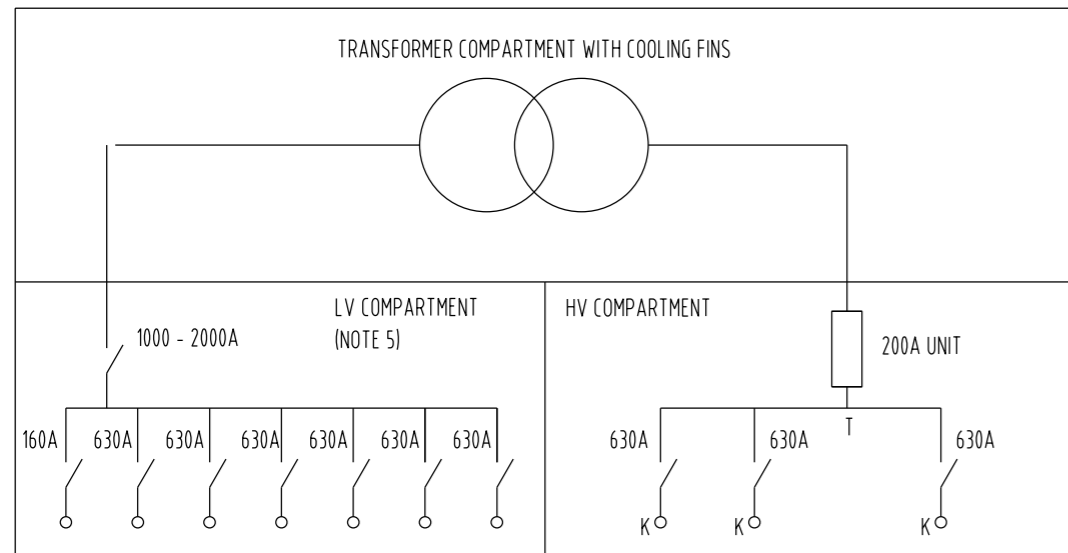


MK3 PACKAGE SUBSTATION GENERAL LAYOUT
SCALE 1:25



EXAMPLE SHOWN IS FOR KTK SUBSTATION WITH STRIPPLE FUSE UNIT

MANUFACTURER DETAILS

To AS 60076 (MEPS compliant)
WTC SERIAL NUMBER

OFF CIRCUIT TAPSELECTOR DE-ENERGISE BEFORE CHANGING TAPS

kVA		Insul. liquid Oil		MINERAL
Phase	3	Temp. rise Oil/Wdg	°C	55/60
Frequency	Hz 50	Total mass	kg	
Volts (no load)	LV	Untanking mass	kg	
Amps	HV 26.2	Liquid volume	l	
Amps	LV 722	Pressure min/max (kPa abs)		50/130
Vector group	Dyn1	Year of manufacture		
Insulation level	LI95AC28/AC10	Impedance	%	
Cooling type	ONAN			

Plan of tank

ACROSS	HV	POS	%	CONN	LV	ACROSS
A10 B10 C10	12100	1	110.0	6-5		a2 b2 c2
	11825	2	107.5	5-7		
	11550	3	105.0	7-4		
	11275	4	102.5	4-8		
	11000	5	100.0	8-3	400	
	10725	6	97.5	3-9		
	10450	7	95.0	9-2		

**PROPERTY OF
POWER & WATER CORPORATION**

This is a Sealed Transformer

RATED VOLTAGE	11kV SUBSTATIONS			22kV SUBSTATIONS		
SIZE (kVA)	500	750	1000	500	750	1000
3 WAY KKT ITEM No.	503369	504059	504064	504058	504062	504063
4 WAY KTK ITEM No.	504056	504060	504065	504057	504061	504066
OVERALL HEIGHT	1677		1807	1677		1807
DEPTH	1554					

NOTES:-

1. COMPRESSION LUGS ARE TO BE USED ON ALL LV CABLE CONNECTIONS FOR XLPE AND OTHER ALUMINIUM CONDUCTORS. CABLE LUGS WITH FINAL COMPRESSION OVER INSULATION TO EXCLUDE MOISTURE ARE ESSENTIAL. REFER TO DRAWING S02-02-02-10.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE PWC SPECIFICATION STSP 02-006.
3. EACH CABLE ENTERING / LEAVING SUBSTATION IS TO HAVE A DESTINATION TAG REFER TO DRAWING S2-01-08-25.
4. CABLES IN THE HV AND LV COMPARTMENTS MUST HAVE HEAT SHRINK COLOURED SLEEVES TO MATCH PHASE AND CONNECTED TO SWITCHGEAR WITH R.W.B. FROM REAR OF CABINET TO FRONT. ALL COLOUR CODING SHALL BE ON UN-STRIPPED CABLE.
5. UNLESS SPECIFIED OTHERWISE, PACKAGE SUBSTATIONS SHALL BE SUPPLIED WITH LV PANEL INCLUDING STRIPPLE SWITCH FUSE UNITS.
6. THE CABLE TERMINATION FRAME CAN BE USED TO ASSIST IN CABLE ENTRY AND TERMINATION OF HV CABLES TO THE DRIESCHER MINEX SWITCHGEAR. REFER TO DRAWING S02-01-09-03
7. ALL HV CABLE TERMINATIONS SHALL BE VIA 630A TYPE C SCREENED DEADBREAK CONNECTIONS.
8. LARGEST CABLE TO BE TERMINATED TO HV SWITCHGEAR IS 400sqmm ALUMINIUM.
9. ALL HV CABLE EARTH SCREENS SHALL BE CONNECTED TO THE HV EARTH BAR.
10. ALL HV CABLES SHALL BE SECURELY CLAMPED BELOW THEIR RESPECTIVE HV BUSHING USING PWC APPROVED CLAMPS. REFER TO DRAWING S02-01-09-03.
11. REFER TO DRAWING S02-02-06-37 FOR FOUNDATION DETAILS, S02-02-06-17 FOR EASEMENT DETAILS AND S02-02-05-10 AND S02-02-05-14 FOR EARTHING ARRANGEMENTS.
12. HV CABLES CONNECTING THE TRANSFORMER BUSHINGS TO THE SWITCHGEAR FUSED TEE-OFF SHALL BE TERMINATED USING DEAD BREAK ELBOWS AND INSTALLED BY THE SUBSTATION MANUFACTURER.
13. SWITCH NUMBERS SHALL BE RIVETED TO A 40 x 40 ALUMINIUM ANGLE CHANNEL. ANGLE CHANNEL SHALL BE BOLTED TO THE SWITCHGEAR MOUNTING FRAME.
14. NOMINAL TAP POSITION IS TAP 5 (100%).

**HV CABLE TERMINATION
(COMPACT DEAD-BREAK ELBOW)
ITEM NUMBERS**

CABLE TYPE	11kV	22kV
35mm ² AL	503768	-
95mm ² AL	503766	-
240mm ² AL	503769	503772
400mm ² AL	503765	503773
120mm ² Cu	-	503767
240mm ² Cu	503769	503772
300mm ² Cu	503770	-

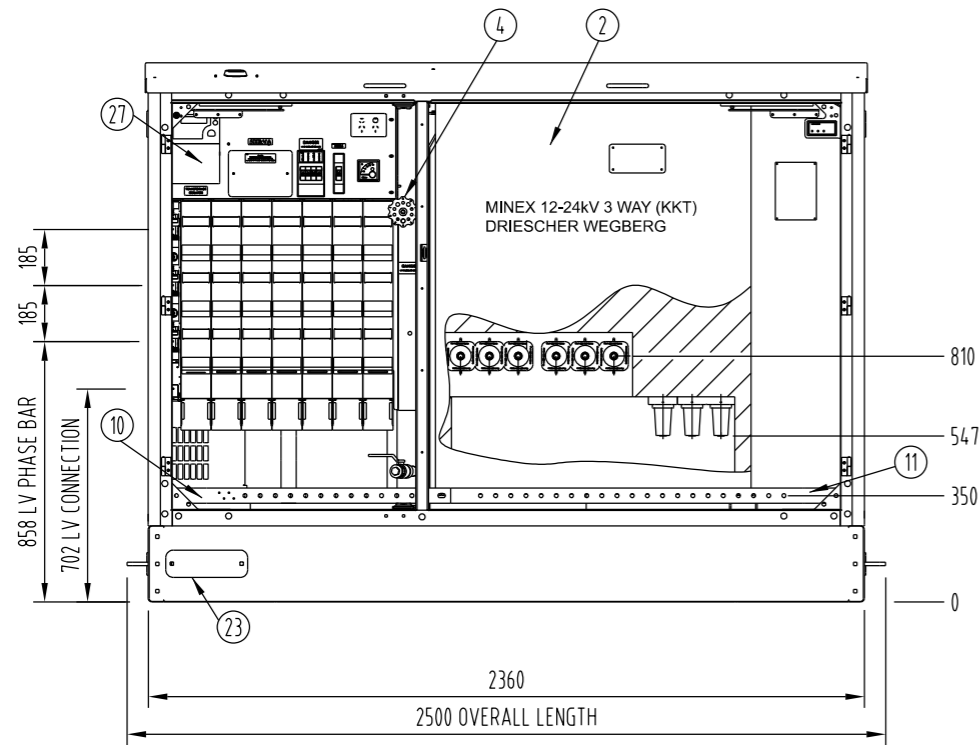
REFERENCE DRAWINGS AND DOCUMENTS	
DOCUMENT No.	DOCUMENT TITLE
S02-02-05-10	CABLE JOINTS AND TERMINATIONS 11 & 22kV CABLE KIT ITEM No.

NO	DESCRIPTION	DRN	DATE	CKD	APPD
3	CORRECTED 240 SO.mm AL CABLE, 22kV ITEM NUMBER.	P.BH.	SEP'23	B.V.	B.C.
2	UPDATED NOTES 1, 2, 3, 6, 10 & 11. COMBINED 11 & 22kV SUBSTATION TABLES. UPDATED RATED VOLTAGES AND CURRENTS. GENERAL FORMATTING.	A.N.	NOV'20	C.C.C.	B.C.
1	TITLEBLOCK & DRAWING NUMBER FORMATTED	K.T.	FEB'19	C.C.	C.C.
0	ISSUED FOR CONSTRUCTION	SHW	SEP'17	MP	MP
AMENDMENTS					



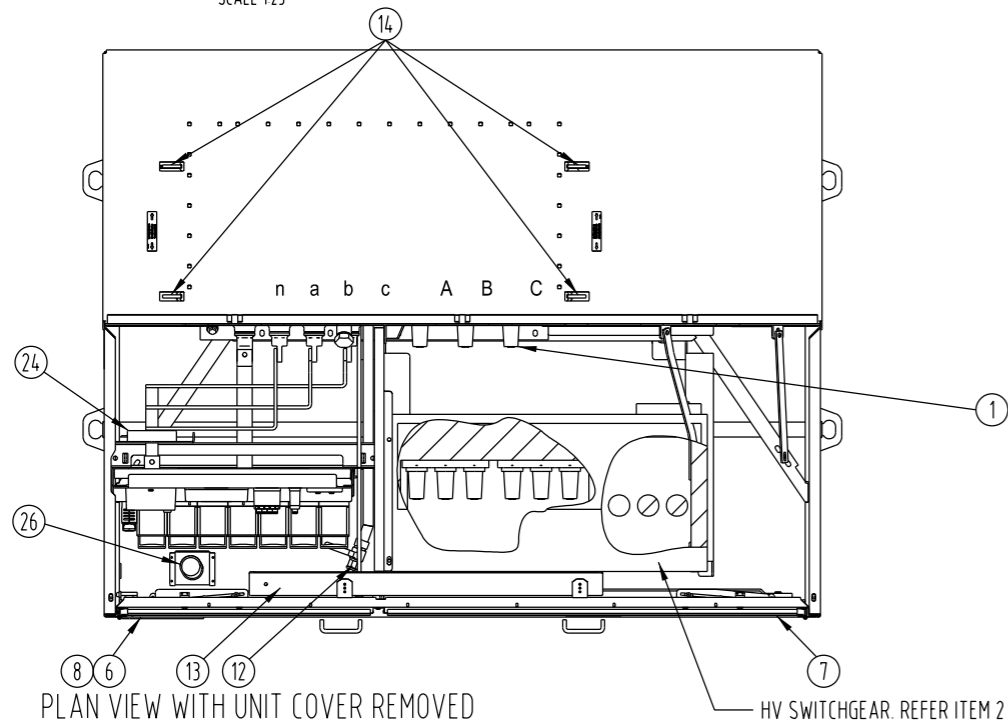
DES	PWC	POWER STANDARD DRAWING		
DRN	SHW	SUBSTATION MK3 PACKAGE SUBSTATION GENERAL ARRANGEMENT - SHEET 1 OF 4		
CKD	MP			
APPD	CS			
SCALE	AS SHOWN			
ISSUED	SEP'17	A3	DRAWING NUMBER	S02-01-07-18_1
ALL DIM.	IN mm			
DRAFTING STANDARD TO A.S.1100			CAD PRODUCT - DO NOT AMEND MANUALLY	





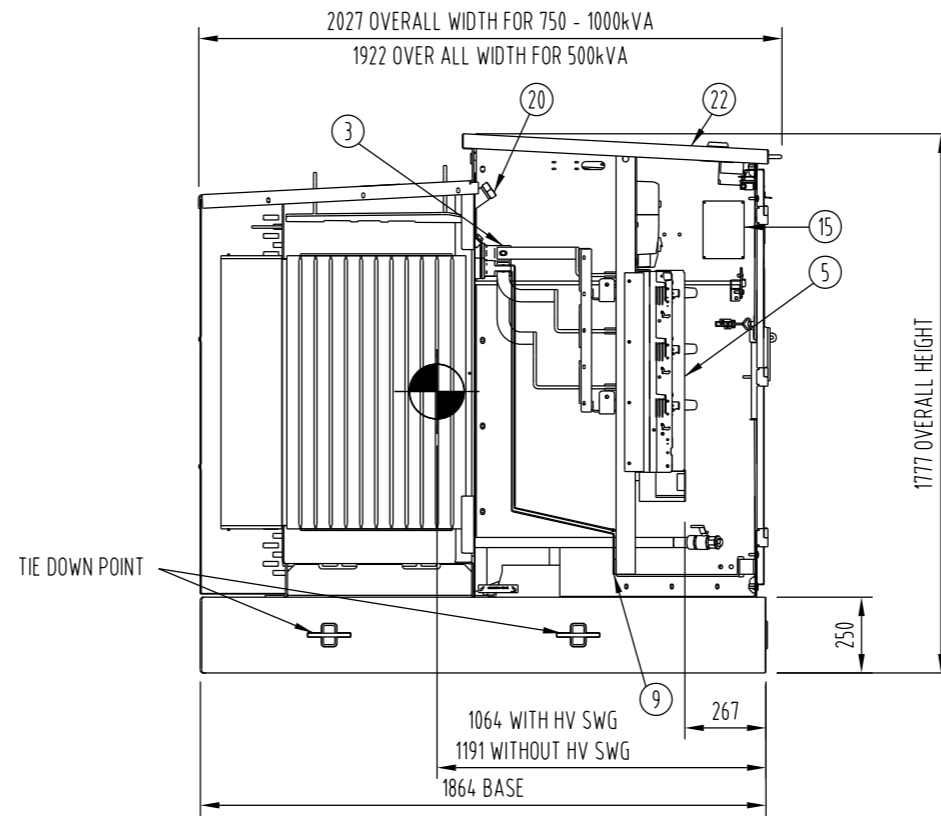
FRONT VIEW WITH DOORS REMOVED

SCALE 1:25



PLAN VIEW WITH UNIT COVER REMOVED

SCALE 1:25



SIDE VIEW

SCALE 1:25

DESCRIPTION LIST

1. HV BUSHING 630A SCREW TYPE (M16).
2. HV COMPARTMENT SUITABLE FOR FITTING MINEX 12-24kV 3 WAY AND 4 WAY RMU. CONNECT LH EARTH STUD LOCATED IN LH COMPARTMENT OF HV SWITCHGEAR TO CUBICLE HV EARTH BAR.
3. LV BUSHING 'ZEP 2/3/4M' HOLE IN PALM Ø14.
4. OFF CIRCUIT TAP SELECTOR 7 POSITION -5% TO +10% WITH LOCKING FACILITIES.
5. LV SWITCHGEAR STANDARD IS LEFT TO RIGHT - 1 x 160A DIN FUSE BASE, 1 x 1000A GENERATOR / ISOLATOR STRIP, 6 x 630A FUSE STRIPS, MDI FITTED TO 'b' PHASE, EXTRA INSULATION ON 'b' PHASE BUSBAR (TX TO SWITCHGEAR), TEST BLOCK, DOUBLE GPO, 4 MINI TERASAKI CIRCUIT BREAKERS 10A 10kA, 1 MINI CIRCUIT BREAKER 2A 6kA FOR HV FAULT METER (COMPASS B), CONNECTION SWITCHGEAR BUS WORK TO HAVE BOTH ENDS FITTED WITH COLOURED HEATSHRINK TO ID. PHASES.
6. PROVISION FOR MOUNTING PWC NUMBER PLATE PANEL ON INSIDE OF LV DOOR.
7. HV DOOR INTER-LOCKED WITH LV DOOR WITH OVERCENTRE LATCH OWNERSHIP PLATE, RMU OPERATION LABEL & OPERATING HANDLE SUPPORT (INSIDE DOOR) 3 x HINGES AND DOOR STAY.

DESCRIPTION LIST CONTINUED:

8. LV DOOR WITH SWING HANDLE (3 POINT LOCKING) WITH PROVISION FOR PAD LOCKING, DANGER PLATE (STICK-ON), 3 x HINGES AND DOOR STAY.
9. LV NEUTRAL BAR TO CONSIST OF 50 x 6.3 TINNED COPPER COMPLETE WITH 1 Ø13 MOUNTING HOLE, 3 M6X1.00 TAPPED HOLES, 14 Ø13 MOUNTING HOLES.
10. LV EARTH BAR 50 x 6.3 TINNED COPPER COMPLETE WITH 10 HOLES Ø13, 4 M6X1.00 TAPPED HOLES & 2 Ø13 MOUNTING HOLES.
11. HV EARTH BAR 50 x 6.3 TINNED COPPER COMPLETE WITH 21 HOLES Ø13, PLUS 2 Ø13 MOUNTING HOLES.
12. DRAIN / SAMPLE BALL VALVE Ø25 NOMINAL.
13. HV / LV COMPARTMENT BATTEN LED LIGHT 40W.
14. CRANE LIFTING LUGS SLOT 40 x 60.
15. RATING AND DIAGRAM PLATE.
16. THERMOMETER POCKET IN LV COMPARTMENT.
17. FLUSH TYPE OIL GAUGE MARKED AT 15°C (BACKGROUND ON WALL OF TANK PAINTED WHITE BEHIND PERPEX) IN LV COMPARTMENT.
18. PRESSURE RELIEF VALVE IN LV COMPARTMENT.
19. SEALING PLUG IN LV COMPARTMENT.
20. FILLER CAP Ø40 NOMINAL IN LV COMPARTMENT.
21. COOLING FINS.
22. CUBICLE COVER WITH INSULATION ON UNDERSIDE OF COVER AND FITTED WITH HANDLES TO AID REMOVAL OF COVER.
23. BASE FRAME 250 x 50 CHANNEL GALVANISED WITH GENERATOR CABLE ACCESS POINT (COVER PLATE BOLT ON).
24. CT 800/5A FOR MDI'S (MOUNTED ON BUSBAR TO PHASE LV BUSHINGS) REFER TO STSP 02-012
25. LIGHT SWITCH BRACKET.
26. EXTERNAL ANTENNA.
27. MULTIFUNCTIONAL SMART METER & COMMUNICATION UNIT (MOUNTED ON LV BOARD).
28. REMOVABLE 50 x 6.3 TINNED COPPER NEUTRAL LINK TO BE PROVIDED BOLTED INTO PLACE WITH SS316 SPRING AND FLAT WASHERS BETWEEN THE LV NEUTRAL BAR AND LV EARTH BAR.

REFERENCE DRAWINGS AND DOCUMENTS

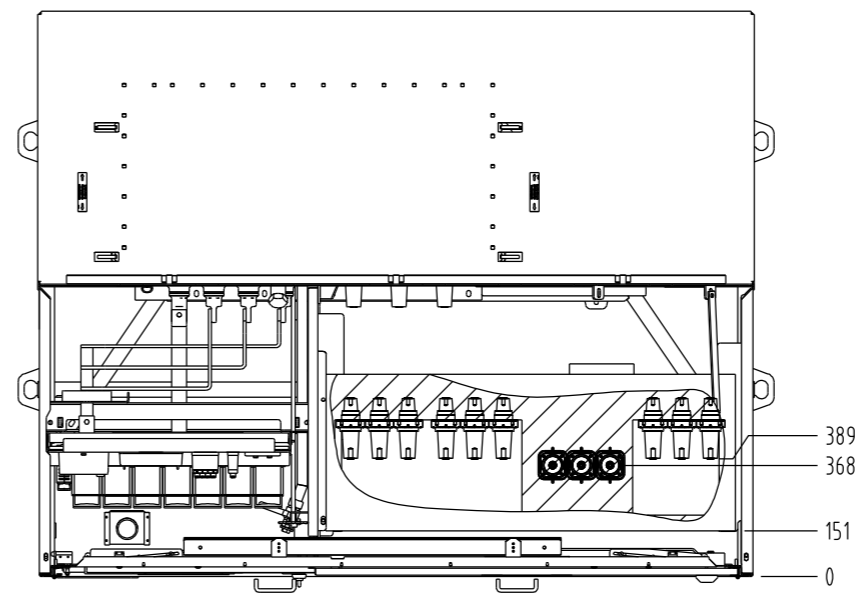
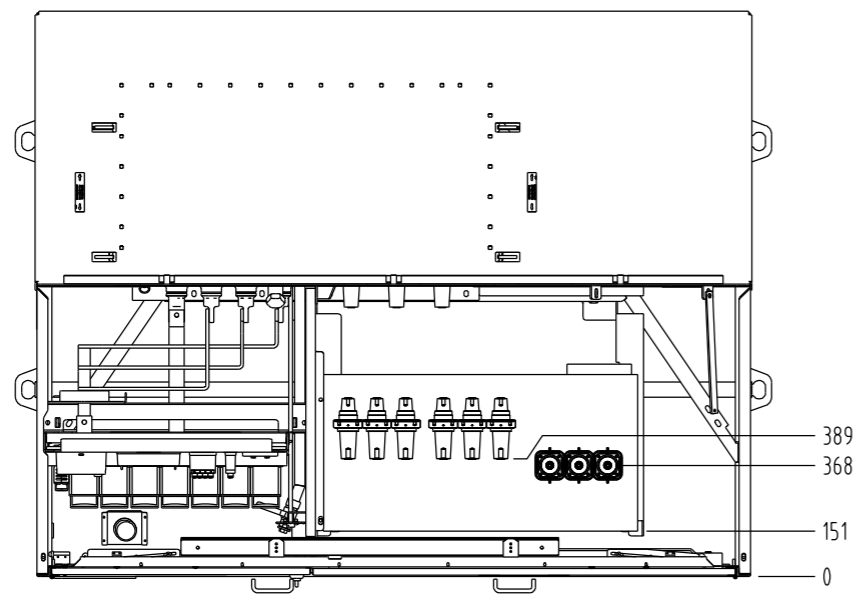
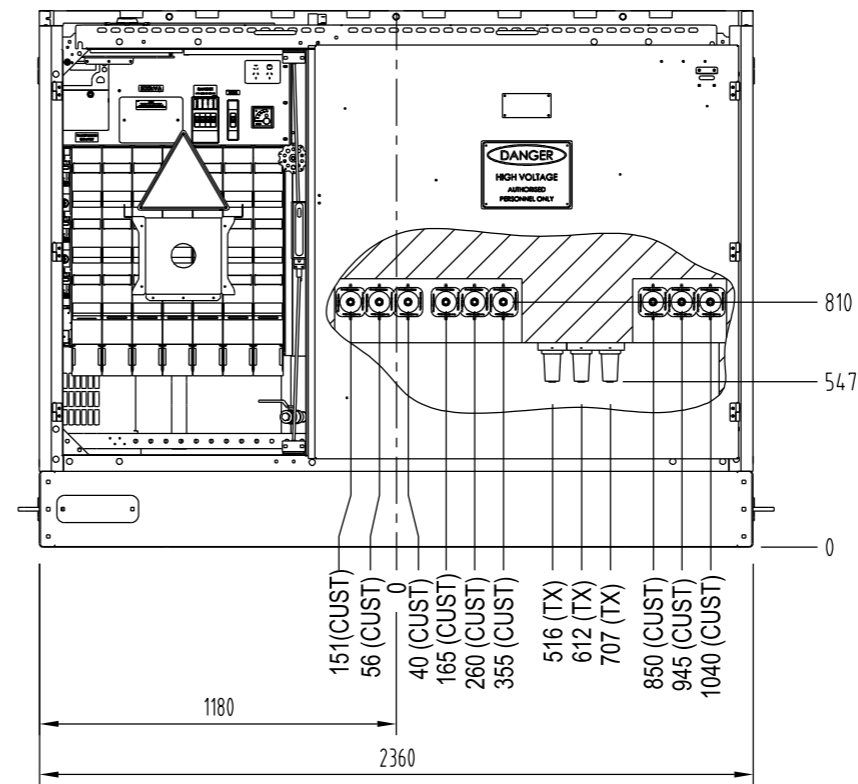
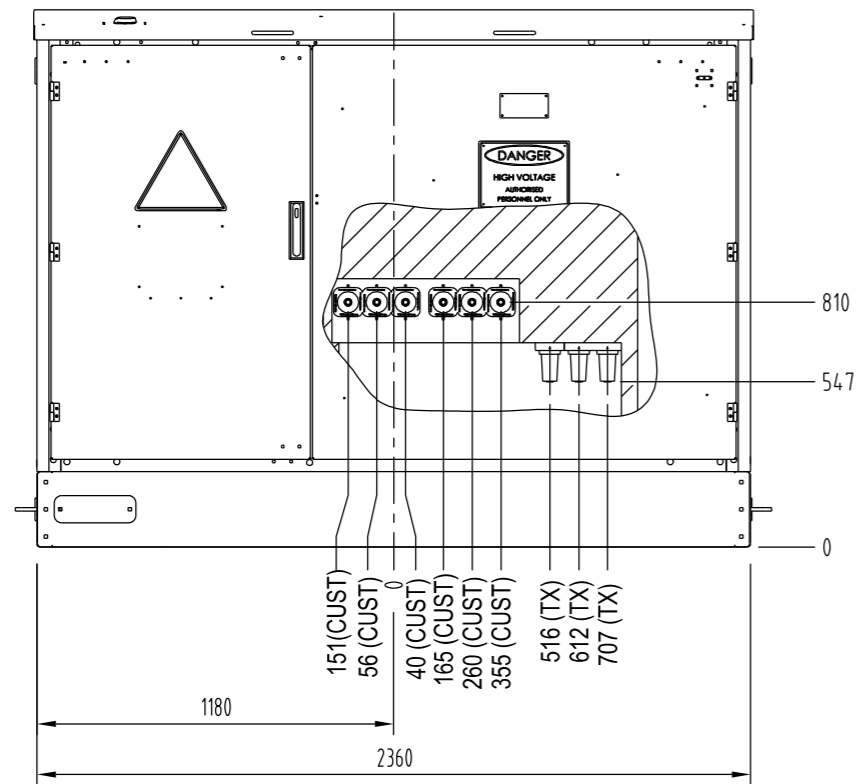
DOCUMENT No.	DOCUMENT TITLE
S02-02-05-10	CABLE JOINTS AND TERMINATIONS 11 & 22kV CABLE KIT ITEM No.

NO	DESCRIPTION	DRN	DATE	CKD	APPD
3	AMENDED SHEET 1.	P.BH.	SEP'23	B.V.	B.C.
2	UPDATED DESCRIPTIONS 9, 10, 11, 13 & 24. ADDED NOTE 28. REFORMATTED DESCRIPTION LIST.	A.N.	NOV'20	C.C.C.	B.C.
1	TITLEBLOCK & DRAWING NUMBER FORMATTED	K.T.	FEB'19	C.C.	C.C.
0	ISSUED FOR CONSTRUCTION	SHW	SEPT'17	MP	MP
AMENDMENTS					



DES	PWC	POWER STANDARD DRAWING		
DRN	SHW	SUBSTATION MK3 PACKAGE SUBSTATION GENERAL ARRANGEMENT - SHEET 2 OF 4		
CKD	MP			
APPD	CS			
SCALE	AS SHOWN			
ISSUED	SEP'17	A3	DRAWING NUMBER	S02-01-07-18_2
ALL DIM. IN mm				
DRAFTING STANDARD TO A.S.1100			CAD PRODUCT - DO NOT AMEND MANUALLY	





HV SWITCHGEAR CONNECTION LOCATION FOR 3 WAY MINEX (KKT)
SCALE 1:25

HV SWITCHGEAR CONNECTION LOCATION FOR 4 WAY MINEX (KTK)
SCALE 1:25

REFERENCE DRAWINGS AND DOCUMENTS	
DOCUMENT No.	DOCUMENT TITLE
S02-02-05-10	CABLE JOINTS AND TERMINATIONS 11kV AND 22kV CABLE KIT ITEM NUMBER

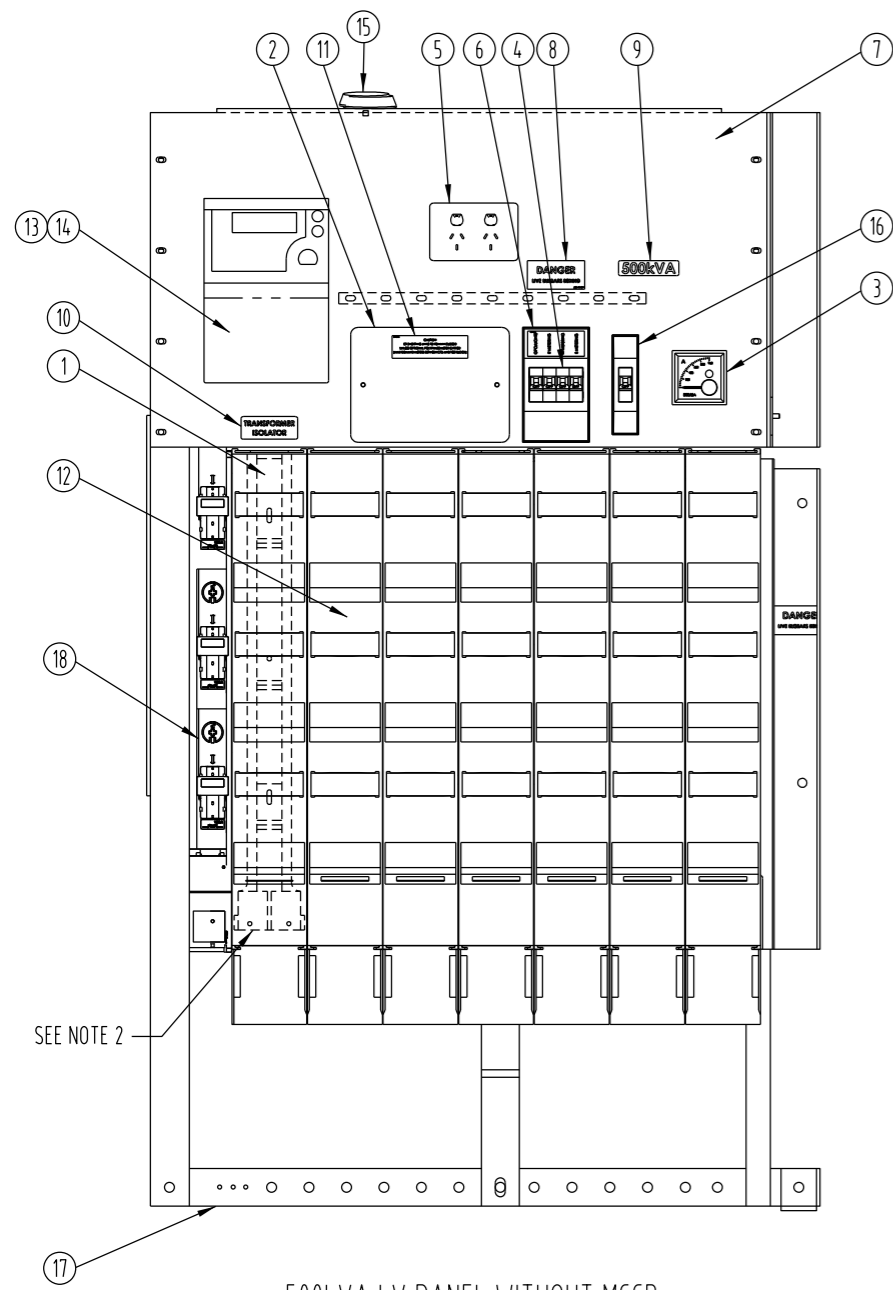
NO	DESCRIPTION	DRN	DATE	CKD	APPD
2	AMENDED SHEET 1.	P.BH.	SEP'23	B.V.	B.C.
1	TITLEBLOCK & DRAWING NUMBER FORMATTED	K.T.	FEB'19	C.C.	C.C.
0	ISSUED FOR CONSTRUCTION	SHW	SEPT'17	MP	MP
AMENDMENTS					



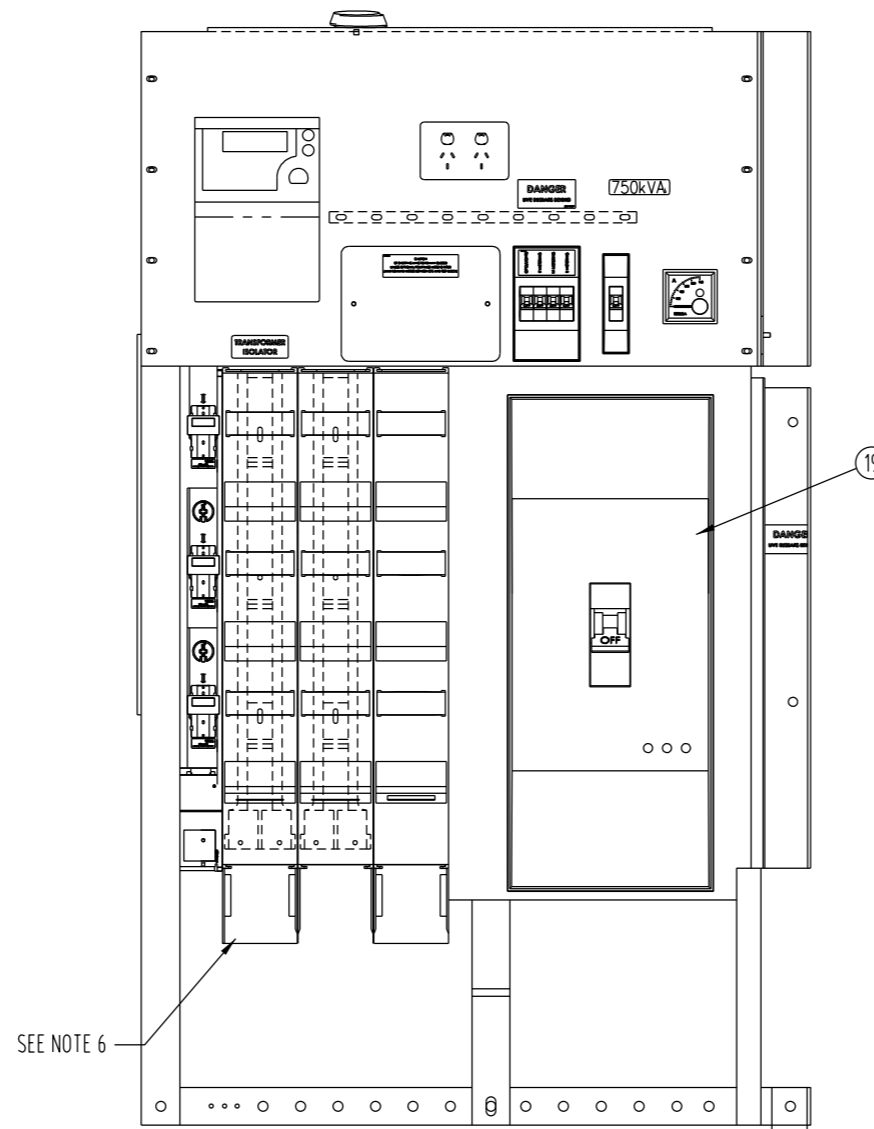
DES	PWC
DRN	SHW
CKD	MP
APPD	CS
SCALE	AS SHOWN
ISSUED	SEP'17
ALL DIM.	IN mm
DRAFTING STANDARD TO A.S.1100	

POWER STANDARD DRAWING	
SUBSTATION MK3 PACKAGE SUBSTATION GENERAL ARRANGEMENT - SHEET 3 OF 4	
A3	DRAWING NUMBER S02-01-07-18_3
CAD PRODUCT - DO NOT AMEND MANUALLY	





500kVA LV PANEL WITHOUT MCCB



500 - 1000kVA LV PANEL WITH MCCB
(EXAMPLE FOR 750kVA ONLY)

ITEM No.	DESCRIPTION	DEFAULT QTY.
1	JEAN MULLER 1000/2000A GENERATOR ISOLATOR	1
2	BOX TEST IPD-KWHTB02	1
3	METER MAX DEMAND 0-800/5A WHITE	1
4	CIRCUIT BREAKER TERSAKI 10A 10kA 1 PHASE DTCB10110C	4
5	SOCKET GPO 10A CLIPSAL 25	1
6	CIRCUIT BREAKER ENCLOSURE 4CC4WE_CLI	1
7	BARRIER - PERSPEX COVER	1
8	LABEL - DANGER	2
9	LABEL - 500-1000kVA	1
10	LABEL - TRANS ISOLATOR	1
11	LABEL - IMPORTANT SHORTENING LINKS	1
12	JEAN MULLER 630A NH3 SWITCH FUSE DISCONNECTOR	6
13	METER 800/5A CT (PWC) (NOT SHOWN) IAW STSP 02-012	1
14	SMART METER COMMUNICATION UNIT TLM	1
15	SMART METER ANTENNA	1
16	CIRCUIT BREAKER CLIPSAL 2A 6kA 1 PHASE 4CB102/6	1
17	LV NEUTRAL BAR	1
18	JEAN MULLER 160A FUSE STRIP SL00-3X (L5461001T)	1
19	TERASAKI CIRCUIT BREAKER	1

NOTES:

- ALL CONNECTING BUS WORK TO BE MARKED BOTH ENDS WITH COLOURED HEAT SHRINK TO IDENTIFY PHASES.
- THE GENERATOR LUGS TO BE MARKED WITH COLOURED DOTS TO IDENTIFY PHASES.
- ALL CURRENT CARRYING BOLTED CONNECTIONS SHALL BE VIA CLASS 8.8 STAINLESS STEEL BOLTS TO THE FOLLOWING TORQUE SPECIFICATIONS:
M8 : 10 - 15Nm
M10 : 30 - 35Nm
M12 : 35 - 40Nm
ALL CONNECTIONS SHALL USE A SPRING WASHER BETWEEN A FLAT WASHER AND THE NUT. WHERE CAPTIVE NUTS ARE USED THE SPRING WASHER SHALL BE ON THE BOLT SIDE OF THE CONNECTION. ALL STAINLESS STEEL BOLTS REQUIRE A COATING OF ANTI-SIEZE BEFORE INSTALLATION. WHERE MULTIPLE BOLTS ARE USED TO MAKE A CONNECTION, DO NOT APPLY FULL TORQUE TO THE BOLTS ON THE FIRST PASS.
- TO AVOID POSSIBLE CONTACT BY EXTERNAL SOURCES ALL LV BUSHING TO SWITCHBOARD BUSBARS SHALL BE COVERED BY COLOURED HEATSHRINK.
- 1000A GENERATOR / ISOLATOR STRIP (PWC ITEM No. 406808) SHALL BE USED FOR 500kVA. 2000A GENERATOR / ISOLATOR STRIP (PWC ITEM No. 406811) SHALL BE USED FOR 750-1000kVA.
- THE NUMBER OF 630A FUSE STRIPS AVAILABLE ON A MCCB LV PANEL DEPENDS ON THE SIZE OF THE MCCB AND THE SIZE OF THE PACKAGE. REFER TO S02-01-04-08 FOR SWITCH-FUSE DISCONNECTORS & S02-01-04-10 FOR FUSES.
- ALL MCCB KITS ARE INSTALLED BY MANUFACTURER ON REQUEST AT THE TIME OF ORDERING THE PACKAGE SUB AND MCCB KIT. REFER TO STSP 02-013.

LV PANEL SWITCHGEAR WITHOUT MCCB FITTED (L TO R)	
500kVA	1x 160A DIN FUSE STRIP (407050) 1x 1000A GENERATOR ISOLATOR STRIP (406808) 6x 630A SWITCH-FUSE DISCONNECTOR STRIPS (11866)
750 & 1000kVA	1x 160A DIN FUSE STRIP (407050) 1x 2000A GENERATOR ISOLATOR STRIP (406811) 5x 630A SWITCH-FUSE DISCONNECTOR STRIP (11866)

MCCB KITS	ITEM NUMBER
800A	503922
1250A	503923
1600A	503919
2000A	503924

LV PANEL SWITCHGEAR WITH MCCB FITTED (L TO R)	
500kVA	1x 160A DIN FUSE STRIP (407050) 1x 1000A GENERATOR ISOLATOR STRIP (406808) 2x 630A SWITCH-FUSE DISCONNECTOR STRIPS (11866)
750 & 1000kVA	1x 160A DIN FUSE STRIP (407050) 1x 2000A GENERATOR ISOLATOR STRIP (406811) 1x 630A SWITCH-FUSE DISCONNECTOR STRIP (11866)

REFERENCE DRAWINGS AND DOCUMENTS

DOCUMENT No.	DOCUMENT TITLE
S02-02-05-10	CABLE JOINTS AND TERMINATIONS 11 & 22kV CABLE KIT ITEM No.

NO	DESCRIPTION	DRN	DATE	CKD	APPD
3	AMENDED SHEET 1.	P.BH. A.N.	SEP'23 NOV'20	B.V. C.C.C.	B.C. B.C.
2	UPDATED TABLE FORMAT & NOTES 5, 6 & 7. ITEMS 1, 12 & 13 DESCRIPTION UPDATED. EDITED NEUTRAL BAR. REFORMATTED LV SWITCHGEAR DESCRIPTION WITH ITEM NUMBERS.	K.T. SHW	FEB'19 SEPT'17	C.C. MP	C.C. MP
1	TITLEBLOCK & DRAWING NUMBER FORMATTED				
0	ISSUED FOR CONSTRUCTION				
AMENDMENTS					



NORTHERN TERRITORY

DES	PWC	POWER STANDARD DRAWING		
DRN	SHW	SUBSTATION MK3 PACKAGE SUBSTATION GENERAL ARRANGEMENT - SHEET 4 OF 4		
CKD	MP			
APPD	CS			
SCALE	AS SHOWN			
ISSUED	SEP'17	A3	DRAWING NUMBER	S02-01-07-18_4
ALL DIM.	IN mm			
DRAFTING STANDARD TO A.S.1100			CAD PRODUCT - DO NOT AMEND MANUALLY	

