

Substation Maintenance Instruction

Transmission and zone substation data asset structure and nameplate details

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SUBSTATION MAINTENANCE INSTRUCTION

ASSET STANDARDS & DESIGN

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SMI 119 TRANSMISSION AND ZONE SUBSTATION DATA ASSET STRUCTURE AND NAMEPLATE DETAILS

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1.0 PURPOSE

To set out in detail the mandatory data entry and asset structure requirements for transmission network assets required to be recorded for each asset within Endeavour Energy's asset database Ellipse.

This document will remain for the current and archived Ellipse asset data register.

2.0 SCOPE

This instruction covers all transmission network assets and shall be read in conjunction with all transmission SMIs, SDIs, PMIs and PDIs.

This instruction does not cover distribution and field transmission network assets (refer to SMI 113 - Distribution and field transmission data asset structure and details).

Where data entry requirements for any new transmission asset are not specified in this instruction, or the instruction does not cover a particular situation, it shall be brought to the notice of the Substation Assets Manager so that a reasonable solution can be developed to capture the information.

Any deviation from this Standard shall be approved by the Substation Assets Manager.

3.0 REFERENCES

Internal

Company Policy 9.9.1 – Network Asset Maintenance
Company Procedure GAM 0012 – System Asset Equipment Register (Ellipse)
Company Procedure GAM 0104 – Network Asset Information
Branch form FAD 2001 – Notification of network alterations sheet (white sheet)
Branch form FCL 0143 – Notification of HV system alterations (pink sheet)
Endeavour Energy Electrical Safety Rules
Substation Maintenance Instruction SMI 113 – Distribution and field transmission data asset structure and nameplate details
Substation Maintenance Instruction SMI 124 – Maintenance data entry and defect prioritisation

External

Electricity Supply Act 1995 (NSW)
National Electricity (NSW) Act 1997
Work Health and Safety Act 2011 (NSW)
Electricity Supply (Safety and Network Management) Regulation 2014 (NSW)
Work Health and Safety Regulation 2017 (NSW)
AS 5577 – 2013 – Electricity network safety management systems
ENA National Electricity Network Safety Code (Doc 01-2008)
National Electricity Rules

4.0 DEFINITIONS AND ABBREVIATIONS

EGI

Equipment group identifier

Ellipse

Endeavour Energy asset database

Equipment Register

A module of Ellipse that holds nameplate, maintenance history and ongoing costs of equipment

Equipment Owner

The asset owner. For example an asset can be owned by a distribution network service provider (Endeavour Energy/Ausgrid/Essential Energy), a third party (RTA/Telstra/Optus) or be privately owned. All assets regardless of ownership shall have all mandatory fields populated as detailed in annexure 4.

Equipment Function

The primary function of the asset in the electrical network (Transmission/Distribution/Street lighting). The highest voltage shall take precedence. For example a pole with 415V (LV) and 33kV (HV), shall be assigned as Transmission.

Field transmission

Transmission assets not located within a transmission or zone substation

GIS

Geographical Interface System

Productive unit

This is the field in Equipment Register in Gen (Misc) tab to refer to the parent equipment of the asset

SPN

Structured plant number

System Generated

Nameplate details extracted from GIS system

5.0 ACTIONS

5.1 General

The construction and maintenance activity includes the entering of data into the Equipment register. The construction and maintenance activities will be considered complete only when complete and correct data has been entered into the Equipment register.

Transmission and zone substation data entry requirements that are specific to the maintenance activity are set out in **SMI 124 – Maintenance data entry and defect prioritisation**.

During maintenance works, the nameplate data that has been recorded in the Equipment register shall be confirmed. If the nameplate data is incorrect or missing in the Equipment register, it shall be captured and entered into the Equipment register.

5.2 Equipment data hierarchy for transmission and zone substation assets

All transmission and zone substations assets have a parent-child Productive unit relationship. The following data hierarchy is applied to enter asset data into Equipment register for transmission and zone substation assets:

1. Transmission or zone substation.
2. Equipment bay/protection scheme.
3. Substation equipment/protection relay.

The data hierarchy for transformers is different to all the other substation equipment. Transformers follow the following parent-child Productive unit relationship data hierarchy:

1. Transmission or zone substation.
2. Equipment bay.
3. Position.
4. Transformer, tap changer, motor box.
5. Winding.

Annexure 1 shows the equipment data hierarchy for transmission and zone substation assets.

5.2.1 *Transmission or zone substation*

This is the highest level in the data hierarchy for all transmission substation assets. All transmission or zone substations have a parent-child Productive unit relationship to equipment bays/protection schemes.

5.2.2 *Equipment bays/Protection schemes*

Equipment bays/protection schemes are the next level in the data hierarchy under the parent transmission or zone substation. A substation may have one (1) or more of the following types of equipment bays/protection schemes:

- Feeder bay/protection scheme.
- Bus section bay/ protection scheme.
- Transformer bay/ protection scheme.
- SCADA protection scheme.
- AFIC bay - two (2) categories of AFIC bay: substation and protection.
- Auxiliary bar bay.
- Auxiliary transformer bay.
- Battery bay.
- Capacitor bay.
- Miscellaneous bay.
- Inter-trip protection scheme.
- Under-frequency protection scheme.
- Voltage regulator protection scheme.

5.2.3 *Equipment classes*

All transmission and zone substation assets are grouped into equipment classes at the highest level. The equipment class must be selected from the list in Annexure 2 that most accurately fits the piece of equipment, bay or protection scheme.

Examples:

- A high voltage circuit breaker would be classed as CB.
- A transmission or zone substation battery would be classed as BT.
- A feeder bay would be classed as BY.

Annexure 2 shows the equipment classes in transmission/zone substations.

5.2.4 Equipment group identification (ID)

All assets are sub-grouped under the equipment class into equipment group ID. Annexure 3 shows the equipment group ID for all transmission and zone substation assets.

5.3 Equipment details

Accurate recording of equipment information is critical if, for example recalls are required for a specific batch of faulty equipment which can be identified by serial numbers or date of manufacture.

The *Nameplate Attribute* form under the Equipment register was designed to capture key information about equipment.

Annexure 4 details the mandatory equipment fields to be recorded in the Equipment register categorised by equipment class and equipment group ID.

5.4 Equipment status detail

The table below details the status descriptions which shall be used for all equipment.

Code	Name	Full description
SP	Spare	A spare asset kept in case another asset of the same type is damaged. For example transformers, circuit breakers, and the like.
PR	Proposed	New asset proposed and planned for construction.
CN	Constructed	New asset that has been constructed but not yet commissioned.
IS	In-service	Asset commissioned and available for use on the electrical network.
OS	Out-of-service	Was in service but has been de-commissioned and isolated from the electrical network.
SC	Scrapped/disposed	No longer a viable asset, disassembled and no longer with Endeavour Energy.
SD	Sold	Sold as a unit that may be reused by others.

Equipment status is controlled by the GIS system. When an asset transitions from one status to another, branch form FAD 2001 – Notification of network alterations sheet (white sheet) or FCL 0143 – Notification of HV system alterations (pink sheet) must be submitted to Asset & Metering Data to keep the GIS system updated.

5.4.1 Asset lifecycle

All equipment will typically go through the following asset life cycle stages:

- Proposed or spare.
- Constructed.
- In-service.
- Out-of-service.
- Scrapped/disposed or sold.

Equipment will require specific information depending on the stage in the asset life cycle. For example equipment assigned as “Proposed” will only have general information available. When equipment transitions from the “Constructed” asset lifecycle stage to “In-service” stage it **must** contain all the mandatory information as detailed in Annexure 4.

5.5 Structured plant number (SPN) system

Data entry in the Equipment register shall be made in such a way that all transmission and zone substation assets are uniquely identified with a structured plant number (SPN). This number will be generated when all the relevant data is entered into the Equipment register.

However, power transformers; including tap changer, motor box and winding; are treated as special equipment and, therefore, these structured plant numbers are different to other equipment. Poles and towers in the Equipment register do not have a structured plant number; they are linked to Equipment register through the GIS system by a map number and GPS co-ordinates.

The SPN provides details of where an asset is located in the network, the type of asset and its operating number. An example of a structured plant number for an incoming feeder bay CB at Kiama substation is: **9664SA01CB00KM12**.

The SPN is made up of the following five (5) sections shown below.

SPN 1	SPN 2	SPN 3	SPN 4	SPN 5
9664	S	A01	CB	00KM12

Note: Substation equipment cannot exist without a SPN number.

5.5.1 SPN 1 - Substation number

SPN 1 is dedicated to the substation number, for example, 9664 is for Kiama zone substation. The substation number for a new substation will be provided by Asset Strategy & Planning branch.

5.5.2 SPN 2 - List of designations

SPN 2 is divided to five (5) categories, as follows:

SPN 2	Designation
S	Substation
P	Protection
C	Civil
X	Scrapped/decommissioned - substation + civil
Y	Scrapped/decommissioned - protection

Explanatory notes on SPN 2:

When equipment is scrapped or decommissioned, it should be moved to the X or Y designation. The SPN should be, for example, 9664XE04CB00KMD2, where the X replaces the S. This will provide a tracking method to show the origin of the scrapped equipment.

5.5.3 SPN 3 - List of equipment bays and protection schemes

SPN 3 defines the equipment bay or the protection scheme and is made up of two parts – SPN 3a and SPN 3b.

Annexure 7 shows the boundaries of the equipment bay and protection scheme for incoming feeder bay, incoming bus section bay, transformer bay, outgoing bus section bay and outgoing feeder bay.

The following tables define the equipment bays and protection schemes, and related SPN 3a and SPN 3b.

SPN3a	Equipment bay/protection scheme	Possible designation
A	Incoming feeder equipment bay/protection scheme	Substation and protection
B	Incoming bus section equipment bay/protection scheme	Substation and protection
C	Transformer equipment bay/protection scheme	Substation and protection
D	Outgoing bus section equipment bay/protection scheme	Substation and protection
E	Outgoing feeder bay/protection scheme	Substation and protection
J	SCADA protection scheme	Protection
K	AFIC equipment bay	Substation = AFIC cells and MG set Protection = AFIC controller/supervision unit, contactor
L	Auxiliary bar equipment bay	Substation
M	Auxiliary transformer equipment bay	Substation
N	Battery bay	Substation
P	Capacitor equipment bay/protection scheme	Substation and protection
Q	Miscellaneous equipment bay	Substation
T	Inter-trip protection scheme	Protection
U	Under-frequency protection scheme	Protection
V	Voltage regulator protection scheme	Protection

SPN3b- Substation bay

01 as required
02 as required
03 as required
and so on

SPN3b- Protection schemes

S if one scheme available
A and B If two (2) schemes available

Explanatory notes on SPN 3:

- For all equipment bays/protection schemes, the bay/scheme number (SPN3b) will be 01; if there is more than one (1) equipment bay/protection scheme, the number will be 02, 03, and so on.

For example, consider Kiama substation: There are four (4) incoming feeder bays: SPN 3 for equipment bays, equipment, protection schemes and protection relays in four incoming feeders – no's 01, 02, 03 and 04 are **A01**, **A02**, **A03** and **A04** respectively.

- SPN 3 for civil equipment (fence, lawn, building and the like) is generally in **Q** bay. However, it could be the A, B, C, D or E if civil equipment is located in that particular bay.

3. Protection schemes and relays numbering conventions are as follows:

- SPN 3b for all protection schemes and protection relays will be 01S if one (1) scheme is available. If there are two (2) schemes, SPN 3b for two schemes will be 01A and 01B.
- SPN 3 for incoming feeder protection is A01S (A01A and A01B if more than one [1] scheme).
- SPN 3 for incoming bus bar protection HV is B01S (B01A and B01B if more than one [1] scheme)

5.5.4 SPN 4 and SPN 5 for each equipment group ID

A complete list of SPN 4 and SPN 5 for each equipment group ID is included in Annexure 5.

1. For all other equipment where a generic equipment name is used and no operational number exists, the SPN 5 modifier needs to be **...-01, ...-02, ...-03** and so on (**SPN 5**), for example, 9664SN**01**BATT-**01**.
2. Where surge diverters (for example, transformer bays) are on all voltages, the SPN5 column will have a *modifier* of ...-01A, ...-01B, ...-01C and ...-02A, ...-02B, ...-02C and ...-03A, ...-03B, ...-03C for the respective voltages from the highest to the lowest. For example, the complete SPN is 9664SC01SURG-01A. If there is only one (1) set of surge diverters (such as a feeder bay) it will have ...-01A,-01B,-01C.
3. The same procedure as in item 2 above applies for CTs (for example, 9664SC01CUTX-01A).

5.5.5 SPN 4 and SPN 5 for protection relays

A complete list SPN 4 for protection relays is included in Annexure 6.
There is no requirement for SPN 5 for protection relays.

5.5.6 Special requirements for transformers, motor boxes, tap changers and windings

Power transformers, auxiliary transformers, earthing transformers and isolation transformers are moved from one location to another to accommodate the demands of the network. To allow tracking of this equipment, equipment positions have been created.

The position must first be created and the actual transformer, motor box and tap changers can be added to this position. If the position is to be located in a new bay, the new bay must be created before the position is created.

If this equipment is to be created at a brand new substation, the substation must be created first, followed by the bays and position. Only then can the transformer, motor box and tap changers be fitted.

There shall be only one (1) transformer, motor box and tap changer at each transformer position.

5.5.7 SPN requirement for transformer position and actual transformer

Position - power transformers are to be numbered according to the bay that they are in with PWTX. There is no need to include a modifier as the transformer position is unique to that bay. If a modifier is included, the modifier shall be same as the bay number.

For example, Kiama no. 01 power transformer: SPN for power transformer position is 9664SC01PWTX or with a modifier 9664SC**01**PWTX-**01**.

Position - auxiliary transformers, earthing transformers and isolation transformers are to be numbered according to the bay that they are in, with AUTX for auxiliary transformers, ISTX for isolating transformers, and EATX for earthing transformers. There is no need to include a modifier as the transformer position is unique to that bay. If a modifier is included, the modifier shall be same as the bay number.

For example, Kiama no. 01 auxiliary transformer: SPN for auxiliary transformer position is 9664SC01AUTX or with a modifier 9664SC**01**AUTX-**01**.

Actual - power transformers SPN have a prefix of TX followed by the substation number. An operating number must be added.

For example, Kiama no. 1 power transformer: SPN for power transformer actual is TX9664**1**. The related SPN number for tap changer (TC) and motor box (MB) will be TC9664**1** and MB9664**1** respectively.

All transformer windings assets shall have Productive unit relationship to the parent power transformer. The related SPN for two (2) windings will be TX9664**1** **WI-01** and TX9664**1** **WI-02**. SPN for spare transformers: TX followed by substation number, with a modifier SP01. Since spare transformers have no transformer position or transformer bay. The Productive unit for spare transformer shall be the substation SPN. Spare transformer equipment status shall be SP.

For example, the no. 01 spare transformer at Hawkesbury TS spares yard SPN would be TX9550**SP01**.

Actual - auxiliary transformer SPN have a prefix of TX followed by the substation number. A modifier must be added, for example TX9664-**01** for no 01 auxiliary transformer at Kiama.

Actual - isolating transformer SPN have a prefix of TX followed by the substation number. A modifier must be added, for example TX9664-**01** for no 01 isolating transformer at Kiama.

Actual - earthing transformer SPN have a prefix of TX followed by the substation number. A modifier must be added, for example TX9664-**01** for no 01 earthing transformer at Kiama.

5.6 Equipment Location

Refer to Annexure 8 for details of location format for various transmission and zone substation assets.

5.7 Equipment Register

The main asset management tool is the Equipment register. The Equipment register consists of the following tab sections:

- General
- Gen (Misc)
- Costing
- Tracing
- Classifications

All sections must be filled out according to the instructions below in order for the equipment number to be generated by the system.

5.7.1 General tab

The following data fields must be completed:

- Class
- Status
- Owner district
- Equipment group ID
- Plant details
- Disposal details (if disposing)
- Nameplate details
- Alternate references

The screenshot shows the 'Equipment Register' application window. The 'General' tab is selected, displaying various data fields for equipment entry. The 'Equipment Number' is 000000117738, and the location is 'EAST PROSPECT ZS, 11kV'. The 'Class' is 'CB' (Circuit Breaker) and the 'Status' is 'IS' (In Service). The 'Owner Dstrct' is 'INTG' (Endeavour Energy). The 'Equip Grp Id' is 'CBVACUUM' (Vacuum Circuit Breaker). The 'Active' checkbox is checked. The 'MSSS Applies', 'RCM Analysis', and 'Permit Required Sw' checkboxes are unchecked.

Field	Value
Equipment Number	000000117738
Location	EAST PROSPECT ZS, 11kV
Name Code	
Plant Number	9634SC02CB018815
Type	
Class	CB - Circuit Breaker
Status	IS - In Service
Equip. Location	7919 - PROSPECT - Reservoir Rd [31001]
Owner Dstrct	INTG - ENDEAVOUR ENERGY
Equip Grp Id	CBVACUUM - VACUUM CIRCUIT BREAKER
Active	☒
MSSS Applies	☐
RCM Analysis	☐
Permit Required Sw	☐

5.7.1.1 Class field

The class details will be as selected, as set out in Annexure 2, and should already appear in this table.

5.7.1.2 Status field

The status relevant to substation equipment is specified in clause 5.4.

5.7.1.3 Owner district field

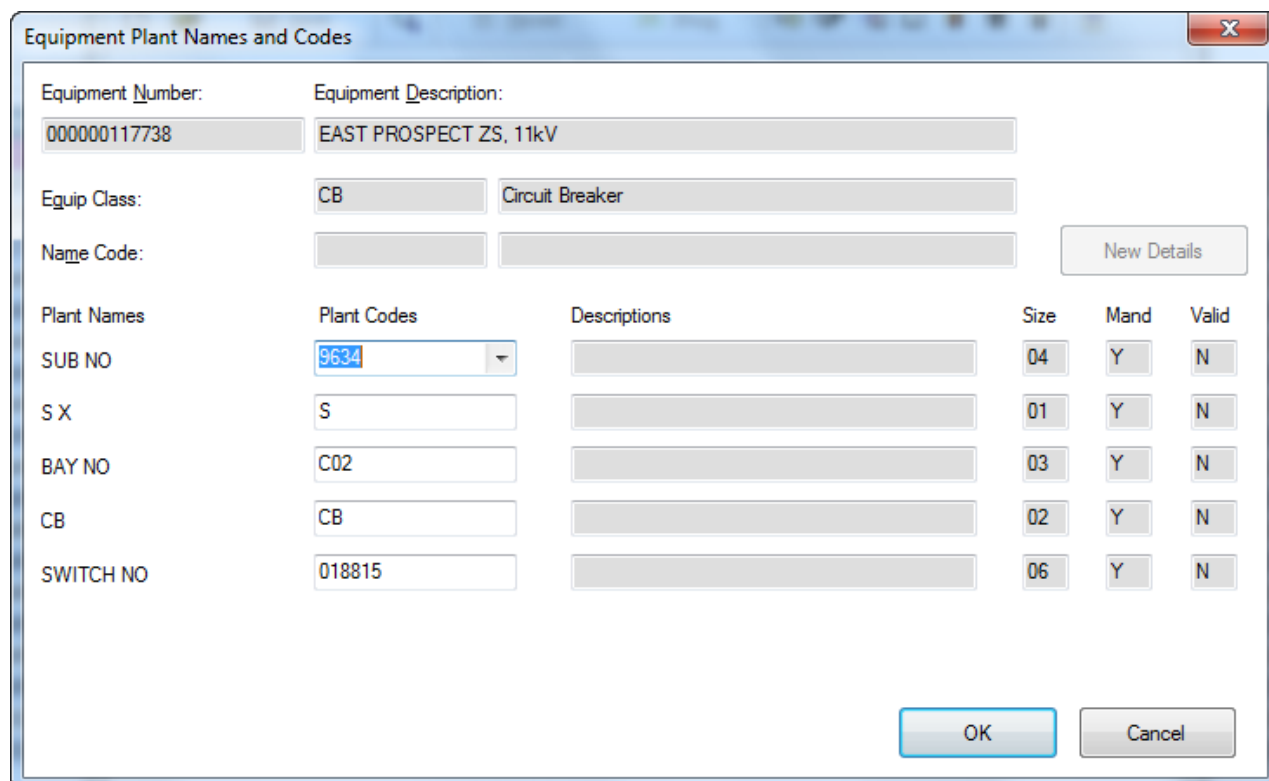
Owner district is INTG.

5.7.1.4 Equipment group ID field

Equipment group IDs should be selected from Annexure 3.

5.7.1.5 Plant details

This plant details screen determines the SPN number that will be generated.



The dialog box titled "Equipment Plant Names and Codes" contains the following fields and controls:

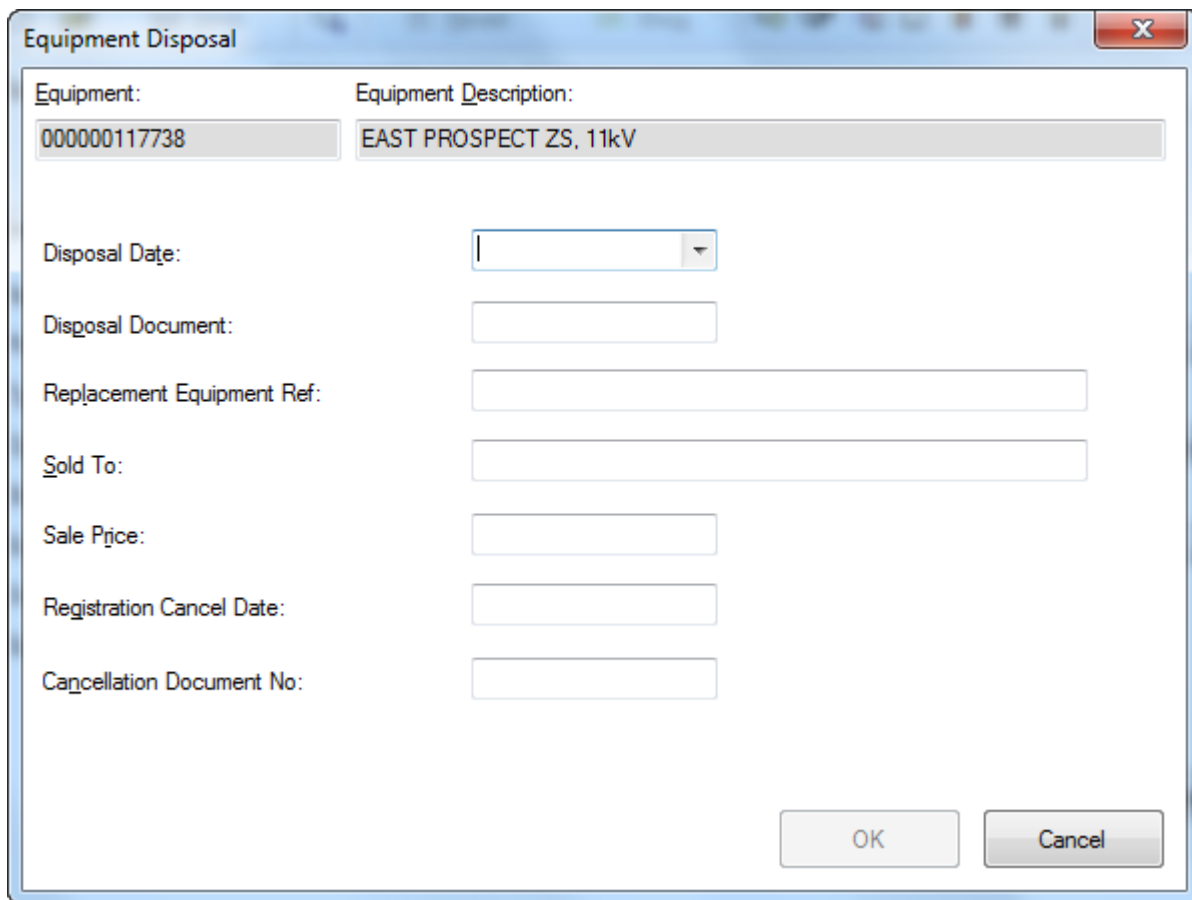
- Equipment Number:** 000000117738
- Equipment Description:** EAST PROSPECT ZS, 11kV
- Equip Class:** CB (selected), Circuit Breaker
- Name Code:** (empty)
- New Details** button
- Plant Names Table:**

Plant Names	Plant Codes	Descriptions	Size	Mand	Valid
SUB NO	9634		04	Y	N
S X	S		01	Y	N
BAY NO	C02		03	Y	N
CB	CB		02	Y	N
SWITCH NO	018815		06	Y	N

At the bottom right are **OK** and **Cancel** buttons.

5.7.1.6 Disposal details

The disposal details screen shall be filled in when disposing equipment.



The image shows a software dialog box titled "Equipment Disposal". It contains several input fields for recording disposal information. The "Equipment" field is pre-filled with "000000117738" and the "Equipment Description" field is pre-filled with "EAST PROSPECT ZS, 11kV". Other fields include "Disposal Date" (a date picker), "Disposal Document", "Replacement Equipment Ref", "Sold To", "Sale Price", "Registration Cancel Date", and "Cancellation Document No". At the bottom right are "OK" and "Cancel" buttons.

Field Label	Value / Type
Equipment:	000000117738
Equipment Description:	EAST PROSPECT ZS, 11kV
Disposal Date:	[Date Picker]
Disposal Document:	[Text Field]
Replacement Equipment Ref:	[Text Field]
Sold To:	[Text Field]
Sale Price:	[Text Field]
Registration Cancel Date:	[Text Field]
Cancellation Document No:	[Text Field]

5.7.1.7 Nameplate

The *nameplate* screen brings up the relevant nameplate for the type of equipment selected.

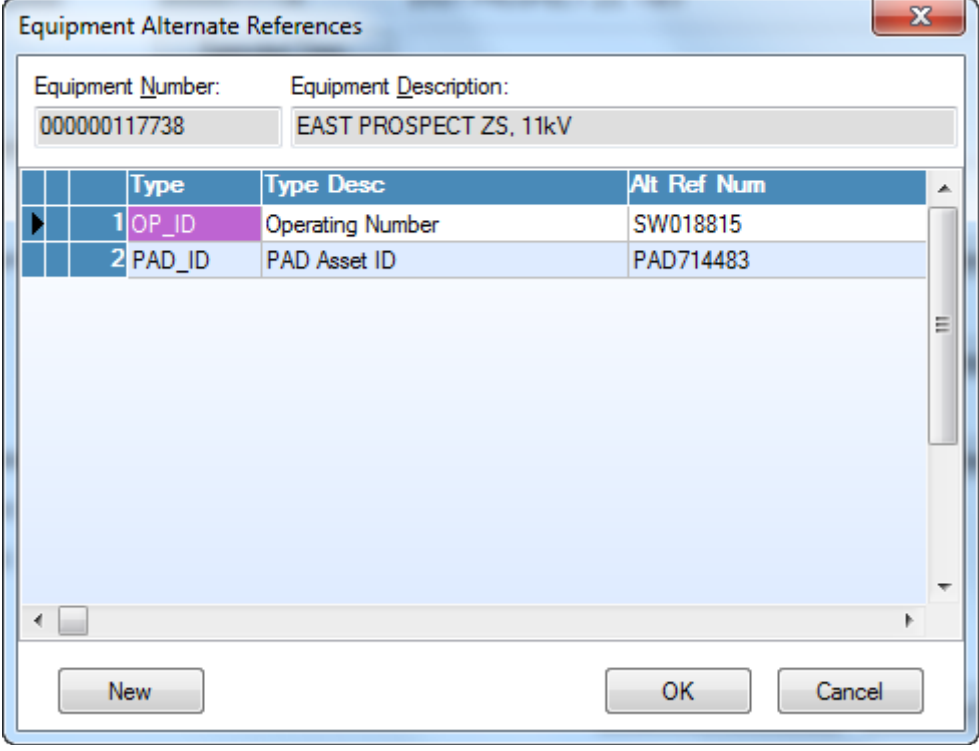
The screenshot shows a software window titled "Nameplate Attributes". It contains a table with the following columns: Seq No, Mandatory, Attribute Name, Attribute Description, Attribute Value, and Description. The table lists 34 attributes for equipment, including contract details, commissioning date, owner information, voltage, profile date, data source, project details, ratings, switch current, PCB information, duty cycle, trip settings, arc quenching, insulating medium, recloser settings, auto target reset, CB locality, close retry time, coil amps, cold load pickup, and HV bushing fill compounds. At the bottom of the window are buttons for "Print", "OK", and "Close".

Seq No	Mandatory	Attribute Name	Attribute Description	Attribute Value	Description
1 0010	NO	CONTRACTID	Contract Id		
2 0011	NO	DATECOMM	Commissioning Date	18/07/1990	
3 0012	NO	POLEOWNER	Equip Owner	INTEGRAL ENERGY	INTEGRAL ENERGY
4 0014	NO	3PHASE	Phases	3 PHASE	3 Phase
5 0015	NO	VOLTNOMINAL	Voltage - Nominal (V)	11000	11000
6 0016	NO	PROFDATE	Profile date (est dt of manuf)	1/01/1994	
7 0017	NO	PROFDSOURCE	Data source (for profile date)	SAM	SAM equipment schedule (eg. ex Prospect)
8 0020	NO	PROJECT	Project No		
9 0022	NO	DRAWING	Project Drawing		
10 0028	NO	RATINGVOLTS	Voltage Rating (KV)		
11 0030	NO	RATINGA	Rating - Current (A)	2000.0	
12 0040	NO	RATINGSW	Switch Current Rating (A)		
13 0050	NO	PCBFREE	PCB Free		
14 0051	NO	PCBVALUE	PCB Value (ppm)		
15 0052	NO	DATEPCB	Date of PCB Reading		
16 0053	NO	PCBREF	PCB Test File Ref No		
17 0060	NO	100DUTY	100% Duty		
18 0070	NO	ADDER	Adder		
19 0080	NO	EFALTMINTRIP	Alt Min Trip E/F		
20 0090	NO	OCALTMINTRIP	Alt Min Trip O/C		
21 0100	NO	ARCQUENCH	Arc Quenching Medium	VACUUM	VACUUM (to be deleted)
22 0110	NO	VOLARQUENCH	Arc Quench/Insulating Vol (l)		
23 0115	NO	INSULMEDIUM	Insulating Medium		
24 0116	NO	INTERRUPTER	Recloser/Sect Interrupter		
25 0120	NO	AUTOTARGETRE	Auto Target Reset		
26 0130	NO	CBLOCALITY	CB Locality		
27 0140	NO	TIMECLOSERET	Close Retry Time (secs)		
28 0150	NO	COILAMPS	Coil (Amps)		
29 0160	NO	COLDLOADPU	Cold Load Pickup (Amps)		
30 0161	NO	HVBUSHFILLA1	HV Bushing A1 - fill compound		
31 0162	NO	HVBUSHFILLA2	HV Bushing A2 - fill compound		
32 0163	NO	HVBUSHFILLB1	HV Bushing B1 - fill compound		
33 0164	NO	HVBUSHFILLB2	HV Bushing B2 - fill compound		
34 0165	NO	HVBUSHFILLC1	HV Bushing C1 - fill compound		

All mandatory fields in the equipment nameplate screen shall be completed (refer to Annexure 4 for the mandatory details to be recorded in the Equipment register categorised by equipment class and equipment group ID).

5.7.1.8 *Alternate reference*

Complete details as available. This tab is used to enter the reference Operating Number related to The Equipment register asset data.



The dialog box titled "Equipment Alternate References" contains two input fields at the top: "Equipment Number:" with the value "000000117738" and "Equipment Description:" with the value "EAST PROSPECT ZS, 11kV". Below these fields is a table with three columns: "Type", "Type Desc", and "Alt Ref Num". The table contains two rows: the first row has "1" in the first column, "OP_ID" in the second column, "Operating Number" in the third column, and "SW018815" in the fourth column; the second row has "2" in the first column, "PAD_ID" in the second column, "PAD Asset ID" in the third column, and "PAD714483" in the fourth column. At the bottom of the dialog box are three buttons: "New", "OK", and "Cancel".

	Type	Type Desc	Alt Ref Num
1	OP_ID	Operating Number	SW018815
2	PAD_ID	PAD Asset ID	PAD714483

5.7.2 General (Misc) tab

The following field must be completed:

- Productive unit.

Description below productive unit will automatically appear once productive unit field is completed.

The screenshot shows the 'Equipment Register' application window. The 'General (Misc)' tab is selected. The 'Equipment Number' field contains '000000117738' and the 'Extended Desc' field contains 'EAST PROSPECT ZS, 11kV'. The 'General' tab is active, showing fields for 'Custodian', 'Input By', 'Operator Id', 'Shutdown Eq', 'Productive Unit', 'Warranty', and 'No OP_ID Instance'. The 'Productive Unit' field contains '9634SC02' and the 'Extended Desc' field contains 'EAST PROSPECT ZS, 33KV, NO 2 TRANSFORMER'. The 'Warranty' field is split into 'Date', 'Type', and 'Value' sub-fields. The 'No OP_ID Instance' field is empty.

Field	Value
Equipment Number	000000117738
Extended Desc	EAST PROSPECT ZS, 11kV
Custodian	
Input By	
Operator Id	
Shutdown Eq	
Productive Unit	9634SC02
Extended Desc	EAST PROSPECT ZS, 33KV, NO 2 TRANSFORMER
Warranty Date	
Warranty Type	
Warranty Value	
No OP_ID Instance	

5.7.3 Costing tab

The following fields must be completed:

- Acct Code.

The costing information should be obtained from the Regional support employees.

Equipment Register

Equipment Edit View Tools Help

Save Find Revert Show

Equipment Number: 000000117738 EAST PROSPECT ZS, 11kV

Extended Desc

General Gen (Misc) **Costing** Tracing Classifications Location Reference Codes

Acct Code: A872040RP TRANSMISSION SUBSTATIONS - CENTRAL NO RE

Exp Elem:

Costing: Allowed

Continuous Asset Segments

Range Start: End: Length: Unit of Measure:

View Segments

5.7.4 Tracing tab

The following fields must be completed:

- *Comp codes*, which is the component code (used in protection equipment).
- *Mnemonic*, this is the equipment manufacturer's name.
- *Serial No.*, which is the equipment's serial number.
- *Part No.*, which is the equipment's model number.

The screenshot shows the 'Equipment Register' application window. The 'Tracing' tab is selected, displaying various fields for equipment identification and tracking. The 'Equipment Number' is 000000117738, and the description is 'EAST PROSPECT ZS, 11kV'. The 'Comp Code' is empty, 'Mnemonic' is REYROLLE, 'Stock Code' is empty, 'Serial No' is 1993VP288, and 'Part No' is LM23T/X6/MO. Other fields include 'Document No', 'GIS Reference' (63974322), 'Purchase Ord', 'Purchase Price', 'Purchase Date', and a 'Traceable' checkbox.

Field	Value
Equipment Number	000000117738
Description	EAST PROSPECT ZS, 11kV
Extended Desc	
Comp Code	
Mnemonic	REYROLLE
Stock Code	
Serial No	1993VP288
Part No	LM23T/X6/MO
Document No	
GIS Reference	63974322
Purchase Ord	
Purchase Price	
Purchase Date	
Traceable	☐

5.7.5 Classifications tab

The following fields must be completed:

- Depot.
- Equipment Usage.

Equipment Register

Equipment Edit View Tools Help

Equipment Number: 000000117738 EAST PROSPECT ZS, 11kV

Extended Desc

General Gen (Misc) Costing Tracing **Classifications** Location Reference Codes

Equipment Locality			Equipment Use		
Property Process			Ownership		
Condition Equipment			Hire Category		
Depot	TC	T/SUBS - Central	Usage		
Inspection Flag			Not used		
Division			Not used		
Branch			Not used		
Group			Not used		
Section			Not used		
Equipment Usage	TS	Transmission Subs	Renumbr Pole		

6.0 AUTHORITIES AND RESPONSIBILITIES

Manager Asset Standards & Design has the authority and responsibility for approving the amendments to this Standard in accordance with GAM0001.

Manager Asset & Metering Data has the authority and responsibility for checking that the requirements of this instruction, all SDIs, and SMIs data entry requirements are met when recording information in the equipment register.

Substation Assets Manager has the authority and responsibility for keeping the content of this Standard up to date.

Regional Transmission Managers and **Manager Projects & Programs** have the authority and responsibility for:

- checking that the requirements of this instruction, all SDIs, and SMIs data entry requirements are met when recording information in the equipment register;
- checking that Endeavour Energy employees and/or contractors engaged to perform the work have appropriate qualifications and are competent to carry out the work; and
- providing appropriate equipment and training.

Endeavour Energy employees and/or contractors has the authority and responsibility for:

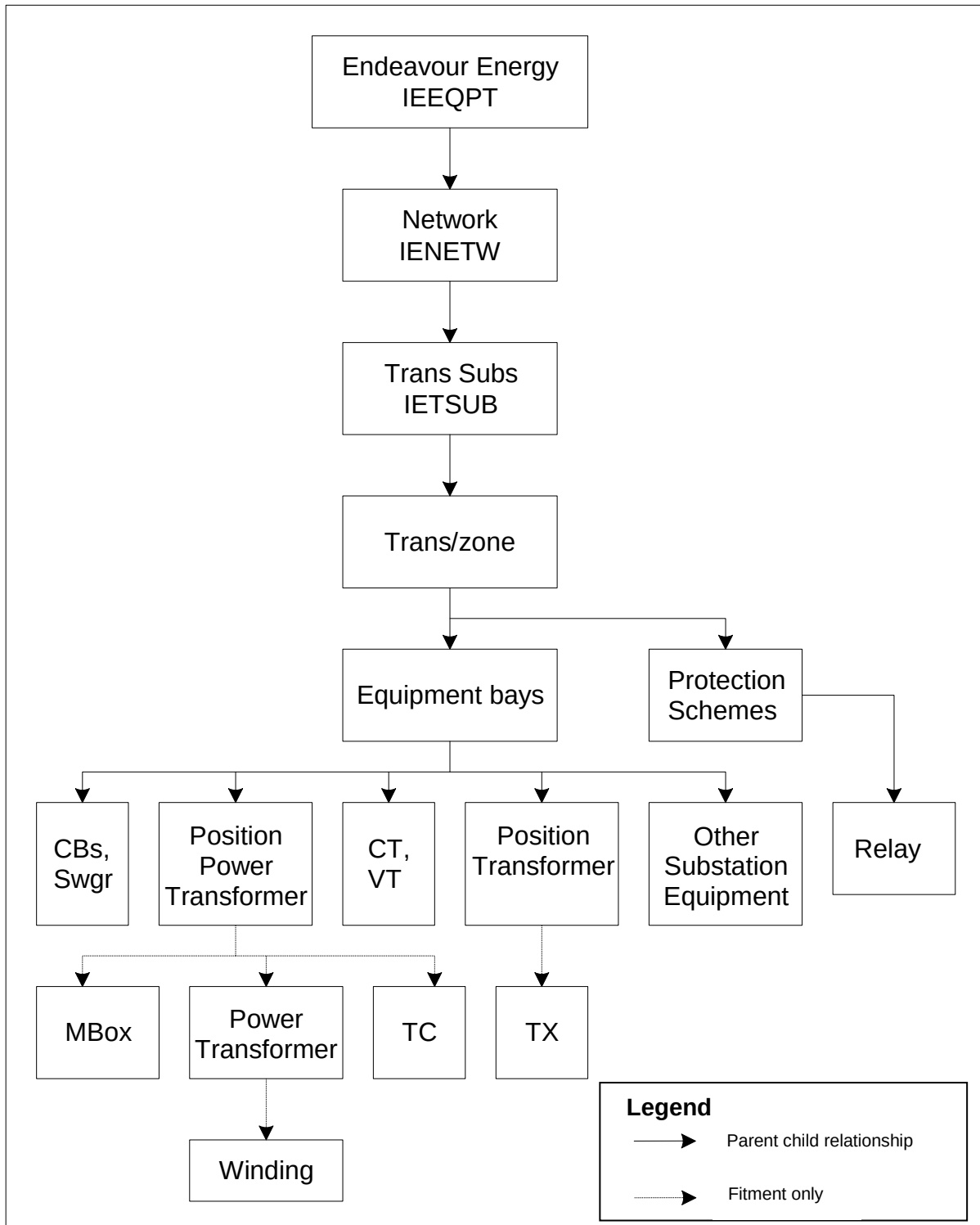
- checking that the requirements of this instruction, all SDIs, and SMIs data entry requirements are met when recording information in the equipment register;
- updating Endeavour Energy's asset database (The Equipment register); and
- communicating abnormalities found in data to the Regional Transmission Managers, **Manager Projects & Programs** and the Substation Assets Manager.

7.0 DOCUMENT CONTROL

Documentation Content Coordinator : **Substation Assets Manager**

Documentation Distribution Coordinator : Branch Process Coordinator

Annexure 1: Endeavour Energy transmission and zone substation equipment data hierarchy



Annexure 2: Transmission and zone substation equipment classes

Equipment class	Description
AC	Accommodation
AF	AFIC Equipment
AI	Air System
BT	Battery – Trans
BY	Substation Bay
CB	Circuit Breaker
CM	Communications
CN	Control Panel
CT	Current Trf
CU	Capacitor –Tran
ER	Earthing
FE	Fire Equipment
MB	Motor Box (TC)
P1	Pos - Power Trf
P2	Pos - Aux/Isol
PC	Pilot Cable
PE	Portable Earth
PR	Prot Relay
PS	Prot Scheme
PX	Power Transformer
RE	Reactor
SC	SCADA Equip
TC	Tap changer
TE	Trans. Equip
TS	Sw/gear - TRANS
TX	Transformer
TZ	Trans/Zone Sub
VR	Voltage Regulation
VT	Voltage Transformer
WI	Winding

Annexure 3: Transmission and zone substation equipment group ID

Equipment class	Equipment group ID EGI	Description for equipment group ID
AC	AIRCON	Air Conditioner
AC	ALARM	Security Alarm Systems
AC	ALARMPANEL	Fire Alarm Panel
AC	BACKFLOWPRV	Back Flow Prevention Device
AC	BLDGCONTROL	Control Building
AC	BUNDWALL	Bund Wall
AC	EMERLIGHTING	Emergency Lights
AC	FENCE	Fence
AC	LAWN	Lawn/Landscaping
AC	LIGHTING	Lighting
AC	LVRESCUEKIT	LV Rescue Kits
AC	OILSBARRIER	Oil Splash Barrier
AC	OILSEP	Oil Separator
AC	PASSIVESEP	Passive Oil/Water Sep
AC	ROOFACCSYSTM	Roof Access System
AC	SEPTICTANK	Septic Tank
AC	SPILLKIT	Spill Kit
AC	SWITCHYARD	Switch Yard
AF	AFCAPACITOR	Coupling Cell Cap - AFIC
AF	AFCONTACT	Contactor Equip - AFIC
AF	AFCONTROL	Controller - AFIC
AF	AFISOLTRF	Isolation Transf - AFIC
AF	AFMOTORGEN	Motor Generator - AFIC
AF	AFSTATICFU	Static Freq Unit - AFIC
AF	AFSUPERVISIO	Supervision Unit - AFIC
AF	AFTUNECOILS	Coupling Cell Coils -AFIC
AI	AIRRECTANK	Air Receiver Tank
AI	COMPRESSOR	Compressor
BT	BATTCHARGER	Charger - Battery
BT	BATTLEAD	Lead-Acid Battery
BT	BATTNICAD	Nickel-Cadmium Battery
BT	BATTSEALED	Sealed Battery
BY	BYAFIC	AFIC Bay
BY	BYAUXBUS	Auxiliary Busbar Bay
BY	BYAUXTRF	Auxiliary Trf Bay
BY	BYBATT	Battery Bay
BY	BYBUSBAR	Busbar Bay
BY	BYBUSSECT	Bus Section Bay
BY	BYBUSSECTCB	Bus Section CB Bay
BY	BYCAP	Capacitor Bay
BY	BYFDR	Feeder Bay
BY	BYMISC	Miscellaneous Bay
BY	BYSCADA	SCADA Bay

Equipment class	Equipment group ID EGI	Description for equipment group ID
BY	BYSCRAP	Scrapped/Decommissioned
BY	BYTRFHV	Transformer Bay HV Side
CB	CBBULKOIL	Bulk Oil CB
CB	CBBULKOILCAP	Bulk Oil CB (Capacitor)
CB	CBEARTHTRUCK	Circuit Breaker Earth Truck
CB	CBSF6	SF6 Circuit Breaker
CB	CBSF6CAP	SF6 Circuit Breaker (Cap)
CB	CBSMALLOIL	Small Oil Volume CB
CB	CBVACUUM	Vacuum Circuit Breaker
CB	RECLOSET	Recloser - Transmission
CM	COUPFILTER	Coupling Filter
CM	MMI	MMI
CM	RADIO	Radio
CM	TELEPHONE	Telephone
CN	CNACCONTROL	AC Control Panel
CN	CNDCCONTROL	DC Control Panel
CN	CNFDRCONTROL	Feeder Protn & Ctrl Panel
CN	CNSCADA	SCADA Control Panel
CN	CNVRCONTROL	V/R Control Panel
CT	CT	Current Transformer
CT	CTNEUTEARTH	Neutral Earthing CT
CT	CTNEUTUNB	Neutral Unbalance CT
CT	CTPOST	Post Current Transformer
CU	CAP11KV	Capacitor - 11kV
CU	CAPBANK	Capacitor Bank
ER	ERGRID	Earth grid
FE	ALARMFIRE	Fire Alarm Detector
FE	ALARMPANEL	Fire Alarm Panel
FE	BLANKFIREDRY	Fire Blankets - Dry
FE	BLANKFIREWET	Fire Blankets - Wet
FE	DELUGSHWR	Deluge Shower
FE	FIREPUMP	Fire Pump
FE	FIRSHTTTHRMVN	Fire Shutters/Thermal Vent
FE	HYDRFIRE	Hydrant - Fire
FE	P3FIRE	Fire Extinguisher Pos
MB	MOTORBOX	Motor Box VR
P1	P1POWER	Power Trf Position
P2	P2AUXTRF	Auxiliary Trf Position
P2	P2ISOLTRF	Isolating Transformer Position
PC	PILOTCABLE	Pilot Cable
PE	PORTEARTH	Portable Earth
PR	PRACIR	A/C Intertrip Rec Relay
PR	PRACMT	A/C L/out Multitrip Relay
PR	PRALRM	Alarm Relay
PR	PRARCL	A/R Relay

Equipment class	Equipment group ID EGI	Description for equipment group ID
PR	PRARMT	A/R Multitrip Relay
PR	PRARSC	A/R SCADA Relay
PR	PRAUXL	Auxiliary Relay
PR	PRBBPD	Busbar Differential Relay
PR	PRBHAL	Buchholz Alarm Relay
PR	PRBHAT	Buchholz Aux Trf Relay
PR	PRBHCH	Buchholz Relay
PR	PRBHMT	Buchholz Main Tank Relay
PR	PRBHTC	Buchholz Tap Changer Relay
PR	PRBHTM	Buchholz Timer Relay
PR	PRBHVT	VT Buchholz Relay
PR	PRCBFK	CB Fail Check Relay
PR	PRCBFT	CB Fail Timer Relay
PR	PRCHCK	Check Relay
PR	PRCOVT	VT Changeover Relay
PR	PRDBBK	Dead Bus Bypass Chk Relay
PR	PRDCSV	DC Fuse Supervision Relay
PR	PRDEFT	B/up Directional E/F Relay
PR	PRDFOC	Differential O/C Relay
PR	PRDIRE	Directional E/F Relay
PR	PRDIST	Distance Relay
PR	PRDOCT	B/up Directional O/C Relay
PR	PRDRIE	Directional E/F-IOC Relay
PR	PRDROC	Directional Relay
PR	PRDROE	Directional O/C-E/F Relay
PR	PRDROI	Directional O/C-IOC Relay
PR	PRDSOC	Distance & O/C Relay
PR	PREFAL	Earth Alarm Relay
PR	PREFCK	Earth Fault Check Relay
PR	PREFLT	Earth Fault Relay
PR	PRFLAG	Flag Relay
PR	PRFLCK	Frame Leakage Check Relay
PR	PRFLOC	Frame Leakage Relay
PR	PRFRDF	Feeder Differential Relay
PR	PRFSSV	Fuse Supervision Relay
PR	PRFSVT	VT Fuse Relay
PR	PRFUSE	Fuse Relay
PR	PRHOHW	Hot Oil-Hot Winding Relay
PR	PRHOTO	Hot Oil Relay
PR	PRHOTW	Hot Winding Relay
PR	PRIOCE	IOC & IEF Relay
PR	PRIOCT	IOC Relay
PR	PRITFG	Intertrip Rec Flag Relay
PR	PRITPR	Intertrip Receive Relay
PR	PRITPS	Intertrip Send Relay

Equipment class	Equipment group ID EGI	Description for equipment group ID
PR	PRITRP	Intertrip Relay
PR	PRLBUK	Local Backup Check Relay
PR	PRLBUP	Local Backup Relay
PR	PRLBUT	Local Backup Timer Relay
PR	PRLOWG	Low Gas Relay
PR	PRLVCB	LVCB Relay
PR	PRMMTF	Memory Trip Series Flag Relay
PR	PRMMTM	Memory Timer Relay
PR	PRMTRP	Multitrip Relay
PR	PRNEFK	Neutral E/F Check Relay
PR	PRNEFT	Neutral E/F Relay
PR	PRNEUB	Neutral Unbalance Relay
PR	PRNEUT	Neutral U/b Timer Relay
PR	PRNVCO	No Volt Change Over Relay
PR	PROCEF	Over current & E/F Relay
PR	PROCIO	Over current & IOC Relay
PR	PROCRT	Over current Relay
PR	PROCTI	HV O/C & IOC Relay
PR	PROCUB	Overload & Unbalance Relay
PR	PROEFT	HV Over current & E/F Relay
PR	PROESF	O/C-E/F-SEF Relay
PR	PROILS	Oil Surge Relay
PR	PROPRS	Overpressure Relay
PR	PROVLT	Over voltage Relay
PR	PRPRSR	Pressure Relief Relay
PR	PRPRTC	Pressure Tap Change Relay
PR	PRPSSF	Power Supply Fail Relay
PR	PRREFT	Restricted E/F Relay
PR	PRRELY	Relay
PR	PRSCAD	SCADA Relay
PR	PRSEFF	SEF Flag Relay
PR	PRSEFK	SEF Check Relay
PR	PRSEFT	SEF Relay
PR	PRSUSV	Supervision Relay
PR	PRSYNC	Synchronising Check Relay
PR	PRTHOL	Thermal Overload Relay
PR	PRTMER	Timer Relay
PR	PRTRAN	Translay Relay
PR	PRTRIP	Trip Relay
PR	PRTRPK	Trip Check Relay
PR	PRTRSP	Trip Circuit Super Relay
PR	PRTUNT	Test Unit Relay
PR	PRTXDF	Trf Differential Relay
PR	PRTXMN	Trf Management Relay
PR	PRUFRQ	Under frequency Relay

Equipment class	Equipment group ID EGI	Description for equipment group ID
PR	PRUVAC	AC Under voltage Relay
PR	PRUVVT	VT Under volt Detect Relay
PR	PRVDIFF	Voltage Differential Relay
PR	PRVSEN	Voltage Sensing Relay
PR	PRZNME	Zone Measuring Unit Relay
PR	PSAUXTRF	Auxiliary Trf Protection
PR	PSBUSBAR	Busbar Protection
PR	PSFDRDIST	11-22kV Fdr Protection
PS	PSBUSBAR	Busbar Protection
PS	PSCAP	Capacitor Protection
PS	PSFDR132	66-132kV Fdr Protection
PS	PSFDRDIST	11-22kV Fdr Protection
PS	PSFDRTRANS	33kV Fdr Protection
PS	PSINTERTRIP	Intertrip Protection
PS	PSMISC	Misc Protection
PS	PSPOWER	Zone Sub Trf Protection
PS	PSTRANTRF	Trans Sub Trf Protection
PS	PSUNDFREQ	U/F Load Shed Protection
PX	PXPOWER	Power Transformer
RE	REACCAPDIS	Capacitor Disc Reactor
RE	REACNEUTERTH	Neutral Earthing Reactor
RE	REACTCAPSW	Capacitor Switching Reactor
RE	REACTCUR	Current Reactor
SC	SCMMI	MMI (Screen & Key Panel)
SC	SCSYSTEM	SCADA System
TC	TAPCHANGER	Tap changer
TE	SOLARCONTRLR	Solar Control Box
TE	SOLARGRNDCEL	Solar Ground Mounted Array
TE	SOLARROOFCEL	Solar Roof Mounted Array
TE	SURGEDIV	Surge Arrester - Hv
TE	SWBOARD	Hv Switchboard
TS	CONTACTOR	Contactator - Capacitor Bank
TS	ISOL	Isolator
TS	SWEARTH	Earth Switch
TS	SWEARTHIN	Earthing Switch - Indoor
TS	SWEARTHINMOT	Earthing Switch - Indoor (Motorised)
TS	SWEARTHOUT	Earthing Switch - Outdoor
TS	SWEARTHOUTMO	Earthing Switch - Outdoor (Motorised)
TS	SWFAULT	Fault Throwing Switch
TS	SWFUSE	Hv Fuse Switch
TS	SWFUSEEPOXY	Hv Fuse Switch – Epoxy Encapsulated
TS	SWFUSEOIL	Hv Fuse Switch - Oil
TS	SWFUSESE	Hv fuse Switch – Sheet Steel

Equipment class	Equipment group ID EGI	Description for equipment group ID
		Enclosed
TS	SWFUSEUNIT	HV Switch/Fuse Unit
TS	SWFUSEUNITOL	Hv Switch/Fuse Unit - Oil
TS	SWFUSEUNITEP	Hv Switch/Fuse Unit – Epoxy Encapsulated
TS	SWFUSEUNITSS	Hv Switch/Fuse Unit – Sheet Steel Enclosed
TS	SWLINK	Link
TS	SWUNIT	HV Switch Unit
TS	SWUNITEPOXY	Hv Switch Unit –Epoxy Encapsulated
TS	SWUNITOIL	Hv Switch Unit -Oil
TS	SWUNITSSE	Hv Switch unit – Sheet Steel Enclosed
TX	TXAUX	Auxiliary Transformer
TX	TXEARTH	Earthing Transformer
TX	TXISOL	Isolation Transformer
TZ	BSP	Bulk Supply Point
TZ	HVC	HV Customer Zone Sub
TZ	SWSTN	Switching Station
TZ	TRANSUB	Transmission Substation
TZ	ZONESUB	Zone Substation
VR	RELAYAVR	Voltage Reg Relay
VR	VRSCADA	Voltage Reg - SCADA
VT	VT	Voltage Transformer
VT	VTCAP	Capacitor VT
VT	VTCCT	Metering Unit (CCT/VT)
VT	VTMAGN	Magnetic VT
WI	WIPRIM	Primary winding
WI	WISEC	Secondary winding
WI	WISEC2	Secondary winding

Annexure 4: Mandatory transmission and zone substation equipment details

The following equipment details for each transmission and zone substation asset shall be entered into the Equipment register database.

1 Common data for transmission and zone substation assets under equipment register

Equipment register attribute	Description
Blank field	Item Name 1 and Item Name 2
Equipment number	Not to be edited (generated by Equipment register)
Blank field	General location and description about asset
Extended notes	Enter detail when the above description field is not enough
General tab	
Plant number	Generated once enter the relevant data under plant detail button
Class	Equipment class
Status	Equipment status
Equip Location	GIS reference
Owner district	Equipment owner
Equip Grp ID	Equipment group ID
Plant detail button	
SUB NO	Substation Number- SPN 1
SX	Equipment designation-SPN 2
Bay NO	Equipment bay-SPN3
CB	SPN 4
SWITCH NO	Operating no.
Gen (Misc) tab	
Input by	Name of person creating asset
Productive unit	Plant number of parent asset
Costing tab	
Acct code	Group responsible for asset once installed
Costing	Allowed/not allowed
Tracing tab	
Comp code	
Mnemonic	Equipment manufacture name
Serial No	Equipment serial no.
Part No	Manufacture equipment type/model
Traceable	
GISREF	

Classification tab	
Depot	
Equipment usage	
Alternative ref.	
Operational No.	Relevant PDA asset ID

2 Mandatory Equipment Nameplate details**2.1 Equipment class – Accommodation (AC)**

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
AIRCON ALARM ALARMPANEL BACKFLOWPRV BLDGCONTROL BUNDWALL EMERLIGHTING FENCE LAWN LIGHTING LVRESCUEKIT OILSBARRIER OILSEP PASSIVESEP ROOFACCSYSTEM SEPTICTANK SPILLKIT SWITCHYARD	DATECOMM	Commissioning Date	All	
	DATEMANU	Date of Manufacture	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	PROJECT	Project No	All	
	CAP	CAP Application No	All	
	DRAWING	Project Drawing	All	
	INSTALLED	Installed By		
	DATEINSTALL	Installation Date		
	ALARMSYSTEM	Alarm System Installed	ALARM	
	QTYTHERMAL	Thermal Detectors - Qty		
	QTYLVRESCUE	LV Rescue Kits - Qty	LVRESCUEKIT	
	QTYAIRCONDIT	Air Conditioners - Qty	AIRCON	
	HGTBASEMENT	Basement Height (mm)		
	TYPEBASEVENT	Basement Vent Type	BLDGCONTROL	
	QTYBASEMVENT	Basement Vents - Qty		
	QTYBASEMDOOR	Basement Access Doors - Qty		
	BASEMENTCONF	Basement is a Confined Space?	BLDGCONTROL	
	TYPEBUILDING	Building Type	BLDGCONTROL	Permanent, Permanent – brick, Permanent – cladding, Portable, Portable and permanent

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
	EMERLIGHTS	Emergency Lights Installed	EMERLIGHTING	
	TYPEFENCE	Fence Type	FENCE	Colourbond, Chainwire, Weld mesh, other
	LENGTHFENCE	Fence Length (approx.) (m)	FENCE	
	AREALAWNEXT	Lawn - Ext Cutting Area (m2)	LAWN	
	AREALAWNINT	Lawn - Int Cutting Area (m2)	LAWN	
	OILSEPARATOR	Oil Separator	OILSEP	
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.2 Equipment class – AFIC equipment (AF)

Equipment group ID EGI	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
AFCAPACITOR AFCONTACT AFCONTROL AFISOLTRF AFMOTORGEN AFSTATICFU AFSUPERVISIO AFTUNECOILS	DATECOMM	Commissioning Date	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	VOLTNOMINAL	Voltage - Nominal (V)	All	
	PROJECT	Project No	All	
	DRAWING	Project Drawing	All	
	DATEMANU	Date of Manufacture	All	
	UCNUMBER	Unit/Cell Number	AFMOTORGEN	
	RATEDVOLT	Rated Voltage (V)	All	
	TYPECONTROLL	Control Type	AFCONTROL	LARK, SILC
	TYPESFU	SFU Type	AFMOTORGEN AFSTATICFU	SFU, Motor generator
	CAPACITANCEM	Capacitance (uF)	AFCAPACITOR	
	FREQ	Frequency (Hz)	AFMOTORGEN AFSTATICFU	
	INDUCTANCE	Inductance (milliHenry)	AFTUNECOILS	
	RATEDCAPACIT	Rated Capacity (kVA)	AFISOLTRF	
	RATINGKW	Rating - Power Output (KW)		
	RATINGA	Rating - Current (A)	AFTUNECOILS	
	RATIOSETTING	Ratio Setting		
	AFICTAP	Tap Setting	AFISOLTRF	
	SETTING	Setting		
	DATESOFTWARE	Software Version Date		
	VECTOR	Vector		
	RATINGPRIMA	Rating - Current Primary (A)		

Equipment group ID EGI	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
	RATINGSECA	Rating - Current (SEC) (A)		
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.3 Equipment class – Air system (AI)

Equipment group ID EGI	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
AIRRECTANK COMPRESSOR	DATECOMM	Commissioning Date	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	PROJECT	Project No	All	
	DRAWING	Project Drawing	All	
	DATEMANU	Date of Manufacture	All	
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.4 Equipment class – Battery transmission (BT)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
BATTCHARGER BATTLEAD BATTNICAD BATTSEALED	DATECOMM	Commissioning Date	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	VOLTNOMINAL	Voltage - Nominal (V)	All	
	PROJECT	Project No	All	
	DRAWING	Project Drawing	All	
	DATEMANU	Date of Manufacture	All	
	QTYBLOCKS	Blocks - Qty		
	RATEDVOLT	Rated Voltage (V)	All	
	RATINGA	Rating - Current (A)	BATTCHARGER	
	TOTBATT10HR	Total Bank @10hr (LA) (amphrs)	BATTLEAD BATTSEALED	
	TOTBATT05HR	Total Bank @5hr (Nic) (amphrs)	BATTNICAD	
	TOTBATTTERV	Total Bank Term Voltage (V)	BATTLEAD BATTNICAD BATTSEALED	
	CELLTYP10HR	Cell Rtg @10HR (LA) (AmpHrs)		
	CELLTYP05HR	Cell Rtg @5hr (NIC) (AmpHrs)		
	QTYCELLS	Cells - Qty	BATTLEAD BATTNICAD BATTSEALED	
	BATTFUNCTION	Battery Function	BATTLEAD BATTNICAD BATTSEALED	AFIC, COMMS, Fire alarm, Generator, Intertripping, Lighting,

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
				Microwave, PABX, Radio, SCADA, Station, UPS, Telephone line isolation
	BATTNUMBER	Battery Number	BATTCHARGER	
	CONDITION	Condition	BATTLEAD BATTNICAD BATTSEALED	Normal, Poor
	VOLTCELLTYP	Cell Voltage - Typical (V)	BATTLEAD BATTNICAD BATTSEALED	
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.5 Equipment class – Substation bay (BY)

Equipment group ID EGI	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
BYAFIC BYAUXBUS BYAUXTRF BYBATT BYBUSBAR BYBUSSECT BYBUSSECTCB BYCAP BYFDR BYMISC BYSCADA BYSCRAP BYTRFHV	TITLE	Equipment Title		
	DATECOMM	Commissioning Date	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	VOLTNOMINAL	Voltage - Nominal (V)		
	PROJECT	Project No	All	
	DRAWING	Project Drawing	All	
	EQUIPBNO	Equipment Bay No	All	
	FEEDBANM	Feeder/Bay Name		
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.6 Equipment class – Circuit breakers (CB)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
CBBULKOIL CBBULKOILCAP CBEARTHTRUCK CBSF6 CBSF6CAP CBSMALLOIL CBVACUUM RECLOSET	CONTRACTID	Contract Id	All	
	DATECOMM	Commissioning Date	All	
	POLEOWNER	Equip Owner	All	Endeavour Energy, Ausgrid, Essential Energy, Transgrid, Optus, Telstra, RMS, SRA, Sydney water
	3PHASE	Phases	All	
	VOLTNOMINAL	Voltage - Nominal (V)	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	PROJECT	Project No	All	
	DRAWING	Project Drawing	All	
	RATINGVOLTS	Voltage Rating (KV)	All	
	RATINGA	Rating - Current (A)	All except CBEARTHTRUCK	
	RATINGSW	Switch Current Rating (A)		
	PCBFREE	PCB Free		
	PCBVALUE	PCB Value (ppm)		
	DATEPCB	Date of PCB Reading		
	PCBREF	PCB Test File Ref No		
	100DUTY	100% Duty		
	ADDER	Adder		
	EFALTMINTRIP	Alt Min Trip E/F		
	OCAITMINTRIP	Alt Min Trip O/C		
	ARCQUENCH	Arc Quenching Medium	All except	Oil, SF6, Vacuum

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
			CBEARTHTRUCK	
	VOLARCQUENCH	Arc Quench/Insulating Vol (I)	All except CBEARTHTRUCK	
	INSULMEDIUM	Insulating Medium	All except CBEARTHTRUCK	Epoxy, Air, Oil, SF6,
	INTERRUPTER	Recloser/Sect Interrupter		
	AUTOTARGETRE	Auto Target Reset		
	CBLOCALITY	CB Locality	All except CBEARTHTRUCK	Indoor, Outdoor
	TIMECLOSERET	Close Retry Time (secs)		
	COILAMPS	Coil (Amps)		
	COLDLOADPU	Cold Load Pickup (Amps)		
	HVBUSHFILLA1	HV Bushing A1 - fill compound	All except CBEARTHTRUCK	Oil, Pitch, Silicone, SF6
	HVBUSHFILLA2	HV Bushing A2 - fill compound	All except CBEARTHTRUCK	Oil, Pitch, Silicone, SF6
	HVBUSHFILLB1	HV Bushing B1 - fill compound	All except CBEARTHTRUCK	Oil, Pitch, Silicone, SF6
	HVBUSHFILLB2	HV Bushing B2 - fill compound	All except CBEARTHTRUCK	Oil, Pitch, Silicone, SF6
	HVBUSHFILLC1	HV Bushing C1 - fill compound	All except CBEARTHTRUCK	Oil, Pitch, Silicone, SF6
	HVBUSHFILLC2	HV Bushing C2 - fill compound	All except CBEARTHTRUCK	Oil, Pitch, Silicone, SF6
	CTCORE1CLASS	CT Core 1 Class		
	CTCORE1RATIO	CT Core 1 Ratio		
	CTCORE1SEC	CT Core 1 Sec Rating (VA)		
	CTCORE2RATIO	CT Core 2 Ratio		
	CTCORE2CLASS	CT Core 2 Class		
	CTCORE2SEC	CT Core 2 Sec Rating (VA)		

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
	CTCORE3CLASS	CT Core 3 Class		
	CTCORE3RATIO	CT Core 3 Ratio		
	CTCORE3SEC	CT Core 3 Sec Rating (VA)		
	CTCORE4CLASS	CT Core 4 Class		
	CTCORE4RATIO	CT Core 4 Ratio		
	CTCORE4SEC	CT Core 4 Sec Rating (VA)		
	CTCORE5CLASS	CT Core 5 Class		
	CTCORE5RATIO	CT Core 5 Ratio		
	CTCORE5SEC	CT Core 5 Sec Rating (VA)		
	CTCORE6CLASS	CT Core 6 Class		
	CTCORE6SEC	CT Core 6 Sec Rating (VA)		
	CTCORE6RATIO	CT Core 6 Ratio		
	CURVEGROUP	Curve Group		
	DATEMANU	Date of Manufacture	All	
	CONTRACTCB	Contract - Circuit Breaker		
	DEADTIM1	Dead Time 1 (s)		
	DEADTIME2	Dead Time 2 (s)		
	DEADTIME3	Dead Time 3 (s)		
	DEADTIME4	Dead Time 4 (s)		
	DUTYRECORDER	Duty Recorder		
	EFCOUNT	E/F Count		
	EFFASTCURVE	E/F Fast Curve		
	EFHSET	E/F Hset (A)		
	EFMULTIPLIER	E/F Multiplier		
	EFPICKUP	E/F Pickup (A)		
	EFSEQUENCE	E/F Sequence		
	EFSLOWCURVE	E/F Slow Curve		

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
	EVENTRECORD	Event Recorder		
	EXTINPUTS	External Inputs		
	FAULTLEVEL	Fault Level (kA)		
	RATFAULT	Fault Rating (kA)	All	
	RATFAULTMVA	Fault Rating (MVA)		
	TIMEFAULTRAT	Fault Rating Time (secs)		
	FEEDBANM	Feeder/Bay Name		
	FREQ	Frequency (Hz)		
	GRDEMANDINT	Gr Demand Int. Time (secs)		
	GRNDTRIPPREC	Ground Trip Precedent		
	LOCKOUTLEVER	Lockout Lever		
	MAINTMANLIB	Maint Manual Library No		
	MASSOIL	Mass - Oil (kg)		
	MASS	Mass - Total (kg)		
	MULTIPLIER	Multiplier		
	EFNONAUTO	Non-Auto E/F		
	OCNONAUTO	Non-Auto O/C		
	NOCLOSERETR	Number Close Retry		
	OCCOUNT	O/C Count		
	OCCURVE	O/C Curve		
	OCFASTCURVE	O/C Fast Curve		
	OCHSET	O/C Hset		
	OCMULTIPLIER	O/C Multiplier		
	OCPIKUP	O/C Pickup		
	OCSEQUENCE	O/C Sequence		
	OCSLOWCURVE	O/C Slow Curve		
	VOLOIL	Oil or other insulating Vol(I)	All except CBEARTHTRUCK	

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
	TYPEOPERMECH	Operating Mech Type	All except CBEARTHTRUCK	
	OPERCOUNTER	Operations Counter		
	TIMEPHDEMAND	Ph Demand Int Time (secs)		
	PHASE	Phase		
	PHASEROTATIO	Phase Rotation		
	QTYPHASES	Phase - Qty		
	RECLAIMTIME	Reclaim Time (secs)		
	SCADACONT	SCADA Control	All	
	SENSEARFAULT	Sensitive Earth Fault		
	SEQCOORD	Seq. Co-Ord		
	SUPPLYCLSRES	Supply Close Reset		
	SURGEDIVFITD	Surge Diverted Fitment		
	VOLTTRIPCLOS	Voltage - Trip/Close Coil (V)		
	TUNGSTENCONT	Tungsten Contact Tips		
	COORDX	X co-ord (GDA94)	All	
	COORDY	Y co-ord (GDA94)	All	
	TSZSSUBNAME	Trans-Zone Substation Name	All	
	TIMERESTLIT	DINIS-Restore Time-Light (HRS)		
	TIMERESTHEV	DINIS-Restore Time-Heavy (HRS)		
	TIMERESTCAB	DINIS-Restore Time-Cable (HRS)		
	FAULTYRKMLT	DINIS-Faults Per Year KM-Light		
	FAULTYRKMHV	DINIS-Faults Per Year KM-Heavy		

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
	FAULTYRKMCB	DINIS-Faults Per Year KM-Cable		
	RETTIMSW	DINIS-Switch Restoration Time		
	RETTIMRP	DINIS-Repair Restoration Time		
	RATFAULTA	DINIS-Fault Rating (A)		

2.7 Equipment class – Communication (CM)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
COUPFILTER MMI RADIO TELEPHONE	DATECOMM	Commissioning Date	All	
	DATEMANU	Date of Manufacture	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	PROJECT	Project No	All	
	CAP	CAP Application No	All	
	DRAWING	Project Drawing	All	
	WATTAGE	Power (W)		
	VOLTSUPPLY	Supply Voltage		
	FREQ	Frequency (Hz)		
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.8 Equipment class – Control panel (CN)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
CNACCONTROL CNDCCONTROL CNFDRCONTROL CNSCADA CNVRCONTROL	DATECOMM	Commissioning Date	All	
	DATEMANU	Date of Manufacture	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	PROJECT	Project No	All	
	DRAWING	Project Drawing	All	
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.9 Equipment class – Current transformers (CT)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
CTNEUTEARTH CTNEUTUNB CTPOST	DATECOMM	Commissioning Date	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	3PHASE	Phases		
	VOLTNOMINAL	Voltage - Nominal (V)	All	
	PROJECT	Project No	All	
	DRAWING	Project Drawing	All	
	DATEMANU	Date of Manufacture	All	
	RATINGVOLTS	Voltage Rating (KV)	All	
	RATINGSECVA	VA Rating (Secondary) VA)		
	RATINGSECV	Voltage Rating (Secondary) (V)		
	RATINGPRIMKV	Voltage Rating (Primary) (KV)		
	PCBFREE	PCB Free		
	PCBVALUE	PCB Value (ppm)		
	DATEPCB	Date of PCB Reading		
	PCBREF	PCB Test File Ref No		
	RATINGA	Rating - Current (A)	All	
	RATINGSECA	Rating - Current (SEC) (A)	All	
	CTRATIOPRIM	CT Primary		
	CTRATIOSEC	CT Secondary		
	RATFAULT	Fault Rating (kA)		
	FEEDBANM	Feeder/Bay Name		
	INSULMEDIUM	Insulating Medium	All	Oil, Epoxy

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
	MASS	Mass - Total (kg)	All	
	VOLOIL	Oil or other insulating Vol(I)	All	
	VA	VoltAmps		
	PHASE	Phase	All	
	QTYCORES	Cores - Qty		
	CLASSCT	Class - CT		
	CLASSVT	Class - VT		
	MAINTMANLIB	Maint Manual Library No		
	CTCORE1CLASS	CT Core 1 Class	All	
	CTCORE1RATIO	CT Core 1 Ratio	All	
	CTCORE1SEC	CT Core 1 Sec Rating (VA)		
	CTCORE2CLASS	CT Core 2 Class	All	
	CTCORE2RATIO	CT Core 2 Ratio	All	
	CTCORE2SEC	CT Core 2 Sec Rating (VA)		
	CTCORE3CLASS	CT Core 3 Class	All	
	CTCORE3RATIO	CT Core 3 Ratio	All	
	CTCORE3SEC	CT Core 3 Sec Rating (VA)		
	CTCORE4CLASS	CT Core 4 Class	All	
	CTCORE4RATIO	CT Core 4 Ratio	All	
	CTCORE4SEC	CT Core 4 Sec Rating (VA)		
	CTCORE5CLASS	CT Core 5 Class	All	
	CTCORE5RATIO	CT Core 5 Ratio	All	
	CTCORE5SEC	CT Core 5 Sec Rating (VA)		
	CTCORE6CLASS	CT Core 6 Class	All	
	CTCORE6RATIO	CT Core 6 Ratio	All	
	CTCORE6SEC	CT Core 6 Sec Rating (VA)		
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.10 Equipment class – Capacitors Transmission (CU)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
CAP11KV CAPBANK	DATECOMM	Commissioning Date	All	
	DATEMANU	Date of Manufacture	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	VOLTNOMINAL	Voltage - Nominal (V)	All	
	PROJECT	Project No	All	
	DRAWING	Project Drawing	All	
	CAPACINO	Capacitor No	All	
	FEEDBANM	Feeder/Bay Name		
	RATINGVOLTS	Voltage Rating (KV)	All	
	RATINGCAPBNK	Capacitor Bank Rating (MVAR)	All	
	CAPACITANCEP	Capacitance (pF)		
	PHASE	Phase		
	QTYCANS	Cans - Qty		
	RATINGKVA	KVA Rating (KVA)	All	
	TIMECLKCONT	Time-Clock Controller		
	FAULTPPRD	DINIS-Faults Per Period		
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.11 Equipment class – Earthing (ER)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
ERGRID	DATECOMM	Commissioning Date	All	
	DATEMANU	Date of Manufacture	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	PROJECT	Project No	All	
	DRAWING	Project Drawing	All	
	EARTHCMEN	Common Multiple Earth Neutral		
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.12 Equipment class – Fire equipment (FE)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
ALARMFIRE ALARMPANEL BLANKFIREDRY BLANKFIREWET DELUGSHWR FIREPUMP FIRSHTTHRMVN HYDRFIRE P3FIRE	DATECOMM	Commissioning Date	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	PROJECT	Project No	All	
	CAP	CAP Application No	All	
	DRAWING	Project Drawing	All	
	INSTALLED	Installed By		
	DATEINSTALL	Installation Date		
	DATEMANU	Date of Manufacture	All	
	QTYPANELS	Panels - Qty		
	QTYTHERMAL	Thermal Detectors - Qty	ALARMFIRE	
	QTYVESDA	Vesda Detector Heads - Qty	ALARMFIRE	
	QTYFIREBL	Fire Blankets - Qty		
	QTYDRYFIREBL	Dry Fire Blankets - Qty	BLANKFIREDRY	
	QTYWETFIREBL	Wet Fire Blankets - Qty	BLANKFIREWET	
	DELUGESHOWER	Deluge Shower Installed	DELUGSHWR	
	TYPEDELSHWE	Deluge Shower Type	DELUGSHWR	Mains, Tank
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.13 Equipment class - Motor box (MB)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
MOTORBOX	DATECOMM	Commissioning Date	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	EQUIPFUNCTN	Equipment Function	All	Transmission
	PROJECT	Project No	All	
	CAP	CAP Application No	All	
	DRAWING	Project Drawing	All	
	DATEMANU	Date of Manufacture	All	
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.14 Equipment class – Position power transformer (P1)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Actual equipment data	Allowable values
P1POWER	DATECOMM	Commissioning Date	All	
	POLEOWNER	Equip Owner	All	
	DATEMANU	Date of Manufacture	All	
	VOLTNOMINAL	Voltage - Nominal (V)		
	PROJECT	Project No	All	
	DRAWING	Project Drawing	All	
	RATINGMVA	MVA Rating (MVA)		
	TRFNUMBER	Transformer Number		
	COORDX	X co-ord (GDA94)	All	
	COORDY	Y co-ord (GDA94)	All	
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.15 Equipment class – Position aux/isol transformer (P2)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Actual equipment data	Allowable values
P2AUXTRF P2ISOLTRF	DATECOMM	Commissioning Date	All	
	VOLTNOMINAL	Voltage - Nominal (V)	All	
	PROJECT	Project No	All	
	DRAWING	Project Drawing	All	
	TRFNUMBER	Transformer Number		
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.16 Equipment class – Pilot cable (PC)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Actual equipment data	Allowable values
PILOT CABLE	DATECOMM	Commissioning Date	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	PROJECT	Project No	All	
	DRAWING	Project Drawing	All	
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.17 Equipment class – Portable earth (PE)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
PORTEARTH	TSTCURRNT(A)	Test Current(A)	All	
	VOLTDROPN(V)	Voltage Drop N (V)		
	DATECOMM	Commissioning Date	All	
	VOLTDROPA(V)	Voltage Drop A (V)		
	VOLTDROPB(V)	Voltage Drop B (V)		
	VOLTDROPC(V)	Voltage Drop C (V)		
	VOLTNOMINAL	Voltage - Nominal (V)		
	DATEMANU	Date of Manufacture	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	PROJECT	Project No	All	
	RATEARTHFAUL	Earth Fault Rating (kA)	All	
	EARTHSET	Earth Set Number	All	
	STYLE	Style		
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.18 Equipment class – Protection relays (PR)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
Refer to Annexure 2 for full list of EGIs	DATECOMM	Commissioning Date	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	PROJECT	Project No	All	
	DRAWING	Project Drawing	All	
	DATEMANU	Date of Manufacture	All	
	PANEL	Panel		
	FIRMVER	Firmware Version	All	
	NUMERICRLY	Numerical Relay		
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.19 Equipment class – Protection scheme (PS)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
PSBUSBAR PSCAP PSFDR132 PSFDRDIST PSFDRTRANS PSINTERTRIP PSMISC PSPower PSTRANTRF PSUNDFREQ	TITLE	Equipment Title	All	
	DATECOMM	Commissioning Date	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	VOLTNOMINAL	Voltage - Nominal (V)	All	
	PROJECT	Project No	All	
	CAP	CAP Application No	All	
	DRAWING	Project Drawing	All	
	NUMERICRLYSC	Numerical Relay Scheme		
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.20 Equipment class – Power transformer (PX)

Equipment group ID EGI	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGI	Allowable values
PXPOWER	DATECOMM	Commissioning Date	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	VOLTNOMINAL	Voltage - Nominal (V)	All	
	PROJECT	Project No	All	
	CAP	CAP Application No	All	
	DRAWING	Project Drawing	All	
	DATEMANU	Date of Manufacture	All	
	MVACOMBINED	MVA Combined	All	
	MVACYCLIC	MVA Rating - Cyclic		
	MVAEMERGENCY	MVA Rating - Emergency		
	MVAONAN	MVA Rating - ONAN	All	
	MVAONAF	MVA Rating - ONAF		
	MVAOFAN	MVA Rating - OFAN	All	
	MVAOFAF	MVA Rating - OFAF	All	
	OILTYPE	Oil Type		
	INHIBVAL	Level of Inhibiter %		
	INHIBDATE	Date of inhibitor test		
	INHITYPE	Type of inhibitor		
	PCBFREE	PCB Free		
	PCBVALUE	PCB Value (ppm)	All	
	DATEPCB	Date of PCB Reading	All	
	PCBREF	PCB Test File Ref No	All	
	RATINGPRIMKV	Voltage Rating (Primary) (KV)	All	

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
	RATINGSECV	Voltage Rating (Secondary) (V)	All	
	RATINGTERV	Voltage Rating (Ter) (V)		
	VECTORGROUP	Vector Group	All	
	BLADDER	Bladder Fitted		
	BREATHEROILS	Breather Oil Seal		
	BREATHERSIZE	Breather Size (kg)		
	TYPEBREATHER	Breather Type	All	Electro-static dryer, Free, Mechanical dryer, Refrigerated, Sealed (under pressure), Semi-sealed, Silica gel
	BUNDWALL	Bund Wall (Y/N)	All	
	CHLORINE	Chlorine Value (ppm)		
	CONTRACTPX	Contract - Power Transformer	All	
	MAINTMANLIB	Maint Manual Library No		
	MASSCONS	Mass -Conservator (kG)		
	MASSCORE	Mass - Core & Coils (kg)	All	
	MASSOIL	Mass - Oil (kg)		
	MASSTANK	Mass - Tank (kg)		
	MASS	Mass - Total (kG)	All	
	VOLOIL	Oil or other insulating Vol(l)	All	
	IMPEDANCEZ	Z Impedance (%) Nominal Tap		
	TSZSSUBNAME	Trans-Zone Substation name	All	
	TRFTYPE	DINIS-Transformer Type	All	
	COMEARTH	DINIS-Common Earth	All	
	TRFGROUP	DINIS-Transformer Group	All	
	TERWINDING	DINIS-Tertiary Winding	All	

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
	MAGCURPF	DINIS-Magnetising Current PF	All	
	IRONLOSS	DINIS-Iron Loss (kW)	All	
	ZSSHCOND	DINIS-Zero Seq Shunt Conduct	All	
	ZSSHSTPT	DINIS-Zero Seq Shunt Suspect	All	
	TPSRESIST	DINIS-Ter Pos Seq Resistance	All	
	TPSREACT	DINIS-Ter Pos Seq Reactance	All	
	TZSRESIST	DINIS-Ter Zero Seq Resistance	All	
	TZSREACT	DINIS-Ter Zero Seq Reactance	All	
	FAULTPPRD	DINIS-Faults Per Period	All	

2.21 Equipment class – Reactor (RE)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
REACCAPDIS REACNEUTERTH REACTCAPSW REACTCUR	DATEMANU	Date of Manufacture	All	
	DATECOMM	Commissioning Date	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	VOLTNOMINAL	Voltage - Nominal (V)	All	
	PROJECT	Project No	All	
	CAP	CAP Application No	All	
	DRAWING	Project Drawing	All	
	PHASE	Phase	REACCAPDIS	
	RATINGKVA	KVA Rating (KVA)		
	RATINGVOLTS	Voltage Rating (KV)		
	RATINGA	Rating - Current (A)	All	
	ECPURPOSE	EC Purpose		
	RATFAULT	Fault Rating (kA)	REACCAPDIS	
	TIMEFAULTRAT	Fault Rating Time (secs)		
	IMPEDANCE	Impedance (Ohms)		
	INSULMEDIUM	Insulating Medium	REACNEUTERTH REACTCUR	Air, Oil
	VOLOIL	Oil or other insulating Vol(l)	REACNEUTERTH REACTCUR	
	MASS	Mass - Total (kg)		
	PCBFREE	PCB Free		
	PCBVALUE	PCB Value (ppm)		
	DATEPCB	Date of PCB Reading		
	PCBREF	PCB Test File Ref No		

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
	IMPEDANCEZ	Z Impedance (%) Nominal Tap		
	LINERESIST	DINIS-Line Resistance		
	LINEREACTION	DINIS-Line Reactance		
	LINECHARGE	DINIS-Line Charging		
	ZSRESIST	DINIS-Zero Seq Resistance		
	ZSREACTION	DINIS-Zero Seq Reactance		
	ZSCHARGE	DINIS-Zero Seq Charging		
	LOADLOSS	DINIS-Loss Load (kW)		
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.22 Equipment class – SCADA equipment (SC)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
SCMMI SCSYSTEM	DATECOMM	Commissioning Date	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	PROJECT	Project No	All	
	CAP	CAP Application No	All	
	DRAWING	Project Drawing	All	
	CONFIG	Configuration		
	DATEDATABASE	Database Date		
	DATEMANU	Date of Manufacture	All	
	INTERFACELAN	LAN Interface		
	INTERFACEMS	M/S Interface		
	OSVERS	O/S Version		
	DATEOS	O/S Version Date		
	TYPEPROCESS	Processor Module Type		
	DATESOFTWARE	Software Version Date		
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.23 Equipment class –Tap changer (TC)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
TAPCHANGER	DATECOMM	Commissioning Date	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	VOLTNOMINAL	Voltage - Nominal (V)	All	
	PROJECT	Project No	All	
	CAP	CAP Application No	All	
	DRAWING	Project Drawing	All	
	DATEMANU	Date of Manufacture	All	
	QTYTAPS	Taps - Qty	All	
	RATINGA	Rating - Current (A)		
	TSZSSUBNAME	Trans-Zone Substation Name	All	
	WINDING	DINIS-Winding Number	All	
	TAPTYPE	DINIS-Tap Type	All	
	TAPNOSTEPS	DINIS-Number of Tap Steps	All	
	TAPPOSTN	DINIS-Tap Position	All	
	MXVOLTTPOSN	DINIS-Maximum Voltage Tap	All	
	MNVOLTTPOSN	DINIS-Minimum Voltage Tap	All	
	TAPCHGLOC	DINIS-Controlling Side	All	
	FLOATV	DINIS-Controlled Voltage	All	

2.24 Equipment class – Transmission Equipment (TE)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
SOLARCONTRLR SOLARGRNDCEL SOLARROOFCEL SURGEDIV SWBOARD	DATECOMM	Commissioning Date	All	
	DATEMANU	Date of Manufacture	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	VOLTNOMINAL	Voltage - Nominal (V)	SURGEDIV SWBOARD	
	PROJECT	Project No	All	
	DRAWING	Project Drawing	All	
	RATINGVOLTS	Voltage Rating (KV)		
	PHASE	Phase	SWBOARD	
	TYPESURGEDIV	Surge Diverter Type	SURGEDIV	Polymeric, Porcelain
	RATINGA	Rating - Current (A)		
	RATFAULT	Fault Rating (kA)		
	FEEDBANM	Feeder/Bay Name		
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.25 Equipment class – Switchgear transmission (TS)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
CONTACTOR ISOL SWEARTH SWEARTHIN SWEARTHINMOT SWEARTHOUT SWEARTHOUTMO SWFAULT SWFUSE SWFUSEEPOXY SWFUSEOIL SWFUSESSE SWFUSEUNIT SWFUSEUNITEP SWFUSEUNITOL SWFUSEUNITSS SWLINK SWUNIT SWUNITEPOXY SWUNITOIL SWUNITSSSE	DATECOMM	Commissioning Date	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	VOLTNOMINAL	Voltage - Nominal (V)	All	
	PROJECT	Project No	All	
	CAP	CAP Application No	All	
	DRAWING	Project Drawing	All	
	CONTMETHOD	Control Method	All	Local, Remote
	ARCQUENCH	Arc Quenching Medium	All	Air, Oil , SF6, Vacuum, Epoxy, Vacuum
	VOLARCQUENCH	Arc Quench/Insulating Vol (I)		
	DATEMANU	Date of Manufacture	All	
	DATEMANUFUSE	Date of Manufacture - FUSE		
	DATEMANUSW1	Date of Manufacture - SW Mod 1		
	DATEMANUSW2	Date of Manufacture - SW Mod 2		
	DATEMANUSW3	Date of Manufacture - SW Mod 3		
	DATEMANUSW4	Date of Manufacture - SW Mod 4		
	DATEMANUSW5	Date of Manufacture - SW Mod 5		
	DATEMANUSW6	Date of Manufacture - SW		

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
		Mod 6		
	DATEMANUUNIT	Date of Manufacture - UNIT		
	ECPURPOSE	EC Purpose		
	RATFAULT	Fault Rating (kA)	All	
	RATFAULTMVA	Fault Rating (MVA)		
	RATFAULT1S	Fault Rating @ 1 sec (kA)		
	RATFAULT3S	Fault Rating @ 3 secs (kA)		
	TIMEFAULTRAT	Fault Rating Time (secs)	All	
	HEATER	Heater Fitted	SWUNIT SWUNITEPOXY SWUNITOIL SWUNITSSE	
	KRONE	Krone HV Switchgear		
	MAINTMANLIB	Maint Manual Library No		
	PHASE	Phase		
	QTYBUSSECT	Bus-Section Units - Qty		
	QTYSWFUSE	Fuse Switches - Qty		
	QTYSWUNITS	Switch Units - Qty		
	RATINGA	Rating - Current (A)	All	
	RATINGFUSEM	Rating - Current (FuseMod) (A)		
	RATINGSW1	Rating - Current (SWMod 1) (A)		
	RATINGSW2	Rating - Current (SWMod 2) (A)		
	RATINGSW3	Rating - Current (SWMod 3) (A)		
	RATINGSW4	Rating - Current (SWMod 4) (A)		

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
	RATINGSW5	Rating - Current (SWMod 5) (A)		
	RATINGSW6	Rating - Current (SWMod 6) (A)		
	RATINGUNIT	Rating - Current (Unit) (A)		
	RATINGVOLTS	Voltage Rating (KV)	All	
	SERIALFUSE	Serial No (Fuse)		
	SERIALSW1	Serial No (Sw 1)		
	SERIALSW2	Serial No (Sw 2)		
	SERIALSW3	Serial No (Sw 3)		
	SERIALSW4	Serial No (Sw 4)		
	SERIALSW5	Serial No (Sw 5)		
	SERIALSW6	Serial No (Sw 6)		
	SERIALUNIT	Serial No (Unit)		
	RATINGSW	Switch Current Rating (A)	SWFAULT	
	SWGRCONFIG	Switchgear Configuration		SF, SFS, SFSS, SC, SCS, SCSS, SSS, SSSS
	COORDX	X co-ord (GDA94)		
	COORDY	Y co-ord (GDA94)		
	SUPSTRUCTURE	Support Structure	SWLINK	
	TSZSSUBNAME	Trans-Zone Substation name	All	

2.26 Equipment class –Transformer (TX)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
TXAUX TXEARTH TXISOL	VOLTNOMINAL	Voltage - Nominal (V)	All	
	RATINGKVA	KVA Rating (KVA)	All	
	DATECOMM	Commissioning Date	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	PROJECT	Project No	All	
	3PHASE	Phases	All	
	VECTOR	Vector	TXAUX TXISOL	
	CTRATIOPRIM	CT Primary	TXAUX	
	CTRATIOSEC	CT Secondary	TXAUX	
	TRFRATIOPRIM	Transf Ratio - PRIM		
	TRFRATIOSEC	Transf Ratio - SEC		
	TRFRATIO TER	Transf Ratio - TER		
	PCBFREE	PCB Free	TXAUX	
	PCBVALUE	PCB Value (ppm)		
	DATEPCB	Date of PCB Reading		
	PCBREF	PCB Test File Ref No		
	RATINGVOLTS	Voltage Rating (KV)	TXAUX TXISOL	
	RATINGPRIMKV	Voltage Rating (Primary) (KV)	TXAUX TXISOL	
	RATINGSECV	Voltage Rating (Secondary) (V)	TXAUX TXISOL	
	DATEMANU	Date of Manufacture	All	
	CONTRACTTX	Contract - Transformer		

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
	DATEACCEPTAN	Acceptance Date		
	TAPGROUP	Tap Group		
	TAPSETTING	Tap Setting Code	TXAUX	
	DATETAPSET	Tap Setting Date	TXAUX	
	TYPETRFLOAD	Transformer Load Type		
	HEIGHTBRKT	Bracket Height (mm)		
	BREATHEROILS	Breather Oil Seal		
	BREATHERSIZE	Breather Size (kg)		
	TYPEBREATHER	Breather Type		
	BUNDWALL	Bund Wall (Y/N)		
	CHLORINE	Chlorine Value (ppm)		
	TYPECOOLING	Cooling Type	TXAUX	
	LOSSCOPPER	Copper Loss (W)		
	LOSSCORE	Core Loss (W)		
	TYPECORE	Core Type		
	COSTMR	Cost M&R		
	CTBURDEN	CT Burden		
	CTCLASS	CT Class		
	CTPOSITION	CT Position		
	TYPECUBICLE	Cubicle Type		
	DATAFOLDER	Data Folder No		
	ECPURPOSE	EC Purpose		
	HARMONICS3	Harmonics 3rd		
	HARMONICS5	Harmonics 5th		
	HARMONICS7	Harmonics 7th		
	HEIGHT	Height (mm)		
	HVBUSHLOC	HV Bushing Location		
	TYPEHVBUSH	HV Bushing Type		

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
	INSULMEDIUM	Insulating Medium	All	
	LENGTH	Length (mm)		
	LOSSLOAD	Load Loss (W)		
	TYPELVBUSH	LV Bushing Type		
	MASSCORE	Mass - Core & Coils (kg)		
	MASSOIL	Mass - Oil (kg)		
	MASSTRIPPED	Mass - Stripped (kg)		
	MASSTANK	Mass - Tank (kg)		
	MASS	Mass - Total (kg)	TXAUX TXISOL	
	NOISELOWRLVL	Noise - Lower Level (dB)		
	VOLOIL	Oil or other insulating Vol(l)	All	
	SPECOIL	Oil Specification		
	TYPEOILWASEP	Oil/Water Separator Type		
	PCCORDER	PCC Order No		
	PHASECONNECT	Phase Connection		
	COSTPURCHASE	Purchase Cost		
	COSTSTD	Standard Cost		
	SUITFUTUREUSE	Suitable for future use		
	TANKSURFFIN	Surface Finish of Tank		
	SURGEDIVFITD	Surge Diverted Fitment		
	TANDEMIE	Tandem IE No		
	TRFNUMBER	Transformer Number	TXAUX	
	TEMPAVEWIND	Average Winding Temp (degC)		
	TEMPBOTTOIL	Bottom Oil Temperature (degC)		
	TEMPHOTOIL	Hot Oil Temperature (degC)		

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
	TEMPHOTALM	Hot Oil Alarm Temp (degC)		
	TEMPHOTWDG	Hot Winding Alarm Temp (degC)		
	TEMPHOTWIND	Hot Winding Temperature(degC)		
	TEMPHVWINDIN	HV Winding Temperature (degC)		
	TEMPLVWINDIN	LV Winding Temperature (degC)		
	TEMPTOPOIL	Top Oil Temperature (degC)		
	DATETEMPIND	Temp Indicator Installed		
	TEMPINDICAT	Temperature Indicator		
	DATETFR	TFR Date Inspected		
	TFRFILE	TFR File Number		
	TFRRTPLTDWG	TFR Rtpltdwg		
	TFRSPEC	TFR Specification No		
	WIDTH	Width (mm)		
	IMPEDANCEZ	Z Impedance (%) Nominal Tap	All	
	TSZSSUBNAME	Trans-Zone Substation Name	All	
	TRFTYPE	DINIS-Transformer Type		
	COMEARTH	DINIS-Common Earth		
	TRFGROUP	DINIS-Transformer Group		
	TERWINDING	DINIS-Tertiary Winding		
	MAGCURPF	DINIS-Magnetising Current PF		

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
	IRONLOSS	DINIS-Iron Loss (kW)		
	ZSSHCOND	DINIS-Zero Seq Shunt Conduct		
	ZSSHSTPT	DINIS-Zero Seq Shunt Suspect		
	TPSRESIST	DINIS-Ter Pos Seq Resistance		
	TPSREACT	DINIS-Ter Pos Seq Reactance		
	TZSRESIST	DINIS-Ter Zero Seq Resistance		
	TZSREACT	DINIS-Ter Zero Seq Reactance		
	FAULTPPRD	DINIS-Faults Per Period		

2.27 Equipment class – Trans/Zone substation (TZ)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
BSP HVC SWSTN TRANSUB ZONESUB	TITLE	Equipment Title	All	
	DATECOMM	Commissioning Date	All	
	POLEOWNER	Equip Owner	All	Endeavour Energy, Ausgrid, Essential Energy, Transgrid, Optus, Telstra, RMS, SRA, Sydney water
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	VOLTNOMINAL	Voltage - Nominal (V)	All	
	VOLTFLOAT	Voltage - Float (kV)		
	PROJECT	Project No	All	
	CAP	CAP Application No	All	
	DRAWING	Project Drawing	All	
	INSTALLED	Installed By		
	DATEINSTALL	Installation Date		
	UBDREF	UBD Ref (eg 191-M4)	TRANSUB ZONESUB	
	NEMI	NEMI Number		
	PGS	Property (PGS) No	TRANSUB ZONESUB	
	TSZSSUBNAME	Trans-Zone Substation Name	All	
	MAP1	Map 1	All	
	MAP2	Map 2		
	MAP3	Map 3		
	MAP4	Map 4		

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
	MAP5	Map 5		
	COORDX	X co-ord (GDA94)	System Generated	
	COORDY	Y co-ord (GDA94)	System Generated	

2.28 Equipment class – Voltage Regulation (VR)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
RELAYAVR VRSCADA	DATECOMM	Commissioning Date	All	
	DATEMANU	Date of Manufacture	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	VOLTNOMINAL	Voltage - Nominal (V)	All	
	PROJECT	Project No	All	
	CAP	CAP Application No	All	
	DRAWING	Project Drawing	All	
	ECPURPOSE	EC Purpose		
	MVAONAN	MVA Rating - ONAN		
	RATINGA	Rating - Current (A)		
	TSZSSUBNAME	Trans-Zone Substation Name	All	

2.29 Equipment class – Voltage Transformers (VT)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
VT VTCAP VTCCT VTMAGN	DATECOMM	Commissioning Date	All	
	PROFDATE	Profile date (est dt of manuf)		
	PROFDTSOURCE	Data source (for profile date)		
	3PHASE	Phases		
	VOLTNOMINAL	Voltage - Nominal (V)	All	
	PROJECT	Project No	All	
	DRAWING	Project Drawing	All	
	DATEMANU	Date of Manufacture	All	
	FEEDBANM	Feeder/Bay Name		
	PHASE	Phase	All	
	RATINGPRIMKV	Voltage Rating (Primary) (KV)	All	
	RATINGSECVA	VA Rating (Secondary) VA)		
	RATINGSECV	Voltage Rating (Secondary) (V)	All	
	CLASSVT	Class - VT	All	
	PCBFREE	PCB Free		
	PCBVALUE	PCB Value (ppm)		
	DATEPCB	Date of PCB Reading		
	PCBREF	PCB Test File Ref No		
	INSULMEDIUM	Insulating Medium	All	Oil, Epoxy
	VOLOIL	Oil or other insulating Vol(I)	All	
	MAINTMANLIB	Maint Manual Library No		
	MASS	Mass - Total (kG)	All	
	TSZSSUBNAME	Trans-Zone Substation	All	

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Attribute is mandatory for the following EGIs	Allowable values
		Name		

2.30 Equipment class – Winding (WI)

Equipment group ID EGIs	Equipment register attribute name	Attribute description	Actual equipment data	Allowable values
WIPRIM WISEC WISEC2	TYPE	DINIS-Type	All	
	WINDTYPE	DINIS-Winding Type	All	
	EARTHED	DINIS-Earthed	All	
	TAPPED	DINIS-Tapped	All	
	RATINGWINT	DINIS-Winter Rating(MVA)	All	
	RATINGSUMR	DINIS-Summer Rating(MVA)	All	
	RATINGSHRTRM	DINIS-Short Term Rating(MVA)	All	
	VOLTNMAL	DINIS-Nominal Voltage (kV)	All	
	VOLTNAMPLATE	DINIS-Nameplate Voltage(kV)	All	
	PSRESIST	DINIS-Positive Seq Resistance	All	
	PSREACT	DINIS-Positive Seq Reactance	All	
	ZSRESIST	DINIS-Zero Seq Resistance	All	
	ZSREACT	DINIS-Zero Seq Reactance	All	
	EARTHREST	DINIS-Earthing Resistance	All	
	EARTHRECT	DINIS-Earthing Reactance	All	
	PHASEANGLE	DINIS-Phase Angle	All	
	LDCRESIST	DINIS-Line Drp Comp Resistance	All	
	LDCREACT	DINIS-Line Drop Comp Reactance	All	
	TSZSSUBNAME	Trans-Zone Substation Name	All	

Annexure 5: SPN 4 and SPN 5 for each equipment group ID

Equip class	Equipment group ID EGI	Description for equipment	SPN 04	SPN 05
AC	AIRCON	Air Conditioner	ACON	01(If more than 1 in a bay 02,03 etc)
AC	ALARM	Security Alarm Systems	ALRM	01(If more than 1 in a bay 02,03 etc)
AC	ALARMPANEL	Fire Alarm Panel	FIRP	01(If more than 1 in a bay 02,03 etc)
AC	BACKFLOWPRV	Back flow prevention device	RPZ	01(If more than 1 in a bay 02,03 etc)
AC	BLDGCONTROL	Control Building	BLDG	01(If more than 1 in a bay 02,03 etc)
AC	BUNDWALL	Bund Wall	BUND	01(If more than 1 in a bay 02,03 etc)
AC	EMERLIGHTING	Emergency Lights	EMLT	01(If more than 1 in a bay 02,03 etc)
AC	FENCE	Fence	FENC	01(If more than 1 in a bay 02,03 etc)
AC	LAWN	Lawn/Landscaping	LAWN	01(If more than 1 in a bay 02,03 etc)
AC	LIGHTING	Lighting	LGTG	01(If more than 1 in a bay 02,03 etc)
AC	LVRESCUEKIT	LV Rescue Kits	LVRK	01(If more than 1 in a bay 02,03 etc)
AC	OILSBARRIER	Oil Splash barrier	OLDB	01(If more than 1 in a bay 02,03 etc)
AC	OILSEP	Oil Separator	SPTR	01(If more than 1 in a bay 02,03 etc)
AC	PASSIVESEP	Passive Oil/Water Sep	SPTR	01(If more than 1 in a bay 02,03 etc)
AC	ROOFACCSYSTM	Roof Access System	ROOF	01(If more than 1 in a bay 02,03 etc)
AC	SEPTICTANK	Septic Tank	SPTK	01(If more than 1 in a bay 02,03 etc)
AC	SPILLKIT	Spill Kit	SPLK	01(If more than 1 in a bay 02,03 etc)
AC	SWITCHYARD	Switch Yard	SWYD	01(If more than 1 in a bay 02,03 etc)
AF	AFCAPACITOR	Coupling Cell Cap - AFIC	CCCP	01(If more than 1 in a bay 02,03 etc)
AF	AFCONTACT	Contactor Equip - AFIC	CTEQ	01(If more than 1 in a bay 02,03 etc)
AF	AFCONTROL	Controller - AFIC	CONT	01(If more than 1 in a bay 02,03 etc)
AF	AFISOLTRF	Isolation Transf - AFIC	ISTX	01(If more than 1 in a bay 02,03 etc)
AF	AFMOTORGEN	Motor Generator - AFIC	MTGN	01(If more than 1 in a bay 02,03 etc)
AF	AFSTATICFU	Static Freq Unit - AFIC	SFUA	01(If more than 1 in a bay 02,03 etc)
AF	AFSUPERVISIO	Supervision Unit - AFIC	SUPA	01(If more than 1 in a bay 02,03 etc)
AF	AFTUNECOILS	Coupling Cell Coils - AFIC	CCTC	01(If more than 1 in a bay 02,03 etc)
AI	AIRRECTANK	Air Receiver Tank	AIRC	01(If more than 1 in a bay 02,03 etc)
AI	COMPRESSOR	Compressor	AIRT	01(If more than 1 in a bay 02,03 etc)
BT	BATTCHARGER	Charger - Battery	CHRG	01(If more than 1 in a bay 02,03 etc)
BT	BATTLEAD	Lead-Acid Battery	BATT	01(If more than 1 in a bay 02,03 etc)
BT	BATTNICAD	Nickel-Cadmium Battery	BATT	01(If more than 1 in a bay 02,03 etc)
BT	BATTSEALED	Sealed Battery	BATT	01(If more than 1 in a bay 02,03 etc)
CB	CBBULKOIL	Bulk Oil CB	CB	Operating No
CB	CBBULKOILCAP	Bulk Oil CB (Capacitor)	CB	Operating No
CB	CBEARTHTRUCK	Circuit Breaker Earth Truck		Operating No
CB	CBSF6	SF6 Circuit Breaker	CB	Operating No
CB	CBSF6CAP	SF6 Circuit Breaker (Cap)	CB	Operating No
CB	CBSMALLOIL	Small Oil Volume CB	CB	Operating No
CB	CBVACUUM	Vacuum Circuit Breaker	CB	Operating No
CB	RECLOSET	Recloser - Transmission	CB	Operating No

Equip class	Equipment group ID EGI	Description for equipment	SPN 04	SPN 05
CM	COUPFILTER	Coupling Filter	CFIL	01(If more than 1 in a bay 02,03 etc)
CM	MMI	MMI	CMMI	01(If more than 1 in a bay 02,03 etc)
CM	RADIO	Radio	RADO	01(If more than 1 in a bay 02,03 etc)
CM	TELEPHONE	Telephone	TELE	01(If more than 1 in a bay 02,03 etc)
CN	CNACCONTROL	AC Control Panel	ACCP	01(If more than 1 in a bay 02,03 etc)
CN	CNDCCONTROL	DC Control Panel	DCCP	01(If more than 1 in a bay 02,03 etc)
CN	CNFDRCONTROL	Feeder Protn & Ctrl Panel	FDCCP	01(If more than 1 in a bay 02,03 etc)
CN	CNSCADA	SCADA Control Panel	SCCP	01(If more than 1 in a bay 02,03 etc)
CN	CNVRCONTROL	V/R Control Panel	VRCP	01(If more than 1 in a bay 02,03 etc)
CT	CTNEUTEARTH	Neutral Earthing CT	CUTX	01(If more than 1 in a bay 02,03 etc and for phases A,B or C at end)
CT	CTNEUTUNB	Neutral Unbalance CT	CUTX	01(If more than 1 in a bay 02,03 etc and for phases A,B or C at end)
CT	CTPOST	Post Current Transformer	CUTX	01(If more than 1 in a bay 02,03 etc and for phases A,B or C at end)
CU	CAP11KV	Capacitor - 11kV	CAPU	01(If more than 1 in a bay 02,03 etc and for phases A,B or C at end)
CU	CAPBANK	Capacitor Bank	CAPB	01(If more than 1 in a bay 02,03 etc and for phases A,B or C at end)
ER	ERGRID	Earth grid	ERTH	
FE	ALARMFIRE	Fire Alarm Detector	FIRD	01(If more than 1 in a bay 02,03 etc)
FE	ALARMPANEL	Fire Alarm Panel	FIRP	01(If more than 1 in a bay 02,03 etc)
FE	BLANKFIREDRY	Fire Blankets - Dry	BLKT	01(If more than 1 in a bay 02,03 etc)
FE	BLANKFIREWET	Fire Blankets - Wet	BLKT	01(If more than 1 in a bay 02,03 etc)
FE	DELUGSHWR	Deluge Shower	SHWR	01(If more than 1 in a bay 02,03 etc)
FE	FIREPUMP	Fire Pump	FPMP	01(If more than 1 in a bay 02,03 etc)
FE	FIRSHTTTHRMVN	Fire Shutters/Thermal Vent	FSTV	01(If more than 1 in a bay 02,03 etc)
FE	HYDRFIRE	Hydrant - Fire	HYDT	01(If more than 1 in a bay 02,03 etc)
FE	P3FIRE	Fire Extinguisher Pos	FEXT	01(If more than 1 in a bay 02,03 etc)
P1	P1POWER	Power Trf Position	PWTX	No modifier required
P2	P2AUXTRF	Auxiliary Trf Position	AUTX	No modifier required
P2	P2ISOLTRF	Isolating Transformer Position	ISTX	No modifier required
PC	PILOTCABLE	Pilot Cable	PILT	
PE	PORTEARTH	Portable Earth	CDEA	01(If more than 1 in a bay 02,03 etc)
RE	REACCAPDIS	Capacitor Disc Reactor	REAC	01(If more than 1 in a bay 02,03 etc)
RE	REACNEUERTH	Neutral Earthing reactor	REAC	01(If more than 1 in a bay 02,03 etc)
RE	REACTCAPSW	Capacitor Switching Reactor	REAC	01(If more than 1 in a bay 02,03 etc)
RE	REACTCUR	Current Reactor	REAC	01(If more than 1 in a bay 02,03 etc)
SC	SCMMI	MMI (Screen & Key Panel)	SMMI	01(If more than 1 in a bay 02,03 etc)
SC	SCSYSTEM	SCADA System	SCDS	01(If more than 1 in a bay 02,03 etc)
TE	SURGEDIV	Surge Arrester - HV	SURG	01(If more than 1 in a bay 02,03 etc as per highest voltage and for phases A,B or C at the end)
TE	SWBOARD	HV Switchboard	SWBD	01(If more than 1 in a bay 02,03 etc)
TS	CONTACTOR	Contact - Capacitor	SW	Operating No

Equip class	Equipment group ID EGI	Description for equipment	SPN 04	SPN 05
		Bank		
TS	ISOL	Isolator	SW	Operating No
TS	SWEARTH	Earth Switch	SW	Operating No
TS	SWEARTHIN	Earthing Switch - Indoor	SW	Operating No
TS	SWEARTHINMOT	Earthing Switch – Indoor (Motorised)	SW	Operating No
TS	SWEARTHOUT	Earthing Switch - Outdoor	SW	Operating No
TS	SWEARTHOUTMO	Earthing Switch – Outdoor (Motorised)	SW	Operating No
TS	SWFAULT	Fault Throwing Switch	SW	Operating No
TS	SWFUSE	Hv Fuse Switch	SW	Operating No
TS	SWFUSEOIL	Hv Fuse Switch - Oil	SW	Operating No
TS	SWFUSESE	Hv fuse Switch – Sheet Steel Enclosed	SW	Operating No
TS	SWFUSEUNIT	HV Switch/Fuse Unit	SW	Operating No
TS	SWFUSEUNITOL	Hv Switch/Fuse Unit -Oil	SW	Operating No
TS	SWFUSEUNITOP	Hv Switch/Fuse Unit – Epoxy Encapsulated	SW	Operating No
TS	SWLINK	Link	SW	Operating No
TS	SWUNIT	HV Switch Unit	SW	Operating No
TS	SWUNITEPOXY	Hv Switch Unit –Epoxy Encapsulated	SW	Operating No
TS	SWUNITOIL	Hv Switch Unit – Sheet Steel Enclosed	SW	Operating No
TS	SWUNITSS	Hv Switch Unit – Sheet Steel Enclosed	SW	Operating No
TX	TXAUX	Auxiliary Transformer	AUTX	01(If more than 1 in a bay 02,03 etc)
TX	TXEARTH	Earthing Transformer	EATX	01(If more than 1 in a bay 02,03 etc)
TX	TXISOL	Isolation Transformer	ISTX	01(If more than 1 in a bay 02,03 etc)
VR	RELAYAVR	Voltage Reg Relay	AVR	01(If more than 1 in a bay 02,03 etc)
VR	VRSCADA	Voltage Reg - SCADA	SCVR	01(If more than 1 in a bay 02,03 etc)
VT	VT	Voltage Transformer	VT	Operating Number and add a modifier A,B or C where each phase is an asset
VT	VTCAP	Capacitor VT	VT	Operating Number and add a modifier A,B or C where each phase is an asset
VT	VTCCT	Metering Unit (CCT/VT)	VT	Operating Number and add a modifier A,B or C where each phase is an asset
VT	VTMAGN	Magnetic VT	VT	Operating Number and add a modifier A,B or C where each phase is an asset

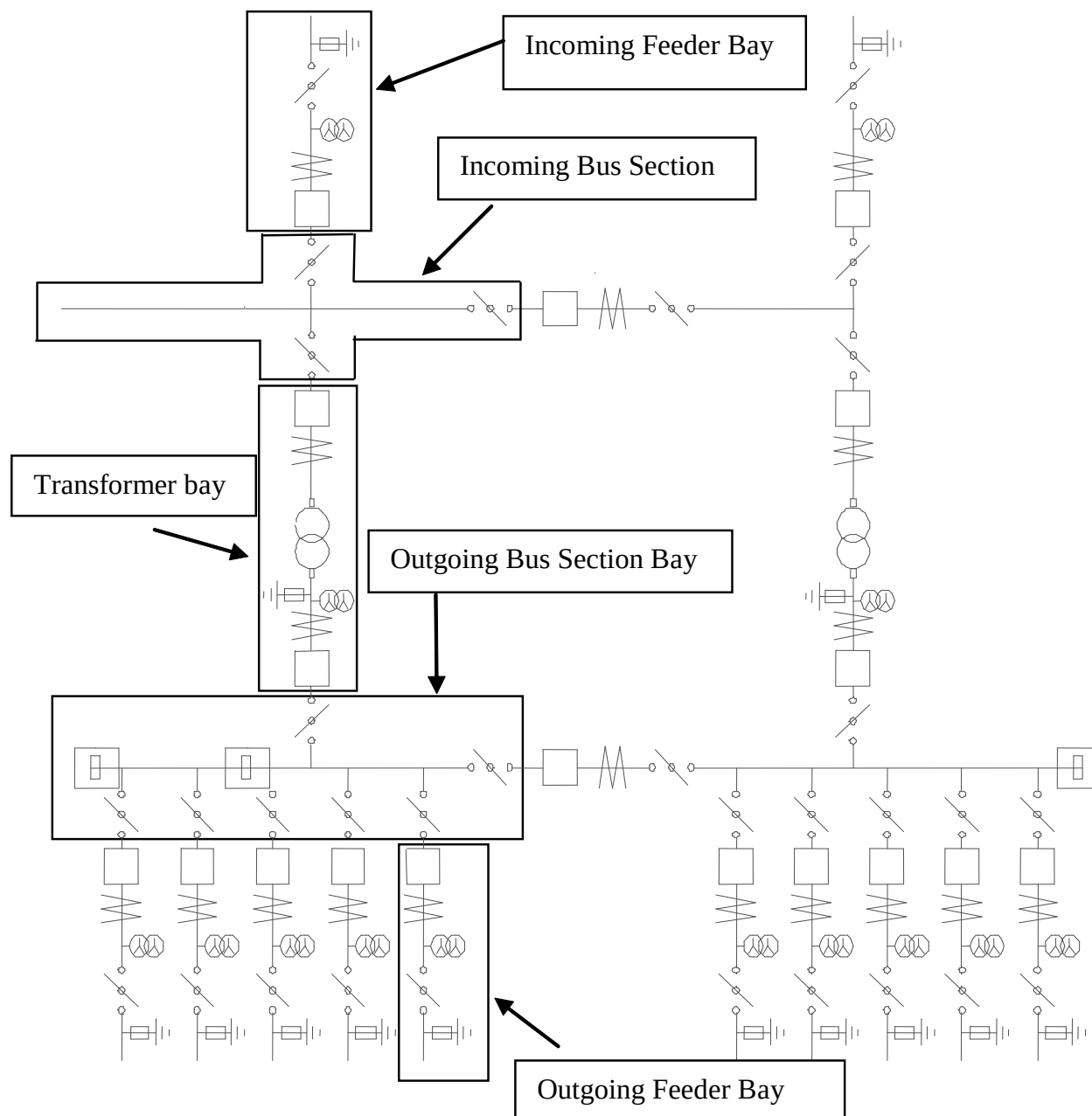
Annexure 6: SPN 4 and SPN 5 for protection relays**No SPN 5 is required for protection relays.**

Relay description	SPN4	SPN5
Distance Relay	21	
Distance & Over current Relay	21	
Zone Measuring Unit Relay	21	
Synchronising Check Relay	25	
Dead Bus Bypass Check Relay	25CK	
AC Under voltage Relay	27	
DC Under voltage Relay	27	
No Volt Change Over Relay	27NO	
VT Changeover Relay	27CR	
Alarm Relay	30	
Alarm Unit Relay	30	
Flag Relay	30	
Intertrip Receive Flag Relay	30IR	
Sensitive Earth Fault Flag Relay	30SEFI	
Memory Trip Series Flag Relay	30SOTF	
VT Fuse Supervision Relay	30VTF	
Thermal Overload Relay	49	
Hot Oil Relay	49HO	
Hot Winding Relay	49HW	
Hot Oil & Hot Winding Relay	49OW	
IOC-Instantaneous over current Relay	50	
IOC & IEF Relay	50	
VT Fuse Relay	50	
Local Backup Relay	50CBF	
Local Backup Check Relay	50CBFCK	
CB Fail Check Relay	50CK	
Neutral Earth Fault Check Relay	50CK	
LV Frame Leakage Check Relay	50GCK	
HV IOC Relay	50GH	
Over current Relay	51	
Over current & Earth Fault Relay	51	
Over current & IOC Relay	51	
Over current, E/F & SEF Relay	51	
Backup Earth Fault Relay	51BU	
Backup Over current Relay	51BU	
Backup Over current & Earth Fault Relay	51BU	
LV Earth Fault Relay	51E	
Neutral Earth Fault Relay	51E	
Earth Alarm Relay	51G	
Earth Fault Relay	51G	
Earth Fault Check Relay	51GCK	
HV Earth Fault Relay	51GH	
HV Over current Relay	51HV	
HV Over current & Earth Fault Relay	51HV	
HV Over current & IOC Relay	51HV	
LV Over current Relay	51LV	

Relay description	SPN4	SPN5
LV Over current & Earth Fault Relay	51LV	
LV Over current & IOC Relay	51LV	
Earth Fault & Sensitive Earth Fault Relay	51SEF	
Sensitive Earth Fault Relay	51SEF	
Sensitive Earth Fault Check Relay	51SEFCK	
LVCB Relay	52	
CT Shorting Relay	59	
Over voltage Relay	59	
Neutral Displacement Relay	59N	
Neutral Unbalance Relay	60	
Voltage Differential Relay	60	
Buchholz Timer Relay	62	
Directional Earth Fault Timer Relay	62	
Neutral Unbalance Timer Relay	62	
Timer Relay	62	
CB Fail Timer Relay	62CBF	
Local Backup Timer Relay	62CBF	
Memory Timer Relay	62SOTF	
Buchholz Relay	63	
Low Gas Relay	63	
Oil Surge Relay	63	
Overpressure Relay	63	
Buchholz Alarm Relay	63A	
Buchholz Indication Relay	63A	
Buchholz Aux Transformer Relay	63AT	
Buchholz Main Tank Relay	63MT	
Pressure Relief Relay	63PR	
Buchholz Tap Changer Relay	63TC	
Pressure Tap Change Relay	63TC	
VT Buchholz Relay	63VT	
Frame Leakage Relay	64	
Frame Leakage Check Relay	64CK	
Frame Leakage Trip Relay	64T	
Frame Leakage Trip Check Relay	64TCK	
Frame Leakage Zone Relay	64ZN	
Directional Earth Fault & IOC Relay	67	
Directional Over current Relay	67	
Directional Over current & Earth Fault Relay	67	
Directional Over current & IOC Relay	67	
Directional Unit Relay	67	
Backup Directional Earth Fault Relay	67BU	
Backup Directional Over current Relay	67BU	
Directional Earth Fault Relay	67E	
Feeder Management Relay	67FM	
Auto Reclose Blocking Relay	68	
Auto Reclose Relay	79	
Auto Recloser Relay	79	
Auto Reclose SCADA Relay	79S	
Fuse Relay	80	

Relay description	SPN4	SPN5
DC Fuse Supervision Relay	80	
Fuse Supervision Relay	80	
Power Supply Fail Relay	80	
Supervision Relay	80	
Trip Circuit Supervision Relay	80	
Trip Fuse Supervision Relay	80	
Backup Fuse Supervision Relay	80BU	
Local Backup Fuse Supervision Relay	80CBF	
Under frequency Relay	81	
Intertrip Relay	85	
Intertrip Receive Relay	85R	
Intertrip Send Relay	85S	
Differential Over current Relay	87	
Feeder Differential Relay	87	
Translay Relay	87F	
Restricted Earth Fault Relay	87R	
HV Restricted Earth Fault Relay	87RH	
LV Restricted Earth Fault Relay	87RL	
Transformer Differential Relay	87T	
Transformer Management Relay	87TM	
Auxiliary Relay	94	
Auxiliary Trip Relay	94	
Multitrip Relay	94	
Trip Relay	94	
Auto Close Lockout Multitrip Relay	94B	
Backup Multitrip Relay	94BU	
Trip Check Relay	94CK	
Auto Close Intertrip Receive Relay	94F	
Auto Close Multitrip Relay	94P	
Auto Reclose Multitrip Relay	94P	
Memory Trip Relay	94SOTF	
Fuse Relay Relay	95	

Annexure 7: Bays for transmission and zone substations



Annexure 8: Location format for transmission and zone substation assets

Equipment class	Description	Location format S=Substation name V = Voltage
AC	Accommodation	S
AF	AFIC Equipment	S + V + (Cell No. / Misc equipment)
AI	Air System	S + V + (CB No. / Main air receiver No. / Compressor No.)
BT	Battery – Trans	S + V + Battery No.
BY	Substation Bay	S + V + (Bus-Section No. / Street / Misc equipment)
CB	Circuit Breaker	S + V + (Bus-section No. / Transformer No. / Auxiliary transformer No. Feeder No. / Capacitor bank No. / Street / Misc equipment)
CM	Communications	S + V + Feeder No.
CN	Control Panel	S + V + (Transformer No. / Misc equipment)
CT	Current Trf	S + V + (Bus-section No. / Transformer No. / Feeder No. / Capacitor bank No. / Street / Misc equipment) + Phase A/B/C
CU	Capacitor –Tran	S + V + Capacitor No.
ER	Earthing	S
FE	Fire Equipment	S + (Wet blanket / Dry blanket / Fire extinguisher)
MB	Motor Box (TC)	S + V + Transformer No.
P1	Pos - Power Trf	S + V + Transformer No.
P2	Pos - Aux/Isol	S + V + Transformer No.
PC	Pilot Cable	S
PE	Portable Earth	S + (Switchyard / Capacitor)
PR	Prot Relay	S + V + (Feeder No. / Bus-section No. / Transformer No. / Auxiliary Transformer No. / Capacitor bank No. / Zone No. / Street)
PS	Prot Scheme	S + V + (Feeder No. / Bus-section No. / Transformer No. / Auxiliary Transformer No. / Capacitor bank No. / Zone No. / Street)
PX	Power Transformer	S + V + Transformer No.
RE	Reactor	S + V + (Transformer No. / Capacitor No. A/B/C)
SC	SCADA Equip	S
TC	Tap changer	S + V + Transformer No.
TE	Trans. Equip	S + V + (Transformer No. / Feeder No.) + Phase A/B/C
TS	Sw/gear - TRANS	S + V + (Feeder No. / Bus-section No. / Transformer No. / Auxiliary Transformer No. / Capacitor bank No. / Street / Auxiliary busbar)
TX	Transformer	S + V + (Auxiliary transformer No. / Earthing transformer / Isolating transformer)
TZ	Trans/Zone Sub	S
VR	Voltage Regulation	S + V + Transformer No.
VT	Voltage Transformer	S + V + (Bus-section No. / Transformer No. / Feeder No. / Capacitor bank No. / Street / Misc equipment) + Phase A/B/C
WI	Winding	S + V + Transformer No.