
23	BOLT & NUT - M16x150mm, HEX, GALVANISED	515466	175672	2	4	
22	FUSE - LINK, NGK STANGER (SEE NOTE 21)		H84350	2	2	
21	FUSEBASE - 12kV, DROPOUT, NGK POLYMER ASSEMBLY	515466	46805	7	7	
19	BRACE - CROSSARM, ANGLE, 740mm, GALVANISED	46	99119	1	1	
18	CROSSARM - 2400x100x100mm, ITEM A, HARDWOOD	566345	176222	1	1	
17	EYEBOLT - M20, GALVANISED (LENGTH TO SUIT POLE) (SEE NOTES 4 & 10)		513853	1	1	
16	INSULATOR - 1122kV LONGROD, STRING ARRANGEMENT AR.2 (SEE NOTE 5)	565715		3	3	
15	BLOCK - GAIN, ALUMINIUM, 100mm		146274	2	3	
14	WASHER - LP, M24, GALVANISED	518081	176912	2	2	
13	EYEBOLT - M20x200mm, GALVANISED (SEE NOTES 4 & 10)	513853	H37881	2	2	
12	WASHER - FLAT, M20, GALVANISED	518081	177986	6	7	
11	WASHER - CONICAL, M20, GALVANISED	518082	H39655	6	7	
10	WASHER - SQUARE, 75x75x6mm, GALVANISED (Ø22mm HOLE)	518081	H39231	10	12	
9	BOLT & NUT - M20, HEX, GALVANISED (LENGTH TO SUIT POLE)	515466		3	4	
8	WASHER - CONICAL, M12, GALVANISED	518082	H39639	6	8	
7	WASHER - FLAT, M12, GALVANISED	518081	177982	17	21	
6	BOLT & NUT - M12x180mm, HEX, GALVANISED	515466	46888	2	4	
5	CROSSARM - 2700x150x100mm, TYPE C, HARDWOOD	514373	H23907	1	1	
4	SCREW - COACH, M12x100mm, GALVANISED		H40484	2	3	
3	BRACE - CROSSARM, FLAT, 600mm, GALVANISED	514385	H17738	2	4	
2	FOOTING - TIMBER POLE, ARRANGEMENT (SEE NOTE 1)	508726		1	1	
1	POLE - TIMBER (MINIMUM 8kN) (POLE LENGTH AS REQUIRED)	513988		1	1	

CAD DRAWING
DO NOT MANUALLY AMEND
AMENDMENTS
DWN BARBARA BARKSI
CHKD WILLIAM GRAHAM
4 DATE: 18/04/2007
CHANGED TO METRIC & STOCK CODES UPDATED

APPD BY WILLIAM GRAHAM

DWN: P. RIOS
CHKD: P. JONES
5 DATE: 24/08/2021
DESIGN CHECKED & MATERIAL LIST & NOTES AMENDED

APPD BY: G. FORD

DESCRIPTION	STOCK CODE	QUANTITY
HV CONDUCTOR TIE SUPPORT ARRANGEMENTS	514038	
20mm EYEBOLT LOADING & DEVIATION GRAPH	520324	

ASSOCIATED DRAWINGS

145 NEWCASTLE RD WALLSEND, NSW 2287

AN EARTHING DESIGN MUST BE UNDERTAKEN FOR EACH SITE.
THE MAXIMUM HIGH VOLTAGE EARTH RESISTANCE OF A 100kVA SWER ISOLATING SUBSTATION IS TO BE 3Ω UNDER WORST CONDITIONS.
THE EARTHING SHOWN ON THIS DRAWING IS INDICATIVE ONLY. ADDITIONAL EARTHING MAY BE REQUIRED TO MEET THE REQUIRED EARTH RESISTANCE.

NETWORK STANDARD

Ausgrid

SCALE 120 UNLESS SHOWN OTHERWISE
DESIGNED S.N.
DRAWN D.K.S.
CHECKED J.E.H.
APPROVED A.DONALDSON
DATE 25/10/1963

PROJECT NUMBER STD
PROJTRAK NUMBER -

STANDARD CONSTRUCTION
SINGLE POLE 12.7kV SWER
ISOLATING SUBSTATION
GENERAL ARRANGEMENT

SIZE A1
DRAWING No 502801
SHEET 1
AMD 5