

Version control and endorsements

Version	Date	Comments
1.0	August 2022	Initial issue

Prepared by:

Vasan Naidoo

Business Trainer

Date: 05/08/2022

Reviewed by:

Geoff Brown

Applications Assessment Officer

Date: 05/08/2022

Approved by:

Sunny Mehfooz

Customer Solutions Lead

Date: 05/08/2022

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1. Background

This document was created to aid Endeavour Energy's (EE) Accredited Service Providers (ASP's) to plan and document assets that are added or removed from EE's electrical network.

Design and construction of new electrical network assets begins with ASP's requesting the quantities of new assets to EE in the form of a Technical Asset Shell (TAS). EE processes the TAS and generates a base Technical Asset Loader (TAL) document that is sent to the ASPs for filling out. ASP's return the completed TAL to EE for updating the SAP database.

This process is shown in Figure 1 below.

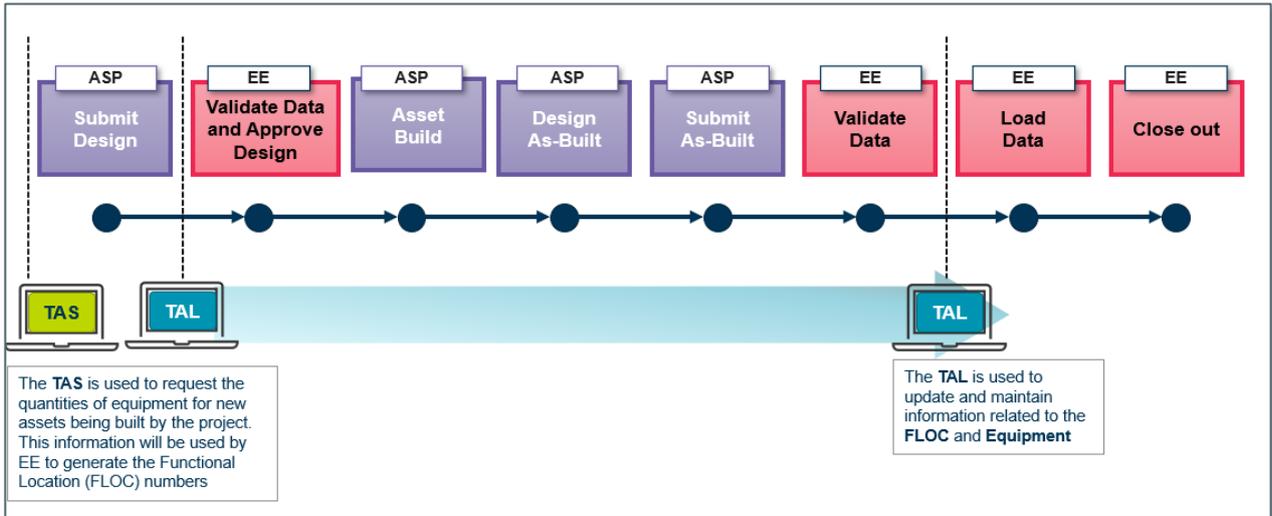


Figure 1 – TAS and TAL process flow

The Technical Asset Shell (TAS) and the Technical Asset Loader (TAL) are new tools introduced as part of EE's SAP program.

The **TAS** replaces the existing Asset Request message and will be used to request new asset numbers (asset shells) being built as part of a project.

The **TAL** is an updated version of the EEL spreadsheet used to manage updates to asset information.

The TAL is an Excel spreadsheet that is categorised by superior functional locations (such as poles and distribution substations) and other functional locations (like switches, transformers) which is used to create or change assets in EE's SAP database.

The electrical network is represented in SAP as a hierarchy with superior functional locations where other functional locations and equipment are stored. These functional locations are linked to other data sources such as Geographic Information System (GIS), Advanced Distribution Management System (ADMS), ESRI, Click,

Terms used in the TAS and TAL:

Term	Description
Functional Location	Also known as FLOC – stands for the Function (or purpose that the asset serves in the network) and it is location in the network. The FLOC has a smart name i.e. POLE12345678 for poles, SWIT87654321 for switches. With the introduction of the FLOC Endeavour will aim to keep that FLOC and asset number as the history and name are maintained at that location. The FLOC is the

Term	Description
	point of alignment with GIS and ADMS. The TAL will be sent to the ASPs with new prepopulated FLOC numbers
Reference Functional Location	Also known as REF-FLOC – is the basic template that is used to create new or additional FLOCs. This cell is automatically populated in the TAL worksheets.
Flag for Deletion (Mark as 'X')	Used to show instances of where an asset is no longer required and can be deleted. Only used for non-active assets.
Pole Plate Number (Sort Field)	This is the legacy asset number, has been continued as the operational asset number e.g., pole number PL123456 or DS number DS18459. When the TAL is returned with new FLOCs e.g POLE00982456, the sort field will be filled in as PL for the pole asset type and followed by the number without the preceding 00's and will look like PL982456.
Superior Functional Location	Superior means the higher level in the asset hierarchy at that location. Superior flocs include poles, columns, ground subs (padmounts, indoor subs), pillar boxes, zone and transmission substations, switching stations or any location that contains a group of assets. E.g., an Air Break Switch (ABS) installed on a pole will have the FLOC of that pole as its superior location, a switch inside HV switchgear will have the HV switchgear as its superior FLOC.
FLOC Construction Type	Describes the type of construction e.g., ground sub, padmount sub. Construction types are linked to tasks, materials, failure modes.
FLOC Technical Object Type	A technical object defines what the object is and sets the attribute list for the asset. This cell is automatically populated in the TAL worksheets and is related to the FLOC construction type.
Location	Represents the Endeavour Field Service Centre that maintains this asset. Drop Down Menu – please refer to Lookup Table for values applicable to this field
ABC Indicator	This field is used by Endeavour to determine whether works at this location will require an outage or not by default. Drop Down Menu – please refer to Lookup Table for values applicable to this field
Special Use Code	Code used to describe whether the assets is joint EE use or use with other entities such as Telstra, Ausgrid, State rail etc.
Equipment Number	This is an SAP generated unique number. Represents the actual asset(s), specific to the physical asset with details such as the Manufacturer, Serial number etc.
EQ Reference Equipment Desc	The is a template for a given type of equipment
EQ Technical Object Type	Defines what the object is which also sets the attribute list. Both FLOCs and Equipment have Technical Object Types but these fields are not linked and do not limit each other.
FLOC and Asset numbers	Existing FLOC numbers are 12 digits/characters long. X is the asset number shown in Gnet viewer Substations are DSUB000XXXXX Poles are POLE00XXXXXX

Term	Description
	Columns are CLMN000XXXXX Pillars are PILL0000XXXX
Distribution Substations	DSUB plate number is the asset number which appears on the design DSUB ground is a ground mounted substation. DSUB pole is a pole mounted substation. Pole Sub-Switches are any switches and fuses for a pole substation including both HV or LV switches Pole Switch is any switch mounted on a pole that is not part of the DSUB e.g. and ABS or Load Break Switch.
High Voltage switches	HV Distribution Sub Sub Switch is the HV transformer isolation unit. HV switch is the isolation and earth switches for the cable units of the HV switchgear. HVCB is a high voltage circuit breaker. BBHV is the high voltage busbar.
Low Voltage switches	LV Distribution Sub Sub Switch is the low voltage transformer isolation unit. LV switch is the low voltage fuses strips. LVCB is a low voltage circuit breaker. BBLV is the low voltage bus bar.
Pole mounted distribution substations	DSUB pole is a pole mounted substation. Pole Sub Switch are any switch HV or LV and fuses of a pole substation. Pole Switch is any switch mounted on a pole.

TAL Colour Code Legend:

Functional Location <i>RED BOLD ITALICISED</i> attributes are mandatory and <u>will</u> auto populate
FLOC Construction Type RED BOLD attributes are mandatory and <u>require user input</u>
FLOC Technical Object Type <i>RED ITALICISED</i> attributes are mandatory and <u>will auto populate</u> based on other field inputs
Superior Functional Location BLACK BOLD attributes are mandatory and will reflect the parent asset if required
Pole Plate Number (Sort Field) BLACK attributes are not mandatory, except Commissioning Date as required as part of Construction Processes (ASP L1)

The following sections will show examples of the asset and how to fill out the TAS and the TAL for each asset type. Pole Distribution Substations are included in Poles; HV and LV switchgear are included in Ground Distribution Substations.

2. Poles and Pole Substations

2.1 Pole Structure in SAP

Figure 2 below shows the FLOC and equipment hierarchy of a pole in SAP. Dark blue shaded blocks indicate objects that are connected to GIS or ADMS.

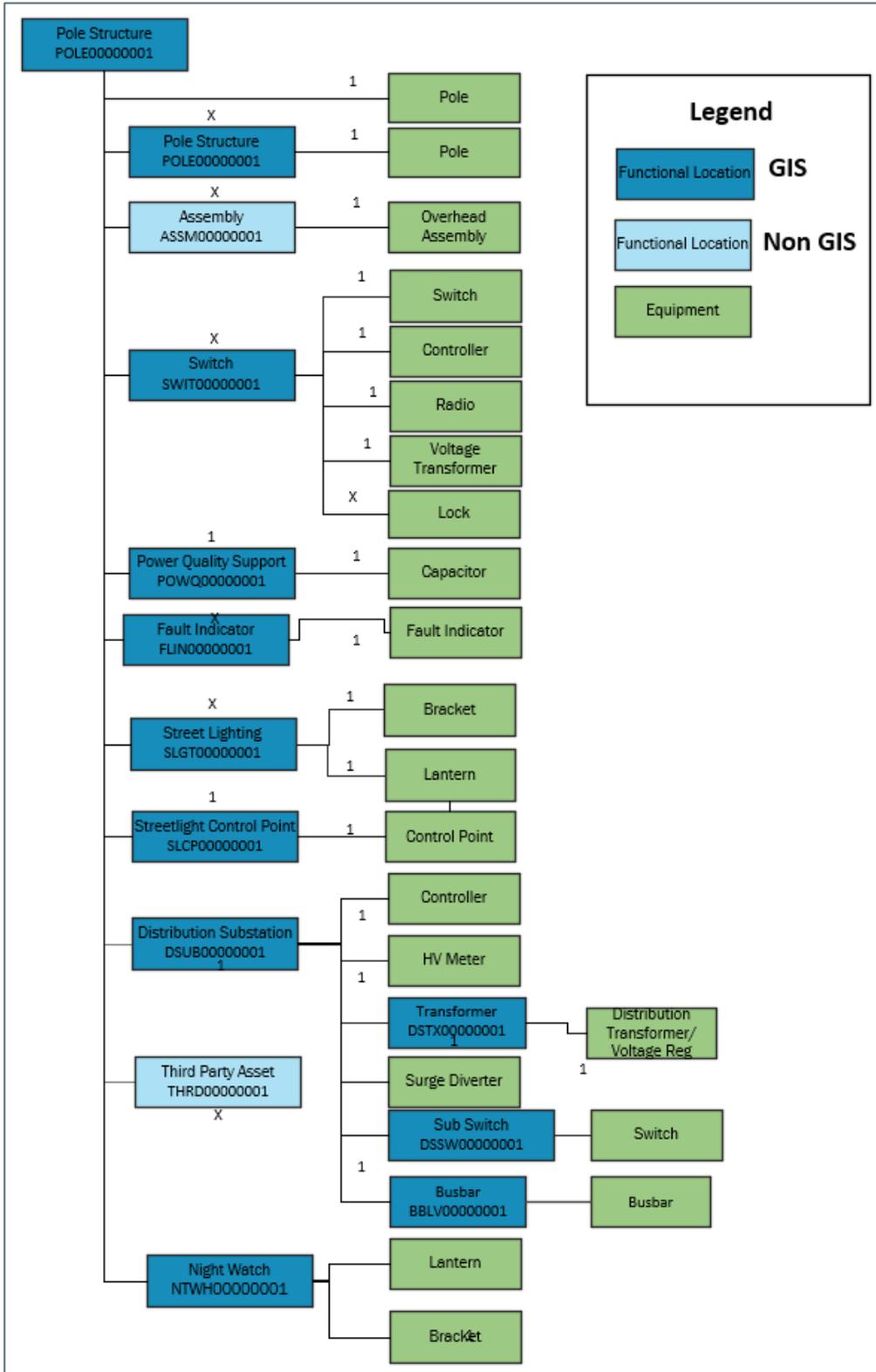


Figure 2 – Pole structure in SAP

2.2 Simple Pole Structure

TAS request for a Distribution pole supporting an LV feeder that has one streetlight is shown in Figure 3 below. Figure 4 shows a typical example in the field of the pole in Figure 3.

If new drawing numbers are required then check the tick boxes else insert the drawing numbers and CAMS or CAP

EE field service centre that is closest to the assets that usually maintains these

Pole mounted switch e.g ABS
Qty of streetlights required
Qty of pole assemblies required
Qty of streetlight control points required

Figure 3 – TAS pole request

Figure 4 – Pole 4KD380 – LV and streetlight

In the above TAS image (Figure 3) the Pole Structure is regarded as the superior or parent functional location and the Pole Switch, Pole Streetlighting, Pole Assemblies and Pole Streetlight Control Point are sub or child functional locations. Note in this example only the pole structure, pole streetlight and Pole Assemblies are populated. The image on the right (Figure 4) shows the physical example.

The TAL spreadsheet that is returned in relation to the above TAS will have the following worksheets that are partially populated, and these will need more data from the ASPs:

1. Pole;
2. Assm; and
3. Streetlight.

The received TAL will look like Figure 5 which shows the pole sheet with the prepopulated Functional Locations, Reference Functional Locations, Pole Plate Number (Sort Field), Location and ABC indicator. The assembly sheet and Streetlight sheets are shown in Figure 6 below with their prepopulated information.

	J	K	L	M				
1	Poles							
2	<i>Functional Location</i>	POLE01000643						
3	<i>Reference Functional Location</i>	POLEPOLE0001						
4	Flag for Deletion (Mark as 'X')							
5								
6	Pole Plate Number (Sort Field)	PL1000643						
7	Superior Functional Location							
8	<i>FLOC Construction Type</i>							
9	<i>FLOC Technical Object Type</i>							
10	<i>Location</i>	Kings Park Field ServiceCentre						
12								
13	Network General Characteristics							
14	Urban							
15								
16	FLOC Characteristics							
17	Creek Crossing							
18	<i>Equipment Owner</i>							
19	Ice Loading Area							
20	Pole Equipment Function							
21	Pole Function							
22	River Crossing Navigable							
23	Structure No (Trans)							
24	<i>Special Use Code</i>							
25	Voltage - Nominal (V)							
26								
27	Equipment Characteristics							
28	<i>Equipment Number</i>							
29	<i>EQ Reference Equipment Desc</i>							
30	<i>EQ Technical Object Type</i>							
31	Commissioned Date (DD/MM/YYYY)							
32	Streetlight Vertical Support							
33	Streetlight Tariff Class							
34	Streetlight Tariff Rate							
35								
36	Manufacturer							
37	Manufacturer Part No							
38	Manufacturer Serial No							
39	Manufacturer Country							
40	Manufacturer Month							
41	Manufacturer Year							
42								
43	Pole Burial Depth (m)							
44	Pole length (m)							
45	Pole Strength on disc (kN)							
46	Pole Species							
47	Pole Type							
48	Original Pole Dia groundline (Wood Only)							
49	Proposed Removed							
50	Proposed Removed Equipment Number							
51								
52	Assembly							
53	<i>Functional Location</i>	ASSM00710578	ASSM00710579					
54	<i>Reference Functional Location</i>	ASSMPOLE0001	ASSMPOLE0001					
55	Flag for Deletion (Mark as 'X')							
56								
57	ASSM Plate Number (Sort Field)							
58	<i>Superior Functional Location</i>	POLE01000643	POLE01000643					
59	<i>FLOC Construction Type</i>							
60	<i>FLOC Technical Object Type</i>							
61	<i>Location</i>	Kings Park Field ServiceCentre	Kings Park Field ServiceCentre					
63								
64	Network General Characteristics							
65	Urban							
66								
67	FLOC Characteristics							
	PROJECT	POLE	COLUMN	PILLAR	SLCP	STREETLIGHT	DSUB (GRND)	DSUB (POL)

Figure 5 – TAL for Simple Pole structure showing pole sheet

	J	K	L	M	N						
1	Streetlights										
2	Functional Location	SLGT00306041									
3	Reference Functional Location	SLGTPOLE0001									
4	Flag for Deletion (Mark as 'X')										
5											
7	Superior Functional Location	POLE01002745									
8	FLOC Construction Type										
9	FLOC Technical Object Type										
10	Location	Hoxton Park FieldServiceCentre									
12											
13	Network General Characteristics										
14	Urban										
15											
16	Streetlight Characteristics										
17	Billing Customer										
18	Commissioned Date (DD/MM/YYYY)										
19	Column Function										
20	Equipment Owner										
21	Location Zone										
22	Mast Length (m)										
23	Outreach Length (m)										
24	Streetlight Control Type										
25	Streetlight Luminaire										
26	Streetlight Tariff Class										
27	Streetlight Tariff Rate										
28	SLCP No										
29	Unmetered Supply										
30											
31	Bracket/Outreach Characteristics										
32	Equipment Number										
33	EQ Reference Equipment Desc	Gen. Streetlight Bracket									
34	EQ Technical Object Type	Streetlight Bracket									
35	Commissioned Date (DD/MM/YYYY)										
36	Horiz. Support Tariff Class										
37	Streetlight Horizontal Support										
38	Legacy or Annuity Rate Code										
39	Proposed Removed										
40	Proposed Removed Equipment Number										
41											
42	Lantern Characteristics										
43	Equipment Number										
44	EQ Reference Equipment Desc										
45	EQ Technical Object Type										
46	Commissioned Date (DD/MM/YYYY)										
47	ESR Number										
48	Lantern Locality										
49	Lantern Type										
50	Mounting										
51	SL Subsidy No										
52	Proposed Removed										
53	Proposed Removed Equipment Number										
54											
	Comments										
	PROJECT	POLE	COLUMN	PILLAR	SLCP	STREETLIGHT	DSUB (GRND)	DSUB (POLE)	SWITCHGEAR	HV_LV Switches	TRANSFORMER

Figure 6 – Streetlight sheet

Each worksheet will require information in relation to the:

1. The Functional location (FLOC);
2. Network General Characteristics;
3. Floc Characteristics; and,
4. Equipment Characteristics.

The figures below show examples of the data that will be populated by the ASPs.

	J	K	L	M
1	Poles			
2	<i>Functional Location</i>	POLE01000643		
3	<i>Reference Functional Location</i>	POLEPOLE0001		
4	Flag for Deletion (Mark as 'X')			
5				
9	<i>FLOC Technical Object Type</i>	Structure Pole		
10	<i>Location</i>	Kings Park Field ServiceCentre		
12				
13	Network General Characteristics			
14	Urban			
15				
16	FLOC Characteristics			
17	Creek Crossing			
18	<i>Equipment Owner</i>	Endeavour Energy		
19	Ice Loading Area			
20	Pole Equipment Function			
21	Pole Function			
22	River Crossing Navigable			
23	Structure No (Trans)			
24	<i>Special Use Code</i>	Only EE Assets on Pole		
25	Voltage - Nominal (V)			
26				
27	Equipment Characteristics			
28	<i>Equipment Number</i>			
29	<i>EQ Reference Equipment Desc</i>	Pole - Wood Treated		
30	<i>EQ Technical Object Type</i>	Wood Pole		
31	Commissioned Date (DD/MM/YYYY)			
32	Streetlight Vertical Support			
33	Streetlight Tariff Class			
34	Streetlight Tariff Rate			
35				
36	Manufacturer			
37	Manufacturer Part No			
38	Manufacturer Serial No			
39	Manufacturer Country			
40	Manufacturer Month			
41	Manufacturer Year			
42				
43	Pole Burial Depth (m)			
44	Pole length (m)			
45	Pole Strength on disc (kN)			
46	Pole Species			
47	Pole Type			
48	Original Pole Dia groundline (Wood Only)			
49	Proposed Removed			
50	Proposed Removed Equipment Number			
51				
52	Assembly			
53	<i>Functional Location</i>	ASSM00710578	ASSM00710579	
54	<i>Reference Functional Location</i>	ASSMPOLE0001	ASSMPOLE0001	
55	Flag for Deletion (Mark as 'X')			
56				
57	ASSM Plate Number (Sort Field)			
58	<i>Superior Functional Location</i>	POLE01000643	POLE01000643	
59	<i>FLOC Construction Type</i>	LV OH Assembly - Xarm Type - Bare	Gen, LV Overhead Assembly	
60	<i>FLOC Technical Object Type</i>	LV Overhead Assembly	LV Overhead Assembly	
61	<i>Location</i>	Kings Park Field ServiceCentre	Kings Park Field ServiceCentre	
63				
64	Network General Characteristics			
65	Urban			
66				
67	FLOC Characteristics			
68	<i>Equipment Owner</i>	Endeavour Energy	Endeavour Energy	
69	Voltage - Nominal (V)			
70				

Figure 7 – Typical Pole sheet as filled out by ASP3 .

	J	K	L	M	N						
1	Streetlights										
2	Functional Location	SLGT00306041									
3	Reference Functional Location	SLGTPOLE0001									
4	Flag for Deletion (Mark as 'X')										
5											
7	Superior Functional Location	POLE01002745									
8	FLOC Construction Type	Gen, Street Lighting									
9	FLOC Technical Object Type	Street Lighting									
10	Location	Hoxton Park FieldServiceCentre									
12											
13	Network General Characteristics										
14	Urban	Yes									
15											
16	Streetlight Characteristics										
17	Billing Customer	Liverpool City Council									
18	Commissioned Date (DD/MM/YYYY)										
19	Column Function	Distribution									
20	Equipment Owner	Endeavour Energy									
21	Location Zone	Residential									
22	Mast Length (m)		5.5								
23	Outreach Length (m)		1.2								
24	Streetlight Control Type	PE Cell									
25	Streetlight Luminaire	25W LED P4 Gerard									
26	Streetlight Tariff Class	Annuity-Gift By Cus, Mnt By EE									
27	Streetlight Tariff Rate		867								
28	SLCP No										
29	Unmetered Supply										
30											
31	Bracket/Outreach Characteristics										
32	Equipment Number										
33	EQ Reference Equipment Desc	Gen, Streetlight Bracket									
34	EQ Technical Object Type	Streetlight Bracket									
35	Commissioned Date (DD/MM/YYYY)										
36	Horiz. Support Tariff Class	Annuity-Gift By Cus, Mnt By EE									
37	Streetlight Horizontal Support	Bracket - Minor (<3M)									
38	Legacy or Annuity Rate Code		890								
39	Proposed Removed										
40	Proposed Removed Equipment Number										
41											
42	Lantern Characteristics										
43	Equipment Number										
44	EQ Reference Equipment Desc	Streetlight Lantern - LED Type									
45	EQ Technical Object Type	Streetlight Lantern									
46	Commissioned Date (DD/MM/YYYY)										
47	ESR Number										
48	Lantern Locality	Road									
49	Lantern Type	Minor Road - Lantern Type									
50	Mounting	Pole Mounted									
51	SL Subsidy No										
52	Proposed Removed										
53	Proposed Removed Equipment Number										
54											
55	Comments										
	PROJECT	POLE	COLUMN	PILLAR	SLCP	STREETLIGHT	DSUB (GRND)	DSUB (POLE)	SWITCHGEAR	HV_LV Switches	TRANSFORMER

Figure 8 – Streetlight sheet out by ASP based on TAS in Figure 3 – TAS pole request.

2.3 Complex Pole structure including pole substation

Figure 9 and Figure 10 below show how a TAS is completed for a complex pole with a distribution substation.

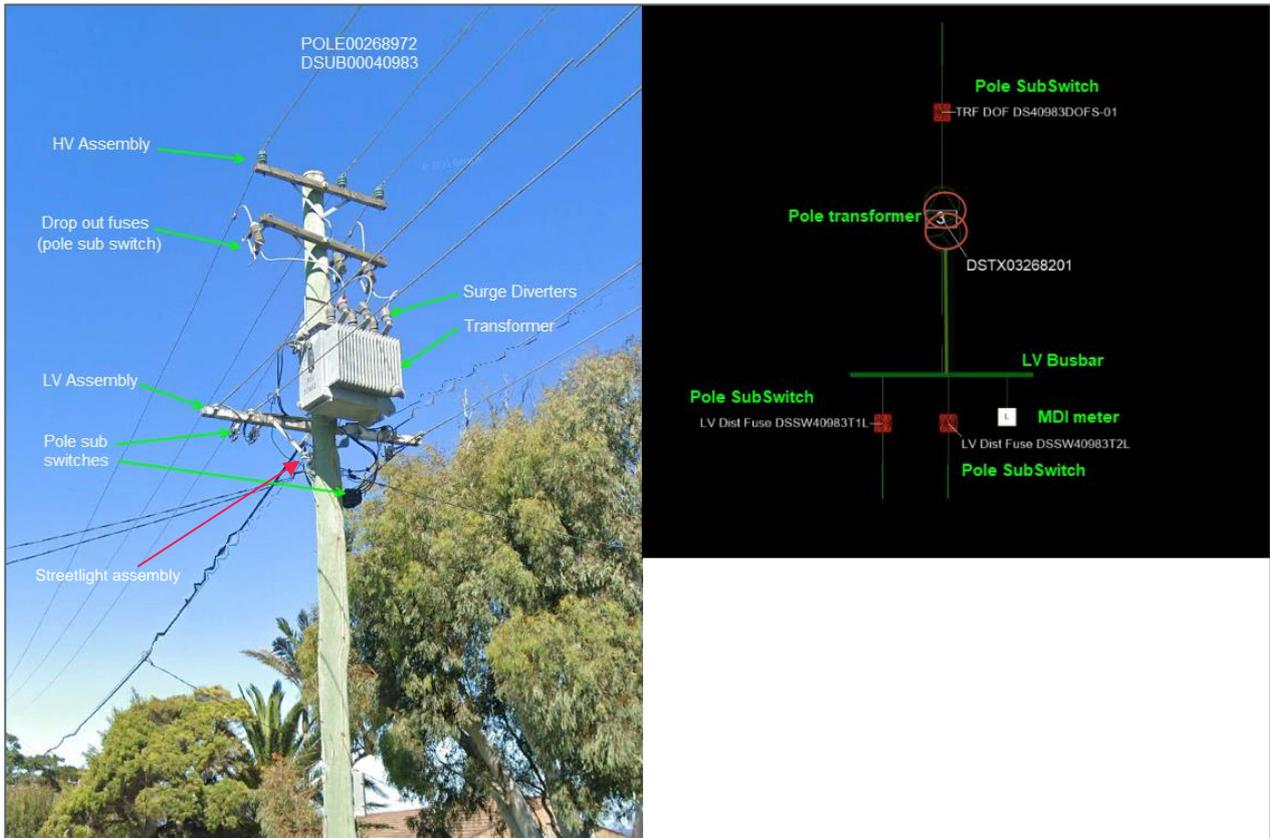


Figure 9 – Complex pole with single line drawing

PROJECT: Endeavour Use Only

RETIC DRAWING NUMBER: P.35645.6

DUCT DRAWING NUMBER: Request new Duct Drawing number

CAP APPLICATION NUMBER: UAT2003 ASP Use Only

LOCATION: Hoxton Park FieldServiceCentre Endeavour Use Only

PROCESSING: TAS+TAL TAS Only or TAS+TAL Endeavour Use Only

Person: Endeavour Use Only

eMail:

Functional Locations: Quantity Version 2

Poles:	1													
		<table border="1"> <tr><td>Poles: 1</td><td></td></tr> <tr><td>Pole Structure</td><td>1</td></tr> <tr><td>Pole Switch</td><td></td></tr> <tr><td>Pole Street Lighting</td><td></td></tr> <tr><td>Pole Assembly (1 per voltage level)</td><td>4</td></tr> <tr><td>Pole Streetlight Control Point</td><td></td></tr> </table>	Poles: 1		Pole Structure	1	Pole Switch		Pole Street Lighting		Pole Assembly (1 per voltage level)	4	Pole Streetlight Control Point	
Poles: 1														
Pole Structure	1													
Pole Switch														
Pole Street Lighting														
Pole Assembly (1 per voltage level)	4													
Pole Streetlight Control Point														
Columns:	0													
Pillars:	0													
HV Combination Switchgear:	0													
Ground Dist Subs:	0													
LV Combination Switchgear:	0													
Pole Dist Subs:	1	<table border="1"> <tr><td>Pole Dist Subs: 1</td><td></td></tr> <tr><td>Pole Distribution Substation</td><td>1</td></tr> <tr><td>Pole Transformer</td><td>1</td></tr> <tr><td>Pole Sub Switches (LV,HV,Tx links,etc)</td><td>3</td></tr> <tr><td>-</td><td></td></tr> </table>	Pole Dist Subs: 1		Pole Distribution Substation	1	Pole Transformer	1	Pole Sub Switches (LV,HV,Tx links,etc)	3	-			
Pole Dist Subs: 1														
Pole Distribution Substation	1													
Pole Transformer	1													
Pole Sub Switches (LV,HV,Tx links,etc)	3													
-														

HV - bare
LV circuit 1 - bare conductor
LV circuit 2 - ABC
Streetlight circuit

Transformer
DOF, and 2 LV fuse switches

Figure 10 – TAS for Figure 9 above

In this example it is assumed that the Pole Distribution Substation will be fitted onto the same pole that was requested in the TAS and therefore the Pole Distribution Substation's FLOC will be a child of this pole. Pole is treated as the superior FLOC. However, instances where a pole distribution substation that is requested to be fitted on an existing pole then this will be requested in the TAS section below the green line in an equivalent manner as shown above.

2.3.1 Data for the pole sheet

The Functional Location (FLOC), Reference Functional Location (RefFloc) and Pole Plate Number (Sort Field) will be pre-populated. The remaining items in Red font, except Equipment Number, must be filled out by the ASPs. EE will populate Equipment Number field when the TAL is returned.

The **Reference Functional Location drives** the FLOC construction types. In the case of a pole floc the Reference functional location is POLEPOLE0001 that is populated by EE. Floc technical object type is auto populated based on the Floc construction type.

2.3.2 Data for Assembly section

An assembly in SAP terminology (in relation to poles, columns, and pillars) is a point of connection of a conductor set of the same voltage onto a pole or column or pillar. Conductors with the same voltage are treated as one assembly.

Example 1.

E.g. if a pole supports a feeder which tees off to another street from that pole, then this pole would have at least two cross arms. However, since this is a common voltage, in SAP, it will be treated as one assembly.

Example 2.

If a pole supported an overhead earth wire, a 33kV circuit and an 11kV, with two crossarms (one for the 33kV and one for the 11kV) and one connection point for the overhead earth wire connection, then the pole is treated as having three assemblies; one for the 0V or ground circuit, one for the 33kV circuit, and one for the 11kV circuit. Assume that the same 11kV circuit tee'd-off to another pole then the number of assemblies on this original pole would still be only three.

An Assembly is required for **each circuit that touches** a pole or tower.

The list below supplies further clarification:

1. Each Transmission, HV or LV circuit on same pole require individual assemblies;
2. Dedicated lighting circuits require their own assembly;
3. Overhead earth wire or OPGW or Pilot Cable (generally, a pole will have only one of these, if any) require an assembly.
4. If there is an OHEW and an ADSS conductor on the same pole then each of them will require an assembly.
5. Instances where a Pilot/Hardex conductor that terminates/transitions to optical fibre comms on a pole then this is treated as one circuit and therefore one assembly ;
6. Each UGOH is to have a separate assembly;
7. Currently, only one assembly is required for Tee-off situations that are on the same circuit. (We hope to change this in future to two assemblies).
8. Columns and pillars have only one assembly.

Assemblies are not required for isolators or switch/fuses in a ground distribution substation.

Functional Location and Reference Function Location data will be provided by EE.

2.3.2.1 Superior Function Location

Because an Assembly is a child of the pole floc its Superior Functional Location will be the functional location of the pole to which it is attached.

Data for the Location and Equipment Owner are the same as that for the pole sheet.

The following Figures show how the data must be filled in:

	J	K	L	M	
1	Poles				
2	Functional Location	POLE01001280			
3	Reference Functional Location	POLEPOLE0001			
4	Flag for Deletion (Mark as 'X')				
5					
6	Pole Plate Number (Sort Field)	PL1001280			
7	Superior Functional Location				
8	FLOC Construction Type	Gen. Structure Pole			
9	FLOC Technical Object Type	Structure Pole			
10	Location	Hoxton Park FieldServiceCentre			
11					
12					
13	Network General Characteristics				
14	Urban				
15					
16	FLOC Characteristics				
17	Creek Crossing				
18	Equipment Owner	Endeavour Energy			
19	Ice Loading Area				
20	Pole Equipment Function				
21	Pole Function				
22	River Crossing Navigable				
23	Structure No (Trans)				
24	Special Use Code	Only EE Assets + Tx on Pole			
25	Voltage - Nominal (V)				
26					
27	Equipment Characteristics				
28	Equipment Number				
29	EQ Reference Equipment Desc	Pole - Wood Treated			
30	EQ Technical Object Type	Wood Pole			
31	Commissioned Date (DD/MM/YYYY)				
32	Streetlight Vertical Support				
33	Streetlight Tariff Class				
34	Streetlight Tariff Rate				
35					
36	Manufacturer				
37	Manufacturer Part No				
38	Manufacturer Serial No				
39	Manufacturer Country				
40	Manufacturer Month				
41	Manufacturer Year				
42					
43	Pole Burial Depth (m)				
44	Pole length (m)				
45	Pole Strength on disc (kN)				
46	Pole Species				
47	Pole Type				
48	Original Pole Dia groundline (Wood Only)				
49	Proposed Removed				
50	Proposed Removed Equipment Number				
51					
52	Assembly				
53	Functional Location	ASSM00714645	ASSM00714646	ASSM00714647	ASSM00714648
54	Reference Functional Location	ASSMPOLE0001	ASSMPOLE0001	ASSMPOLE0001	ASSMPOLE0001
55	Flag for Deletion (Mark as 'X')				
56					
57	ASSM Plate Number (Sort Field)				
58	Superior Functional Location	POLE01001280	POLE01001280	POLE01001280	POLE01001280
59	FLOC Construction Type	HV OH Assembly - Crossarm Type - Bare	LV OH Assembly - Xarm Type - Bare	LV OH Assembly - Non Xarm - ABC	LV OH Assembly - Non Xarm - Bare
60	FLOC Technical Object Type	HV Overhead Assembly	LV Overhead Assembly	LV Overhead Assembly	LV Overhead Assembly
61	Location	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre
62					
63					
64	Network General Characteristics				
65	Urban				
66					
67	FLOC Characteristics				
68	Equipment Owner	Endeavour Energy	Endeavour Energy	Endeavour Energy	Endeavour Energy
69	Voltage - Nominal (V)				
70					
71	Equipment Characteristics				
72	Equipment Number				
73	EQ Reference Equipment Desc	HV OH Assy - Crossarm Type - Bare	LV OH Assembly - Xarm Type - Bare	LV OH Assembly - Non Xarm - ABC	LV OH Assembly - Non Xarm - Bare
74	EQ Technical Object Type	HV Overhead Assembly	LV Overhead Assembly	LV Overhead Assembly	LV Overhead Assembly
75	Commissioned Date (DD/MM/YYYY)				
76	Proposed Removed				
77	Proposed Removed Equipment Number				
78					
79	Comments				
80					
81					
82					

Figure 11 – Complex Pole – Pole Sheet with selections

	J	K	L	M	N	O
1	Poles					
2	Functional Location	POLE01001280				
3	Reference Functional Location	POLEPOLE0001				
4	Flag for Deletion (Mark as 'X')					
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43	Pole Burial Depth (m)					
44	Pole length (m)					
45	Pole Strength on disc (kN)					
46	Pole Species					
47	Pole Type					
48	Original Pole Dia groundline (Wood Only)					
49	Proposed Removed					
50	Proposed Removed Equipment Number					
51						
52	Assembly					
53	Functional Location	ASSM00714645	ASSM00714646	ASSM00714647	ASSM00714648	
54	Reference Functional Location	ASSMPOLE0001	ASSMPOLE0001	ASSMPOLE0001	ASSMPOLE0001	
55	Flag for Deletion (Mark as 'X')					
56						
57	ASSM Plate Number (Sort Field)					
58	Superior Functional Location	POLE01001280	POLE01001280	POLE01001280	POLE01001280	
59	FLOC Construction Type	HV OH Assembly - Crossarm Type - Bare	LV OH Assembly - Xarm Type - Bare	LV OH Assembly - Non Xarm - ABC	LV OH Assembly - Non Xarm - Bare	
60	FLOC Technical Object Type	HV Overhead Assembly	LV Overhead Assembly	LV Overhead Assembly	LV Overhead Assembly	
61	Location	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre	
62						
63						
64	Network General Characteristics					
65	Urban					
66						
67	FLOC Characteristics					
68	Equipment Owner	Endeavour Energy	Endeavour Energy	Endeavour Energy	Endeavour Energy	
69	Voltage - Nominal (V)					
70						
71	Equipment Characteristics					
72	Equipment Number					
73	EQ Reference Equipment Desc	HV OH Assy - Crossarm Type - Bare	LV OH Assembly - Xarm Type - Bare	LV OH Assembly - Non Xarm - ABC	LV OH Assembly - Non Xarm - Bare	
74	EQ Technical Object Type	HV Overhead Assembly	LV Overhead Assembly	LV Overhead Assembly	LV Overhead Assembly	
75	Commissioned Date (DD/MM/YYYY)					
76	Proposed Removed					
77	Proposed Removed Equipment Number					
78						
79	Comments					
80						
81						
82						

Figure 12 Complex Pole – ASSM (Assembly) Sheet with selections

	J	K	L	M
1	Substations			
2	Functional Location	DSUB00095797		
3	Reference Functional Location	DSUBPOLE0001		
4	Flag for Deletion (Mark as 'X')			
5				
6	DSUB Plate Number (Sort Field)	DS95797		
7	Superior Functional Location	POLE01001280		
8	FLOC Construction Type	Single Pole Substation - Urban Type		
9	FLOC Technical Object Type	Single Pole Sub		
10	Location	Hoxton Park FieldServiceCentre		
12				
13	Network General Characteristics			
14	Urban			
15				
16	FLOC Characteristics			
17	Agreed Supply Load (kVA)			
18	Assigned Load (kVA)			
19	Customer Meterbox on Sub Pole			
20	Designed COM Earth (Ohm)			
21	Designed HV Earth (Ohm)			
22	Designed LV Earth (Ohm)			
23	Distance from Road (m)			
24	Earthing Conductor Size (mm2)			
25	Earth Configuration			
26	Easement/DP No			
27	Equipment Function			
28	Equipment Owner	Endeavour Energy		
29	Hanging Bracket Height (m)			
30	HV Dropper Cable Type			
31	Installed COM Earth (Ohm)			
32	Installed HV Earth (Ohm)			
33	Installed LV Earth (Ohm)			
34	Live-Line Clamp Bndges			
35	Live-Line Disconnects Fitted			
36	Load Type			
37	MDI Connection			
38	Phase Rotation			
39	Phase - QTY			
40	Safety Chain Fitted			
41	Temp Indicator Installed (DD/MM/YYYY)			
42	Voltage - Nominal (V)			
43				
44	Surge Diverter Characteristics			
45	Equipment Number			
46	EQ Reference Equipment Desc	Gen, Surge Diverters		
47	EQ Technical Object Type	Surge Diverters		
48	Commissioned Date (DD/MM/YYYY)			

DSUB is fitted to this pole in this example

←

Figure 13 Complex Pole – DSUB (POLE) Sheet with selections

Note : the busbar information will be automatically filled out in the TAL, however it is dependant on the DSUB information being filled out as shown above. Note the Surge Diverter EQ Reference Equipment Desc must be selected, and this will auto-populate the EQ Technical Object Type (in the Surge Diverter Characteristics)

	J	K	L	M	N
1	Sub Switchgear				
2	<i>Functional Location</i>	BBLV00037142			
3	<i>Reference Functional Location</i>	BBLVPOLE0001			
4	Flag for Deletion (Mark as 'X')				
5					
12					
13	Network General Characteristics				
14	Urban				
15					
16	FLOC Characteristics				
17	<i>Equipment Owner</i>	Endeavour Energy			
18	Voltage Nominal (V)				
19	LV Switchgear Config				
20					
21	Equipment Characteristics				
22	<i>Equipment Number</i>				
23	<i>EQ Reference Equipment Desc</i>	Gen, LV Busbar			
24	<i>EQ Technical Object Type</i>	LV Busbar			
25	Commissioned Date (DD/MM/YYYY)				
26					
27	Manufacturer				
28	Manufacturer Part No				
29	Manufacturer Serial No				
30	Manufacturer Country				
31	Manufacturer Month				
32	Manufacturer Year				
33					
34	Arc Quenching Medium				
35	Control Method				
36	Rating - Current (A)				
37	Fault Rating Time (s)				
38	Fault Rating (kA)				
39	Heater Fitted				
40	Fuse Element (A)				
41	Krone 3PH Operation				
42	Phase - Qty				
43	Fuse Rating (A)				
44	Voltage Rating (V)				
45	SF6 Gas Quantity (kg)				
46	Switchgear Configuration				
47	Mass - Total (kg)				
48	Arc Quench/Insulating Vol (l)				
49	Voltage - Trip/Close Coil (V)				
50	Disposal Date				
51	Proposed Removed				
52	Proposed Removed Equipment Number				
53					

Figure 14 Complex Pole – SWITCHGEAR Sheet

	J	K	L	M	N						
1	HV/LV Switches										
2	Functional Location	DSSW00402215	DSSW00402216	DSSW00402217							
3	Reference Functional Location	DSSWPOLE0001	DSSWPOLE0001	DSSWPOLE0001							
4	Flag for Deletion (Mark as 'X')										
5											
6	Switch Plate Number (Sort Field)										
7	Superior Functional Location	DSUB00095797	DSUB00095797	DSUB00095797							
8	FLOC Construction Type	Gen, Drop Out Fuse PL Sub	Gen, SW Fuse - LV - PL	Gen, SW Fuse - LV - PL							
9	FLOC Technical Object Type	Drop Out Fuse PL Sub	Sw Fuse - LV - PL	Sw Fuse - LV - PL							
10	Location	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre							
12											
13	Network General Characteristics										
14	Urban										
15											
16	FLOC Characteristics										
17	Equipment Owner	Endeavour Energy	Endeavour Energy	Endeavour Energy							
18	Voltage Nominal (V)										
19											
20	Equipment Characteristics										
21	Equipment Number										
22	EQ Reference Equipment Desc	Drop Out Fuse PL Sub	Gen, SW Fuse - LV - PL	Gen, SW Fuse - LV - PL							
23	EQ Technical Object Type	Drop Out Fuse PL Sub	Sw Fuse - LV - PL	Sw Fuse - LV - PL							
24	Commissioned Date (DD/MM/YYYY)										
25											
26	Manufacturer										
27	Manufacturer Part No										
28	Manufacturer Serial No										
29	Manufacturer Country										
30	Manufacturer Month										
31	Manufacturer Year										
32											
33	Arc Quenching Medium										
34	Control Method										
35	Rating - Current (A)										
36	Equipment Function										
37	Fuse Type										
38	Fuse Element (A)										
39	Recloser/Sect Interrupter										
40	Operating Handle Location										
41	Phase - Qty										
42	Voltage Rating (V)										
43	Switch Current Rating (A)										
44	Proposed Removed										
45	Proposed Removed Equipment Number										
46											
47	Controller Characteristics										
48	Equipment Number										
	PROJECT	POLE	COLUMN	PILLAR	SLCP	STREETLIGHT	DSUB (GRND)	DSUB (POLE)	SWITCHGEAR	HV_LV Switches	TRANSFORMER

Figure 15 Complex Pole – HV_LV Switches Sheet with selections

	J	K	L	M	N						
1	Transformers										
2	Functional Location	DSTX10004129									
3	Reference Functional Location	DSTXPOLE0001									
4	Flag for Deletion (Mark as 'X')										
5											
6	Transformer Plate Number (Sort Field)										
7	Superior Functional Location	DSUB00095797									
8	FLOC Construction Type	Gen, PL Mounted Trf									
9	FLOC Technical Object Type	Pole Mounted Trf									
10	Location	Hoxton Park FieldServiceCentre									
12											
13	Network General Characteristics										
14	Urban										
15											
16	FLOC Characteristics										
17	Current Tap Voltage (V)										
18	kVA Rating (kVA)										
19	Phase - Qty										
20	Transformer Load Type										
21	Voltage - Nominal (V)										
22											
23	Equipment Characteristics										
24	Equipment Number										
25	EQ Reference Equipment Desc	Gen, PL Mounted Trf									
26	EQ Technical Object Type	Pole Mounted Trf									
27	Commissioned Date (DD/MM/YYYY)										
28											
29	Manufacturer										
30	Manufacturer Part No										
31	Manufacturer Serial No										
32	Manufacturer Country										
33	Manufacturer Month										
34	Manufacturer Year										
35											
36	Bracket Height (m)										
37	Breather Type										
38	Class - CT										
39	Cooling Type										
40	Core Type										
41	CT Burden (VA)										
42	CT Position										
43	CT Primary (EA)										
44	CT Secondary (EA)										
45	Harmonics 3rd (HZ)										
46	Harmonics 5th (HZ)										
47	Harmonics 7th (HZ)										
48	Height (m)										
49											
	PROJECT	POLE	COLUMN	PILLAR	SLCP	STREETLIGHT	DSUB (GRND)	DSUB (POLE)	SWITCHGEAR	HV_LV Switches	TRANSFORMER

Figure 16 Complex Pole – TRANSFORMER Sheet with selections

3. Columns

3.1 Column Structure in SAP

Figure 17 shows the FLOC and equipment hierarchy of a column in SAP. Dark blue shaded blocks indicate objects that are connected to GIS or ADMS.

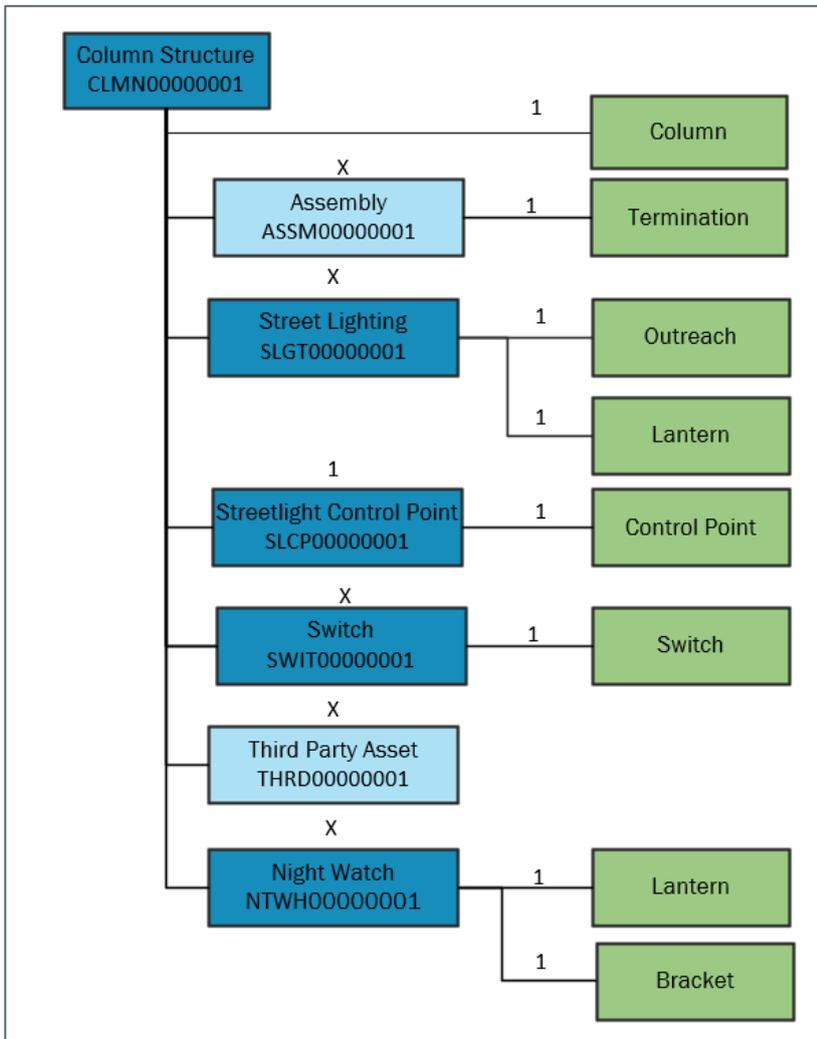


Figure 17 – Column structure

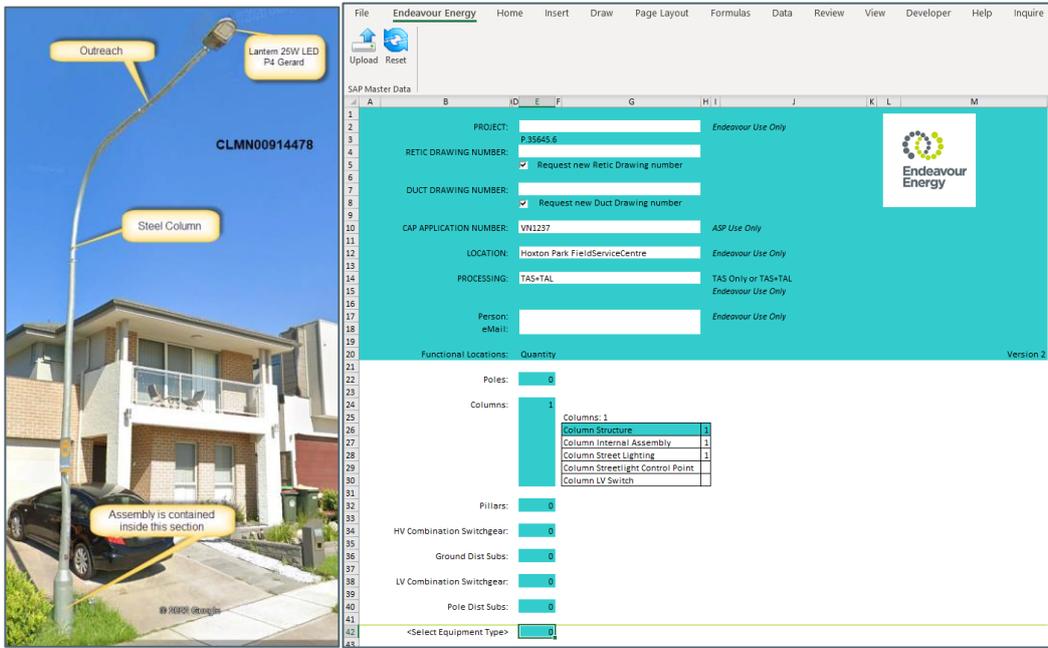


Figure 18 Simple column

Note : Streetlight control points no longer allowed in new columns

3.2 Column

	J	K	L	M	N
1	Columns				
2	Functional Location	CLMN02001880			
3	Reference Functional Location	CLMNCLMN0001			
4	Flag for Deletion (Mark as 'X')				
5					
37	Legacy or Annuity Rate Code				
38	Mast Length (m)				
39	Streetlight Vertical Support				
40	Unmetered Supply				
41	Proposed Removed				
42	Proposed Removed Equipment Number				
43					
44	Assembly				
45	Functional Location	ASSM00638048			
46	Reference Functional Location	ASSMCLMN0001			
47	Flag for Deletion (Mark as 'X')				
48					
49	ASSM Plate Number (Sort Field)				
50	Superior Functional Location	CLMN02001880			
51	FLOC Construction Type	Termination UG - SL Mains			
52	FLOC Technical Object Type	UG Termination			
53	Location	Hoxton Park FieldServiceCentre			
54					
55					
56	Network General Characteristics				
57	Urban				
58					
59	FLOC Characteristics				
60	Equipment Owner	Endeavour Energy			
61	Voltage - Nominal (V)				
62					
63	Equipment Characteristics				
64	Equipment Number				
65	EQ Reference Equipment Desc	Termination UG - SL Mains			
66	EQ Technical Object Type	UG Termination			
67	Commissioned Date (DD/MM/YYYY)				
68	Proposed Removed				
69	Proposed Removed Equipment Number				
70					
71	Comments				
72					
73					
74					
75					
76					
77					

Figure 19 –Column – Column sheet

	J	K	L	M	N
1	Streetlights				
2	Functional Location	SLGT00306044			
3	Reference Functional Location	SLGTCLMN0001			
4	Flag for Deletion (Mark as 'X')				
5					
7	Superior Functional Location	CLMN02001880			
8	FLOC Construction Type	Gen. Street Lighting			
9	FLOC Technical Object Type	Street Lighting			
10	Location	Hoxton Park FieldServiceCentre			
12					
13	Network General Characteristics				
14	Urban				
15					
16	Streetlight Characteristics				
17	Billing Customer	Liverpool City Council			
18	Commissioned Date (DD/MM/YYYY)				
19	Column Function				
20	Equipment Owner	Endeavour Energy			
21	Location Zone				
22	Mast Length (m)				
23	Outreach Length (m)				
24	Streetlight Control Type				
25	Streetlight Luminaire	25W LED P4 Gerard			
26	Streetlight Tariff Class	Annuity-Gift By Cus. Mnt By EE			
27	Streetlight Tariff Rate		867		
28	SLCP No				
29	Unmetered Supply				
30					
31	Bracket/Outreach Characteristics				
32	Equipment Number				
33	EQ Reference Equipment Desc	Gen. Streetlight Outreach			
34	EQ Technical Object Type	Streetlight Outreach			
35	Commissioned Date (DD/MM/YYYY)				
36	Horiz. Support Tariff Class	Annuity-Gift By Cus. Mnt By EE			
37	Streetlight Horizontal Support	Outreach - Major (>2M)			
38	Legacy or Annuity Rate Code		991		
39	Proposed Removed				
40	Proposed Removed Equipment Number				
41					
42	Lantern Characteristics				
43	Equipment Number				
44	EQ Reference Equipment Desc	Streetlight Lantern - LED Type			
45	EQ Technical Object Type	Streetlight Lantern			
46	Commissioned Date (DD/MM/YYYY)				
47	ESR Number				
48	Lantern Locality				
49	Lantern Type				

Figure 20 – Streetlight sheet

3.3 Complex Columns



PROJECT:	<input type="text" value="R35645.6"/>	Endeavour Use Only												
RETIC DRAWING NUMBER:	<input type="text"/>	<input type="checkbox"/> Request new Retic Drawing number												
DUCT DRAWING NUMBER:	<input type="text"/>	<input type="checkbox"/> Request new Duct Drawing number												
CAP APPLICATION NUMBER:	<input type="text" value="UAT2005"/>	ASP Use Only												
LOCATION:	<input type="text" value="Hoxton Park FieldServiceCentre"/>	Endeavour Use Only												
PROCESSING:	<input type="text" value="TAS-TAL"/>	TAS Only or TAS+TAL Endeavour Use Only												
Person:	<input type="text"/>	eMail: <input type="text"/> Endeavour Use Only												
Functional Locations: <input type="text"/> Quantity <input type="text"/> Version: <input type="text"/>														
Poles:	<input type="text" value="0"/>													
Columns:	<input type="text" value="1"/>	<table border="1"> <thead> <tr> <th>Columns: 1</th> <th></th> </tr> </thead> <tbody> <tr> <td>Column Structure</td> <td><input type="text" value="1"/></td> </tr> <tr> <td>Column Internal Assembly</td> <td><input type="text" value="1"/></td> </tr> <tr> <td>Column Street Lighting</td> <td><input type="text" value="2"/></td> </tr> <tr> <td>Column Streetlight Control Point</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>Column LV Switch</td> <td><input type="text" value="0"/></td> </tr> </tbody> </table>	Columns: 1		Column Structure	<input type="text" value="1"/>	Column Internal Assembly	<input type="text" value="1"/>	Column Street Lighting	<input type="text" value="2"/>	Column Streetlight Control Point	<input type="text" value="0"/>	Column LV Switch	<input type="text" value="0"/>
Columns: 1														
Column Structure	<input type="text" value="1"/>													
Column Internal Assembly	<input type="text" value="1"/>													
Column Street Lighting	<input type="text" value="2"/>													
Column Streetlight Control Point	<input type="text" value="0"/>													
Column LV Switch	<input type="text" value="0"/>													
Pillars:	<input type="text" value="0"/>													
HV Combination Switchgear:	<input type="text" value="0"/>													
Ground Dist Subs:	<input type="text" value="0"/>													
LV Combination Switchgear:	<input type="text" value="0"/>													
Pole Dist Subs:	<input type="text" value="0"/>													

Figure 21 – Complex column

In this example we will be billing for the single column and for one outreach only. The second streetlight outreach tariff information must be left blank. Refer Figure 24 – Streetlights on Complex Column.

	J	K	L
1	Columns		
2	Functional Location	CLMN02002612	
3	Reference Functional Location	CLMNCLMN0001	
4	Flag for Deletion (Mark as 'X')		
5			
6	Column Plate Number (Sort Field)	CL2002612	
7	Superior Functional Location		
8	FLOC Construction Type	Gen, Structure Column	
9	Technical Object Type	Structure Column	
10	Location	Hoxton Park FieldServiceCentre	
12			
13	Network General Characteristics		
14	Urban		
15			
16	FLOC Characteristics		
17	Column Function		
18	Location Zone		
19	Equipment Owner	Endeavour Energy	
20	Streetlight Tariff Class		
21	SLCP No		
22			
23	Equipment Characteristics		
24	Equipment Number		
25	EQ Reference Equipment Desc	Column Steel (SL) - Major	
26	EQ Technical Object Type	Column Steel (SL)	
27	Streetlight Vertical Support	Column (Steel) - Minor (<9M)	
28	Streetlight Tariff Class	(4) Annuity, Gift by Customer	
29	Streetlight Tariff Rate	995	
30	Commissioned Date (DD/MM/YYYY)		
31			
32	Manufacturer		
33	Manufacturer Part No		
34	Manufacturer Serial No		
35	Manufacturer Country		
36	Manufacturer Month		
37	Manufacturer Year		
38			
39	Column Characteristics		
40	Legacy or Annuity Rate Code		
41	Mast Length (m)		
42	Streetlight Vertical Support		
43	Unmetered Supply		
44	Proposed Removed		
45	Proposed Removed Equipment Number		
46			

Figure 22 – Complex column

	J	K	L
1	Columns		
2	Functional Location	CLMN02002612	
3	Reference Functional Location	CLMNCLMN0001	
4	Flag for Deletion (Mark as 'X')		
5			
39	Column Characteristics		
40	Legacy or Annuity Rate Code		
41	Mast Length (m)		
42	Streetlight Vertical Support		
43	Unmetered Supply		
44	Proposed Removed		
45	Proposed Removed Equipment Number		
46			
47	Assembly		
48	Functional Location	ASSM00714649	
49	Reference Functional Location	ASSMCLMN0001	
50	Flag for Deletion (Mark as 'X')		
51			
52	ASSM Plate Number (Sort Field)		
53	Superior Functional Location	CLMN02002612	
54	FLOC Construction Type	Termination UG - SL Mains	
55	FLOC Technical Object Type	UG Termination	
56	Location	Hoxton Park FieldServiceCentre	
58			
59	Network General Characteristics		
60	Urban		
61			
62	FLOC Characteristics		
63	Equipment Owner	Endeavour Energy	
64	Voltage - Nominal (V)		
65			
66	Equipment Characteristics		
67	Equipment Number		
68	EQ Reference Equipment Desc	Termination UG - SL Mains	
69	EQ Technical Object Type	UG Termination	
70	Commissioned Date (DD/MM/YYYY)		
71	Proposed Removed		
72	Proposed Removed Equipment Number		
73			
74	Comments		
75			
76			
77			
78			
79			

Figure 23 – Complex column assembly

	J	K	L	M
1	Streetlights			
2	Functional Location	SLGT00303547	SLGT00303548	
3	Reference Functional Location	SLGTCLMN0001	SLGTCLMN0001	
4	Flag for Deletion (Mark as 'X')			
5				
6	Streetlight Plate Number (Sort Field)	SL303547	SL303548	
7	Superior Functional Location	CLMN02002612	CLMN02002612	
8	FLOC Construction Type	Gen. Street Lighting	Gen. Street Lighting	
9	FLOC Technical Object Type	Street Lighting	Street Lighting	
10	Location	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre	
12				
13	Network General Characteristics			
14	Urban			
15				
16	Streetlight Characteristics			
17	Billing Customer	Campbelltown City Council	Campbelltown City Council	
18	Commissioned Date (DD/MM/YYYY)			
19	Column Function			
20	Equipment Owner	Endeavour Energy	Endeavour Energy	
21	Location Zone			
22	Mast Length (m)			
23	Outreach Length (m)			
24	Streetlight Control Type			
25	Streetlight Luminaire	150W Metal Halide - STANDARD	150W Metal Halide - STANDARD	
26	Streetlight Tariff Class	(4) Annuity, Gift by Customer	(4) Annuity, Gift by Customer	
27	Streetlight Tariff Rate		860	860
28	SLCP No			
29	Unmetered Supply			
30				
31	Bracket/Outreach Characteristics			
32	Equipment Number			
33	EQ Reference Equipment Desc	Gen. Streetlight Outreach	Gen. Streetlight Outreach	
34	EQ Technical Object Type	Streetlight Outreach	Streetlight Outreach	
35	Commissioned Date (DD/MM/YYYY)			
36	Horiz. Support Tariff Class	Annuity-Gift By Cus. Mnt By EE		
37	Streetlight Horizontal Support	Outreach - Major (>2M)		
38	Streetlight Tariff Rate		991	
39	Proposed Removed			
40	Proposed Removed Equipment Number			
41				
42	Lantern Characteristics			
43	Equipment Number			
44	EQ Reference Equipment Desc	Streetlight Lantern - HPS/MH Type	Streetlight Lantern - HPS/MH Type	
45	EQ Technical Object Type	Streetlight Lantern	Streetlight Lantern	
46	Commissioned Date (DD/MM/YYYY)			
47	ESR Number			
48	Lantern Locality			

leave blank to avoid double billing

Figure 24 – Streetlights on Complex Column

4. Pillar/Cubicle

4.1 Pillar structure in SAP

Figure 25 shows the FLOC and equipment hierarchy of a pillar in SAP. Dark blue shaded blocks indicate objects that are connected to GIS or ADMS

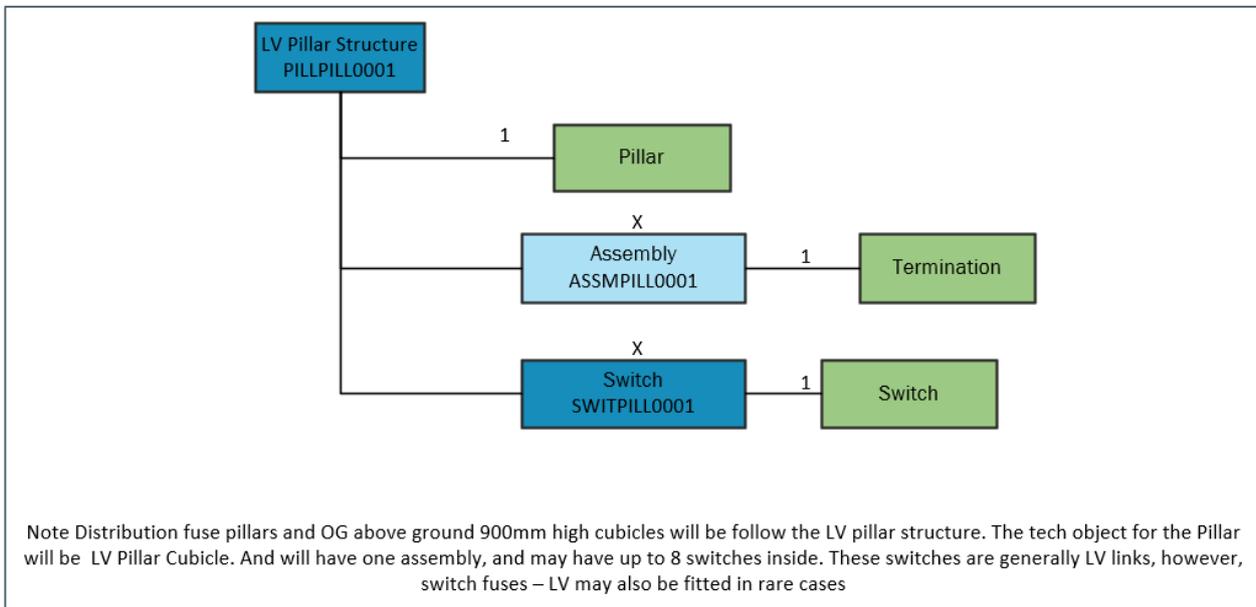


Figure 25 – Pillar in SAP

Double link pillar

	J	K	L
1	Pillars		
2	Functional Location	PILL00402949	
3	Reference Functional Location	PILLPILL0001	
4	Flag for Deletion (Mark as 'X')		
5			
6	Pillar Plate Number (Sort Field)	LV402949	
7	Superior Functional Location		
8	FLOC Construction Type	Gen. Structure LV Pillar	
9	Technical Object Type	Structure LV Pillar	
10	Location	Hoxton Park FieldServiceCentre	
12			
13	Network General Characteristics		
14	Urban		
15			
16	FLOC Characteristics		
17	Connection Type		
18	Equipment Owner	Endeavour Energy	
19	Location Zone		
20	Phase - Qty		
21	Unmetered Supply		
22			
23	Equipment Characteristics		
24	Equipment Number		
25	EQ Reference Equipment Desc	Gen, LV Pillar Box	
26	EQ Technical Object Type	LV Pillar Box	
27	Commissioned Date (DD/MM/YYYY)		
28			
29	Manufacturer		
30	Manufacturer Part No		
31	Manufacturer Serial No		
32	Manufacturer Country		
33	Manufacturer Month		
34	Manufacturer Year		
35			
36	Pillar Base		
37	Pillar Enclosure		
38	Pillar Function		
39	Pillar Mounting		
40	Proposed Removed		
41	Proposed Removed Equipment Number		
42			
43	Assembly		
44	Functional Location	ASSM00714643	
45	Reference Functional Location	ASSMPILL0004	

Figure 26 – Pillar sheet

	J	K	L	M
1	Pillars			
2	<i>Functional Location</i>	PILL00402949		
3	<i>Reference Functional Location</i>	PILLPILL0001		
4	Flag for Deletion (Mark as 'X')			
5				
33	Manufacturer Month			
34	Manufacturer Year			
35				
36	Pillar Base			
37	Pillar Enclosure			
38	Pillar Function			
39	Pillar Mounting			
40	Proposed Removed			
41	Proposed Removed Equipment Number			
42				
43	Assembly			
44	<i>Functional Location</i>	ASSM00714643		
45	<i>Reference Functional Location</i>	ASSMPILL0001		
46	Flag for Deletion (Mark as 'X')			
47				
48	ASSM Plate Number (Sort Field)			
49	<i>Superior Functional Location</i>	PILL00402949		
50	<i>FLOC Construction Type</i>	Gen, UG Termination		
51	<i>FLOC Technical Object Type</i>	UG Termination		
52	<i>Location</i>	Hoxton Park FieldServiceCentre		
54				
55	Network General Characteristics			
56	Urban			
57				
58	FLOC Characteristics			
59	<i>Equipment Owner</i>	Endeavour Energy		
60	Voltage - Nominal (V)			
61				
62	Equipment Characteristics			
63	<i>Equipment Number</i>			
64	<i>EQ Reference Equipment Desc</i>	Termination UG LV Mains- Panel		
65	<i>EQ Technical Object Type</i>	UG Termination		
66	Commissioned Date (DD/MM/YYYY)			
67	Proposed Removed			
68	Proposed Removed Equipment Number			
69				
70	Comments			
71				
72				
73				

◀ ▶ | PROJECT | POLE | COLUMN | **PILLAR** | SLCP | STREETLIGHT | DSUB (GRND) | DSUB (POLE) | SWITC

Num Lock

Figure 27 - Assembly for Pillar

	J	K	L	M	N
1	HV/LV Switches				
2	Functional Location	SWIT00207898	SWIT00207899		
3	Reference Functional Location	SWITPILL0001	SWITPILL0001		
4	Flag for Deletion (Mark as 'X')				
5					
6	Switch Plate Number (Sort Field)				
7	Superior Functional Location	PILL00402949	PILL00402949		
8	FLOC Construction Type	Gen, LV Links	Gen, LV Links		
9	FLOC Technical Object Type	LV Links	LV Links		
10	Location	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre		
12					
13	Network General Characteristics				
14	Urban				
15					
16	FLOC Characteristics				
17	Equipment Owner	Endeavour Energy	Endeavour Energy		
18	Voltage Nominal (V)				
19					
20	Equipment Characteristics				
21	Equipment Number				
22	EQ Reference Equipment Desc	Gen, LV Links	Gen, LV Links		
23	EQ Technical Object Type	LV Links	LV Links		
24	Commissioned Date (DD/MM/YYYY)				
25					
26	Manufacturer				
27	Manufacturer Part No				
28	Manufacturer Serial No				
29	Manufacturer Country				
30	Manufacturer Month				
31	Manufacturer Year				
32					
33	Arc Quenching Medium				
34	Control Method				
35	Rating - Current (A)				
36	Equipment Function				
37	Fuse Type				
38	Fuse Element (A)				
39	Recloser/Sect Interrupter				
40	Operating Handle Location				
41	Phase - Qty				
42	Voltage Rating (V)				
43	Switch Current Rating (A)				
44	Proposed Removed				
45	Proposed Removed Equipment Number				
46					
47	Controller Characteristics				
48	Equipment Number				

Figure 28 – HV_LV switches sheet for Pillar

Note: Cubicles are treated the same way as a pillar, except that the EQ Reference Equipment Desc will be Gen, LV Pillar Cubicle for cubical type.

In the example above, if you realised that the links are on the incorrect pillar then you can change the superior Functional Locations of these links to the correct Pillar Functional Location and then change the Pillar assembly to a panel type in the Pillar sheet.

5. Ground Distribution Substations

5.1 Ground Substation in SAP

Figure 29 below shows the FLOC and equipment hierarchy in a typical distribution substation in SAP. Dark blue shaded blocks indicate objects that are connected to GIS or ADMS.

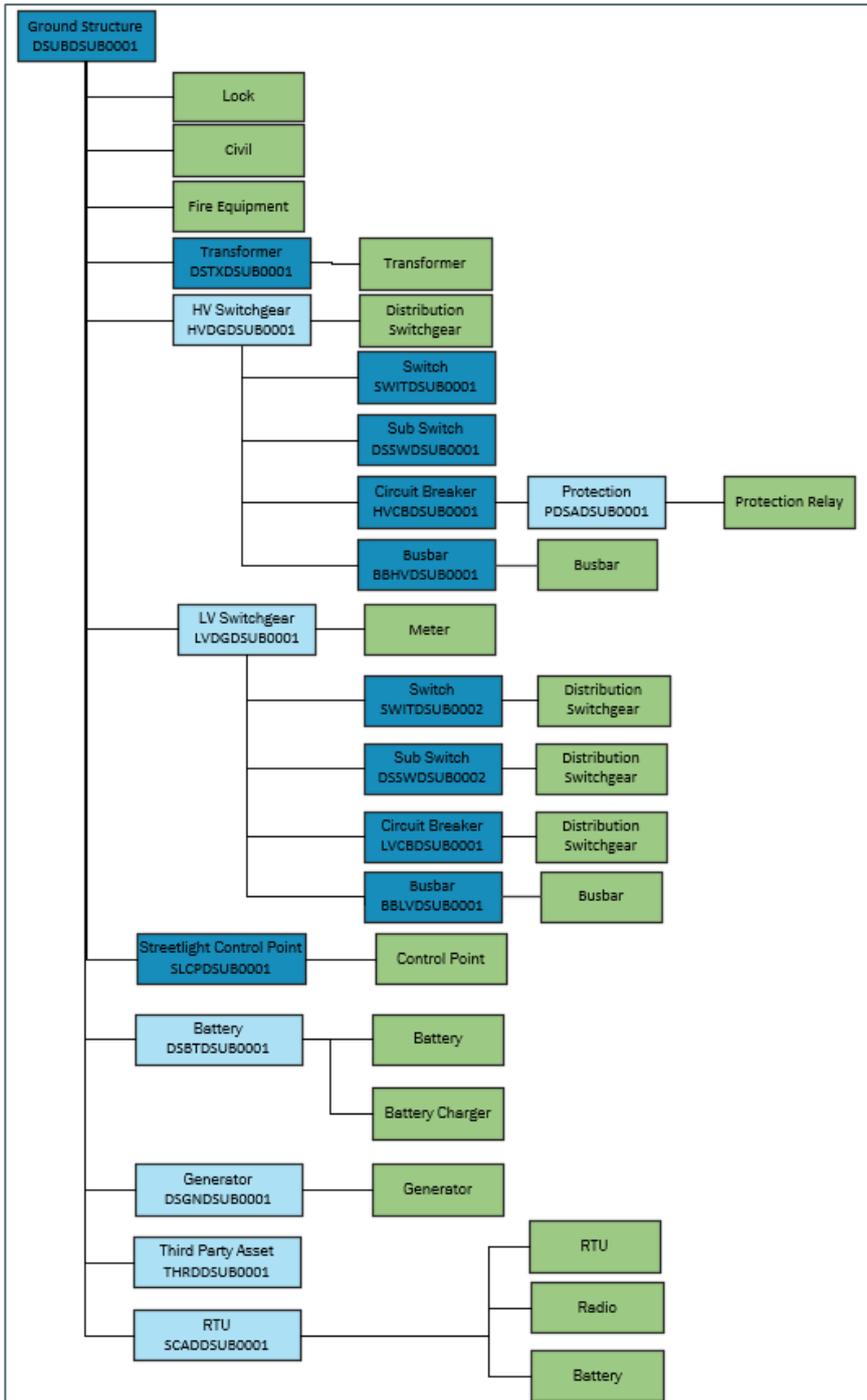


Figure 29 – Ground Substation Hierarchy in SAP

The following items will be discussed for typical ground substations:

1. HV switchgear
2. LV switchgear
3. Transformers

Terms used for distribution substations

Term	Explanation
DSUB	Distribution sub number
DSSW	Distribution Sub Sub Switch is the isolation unit or the earth switch on the incoming or outgoing supply sides of a transformer.
HV switch	Isolation and earth switches for the cable units of the HV switchgear.
LV switch	Low voltage fuses strips or links
HVCB	High voltage circuit breaker
LVCB	Low voltage circuit breaker
BBHV	High voltage bus bar
BBLV	Low voltage bus bar
DSUB ground	Ground mounted substation or PaDSUB
HVDG	High voltage switchgear superior FLOC
LVDG	Low voltage switchgear superior FLOC
DSTX	Distribution transformer
SWIT	Switches, isolators or links
PDSA	Protection equipment
SLCP	Streetlight control point
DSBT	Distribution sub battery
DSGN	Distribution sub generator

The following figures show a typical modern complex distribution substation,

Example of a Complex Distribution Substation – single line drawing

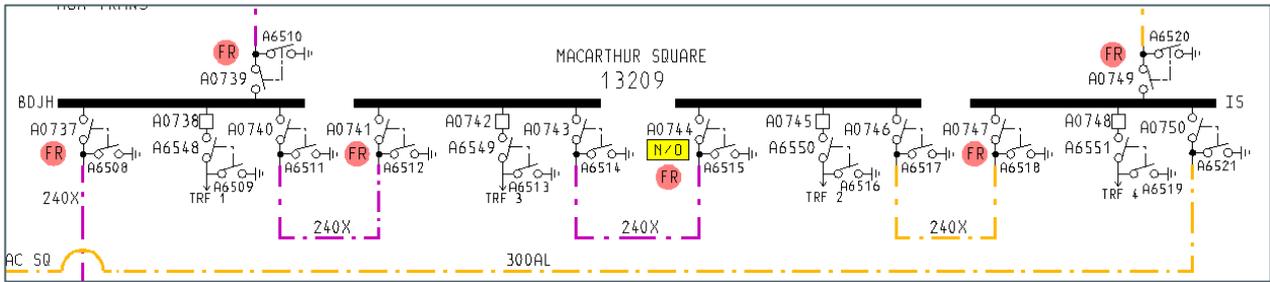


Figure 30 – New type complex distribution substation – single line drawing



FIGURE 31 – Image of a Complex Distribution Substation's HV switchgear

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SAP Master Data

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1																		
2		PROJECT:																
3																		
4		RETIC DRAWING NUMBER:																
5																		
6																		
7		DUCT DRAWING NUMBER:																
8																		
9																		
10		CAP APPLICATION NUMBER:																
11																		
12		LOCATION:																
13																		
14		PROCESSING:																
15																		
16																		
17		Person:																
18		eMail:																
19																		
20		Functional Locations:																
21			Quantity															
22		Poles:	0															
23																		
24		Columns:	0															
25																		
26		Pillars:	0															
27																		
28		HV Combination Switchgear:	4															
29																		
30																		
31																		
32																		
33																		
34																		
35																		
36		Ground Dist Subs:	1															
37																		
38																		
39																		
40																		
41																		
42																		
43																		
44		LV Combination Switchgear:	4															
45																		
46																		
47																		
48																		
49																		
50																		
51																		
52		Pole Dist Subs:	0															
53																		
54		<Select Equipment Type>	0															
55																		
56																		
57																		
58																		
59																		
60																		

Version 2

Project Configs SAPJOB SAPTAS

Figure 32 – TAS for Complex Distribution Substation

The HV and LV switchgear and transformer FLOCS and their respective equipment must be added to the DSUB to complete the connectivity in SAP. The following figures will show examples of how to complete the required information.

J	K	J	K	L
1	Substations	1	Substations	
2	Functional Location	2	Functional Location	DSUB00097782
3	Reference Functional Location	3	Reference Functional Location	DSUBDSUB0001
4	Flag for Deletion (Mark as 'X')	4	Flag for Deletion (Mark as 'X')	
5		5		
6	DSUB Plate Number (Sort Field)	37	Sump Pump Installed? (Y/N)	
7	Superior Functional Location	38		
8	FLOC Construction Type	39	Fire Extinguisher Characteristics	
9	FLOC Technical Object Type	40	EQ Reference Equipment Desc	Gen, Fire Extinguisher
10	Location	41	EQ Technical Object Type	Fire Extinguisher
12		42	Quantity	
13	Network General Characteristics	43	Commissioned Date (DD/MM/YYYY)	
14	Urban	44		
15		45	Fire Blanket Characteristics	
16	FLOC Characteristics	46	EQ Reference Equipment Desc	Gen, Fire Blankets - Dry
17	Commissioned Date (DD/MM/YYYY)	47	EQ Technical Object Type	Fire Blankets - Dry
18	Agreed Supply Load (kVA)	48	Commissioned Date (DD/MM/YYYY)	
19	Assigned Load (kVA)	49	Installed By	
20	Designed COM Earth (Ohm)	50	Quantity	
21	Designed HV Earth (Ohm)	51		
22	Designed LV Earth (Ohm)	52	Emergency Light Characteristics	
23	Earthing Conductor Size (mm2)	53	Equipment Number	
24	Earth Configuration	54	EQ Reference Equipment Desc	Gen, Emergency Exit Light
25	Easement/DP No	55	EQ Technical Object Type	Emergency Exit Light
26	Equipment Owner	56	Commissioned Date (DD/MM/YYYY)	
27	Installed COM Earth (Ohm)	57	Installed By	
28	Installed HV Earth (Ohm)	58	Proposed Removed	
29	Installed LV Earth (Ohm)	59	Proposed Removed Equipment Number	
30	Load Type	60		
31	Phases	61	Door Characteristics	
32	Voltage - Nominal (V)	62	EQ Reference Equipment Desc	Gen, Door - Standard
33	Distance from Road (m)	63	EQ Technical Object Type	Door - Standard
34	Equipment Function	64	Commissioned Date (DD/MM/YYYY)	
35	Forced Ventilation	65	Equipment Owner	Endeavour Energy
36	Substation Footing	66	Quantity	
37	Sump Pump Installed? (Y/N)	67		
38		68	Brick Enclosure Characteristics	
39	Fire Extinguisher Characteristics	69	Equipment Number	
40	EQ Reference Equipment Desc	70	EQ Reference Equipment Desc	Gen, Brick Enclosure
41	EQ Technical Object Type	71	EQ Technical Object Type	Brick Enclosure
42	Quantity	72	Commissioned Date (DD/MM/YYYY)	
43	Commissioned Date (DD/MM/YYYY)	73	Building Type	
44		74	Equipment Owner	Endeavour Energy
45	Fire Blanket Characteristics	75	Proposed Removed	
46	EQ Reference Equipment Desc	76	Proposed Removed Equipment Number	
47	EQ Technical Object Type	77		
48	Commissioned Date (DD/MM/YYYY)	78	Cubicle Characteristics	

Figure 33 – Complex Distribution Substation – DSUB (GRND) sheet

J	K	L	M	N	O	P	Q	R
1	Sub Switchgear							
2	Functional Location	LVDG00002751	LVDG00002750	LVDG00002749	LVDG00002748	LVCB00601729	LVCB00601728	LVCB00601727
3	Reference Functional Location	LVDGDSUB0001	LVDGDSUB0001	LVDGDSUB0001	LVDGDSUB0001	LVCBDSUB0001	LVCBDSUB0001	LVCBDSUB0001
4	Flag for Deletion (Mark as 'X')							
5								
6	Switchgear Plate Number (Sort Field)							
7	Superior Functional Location	DSUB00097782	DSUB00097782	DSUB00097782	DSUB00097782	LVDG00002751	LVDG00002750	LVDG00002749
8	FLOC Construction Type	Gen, LV Switchgear	Gen, LV Switchgear	Gen, LV Switchgear	Gen, LV Switchgear	Gen, Circuit Breaker - LV	Gen, Circuit Breaker - LV	Gen, Circuit Breaker - LV
9	FLOC Technical Object Type	LV Switchgear	LV Switchgear	LV Switchgear	LV Switchgear	Circuit breaker - LV	Circuit breaker - LV	Circuit breaker - LV
10	Location	Hoxton Park FieldServiceCentre						
12								
13	Network General Characteristics							
14	Urban							
15								
16	FLOC Characteristics							
17	Equipment Owner	Endeavour Energy						
18	Voltage Nominal (V)							
19	LV Switchgear Config							
20								
21	Equipment Characteristics							
22	Equipment Number							
23	EQ Reference Equipment Desc					Gen, Circuit Breaker - LV	Gen, Circuit Breaker - LV	Gen, Circuit Breaker - LV
24	EQ Technical Object Type					Circuit breaker - LV	Circuit breaker - LV	Circuit breaker - LV
25	Commissioned Date (DD/MM/YYYY)							
26								
27	Manufacturer							
28	Manufacturer Part No							
29	Manufacturer Serial No							
30	Manufacturer Country							
31	Manufacturer Month							
32	Manufacturer Year							
33								
34	Arc Quenching Medium							
35	Control Method							
36	Rating - Current (A)							
37	Fault Rating Time (s)							
38	Fault Rating (kA)							
39	Heater Fitted							
40	Fuse Element (A)							
41	Krona 3PH Operation							
42	Phase - Qty							
43	Fuse Rating (A)							
44	Voltage Rating (V)							
45	SF6 Gas Quantity (kg)							

Note : Busbars and Circuit Breakers are located in Switchgear sheet. Switches are located in HV_LV Switches sheet

Figure 34 – Substation switchgear includes busbars and circuit breakers and switchboard

Note: The busbar information will be inherited from the HVDG's and the LVDG's Floc Construction Type, Floc Technical Object Type, and the EQ Reference Equipment Desc and the EQ Technical Object Type from Equipment Characteristics.

	J	P	Q	R	S	T	U	V	W
1	HV/LV Switches								
2	Functional Location	DSSW00405289	DSSW00405289	DSSW00405290	DSSW00405291	DSSW00405292	DSSW00405293	DSSW00405294	SWT00208963
3	Reference Functional Location	DSSWDSUB0001	DSSWDSUB0001	DSSWDSUB0001	DSSWDSUB0002	DSSWDSUB0002	DSSWDSUB0002	DSSWDSUB0002	SWTDSUB0001
4	Flag for Deletion (Mark as 'X')								
5									
6	Switch Plate Number (Sort Field)								
7	Superior Functional Location	HVDG00003500	HVDG00003501	HVDG00003501	LVDG00002748	LVDG00002749	LVDG00002750	LVDG00002751	HVDG00003498
8	FLOC Construction Type	Gen_Earth Switch - Dist	HV Switch/Fuse Unit - Sheet Steel Enclos	Gen_Earth Switch - Dist	Gen_Isol No Load Br - LV	Gen_HV Switch Unit			
9	FLOC Technical Object Type	Dist Earth Switch	HV Switch/Fuse Unit	Dist Earth Switch	Isol No Load Br - LV	HV Switch Unit			
10	Location	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre
11									
12									
13	Network General Characteristics								
14	Urban								
15									
16	FLOC Characteristics								
17	Equipment Owner	Endeavour Energy	Endeavour Energy	Endeavour Energy	Endeavour Energy	Endeavour Energy	Endeavour Energy	Endeavour Energy	Endeavour Energy
18	Voltage Nominal (V)								
19									
20	Equipment Characteristics								
21	Equipment Number								
22	EQ Reference Equipment Desc				Gen_Isol No Load Br - LV				
23	EQ Technical Object Type				Isol No Load Br - LV				
24	Commissioned Date (DD/MM/YYYY)								
25									
26	Manufacturer								
27	Manufacturer Part No								
28	Manufacturer Serial No								
29	Manufacturer Country								
30	Manufacturer Month								
31	Manufacturer Year								
32									
33	Arc Quenching Medium								
34	Control Method								
35	Rating - Current (A)								
36	Equipment Function								
37	Fuse Type								
38	Fuse Element (A)								
39	Recloser/Sect Interrupter								
40	Operating Handle Location								
41	Phase - Qty								
42	Voltage Rating (V)								
43	Switch Current Rating (A)								
44	Proposed Removed								
45	Proposed Removed Equipment Number								
46									

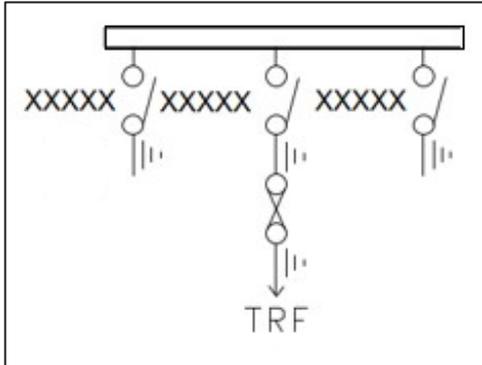
Figure 35 – Switches includes fuses, DSSWs, earth switches and phase switches

	J	K	L	M	N
1	Transformers				
2	Functional Location	DSTX10005933	DSTX10005934	DSTX10005935	DSTX10005936
3	Reference Functional Location	DSTXDSUB0001	DSTXDSUB0001	DSTXDSUB0001	DSTXDSUB0001
4	Flag for Deletion (Mark as 'X')				
5					
6	Transformer Plate Number (Sort Field)				
7	Superior Functional Location	DSUB00097782	DSUB00097782	DSUB00097782	DSUB00097782
8	FLOC Construction Type	Gen, Padmount Transformer	Gen, Padmount Transformer	Gen, Padmount Transformer	Gen, Padmount Transformer
9	FLOC Technical Object Type	Padmount Transformer	Padmount Transformer	Padmount Transformer	Padmount Transformer
10	Location	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre	Hoxton Park FieldServiceCentre
11					
12					
13	Network General Characteristics				
14	Urban				
15					
16	FLOC Characteristics				
17	Current Tap Voltage (V)				
18	KVA Rating (kVA)				
19	Phase - Qty				
20	Transformer Load Type				
21	Voltage - Nominal (V)				
22					
23	Equipment Characteristics				
24	Equipment Number				
25	EQ Reference Equipment Desc	Gen, Padmount Transformer	Gen, Padmount Transformer	Gen, Padmount Transformer	Gen, Padmount Transformer
26	EQ Technical Object Type	Padmount Transformer	Padmount Transformer	Padmount Transformer	Padmount Transformer
27	Commissioned Date (DD/MM/YYYY)				
28					
29	Manufacturer				
30	Manufacturer Part No				
31	Manufacturer Serial No				
32	Manufacturer Country				
33	Manufacturer Month				
34	Manufacturer Year				
35					
36	Bracket Height (m)				
37	Breather Type				
38	Class - CT				
39	Cooling Type				
40	Core Type				
41	CT Burden (VA)				
42	CT Position				
43	CT Primary (EA)				
44	CT Secondary (EA)				
45	Harmonics 3rd (HZ)				
46	Harmonics 5th (HZ)				

Figure 36 – Transformers

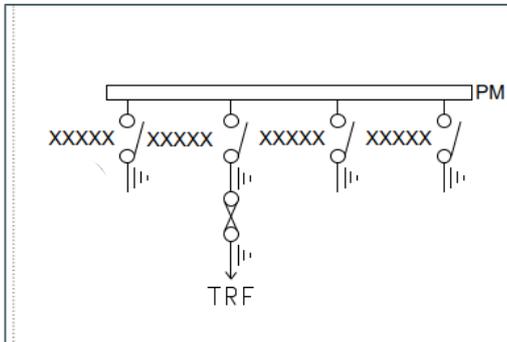
6. Typical TAS for Common HV switchgear

6.1 CFC



HV Combination Switchgear: 1	
HV Combination Switchgear	1
HV and Earth Tx Switches	1
HV and Earth Fdr Switches	2
HVCB - HV Circuit Breaker	

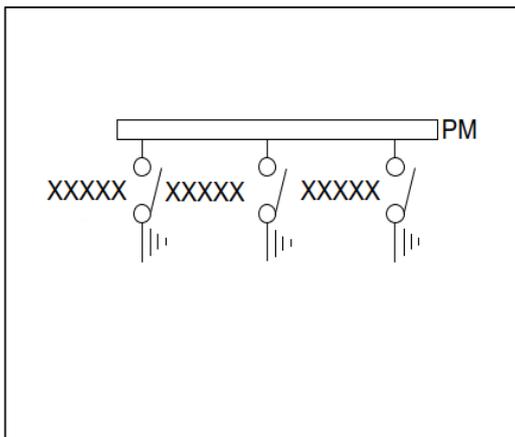
6.2 CFCC



HV Combination Switchgear: 1	
HV Combination Switchgear	1
HV and Earth Tx Switches	1
HV and Earth Fdr Switches	3
HVCB - HV Circuit Breaker	

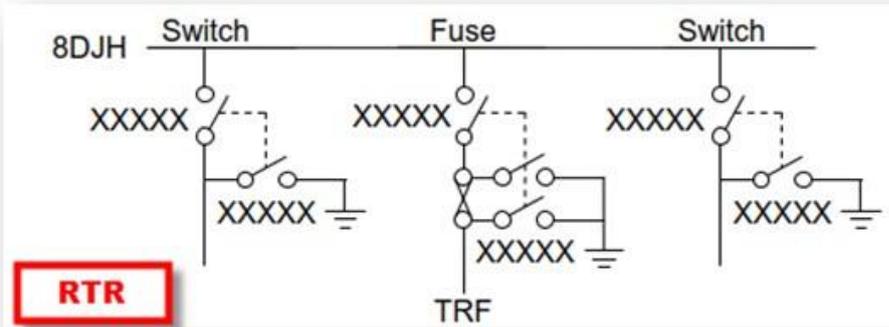
Note : in this case only one number is required for the HV distn Sub Sub Switch (DSSW) because this is one device. When you pull out the fuse you open the switch at the same time.

6.3 CCC



HV Combination Switchgear: 1	
HV Combination Switchgear	1
HV and Earth Tx Switches	
HV and Earth Fdr Switches	3
HVCB - HV Circuit Breaker	

6.4 RTR

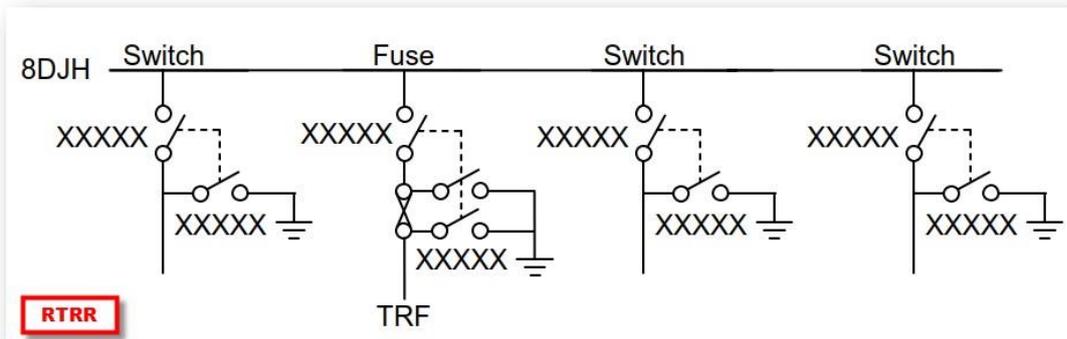


HV Combination Switchgear: 1

HV Combination Switchgear	1
HV and Earth Tx Switches	2
HV and Earth Fdr Switches	4
HVCB - HV Circuit Breaker	0

Note : in this instance there are two DSSWs or transformer switches, one for the phase and one for the earth switch which is a gang-operated switch.

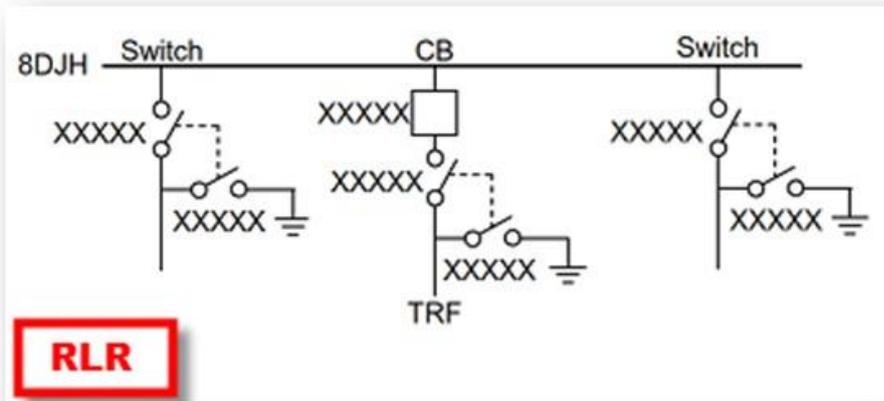
6.5 RTRR



HV Combination Switchgear: 1

HV Combination Switchgear	1
HV and Earth Tx Switches	2
HV and Earth Fdr Switches	6
HVCB - HV Circuit Breaker	

6.6 RLR



HV Combination Switchgear: 1	
HV Combination Switchgear	1
HV and Earth Tx Switches	2
HV and Earth Fdr Switches	4
HVCB - HV Circuit Breaker	1

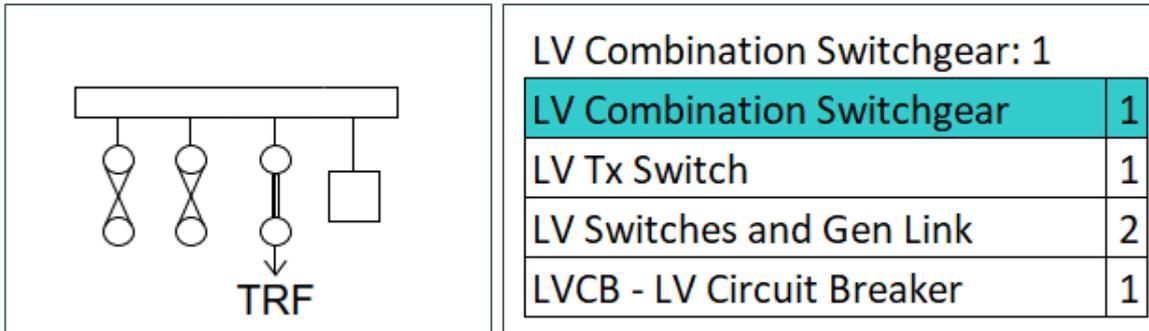
7. Typical TAS for Common LV switchgear

7.1 CAT 1 or CAT 2 Busbar LV, 4 feeders

NEW LABELS SUB XXXXXX	
'R' - PILLAR 95930	XXXXXX
'S' - PILLAR 95939	XXXXXX
'T' - TRANSFORMER	XXXXXX
'U' - PILLAR 95938	XXXXXX
'V' - PILLAR 95931	XXXXXX
'G' - GENERATOR FUSE STRIP	XXXXXX

LV Combination Switchgear: 1	
LV Combination Switchgear	1
LV Tx Switch	1
LV Switches and Gen Link	5
LVCB - LV Circuit Breaker	

7.2 Busbar LV, CB with 2 feeders note no gen link shown in drawing



7.3 Generator links

Note: Some LV switchboards do not have generator links but they may have flags behind the switchgear for a generator connection. In these instances an asset number is not required for the gen link flags. Generator switches are only required if there is a link or switch provided for the generator connection.

7.4 Unused fuse strips

If the LV switchboard is provided with unused or spare fuse strip then the unused fuse strips do not require a number. Future projects that want to use these spare slots will request an asset number under their project.

So only request asset numbers that you are going to use.

8. Requesting more equipment after you have submitted a TAL

To request additional equipment for the same Cap Application number you need to submit new a TAS with the same CAP application number. The additional equipment's are selected from dropdowns below the green line.

This TAS will only have the added equipment that are required. Figure 37 below shows a request for an additional LV distribution Sub Sub switch and a Pole Switch using the same CAP number that was submitted in the original request.

When the TAL is returned it will have all the equipment from the original request as well as the additional equipment.

The screenshot shows the Endeavour Energy software interface. The top menu bar includes File, Endeavour Energy, Home, Insert, Draw, Page Layout, Formulas, Data, Review, View, Developer, Help, and Inq. Below the menu bar are buttons for Upload and Reset. The main area is titled 'SAP Master Data' and contains several input fields with dropdown menus and checkboxes. The fields are: PROJECT (P.35845.6), RETIC DRAWING NUMBER, DUCT DRAWING NUMBER, CAP APPLICATION NUMBER (VNI234), LOCATION (Hoxton Park FieldServiceCentre), PROCESSING (TAS+TAL), and Person (Vasan Naidoo). Below these fields is a section for 'Functional Locations' with a 'Quantity' column. The items and their quantities are: Poles (0), Columns (0), Pillars (0), HV Combination Switchgear (0), Ground Dist Subs (0), LV Combination Switchgear (0), Pole Dist Subs (0), Pole Structure (1), HV and Earth Tx Switches (2), and <Select Equipment Type> (0). The Endeavour Energy logo is visible in the top right corner of the form area.

Figure 37 – TAS for additional equipment

-
-
-
- Note if another pole, column, pillar, Ground Distribution substation, LV switchgear or Pole Substation was needed then they would be requested above the line.
-

These new items will have to be manually updated in the TAL

9. DATA DICTIONARIES

APPENDIX 1– TAS Locations

Location	Locations that apply to ASPs
Central Logistics Facility	Central Logistics Facility
Head Office Huntingwood	Head Office Huntingwood
Kandos Field Service Centre	Kandos Field Service Centre
Katoomba Field Service Centre	Katoomba Field Service Centre
Kings Park Field ServiceCentre	Kings Park Field Service Centre
Parramatta Field ServiceCentre	Parramatta Field Service Centre
Penrith Field Service Centre	Penrith Field Service Centre
Penrith Pole Yard	Penrith Pole Yard
Windsor Field Service Centre	Windsor Field Service Centre
Bowenfels Field Service Centre	Bowenfels Field Service Centre
Glendenning FieldServiceCentre	Glendenning Field Service Centre
Hoxton Park FieldServiceCentre	Hoxton Park Field Service Centre
Hoxton Park Technical Training	Hoxton Park Technical Training
Moss Vale Field Service Centre	Moss Vale Field Service Centre
Narellan Field Service Centre	Narellan Field Service Centre
Picton Field Service Centre	Picton Field Service Centre
Transformer Workshop	Transformer Workshop
Nowra Field Service Centre	Nowra Field Service Centre
Shellharbour FieldServiceCentr	Shellharbour Field Service Centre
Springhill Field ServiceCentre	Springhill Field Service Centre
Ulladulla Field Service Centre	Ulladulla Field Service Centre

APPENDIX 2 – FLOC Construction Type

Reference Functional Location	FL's Construction Type Desc	Comments in relation to REFLOC
ASSMCLMN0001	Gen, UG Termination	underground termination column
ASSMCLMN0001	Termination UG - LV Mains Bolted	Old standard for connecting customers to a link panel in a SL column. Not used any more.
ASSMCLMN0001	Termination UG - LV Service Mains	used for 50mm cable to service customers from column
ASSMCLMN0001	Termination UG - SL Mains	termination of SL cable in columns
ASSMCLMN0001	Termination UG LV Mains-Panel	Old standard for connecting LV mains to a link panel in a SL column. Not used any more.
ASSMPILL0001	Gen, UG Termination	underground termination pillar
ASSMPILL0001	Termination UG - LV Mains Bolted	Mains cable connection in a pillar.
ASSMPILL0001	Termination UG - LV Service Mains	Connection for a customer's service mains in a pillar
ASSMPILL0001	Termination UG - SL Mains	connection for SL cable in a pillar
ASSMPILL0001	Termination UG LV Mains-Panel	Old standard for connecting customers to a link panel in a pillar - Not used any more.
ASSMPOLE0001	Gen, Earth Wire	Earth wire typically for overhead assets
ASSMPOLE0001	Gen, HV Overhead Assembly	HV OH construction for attaching conductors to pole
ASSMPOLE0001	Gen, LV Overhead Assembly	LV connection point on pole
ASSMPOLE0001	Gen, OPGW	Transmission overhead pilot/protection cable connection point on pole
ASSMPOLE0001	Gen, Pilot Cable	Transmission pilot cable connection point on pole
ASSMPOLE0001	Gen, TR Overhead Assembly	Transmission voltage connection point on pole
ASSMPOLE0001	Gen, UG/OH Termination	underground to overhead construction connection point
ASSMPOLE0001	HV OH Assembly - Crossarm Type - ABC	Pole mounted HV construction on crossarm for ABC cable
ASSMPOLE0001	HV OH Assembly - Crossarm Type - Bare	Pole mounted HV construction on crossarm for uninsulated conductors to the pole
ASSMPOLE0001	HV OH Assembly - Crossarm Type - CCT	Pole mounted HV construction on crossarm for HV CCT cable.
ASSMPOLE0001	HV OH Assembly - Non Crossarm - ABC	Pole mounted HV construction for pole bracket - ABC conductors
ASSMPOLE0001	HV OH Assembly - Non Crossarm - Bare	Pole mounted HV construction for pole bracket - uninsulated conductors
ASSMPOLE0001	HV OH Assembly - Non Crossarm - CCT	Pole mounted HV construction for pole bracket - CCT conductors
ASSMPOLE0001	LV OH Assembly - Non Xarm - ABC	LV connection point on pole bracket - ABC

Reference Functional Location	FL's Construction Type Desc	Comments in relation to REFLOC
ASSMPOLE0001	LV OH Assembly - Non Xarm - Bare	LV connection point on pole bracket - Uninsulated
ASSMPOLE0001	LV OH Assembly - Xarm Type - ABC	LV connection point on pole crossarm - ABC
ASSMPOLE0001	LV OH Assembly - Xarm Type - Bare	LV connection point on pole crossarm - Uninsulated
ASSMPOLE0001	Transmission OH Assembly - Crossarm	Transmission voltage connection point on pole crossarm
ASSMPOLE0001	Transmission OH Assembly - Non Crossarm	Transmission voltage connection point on pole bracket
BBHVDSUB0001	Gen, HV Busbar	DSUB HV busbar
BBLVDSUB0001	Gen, LV Busbar	DSUB LV busbar
BBLVPOLE0001	Gen, LV Busbar	polesub LV busbar
CLMNCLMN0001	Gen, Structure Column	Lighting column
DSSWDSUB0001	Gen, Earth Switch - Dist	Earth switch for transformer isolation unit in DSUB
DSSWDSUB0001	Gen, HV Switch/Fuse Unit	Fuse or link used for protection and isolation
DSSWDSUB0001	HV Switch/Fuse Unit - Epoxy Encapsulated	individual switch unit for DSUB Holec not used anymore
DSSWDSUB0001	HV Switch/Fuse Unit - Sheet Steel Enclos	individual switch unit for indoor sub
DSSWDSUB0002	Gen, Isol No Load Br - LV	Isolation links in LV busbar of DSUB - phase
DSSWDSUB0002	Gen, Isol/Disc - LV - GD	Isolation links in LV busbar of DSUB - earth
DSSWPOLE0001	Drop Out Fuse - Other	HV fuse, used as protection for OH mains.
DSSWPOLE0001	Drop Out Fuse (Boric) - Porcelain	HV fuse, used with pole sub
DSSWPOLE0001	Drop Out Fuse (Wired) - Polymeric	HV fuse, used with pole sub
DSSWPOLE0001	Drop Out Fuse (Wired) - Porcelain	Porcelain - no longer used
DSSWPOLE0001	Gen, Direct Con - LV - PL	Old standard, no longer used.
DSSWPOLE0001	Gen, Drop Out Fuse PL Sub	HV fuse, used as protection for OH mains.
DSSWPOLE0001	Gen, Link	Generic pole mounted link.
DSSWPOLE0001	Gen, Link/Fuse Pole Mount	LV fuse / link for LV feeder isolation.
DSSWPOLE0001	Gen, LV Circuit Breaker - Pole Mounted	Pole mounted LV CB for customer only pole sub.
DSSWPOLE0001	Gen, SW Fuse - LV - PL	LV switch fuse DSUB mounted on pole
DSSWPOLE0001	Links - Pole Mounted	LV isolation links mounted on pole.
DSSWPOLE0001	LV Direct Connection - Pole Substation	Old standard, no longer used.
DSTXDSUB0001	Gen, Auto Transformer	Step up/down transformer. Eg 11kV to 22kV.
DSTXDSUB0001	Gen, Cable Entry Trf	Indoor sub cable entry for transformer. Typically noted on the design as duct for HV cable.
DSTXDSUB0001	Gen, Free Standing Trf	Old standard for cottage substation. No longer used.
DSTXDSUB0001	Gen, Ground Mounted Trf	Padmount transformer - old type not used anymore
DSTXDSUB0001	Gen, Kiosk Transformer	No longer standard equipment

Reference Functional Location	FL's Construction Type Desc	Comments in relation to REFLOC
DSTXDSUB0001	Gen, Padmount Transformer	Used in padmount and indoor constructions.
DSTXDSUB0001	Gen, Platform Transformer	No longer standard equipment
DSTXDSUB0001	Gen, Voltage Reg Trf	Transformer for regulator ground sub
DSTXPOLE0001	Crossarm Mounted Trf	Pole substation mounted on crossarm
DSTXPOLE0001	Gen, PL Mounted Trf	Transformer for Pole substation construction.
DSTXPOLE0001	Gen, Voltage Reg Trf	Transformer for regulator pole sub
DSUBDSUB0001	Gen, Cottage Substation	Old style ground mounted sub. No longer standard
DSUBDSUB0001	Gen, Cubicle Swtchnng Stn	switching station located in DSUB cubicle
DSUBDSUB0001	Gen, Ground Substation	Generally used for indoor substations
DSUBDSUB0001	Gen, Indoor Substation	Substation inside a building
DSUBDSUB0001	Gen, Indoor Swtchnng Stn	Switching station located inside a building.
DSUBDSUB0001	Gen, Kiosk Substation	Old style ground mounted sub. No longer standard
DSUBDSUB0001	Gen, Padmount Substation	Ground mounted DSUB. Compliant with current standards.
DSUBDSUB0001	Gen, Private Sub/HVC	Private High Voltage customer. Supplied via 11kV or above.
DSUBDSUB0001	Gen, Regulating Sub - GD	Auto regulation DSUB. Typically 1:1 ratio
DSUBPOLE0001	Gen, Private Sub/HVC	Private High Voltage customer. Supplied via 11kV or above. Ground mounted.
DSUBPOLE0001	Gen, Regulating Pole Sub	Auto regulation pole substation. Typically 1:1 ratio
DSUBPOLE0001	Gen, Single Pole Sub	typical pole sub constructed on a single pole. Standard compliant
DSUBPOLE0001	Gen, SWER Isolating Sub	Isolation transformer between multi wire HV network and single wire earth return sub.
DSUBPOLE0001	Gen, SWER Substation	Single phase single wire earth return Pole substation.
DSUBPOLE0001	Overhead Voltage Regulator - 3PH	Auto regulation pole substation. Typically 1:1 ratio
DSUBPOLE0001	Single Pole Substation - Coastal Type	Pole sub construction for urban Coastal areas generally with 2 LV feeders and fuses
DSUBPOLE0001	Single Pole Substation - Rural/Semi Type	Pole sub without crossarms for LV and generally with 1 or 2 ABC fuseblocks for service connections.
DSUBPOLE0001	Single Pole Substation - Urban Type	Pole sub construction for urban areas generally with 2 LV feeders and fuses
HVCBDSUB0001	Gen, Circuit Breaker - HV	HV CB located inside a DSUB or indoor sub
HVDGDSUB0001	Gen, Bus Section Unit	indoor sub busbar section - not used anymore
HVDGDSUB0001	Gen, Cable Term Unit	HV cable termination
HVDGDSUB0001	Gen, Combination Sw Stn	HV ground mounted switching station.
HVDGDSUB0001	Gen, Combination Swgr	High voltage combination Swgr unit
HVDGDSUB0001	Gen, Direct Con - HV	Direct connection from HV network no HV S/G in sub. Not standard.
LVCBDSUB0001	Gen, Circuit Breaker - LV	LV CB installed as part of a substation
LVDGDSUB0001	Gen, LV Switchgear	LV fuses used for LV feeder isolation and part of DSUB

Reference Functional Location	FL's Construction Type Desc	Comments in relation to REFLOC
PILLPILL0001	Gen, Structure LV Pillar	common pillar box
POLEPOLE0001	Gen, Structure Pole	Pole used for purposes other than transmission or distribution like stay poles.
POLEPOLE0001	Pole Structure - Distribution Use	Poles that support conductors 22kV and below
POLEPOLE0001	Pole Structure - Extended Service Use	Poles that support conductors at Transmission or Distribution voltage as well as another service e.g Telstra, Optus, NBN supported on same pole. These poles may also support Distribution Substations.Road crossing LV pole or pole with pole sub or pole with transmission and distribution voltages
POLEPOLE0001	Pole Structure - Streetlighting Use	Poles that exclusively support streetlights
POLEPOLE0001	Pole Structure - Transmission Use	Poles that support conductors at 33kV and above
SLCPCLMN0001	1PH SL Control Point	1 phase SL control point mounted in DSUB, cubicle or pillar.
SLCPCLMN0001	3PH SL Control Point	3 phase SL control point mounted in DSUB, cubicle or pillar.
SLCPCLMN0001	Gen, Streetlight Ctrl Pt	Generic streetlight control point - used on columns - no longer installed
SLCPCLMN0001	Timeclock Astronomic SL Control Point	timeclock for controlling streetlights.
SLCPPOLE0001	1PH SL Control Point	1 phase SL control point mounted in DSUB, box or pillar.
SLCPPOLE0001	3PH SL Control Point	3 phase SL control point mounted in DSUB, box or pillar.
SLCPPOLE0001	Gen, Streetlight Ctrl Pt	SL control point with Zellweger relay. Historic asset no longer installed.
SLCPPOLE0001	Timeclock Astronomic SL Control Point	timeclock for controlling streetlights.
SLGTCLMN0001	Gen, Street Lighting	streetlight column mounted
SLGTPOLE0001	Gen, Street Lighting	street light pole mounted
SWITCLMN0001	Gen, LV Links	LV isolation or earth switch
SWITCLMN0001	LV Double Switch Panel - Column	internal column switch assembly. No longer used.
SWITCLMN0001	LV Single Switch Panel - Column	internal column switch assembly. No longer used.
SWITDSUB0001	Gen, Earth Switch - Dist	HV earth switch for DSUB
SWITDSUB0001	Gen, HV Switch Unit	HV isolation or earth switch in DSUB
SWITDSUB0001	HV Switch Unit - Epoxy Encapsulated	Old Holec swgr - not used anymore
SWITDSUB0001	HV Switch Unit - Sheet Steel Encloed	Metal Clad switchgear
SWITDSUB0002	Gen, Direct Con - LV - GD	Direct connection from LV network no HV S/G in substation- Not standard.
SWITDSUB0002	Gen, Generator Link - LV	DSUB LV generator connection point

Reference Functional Location	FL's Construction Type Desc	Comments in relation to REFLOC
SWITDSUB0002	Gen, Knife Switch - LV	Old style asset not used as non compliant to current standards.
SWITDSUB0002	Gen, Steel Encl Swbd - LV	LV swgr combination number for steel cabinet DSUB.
SWITDSUB0002	Gen, SW Fuse - LV - PL	LV switch fuse DSUB
SWITDSUB0002	Gen, Switch Fuse - LV	ABC fuse block
SWITPILL0001	Gen, LV Link Box	Pillar box or cubicle
SWITPILL0001	Gen, LV Links	LV isolation links
SWITPILL0001	Gen, Switch Fuse - LV	pillar LV switch fuse unit. Not current standard
SWITPILL0001	LV Double Switch Panel - Column	LV isolation links in column. Not standard any more.
SWITPILL0001	LV Link Box - Fuse	Fuse strip with fuses
SWITPILL0001	LV Link Box - Removeable Link	Fuse strip with removable links.
SWITPILL0001	LV Link Box - Solid	Non removable solid links.
SWITPILL0001	LV Single Switch Panel - Column	LV isolation links in column. Not standard any more.
SWITPOLE0001	Air Break Switch - Distribution	ABS operating voltage is less than or equal to 22kV
SWITPOLE0001	Air Break Switch - Transmission	ABS operating voltage is greater than or equal to 33kV
SWITPOLE0001	Drop Out Fuse - Other	HV fuse, used as protection for OH mains.
SWITPOLE0001	Drop Out Fuse (Boric) - Porcelain	HV fuse, used with pole sub
SWITPOLE0001	Drop Out Fuse (Wired) - Polymeric	HV fuse, used with pole sub
SWITPOLE0001	Drop Out Fuse (Wired) - Porcelain	Porcelain - no longer used
SWITPOLE0001	Gen, Fuse Saver	Circuit breaker used in series with a fuse - HV
SWITPOLE0001	Gen, Link	Generic pole mounted link.
SWITPOLE0001	Gen, Load Break Switch	HV on load isolation for OH network
SWITPOLE0001	Gen, Recloser	Pole mounted recloser.
SWITPOLE0001	Gen, Sectionaliser	Isolation point on OH line
SWITPOLE0001	Gen, SW Fuse - LV - PL	LV fuse used on poles
SWITPOLE0001	Gen, Under Slung Link	LV underslung links for isolation on LV network.
SWITPOLE0001	HV Underslung Links - PL Mount-Polymeric	HV isolation links
SWITPOLE0001	HV Underslung Links - PL Mount-Porcelain	HV isolation links
SWITPOLE0001	Links - Pole Mounted	HV or LV isolation links
SWITPOLE0001	Load Break Switch - Pole - Auto Oper	HV isolation, pole mounted, auto/remote operation. operation.
SWITPOLE0001	Load Break Switch - Pole - Manual Oper	HV isolation, pole mounted, non auto operation.

APPENDIX 3 – ABC indicator

ABC indicator	Comment
Non-Outage Object	Network outage is not needed to replace this asset
Outage Dependant obj	Network outage is needed to replace this asset
Unknown Outage Depen	Network outage to replace this asset is not known

APPENDIX 4 – Equipment owner

Equipment Owner	
Artc	
Ausgrid Owned Equipment	
Country Energy	
Delta Electricity Owned Equip	
Endeavour Energy	
Energy Australia	
Essential Energy	
NBN	
Not Owned by EE	
Optus Owned Equipment	
Privately Owned Equipment	
Railcorp	
RMS	
RTA	
SRA	
Sydney Water	
Telstra Owned Equipment	
Transgrid Owned Equipment	
Unknown	

Equipment Owner	
Water Nsw	

APPENDIX 5 – Special use codes

Special Use Code	
Only EE Assets + Tx on Pole	
Telstra Joint Use + Tx on Pole	
Telstra Commn Use + Tx on Pole	
Extndd Service Line/Cust Owned	
Telstra Common Use	
Extend Service Line/ex Nepean	
Common Use/Telstra owned	
Priv Tx Line/Cust ownd + Tx PL	
Telstra Joint Use	
Ausgrid Mains on Pole	
EE Mains on Pole/SRA owned	
EE Mns PL/Trsgrd Owd + Tx Pole	
EE Mains on Pole/Ausgrid Owned	
Private HV Line/Customer owned	
Priv HV Mns/EE ownd + Tx Pole	
Stay Pole	
Optus owned pole	
EE Mns Pole/Asgrd Ownd + Tx PL	
Fire Station	
Only EE Assets on Pole	

APPENDIX 6 – Reference equipment

EQ Reference Equipment Desc	EQ Technical Object Type (Auto populated after EQ Reference Equipment is selected)	
Pole - Wood Treated	Wood Pole	
Gen, Steel Pole	Steel Pole	
Gen, Pole - Concrete	Concrete Pole	
Gen, Composite Fibre Pole	Composite Fibre Pole	
Pole - Wood Untreated	Wood Pole	
Gen, Wood Pole	Wood Pole	

APPENDIX 7- Pole Species

Pole Species		
Blackbutt		
Bloodwood, Brown		
Ironbark, Broadleaved Red		
Bloodwood		
Box, Coast Grey		
Concrete Pole		
Box, Grey		
Gum, Grey		
Ironbark, Grey		
Ironbark		
Messmate		
Ironbark, Narrowleaved Re		
Pine, Radiata		
Ironbark, Red		
Mahogany, Red		

Pole Species		
Stringybark, Red		
Bloodwood, Red		
Gum, Spotted		
Stringybark, Blueleaved		
Mahogany, Southern		
Stringybark, Silvertop		
Steel Pole		
Gum, Sydney Blue		
Turpentine		
Tallowwood		
Mahogany, White		
Stringybark, White		
Box, White		
Unknown Type		
Box, Yellow		
Stringybark, Yellow		

Pole Type	
Cca (Hard Wood) Pole	
Cca (Soft Wood) Pole	
Composite Fibre Pole	
Concrete (Pre-Stressed) Pole	
Concrete (Slack Cage) Pole	
Concrete (Semi-Stressed) Pole	

Pole Type	
Creosote (H&C Dip) Pole	
Creosote (Ht/Lt) Pole	
Creosote (Pec) Pole	
Desapped Durable	
Natural Round	
Pentachlorophenol (Pcp) Pole	
Pine Treated Pole	
Square Sawn Customer Wood Pole	
Steel Pole	
Wood Pole	

APPENDIX 8 – Reference Equipment

Reference Equipment Desc	Comments
Gen, UG Termination	underground termination column
Gen, LV Overhead Assembly	LV connection point on pole
Gen, HV Overhead Assembly	HV OH construction for attaching conductors to pole
Gen, TR Overhead Assembly	Transmission voltage connection point on pole
Gen, UG/OH Termination	underground to overhead construction connection point
Gen, Earth Wire	Earth wire typically for overhead assets
Gen, Pilot Cable	Transmission pilot cable connection point on pole
Gen, OPGW	Transmission overhead pilot/protection cable connection point on pole
Transmission OH Assembly - Crossarm	Transmission voltage connection point on pole crossarm
Transmission OH Assy - Non Crossarm	Transmission voltage connection point on pole bracket
Termination UG - LV Mains Bolted	Old standard for connecting customers to a link panel in a SL column. Not used any more.
Termination UG LV Mains- Panel	Old standard for connecting LV mains to a link panel in a SL column. Not used any more.
Termination UG - LV Service Mains	used for 50mm cable to service customers from column
Termination UG - SL Mains	termination of SL cable in columns
HV OH Assembly - Non Crossarm - ABC	Pole mounted HV construction for pole bracket - ABC conductors
HV OH Assy - Crossarm Type - ABC	Pole mounted HV construction on crossarm for ABC cable

Reference Equipment Desc	Comments
HV OH Assy - Non Crossarm - Bare	Pole mounted HV construction for pole bracket - uninsulated conductors
HV OH Assy - Crossarm Type - Bare	Pole mounted HV construction on crossarm for uninsulated conductors to the pole
HV OH Assembly - Non Crossarm - CCT	Pole mounted HV construction for pole bracket - CCT conductors
HV OH Assy - Crossarm Type - CCT	Pole mounted HV construction on crossarm for HV CCT cable.
LV OH Assembly - Non Xarm - ABC	LV connection point on pole bracket - ABC
LV OH Assembly - Xarm Type - ABC	LV connection point on pole crossarm - ABC
LV OH Assembly - Non Xarm - Bare	LV connection point on pole bracket - Uninsulated
LV OH Assembly - Xarm Type - Bare	LV connection point on pole crossarm - Uninsulated
Gen, Column Steel (SL)	Streetlight Column - Steel
Gen, Column Steel (LV)	LV mains column - Steel
Gen, Column Concrete (SL)	Streetlight Column - Concrete
Column Steel (LV) - Minor	Column with mast height <7m
Column Steel (LV) - Major	Column with mast height >7m
Column Top Extension 2m	Column Top Extension 2m
Column Steel (SL) - Minor	Column with mast height <7m
Column Steel (SL) - Major	Column with mast height >7m
Gen, Switch Controller	Switch Controller
Gen, Brick Enclosure	Brick Enclosure
Gen, Composite Cubicle	Composite Cubicle
Gen, Emergency Exit Light	Emergency Exit Light
Gen, Fire Blankets - Dry	Fire Blankets - Dry
Gen, Fire Extinguisher	Fire Extinguisher
Fire Extinguisher Pos	Fire Extinguisher
Gen, Door - Standard	Door - Standard
Gen, Surge Diverters	Surge Diverters
Surge Diverters - Pole Mount - Polymeric	Surge Diverters
Surge Diverters - Pole Mount - Porcelain	Surge Diverters
Gen, LV Links	LV isolation or earth switch
Gen, Switch Fuse - LV	ABC fuseblock
Gen, Link	Generic pole mounted link.
Gen, Isol/Disc - LV - GD	Isolation links in LV busbar of DSUB - earth
Gen, SW Fuse - LV - PL	Fuse used on an LV pole
Air Break Switch - Distribution	ABS operating voltage is less than or equal to 22kV
Gen, Under Slung Link	LV underslung links for isolation on LV network.
Gen, Recloser	Pole mounted recloser.
Gen, Load Break Switch	HV on load isolation for OH network
Drop Out Fuse (Boric) - Porcelain	HV fuse, used with pole sub
Drop Out Fuse (Boric) - Porcelain	HV fuse, used with pole sub
Gen, Generator Link - LV	DSUB LV generator connection point

Reference Equipment Desc	Comments
Gen, Direct Con - LV - GD	Direct connection from LV network no HV S/G in substation Not standard.
Gen, LV Circuit Breaker - Pole Mounted	Pole mounted LV CB for customer only pole sub.
Drop Out Fuse (Wired) - Poly	HV fuse, used with pole sub
Drop Out Fuse (Wired) - Porcelain	Porcelian - no longer used
Gen, Drop Out Fuse - Other	Porcelian - no longer used
Drop Out Fuse (Wired) - Poly	HV fuse, used with pole sub
Drop Out Fuse (Wired) - Porcelain	Porcelian - no longer used
Gen, Drop Out Fuse - Other	HV fuse, used as protection for OH mains.
Gen, Isol No Load Br - LV	Isolation links in LV busbar of DSUB - phase
Gen, Sectionaliser	Isolation point on OH line
Gen, Steel Encl Swbd - LV	LV swgr combination number for steel cabinet DSUB.
Gen, Fuse Saver	Circuit breaker used in series with a fuse - HV
Air Break Switch - Transmission	ABS operating voltage is greater than or equal to 33kV
Gen, Direct Con - LV - PL	Old standard, no longer used.
LV Direct Connection - Pole Substation	Old standard, no longer used.
Drop Out Fuse PL Sub	HV fuse, used with pole sub
Load Break Switch - Pole - Man Op	Load Break Switch - Pole - Manually Operated
Load Break Switch - Pole - Auto Op	Load Break Switch - Pole - Remote Operation
Links - PL Mounted	Links on pole
LV Double Switch Panel - Column	internal column switch assembly. No longer used.
LV Sng Switch Panel - Column	internal column switch assembly. No longer used.
LV Isolator - PL Mounted	Pole mounted low voltage isolator
HV Underslung Links - PL Mnt - Poly	HV Underslung Links - Pole Mounted Polymeric
HV Underslung Links - PL Mnt - Porc	HV Underslung Links - Pole Mounted Porcelain
Gen, Air Break Switch	Air break switch
Gen, Knife Switch - LV	Old style asset not used as non-compliant to current standards.
Gen, Link/Fuse PL Mount	Links or fuses used on poles
Gen, SW Load Break - LV	Low voltage load break switch
Gen, Drop Out Fuse	HV fuse, used as protection for OH mains.
Gen, Cylinder Lock	
Cylinder Lock D1	
Cylinder Lock D2	
Cylinder Lock D3	
Cylinder Lock D4	
Gen, Padlock	
Padlock PL330 D1	
Padlock PL330 D2	
Padlock PL330 D3	
Padlock PL330 D4	
Padlock PL330 D10	

Reference Equipment Desc	Comments
Padlock PL330 D11	
Padlock PL330 D12	
Padlock PL330 D13	
Padlock PL330 D14	
Padlock PL330 D5	
Padlock PL330 D6	
Padlock PL330 D7	
Padlock PL330 D8	
Padlock PL330 D9	
Gen, LV Pillar Box	Low voltage pillar box
Gen, LV Pillar Cubicle	Low voltage cubicle
Pole - Wood Treated	Treated wood pole
Gen, Steel Pole	Steel pole
Gen, Pole - Concrete	Concrete pole
Gen, Composite Fibre Pole	Composite fibre pole
Pole - Wood Untreated	Untreated wood pole
Gen, Wood Pole	Generic wood pole - used when it is not know wheter it is treated or not
Gen, Switch Radio - PL Mount	Scada radio mounted on pole
Timeclock Astronomic SL Ctrl Pt	Timeclock Astronomic SL Control Point
1PH SL Ctrl Pt	1PH SL Ctrl Pt
3PH SL Ctrl Pt	3PH SL Ctrl Pt
Gen, SL Ctrl Pt	Gen, SL Ctrl Pt
Gen, Streetlight Lantern	Gen, Streetlight Lantern
Streetlight Lantern - LED Type	Streetlight Lantern - LED Type
Streetlight Lantern - Fluro Type	Streetlight Lantern - Fluro Type
Streetlight Lantern - MF Type	Streetlight Lantern - MF Type
Streetlight Lantern - HPS/MH Type	Streetlight Lantern - HPS/MH Type
Streetlight Lantern - MV Type	Streetlight Lantern - MV Type
Gen, Streetlight Outreach	Gen, Streetlight Outreach
Gen, Streetlight Bracket	Gen, Streetlight Bracket
Minor Bracket - Aluminium	Minor Bracket - Aluminium
Major Bracket - Aluminium	Major Bracket - Aluminium
Minor Bracket - Steel	Minor Bracket - Steel
Major Bracket - Steel	Major Bracket - Steel
Night Watch Bracket	Night Watch Bracket
Gen, LV Busbar	DSUB LV busbar
Gen, Combination Swgr	High voltage combination Swgr unit
Gen, HV Busbar	DSUB HV busbar
Gen, Circuit Breaker - LV	LV CB installed as part of a substation
Gen, Combination Sw Stn	HV ground mounted switching station.
Gen, Bus Section Unit	indoor sub busbar section - not used anymore
Gen, Direct Con - HV	Direct connection from HV network no HV S/G in sub. Not statndard.

Reference Equipment Desc	Comments
Gen, Cable Term Unit	HV cable termination
Crossarm Mounted Trf	Pole substation mounted on crossarm
Gen, Padmount Transformer	Used in padmount and indoor constructions.
Gen, Padmount Transformer	Used in padmount and indoor constructions.
Gen, Cable Entry Trf	Indoor sub cable entry for transformer. Typically noted on the design as duct for HV cable.
Gen, Free Standing Trf	Old standard for cottage substation. No longer used.
Gen, Ground Mounted Trf	Padmount transformer - old type not used anymore
Gen, Kiosk Transformer	No longer standard equipment
Gen, Voltage Reg Trf	Transformer for regulator ground sub
Gen, Auto Transformer	Step up/down transformer. Eg 11kV to 22kV.
Gen, PL Mounted Trf	Transformer for Pole substation construction.
Gen, VT - Switch	Switch or link for voltage transformer
Gen, Night Watch Bracket	Night Watch Bracket
Gen, Night Watch Lantern	Night Watch Lantern
Gen, RCDs	RCDs
Gen, Trans Isolator	Trans Isolator
Gen, Line Fault Indicator	Line Fault Indicator
Gen, AUX & Tripping Relay	AUX & Tripping Relay
Gen, DSUB Monitor	DSUB Monitor
Gen, Trans Disconnecter	Trans Disconnecter
Gen, Portable Earth	Portable Earth
Gen, Trans Earth Switch	Trans Earth Switch
Gen, Fire Door - Standard	Fire Door - Standard
Gen, Integrated VT	Integrated VT
Gen, OC/EF/SEF Prot Relay	OC/EF/SEF Prot Relay
Gen, Power Transformer	Power Transformer
Gen, Trf Auxiliary Relay	Trf Auxiliary Relay
Gen, Auxilliary Transfrm	Auxiliary Trf
Gen, Busbar Prot Relay	Busbar Prot Relay
Gen, COMMS Battery	COMMS Battery
Gen, Vacuum Circuit Breaker	Dead Tank CB
Gen, Isolation Trf	Isolation Trf
Gen, Vacuum Circuit Breaker	Live Tank CB
Gen, LV Link Box	LV Link Box
Gen, Post Magnetic VT	Post Magnetic VT
Gen, Rackable Magnetic VT	Rackable Magnetic VT
Gen, HV Switch/Fuse Unit	HV Switch/Fuse Unit
Gen, Switch Yard	Switch Yard
Gen, Tapchanger	Tapchanger
Gen, Vacuum Circuit Breaker	CB Truck
Gen, TSUB Radio	TSUB Radio
Gen, Uninterrupted Power Supply	Unintrptd Pwr Spply

Reference Equipment Desc	Comments
Gen, 3 Phase Magnetic VT	3 Phase Magnetic VT
Gen, Aerial Marker Ball	Aerial Marker Ball
Gen, Battery	Battery
Gen, Contactor	Contactora
Gen, Coupling Cell Cap	Coupling Cell Cap
Gen, Coupling Cell Coils	Coupling Cell Coils
Gen, Distance Prot Relay	Distance Prot Relay
Gen, SF6 Circuit Breaker	Dead Tank CB
Gen, Bulk Oil CB	Dead Tank CB
Gen, Small Oil CB	Dead Tank CB
Gen, Feeder Diff Relay	Feeder Diff Relay
Gen, SF6 Circuit Breaker	Live Tank CB
Gen, Bulk Oil CB	Live Tank CB
Gen, Small Oil CB	Live Tank CB
Gen, Motor Box	Motor Box
Gen, Metering CT	Metering CT
Gen, Outdoor Capacitor	Outdoor Capacitor
Gen, Outdoor Enclosed Cap	Outdoor Enclosed Cap
Gen, Land Line Phone	Land Line Phone
Gen, Pole Capacitor Bank	Pole Capacitor Bank
Gen, Post Magnetic CT	Post CT
Gen, VT Primary Fuse	VT Primary Fuse
Gen, Recloser CB	Recloser CB
Gen, Scada Comms Equip	Scada Comms Equip
Gen, Static Freq Unit	Static Freq Unit
Gen, Supervision Unit	Supervision Unit
Gen, SF6 Circuit Breaker	CB Truck
Gen, Bulk Oil CB	CB Truck
Gen, Small Oil CB	CB Truck
Gen, Trf Diff Relay	Trf Diff Relay
Gen, Underfrequency Relay	Underfrequency Relay
Metering (CCT) VT Oil Outdoor	Metering (CCT) VT
Metering (CCT) VT Oil Indoor	Metering (CCT) VT
Metering (CCT) VT SF6 Outdoor	Metering (CCT) VT
Metering (CCT) VT SF6 Indoor	Metering (CCT) VT
Metering (CCT) VT Epoxy Outdoor	Metering (CCT) VT
Metering (CCT) VT Epoxy Indoor	Metering (CCT) VT
Metering (CCT) VT GIS Outdoor	Metering (CCT) VT
Metering (CCT) VT GIS Indoor	Metering (CCT) VT
Vacuum Circuit Breaker	Dead Tank CB
Trans Earth Switch Indoor Motorised	Trans Earth Switch
Trans Earth Switch Indoor	Trans Earth Switch
Trans Earth Switch Outdoor	Trans Earth Switch

Reference Equipment Desc	Comments
Outdoor Capacitor	Indoor Capacitor
Outdoor Enclosed Cap 11kV ABB	Indoor Capacitor
Outdoor Enclosed Cap 11kV Other	Indoor Capacitor
Outdoor Enclosed Cap 22kV	Indoor Capacitor
Outdoor Enclosed Cap 33kV	Indoor Capacitor
Outdoor Enclosed Cap 66kV	Indoor Capacitor
Outdoor Enclosed Cap 132kV	Indoor Capacitor
Neutral Earth CT 33kV BMW Elect	Neutral Earth CT
Neutral Earth CT 33kV Hanson	Neutral Earth CT
Neutral Earth CT 132kV Hanson	Neutral Earth CT
Step Ladder	Portable Ladder
Static Freq Unit 750 Hz	Static Freq Unit
Static Freq Unit 1050 Hz	Static Freq Unit
Gen, HV Switch Unit	HV Switch Unit
Tapchanger 33kV Reinhausen	Tapchanger
Tapchanger 66kV Reinhausen	Tapchanger
Tapchanger 132kV Reinhausen	Tapchanger
Tapchanger 33kV Other	Tapchanger
Tapchanger 66kV Other	Tapchanger
Tapchanger 132kV Other	Tapchanger
Wall Bushing Indoor	Wall Bushing
Wall Bushing Outdoor	Wall Bushing
3 Phase Magnetic VT Oil Outdoor	3 Phase Magnetic VT
3 Phase Magnetic VT Oil Indoor	3 Phase Magnetic VT
3 Phase Magnetic VT SF6 Outdoor	3 Phase Magnetic VT
3 Phase Magnetic VT SF6 Indoor	3 Phase Magnetic VT
3 Phase Magnetic VT Epoxy Outdoor	3 Phase Magnetic VT
3 Phase Magnetic VT Epoxy Indoor	3 Phase Magnetic VT
3 Phase Magnetic VT GIS Outdoor	3 Phase Magnetic VT
3 Phase Magnetic VT GIS Indoor	3 Phase Magnetic VT
Gen, Cap Dischrge Reactor	Cap Dischrge Reactor
Gen, Cap Switch Reactor	Cap Switch Reactor
Post Capacitor VT Oil Outdoor	Post Capacitor VT
Post Capacitor VT Oil Indoor	Post Capacitor VT
Post Capacitor VT SF6 Outdoor	Post Capacitor VT
Post Capacitor VT SF6 Indoor	Post Capacitor VT
Post Capacitor VT Epoxy Outdoor	Post Capacitor VT
Post Capacitor VT Epoxy Indoor	Post Capacitor VT
Post Capacitor VT GIS Outdoor	Post Capacitor VT
Post Capacitor VT GIS Indoor	Post Capacitor VT
Gen, Core Balance CT	Core Balance CT
Core Balance CT Split Core	Core Balance CT
Fault Throwing Switch	Dead Tank CB

Reference Equipment Desc	Comments
Integrated CB Bulk Oil	Integrated CB
Integrated CB Small Oil	Integrated CB
Integrated VT Oil Outdoor	Integrated VT
Integrated VT Oil Indoor	Integrated VT
Integrated VT SF6 Outdoor	Integrated VT
Integrated VT SF6 Indoor	Integrated VT
Integrated VT Epoxy Outdoor	Integrated VT
Integrated VT Epoxy Indoor	Integrated VT
Integrated VT GIS Outdoor	Integrated VT
Integrated VT GIS Indoor	Integrated VT
Isolation Transformer Oil	Isolation Trf
Isolation Transformer Air	Isolation Trf
Extension Ladder	Portable Ladder
Post Magnetic VT Oil Outdoor	Post Magnetic VT
Post Magnetic VT Oil Indoor	Post Magnetic VT
Post Magnetic VT SF6 Outdoor	Post Magnetic VT
Post Magnetic VT SF6 Indoor	Post Magnetic VT
Post Magnetic VT Epoxy Outdoor	Post Magnetic VT
Post Magnetic VT Epoxy Indoor	Post Magnetic VT
Post Magnetic VT GIS Outdoor	Post Magnetic VT
Post Magnetic VT GIS Indoor	Post Magnetic VT
Rackable Magnetic VT Oil Outdoor	Rackable Magnetic VT
Rackable Magnetic VT Oil Indoor	Rackable Magnetic VT
Rackable Magnetic VT SF6 Outdoor	Rackable Magnetic VT
Rackable Magnetic VT SF6 Indoor	Rackable Magnetic VT
Rackable Magnetic VT Epoxy Outdoor	Rackable Magnetic VT
Rackable Magnetic VT Epoxy Indoor	Rackable Magnetic VT
Rackable Magnetic VT GIS Outdoor	Rackable Magnetic VT
Rackable Magnetic VT GIS Indoor	Rackable Magnetic VT
HV Switch/Fuse Unit- Epoxy Enc	HV Switch/Fuse Unit
HV Switch/Fuse Unit - Steel Enc	HV Switch/Fuse Unit
HV Switch Unit - Epoxy Encapsulated	HV Switch Unit
HV Switch Unit - Steel Enc	HV Switch Unit
Gen, CB Truck	CB Truck
CB Truck Bulk Oil	CB Truck
CB Truck Small Oil	CB Truck
LV Link Box - Solid	LV Link Box
LV Link Box - Removeable Link	LV Link Box
LV Link Box - Fuse	LV Link Box
Gen, DSUB Radio	DSUB Radio
Gen, Epoxy CT	Epoxy CT
Gen, Earth Switch - Dist	Dist Earth Switch
Gen, Earthing Transformer	Earthing Transformer

Reference Equipment Desc	Comments
Gen, HVAC Exhaust Fan	HVAC Exhaust Fan
Gen, Eye Wash Station	Eye Wash Station
Gen, Fall Arrestor	Fall Arrestor
Gen, Fire Alarm Detector	Fire Alarm Detector
Gen, Fire Alarm Panel	Fire Alarm Panel
Gen, Fire Blankets - Gel	Fire Blankets - Gel
Gen, HVAC Fan Coil Unit	HVAC Fan Coil Unit
Gen, Fire Door - Sliding	Fire Door - Sliding
Gen, Fire Indicator Panel	Fire Indicator Panel
Gen, Fire Wall	Fire Wall
Gen, Fire Pump Set	Fire Pump Set
Gen, Fire Shutters/Vent	Fire Shutters/Vent
Gen, Fire Storage Tank	Fire Storage Tank
Gen, Indoor Capacitor	Indoor Capacitor
Gen, Lightning Mast	Lightning Mast
Gen, Lighting Tower	Lighting Tower
Gen, Live Tank CB	Live Tank CB
Gen, Main Switch Board	Main Switch Board
Gen, Metal Enclosure	Metal Enclosure
Gen, Motor Generator Set	Motor Generator Set
Gen, Neutral Earth CT	Neutral Earth CT
Gen, Neutral Erth Reactor	Neutral Erth Reactor
Gen, Neutral Erth Resistor	Neut Erth Resistor
Gen, Neutral Unbalance CT	Neutral Unbalance CT
Gen, OH Consumer Mains	OH Consumer Mains
Gen, Full Rack	Full Rack
Gen, SCADA Router	Scada Router
Gen, Router	Router
Gen, Remote Terminal Unit	Remote Terminal Unit
Gen, Trans Surge Arrestor	Trans Surge Arrestor
Gen, Trench	Trench
Gen, Trench Cover	Trench Cover
Gen, Pit Trans/Zone Sub	Pit Trans/Zone Sub
Gen, UG Consumer Mains	UG Consumer Mains
Gen, UG Cable Segment	UG Cable Segment
Gen, Voltage Prot Relay	Voltage Prot Relay

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Produced by Customer Network Solutions Branch

W Endeavourenergy.com.au

E aspaudit@endeavourenergy.com.au

T 131 081



ABN 11 247 365 823