

# Technical Standard - TS099

Distribution and Sub-Transmission CAD Drafting Standards

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Empowering South Australia

**Revision Notice:**

Date	Details	Author	Authorised
21 July 2022	<p><b>Removed:</b></p> <ul style="list-style-type: none"> <li>• Section 3: Grace Period</li> </ul> <p><b>Minor Updates:</b></p> <ul style="list-style-type: none"> <li>• Section 5: Access to AutoCAD Templates and Files</li> <li>• Section 6, dot point 40.</li> <li>• Section 7.22: Pole Schedules</li> <li>• Section 11.1: AutoCAD Map 3D Drawing Software</li> </ul>	A. Pradhan A. Butler	M. Napolitano
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## 1. Introduction

This technical standard details the requirements for the preparation of standard design drawings, including the use of standard symbols for SA Power Networks electrical distribution and sub-transmission network.

It also includes details of the processes and methods to ensure effective version control, access and security of design documents using Autodesk Vault.

The specifications in this technical standard are applicable to all electrical and civil design drawing works for any installation that will become a component of SA Power Networks infrastructure. This includes internally and externally produced design drawings detailing the construction or maintenance of overhead and underground distribution, sub-transmission, and public lighting infrastructure.

This technical standard is limited to installations external to any substation boundary.

## 2. Deviation from this Standard

Deviation from any specific requirement(s) of this Standard will only be permitted with the written approval of SA Power Networks Technical Standards Manager.

Contact 'Technical Standards Team' at [networkstandards@sapowernetworks.com.au](mailto:networkstandards@sapowernetworks.com.au)

## 3. Intellectual Property

If anyone wishes to utilise SA Power Networks' specification for a design that is not being vested to SA Power Networks, then they shall request written approval from SA Power Networks Digital Engineering and Standards Manager.

A charge may apply for the use of SA Power Networks' drawings or templates for the design or construction of assets not intended to be vested to or constructed for SA Power Networks.

Contact 'Technical Standards Team' via email to [networkstandards@sapowernetworks.com.au](mailto:networkstandards@sapowernetworks.com.au)

## 4. Definitions and Abbreviations

### 4.1 Definitions

<b>Accredited Designer</b>	A designer who has satisfied SA Power Networks Terms and Conditions to undertake an electrical design.
<b>Applicant</b>	Person applying for access to the SA Power Networks network.
<b>Bush Fire Risk Area</b>	The part of the State shown in the maps in Electricity (Principles of Vegetation Clearance) Regulations 2010, Schedule 4 as the bushfire risk area excluding the areas shown in those maps as non-bushfire risk areas.
<b>Cable</b>	An insulated conductor, or two or more such conductors, laid together, whether with or without fillings, reinforcements, or protective coverings. (Note: Cable for the purpose of this manual also means aerial bundled cables).
<b>Conductor (Overhead)</b>	A wire, cable or form of metal designed for carrying electric current.
<b>Contractor</b>	Includes but is not limited to licensed subcontractors, consultants and sub consultants and engaged by the Applicant.
<b>Council</b>	The local government authority for the site of the Development.

<b>Design Drawings</b>	Drawings produced for the design, construction/maintenance of overhead and underground distribution, sub-transmission and public lighting infrastructure including recording the final state of the constructed assets.
<b>Development</b>	The development proposed by the Applicant on the Land and any land external to that land but included in the Applicant's proposal.
<b>Earthed</b>	Connected to the general mass of earth by a conductor to ensure and maintain the effective dissipation of electrical energy.
<b>High Voltage</b>	For the purpose of this document means a nominal voltage exceeding 1,000 volts alternating current or exceeding 1,500 volts direct current.
<b>Low Voltage</b>	A nominal voltage exceeding 50 volts alternating current or 120 volts direct current, but not exceeding 1000 volts alternating current or 1500 volts direct current.
<b>Local CMEN</b>	A CMEN system in an isolated (remote) location, as defined below. It differs from CMEN only in that the neutral is not connected back to the substation earth.
<b>Powerline Environment Committee</b>	They are responsible for the selection of sites where SA Power Networks assets are to be undergrounded for the community benefit.
<b>Project Manager</b>	SA Power Networks Network Project Manager, Delivery Project Manager, Network Project Officer, Network Service Officer, Customer Service Officer, Strategic Project Manager, or any Officer / Supervisor who is ultimately responsible for the management of a project.
<b>SAP</b>	Systems, Applications, and Products in Data Processing, Core Enterprise Resource Planning (ERP) software for project management.
<b>Substation</b>	Part of a power system, concentrated in each place, including mainly the terminations of transmission or distribution lines, switchgear, and housing and which may also include transformers. It generally includes facilities necessary for system security and control (e.g. the protective devices).

## 4.2 Abbreviations

<b>CMEN</b>	Common Multiple Earthed Neutral
<b>DST</b>	Distribution Standard Template
<b>HV</b>	High Voltage
<b>LV</b>	Low Voltage
<b>MEN</b>	Multiple Earthed Neutral
<b>NPM</b>	SA Power Networks Network Project Manager
<b>NSO</b>	SA Power Networks Network Service Officer
<b>PLEC</b>	Power Line Environment Committee
<b>SLD</b>	Single Line Diagram

## 4.3 Terminology

<b>Shall or Must</b>	Indicates a mandatory requirement
<b>Should or May</b>	Indicates a recommendation that will not be mandatory imposed

## 5. Relevant Rules, Regulations, Standards and Codes

This list of references has been made as comprehensive as possible at the time of publication. However, other references may have been applicable at the time. The references listed may have been amended or made obsolete and new references may be applicable. The user is responsible to correct references applied.

### 5.1 Acts and Regulations

- Electricity Act 1996 and Electricity (General) Regulations 2012
- Plumbers, Gas Fitters & Electricians Act 1995
- Work Health & Safety Act 2012 and Work Health & Safety Regulations 2012

### 5.2 Codes and Guidelines

- National Electricity Rules
- Electricity Distribution Code
- References, Administrators, and their contact details include:
  - ❖ Standards Australia [www.standards.com.au](http://www.standards.com.au)
  - ❖ Electricity Network Distributor [www.sapowernetworks.com.au](http://www.sapowernetworks.com.au)
  - ❖ The Australian Energy Regulator [www.aer.gov.au](http://www.aer.gov.au)
  - ❖ Australian Energy Market Operator [www.aemo.com.au](http://www.aemo.com.au)
  - ❖ Australian Energy Market Commission [www.aemc.gov.au](http://www.aemc.gov.au)
  - ❖ SafeWork SA [www.safework.sa.gov.au](http://www.safework.sa.gov.au)
  - ❖ The Office of Technical Regulator [www.sa.gov.au](http://www.sa.gov.au)
  - ❖ The Department for Infrastructure and Transport [www.dit.sa.gov.au](http://www.dit.sa.gov.au)

### 5.3 SA Power Networks Publications

<b>Manuals</b>	
<a href="#">Manual 32</a>	Service and Installation Rules
<b>NICC Brochures</b>	
<a href="#">NICC400</a>	Information for an applicant undertaking a contestable extension
<a href="#">NICC401</a>	Information on Network Design and Installation by an External Contractor
<a href="#">NICC404</a>	Working in the Vicinity of SA Power Networks Infrastructure - Network Access Permit Process
<b>Technical Standards</b>	
<a href="#">TS085</a>	Trenching and Installation of Underground Conduits and Cables (up to and including 33kV)
<a href="#">TS100</a>	Electrical Design Standards for Underground Distribution Cable Networks (up to and including 33kV)
<a href="#">TS101</a>	Public Lighting – Design and Installation
<a href="#">TS105A (Forms)</a>	Standard Forms for SA Power Networks Underground & Overhead Electricity Distribution and Sub-Transmission Cable Networks
<a href="#">TS107</a>	Overhead Line Design Standard for Electrical Sub-Transmission and Distribution Systems
<a href="#">TS109</a>	Technical Standard for Earthing of the Distribution Network
<a href="#">TS110</a>	Electrical Design, Civil/Electrical Works & Testing for 66kV UG Sub-Transmission Networks
<b>Relevant E Drawing Series</b>	
This document is relevant to all SA Power Networks E Drawings	

### 5.4 Standards Australia

AS 1100 Series	Technical drawings: Part 101: General principles Part 201: Mechanical drawing Part 401: Engineering survey and engineering survey design drawing Part 501: Structural engineering drawing
AS 60038	Standard voltages
AS/NZS 1158.0	Lighting for Roads and Public Spaces
AS/NZS 3000	Electrical Installations (known as the wiring rules)
AS/NZS 4026	Electric cables - for underground residential distribution systems

## 6. Access to AutoCAD Templates/Files

SA Power Networks provides access to standard line design drawing templates, AutoCAD drawing palettes, and associated blocks etc., as well as instructional materials, training files, and user manuals, via its secured internet **Contractors External SharePoint site**. This will assist designers to produce a drawing file that complies with the requirements of this standard and is compatible with SA Power Networks systems.

Contractors are advised to obtain and maintain a correct version of AutoCAD Map 3D software, and ensure they have the latest version of SA Power Networks templates and files.

**Note:** If you are not an approved external designer, and need access to the **Contractors External SharePoint site**, please forward your request email to [networkstandards@sapowernetworks.com.au](mailto:networkstandards@sapowernetworks.com.au).

Refer to Appendix A of [NICCC401](#), for further details.

SA Power Networks internal designers shall have access via [Customer Solutions](#) intranet website. Browse '[Resource Centre](#)', then under heading 'Training Material/User Manuals', click [Line Design CAD](#) and access all 'AutoCAD and PLS-CADD, How to Guides, Symbols/Palettes'.

For information on customer solutions area boundaries and contact details, refer to the [Customer Solutions Managers](#) document and the detailed maps included in the **Contractors External SharePoint site**.

## 7. Standard Drawings - Minimum Requirements

Drawing content requirements are to be established during the project planning phase to ensure that the drawing will appropriately meet project delivery and record-keeping requirements.

SA Power Networks may specify the requirement for a high precision 'As Constructed' drawing to be prepared for specific projects if recording of higher precision/more detailed asset location information is deemed pertinent. This is more likely to be required for works involving the installation or alteration of high priority/high value assets (e.g. 66kV), assets in heavily utilised areas, and/or cables and conduits installed with significant lengths of directional boring. Refer to **Section 8.21** for more information on directional boring and **Appendix B** for further information on high precision 'As Constructed' drawings.

Drawings shall, as a minimum, contain the following:

1. Drawing number (SA Power Networks Notification number)
2. Sheet Numbers (All sheets bearing the same drawing number must be uniquely numbered and have main index/overview sheet indicating sections covered by relevant sheets. Refer to **Section 8.11** and **Appendix C**, for more details)
3. Customer/Project name and project address
4. Designer name and logo, if not SA Power Networks. External designers shall add their company logo to the standard template to identify the origin of the design. External designer's logos should not be embedded within SA Power Networks title block but be included as a part of the drawing. Refer to **Section 8.27**, for more details.
5. North Point. Drawings are to be oriented such that 'North' is towards the top of the sheet where practicable, or within 90 degrees left.
6. Bar scale and written drawing scale for the main drawing frame on each sheet.
7. Roads with road names labelled, or distance and direction to nearest roads noted.
8. Property boundaries with street numbers or lot numbers where available.
9. Plan parcel identification numbers (country areas)
10. Suburb/Town name/Hundred (country areas)
11. Specify reference to 'Distribution Design Templates (DST)' as well as the 'E-drawing' numbers for public lighting, overhead construction assemblies, specific service pits/pillars etc on the design drawing
12. Standard notes to conform with the purpose of the drawing

13. Feeder plan and substation references (e.g. Happy Valley Substation, SSD-210, Aberfoyle West Feeder PN-210C)
14. Map Grid of Australia Zone number
15. Grid reference co-ordinates for lower left/upper right corner of project location.
16. South Australian Topographic Map reference.
17. Adjoining sheets and reference drawings noted.
18. Cross sections where necessary to give trenching and conduit use details.
19. Easement dimension detail plans.
20. Customers confirmed maximum demand current, where applicable.
21. Asset Owner
22. Bush Fire Risk Area
23. Earthing type - Localised CMEN, CMEN, MEN or SWER
24. Transformer details showing high and low voltage Single Line Diagram (SLD) arrangements (Padmount Transformers only)
25. Drawing status e.g. 'For Construction' etc
26. Constructor details and construction completion date
27. Dimensioned positions and alignments of installed or altered SA Power Networks assets and identification of abandoned and removed assets (on 'As Constructed' drawings).
28. Revision's block containing Revision Identifier, Description, Reviser and Revision Date.
29. Detailed asset information. The following is a general list of information that shall be provided using notes, labels, and legend items, where applicable:
  - (a) Existing and proposed device stock item numbers and network identification numbers (for transformers, switching devices, voltage regulators, capacitors etc).
  - (b) Phase sequence details for overhead and underground power lines.
  - (c) Pole top line attachment geometry and attachment height; pole height; and pole stock item numbers.
  - (d) Presence and position of earth/neutral wires or cables with installed/altered HV overhead lines.
  - (e) Distance from pole top (or identified as underground)
  - (f) Earth/Neutral conductor types, sizes, and counts
  - (g) Design temperature and line rating, for overhead lines
  - (h) Source phase identification for single/three phase devices/equipment
  - (i) Underground cable types including:
    - Cross-sectional area per core, number of cables, number of cores per cable (e.g. 300mm<sup>2</sup> 3x1c)
    - Conductor material (e.g. Aluminium)
    - Insulation type/construction (e.g. XLPE / HDPE, PLYHDPE)
    - Stock Item Numbers
  - (j) Overhead conductor types including:
    - Stranding and wire size (e.g. 7/3.75, 30/7/2.75)
    - Conductor type (e.g. ACSR/GZ 1350, AAAC 1120, SC/AC)
    - Insulation/covering details if applicable (e.g. ABC, CC, CCT)
    - Stock Item Numbers
  - (k) Pit and pipe types
30. Clear depiction of the intended final LV and HV electrical configuration including:
  - (a) Cable and feeder/conductor connections to switches, transformers, cubicles, voltage regulators, capacitors, and other operational devices.
  - (b) Service connections and LV mains arrangements at affected/pertinent switches, transformers, cubicles, and specifically connections at either side of proposed LV open points.

- (c) Switching device/connection states (open/normally open/closed/fused (specify size)/solid links inserted/closed to earth etc).
- 31. Switching Cubicle details showing High Voltage or Low Voltage SLD arrangements.
- 32. Clear identification of public lighting asset owners and applicable tariffs as per TS101.
- 33. Sheet size.
- 34. Units (Metres or Millimetres)
- 35. Access permits points and extents of contractor and SA Power Networks works
- 36. Development Number and Development Name, where applicable.
- 37. Name of the relevant SA Power Networks Project Manager.
- 38. Cable pulling and/or conductor stringing tension tables, where applicable.
- 39. All other applicable drawing sheet fields completed.
- 40. Clearances, depths, and alignments for third party assets crossing or adjacent to installed/altered SA Power Networks assets. Refer to **Section 8.26**, for more details.
- 41. The latest SA Power Networks Title Block available via the **Contractors External SharePoint site**. Refer to **Section 6**, for more details.
- 42. Standard SA Power Networks Line and Device Symbols. Refer to **Sections 6**, and **11**, for more details.
- 43. Details to ensure correct construction around third-party assets, including service locations and required clearances. Refer to **Section 8.26**, for more details.
- 44. Standard correct version of AutoCAD templates, Map 3D software/tools etc, Refer to **Section 6**, for more details.

## 8. Standard Drawings - Specific Requirements

### 8.1 Drawings Template

All drawings covered by the scope of this standard shall be created using the current SA Power Networks drawing template 'LD-Template.dwt' and use the appropriate associated drawing sheets.

For access to AutoCAD templates/files, refer to **Section 6**, for more details.

### 8.2 Fonts

SA Power Networks uses multiline text and standard ISO fonts for all text on construction drawings. Fonts and text should comply with the requirements of AS 1100. Many standard fonts are accessible via the Symbols palette (Refer to **Section 6** for more details). These fonts are assigned their own specific layer.

### 8.3 Notes

General notes shall be included on the drawing detailing the scope of works to be undertaken by responsible parties for the project. Network Access Permits (NAP) should be numbered and detailed in the general notes if required as per [NICC404](#). An example of NAP labels and details are shown in **Appendix E.4**. 'Notes' regarding the layout of the project and any applicable standards should also be included. A template for notes is included in the provided AutoCAD template files (Refer to **Section 6** for more details) and examples of notes are shown in **Appendix E.1** and **Appendix E.2**.

### 8.4 Main Layer Colours

SA Power Networks utilises many standard colours to represent specific voltages and asset types. All colours are defined in the standard layers table in **Appendix F** and are included in the provided AutoCAD template files (Refer to **Section 6** for more details)

All electronic and hard copy drawings shall be issued in colour.

**Note** that due to the large number of different lines colours and styles, users are encouraged to add a label to lines if considered necessary.

## 8.5 Scaling

SA Power Networks utilises annotative scaling to allow the display of symbols, text, and other annotative objects at various scales in each viewport. The standard scales listed in **Table 1** are preferred for the display of plan drawings.

**Table 1 - Preferred Standard Scales**

Nos.	Scale	Application
1	1:50	for detailed enlargements of underground installations
2	1:100	for detailed enlargements of underground installations
3	1:500	for underground installations
4	1:1,000	for overhead and underground
5	1:2,000	for Urban
6	1:2,500	for Urban
7	1:5,000	for Rural
8	1:10,000	for Rural
9	1:20,000	
10	1:25,000	

Use of other scales may be considered by SA Power Networks if required to support specific project requirements. Inset views and 'Not to Scale' (NTS) views may be used as appropriate and clearly indicated as required.

## 8.6 Drawing Units

Drawing units shall be used as per **Table 2**.

**Table 2 - Drawings Units**

	Type	Decimal
Length	Precision	0.00
	Units	Metres
Angle	Type	Decimal Degrees
	Precision	0
	Insertion scale	Millimetres
	Intensity of Photometric Lighting	Generic
Base Angle	East	0.00

## 8.7 Coordinates and Measurements

Coordinates and measurements are to be provided in metres using two decimal places as per the following examples. The applicable unit of measurement (Metres) must be specified on each drawing sheet.

- Coordinate Labels: E281062.77, N6132600.60, EL60.25
- Coordinates (Tabulated): 281062.77, 6132600.60, 60.25
- Dimensions and Chainages: 12.75

## 8.8 External References (Xrefs)

External references (Xrefs) are permitted to be used on SA Power Networks drawings in a limited number of circumstances. Generally, this should be limited to the following types of drawings, please consult with the SA power Networks Project Manager.:

- Projects with very large land base/reference file sizes which may cause issues during the Vault check-in process.
- Complex, long term infrastructure type projects that may have numerous land base/reference data changes over the life of the project.
- Projects that may require multiple designers to create drawings using a single source of land base/reference data.

- Where the geographical project area requires multiple sheets to cover the extent of the project.

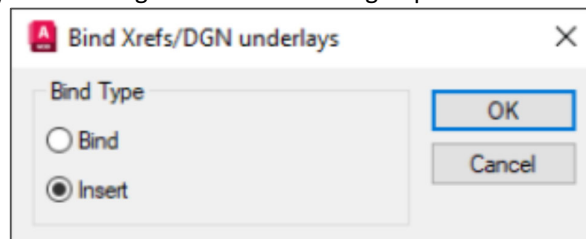
Where one drawing uses an Xref for the details from another, the land base data shall be used via the SA Power Networks Locate tool (refer to **Section 0**) and the layers must be consistent with the SA Power Networks' template.

For drawings that have been created outside of SA Power Networks Vault environment; for example, drawings created by external designers without access to the Vault, the following is required:

1. Any externally referenced drawing that captures the drawing data of another drawing using the AutoCAD Xrefs method, must use the 'relative path' method, explained below.
  - (a) Set an Xref Path to be Relative (not Absolute)
  - (b) Display the External References palette.
  - (c) Display the path options using one of the following methods:
    - In the File References pane, right-click the reference name.
    - In the Details panel, click the Browse button.
    - In the External References toolbar, click the Change Path button.

Select one of the options, e.g. 'Make Relative'.

- (a) Sets a path that assumes the current drive letter or the folder of the host drawing. Note that, Relative Path method is only effective, if the drawing and the referenced file are stored on the same drive.
2. The Xref shall be set to 'insert' via the Bind command as shown in Figure 1 to ensure that the Xref layers are merged rather than being duplicated. When supplying drawings to SA



**Figure 1 - Correct Xref insert setting**

Power Networks, all drawings referring each other must be supplied as a set.

3. Drawings with external references that will not resolve when opened by AutoCAD will be deemed non-compliant and will not be accepted.

## 8.9 SAPN Locate

SAPN Locate is a custom tool to embed the base map GIS information into the design drawing. The tool provides both land base details and asset information directly exported from the SAPN GIS system. This will import a specific selected area for the design as selected saving on excessive data import and contain approved predefined GIS layers.

Imports of land base detail not from the SAPN Locate tool and not utilizing the approved GIS layers will not be accepted, the only exception being for large infrastructure projects that require collaboration with 3rd parties on the design. In these circumstances Xrefs must be used as shown in **Section 8.8**.

The SAPN Locate user guide will be supplied with the AutoCAD configs in the External Contractors SharePoint site for external designers. For internal designers it is located on the Customer Solutions Training Center site.

The SA Power Networks' Land base data is contained within the SAPN Locate tool. All Land base data deeds shall be added to the model space. Land base reference data shall not be moved from its original geographical position within the model. This requirement will maintain the integrity of the geo-referenced data within the drawing.

Different views of the same location shall be created using a combination of viewports and layers, wherever possible. This applies particularly for projects with before and after components, such as 'Power Line Environment Committee (PLEC)' projects.

If it is not practicable to achieve alternative portrayals of an area through the use of layers and viewport settings (e.g. Inset enlargements), then the use of separate DWG files is recommended. For example, it may be necessary to create a separate sheet and DWG file to depict detailed 'As Constructed' enlargements at a larger scale, in their correct geographic locations, without compromising the main design. All drawings sheets shall be numbered as stated in **Section 8.11** and **Appendix C**.

The use of 'External References (Xrefs)' data for subsequent sheets is encouraged. Refer to **Section 8.8** and **Appendix C.5**, for more details.

## 8.10 Embedded Objects

Object Linking and Embedding (OLE) may be utilised, if necessary, to display design details. However, preference should be given to the use of standard SA Power Networks objects if they are available. OLE objects should only be the embedded not linked.

## 8.11 AutoCAD File Naming

The file naming format for AutoCAD (\*.dwg) files for line and feeder design drawings must comply with the strict naming conventions detailed in this standard. Any other file that is associated with the drawing file, and is intended to be checked into the SA Power Networks Vault, must also comply with these naming conventions.

This includes:

1. Files created from the AutoCAD drawing, such as Adobe PDF files
2. Photographs attached to the drawing
3. Spreadsheets attached and referenced by the drawing

Refer to **Appendix C** for details of the file naming conventions.

## 8.12 Multiple Work Sites

Drawings that detail construction work at more than one work site should be split over separate sheets. This requirement ensures that drawings can be easily located and retrieved from SA Power Networks GIS systems.

As a guide, multiple work sites that are more than 200m apart should be placed on separate sheets.

Designers are encouraged to create multiple drawings sheets when it will assist with the construction (if construction is likely to be completed at or over staged / longer time periods) and management of the project and archiving of the 'As Constructed' drawings. References to other sheets in a series should be included on each sheet. Consideration of a summary page to show multiple sites should also be considered.

## 8.13 Standard Projections

Drawing land base data shall be geographically oriented to the 'Geocentric Datum of Australia (GDA)' with the correct 'Map Grid of Australia (MGA)' Zone projection, for the area of South Australia. SA Power Networks current land base data is to be GDA2020. Designers must ensure that the correct datum is utilised and noted on the drawing. This is importance if coordinates are displayed on the drawing.

Refer to the following websites for more information:

1. <https://maps.sa.gov.au/SAPPA/>
2. <https://www.icsm.gov.au/>

For most SA Power Networks drawings, the Zone will be 54 for projects east of Longitude 138°, or a line through Port Pirie. Projects west of this line will be Zone 53.

The 'LD-Template.dwt' is configured to default to Zone 54. The drafter shall ascertain the correct zone before commencing the drawing and assign this zone in AutoCAD Map using the 'Map Setup' function. All coordinates displayed on the drawing shall be expressed as Eastings and Northings.

Use of the SA Power Networks *Custom Tool > SAPN Locate* will automatically assign the correct Map Zone. The project Map Zone and extent coordinates shall be entered in the standard drawing sheet title block.

For further information on customer solutions boundaries and contact details, refer to **Section 6**.

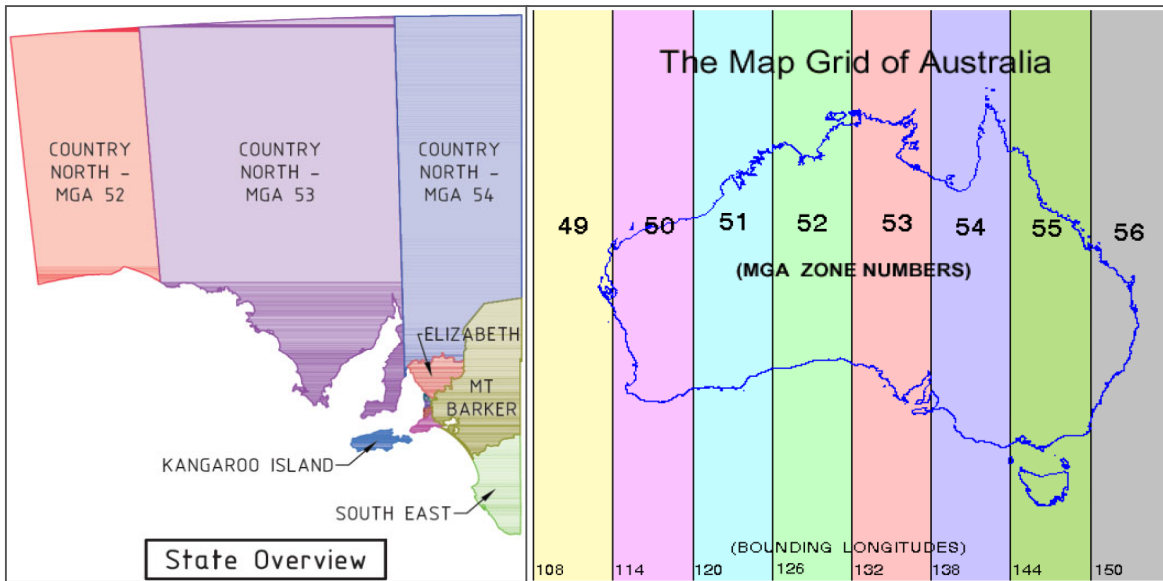


Figure 2 - The MAP Grid of Australia

Note that the default Zone 54 projection can be changed within AutoCAD.

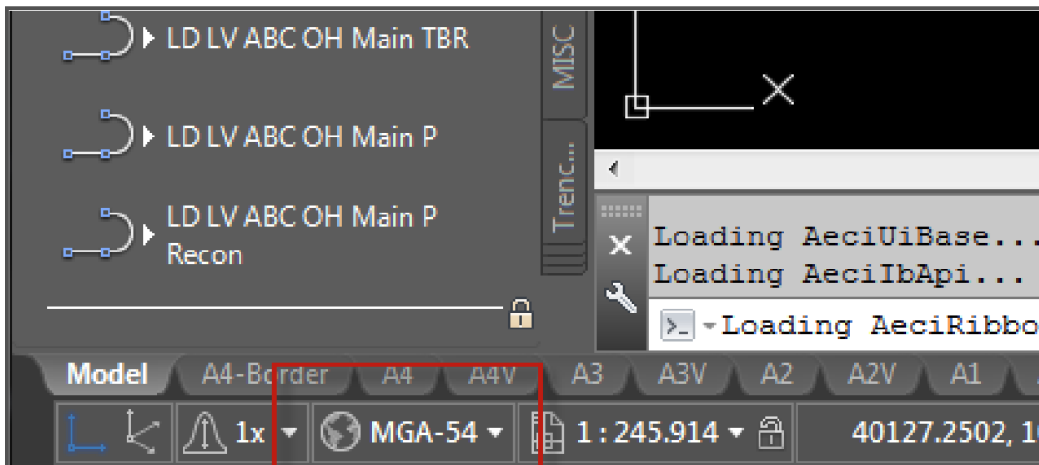


Figure 3 - Example of Default Zone 54 (MGA-54) Projection

## 8.14 Standard Layers Tables

SA Power Networks uses dedicated layers for each specific line styles, fonts, and symbols. Access to symbols and lines etc from SA Power Networks standard palettes ensures that components are automatically inserted on the correct layer.

The use of layer display should be used to control the appearance of the final drawing. Several predefined layer filters are also included to allow simple control of these layers. Refer to **Appendix F** for more details.

## 8.15 Standard Line Styles

SA Power Networks uses the standard line styles in drawings. These line style descriptions are also the standard legend descriptions which are to be modified to meet specific asset description requirements.

Where there may be confusion between line styles, a label shall be placed on the affected line style to clarify it, e.g. add label 'Proposed ABC low voltage'. For the following types of line styles, refer to **Appendix H**, for more details:

- Overhead Lines Styles
- Underground Lines
- LV Cables
- 7.6kV Cables
- 11kV Cables
- 19, 33, and 66kV Cables
- Public Lighting, Fibre, Pilot, and Consumer Cables
- Miscellaneous Line Styles

## 8.16 Standard Drawing Symbols

SA Power Networks uses standard drawing symbols/blocks in drawings. These symbol descriptions are also the standard legend descriptions which are to be modified to meet specific asset description requirements. For the following types of symbols, refer to **Appendix G**, for more details:

1. Overhead Network Symbols
2. Underground Network Symbols
3. Underground Trench and Conduit Symbols
4. Public Lighting Network Symbols

## 8.17 Blocks

SA Power Networks have developed numerous standard AutoCAD blocks for underground and overhead drawings, refer to **Appendix G** for more details. The majority of the standard symbol blocks are dynamic and include some of the following functions:

1. Visibility states
2. Auto-align functionality
3. Dynamic grip rotation
4. Graphical wipe-outs
5. Polar stretch (selected symbols)
6. Polar stretch construction grid
7. Editable attributes
8. Annotative scaling

These functions improve the functionality of the blocks and reduce the overall number of individual blocks that are required.

Poles and symbols that are allocated a device number (Load Switch, Padmount Transformer etc) have editable attributes which can be accessed by double clicking on the block. These functions should be used to ensure a standard format.

## 8.18 Stamps and Tables

Several standard stamps and tables have been developed to display standard information in a uniform format, they are listed as below:

1. Standard Position of Service Pillar/Pit Stamp
2. Bushfire Risk Stamp
3. Earthing Stamp
4. General Notes Stamp
5. Cable Reference Stamp
6. LD Legend
7. LD Maximum Demand Stamp
8. LD Maximum Demand Multi Stamp
9. Railway Crossing Stamp
10. Transformer and Switching Cubicle Layout - Stamp
11. Stringing Tension and Cable Pulling Tables (refer to Section 8.19)
12. Pole Schedules Table (refer to Section 8.24)
13. Easement Stamp
14. Technical Standards Reference Stamp

Designers should include standard SA Power Networks stamps and tables whenever applicable and appropriate to the status of the drawing to provide a consistent appearance.

For most projects, the drawing should contain the following stamps as a minimum, with applicable details completed.

1. LD ENERGISE DATE
2. LD MAX DEMAND
3. LD EARTHING
4. LD GENERAL NOTES

## 8.19 Stringing Tension and Cable Pull Tables

When applicable, drawings shall include cable pulling and / or stringing tension tables using the standard SA Power Networks' tables.

These tables shall be prepared in accordance with the applicable Technical Standard. Refer to **Figure 4** for examples.

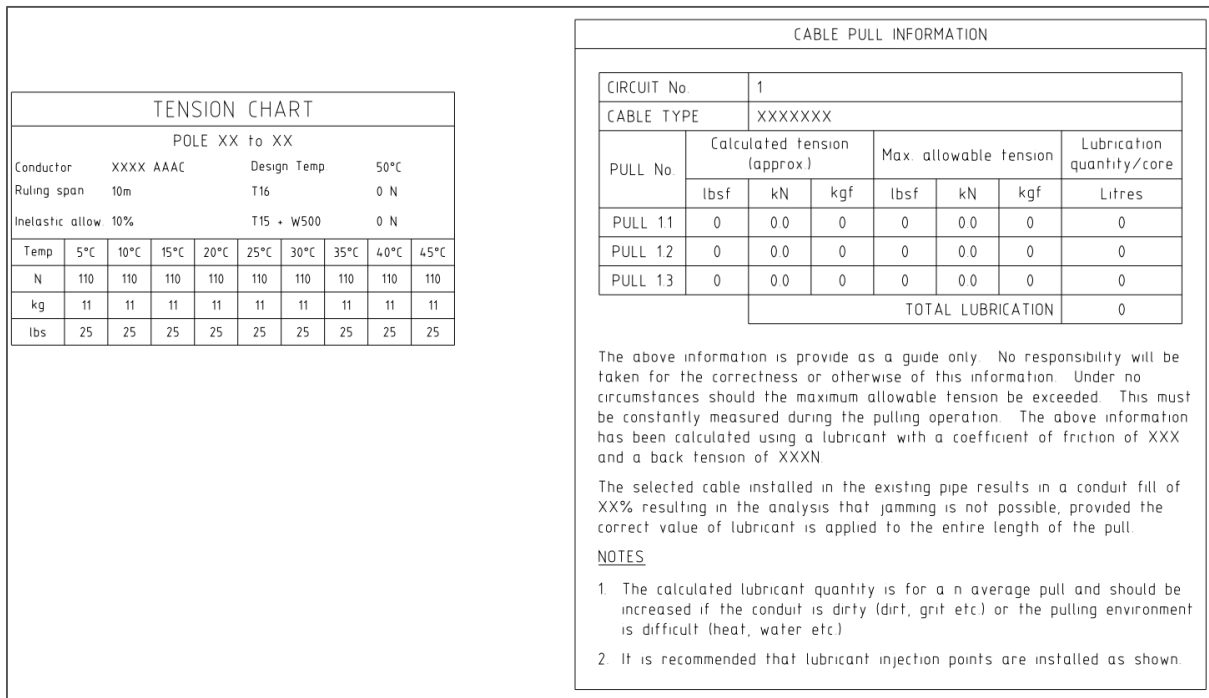


Figure 4 - Example of Stringing Tension and Cable Pull Tables

## 8.20 Trench Cross Section Details

For projects that involve trenching, the required arrangements should be detailed using the standard SA Power Networks trench cross section block. The actual completed trench details shall be included on the 'As Constructed' drawing.

The occupancy of each conduit must be specifically detailed and confirmed/updated upon production of the 'As Constructed' drawing. Refer to [TS085](#) for more details.

## 8.21 Directional Boring Requirements

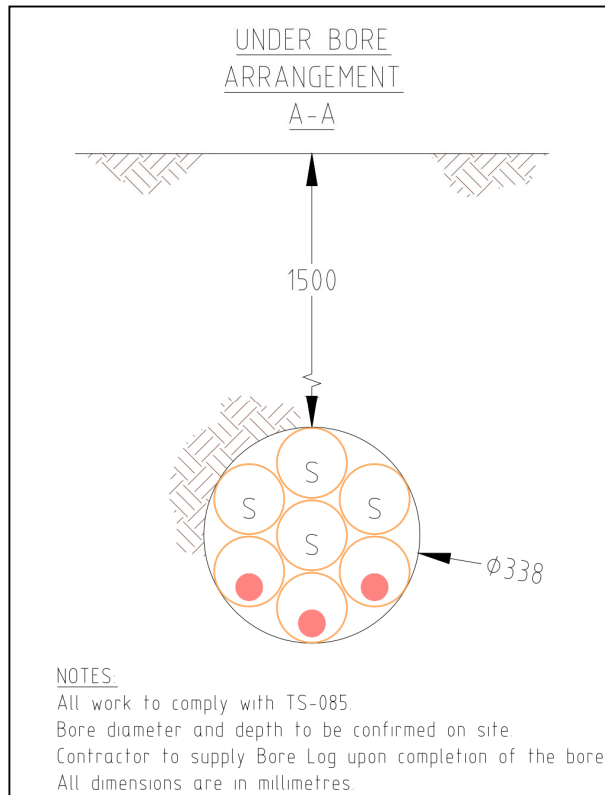
'Preliminary' or 'For Construction' drawings depicting underground directional bores are to include references to the applicable Technical Standards and project-specific bore requirements including proposed section diagrams, longitudinal sections, and other details as necessary to describe the work required.

A standard SA Power Networks section diagram block is available and may be applicable to some proposed works (refer to an example in **Figure 5**).

'As Constructed' drawings for installations incorporating directional boring are to include section diagrams, longitudinal sections, bore logs and other detailed information to comprehensively describe the assets and record their precise locations and depths.

A high-precision drawing (as described in **Appendix B**) may be required to sufficiently record assets installed in directional bores.

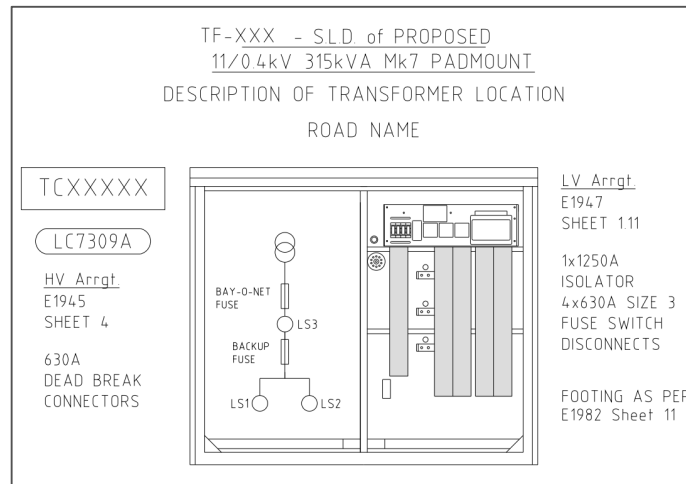
The level of detail required is to be determined by SA Power Networks Project Manager and established with all relevant parties prior to commencement of works. Refer to **Appendix B** for further information on recording directional bored installations.



**Figure 5 - Example of 'Under Bore Block'**

## 8.22 Distribution Transformer Single Line Diagrams

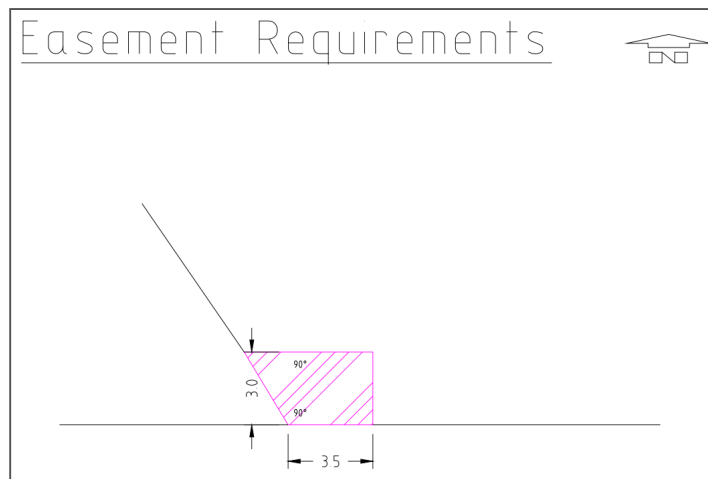
For projects including padmount transformers, the required arrangements should be detailed using the standard SA Power Networks' single line diagram blocks. Applicable editable attributes should be completed, in particular the stock item number and transformer number. Refer to **Figure 6**.



**Figure 6 - Example of Single Line Diagram Block**

## 8.23 Easements

Any drawing that details installation of proposed infrastructure on private property shall include details of the required easements, using the standard SA Power Networks easement blocks, layers, and line styles. An example of an easement arrangement is shown in **Figure 7**. Refer to [Easement Standard TS102](#) for specific details.



**Figure 7 - Example of Easement**

## 8.24 Pole Schedules

Pole schedules contain information about existing and proposed pole arrangements and must use the Pole Schedule table block as shown in **Appendix E.3** or be attached to the drawing as an embedded spreadsheet which is in MS excel format of a version that is compatible with SA Power Networks current version of AutoCAD Map 3D.

For 66kV project works, depending on the extent or works done, a 'Master Pole Schedule' and 'Master Layout Design' may be requested by SA Power Networks to be completed once 'As Constructed' drawings are supplied.

For PLEC project works, a 'Modified Pole Schedule' may be provided by the SA Power Networks Project Manager.

## 8.25 Overhead Line Profiles

For some projects it may be beneficial to include a vertical profile and/or plan view of the line route on the drawing, showing conductor attachment heights, ground clearance and side swing at the applicable operating temperature.

The requirement for a profile should be determined by the relevant SA Power Networks Project Manager at the commencement of the project. Projects requiring clearance to critical areas, such as vegetation in bush fire areas, high load corridors, transmission lines, airports or complex projects are examples that may require a profile. Refer to **Section 12.2** for information about the PLS-CADD Overhead Design Software.

## 8.26 Additional Construction Information

Where appropriate, third-party service locations shall be added to the drawing. The designer should add additional section views, plan views, and notes as required to clearly explain critical construction dimensions to third-party assets and detail non-routine construction requirements.

Examples of this, but not limited to, are critical dimensions between third-party assets and pole footings, cables, installation of footings at greater depth than standard, notes to positively locate services on site, other additional information etc.

## 8.27 External Designer Logos

External designers shall add their company logo to the standard template like the example shown in **Figure 8**. The details should include the entity name, address, and any applicable contact details. **Note:** Do not modify the Title Block layout or logos. External designer logos must be inserted in the drawing as separate elements to the title block.





EXTERNAL DESIGN NAME		SURVEYORS NAME: XXX	MAP REF: XXX	[HBFRA] HIGH BUSHFIRE RISK AREA	
CONTACT DETAILS		SURVEY DATE: XXX	GRID REF: 0.000000 E 0.000000 N	FEEDER NO: XX-000 FEEDER NAME: XXXXX	
		CO-ORDINATE DATUM ZONE: MGA/20-54-GDA2020		SUBSTATION NO: SSD-000 SUB NAME: XXXXX	
		GROUND SCALE: XXX		ASSET OWNER: XXXXX	
		HORIZ: PSM XXXXXXXXXXXX PLANE	0.000000 E 0.000000 N	PROJECT DEFINITION: XX-000000	NOTIFICATION TYPE --
		VERT: PSM XXXXXXXXXXXX AHD		PRELIMINARY	
Head Office: 1 Anzac Highway Keswick South Australia 5035  Postal address: GPO Box 77 Adelaide South Australia 5001  Corporate switchboard 08 8404 5607 19:00am - 5:00pm Monday to Friday)  ABN: 13 332 330 749				TITLE_LINE_1 TITLE_LINE_2 TITLE_LINE_3	
		SCALE X:XXX	A1	XXXXXXX	SHEET X OF X REV -
9	10		11		12

Figure 8 - Example Designer Logo Placement

## 9. Standard Format

### 9.1 Electronic File Format

The CAD design drawing files which will be supplied to SA Power Networks shall be in SA Power Networks' current version AutoCAD Map 3D format.

Externally created drawing files shall be transferred to SA Power Networks as specified in **Section 13** using the AutoCAD standard function, eTransmit, to ensure that all associated files are included.

### 9.2 AutoCAD Layering and Styles

The AutoCAD file shall be compatible with SA Power Networks systems and processes including checking, verification, archiving, analysis, and planning requirements.

The drawing format, layers, styles, symbology etc shall comply with all requirements specified in this standard.

SA Power Networks reserve the right to reject any outdated, non-compliant or non-compatible design data. The design data shall be re-submitted in a form acceptable to SA Power Networks and in compliance with this technical standard.

## 10. Distribution Standard Templates (DST) and E Drawings

The design shall be in accordance with specific Distribution Standard Templates (DST) and/or E-drawings to ensure that the correct assembly is ordered and installed. Therefore, relevant DST and/or E-drawings shall be referenced on the design drawing.

The design shall specify E-drawing numbers for public lighting, overhead construction assemblies, specific service pits / pillars etc on the design drawing.

Non-Standard Special Purpose E-drawings (E-SP) require approval from the Equipment Manager or delegate before they can be included in any design. The approval date and by whom, shall be included in the notes or Pole Schedule.

For documentation access or for approval of non-standard special purpose E-drawings, contact [networkstandards@sapowernetworks.com.au](mailto:networkstandards@sapowernetworks.com.au).

## 11. Standard Drawing Sheets

### 11.1 Layout Tabs

All drawings covered by the scope of this standard shall be created using the current SA Power Networks template 'LD-Template.dwt' and use the appropriate associated drawing sheets.

Designers shall ensure that they have a current version of the drawing template before commencing drafting.

The 'LD-Template.dwt' template contains preconfigured layout tabs with 9 sheet sizes as listed in **Table 3**. It also contains legend title blocks for each type of symbol block and line style.

**Table 3 - Standard 'LD-Template.dwt' - Sheet Sizes Layout Tabs**

Nos.	Sheet Sizes Layout Tabs for Standard Projects
1	A4
2	A4V
3	A3
4	A3V
5	A2
6	A2V
7	A1
8	A1V
9	A0

Each layout contains a configured drawing sheet title block, a design viewport, a legend viewport, scale bar, north sign and 37 editable attributes and a variable number of revision attributes.

The designer shall ensure that all attribute fields are completed with accurate information. The drawing sheet title blocks contain several automated functions which only work correctly when using SA Power Networks standard LD AutoCAD build. If necessary, these fields can be completed manually.

All unused layout tabs (drawing sheets) within the drawing shall be deleted as soon as the initial drawing has been created. Refer to **Appendix E** for 'General Design Drawing Presentation Examples'.

### 11.2 Standard Editable Attributes - Drawing Sheet

Each sheet contains numerous editable attributes to allow entries of standard information into the sheet. Various attributes are searchable within SA Power Networks Vault file server. All attributes allow the simple entry of data in a standard format and location. Refer to **Appendix D**, for more details.

## 12. Standard Drawing Software

### 12.1 AutoCAD Map 3D Drawing Software

AutoCAD Map 3D is SA Power Networks standard CAD package for all drawings covered by the scope of this standard. The Line Design (LD) AutoCAD package includes a suite of custom palettes to provide access to standard SA Power Networks line styles and symbols. It also includes Autodesk Vault, which provides a secure drawing management system for all Customer Solutions drawings.

All drawings covered by the scope of this standard shall be created using the current templates available at SA Power Networks secured internet website at **Contractors External SharePoint site**. Approved external designers will need a login and password. For access, please contact 'Digital Engineering and Standards Team' via email to: [networkstandards@sapowernetworks.com.au](mailto:networkstandards@sapowernetworks.com.au). Refer to **Appendix A** of [NICC401](#), for further details.

## 12.2 PLS-CADD Overhead Design Software

PLS-CADD is SA Power Networks standard overhead line design package. All internally designed SA Power Networks overhead line designs shall be completed using the Network Management build of PLS-CADD.

SA Power Networks preference is that all externally designed overhead line projects are completed using SA Power Networks current version of PLS-CADD. For PLS-CADD designed projects, a copy of the 'filename.bak' file shall be provided to the relevant SA Power Networks Project Manager for archiving on completion of the project.

For non-PLS-CADD designed projects, a \*.pdf and or \*.dwg copy of the line profile will be provided. In all cases, full conductor design and tension details shall be provided.

## 13. Drawings Issuing Process

It is the designer's responsibility to ensure that all relevant parties are in receipt of the latest design information and drawings throughout the life of the project.

### 13.1 The Designer's Role

Upon revision of the design drawing, it is the designer's responsibility to ensure that the design drawing is issued to all relevant parties.

SA Power Networks internal designers are to issue drawings as per SA Power Networks existing internal procedures and forward 'Safety in design/Life cycle safety' documentation to the relevant Project Manager/Construction teams.

External designers are to issue drawings as specified below:

1. Forward a hard copy or PDF file at the 'Preliminary' Stage to the relevant SA Power Networks Officer responsible for management of drawings.
2. At the 'For Construction' and 'As Constructed' stages, forward electronic copies to the relevant SA Power Networks Officer responsible for management of drawings (DWG + PDF copies).
3. Forward copies appropriately to all other relevant recipients in their required quantities and formats.
4. Electronic drawing files shall be lodged with the relevant SA Power Networks Officer responsible for management of drawings via email, USB and/or other data storage devices, unless otherwise specified.
5. SA Power Networks Network Project Officer or Project Manager, who is interacting with or engaging an external designer shall fulfill the role of distributing drawings.
6. For more details, refer to Appendix A.

### 13.2 The Project Manager's Role

It is the relevant SA Power Networks Project Manager's responsibility to ensure that the internal design drawings are to be managed and issued according to SA Power Networks internal procedures and that the external design drawings are to be issued as specified below:

1. Preliminary drawings - DWG format drawings are to be lodged with SA Power Networks Facilities Records Team via SA Power Networks 'Autodesk Vault' lifecycle process.
2. During the 'For Construction' and 'As Constructed' phases - DWG format drawings are to be lodged via SA Power Networks 'Autodesk Vault' lifecycle process, upon each drawing revision.
3. Hard copies are to be issued to the Compliance Coordinator at the 'As Constructed' stage.
4. For more details, refer to **Appendix A**.

## 14. Drawings Requirements to Project Phases

The designer shall ensure that all relevant parties are in receipt of the latest design information and drawing throughout all phases of the project (i.e. Preliminary, For Construction and As Constructed phases), including all revisions made during these phases.

Design changes shall be clearly and promptly communicated as described in **Section 15** to ensure that all relevant parties are informed. Use of an outdated, incorrect, or unapproved design may result in equipment ordering and installation errors, increased risks, introduction of life-threatening hazards or significant additional cost variations.

The designer shall prepare the electrical design layout in a form acceptable to SA Power Networks and in accordance with SA Power Networks standards, E-drawings, and other relevant specifications.

### 14.1 Preliminary Phase

The initial drawing that needs to be submitted to the relevant SA Power Networks Project Manager shall be marked as a 'Preliminary'. By default, this status is included in every drawing sheet of the 'LD-Template.dwt'.

Preliminary drawings must be thoroughly checked by a suitably qualified designer before they are issued. The checkers name shall be included on the title block.

### 14.2 For Construction Phase

Internal design drawings are to be managed and issued according to SA Power Networks internal procedures. The external designer can issue a 'For Construction' design, only upon receipt of the 'Specification Compliance' from SA Power Networks. It is the responsibility of the design contractor to ensure that all the SA Power Networks specification requirements have been met. The 'Specification Compliance' confirms the requirements, the design specification, [TS100](#), [TS110](#), [TS085](#), and any other individual project requirements have been satisfied, such as:

1. Any non-standard design arrangement is approved.
2. Council / DPTI has accepted / approved the works in any road reserve and any public lighting installation and tariff and SA Power Networks is in receipt of that agreement.
3. The offer has been signed and accepted by the customer.
4. Any easement requirement is either lodged with the LTO or SA Power Networks is in receipt of an Agreement to Grant an Easement. (Refer to [Easement Standard TS102](#)); and
5. For sub-transmission projects, DAC SCAP Approval and design certification has been achieved.

On completion of the 'For Construction' version of the drawing, the 'Preliminary' status shall be changed to 'For Construction' within the title block. The drawing shall be checked by a suitably qualified designer and initials entered into the revision block.

If the construction is to be contestable, the requirements stated in [NICC400](#) are to be applied. The design drawing shall also clearly identify the scope and extents of work which is contestable and will be undertaken by the contractor, and the non-contestable work which will be undertaken by SA Power Networks.

The design drawing shall also specify that the contractor undertakes the maximum proportion of the work, unless otherwise specified by SA Power Networks. Work on existing assets managed by SA Power Networks is to be undertaken by SA Power Networks unless otherwise specified by the relevant SA Power Networks Project Manager.

The 'Authority to Proceed - Construction' confirmation letter will not be issued until all requirements of this 'TS099' have been met.

### 14.3 As Constructed Phase

The design drawing must be comprehensively reviewed and updated to ensure that the 'As Constructed' drawing is an accurate and detailed representation of the work performed. The construction crew must provide 'As Constructed' drawings as part of the 'Job Folder Close Out' to the relevant Project Manager, within 30 days of practical completion.

Some of the key information required on 'As Constructed' drawings can only be obtained during construction; therefore, it is essential that all relevant parties from design through construction are aware of the specific requirements for collection and provision of information to the designer/drafter prior to commencement or completion of the works, and that prompt transfer of the required information is ensured during and after construction.

The minimum 'As Constructed' drawing content requirements are as follows:

1. Removed assets must be specifically identified as 'Removed'.
2. Abandoned assets which remain in-situ must be specifically identified as 'Abandoned'.
3. Installed or altered assets must be clearly differentiated from pre-existing assets.
4. Any optional/non-specific/undefined items on the 'For Construction' drawing must be reviewed, and the final action/state recorded (e.g. aspects that could not be determined until construction).
5. Dimensioned cable joint locations and depths provided with jointed phases specified.
6. Above, below and ground level cable marker locations and their types must be depicted.
7. Clearances to adjacent/crossing third-party services and SA Power Networks assets recorded for underground assets.
8. Electrical connection/termination details and open point locations.
9. Final conduit occupancy must be detailed and individual duct continuity through bends/junctions and changes in configuration must be clearly depicted.
10. Detailed 'As Constructed' enlargements may be included as additional views if it is not practicable to incorporate the information into the main design. If so, the main design view must be updated to correctly reflect the works performed and cross-referenced to the detailed views.
11. Pole schedules, Single Line Diagrams (SLDs) and other drawing notes/tables/diagrams must be reviewed and updated as necessary to reflect the works completed and the constructed state of the assets.
12. Construction completion dates must be specified as prominent notes on the main drawing sheet.
13. All 'Contestable Works', at the 'As Constructed' phase, shall be marked clearly on 'As Constructed' drawings, stating which work areas are 'Contestable'.
14. For 'Projects with Multiple Stages', at the 'As Constructed' phase, it must be clearly marked indicating which stage/s are completed and which stages are not.
15. Locations of installed/affected assets are to be detailed using cover measurements (for underground assets) and dimensions/chainages relative to surrounding landscape features.
16. Horizontal measurements are required to define locations in at least two directions (e.g. offset from property boundary and distance from nearest defined property boundary corner) or nominated surveyor general's survey mark.
17. Surveyed three dimensional coordinates (Easting, Northing, AHD Elevation) should be specified as an additional project requirement for specific installations where recording of high-precision asset location information is deemed pertinent. This is most likely to be required for works involving the installation or alteration of high priority/high-cost underground assets and/or cables and conduits or assets requiring significant lengths of directional boring. Coordinates may be presented in tabular form on the drawing (indexed to labelled point locations) or as individual labels at specific point locations. For further relevant information, refer to **Appendix B**.

18. Defined building/boundary lines and kerb lines are to be the primary origins for dimensions and chainages. Adjacent assets, significant trees or other prominent features may be used as additional references or as secondary alternatives if buildings/boundary lines and kerb lines are not present.
19. For overhead line design drawings that include a line profile, the drawing profile must be updated to include the 'As Constructed' details. In all cases, the PLS-CADD model must be updated to reflect the 'As Constructed' details of the project and an 'As Constructed .bak' file provided to the relevant SA Power Networks Project Manager for archiving.
20. For high priority/high value assets such as 66kV and 33kV lines, a follow-up survey may be required at the completion of construction to ensure an accurate 'As Constructed' model is completed. The relevant SA Power Networks Project Manager will determine if this is required and include details in the specification. For project, where there is significant change to a line construction, SA Power Networks Project Manager may request for a full line survey, master pole schedule and layout.

SA Power Networks may specify the requirement for a high precision 'As Constructed' drawing to be prepared for specific projects if recording of higher precision/more detailed asset location information is deemed pertinent.

This is more likely to be required for works involving the installation or alteration of high priority/high value assets (such as 66kV cables), assets in heavily utilised areas, and/or cables and conduits installed requiring significant lengths of directional boring. For further information on high precision 'As Constructed' drawing requirements, refer to **Appendix B**.

## 15. Revision Requirements and Deviations from Design Drawings

Once a Preliminary version of a drawing has been issued, any changes to a design shall be submitted to the relevant SA Power Networks Project Manager for approval.

The designer shall be aware that any changes/revisions made to the 'For Construction' and 'As Constructed' design shall be in accordance with the following requirements:

1. For each revision, the Revision Identifier Character shall be advanced one letter and the Revision Identifier, Description, Reviser and Revision Date shall be logged in the revisions block.
2. Only compliant 'Revision Identifier Characters' are permitted, which are stated below:
  - (a) -
  - (b) A, B, C, D, E, F, G, H, J, K, L, M, N, P, R, T, U, V, W, Y
  - (c) AA, AB, AC, and so on
3. All revision details shall be clearly and unambiguously marked/specified (e.g. public light changes, additional cable installations, additional road crossings, HV cable loops into easements etc). Revision clouds and/or a revision identifier must be used on the body of the drawing. Where revisions are detailed in another part of the drawing such as a pole schedule or notes, a corresponding revision identifier should be used. See **Appendix I** for examples of revision identifiers.
4. For complex revisions and/or projects, consideration should be given to including a drawing revision memo, detailing all changes, when issuing the revised drawing.
5. Where it may not be possible to singularly itemise all changes as a design moves from a 'Preliminary' design to a 'For Construction' design, the critical changes and particularly the ones that may impact any quotation (remembering that the 'Preliminary' design may have been released for quoting purposes) shall be noted.

Any variation in the proposed electrical configuration of the network during construction must be updated and re-issued on the 'For Construction' design drawing no later than 30 business days prior to energisation. This is required to prepare the 'Advanced Distribution Management System (ADMS)' network model ahead of switching.

The relevant SA Power Networks Project Manager is to be consulted to resolve any uncertainties regarding incorporation of variations into the design drawing.

## 16. Equipment Position Changes Affecting Easements

If the position of any transformer/switching cubicle or underground cable is to be altered at any time during the design process or the execution of the works, the survey plan shall be amended to reflect the change and satisfy the requirements stated in the [Easement Standard TS102](#).

Prior to altering any planned or existing asset positions that impact on easements, the details of the alterations must be submitted to the SA Power Networks Project Manager and approved by the appropriate authority.

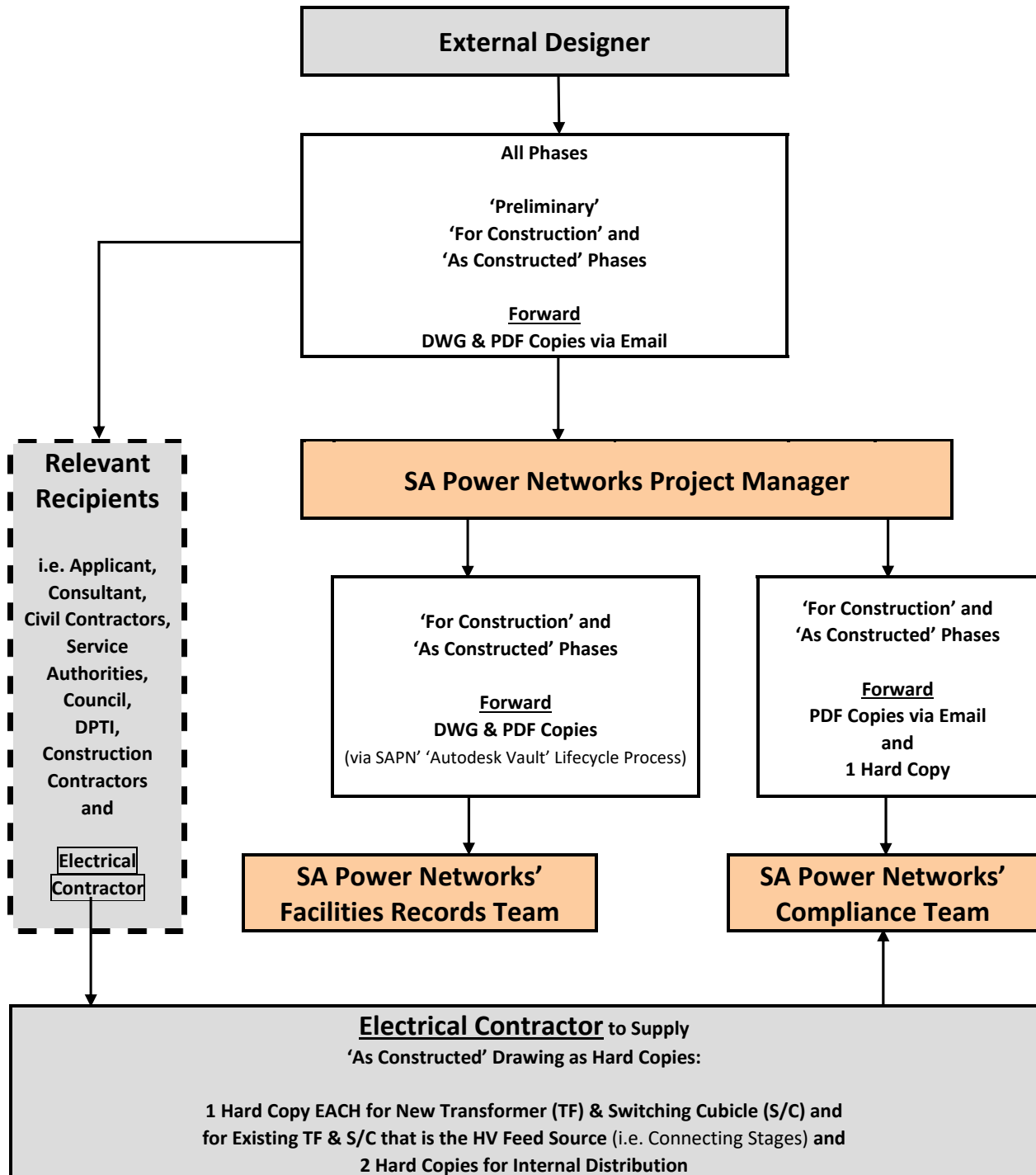
## 17. Provision for Future Stages

It is imperative that a master drawing layout for any distribution and sub-transmission system is undertaken at the commencement of any multi-staged development to ensure that there is an orderly and cost-effective installation.

Where a cable is installed to ultimately feed a future stage, the cable is to be shown on the 'For Construction' design as being connected and capped. Refer to [TS100](#) for full details regarding provision for future stages.

## Appendices

### A. Design Drawings Issuing Process



**Note:** Internal designs produced using SA Power Networks standard AutoCAD design package are to be managed according to SA Power Networks internal procedures including lodgement with Facilities Records Team via SA Power Networks 'Autodesk Vault' lifecycle process.

## B. Supplement for High-Precision 'As Constructed' Drawings

SA Power Networks may specify the requirement for a high precision 'As Constructed' drawing to be prepared for specific projects if recording of higher precision/more detailed asset location information is deemed pertinent. This is more likely to be required for works involving the installation or alteration of high priority/high value assets e.g. sub-transmission, assets in heavily utilised areas, and/or cables and conduits installed with significant lengths of directional boring.

The requirement for a drawing of this kind to be produced should be determined at the preliminary stage to ensure that the initial design drawing is compiled in a manner that will support the future level of detail required, and to ensure that suitable construction information is collected during and after the works.

High precision 'As Constructed' drawings may require CAD objects that are not available in the standard Line Design template 'LD-Template.dwt' (e.g. for scaled enlargements of conduit connection arrangements).

The relevant SA Power Networks Project Manager may seek advice from SA Power Networks Facilities Records Coordinator to identify other standard SA Power Networks CAD object styles or conventions that may be applicable.

This Appendix only specifies enhanced or additional requirements applicable to high precision 'As Constructed' drawings. These drawings must also comply with the other drawing requirements detailed within this Standard.

### Cross Sections

- To be drawn for the start and end of each bored/trenched section and elsewhere as necessary to describe asset positions at breaks, pits and where configuration changes. Cross-sections diagrams must be precisely referenced to their applicable locations on the drawing
- To depict the positions of installed assets relative to the finished ground surface and relative to each other. Details including final bore diameter, trench contents, cover measurements and asset descriptors are to be marked on sections as applicable. Dimensions of the overall configuration and of asset positions within the configuration are to be included where technically feasible.
- If the nature of the installation renders it unfeasible to precisely ascertain the conduit configuration (e.g. where conduits have been pulled through a long bore hole) then an approximated configuration may be drawn and labelled with an accompanying note 'No Controlled Configuration' or similar.
- Sections portraying multiple conduits are to bear corresponding numbers for identification of individual conduits at the start and end of each conduit, at breaks, pits and where changes in configuration occur.

### Longitudinal Sections

May be required by SA Power Networks for specific sections of the works, for example:

- Directional bores
- Cables laid through areas containing multiple crossing services (e.g. road intersections)
- High value assets (e.g. 66kV cables)
- Longitudinal sections are to be embedded in the drawing
- Longitudinal section starts and end points must be specified on the section diagram and clearly related to their corresponding locations on the main plan view
- Horizontal and vertical scales must be labelled on the longitudinal section. Must show depth of assets relative to existing and finished surface levels
- The radii of curvatures for conduits/cables are to be labelled

### Permanent Survey Marks

- To be drawn and labelled with their identification numbers and coordinates
- To be related to their adjacent building lines, kerb lines and project related assets through application of dimensions and/or chainages
- The Permanent Survey Marks used as origins for surveys are to be specifically noted on the drawing

### Coordinates, Dimensions and Depths

- Shall comprehensively describe the locations of installed and/or affected assets.
- Asset positions, bends, ends, configuration changes, gaps, joins and other significant construction elements are to be drawn with corresponding three-dimensional coordinates, cover measurements and chainages/dimensions relative to kerb lines and building/boundary lines. Bend radii are to be labelled. 'Long-term' static landscape features (e.g. significant trees, structures) may be used as origins for measurements in the absence of kerb/building/boundary lines or as additional information.
- Three dimensional coordinates provided for directional bores are to reference the pilot hole drill position as surveyed during the Works. These three-dimensional coordinates must be specifically identified as pilot hole drill positions. Cover measurements are required to reflect the distance from the finished ground level to the top of the installed assets, not to the pilot hole position.
- Where two or more conduits are installed in a trench in close configuration (e.g. touching or laid in trefoil) the horizontal coordinates/measurements may be generalised to the centre line of the configuration rather than providing multiple positions for individual conduits. In these circumstances vertical coordinates and cover measurements are to relate to the top of the shallowest asset in the configuration at that location.
- The requirement for chainages/dimensions may be adapted or omitted at the relevant SA Power Networks Project Manager's discretion if no building / boundary lines, kerb lines or other appropriate long-term static landscape features exist near the works to use as origins for measurements. Three dimensional coordinates and cover measurements are required.
- Where directional bores include bends, the drilled radius calculations shall be displayed on the drawing with reference to their locations.
- Coordinates are to be provided as Eastings and Northings in MGA94 or MGA2020 datum projection with accompanying elevations in Australian Height Datum (AHD). Datum and projection are to be specified on the drawing.
- Chainages are to be clearly differentiated from other dimensions to eliminate potential for misinterpretation. Larger font sizes are typically used for chainages.
- Estimated spatial accuracy is to be noted on the drawing. It is recognised that the accuracy of coordinates and measurements may be subject to technical and/or environmental limitations. Measurement/surveying techniques are to be selected and employed with the aim of meeting the following accuracy targets:
  - Cover measurements - visible/accessible assets
    - +/- 50mm
  - Cover measurements - buried/inaccessible assets
    - +/- 5% for less than 3 metre cover
    - +/- 10% for greater than 3 metre cover
  - Three dimensional coordinates
    - +/- 50mm within the suburbs of Adelaide and North Adelaide
    - +/- 200mm within metropolitan, residential & commercial/industrial areas
    - +/- 500mm in rural areas
  - Chainages & other dimensions measured relative to landscape features
    - +/- 50mm or 1% (whichever is greater)

- Survey/Measurement Date
- Surveyor/Measurer Name and Company Name

#### **Bore Logs**

Bore logs are to be embedded into the drawing as tables. They are to be complete and comprehensively detailed with information including:

- Bore Log Number
- Bore location description
- Name of drilling company/contractor details
- Date of Drilling
- Bore Numbers
- Start and end locations (noted in log and marked precisely on drawing)
- Size and Number of conduits installed
- Final bore diameter
- Rod lengths
- Depth measurement type noted (e.g. 'Depths from surface to centre of pilot hole')
- Type of backfill material used
- Depth below finished surface level to the top of the bore at minimum 3,000mm (3m) spacing and at lesser intervals as required to comprehensively describe bends and irregularities
- Rod numbers (incremental) with accompanying depths and alignments relative to property boundaries
- Relevant notes (e.g. obstructions encountered)
- Other information considered necessary by either the Contractor or Liaison Person

#### **For 66kV**

- Earthing arrangement schematic indicating position of earth continuity conductor relative to phase conductors
- Joint bay detail drawings

## C. File Naming Format

The following are the File Naming format for AutoCAD Drawings and associated files for the Vault.

### C.1 File Naming Format of AutoCAD (\*.dwg) files in Vault

The file naming format for AutoCAD (\*.dwg files) for Line Design drawings must be based on the applicable SAP Notification number, and Notification Type code. For example, for a typical small project the drawing may be named: 'LD-5000XXXXX-CN.dwg'.

**1. The Components of the Name are:**

Nos.	Abbreviation	Description
1	LD	Designates that the drawing is a Line Design drawing and built from the Line design CAD file template, named 'LD-Template.dwt'
2	5000XXXXX	Is the Notification number from SAP
3	02	Only required for multiple sheet projects, when saved as separate files
4	CN	Is the Notification Type code, which may be AW, QS, CS, DD, CN or FM

**2. The Standard Notification Type Codes are:**

Nos.	Notification Type	Description
1	CN	Connection
2	AW	Asset Work
3	QS	Quality of Supply
4	DD	Distribution Defect
5	CS	Customer Supply
6	FM	Field Maintenance

### C.2 Drawing File Names - Single Sheet/ \*.dwg File Projects

For single sheet drawings, the drawing file name in Vault will be shown as 'LD-5000XXXXX-CN.dwg'.

Note that when the \*.dwg file is saved in this format, an automated routine will update the title block with the Notification Type, in the 'SAPN\_NOTIFICATION\_TYPE' field. Refer to **Figure C2.1**.

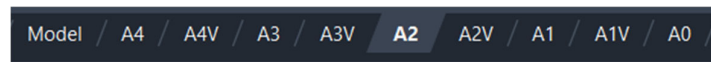
PROJECT DEFINITION:	NOTIFICATION TYPE	PROJECT TYPE
NC-010986	CN	RD

Figure C2.1: SAPN Notification Type Field

### C.3 Drawing File Names - Multiple Sheet single\*.dwg File Projects

Projects requiring multiple drawing sheets should utilise multiple drawing layouts within a single \*.dwg file as a preference. The sheets need to be in sequential order from Left to Right, and relevant sheet size selected to cover geographical area. The naming will be based on the applicable SAP Notification number, and Notification Type code and will be as follows: All sheets 'LD-5000XXXXX-CN.dwg'

Refer to **Figure C3.1**.



LD-5000XXXXX-CN.dwg

Figure C3.1: Examples of Layout Sheets - 'LD-5000XXXXX-CN.dwg'

### C.4 Drawing File Names - Multiple Sheet/multiple \*.dwg File Projects

Alternatively, the file naming format for multiple \*.dwg files containing one drawing sheet only will be based on the applicable SAP Notification number, sheet reference number and Notification Type code and will be as follows:

- Sheet 1 - LD-5000XXXXX-01-CN.dwg
- Sheet 2 - LD-5000XXXXX-02-CN.dwg
- Sheet 3 - LD-5000XXXXX-03-CN.dwg

Refer to **Figure C4.1**.



**Figure C4.1: Example of Layout Sheets**

### C.5 Multiple \*.dwg File Management

Multiple \*.dwg files will normally be used for major projects and projects which involve multiple distinct locations and parcels of work. This may require the release of drawing sheets in stages, which the drawing sheet grouping should align with. Best practice is to capture common land base data and other common geometry within the first \*.dwg file, and then subsequent sheets will Xref (External Reference) this data from drawing sheet 1. For very large geographic projects sheet 1 should contain all land base data and display this as an overview, noting individual sheet references. Refer to **Section 8.8** for specific requirements for the use of Xrefs.

For projects requiring many individual drawing sheets, a better result may be achieved by creating additional dedicated SAP notification numbers for different sheets/sheet sets. The relevant SA Power Networks Project Manager associated with the project can arrange this if required.

The designer should seek guidance and discuss the best option regarding multiple \*.dwg file drawings with the relevant SA Power Networks Project Manager. This may occur at any time during the life of the project, as requirements become apparent. The sheet numbers will be reflected when editing the drawing sheets, regardless of the size used. Refer to **Figure C5.1**.



**Figure C5.1: Sheet Numbers**

**Note:** Do not add a revision number to the drawing file name, as this is captured and searchable as a separate field in the Vault Database.

## C.6 Additional Drawing Sheet Information

For minor projects, such as minor customer connections, only a SAP notification number is raised. For larger projects a 'Project definition' number is also raised. This is referenced back to the SAP notification and is used to monitor projects including milestones and financial reporting. Project numbers have in the past been prefixed CP (Connection Point), NW (Network Upgrade Projects), EX (Extension) etc.

As part of the National Energy Customer Framework Process, SA Power Networks has a common Negotiated Connection (CN) Project (combining CP, EX and Underground Residential Development) which required SA Power Networks to separately identify the different types of projects for reporting.

The list below allows you to choose the 'Project Type' for inclusion on the drawing sheet. A 'Project Type' is only relevant to a CS Notification Type.

Refer to **Appendix D: 'Standard Editable Attributes - Drawing Sheet'**, for more details.

### 1. New 'Project Type' Descriptors:

Nos.	Project Type	Description
1	RC	Retail Customer (Customer Connect Projects)
2	RD	Real Estate Development (Underground Residential Development - URD), or (Underground Industrial Development - UID)
3	EG	Embedded Generation
4	AR	Asset Relocation (old EX jobs)
5	PLEC	Powerline Environment Committee
6	QS	Quality of Supply
7	TC	Telecommunications
8	NW	Network Upgrade Projects
9	NBN	NBN Projects

For the majority of Line Design type projects, the drawing sheet will include a Project definition e.g. NC-002196; a Notification type, CN, AW, QS, DD, CS, FM; and a Project type (only applicable to CN Notification type). Refer to **Figure C6.1** for an example.

This will allow SA Power Networks to search for drawings within the Vault, based on project definition, notification type and project type. This information is only valid on the drawing sheet and is not applicable to the file name in Vault.

PROJECT DEFINITION: <b>NC-002196</b>	NOTIFICATION TYPE <b>CN</b>	PROJECT TYPE <b>RC</b>
-----------------------------------------	--------------------------------	---------------------------

**Figure C6.1: Example of 'Project Description'**

## C.7 Non- AutoCAD file naming

The following file naming formats apply only to non-AutoCAD files. They must be applied as detailed, regardless of the number individual \*.dwg files used on the project. Hence the multiple sheet examples below apply to both single and multiple \*.dwg projects. All reference files must be stored in the same Vault folder as the drawing file. If you are unsure how to apply these formats, please seek assistance.

### 1. PDF/A File Naming Format

The file naming format for PDF/A files created from AutoCAD \*.dwg drawings, and added to Vault via the Line Design Lifecycle, will be based on the template name, applicable SAP notification number, and Notification Type code.

**Note:** The Line Design Lifecycle upon release to Facilities Records Outbox creates the required separate PDF/A sheets automatically. No user interaction is required.

Single and Multi are the same until they reach Facilities Records Outbox.

Single Sheet Example: LD-5000XXXXX-CS.pdf

Multiple Sheet Example: LD-5000XXXXX-02-CS.pdf

**Note:** Only created in Facilities Records Outbox state. There is an automatic process in place which will create separate sheets for Facilities Records Team use. They are removed once Facilities Records Team have completed processing. This note is to avoid confusion if users see them in the Facilities Records Outbox.

### 2. Site Photograph Image File Naming Format

The file naming format for site photographs, Google maps etc. that are used in the AutoCAD drawing are added to Vault, and will be based on the template name, applicable SAP notification number and type, with the last two numbers being a simple numerical list of image files used for this project, for example:

**Single Sheet Example:**

Nos.	Example	Naming Format
1	First photo image used	LD-5000XXXXX-IMG-01.jpg
2	Second photo image used	LD-5000XXXXX-IMG-02.jpg

**Multiple Sheet Example:**

Nos.	Example	Naming Format
1	First photo image used on Sheet 1	LD-5000XXXXX-01-IMG-01.jpg
2	Second photo image used Sheet 1	LD-5000XXXXX-01-IMG-02.jpg
3	First photo image used on Sheet 2	LD-5000XXXXX-02-IMG-01.jpg
4	Second photo image used Sheet 2	LD-5000XXXXX-02-IMG-02.jpg

### 3. Excel Spreadsheet File Naming Format

The file naming format for Excel Spreadsheets that are used in AutoCAD drawings are added to Vault via the Line Design Lifecycle, and will be based on the template name, applicable SAP notification number and type, for example:

**Single/Multi Sheet Example:**

Nos.	Example	Naming Format
1	Pole schedule example	LD-5000XXXXX-PS.xlsx
2	Stringing chart example	LD-5000XXXXX-SC.xlsx
3	Bore Log example	LD-5000XXXXX-BL.xlsx

## C.8 Summary

### C.8.1 Single Sheets

File Type	File Name	Comment
*.pdf Adobe Reader	LD-5000XXXXX-CS-XX.pdf	*.pdf files have a revision letter at the end of the file name.
*.jpeg Photos, Bitmaps, PNG etc	LD-5000XXXXX-IMG-01	*.jpeg files are imported to the drawing via Vault. The suffix IMG is to be added with a numerical sequence for each image used.
Pole Schedule *.xlsx Excel	LD-5000XXXXX-PS	*.xlsx files are imported to the drawing via Vault. The suffix PS represents Pole Schedules and will have a numerical sequence for each schedule used.
Stringing Chart *.xlsx Excel	LD-5000XXXXX-SC	*.xlsx files are imported to the drawing via Vault. The suffix SC represents Stringing Charts and will have a numerical sequence for each chart used.
Bore Log *.xlsx Excel	LD-5000XXXXX-BL	*.xlsx files are imported to the drawing via Vault. The suffix BL represents Bore Logs and will have a numerical sequence for each log used.

### C.8.2 Multiple Drawing Sheets

File Type	File Name	Comment
*.pdf Adobe Reader	LD-5000XXXXX-01-CS-A.pdf	*.pdf files have a revision letter at the end of the file name. The sheet number is represented after the Noti number and before the Noti type. Created automatically in FR Outbox only. Removed once drawing is return to Released or Archived.
*.jpeg Photos, Bitmaps, PNG etc	LD-5000XXXXX-01-IMG-01 e.g. more than one image LD-5000XXXXX-01-IMG-02 LD-5000XXXXX-01-IMG-03 e.g. additional sheets and more than one image LD-5000XXXXX-02-IMG-01 LD-5000XXXXX-02-IMG-02	*.jpeg files are imported to the drawing via Vault. The sheet number is represented after the Noti number and before the prefix IMG. A numerical sequence is used for each image. Each image is to be labelled on the drawing.
Pole Schedule *.xlsx Excel	LD-5000XXXXX-01-PS-01	*.xlsx files are imported to the drawing via Vault. The sheet number is represented after the Noti number and before the suffix PS.
Stringing Chart *.xlsx Excel	LD-5000XXXXX-01-SC-01	*.xlsx files are imported to the drawing via Vault. The sheet number is represented after the Noti number and before the suffix SC.
Bore Log *.xlsx Excel	LD-5000XXXXX-01-BL-01	*.xlsx files are imported to the drawing via Vault. The sheet number is represented after the Noti number and before the suffix BL.

The file naming convention has been designed to capture all information used for the design of the project and store in the Vault for future reference. If you are unsure of any of the file formats detailed in this guide, please seek assistance.

## D. Standard Editable Attributes - Drawing Sheet

Each sheet contains numerous editable attributes to allow entries of standard information into the sheet. Various attributes are searchable within SA Power Networks Vault file server. All attributes allow the simple entry of data in a standard format and location.

Attribute name	Default Value	Expected Value	Type	Comments
SAPN_APPROVED_BY	XXX	FirstInitial.Lastname	User entry	
SAPN_APPROVED_DATE		DD-MM-YYYY	User entry	
SAPN_APPROVER_LOCATION	XXX	NPO/NPM Depot	User entry	
SAPN_APPROVERS_PHONE	X	Phone number	User entry	
SAPN_ASSET_OWNER	XXXXX	SAPN or DLC	User entry	
SAPN_CATEGORY	LD-MINOR-WORKS-2D		User-entry	
SAPN_CHECKED_BY	XXX	FirstInitial.Lastname	User entry	
SAPN_CHECKED_BY_DATE		DD-MM-YYYY	User entry	
SAPN_COUNCIL	City Of_	Council name	User entry	Multiple values concatenated if more than 1 (Value 1, Value 2, Value 3 etc)
SAPN_DRAWING_NUMBER	XXXXXXX	Notification number	User entry	
SAPN_DRAWN_BY	XXX	FirstInitial.Lastname	User entry	
SAPN_DRAWN_BY_DATE		DD-MM-YYYY	User entry	
SAPN_FEEDER_NAME	XXXXX	FEEDER NAME XXXkV	User entry	Multiple values concatenated if more than 1 (Value 1, Value 2, Value 3 etc)
SAPN_FEEDER_NO	XX-000	Feeder No.	User entry	Multiple values concatenated if more than 1 (Value 1, Value 2, Value 3 etc)
SAPN_GROUND_SCALE	XXX		User entry	
SAPN_HORIZ	PSM XXXXXXXXXXX PLANE	PSM XXXX/XXXXX PLANE	User entry	
SAPN_HUNDRED_OF	Hundred Of_	HUNDRED of XXX	User entry	Multiple values concatenated if more than 1 (Value 1, Value 2, Value 3 etc)
SAPN_IN_AREA_NAMED	in the area named		User entry	
SAPN_INSPECTED_BY		FirstInitial.Lastname	User entry	For major projects workflow only, i.e. 66kV
SAPN_INSPECTED_BY_DATE		FirstInitial.Lastname	User entry	For entire project area
SAPN_LLE_COORDS	##### E	Lower Left Easting	Palette tool	For entire project area
SAPN_LLN_COORDS	##### N	Lower Left Northing	Palette tool	
SAPN_MAP_REF	XXXXX-X	MAP_REF	Palette tool	
SAPN_MGA_ZONE	MGA-54-GDA94	MGA54, 53, 52, GDA2020	Automatic routine	
SAPN_NOTIFICATION_TYPE	##	CN, AW, QS, DD, CS, FM	Automatic routine	
SAPN_PROJECT_DEFINITION	XX-0000000	NW, NC, etc	User entry	
SAPN_PROJECT_TYPE	--	AR, etc, As per Appendix C-3	User entry	
SAPN_REVISION	-	As per Section 15	User entry	
SAPN_REVISION_*1 to 15*		As per Section 15	User entry	
SAPN_REVISION_APPROVED_*1 to 15*		FirstInitial.Lastname	User entry	
SAPN_REVISION_BY_*1 to 15*		FirstInitial.Lastname	User entry	
SAPN_REVISION_CHECKED_*1 to 15*		FirstInitial.Lastname	User entry	
SAPN_REVISION_DATE_*1 to 15*		DD-MM-YYYY	User entry	

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TS099 Distribution and Sub-Transmission CAD Drafting Standards

Attribute name	Default Value	Expected Value	Type	Comments
SAPN_REVISION_DETAILS_*1 to 15*		Description of changes made to drawing set	User entry	
SAPN_REVISION_INSPECTED_*1 to 15*		FirstInitial.Lastname	User entry	For major projects workflow only, i.e. 66kV
SAPN_SCALE	X:XXX		User entry	This value is unique per sheet
SAPN_SHEET_NUMBER		X of XX	User entry	This value is unique per sheet This value is not Vault mapped
SAPN_SHEET_SIZE	AX	AX	User-entry	
SAPN_STATUS	PRELIMINARY	Lifecycle state (PRELIMINARY)	User entry	
SAPN_SUB_NAME	SUB NAME	Substation Name	User entry	Multiple values concatenated if more than 1 (Value 1, Value 2, Value 3 etc)
SAPN_SUB_NO	SSD-000	Substation Number	User entry	Multiple values concatenated if more than 1 (Value 1, Value 2, Value 3 etc)
SAPN_SURVEY_DATE	XXX	DD-MM-YYYY	User entry	
SAPN_SURVEYORS_NAME	XXX	FirstInitial.Lastname	User entry	
SAPN_TEMPLATE_DATE	Depending on the latest update of the Template file	DD-MM-YYYY		
SAPN_TITLE_LINE_1	TITLE_LINE_1	Project Name	User entry	
SAPN_TITLE_LINE_2	TITLE_LINE_2	Summary of works	User entry	
SAPN_TITLE_LINE_3	TITLE_LINE_3	Address	User entry	Multiple values concatenated if more than 1 (Value 1, Value 2, Value 3 etc)
SAPN_TOTAL_NUMBER_OF_SHEETS	X	Total number of sheets		
SAPN_TOWNSHIP_SUBURB	Suburb	SUBURB	User entry	
SAPN_URE_COORDS	##### E	Upper Right Easting	Palette tool	For entire project area
SAPN_URN_COORDS	##### N	Upper Right Northing	Palette tool	For entire project area
SAPN_VERT	PSM XXXXXXXXX AHD	PSM XXXX/XXXXX AHD	User entry	

**Notes:**

1. No values are unique per sheet unless specified in the Comments column
2. All values are Vault mapped unless specified in the Comments column

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E. General Design Drawing Presentation Examples:

E.1 A2 Vertical Portrait Drawing Sheet

Hundred of Adelaide  
in the area named  
**EDWARDSTOWN**  
City of Marion

POLE SCHEDULE																	
POLES				HIGH VOLTAGE ARRANGEMENT							LOW VOLTAGE ARRANGEMENT						
POLE	EXISTING	PROP.	PROP. FOOTING	EXISTING ARRGT.	PROP. ARRGT.	E-DRAWINGS	X-ARM SI NO.	DEVICE SI NO.	COND.	REMARKS	PROP.	EXISTING ARRGT.	PROP. ARRGT.	E DRAWINGS	X-ARM SI NO.	COND.	REMARKS
1	WA1110 TO BE REMOVED	WB1227	E1808/11	HV FLAT X-ARM & TEE-OFF	HV FLAT X-ARM & 315kVA T/F VIA LIVE LINE TAPS.	E1235 SHT.1 ARRGT.1 E1277 SHT.2 ARRGT.4 E1281 SHT.1 ARRGT.1	-	TF43	7/4.75 AAC 7/3.75 AAC	REMOVE EXISTING POLE & INSTALL NEW POLE WITH 315kVA SM172C/TF43 (LA5356) VIA LIVE LINE TAPS.	MEN	LV FLAT X-ARM WITH 4W ROAD X-ING N/S	LV 315kVA LINE X-ARM WITH ISOL.	E1162 SHT.11 ARRGT.185 E1162 SHT.12 ARRGT.6 E1135 SHT.4 ARRGT.3 E2372 SHT.1 ARRGT.1	ZA1615 ZA4011 2xZA1623 3xRD3020 DH3672 2xDH3670	7/4.75 AAC	INSTALL LV SHORT ISOLATOR X-ARM. TAP TO BE TAPPED TO LV X-ARM ONLY. REMOVE LV NEUTRAL SCREEN SERVICE TO POLE 4. UPGRADE LV ROAD-XING TO 4x95mm <sup>2</sup> ABC TO POLE 4.
2	WA1115 TO BE REMOVED	-	-	11kV FUSE D/E X-ARM & 200kVA T/F	-	-	-	TF43	7/3.75 AAC	REMOVE POLE & 11kV 200kVA SM172C/TF43 & D/E X-ARM.	MEN	LV 200A O/U & 1W CMEN	-	-	-	7/2.75 NEUTRAL AAC	REMOVE LV 200A O/U & 1W CMEN SERVICE TO POLE 3.
3	WA1115	-	-	11kV FUSE FLAT X-ARM & 315kVA T/F	-	-	-	TF44	7/4.75 AAC	-	MEN	LV FLAT X-ARM WITH ISOL & CMEN SERVICE	-	-	-	7/2.75 NEUTRAL AAC	REMOVE LV 1W CMEN SERVICE TO POLE 2.
4	WB0905	-	-	-	-	-	-	-	-	-	MEN	LV 4W FLAT LINE X-ARM & FACIA MOUNTED 200A SERVICE BOX	LV ABC D/E	E2349 SHT.1 ARRGT.1	-	NEUTRAL SCREEN SERVICE 4x95mm <sup>2</sup> ABC	REMOVE LV NEUTRAL SCREEN SERVICE TO POLE 1. UPGRADE LV ROAD-XING TO 4x95mm <sup>2</sup> ABC TO POLE 1.

**GENERAL NOTES**

- CUSTOMER NAME - [REDACTED]
- DUE TO THE SCHEMATIC NATURE OF THE DRAWING IT SHALL NOT BE SCALED. THE POSITION AND EQUIPMENT SHOWN ARE INDICATIVE ONLY AND SHOULD BE VERIFIED ON SITE.
- THIS DRAWING SHOULD ONLY BE COPIED OR REPRODUCED IN COLOUR.
- ANY CHANGES MADE ON SITE TO THE LOCATION OF THE COMMON SERVICE TRENCH, AND/OR ELECTRICAL & STREET LIGHTING MUST FIRST BE VERIFIED BY THE DESIGNER AND SA POWER NETWORKS PROJECT MANAGER.
- DRAWING TO BE READ IN CONJUNCTION WITH THE SA POWER NETWORKS SPECIFICATION DOCUMENTS, TECHNICAL STANDARDS AND E-DRAWINGS.
- EARTHING - CMEN

**THIS DRAWING TO BE READ IN CONJUNCTION WITH THE FOLLOWING SA POWER NETWORKS TECHNICAL STANDARDS**

TS-085 Trenching and Conduit Standard for Underground Distribution Cable Networks  
 TS-087 Construction Standard for Underground Cable Networks  
 TS-099 Distribution and Sub-Transmission CAD Drafting Standards  
 TS-100 Electrical Design Standard for Underground Distribution Cable Networks  
 TS-101 Public Lighting - Design and Installation  
 TS-102 Easement Standard for Distribution Networks  
 TS-105 Testing for Underground & Overhead Distribution Powerlines up to and including 33kV Networks  
 TS-107 Overhead Line Design Standard for Transmission & Distribution Systems  
 TS-108 Technical Standard for Distribution Equipment and Transformer Rooms  
 TS-109 Earthing of the Distribution Network  
 NICC-L00 Information for an Applicant Undertaking a Contestable Extension  
 NICC-L04 Working in the Vicinity of SA Power Networks Infrastructure - Network Access Permit Process  
 NICC-802 11kV & 7.6kV to Low Voltage M&T Padmount Transformers - Information & Requirements for Customers/Contractors  
 Visit SA Power Networks web site for the current version of the Technical Standards.

**LEGEND**

- 11kV EXISTING 11kV OVERHEAD MAINS
- EXISTING 35mm<sup>2</sup> 11kV CABLE
- LV EXISTING LV OVERHEAD MAINS
- CMEN EXISTING LV 1W CMEN TO BE REMOVED
- 150mm<sup>2</sup> EXISTING 150mm<sup>2</sup> LV CABLE
- ABC PROPOSED LV ABC OVERHEAD MAINS
- NEUTRAL EXISTING LV NEUTRAL SCREEN TO BE REMOVED
- EXISTING POLE
- PROPOSED POLE
- EXISTING POLE TO BE REMOVED
- EXISTING 11kV POLEMOUNT TRANSFORMER
- PROPOSED 11kV POLEMOUNT TRANSFORMER
- EXISTING 11kV POLEMOUNT TRANSFORMER TO BE REMOVED
- EXISTING PADMOUNT TRANSFORMER
- EXISTING LV POLEMOUNT SWITCH
- EXISTING LED 14 LUMINAIRE TO REMAIN

SCALE 0 5 10 15 20 25 METRES 50

AGREED CUSTOMER MAXIMUM DEMAND 400A 3φ 400V

**CMEN Area** PROPOSED ENERGISATION DATE: JUNE 2025

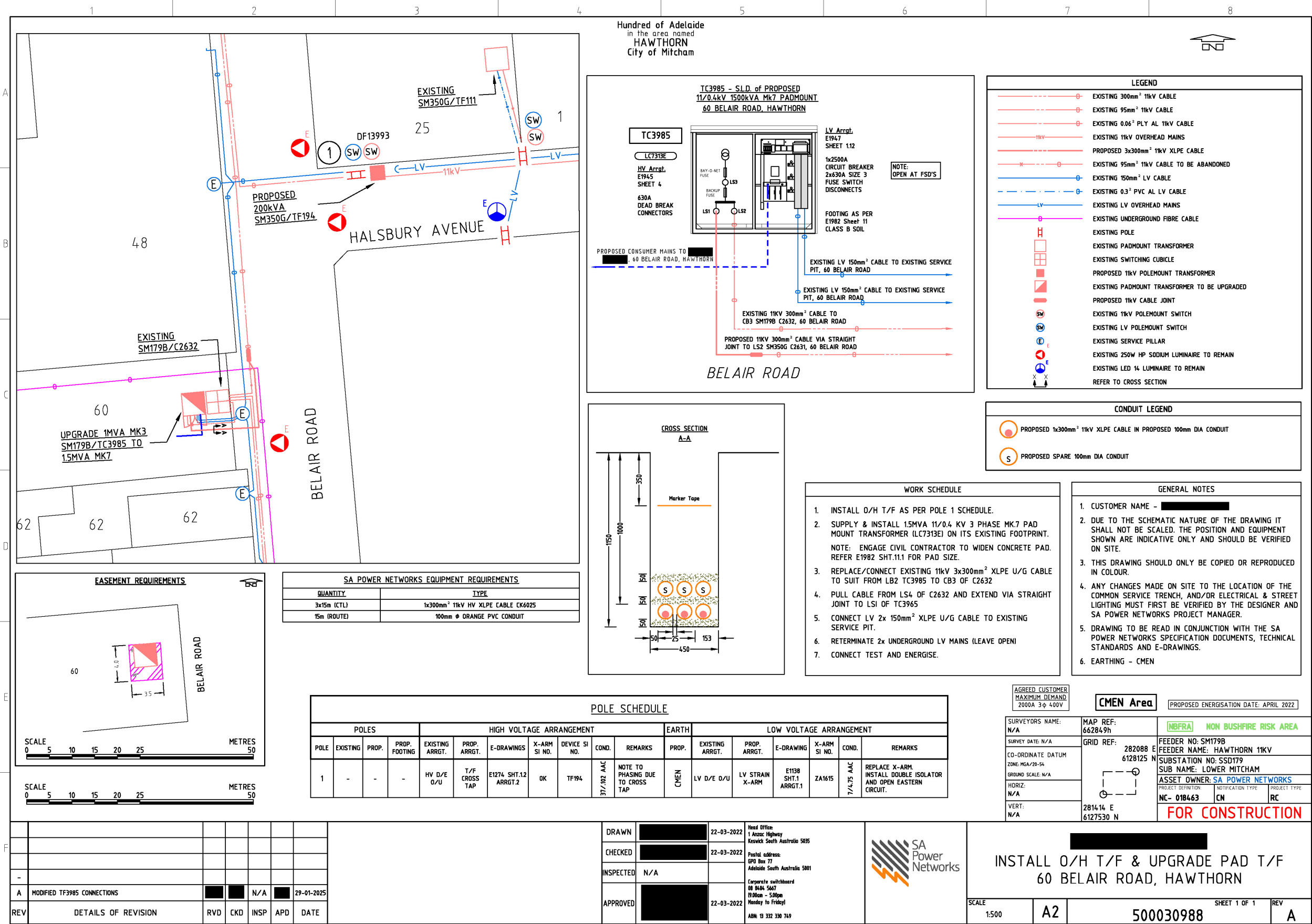
SURVEYORS NAME: N/A	MAP REF: 6628501	<b>NBFR</b> NON BUSHFIRE RISK AREA
SURVEY DATE: N/A	GRID REF: 278295 E 6126007 N	FEEDER NO: SM-172C FEEDER NAME: SIXTH AVENUE 11kV SUBSTATION NO: SSD-172 SUB NAME: ASCOT PARK
CO-ORDINATE DATUM: ZONE: MGA/20-54-40A2020	GROUND SCALE: N/A	ASSET OWNER: SA POWER NETWORKS
HORIZ: N/A	VERT: 278074 E 6125832 N	PROJECT DEFINITION: NC-026125 NOTIFICATION TYPE: CN PROJECT TYPE: RC
<b>FOR CONSTRUCTION</b>		

DRAWN	[REDACTED]	27-03-2025		<p><b>INSTALL 315kVA T/F &amp; REMOVE ASSETS 1-3 KENILWORTH AVENUE, EDWARDSTOWN</b></p>
CHECKED	[REDACTED]	27-03-2025		
INSPECTED	N/A			
APPROVED	[REDACTED]	27-03-2025		

SCALE: 1:500	A2	500046131	SHEET 1 OF 1	REV: -
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WARNING: printed copies of this document ARE DEEMED UNCONTROLLED. The most up-to-date version is located on SAPN Intranet/Internet.

E.2 A2 Horizontal Landscape Drawing Sheet



### E.3 Pole Schedule Layout Sheet

POLE SCHEDULE																					
POLES					HIGH VOLTAGE ARRANGEMENT							EARTH	LOW VOLTAGE ARRANGEMENT								
POLE	SPAN	EXISTING	PROP.	PROP FOOTING	POLE DETAILS	EXISTING ARRGT.	PROP. ARRGT.	E-DRAW	X-ARM SI NO.	DEVICE SI NO.	COND.	REMARKS	PROP.	EXISTING ARRGT.	PROP. ARRGT.	E-DRAW	X-ARM SI NO.	DEVICE SI NO.	COND.	REMARKS	
1																					
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

## E.4 NAP Labels

**NON CONTESTABLE WORK**  
 SA POWER NETWORKS TO:

- CARRY OUT ALL NECESSARY ALTERATIONS TO EXISTING SA POWER NETWORKS INFRASTRUCTURE, AS DETAILED ON THIS DRAWING.
- CARRY OUT POLE WORKS AS SHOWN IN POLE SCHEDULE.
- REMOVE LV OVERHEAD CONDUCTOR BETWEEN POLE 1 AND POLE 2.
- TERMINATE EXISTING 4x150mm<sup>2</sup> LV CABLE FROM LV O/U ARRGT ON POLE 1, INTO PROPOSED JUNCTION PIT, ADJACENT POLE 1.
- REPLACE EXISTING SWITCHING CUBICLE - C2869 WITH 11kV SWITCHING CUBICLE - Stock Item No. RA7203 (as per E1965 Sheet 4.2-4.3) Changeover of unit on same footing.
- TEST, CONNECT AND ENERGISE THE COMPLETED DEVELOPMENT.

**NAP 1** LOCATION

- SUPPLY AND INSTALL ONE (1) SET OF 4x150mm<sup>2</sup> LV TERMINATIONS TO CONNECT PROPOSED 4x150mm<sup>2</sup> LV CABLE INTO EXISTING JUNCTION PIT ADJACENT LOT 334, MULBERRY ROAD.

**NAP 2** LOCATION

- SUPPLY AND INSTALL ONE (1) SET OF 4x150mm<sup>2</sup> LV TERMINATIONS ONTO FSD2, IN EXISTING PADMOUNT TC65539, RESERVE, MULBERRY ROAD.
- SUPPLY AND INSTALL ONE (1) SET OF 4x150mm<sup>2</sup> LV TERMINATIONS ONTO FSD4, IN EXISTING PADMOUNT TC65539, RESERVE, MULBERRY ROAD.

**NAP 3** LOCATION

- CARRY OUT CIVIL WORKS FOR JOINT BAY.
- CARRY OUT 4x150mm<sup>2</sup> LV STRAIGHT JOINTS ONTO EXISTING LV CABLE, IN RESERVE ADJACENT LOT 312, CYPRESS CRESCENT.
- SUPPLY AND INSTALL ONE (1) SET OF 4x150mm<sup>2</sup> LV TERMINATIONS TO CONNECT PROPOSED 4x150mm<sup>2</sup> LV CABLE INTO EXISTING JUNCTION PIT ADJACENT LOT 265, ACACIA AVENUE.
- CREATE NEW LV OPEN POINT, AS SHOWN.

**LOCATION A**

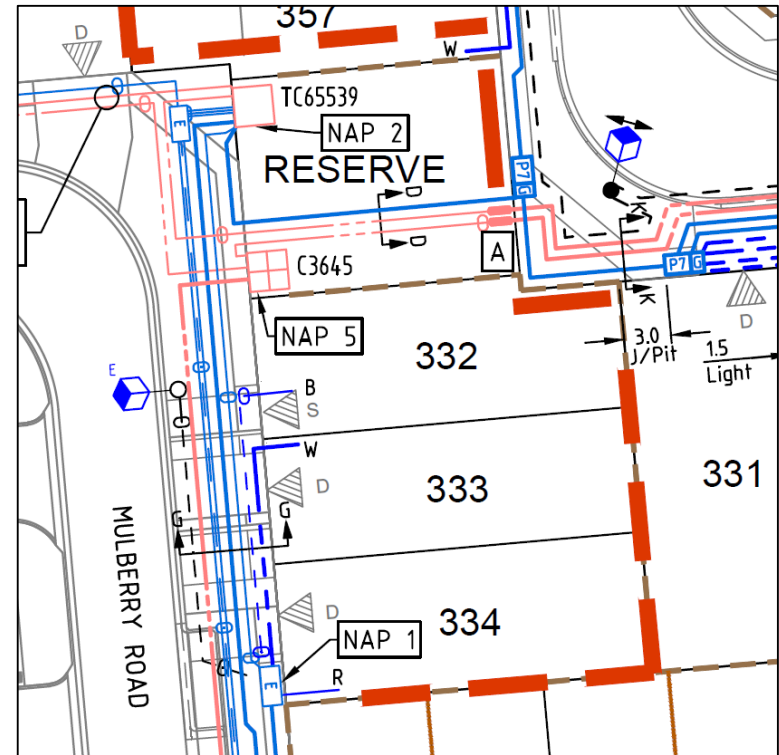
- CARRY OUT CIVIL WORKS FOR JOINT BAY.
- CUT EXISTING 11kV 3x300mm<sup>2</sup> CABLE AND CARRY OUT TWO (2) SETS OF 3x300mm<sup>2</sup> 11kV STRAIGHT JOINTS ONTO EXISTING HV CABLES, AS REQUIRED.

**NAP 5** LOCATION

- SUPPLY AND INSTALL ONE (1) SET OF 3x300mm<sup>2</sup> 11kV TERMINATIONS ONTO LS3, IN EXISTING SWITCHING CUBICLE, C3645, RESERVE, MULBERRY ROAD.

**NAP 6** LOCATION

- SUPPLY AND INSTALL ONE (1) SET OF 3x300mm<sup>2</sup> 11kV TERMINATIONS ONTO LS3, IN EXISTING SWITCHING CUBICLE, C2869, RESERVE, MULBERRY ROAD.



## F. List of Standard Layers

Name	Plot	Colour	Linetype	Lineweight	Description
0	TRUE	white	Continuous	ByLineWeightDefault	
Defpoints	FALSE	white	Continuous	ByLineWeightDefault	
GN-Cyclone-Fence	TRUE	magenta	GN-Cyclone-Fence	LineWeight035	
GN-DTEI-Cables	TRUE	white	GN-DTEI-CABLES	LineWeight035	
GN-Edge-Of-Concrete	TRUE	white	Continuous	LineWeight035	
GN-Galv-Iron-Fence	TRUE	white	GN-Galv-Iron-Fence	LineWeight035	
GN-Gas-Main	TRUE	yellow	GN-GAS-MAIN	LineWeight035	
GN-General-Drafting	TRUE	white	Continuous	LineWeight025	
GN-HP-Gas-Main	TRUE	yellow	Continuous	LineWeight035	HIGH PRESSURE GAS MAIN
GN-Notes-0.10	TRUE	white	Continuous	LineWeight009	
GN-Notes-0.15	TRUE	white	Continuous	LineWeight015	
GN-Notes-0.20	TRUE	white	Continuous	LineWeight020	
GN-Notes-0.25	TRUE	white	Continuous	LineWeight025	
GN-Notes-0.35	TRUE	white	Continuous	LineWeight035	
GN-Notes-0.40	TRUE	white	Continuous	LineWeight040	
GN-Notes-0.50	TRUE	white	Continuous	LineWeight050	
GN-Notes-0.75	TRUE	white	Continuous	LineWeight070	
GN-Notes-0.80	TRUE	white	Continuous	LineWeight080	
GN-Notes-1.00	TRUE	white	Continuous	LineWeight100	
GN-Optical-Fibre	TRUE	30	GN-OPTICAL-FIBRE	LineWeight035	
GN-Railway-Cables	TRUE	red	GN-RAILWAY-CABLES	LineWeight035	
GN-Recycled-Water-Main	TRUE	magenta	GN-RECYCLED-WATER-MAIN	LineWeight035	
GN-Road-CL	TRUE	white	GN-Road-CL	LineWeight035	
GN-Sewer-Main	TRUE	96	GN-SEWER-MAIN	LineWeight035	
GN-Stormwater-Pipes	TRUE	252	GN-STORMWATER-PIPES	LineWeight035	
GN-Symbols	TRUE	white	Continuous	ByLineWeightDefault	

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Name	Plot	Colour	Linetype	Lineweight	Description
GN-Telstra-Cables	TRUE	40	GN-TELSTRA-CABLES	LineWeight035	
GN-Wall-Building-Left	TRUE	white	GN-Wall-Building-Left	LineWeight035	
GN-Wall-Building-Right	TRUE	white	GN-Wall-Building-Right	LineWeight035	
GN-Water-Main	TRUE	blue	GN-WATER-MAIN	LineWeight035	
LB-Aerial-Maps	TRUE	white	Continuous	LineWeight005	
LB-High-Bush-Fire-Risk-Areas-HBFRA	TRUE	red	HIGH-BUSHFIRE-RISK-AREA	LineWeight025	
LB-Medium-Bushfire-Risk-Areas-MBFRA	TRUE	30	MEDIUM-BUSHFIRE-RISK-AREA	LineWeight025	
LB-Non-Bushfire-Risk-Areas-NBFRA	TRUE	83	NON-BUSHFIRE-RISK-AREA	LineWeight025	
LB-Parcel-Boundary	TRUE	white	Continuous	LineWeight020	
LB-Parcel-Text	TRUE	white	Continuous	LineWeight020	
LB-Property-Boundary	TRUE	white	Continuous	LineWeight020	
LB-Property-House-No-Text	TRUE	white	Continuous	LineWeight020	
LB-Railway-Data	TRUE	190	SV-Railway	LineWeight025	
LB-Road-CL	TRUE	blue	GN-Road-CL	LineWeight025	
LB-Road-Names	TRUE	white	Continuous	LineWeight025	
LB-TOPO-Water-Courses-Data	TRUE	blue	Continuous	LineWeight025	
LD-1x150mm-LV-Neutral-Cable-AB	TRUE	40	Continuous	LineWeight025	ABANDONED 1x150mm2 LV NEUTRAL CABLE
LD-1x150mm-LV-Neutral-Cable-E	TRUE	152	Continuous	LineWeight025	EXISTNG 1x150mm2 LV NEUTRAL CABLE
LD-1x150mm-LV-Neutral-Cable-TBAB	TRUE	152	Continuous	LineWeight025	EXISTNG 1x150mm2 LV NEUTRAL CABLE TO BE ABANDONED
LD-3.5c-185mm-LV-Cu-XLPE-Cable-E	TRUE	152	Continuous	LineWeight025	EXISTING 3.5c 185mm2 LV Cu XLPE CABLE
LD-3.5c-185mm-LV-Cu-XLPE-Cable-P	TRUE	152	LD-3.5C-185MM-LV-CU-XLPE-CABLE-P	LineWeight050	PROPOSED 3.5c 185mm2 LV Cu XLPE CABLE
LD-3.5c-185mm-LV-Cu-XLPE-Cable-TBAB	TRUE	152	Continuous	LineWeight025	EXISTING 3.5c 185mm2 LV Cu XLPE CABLES ABANDONED

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Name	Plot	Colour	Linetype	Lineweight	Description
LD-3.5c-240mm-LV-Cu-XLPE-Cable-E	TRUE	152	LD-3.5C-240MM-LV-CU-XLPE-CABLE-E	LineWeight025	EXISTING 3.5c 240mm2 LV Cu XLPE CABLE
LD-3.5c-240mm-LV-Cu-XLPE-Cable-P	TRUE	152	LD-3.5C-240MM-LV-CU-XLPE-CABLE-P	LineWeight050	PROPOSED 3.5c 240mm2 LV Cu XLPE CABLE
LD-3.5c-240mm-LV-Cu-XLPE-Cable-TBAB	TRUE	152	LD-3.5C-240MM-LV-CU-XLPE-CABLE-TBAB	LineWeight025	EXISTING 3.5c 240mm2 LV Cu XLPE CABLES TO BE ABANDONED
LD-3c-185mm-11kV-Cu-XLPE-Cable-E	TRUE	11	Continuous	LineWeight025	EXISTING 3c 185mm2 11kV Cu XLPE CABLE
LD-3c-185mm-11kV-Cu-XLPE-Cable-P	TRUE	11	LD-3C-185MM-11KV-CU-XLPE-CABLE-P	LineWeight050	PROPOSED 3c 185mm2 11kV Cu XLPE CABLE
LD-3c-185mm-11kV-Cu-XLPE-Cable-TBAB	TRUE	11	Continuous	LineWeight025	EXISTING 3c 185mm2 11kV Cu XLPE CABLES TO BE ABANDONED
LD-3c-240mm-11kV-Cu-XLPE-Cable-E	TRUE	11	LD-3C-240MM-11KV-CU-XLPE-CABLE-E	LineWeight025	EXISTING 3c 240mm2 11kV Cu XLPE CABLE
LD-3c-240mm-11kV-Cu-XLPE-Cable-P	TRUE	11	LD-3C-240MM-11KV-CU-XLPE-CABLE-P	LineWeight050	PROPOSED 3c 240mm2 11kV Cu XLPE CABLE
LD-3c-240mm-11kV-Cu-XLPE-Cable-TBAB	TRUE	11	LD-3C-240MM-11KV-CU-XLPE-CABLE-TBAB	LineWeight025	EXISTING 3c 240mm2 11kV Cu XLPE CABLES TO BE ABANDONED
LD-3x95mm-7.6kV-XLPE-Cable-P	TRUE	14	LD-3X95MM-7.6KV-XLPE-CABLE-P	LineWeight050	PROPOSED 3x95mm2 7.6kV XLPE CABLE
LD-3x95mm-11kV-XLPE-Cable-P	TRUE	11	LD-3X95MM-11KV-XLPE-CABLE-P	LineWeight050	PROPOSED 3x95mm2 11kV XLPE CABLE
LD-3x300mm-7.6kV-XLPE-Cable-P	TRUE	14	LD-3X300MM-7.6KV-XLPE-CABLE-P	LineWeight050	PROPOSED 3x300mm2 7.6kV XLPE CABLE
LD-3x300mm-11kV-XLPE-Cable-P	TRUE	11	LD-3X300MM-11KV-XLPE-CABLE-P	LineWeight050	PROPOSED 3x300mm2 11kV XLPE CABLE
LD-3x630mm-7.6kV-XLPE-Cable-P	TRUE	14	LD-3X630MM-7.6KV-XLPE-CABLE-P	LineWeight050	PROPOSED 3x630mm2 7.6kV XLPE CABLE

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Name	Plot	Colour	Linetype	Lineweight	Description
LD-3x630mm-11kV-XLPE-Cable-P	TRUE	11	LD-3X630MM-11KV-XLPE-CABLE-P	LineWeight050	PROPOSED 3x630mm <sup>2</sup> 11kV XLPE CABLE
LD-4x150mm-LV-UBC-XLPE-Cable-P	TRUE	152	Continuous	LineWeight050	PROPOSED 4x150mm <sup>2</sup> LV UBC XLPE CABLE
LD-7.6kV-OH-Main-E	TRUE	14	LD-7.6KV-OH-MAIN-E	LineWeight025	EXISTING 7.6kV OVERHEAD MAINS
LD-7.6kV-OH-Main-P	TRUE	14	LD-7.6KV-OH-MAIN-P	LineWeight050	PROPOSED 7.6kV OVERHEAD MAINS
LD-7.6kV-OH-Main-P-Recon	TRUE	14	LD-7.6KV-OH-MAIN-P-RECON	LineWeight050	PROPOSED 7.6kV RECONDUCTORED O/H MAINS
LD-7.6kV-OH-Main-TBR	TRUE	14	LD-7.6KV-OH-MAIN-TBR	LineWeight025	EXISTING 7.6kV OVERHEAD MAINS TO BE REMOVED
LD-11kV-OH-Main-E	TRUE	11	LD-11KV-OH-MAIN-E	LineWeight025	EXISTING 11kV OVERHEAD MAINS
LD-11kV-OH-Main-P	TRUE	11	LD-11KV-OH-MAIN-P	LineWeight050	PROPOSED 11kV OVERHEAD MAINS
LD-11kV-OH-Main-P-Recon	TRUE	11	LD-11KV-OH-MAIN-P-RECON	LineWeight050	PROPOSED 11kV RECONDUCTORED O/H MAINS
LD-11kV-OH-Main-TBR	TRUE	11	LD-11KV-OH-MAIN-TBR	LineWeight025	EXISTING 11kV OVERHEAD MAINS TO BE REMOVED
LD-19kV-OH-Main-E	TRUE	cyan	LD-19KV-OH-MAIN-E	LineWeight025	EXISTING 19kV OVERHEAD MAINS
LD-19kV-OH-Main-P	TRUE	cyan	LD-19KV-OH-MAIN-P	LineWeight050	PROPOSED 19kV OVERHEAD MAINS
LD-19kV-OH-Main-P-Recon	TRUE	cyan	LD-19KV-OH-MAIN-P-RECON	LineWeight050	PROPOSED RECONDUCTORED 19kV O/H MAINS
LD-19kV-OH-Main-TBR	TRUE	cyan	LD-19KV-OH-MAIN-TBR	LineWeight025	EXISTING 19kV OVERHEAD MAINS TO BE REMOVED

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Name	Plot	Colour	Linetype	Lineweight	Description
LD-33kV-OH-Main-E	TRUE	96	LD-33kV-OH-MAIN-E	LineWeight025	EXISTING 33kV OVERHEAD MAINS
LD-33kV-OH-Main-P	TRUE	96	LD-33kV-OH-MAIN-P	LineWeight050	PROPOSED 33kV OVERHEAD MAINS
LD-33kV-OH-Main-P-Recon	TRUE	96	LD-33kV-OH-Main-P-Recon	LineWeight050	PROPOSED RECONDUCTORED 33kV O/H MAINS
LD-33kV-OH-Main-TBR	TRUE	96	LD-33KV-OH-MAIN-TBR	LineWeight025	EXISTING 33kV OVERHEAD MAINS TO BE REMOVED
LD-35mm-7.6kV-Cable-AB	TRUE	14	LD-35MM-7.6KV-CABLE-AB	LineWeight025	ABANDONED 35mm <sup>2</sup> 7.6kV CABLE
LD-35mm-7.6kV-Cable-E	TRUE	14	LD-35MM-7.6KV-CABLE-E	LineWeight025	EXISTING 35mm <sup>2</sup> 7.6kV CABLE
LD-35mm-7.6kV-Cable-TBAB	TRUE	14	LD-35MM-7.6KV-CABLE-TBAB	LineWeight025	EXISTING 35mm <sup>2</sup> 7.6kV CABLE TO BE ABANDONED
LD-35mm-11kV-Cable-AB	TRUE	40	LD-35MM-11KV-CABLE-AB	LineWeight025	ABANDONED 35mm <sup>2</sup> 11kV CABLE
LD-35mm-11kV-Cable-E	TRUE	11	LD-35MM-11KV-CABLE-E	LineWeight025	EXISTING 35mm <sup>2</sup> 11kV CABLE
LD-35mm-11kV-Cable-TBAB	TRUE	11	LD-35MM-11KV-CABLE-TBAB	LineWeight025	EXISTING 35mm <sup>2</sup> 11kV CABLE TO BE ABANDONED
LD-35mm-LV-Cable-AB	TRUE	40	Continuous	LineWeight025	ABANDONED 35mm <sup>2</sup> LV CABLE
LD-35mm-LV-Cable-E	TRUE	152	Continuous	LineWeight025	EXISTING 35mm <sup>2</sup> LV CABLE
LD-35mm-LV-Cable-TBAB	TRUE	152	Continuous	LineWeight025	EXISTING 35mm <sup>2</sup> LV CABLE TO BE ABANDONED
LD-50mm-19kV-XLPE-Cable-E	TRUE	cyan	LD-50mm-19kV-XLPE-Cable-E	LineWeight025	EXISTING 50mm <sup>2</sup> 19kV CABLE
LD-50mm-19kV-XLPE-Cable-P	TRUE	cyan	LD-50mm-19kV-XLPE-Cable-P	LineWeight050	PROPOSED 50mm <sup>2</sup> 19kV CABLE

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Name	Plot	Colour	Linetype	Lineweight	Description
LD-50mm-19kV-XLPE-Cable-TBAB	TRUE	cyan	LD-50mm-19kV-XLPE-Cable-TBAB	LineWeight025	EXISTING 50mm <sup>2</sup> 19kV CABLE TO BE ABANDONED
LD-50mm-33kV-XLPE-Cable-E	TRUE	96	LD-50MM-33KV-XLPE-CABLE-E	LineWeight025	EXISTING 50mm <sup>2</sup> 33kV XLPE CABLE
LD-50mm-33kV-XLPE-Cable-P	TRUE	96	LD-50MM-33KV-XLPE-CABLE-P	LineWeight050	PROPOSED 50mm <sup>2</sup> 33kV XLPE CABLE
LD-50mm-33kV-XLPE-Cable-TBAB	TRUE	96	LD-50MM-33KV-XLPE-CABLE-TBAB	LineWeight025	EXISTING 50mm <sup>2</sup> 33kV XLPE CABLES TO BE ABANDONED
LD-66kV-Cable-P	TRUE	44	LD-66KV-CABLE-P	LineWeight050	PROPOSED 66kV CABLE
LD-66kV-OH-Main-E	TRUE	44	LD-66KV-OH-MAIN-E	LineWeight025	EXISTING 66kV OVERHEAD MAINS
LD-66kV-OH-Main-P	TRUE	44	LD-66KV-OH-MAIN-P	LineWeight050	PROPOSED 66kV OVERHEAD MAINS
LD-66kV-OH-Main-P-Recon	TRUE	44	LD-66KV-OH-Main-P-Recon	LineWeight050	PROPOSED RECONDUCTORED 66kV O/H MAINS
LD-66kV-OH-Main-TBR	TRUE	44	LD-66KV-OH-MAIN-TBR	LineWeight025	EXISTING 66kV OVERHEAD MAINS TO BE REMOVED
LD-66kV-XLPE-Cable-E	TRUE	44	LD-66KV-XLPE-CABLE-E	LineWeight025	EXISTING 66kV XLPE CABLE
LD-95mm-7.6kV-Cable-AB	TRUE	14	LD-95MM-7.6KV-CABLE-AB	LineWeight025	ABANDONED 95mm <sup>2</sup> 7.6kV CABLE
LD-95mm-7.6kV-Cable-E	TRUE	14	LD-95MM-7.6KV-CABLE-E	LineWeight025	EXISTING 95mm <sup>2</sup> 7.6kV CABLE
LD-95mm-7.6kV-Cable-TBAB	TRUE	14	LD-95MM-7.6KV-CABLE-TBAB	LineWeight025	EXISTING 95mm <sup>2</sup> 7.6kV CABLE TO BE ABANDONED
LD-95mm-11kV-Cable-AB	TRUE	40	LD-95MM-11KV-CABLE-AB	LineWeight025	ABANDONED 95mm <sup>2</sup> 11kV CABLE
LD-95mm-11kV-Cable-E	TRUE	11	LD-95MM-11KV-CABLE-E	LineWeight025	EXISTING 95mm <sup>2</sup> 11kV CABLE
LD-95mm-11kV-Cable-TBAB	TRUE	11	LD-95MM-11KV-CABLE-TBAB	LineWeight025	EXISTING 95mm <sup>2</sup> 11kV CABLE TO BE ABANDONED

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Name	Plot	Colour	Linetype	Lineweight	Description
LD-95mm-33kV-XLPE-Cable-E	TRUE	96	LD-95MM-33KV-XLPE-CABLE-E	LineWeight025	EXISTING 95mm <sup>2</sup> 33kV XLPE CABLE
LD-95mm-33kV-XLPE-Cable-P	TRUE	96	LD-95MM-33KV-XLPE-CABLE-P	LineWeight050	PROPOSED 95mm <sup>2</sup> 33kV XLPE CABLE
LD-95mm-33kV-XLPE-Cable-TBAB	TRUE	96	LD-95MM-33KV-XLPE-CABLE-TBAB	LineWeight025	EXISTING 95mm <sup>2</sup> 33kV XLPE CABLES TO BE ABANDONED
LD-150mm-LV-Cable-AB	TRUE	40	LD-150MM-LV-CABLE-AB	LineWeight025	ABANDONED 150mm <sup>2</sup> LV CABLE
LD-150mm-LV-Cable-E	TRUE	152	LD-150MM-LV-CABLE-E	LineWeight025	EXISTING 150mm <sup>2</sup> LV CABLE
LD-150mm-LV-Cable-TBAB	TRUE	152	LD-150mm-LV-Cable-TBAB	LineWeight025	EXISTING 150mm <sup>2</sup> LV CABLE TO BE ABANDONED
LD-300mm-7.6kV-Cable-AB	TRUE	14	LD-300MM-7.6KV-CABLE-AB	LineWeight025	ABANDONED 300mm <sup>2</sup> 7.6kV CABLE
LD-300mm-7.6kV-Cable-E	TRUE	14	LD-300MM-7.6KV-CABLE-E	LineWeight025	EXISTING 300mm <sup>2</sup> 7.6kV
LD-300mm-7.6kV-Cable-TBAB	TRUE	14	LD-300MM-7.6KV-CABLE-TBAB	LineWeight025	EXISTING 300mm <sup>2</sup> 7.6kV CABLE TO BE ABANDONED
LD-300mm-11kV-Cable-AB	TRUE	40	LD-300MM-11KV-CABLE-AB	LineWeight025	ABANDONED 300mm <sup>2</sup> 11kV CABLE
LD-300mm-11kV-Cable-E	TRUE	11	LD-300MM-11KV-CABLE-E	LineWeight025	EXISTING 300mm <sup>2</sup> 11kV CABLE
LD-300mm-11kV-Cable-TBAB	TRUE	11	LD-300MM-11KV-CABLE-TBAB	LineWeight025	EXISTING 300mm <sup>2</sup> 11kV CABLE TO BE ABANDONED
LD-300mm-33kV-XLPE-Cable-E	TRUE	96	LD-300mm-33kV-XLPE-Cable-E	LineWeight025	EXISTING 300mm <sup>2</sup> 33kV XLPE CABLE
LD-300mm-33kV-XLPE-Cable-P	TRUE	96	LD-300MM-33KV-XLPE-CABLE-P	LineWeight050	PROPOSED 300mm <sup>2</sup> 33kV XLPE CABLE
LD-300mm-33kV-XLPE-Cable-TBAB	TRUE	96	LD-300MM-33KV-XLPE-CABLE-TBAB	LineWeight025	EXISTING 300mm <sup>2</sup> 33kV XLPE CABLES TO BE ABANDONED
LD-630mm-7.6kV-Cable-AB	TRUE	14	Continuous	LineWeight025	ABANDONED 630mm <sup>2</sup> 7.6kV CABLE

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Name	Plot	Colour	Linetype	Lineweight	Description
LD-630mm-7.6kV-Cable-E	TRUE	14	Continuous	LineWeight025	EXISTING 630mm2 7.6kV CABLE
LD-630mm-7.6kV-Cable-TBAB	TRUE	14	Continuous	LineWeight025	EXISTING 630mm2 7.6kV CABLE TO BE ABANDONED
LD-630mm-11kV-Cable-AB	TRUE	40	Continuous	LineWeight025	ABANDONED 630mm2 11kV CABLE
LD-630mm-11kV-Cable-E	TRUE	11	Continuous	LineWeight025	EXISTING 630mm2 11kV CABLE
LD-630mm-11kV-Cable-TBAB	TRUE	11	Continuous	LineWeight025	EXISTING 630mm2 11kV CABLE TO BE ABANDONED
LD-Construction	FALSE	50	Continuous	ByLineWeightDefault	Construction Lines
LD-Consumer-Cables-E	TRUE	blue	Continuous	LineWeight025	
LD-Consumer-Cables-P	TRUE	blue	LD-Consumer-Cables-P	LineWeight050	
LD-Consumer-Cables-TBAB	TRUE	blue	Continuous	LineWeight025	
LD-Cyclone-Fence	TRUE	white	LD-Cyclone-Fence	LineWeight025	
LD-Cyclone-Fence-on-Conc-Footing	TRUE	white	Continuous	LineWeight015	
LD-Dimensions-1.80	TRUE	white	Continuous	LineWeight018	
LD-Dimensions-2.00	TRUE	white	Continuous	LineWeight020	
LD-Dimensions-2.50	TRUE	white	Continuous	LineWeight025	
LD-Dwg-Sht-Text	TRUE	white	Continuous	ByLineWeightDefault	
LD-Fibre-OH-Main-E	TRUE	magenta	LD-FIBRE-OH-MAIN-E	LineWeight025	EXISTING OVERHEAD FIBRE CABLE
LD-Fibre-OH-Main-P	TRUE	magenta	LD-FIBRE-OH-MAIN-P	LineWeight050	PROPOSED OVERHEAD FIBRE CABLE
LD-Fibre-OH-Main-TBR	TRUE	magenta	LD-FIBRE-OH-MAIN-TBR	LineWeight025	EXISTING OVERHEAD FIBRE CABLE TO BE REMOVED
LD-General-Drafting	TRUE	white	Continuous	ByLineWeightDefault	
LD-GIS-7.6kV-OH-Mains	TRUE	14	LD-GIS-7.6KV-OH-MAINS	LineWeight035	GIS 7.6kV OVERHEAD MAINS
LD-GIS-11kV-OH-Mains	TRUE	11	LD-GIS-11KV-OH-MAINS	LineWeight035	GIS 11kV OVERHEAD MAINS
LD-GIS-19kV-OH-Mains	TRUE	cyan	LD-GIS-19KV-OH-MAINS	LineWeight035	GIS 19kV OVERHEAD MAINS

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Name	Plot	Colour	Linetype	Lineweight	Description
LD-GIS-33kV-OH-Mains	TRUE	96	LD-GIS-33KV-OH-MAINS	LineWeight035	GIS 33kV OVERHEAD MAINS
LD-GIS-66kV-OH-Mains	TRUE	44	LD-GIS-66KV-OH-MAINS	LineWeight035	GIS 66kV OVERHEAD MAINS
LD-GIS-132kV-OH-Trans-Line	TRUE	20	LD-GIS-132KV-OH-TRANS-LINE	LineWeight035	GIS 132kV OVERHEAD TRANSMISSION LINE
LD-GIS-275kV-OH-Trans-Line	TRUE	216	LD-GIS-275KV-OH-TRANS-LINE	LineWeight035	GIS 275kV OVERHEAD TRANSMISSION LINE
LD-GIS-Cables-AB	TRUE	40	Continuous	LineWeight035	GIS ABANDONED OR NOT ENERGISED CABLES
LD-GIS-LV-Overhead-Mains	TRUE	152	LD-GIS-LV-OVERHEAD-MAINS	LineWeight035	GIS LV OVERHEAD MAINS
LD-GIS-NMI-Text	FALSE	cyan	Continuous	LineWeight025	
LD-GIS-OH-7.6kV-Conductor	FALSE	14	Continuous	LineWeight025	7.6kV Conductor - Overhead - GIS Data
LD-GIS-OH-11kV-Conductor	FALSE	11	Continuous	LineWeight025	11kV Conductor - Overhead - GIS Data
LD-GIS-OH-19kV-Conductor	FALSE	cyan	Continuous	LineWeight025	19kV Conductor - Overhead - GIS Data
LD-GIS-OH-33kV-Conductor	FALSE	96	Continuous	LineWeight025	33kV Conductor - Overhead - GIS Data
LD-GIS-OH-66kV-Conductor	FALSE	44	Continuous	LineWeight025	66kV Conductor - Overhead - GIS Data
LD-GIS-OH-LV-Conductor	FALSE	152	Continuous	LineWeight025	Low Voltage Conductor - Overhead - GIS Data
LD-GIS-Pole	FALSE	red	Continuous	LineWeight025	
LD-GIS-Public-Light	FALSE	30	Continuous	LineWeight025	
LD-GIS-Public-Light-Pole	FALSE	yellow	Continuous	LineWeight025	
LD-GIS-Substation	FALSE	red	Continuous	LineWeight025	
LD-GIS-Transformer-Text	FALSE	11	Continuous	LineWeight025	
LD-GIS-UG-7.6kV-Conductor	FALSE	44	LD-300MM-7.6KV-CABLE-E	LineWeight025	7.6kV Conductor - Underground - GIS Data

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Name	Plot	Colour	Linetype	Lineweight	Description
LD-GIS-UG-11kV-Conductor	FALSE	31	LD-300MM-11KV-CABLE-E	LineWeight025	11kV Conductor - Underground - GIS Data
LD-GIS-UG-19kV-Conductor	FALSE	140	LD-50mm-19kV-XLPE-Cable-E	LineWeight025	19kV Conductor - Underground - GIS Data
LD-GIS-UG-33kV-Conductor	FALSE	92	LD-300mm-33kV-XLPE-Cable-E	LineWeight025	33kV Conductor - Underground - GIS Data
LD-GIS-UG-66kV-Conductor	FALSE	52	LD-300mm-33kV-XLPE-Cable-E	LineWeight025	66kV Conductor - Underground - GIS Data
LD-GIS-UG-LV-Conductor	FALSE	151	LD-150MM-LV-CABLE-E	LineWeight025	Low Voltage Conductor - Underground - GIS Data
LD-HV-ABC-OH-Main-E	TRUE	11	LD-HV-ABC-OH-MAIN-E	LineWeight025	EXISTING 11kV ABC OVERHEAD MAINS
LD-HV-ABC-OH-Main-P-RECON	TRUE	11	LD-HV-ABC-OH-MAIN-P-RECON	LineWeight050	PROPOSED 11kV ABC RECONDUCTORED O/H MAINS
LD-HV-ABC-OH-Main-TBR	TRUE	11	LD-HV-ABC-OH-Main-TBR	LineWeight025	EXISTING 11kV ABC OVERHEAD MAINS TO BE REMOVED
LD-Kerbline	TRUE	white	LD-Kerbline	LineWeight009	
LD-LV-ABC-OH-Main-E	TRUE	152	LD-LV-ABC-OH-MAIN-E	LineWeight025	EXISTING ABC OVERHEAD MAINS
LD-LV-ABC-OH-Main-P	TRUE	152	LD-LV-ABC-OH-MAIN-P	LineWeight050	PROPOSED ABC OVERHEAD MAINS
LD-LV-ABC-OH-Main-P-Recon	TRUE	152	LD-LV-ABC-OH-Main-P-Recon	LineWeight050	PROPOSED RECONDUCTORED LV ABC O/H MAINS
LD-LV-ABC-OH-Main-TBR	TRUE	152	LD-LV-ABC-OH-MAIN-TBR	LineWeight025	EXISTING ABC OVERHEAD MAINS TO BE REMOVED
LD-LV-OH-Main-E	TRUE	152	LD-LV-OH-MAIN-E	LineWeight025	EXISTING LV OVERHEAD MAINS

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Name	Plot	Colour	Linetype	Lineweight	Description
LD-LV-OH-Main-P	TRUE	152	LD-LV-OH-MAIN-P	LineWeight050	PROPOSED LV OVERHEAD MAINS
LD-LV-OH-Main-TBR	TRUE	152	LD-LV-OH-MAIN-TBR	LineWeight025	EXISTING LV OVERHEAD MAINS TO BE REMOVED
LD-LV-OH-P-Recon	TRUE	152	LD-LV-OH-MAIN-P-RECON	LineWeight050	PROPOSED RECONDUCTORED LV O/H MAINS
LD-Miscellaneous	TRUE	white	Continuous	LineWeight025	
LD-Par-150-LV-UBC-XLPE-P	TRUE	152	Continuous	LineWeight050	PROPOSED PARALLEL 150mm <sup>2</sup> LV UBC XLPE CABLE
LD-Par-150mm-LV-Cable-AB	TRUE	40	Continuous	LineWeight025	ABANDONED PARALLEL 150mm <sup>2</sup> LV CABLE
LD-Par-150mm-LV-Cable-E	TRUE	152	Continuous	LineWeight025	EXISTING PARALLEL 150mm <sup>2</sup> LV CABLE
LD-Par-150mm-LV-Cable-TBAB	TRUE	152	Continuous	LineWeight025	EXISTING PARALLEL 150mm <sup>2</sup> LV CABLE TO BE ABANDONED
LD-Pilot-OH-Main-E	TRUE	20	LD-PILOT-OH-MAIN-E	LineWeight025	EXISTING OVERHEAD PILOT CABLE
LD-Pilot-OH-Main-TBR	TRUE	20	LD-PILOT-OH-MAIN-TBR	LineWeight025	EXISTING OVERHEAD PILOT CABLE TO BE REMOVED
LD-Project-Geo-Boundary	FALSE	white	Continuous	ByLineWeightDefault	
LD-Railway	TRUE	red	Continuous	LineWeight025	
LD-Rural-Fence	TRUE	white	LD-Rural-Fence	LineWeight025	
LD-Sheets	TRUE	white	Continuous	ByLineWeightDefault	
LD-Symbols	TRUE	white	Continuous	ByLineWeightDefault	
LD-UG-Fibre-Cable-E	TRUE	magenta	LD-UG-FIBRE-CABLE-E	LineWeight025	EXISTING UNDERGROUND FIBRE CABLE
LD-UG-Fibre-Cable-P	TRUE	magenta	Continuous	LineWeight050	PROPOSED UNDERGROUND FIBRE CABLE

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Name	Plot	Colour	Linetype	Lineweight	Description
LD-UG-Fibre-Cable-TBAB	TRUE	magenta	LD-UG-FIBRE-CABLE-TBAB	LineWeight025	EXISTING UNDERGROUND FIBRE CABLE TO BE ABANDONED
LD-UG-Pilot-Cable-E	TRUE	green	LD-UG-PILOT-CABLE-E	LineWeight025	EXISTING UNDERGROUND PILOT CABLE
LD-UG-Pilot-Cable-P	TRUE	green	Continuous	LineWeight050	PROPOSED UNDERGROUND PILOT CABLE
LD-UG-Pilot-Cable-TBAB	TRUE	green	LD-UG-PILOT-CABLE-TBAB	LineWeight025	EXISTING UNDERGROUND PILOT CABLE TO BE ABANDONED
LD-Viewport-Boundary	FALSE	yellow	Continuous	ByLineWeightDefault	
LOGO-Hatch	TRUE	white	Continuous	ByLineWeightDefault	
No Plot	FALSE	8	Continuous	ByLineWeightDefault	
PL-2x6mm+1x6mm-Pub-Light-Cable-P	TRUE	white	PL-2X6MM+1X6MM-PUB-LIGHT-CABLE-P	LineWeight035	PROPOSED PUBLIC LIGHTING CABLE 2x6.0mm2 + 1x6mm2 Cu
PL-Boundary-Of-Design-Area	TRUE	magenta	DASHED2	LineWeight100	
PL-General-Drafting	TRUE	white	Continuous	ByLineWeightDefault	
PL-Pub-Light-Cable-AB	TRUE	40	Continuous	LineWeight025	ABANDONED PUBLIC LIGHTING CABLE
PL-Pub-Light-Cable-E	TRUE	white	Continuous	LineWeight025	EXISTING PUBLIC LIGHTING CABLE
PL-Pub-Light-Cable-TBAB	TRUE	white	Continuous	LineWeight025	EXISTING PUBLIC LIGHTING CABLE TO BE ABANDONED
PL-Symbols	TRUE	white	Continuous	LineWeight025	
Revision	TRUE	red	Continuous	LineWeight025	
SAPN-Dwg-Sht-Text	TRUE	white	Continuous	ByLineWeightDefault	
SAPN-Sheet-QR-Code	TRUE	magenta	Continuous	ByLineWeightDefault	
SAPN-Sheet-Text-Hidden	FALSE	magenta	Continuous	ByLineWeightDefault	

**Note** that in description column, the prefix 'GIS' (eg GIS 11kV OVERHEAD MAINS) is merely an acknowledgment that suggest this layer's line style matches the colour within SA Power Networks' GIS System.

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










## G. List of Standard Symbols

### G.1 Overhead Network Symbols

#### G.1.1 Overhead Switch Symbols - List 1





















	EXISTING POLE
	EXISTING POLE TO BE REMOVED
	PROPOSED POLE
	EXISTING POLE TO BE REPLACED IN EXISTING FOOTING
	EXISTING WOODEN POLE
	EXISTING WOODEN POLE TO BE REPLACED
	EXISTING WOODEN POLE TO BE REMOVED
	EXISTING WOODEN CROSS-ARM TO BE REPLACED
	PROPOSED TUBULAR POLE
	EXISTING TUBULAR POLE
	EXISTING TUBULAR POLE TO BE REMOVED
	POLE NUMBER
	EXISTING 11kV POLEMOUNT TRANSFORMER
	EXISTING 11kV POLEMOUNT TRANSFORMER TO BE REMOVED
	PROPOSED 11kV POLEMOUNT TRANSFORMER
	EXISTING 11kV POLEMOUNT TRANSFORMER TO BE UPGRADED
	EXISTING 19kV POLEMOUNT TRANSFORMER
	EXISTING 19kV POLEMOUNT TRANSFORMER TO BE REMOVED
	PROPOSED 19kV POLEMOUNT TRANSFORMER
	EXISTING 19kV POLEMOUNT TRANSFORMER TO BE UPGRADED
	EXISTING 33kV POLEMOUNT TRANSFORMER
	EXISTING 33kV POLEMOUNT TRANSFORMER TO BE REMOVED
	PROPOSED 33kV POLEMOUNT TRANSFORMER
	EXISTING 33kV POLEMOUNT TRANSFORMER TO BE UPGRADED
	EXISTING 11kV LOAD SWITCH
	EXISTING 11kV LOAD SWITCH TO BE REMOVED
	PROPOSED 11kV LOAD SWITCH
	EXISTING 33kV LOAD SWITCH
	EXISTING 33kV LOAD SWITCH TO BE REMOVED
	PROPOSED 33kV LOAD SWITCH
	EXISTING 11kV CAPACITOR BANK
	EXISTING 11kV CAPACITOR BANK TO BE REMOVED
	PROPOSED 11kV CAPACITOR BANK
	EXISTING 11kV RECLOSER
	EXISTING 11kV RECLOSER TO BE REMOVED
	PROPOSED 11kV RECLOSER
	EXISTING 19kV RECLOSER
	EXISTING 19kV RECLOSER TO BE REMOVED
	PROPOSED 19kV RECLOSER
	EXISTING 33kV RECLOSER
	EXISTING 33kV RECLOSER TO BE REMOVED
	PROPOSED 33kV RECLOSER

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	EXISTING 11kV SECTIONALISER
	EXISTING 11kV SECTIONALISER TO BE REMOVED
	PROPOSED 11kV SECTIONALISER
	EXISTING 19kV SECTIONALISER
	EXISTING 19kV SECTIONALISER TO BE REMOVED
	PROPOSED 19kV SECTIONALISER
	EXISTING 33kV SECTIONALISER
	EXISTING 33kV SECTIONALISER TO BE REMOVED
	PROPOSED 33kV SECTIONALISER
	EXISTING 11kV VOLTAGE REGULATOR STATION
	EXISTING 11kV VOLTAGE REGULATOR STATION TO BE REMOVED
	PROPOSED 11kV VOLTAGE REGULATOR STATION
	EXISTING 19kV SWER VOLTAGE REGULATOR STATION
	EXISTING 19kV SWER VOLTAGE REGULATOR STATION TO BE REMOVED
	PROPOSED 19kV SWER VOLTAGE REGULATOR STATION
	EXISTING 33kV VOLTAGE REGULATOR STATION
	EXISTING 33kV VOLTAGE REGULATOR STATION TO BE REMOVED
	PROPOSED 33kV VOLTAGE REGULATOR STATION
	EXISTING LV OVERHEAD OPEN POINT
	PROPOSED LV OVERHEAD OPEN POINT
	GUY WIRE
	PROPERTY/BOUNDARY LINE
	KERB LINE
	GATE
	HOUSE
	SHED
	SWAMP
	TOWER
	WINDMILL
	PROPOSED SERVICE FUSE ENCLOSURE
	EXISTING SERVICE FUSE ENCLOSURE
	PROPOSED MAIN SWITCHBOARD
	EXISTING MAIN SWITCHBOARD
	WATER METER
	REVISION CHANGE TRIANGLE IDENTIFIER

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### G.1.2 Overhead Switch Symbols - List 2

	EXISTING 11kV POLEMOUNT SWITCH
	EXISTING 11kV POLEMOUNT SWITCH TO BE REMOVED
	PROPOSED 11kV POLEMOUNT SWITCH
	EXISTING 11kV POLEMOUNT SWITCH TO BE UPGRADED
	EXISTING LV POLEMOUNT SWITCH
	EXISTING LV POLEMOUNT SWITCH TO BE REMOVED
	PROPOSED LV POLEMOUNT SWITCH
	EXISTING LV POLEMOUNT SWITCH TO BE UPGRADED
	EXISTING 33kV POLEMOUNT SWITCH
	EXISTING 33kV POLEMOUNT SWITCH TO BE REMOVED
	PROPOSED 33kV POLEMOUNT SWITCH
	EXISTING 33kV POLEMOUNT SWITCH TO BE UPGRADED
	EXISTING 19kV POLEMOUNT SWITCH
	EXISTING 19kV POLEMOUNT SWITCH TO BE REMOVED
	PROPOSED 19kV POLEMOUNT SWITCH
	EXISTING 19kV POLEMOUNT SWITCH TO BE UPGRADED
	EXISTING 7.6kV POLEMOUNT SWITCH
	EXISTING 7.6kV POLEMOUNT SWITCH TO BE REMOVED
	PROPOSED 7.6kV POLEMOUNT SWITCH
	EXISTING 7.6kV POLEMOUNT SWITCH TO BE UPGRADED



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## G.2 Underground Network Symbols



















### G.2.1 Underground Network Symbols - List 1

	EXISTING 11kV PADMOUNT TRANSFORMER
	EXISTING 11kV PADMOUNT TRANSFORMER TO BE REMOVED
	PROPOSED 11kV PADMOUNT TRANSFORMER
	EXISTING 11kV PADMOUNT TRANSFORMER TO BE UPGRADED
	EXISTING 11kV SWITCHING CUBICLE
	EXISTING 11kV SWITCHING CUBICLE TO BE REMOVED
	PROPOSED 11kV SWITCHING CUBICLE
	EXISTING 19kV PADMOUNT TRANSFORMER
	EXISTING 19kV PADMOUNT TRANSFORMER TO BE REMOVED
	PROPOSED 19kV PADMOUNT TRANSFORMER
	EXISTING 19kV PADMOUNT TRANSFORMER TO BE UPGRADED
	EXISTING 33kV PADMOUNT TRANSFORMER
	EXISTING 33kV PADMOUNT TRANSFORMER TO BE REMOVED
	PROPOSED 33kV PADMOUNT TRANSFORMER
	EXISTING 33kV PADMOUNT TRANSFORMER TO BE UPGRADED
	EXISTING 33kV SWITCHING CUBICLE
	EXISTING 33kV SWITCHING CUBICLE TO BE REMOVED
	PROPOSED 33kV SWITCHING CUBICLE

**G.2.2 Underground Network Symbols - List 2**




	EXISTING LV CABLE JOINT
	PROPOSED LV CABLE JOINT
	EXISTING 7.6kV CABLE JOINT
	PROPOSED 7.6kV CABLE JOINT
	EXISTING 11kV CABLE JOINT
	PROPOSED 11kV CABLE JOINT
	EXISTING 33kV CABLE JOINT
	PROPOSED 33kV CABLE JOINT
	EXISTING 66kV CABLE JOINT
	PROPOSED 66kV CABLE JOINT
	ABANDONED STRAIGHT JOINT
	EXISTING 11kV SPLICE JOINT (Not modern construction)
	EXISTING LV SPLICE JOINT (Not modern construction)
	ABANDONED SPLICE JOINT
	EXISTING LV TEE JOINT (Not modern construction)
	ABANDONED LV TEE JOINT
	EXISTING LV C JOINT (Not modern construction)
	ABANDONED LV C JOINT
	EXISTING LV UNDERGROUND OPEN POINT
	PROPOSED LV UNDERGROUND OPEN POINT
	PROPOSED FUSED RADIAL PILLAR
	PROPOSED FUSED LOOP PILLAR
	PROPOSED FUSED-T/OFF PILLAR
	PROPOSED UNFUSED 100A RADIAL PILLAR
	PROPOSED UNFUSED 200A RADIAL PILLAR
	PROPOSED UNFUSED 400A RADIAL PILLAR
	PROPOSED SERVICE PILLAR WITH FOOTPATH COVER
	EXISTING SERVICE PILLAR
	EXISTING SERVICE PILLAR WITH FOOTPATH COVER
	EXISTING JUNCTION PIT
	EXISTING P5 JUNCTION PIT (Not Modern)
	PROPOSED P7 JUNCTION PIT
	EXISTING P7 JUNCTION PIT WITH GEL PORTS (Not Modern)
	PROPOSED P7 JUNCTION PIT WITH FUSED GEL PORTS CG1
	PROPOSED P8 JUNCTION PIT
	PROPOSED P8 JUNCTION PIT WITH FUSED GEL PORTS CG1
	PROPOSED P8 JUNCTION PIT WITH FUSED GEL PORTS CG2
	EXISTING JUNCTION PIT TO BE REMOVED
	PROPOSED LOW VOLTAGE SWITCHING CUBICLE
	EXISTING LOW VOLTAGE SWITCHING CUBICLE
	FIBRE PITS

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	PROPOSED LV OVER UNDER
	PROPOSED 7.6kV OVER UNDER
	PROPOSED 11kV OVER UNDER
	PROPOSED 19kV OVER UNDER
	PROPOSED 33kV OVER UNDER
	PROPOSED 66kV OVER UNDER
	EXISTING LV OVER UNDER
	EXISTING 7.6kV OVER UNDER
	EXISTING 11kV OVER UNDER
	EXISTING 19kV OVER UNDER
	EXISTING 33kV OVER UNDER
	EXISTING 66kV OVER UNDER
	REFER TO CROSS SECTION
	CONDUITS
	EXISTING CAPPED CABLE
	PROPOSED CAPPED CABLE
	PROPOSED CONSUMERS MAINS
	CABLE MARKERS

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### G.2.3 Underground Network Symbols - List 3

	PROPOSED 32mm PUBLIC LIGHTING CONDUIT
	PROPOSED 40mm PUBLIC LIGHTING CONDUIT
	PROPOSED 50mm PUBLIC LIGHTING or 3ph Consumer CONDUIT
	PROPOSED 100mm LIGHT DUTY CONDUIT
	PROPOSED 100mm HEAVY DUTY CONDUIT
	PROPOSED 100mm MEDIUM DUTY TELCO CONDUIT
	PROPOSED 110mm HIGH DENSITY POLYETHYLENE CONDUIT
	PROPOSED 110mm HIGH DENSITY POLYETHYLENE WHITE TELCO CONDUIT
	PROPOSED 125mm LIGHT DUTY CONDUIT
	PROPOSED 125mm HEAVY DUTY CONDUIT
	PROPOSED 125mm HIGH DENSITY POLYETHYLENE CONDUIT
	PROPOSED 150mm LIGHT DUTY CONDUIT
	PROPOSED 180mm HIGH DENSITY POLYETHYLENE CONDUIT
	PROPOSED 225mm HIGH DENSITY POLYETHYLENE CONDUIT





















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	EXISTING 40mm PUBLIC LIGHTING or 1ph Consumer CONDUIT
	EXISTING 50mm PUBLIC LIGHTING or 3ph Consumer CONDUIT
	EXISTING 80mm LIGHT DUTY CONDUIT
	EXISTING 100mm LIGHT DUTY CONDUIT
	EXISTING 100mm HEAVY DUTY CONDUIT
	EXISTING 100mm MEDIUM DUTY TELCO CONDUIT
	EXISTING 110mm HIGH DENSITY POLYETHYLENE CONDUIT
	EXISTING 110mm HIGH DENSITY POLYETHYLENE WHITE TELCO CONDUIT
	EXISTING 125mm LIGHT DUTY CONDUIT
	EXISTING 125mm HEAVY DUTY CONDUIT
	EXISTING 125mm HIGH DENSITY POLYETHYLENE CONDUIT
	EXISTING 150mm LIGHT DUTY CONDUIT
	EXISTING 180mm HIGH DENSITY POLYETHYLENE CONDUIT
	EXISTING 225mm HIGH DENSITY POLYETHYLENE CONDUIT































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## G.3 Underground Trench and Conduit Symbols

### G.3.1 Underground Trench Cross-Section Symbols














	PROPOSED 4x150mm <sup>2</sup> LV XLPE UBC
	PROPOSED 150mm <sup>2</sup> NEUTRAL CABLE
	PROPOSED PUBLIC LIGHTING CABLE 6mm <sup>2</sup> TWIN & 6mm <sup>2</sup> EARTH
	PROPOSED 3x95mm <sup>2</sup> 11kV XLPE CABLE
	PROPOSED 300mm <sup>2</sup> 11kV XLPE CABLE
	PROPOSED 630mm <sup>2</sup> 11kV XLPE CABLE
	PROPOSED 50mm <sup>2</sup> 33kV XLPE CABLE
	PROPOSED 95mm <sup>2</sup> 33kV XLPE CABLE
	PROPOSED 300mm <sup>2</sup> 33kV XLPE CABLE
	PROPOSED 3x95mm <sup>2</sup> 7.6kV XLPE CABLE
	PROPOSED 300mm <sup>2</sup> 7.6kV XLPE CABLE
	PROPOSED 630mm <sup>2</sup> 7.6kV XLPE CABLE
	PROPOSED 50mm <sup>2</sup> 19kV SWER XLPE CABLE
	PROPOSED 3.5 CORE 185mm <sup>2</sup> LV COPPER CABLE
	PROPOSED 3.5 CORE 240mm <sup>2</sup> LV COPPER CABLE
	PROPOSED 3 CORE 185mm <sup>2</sup> 11kV COPPER CABLE
	PROPOSED 3 CORE 240mm <sup>2</sup> 11kV COPPER CABLE
	PROPOSED PILOT CABLE
	PROPOSED FIBRE CABLE
	PROPOSED SPARE CONDUIT
	EXISTING 4x150mm <sup>2</sup> LV XLPE UBC
	EXISTING 150mm <sup>2</sup> NEUTRAL CABLE
	EXISTING 4x35mm <sup>2</sup> LV XLPE UBC
	EXISTING PUBLIC LIGHTING CABLE 2.5mm <sup>2</sup> TWIN & 6mm <sup>2</sup> EARTH
	EXISTING PUBLIC LIGHTING CABLE 6mm <sup>2</sup> TWIN & 6mm <sup>2</sup> EARTH
	EXISTING 3x35mm <sup>2</sup> 11kV XLPE CABLE
	EXISTING 3x95mm <sup>2</sup> 11kV XLPE CABLE
	EXISTING 300mm <sup>2</sup> 11kV XLPE CABLE
	EXISTING 630mm <sup>2</sup> 11kV XLPE CABLE
	EXISTING 50mm <sup>2</sup> 33kV XLPE CABLE
	EXISTING 95mm <sup>2</sup> 33kV XLPE CABLE
	EXISTING 300mm <sup>2</sup> 33kV XLPE CABLE
	EXISTING 3x35mm <sup>2</sup> 7.6kV XLPE CABLE
	EXISTING 3x95mm <sup>2</sup> 7.6kV XLPE CABLE

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	EXISTING 50mm <sup>2</sup> 19kV SWER XLPE CABLE
	EXISTING 3.5 CORE 185mm <sup>2</sup> LV COPPER CABLE
	EXISTING 3.5 CORE 240mm <sup>2</sup> LV COPPER CABLE
	EXISTING 3 CORE 185mm <sup>2</sup> 11kV COPPER CABLE
	EXISTING 3 CORE 240mm <sup>2</sup> 11kV COPPER CABLE
	EXISTING PILOT CABLE
	EXISTING FIBRE CABLE
EX	EXISTING SPARE CONDUIT
	EXISTING 4x150mm <sup>2</sup> LV XLPE UBC TO BE ABANDONED
	EXISTING 150mm <sup>2</sup> NEUTRAL CABLE TO BE ABANDONED
	EXISTING 4x35mm <sup>2</sup> LV XLPE UBC TO BE ABANDONED
	EXISTING PUBLIC LIGHTING CABLE 2.5mm <sup>2</sup> TWIN & 6mm <sup>2</sup> EARTH TO BE ABANDONED
	EXISTING PUBLIC LIGHTING CABLE 6mm <sup>2</sup> TWIN & 6mm <sup>2</sup> EARTH TO BE ABANDONED
	EXISTING 3x35mm <sup>2</sup> 11kV XLPE CABLE TO BE ABANDONED
	EXISTING 3x95mm <sup>2</sup> 11kV XLPE CABLE TO BE ABANDONED
	EXISTING 300mm <sup>2</sup> 11kV XLPE CABLE TO BE ABANDONED
	EXISTING 630mm <sup>2</sup> 11kV XLPE CABLE TO BE ABANDONED
	EXISTING 50mm <sup>2</sup> 33kV XLPE CABLE TO BE ABANDONED
	EXISTING 95mm <sup>2</sup> 33kV XLPE CABLE TO BE ABANDONED
	EXISTING 300mm <sup>2</sup> 33kV XLPE CABLE TO BE ABANDONED
	EXISTING 3x35mm <sup>2</sup> 7.6kV XLPE CABLE TO BE ABANDONED
	EXISTING 3x95mm <sup>2</sup> 7.6kV XLPE CABLE TO BE ABANDONED
	EXISTING 300mm <sup>2</sup> 7.6kV XLPE CABLE TO BE ABANDONED
	EXISTING 630mm <sup>2</sup> 7.6kV XLPE CABLE TO BE ABANDONED
	EXISTING 50mm <sup>2</sup> 19kV SWER XLPE CABLE TO BE ABANDONED
	EXISTING 3.5 CORE 185mm <sup>2</sup> LV COPPER CABLE TO BE ABANDONED
	EXISTING 3.5 CORE 240mm <sup>2</sup> LV COPPER CABLE TO BE ABANDONED
	EXISTING 3 CORE 185mm <sup>2</sup> 11kV COPPER CABLE TO BE ABANDONED
	EXISTING 3 CORE 240mm <sup>2</sup> 11kV COPPER CABLE TO BE ABANDONED
	EXISTING PILOT CABLE TO BE ABANDONED
	EXISTING FIBRE CABLE TO BE ABANDONED

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### G.3.2 CBD and PLEC Conduit Symbols

	PROPOSED XX XXXXmm <sup>2</sup> CABLE IN PROPOSED 100mm CONDUIT
	PROPOSED XX XXXXmm <sup>2</sup> CABLE IN EXISTING 100mm CONDUIT
	PROPOSED XX XXXXmm <sup>2</sup> CABLE FROM XXXXXXXXXX TO XXXXXXXXXX IN PROPOSED 100mm CONDUIT. WITH ACCOMPANYING 100mm SPARE CONDUIT.
	PROPOSED PUBLIC LIGHTING CABLE 6mm <sup>2</sup> TWIN & 6mm <sup>2</sup> EARTH IN 40mm CONDUIT
	PROPOSED XX XXXXmm <sup>2</sup> CABLE IN EXISTING SQUARE DUCT
	EXISTING XX XXXXmm <sup>2</sup> CABLE IN 100mm CONDUIT
	EXISTING XX XXXXmm <sup>2</sup> CABLE FROM XXXXXXXXXX TO XXXXXXXXXX IN 100mm CONDUIT. WITH ACCOMPANYING 100mm SPARE CONDUIT.
	EXISTING PUBLIC LIGHTING CABLE 6mm <sup>2</sup> TWIN & 6mm <sup>2</sup> EARTH IN 40mm CONDUIT
	EXISTING XX XXXXmm <sup>2</sup> CABLE IN SQUARE DUCT
	EXISTING XX XXXXmm <sup>2</sup> CABLE TO BE ABANDONED IN EXISTING 100mm CONDUIT
	EXISTING XX XXXXmm <sup>2</sup> CABLE TO BE ABANDONED FROM XXXXXXXXXX TO XXXXXXXXXX IN EXISTING 100mm CONDUIT. WITH ACCOMPANYING 100mm SPARE CONDUIT.
	EXISTING PUBLIC LIGHTING CABLE 6mm <sup>2</sup> TWIN & 6mm <sup>2</sup> EARTH TO BE ABANDONED IN 40mm CONDUIT
	EXISTING XX XXXXmm <sup>2</sup> CABLE TO BE ABANDONED IN EXISTING SQUARE DUCT

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## G.4 Public Lighting Network Symbols

### G.4.1 Public Lighting Network LED Symbols

#### G.4.1.1 P Category Standard



PROPOSED StreetLED 3 17W BLACK AEROSCREEN 4000k (STANDARD), SIN: EM4022



EXISTING StreetLED 3 17W BLACK AEROSCREEN 4000k (STANDARD), SIN: EM4022



EXISTING StreetLED 3 17W Black AEROSCREEN 4000k TO BE REMOVED (STANDARD), SIN: EM4022



PROPOSED StreetLED 3 17W GREY AEROSCREEN 4000k (STANDARD), SIN: EM4024



EXISTING StreetLED 3 17W GREY AEROSCREEN 4000k (STANDARD), SIN: EM4024



EXISTING StreetLED 3 17W GREY AEROSCREEN 4000k TO BE REMOVED (STANDARD), SIN: EM4024



Proposed StreetLED 3 17W Black SEMI CUT-OFF 4000k (STANDARD), SIN: EM4021



EXISTING StreetLED 3 17W Black SEMI CUT-OFF 4000k (STANDARD), SIN: EM4021



EXISTING StreetLED 3 17W Black SEMI CUT-OFF 4000K TO BE REMOVED (STANDARD), SIN: EM4021




PROPOSED StreetLED 3 17W GRAY SEMI CUT-OFF 4000k (STANDARD), SIN: EM4023





EXISTING StreetLED 3 17W GRAY SEMI CUT-OFF 4000k (STANDARD), SIN: EM4023





EXISTING StreetLED 3 17W GRAY SEMI CUT-OFF 4000K TO BE REMOVED (STANDARD), SIN: EM4023


 PROPOSED StreetLED 3 24W BLACK AEROSCREEN  
4000k (STANDARD), SIN: EM4025


 EXISTING StreetLED 3 24W BLACK AEROSCREEN  
4000k (STANDARD), SIN: EM4025


 EXISTING StreetLED 3 24W BLACK AEROSCREEN  
4000k TO BE REMOVED (STANDARD), SIN: EM4025


 PROPOSED StreetLED 3 24W GREY AEROSCREEN  
4000k (STANDARD), SIN: EM4026


 EXISTING StreetLED 3 24W GREY AEROSCREEN  
4000k (STANDARD), SIN: EM4026


 EXISTING StreetLED 3 24W GREY AEROSCREEN  
4000k TO BE REMOVED (STANDARD), SIN: EM4026


 PROPOSED StreetLED 3 24W BLACK AEROSCREEN  
3000k (STANDARD), SIN: EM5000

 EXISTING StreetLED 3 24W BLACK AEROSCREEN  
3000k (STANDARD), SIN: EM5000

 EXISTING StreetLED 3 24W BLACK AEROSCREEN  
3000k TO BE REMOVED (STANDARD), SIN: EM5000

 PROPOSED StreetLED 3 24W GREY AEROSCREEN  
3000k (STANDARD), SIN: EM5001

 EXISTING StreetLED 3 24W GREY AEROSCREEN  
3000k (STANDARD), SIN: EM5001

 EXISTING StreetLED 3 24W GREY AEROSCREEN  
3000k TO BE REMOVED (STANDARD), SIN: EM5001

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**G.4.1.2 P Category Decorative**



PROPOSED LED KENSINGTON 16W BLACK MK2  
4000k (DECORATIVE), SIN:EM4032

E



EXISTING LED KENSINGTON 16W BLACK MK2 4000k  
(DECORATIVE), SIN:EM4032

E



EXISTING LED KENSINGTON 16W BLACK MK2 4000k  
TO BE REMOVED (DECORATIVE), SIN:EM4032



PROPOSED LED KENSINGTON 16W BLACK MK2  
4000k (DECORATIVE), SIN:EM4033

E



EXISTING LED KENSINGTON 16W BLACK MK2 4000k  
(DECORATIVE), SIN:EM4033

E



EXISTING LED KENSINGTON 16W BLACK MK2 4000k  
TO BE REMOVED (DECORATIVE), SIN:EM4033



PROPOSED LED BOURKE HILL 14W BLACK MK2  
4000k (DECORATIVE), SIN: EM4125

E



EXISTING LED BOURKE HILL 14W BLACK MK2 4000k  
(DECORATIVE), SIN: EM4125

E



EXISTING LED BOURKE HILL 14W BLACK MK2 4000k  
TO BE REMOVED (DECORATIVE), SIN: EM4125

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PROPOSED LED B2001 17W BLACK MK2 4000k  
(DECORATIVE), SIN: EM3130

E



EXISTING LED B2001 17W BLACK MK2 4000k  
(DECORATIVE), SIN: EM3130

E



EXISTING LED B2001 17W BLACK MK2 4000k TO BE  
REMOVED (DECORATIVE), SIN: EM3130



PROPOSED LED B2001 17W GREEN MK2 4000k  
(DECORATIVE), SIN: EM3131

E



EXISTING LED B2001 17W GREEN MK2 4000k  
(DECORATIVE), SIN: EM3131

E



EXISTING LED B2001 17W GREEN MK2 4000k TO BE  
REMOVED (DECORATIVE), SIN: EM3131



PROPOSED LED B2001 17W GALVANIZED MK2 4000k  
(DECORATIVE), SIN: EM3132

E



EXISTING LED B2001 17W GALVANIZED MK2 4000k  
(DECORATIVE), SIN: EM3132













E




EXISTING LED B2001 17W GALVANIZED MK2 4000k  
TO BE REMOVED (DECORATIVE), SIN: EM3132


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**G.4.1.3 V Category Standard**


- 
 PROPOSED ROADLED MIDI 150W BLACK  
 AEROSCREEN 4000k (STANDARD), SIN: EM4118
- 
 EXISTING ROADLED MIDI 150W BLACK  
 AEROSCREEN 4000k (STANDARD), SIN: EM4118
- 
 EXISTING ROADLED MIDI 150W BLACK  
 AEROSCREEN 4000k TO BE REMOVED (STANDARD),  
 SIN: EM4118
- 
 PROPOSED ROADLED MIDI 150W GREY  
 AEROSCREEN 4000k (STANDARD), SIN: EM4108
- 
 EXISTING ROADLED MIDI 150W GREY AEROSCREEN  
 4000k (STANDARD), SIN: EM4108
- 
 EXISTING ROADLED MIDI 150W GREY AEROSCREEN  
 4000k TO BE REMOVED (STANDARD), SIN: EM4108
- 
 PROPOSED ROADLED MIDI 60W BLACK  
 AEROSCREEN 4000k (STANDARD), SIN: EM4116
- 
 EXISTING ROADLED MIDI 60W BLACK AEROSCREEN  
 4000k (STANDARD), SIN:EM4116
- 
 EXISTING ROADLED MIDI 60W BLACK AEROSCREEN  
 4000k TO BE REMOVED (STANDARD), SIN: EM4116
- 
 PROPOSED ROADLED MIDI 60W GREY  
 AEROSCREEN 4000k (STANDARD), SIN: EM4106
- 
 EXISTING ROADLED MIDI 60W GREY AEROSCREEN  
 4000k (STANDARD), SIN: EM4106
- 
 EXISTING ROADLED MIDI 60W GREY AEROSCREEN  
 4000k TO BE REMOVED (STANDARD), SIN: EM4106


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 <sup>A</sup> PROPOSED ROADLED MIDI 100W GREY AEROSCREEN 4000k (STANDARD), SIN: EM4105


 <sup>E</sup> <sup>A</sup> EXISTING ROADLED MIDI 100W GREY AEROSCREEN 4000k (STANDARD), SIN: EM4105


 <sup>E</sup> <sup>A</sup> EXISTING ROADLED MIDI 100W GREY AEROSCREEN 4000k TO BE REMOVED (STANDARD), SIN: EM4105


 <sup>A</sup> PROPOSED ROADLED MIDI 120W GREY AEROSCREEN 4000k (STANDARD), SIN: EM4109


 <sup>E</sup> <sup>A</sup> EXISTING ROADLED MIDI 120W GREY AEROSCREEN 4000k (STANDARD), SIN: EM4109


 <sup>E</sup> <sup>A</sup> EXISTING ROADLED MIDI 120W GREY AEROSCREEN 4000k TO BE REMOVED (STANDARD), SIN: EM4109


 <sup>A</sup> PROPOSED ROADLED MIDI 80W BLACK AEROSCREEN 4000k (STANDARD), SIN: EM4117

 <sup>E</sup> <sup>A</sup> EXISTING ROADLED MIDI 80W BLACK AEROSCREEN 4000k (STANDARD), SIN: EM4117

 <sup>E</sup> <sup>A</sup> EXISTING ROADLED MIDI 80W BLACK AEROSCREEN 4000k (STANDARD), SIN: EM4117





 <sup>A</sup> PROPOSED ROADLED MIDI 80W GREY AEROSCREEN 4000k (STANDARD), SIN: EM4107

 <sup>E</sup> <sup>A</sup> EXISTING ROADLED MIDI 80W GREY AEROSCREEN 4000k (STANDARD), SIN: EM4107




 <sup>E</sup> <sup>A</sup> EXISTING ROADLED MIDI 80W GREY AEROSCREEN 4000k (STANDARD), SIN: EM4107

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**G.4.1.4 V Category Decorative**

-  PROPOSED PARKVILL MK2 80W BLACK 4000k (DECORATIVE), SIN: EM4126
- <sup>E</sup>  EXISTING PARKVILL MK2 80W BLACK 4000k (DECORATIVE), SIN: EM4126
- <sup>E</sup>  EXISTING PARKVILL MK2 80W BLACK 4000k TO BE REMOVED (DECORATIVE), SIN: EM4126
-  PROPOSED PARKVILL MK2 100W BLACK 4000k (DECORATIVE), SIN: EM4127
- <sup>E</sup>  EXISTING PARKVILL MK2 100W BLACK 4000k (DECORATIVE), SIN: EM4127
- <sup>E</sup>  EXISTING PARKVILL MK2 100W BLACK 4000k TO BE REMOVED (DECORATIVE), SIN: EM4127
-  PROPOSED PARKVILL MK2 150W BLACK 4000k (DECORATIVE), SIN: EM4128
- <sup>E</sup>  EXISTING PARKVILL MK2 150W BLACK 4000k (DECORATIVE), SIN: EM4128
- <sup>E</sup>  EXISTING PARKVILL MK2 150W BLACK 4000k TO BE REMOVED (DECORATIVE), SIN: EM4128

**G.4.1.5 Flood Lights**
















-  PROPOSED KANON FLOODLIGHT 180W 4000k (FLOOD), SIN: EM1830
- <sup>E</sup>  EXISTING KANON FLOODLIGHT 180W 4000k (FLOOD), SIN: EM1830
- <sup>E</sup>  EXISTING KANON FLOODLIGHT 180W 4000k TO BE REMOVED (FLOOD), SIN: EM1830

**G.4.1.6 Installation**

- LIGHT SIDE ENTRY INSTALLATION
- PL POST TOP INSTALLATION
- ▭ PL PENDANT INSTALLATION

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**G.4.2 Public Lighting Network Symbols - List 1 (NOT MODERN)**

	EXISTING 1000W HPS FLOODLIGHT
	EXISTING 1000W HPS FLOODLIGHT TO BE REMOVED
	EXISTING 100W HP SODIUM LUMINAIRE TO REMAIN
	EXISTING 100W HP SODIUM LUMINAIRE TO REMAIN FITTED ON 3.0 OUTREACH PER E.
	EXISTING 100W HP SODIUM LUMINAIRE TO REMAIN FITTED ON 4.5 OUTREACH PER E.
	EXISTING 100W AERO HP SODIUM LUMINAIRE TO REMAIN FITTED ON 3.0 OUTREACH PER E.
	EXISTING 100W HP SODIUM LUMINAIRE TO REMAIN FITTED ON 2.1 OUTREACH PER E.
	EXISTING 100W HP SODIUM LUMINAIRE TO REMAIN FITTED ON 3.6 OUTREACH PER E.
	EXISTING 100W HP SODIUM LUMINAIRE TO REMAIN FITTED ON 3.7 OUTREACH PER E.
	EXISTING 100W HP SODIUM LUMINAIRE TO REMAIN FITTED ON 4.1 OUTREACH PER E.
	EXISTING 100W HP SODIUM CLER LUMINAIRE TO REMAIN
	EXISTING 100W HP SODIUM CLER LUMINAIRE TO BE REMOVED
	EXISTING 135W LP SODIUM LUMINAIRE TO REMAIN
	EXISTING 135W LP SODIUM LUMINAIRE TO BE REMOVED
	EXISTING 135W LP SODIUM CLER LUMINAIRE TO REMAIN

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	EXISTING 135W LP SODIUM CLER LUMINAIRE TO BE REMOVED
	EXISTING 150W HP SODIUM LUMINAIRE TO REMAIN
	EXISTING 150W HP SODIUM LUMINAIRE TO BE REMOVED
	EXISTING 150W HP SODIUM LUMINAIRE TO REMAIN FITTED ON 3.0 OUTREACH PER E.
	EXISTING 150W HP SODIUM LUMINAIRE TO REMAIN FITTED ON 4.5 OUTREACH PER E.
	EXISTING 150W AERO HP SODIUM LUMINAIRE TO REMAIN FITTED ON 3.0 OUTREACH PER E.
	EXISTING 150W HP SODIUM LUMINAIRE TO REMAIN
	EXISTING 150W HP SODIUM LUMINAIRE TO BE REMOVED
	EXISTING 150W HP SODIUM LUMINAIRE TO REMAIN FITTED ON 3.6 OUTREACH PER E.
	EXISTING 150W HP SODIUM LUMINAIRE TO REMAIN FITTED ON 3.7 OUTREACH PER E.
	EXISTING 150W HP SODIUM LUMINAIRE TO REMAIN FITTED ON 4.1 OUTREACH PER E.
	EXISTING 150W HP SODIUM CLER LUMINAIRE TO REMAIN
	EXISTING 150W HP SODIUM CLER LUMINAIRE TO BE REMOVED
	EXISTING 18W LP SODIUM LUMINAIRE TO REMAIN
	EXISTING 18W LP SODIUM LUMINAIRE TO BE REMOVED

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**G.4.3 Public Lighting Network Symbols - List 2 (NOT MODERN)**

	EXISTING 18W LP SODIUM CLER LUMINAIRE TO REMAIN
	EXISTING 18W LP SODIUM CLER LUMINAIRE TO BE REMOVED
	EXISTING 250W HP SODIUM LUMINAIRE TO REMAIN
	EXISTING 250W HP SODIUM LUMINAIRE TO BE REMOVED
	EXISTING 250W HP SODIUM LUMINAIRE TO REMAIN FITTED ON 4.5 OUTREACH PER E.
	EXISTING 250W HP SODIUM LUMINAIRE TO REMAIN
	EXISTING 250W HP SODIUM LUMINAIRE TO BE REMOVED
	EXISTING 250W HP SODIUM LUMINAIRE TO REMAIN FITTED ON 3.6 OUTREACH PER E.
	EXISTING 250W HP SODIUM LUMINAIRE TO REMAIN FITTED ON 3.7 OUTREACH PER E.
	EXISTING 250W HP SODIUM LUMINAIRE TO REMAIN FITTED ON 4.1 OUTREACH PER E.
	EXISTING 250W MERCURY LUMINAIRE TO REMAIN
	EXISTING 250W MERCURY LUMINAIRE TO BE REMOVED
	EXISTING 250W AEROSCREEN MERCURY LUMINAIRE TO REMAIN
	EXISTING 250W AEROSCREEN MERCURY LUMINAIRE TO BE REMOVED
	EXISTING 250W MERCURY CLER LUMINAIRE TO REMAIN
	EXISTING 250W MERCURY CLER LUMINAIRE TO BE REMOVED

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



 E	EXISTING 26W LP SODIUM LUMINAIRE TO REMAIN
 E	EXISTING 26W LP SODIUM LUMINAIRE TO BE REMOVED
 E	EXISTING 26W LP SODIUM CLER LUMINAIRE TO REMAIN
 E	EXISTING 26W LP SODIUM CLER LUMINAIRE TO BE REMOVED
 E	EXISTING 400W HP SODIUM LUMINAIRE TO REMAIN
 E	EXISTING 400W HP SODIUM LUMINAIRE TO BE REMOVED
 E	EXISTING 400W HP SODIUM CLER LUMINAIRE TO REMAIN
 E	EXISTING 400W HP SODIUM CLER LUMINAIRE TO BE REMOVED
 E	EXISTING 400W HP SODIUM FLOODLIGHT TO REMAIN
 E	EXISTING 400W HP SODIUM FLOODLIGHT TO BE REMOVED
 E	EXISTING 400W AERO MERCURY LUMINAIRE TO REMAIN
 E	EXISTING 400W AERO MERCURY LUMINAIRE TO BE REMOVED
 E	EXISTING 400W MERCURY FLOODLIGHT TO REMAIN
 E	EXISTING 400W MERCURY FLOODLIGHT TO BE REMOVED
 E	EXISTING 400W MERCURY LUMINAIRE TO REMAIN
 E	EXISTING 400W MERCURY LUMINAIRE TO BE REMOVED
 E	EXISTING 400W MERCURY CLER LUMINAIRE TO REMAIN
 E	EXISTING 400W MERCURY CLER LUMINAIRE TO BE REMOVED

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**G.4.4 Public Lighting Network Symbols - List 3 (NOT MODERN)**

	EXISTING 40W FLUORESCENT CLER LUMINAIRE TO REMAIN
	EXISTING 40W FLUORESCENT CLER LUMINAIRE TO BE REMOVED
	EXISTING 40W FLUORESCENT LUMINAIRE TO REMAIN
	EXISTING 40W FLUORESCENT LUMINAIRE TO BE REMOVED
	EXISTING 50W HP SODIUM LUMINAIRE TO REMAIN
	EXISTING 50W HP SODIUM LUMINAIRE TO BE REMOVED
	EXISTING 50W HP SODIUM CLER LUMINAIRE TO REMAIN
	EXISTING 50W HP SODIUM CLER LUMINAIRE TO BE REMOVED
	EXISTING 50W MERCURY LUMINAIRE TO REMAIN
	EXISTING 50W MERCURY LUMINAIRE TO BE REMOVED
	EXISTING 50W MERCURY CLER LUMINAIRE TO REMAIN
	EXISTING 50W MERCURY CLER LUMINAIRE TO BE REMOVED
	EXISTING 55W LP SODIUM LUMINAIRE TO REMAIN
	EXISTING 55W LP SODIUM LUMINAIRE TO BE REMOVED
	EXISTING 55W LP SODIUM CLER LUMINAIRE TO REMAIN
	EXISTING 55W LP SODIUM CLER LUMINAIRE TO BE REMOVED
	EXISTING 70W HP SODIUM CLER LUMINAIRE TO REMAIN
	EXISTING 70W HP SODIUM CLER LUMINAIRE TO BE REMOVED
	EXISTING 80W MERCURY LUMINAIRE TO REMAIN
	EXISTING 80W MERCURY LUMINAIRE TO BE REMOVED
	EXISTING 80W MERCURY CLER LUMINAIRE TO REMAIN
	EXISTING 80W MERCURY CLER LUMINAIRE TO BE REMOVED
	EXISTING 90W LP SODIUM LUMINAIRE TO REMAIN
	EXISTING 90W LP SODIUM LUMINAIRE TO BE REMOVED

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	EXISTING 90W LP SODIUM CLER LUMINAIRE TO REMAIN
	EXISTING 90W LP SODIUM CLER LUMINAIRE TO BE REMOVED
	EXISTING INCANDESCENT CLER LUMINAIRE TO REMAIN
	EXISTING INCANDESCENT CLER LUMINAIRE TO BE REMOVED
	EXISTING INCANDESCENT LUMINAIRE TO REMAIN
	EXISTING INCANDESCENT LUMINAIRE TO BE REMOVED
	EXISTING MULTIPLE FLUORESCENT LUMINAIRES TO REMAIN
	EXISTING MULTIPLE FLUORESCENT LUMINAIRES TO BE REMOVED
	EXISTING MULTIPLE FLUORESCENT CLER LUMINAIRES TO REMAIN
	EXISTING MULTIPLE FLUORESCENT CLER LUMINAIRES TO BE REMOVED
	EXISTING MULTIPLE HP SODIUM CLER LUMINAIRES TO REMAIN
	EXISTING MULTIPLE HP SODIUM CLER LUMINAIRES TO BE REMOVED
	EXISTING MULTIPLE MERCURY CLER LUMINAIRES TO REMAIN
	EXISTING MULTIPLE MERCURY CLER LUMINAIRES TO BE REMOVED
	EXISTING 42W COMPACT FLUORESCENT TO REMAIN
	EXISTING 42W COMPACT FLUORESCENT TO BE REMOVED
	TELEPHONE CABINET
	LUMINAIRE DIRECTION
	EXISTING LIGHTING COLUMN
	PROPOSED LIGHTING COLUMN
	LUMINAIRE LIGHT DIRECTION
	POSTOP COLUMN

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## H. List of Standard Line Styles

### H.1 Overhead Lines Styles

	EXISTING HV ABC OVERHEAD MAINS
	EXISTING HV ABC OVERHEAD MAINS TO BE REMOVED
	PROPOSED 11kV ABC RECONDUCTORED O/H MAINS
	EXISTING 11kV OVERHEAD MAINS
	EXISTING 11kV OVERHEAD MAINS TO BE REMOVED
	PROPOSED 11kV OVERHEAD MAINS
	PROPOSED RECONDUCTORED 11kV O/H MAINS
	EXISTING 7.6kV OVERHEAD MAINS
	EXISTING 7.6kV OVERHEAD MAINS TO BE REMOVED
	PROPOSED 7.6kV OVERHEAD MAINS
	PROPOSED RECONDUCTORED 7.6kV O/H MAINS
	EXISTING LV ABC OVERHEAD MAINS
	EXISTING LV ABC OVERHEAD MAINS TO BE REMOVED
	PROPOSED LV ABC OVERHEAD MAINS
	PROPOSED RECONDUCTORED LV ABC O/H MAINS
	EXISTING LV OVERHEAD MAINS
	EXISTING LV OVERHEAD MAINS TO BE REMOVED
	PROPOSED LV OVERHEAD MAINS
	PROPOSED RECONDUCTORED LV O/H MAINS
	EXISTING 19kV OVERHEAD MAINS
	EXISTING 19kV OVERHEAD MAINS TO BE REMOVED
	PROPOSED RECONDUCTORED 19kV O/H MAINS
	PROPOSED 19kV OVERHEAD MAINS
	EXISTING 33kV OVERHEAD MAINS
	EXISTING 33kV OVERHEAD MAINS TO BE REMOVED
	PROPOSED RECONDUCTORED 33kV O/H MAINS
	PROPOSED 33kV OVERHEAD MAINS
	EXISTING 66kV OVERHEAD MAINS
	EXISTING 66kV OVERHEAD MAINS TO BE REMOVED
	PROPOSED RECONDUCTORED 66kV O/H MAINS
	PROPOSED 66kV OVERHEAD MAINS
	EXISTING OVERHEAD PILOT CABLE
	EXISTING OVERHEAD PILOT CABLE TO BE REMOVED
	PROPOSED OVERHEAD FIBRE CABLE
	EXISTING OVERHEAD FIBRE CABLE
	EXISTING OVERHEAD FIBRE CABLE TO BE REMOVED

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## H.2 Underground Cables

### H.2.1 LV Cables

	EXISTING PARALLEL 150mm <sup>2</sup> LV CABLE
	EXISTING 150mm <sup>2</sup> LV CABLE
	EXISTING 1x150mm <sup>2</sup> LV NEUTRAL CABLE
	EXISTING 35mm <sup>2</sup> LV CABLE
	EXISTING PARALLEL 150mm <sup>2</sup> LV CABLE TO BE AB'D
	EXISTING 150mm <sup>2</sup> LV CABLE TO BE ABANDONED
	EXISTING 1x150mm <sup>2</sup> LV NEUTRAL CABLE TO BE AB'D
	EXISTING 35mm <sup>2</sup> LV CABLE TO BE ABANDONED
	EXISTING 3.5c 240mm <sup>2</sup> LV Cu XLPE CABLE
	EXISTING 3.5c 185mm <sup>2</sup> LV Cu XLPE CABLE
	EXISTING 3.5c 240mm <sup>2</sup> LV Cu XLPE CABLES TO BE AB'D
	EXISTING 3.5c 185mm <sup>2</sup> LV Cu XLPE CABLES TO BE AB'D
	PROPOSED 3.5c 240mm <sup>2</sup> LV Cu XLPE CABLE
	PROPOSED 3.5c 185mm <sup>2</sup> LV Cu XLPE CABLE
	PROPOSED PARALLEL 150mm <sup>2</sup> LV UBC XLPE CABLE
	PROPOSED 4x150mm <sup>2</sup> LV UBC XLPE CABLE
	PROPOSED 4x35mm <sup>2</sup> LV UBC XLPE CABLE
	ABANDONED PARALLEL 150mm <sup>2</sup> LV CABLE
	ABANDONED 150mm <sup>2</sup> LV CABLE
	ABANDONED 1x150mm <sup>2</sup> LV NEUTRAL CABLE
	ABANDONED 35mm <sup>2</sup> LV CABLE

### H.2.2 7.6kV Cables















	EXISTING 630mm <sup>2</sup> 7.6kV CABLE
	EXISTING 300mm <sup>2</sup> 7.6kV CABLE
	EXISTING 95mm <sup>2</sup> 7.6kV CABLE
	EXISTING 35mm <sup>2</sup> 7.6kV CABLE
	EXISTING 630mm <sup>2</sup> 7.6kV CABLE TO BE ABANDONED
	EXISTING 300mm <sup>2</sup> 7.6kV CABLE TO BE ABANDONED
	EXISTING 95mm <sup>2</sup> 7.6kV CABLE TO BE ABANDONED
	EXISTING 35mm <sup>2</sup> 7.6kV CABLE TO BE ABANDONED
	ABANDONED 630mm <sup>2</sup> 7.6kV CABLE
	ABANDONED 300mm <sup>2</sup> 7.6kV CABLE
	ABANDONED 95mm <sup>2</sup> 7.6kV CABLE
	ABANDONED 35mm <sup>2</sup> 7.6kV CABLE
	PROPOSED 3x630mm <sup>2</sup> 7.6kV XLPE CABLE
	PROPOSED 3x300mm <sup>2</sup> 7.6kV XLPE CABLE
	PROPOSED 3x95mm <sup>2</sup> 7.6kV XLPE CABLE

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**H.2.3 11kV Cables**

	EXISTING 630mm <sup>2</sup> 11kV CABLE
	EXISTING 300mm <sup>2</sup> 11kV CABLE
	EXISTING 95mm <sup>2</sup> 11kV CABLE
	EXISTING 35mm <sup>2</sup> 11kV CABLE
	EXISTING 630mm <sup>2</sup> 11kV CABLE TO BE ABANDONED
	EXISTING 300mm <sup>2</sup> 11kV CABLE TO BE ABANDONED
	EXISTING 95mm <sup>2</sup> 11kV CABLE TO BE ABANDONED
	EXISTING 35mm <sup>2</sup> 11kV CABLE TO BE ABANDONED
	EXISTING 3c 240mm <sup>2</sup> 11kV Cu XLPE CABLE
	EXISTING 3c 185mm <sup>2</sup> 11kV Cu XLPE CABLE
	EXISTING 3c 240mm <sup>2</sup> 11kV Cu XLPE CABLES TO BE AB'D
	EXISTING 3c 185mm <sup>2</sup> 11kV Cu XLPE CABLES TO BE AB'D
	PROPOSED 3x630mm <sup>2</sup> 11kV XLPE CABLE
	PROPOSED 3x300mm <sup>2</sup> 11kV XLPE CABLE
	PROPOSED 3x95mm <sup>2</sup> 11kV XLPE CABLE
	PROPOSED 3c 240mm <sup>2</sup> 11kV Cu XLPE CABLE
	PROPOSED 3c 185mm <sup>2</sup> 11kV Cu XLPE CABLE
	ABANDONED 630mm <sup>2</sup> 11kV CABLE
	ABANDONED 300mm <sup>2</sup> 11kV CABLE
	ABANDONED 95mm <sup>2</sup> 11kV CABLE
	ABANDONED 35mm <sup>2</sup> 11kV CABLE

**H.2.4 19, 33 and 66kV Cables**

	PROPOSED 300mm <sup>2</sup> 33kV XLPE CABLE
	PROPOSED 95mm <sup>2</sup> 33kV XLPE CABLE
	PROPOSED 50mm <sup>2</sup> 33kV XLPE CABLE
	EXISTING 300mm <sup>2</sup> 33kV XLPE CABLE
	EXISTING 95mm <sup>2</sup> 33kV XLPE CABLE
	EXISTING 50mm <sup>2</sup> 33kV XLPE CABLE
	EXISTING 300mm <sup>2</sup> 33kV XLPE CABLES TO BE ABANDONED
	EXISTING 95mm <sup>2</sup> 33kV XLPE CABLES TO BE ABANDONED
	EXISTING 50mm <sup>2</sup> 33kV XLPE CABLES TO BE ABANDONED
	PROPOSED 66kV CABLE
	EXISTING 66kV XLPE CABLE
	EXISTING 50mm <sup>2</sup> 19kV CABLE
	PROPOSED 50mm <sup>2</sup> 19kV CABLE
	EXISTING 50mm <sup>2</sup> 19kV CABLE TO BE ABANDONED

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### H.2.5 Public Lighting, Fibre, Pilot and Consumer Cables

	PROPOSED UNDERGROUND PILOT CABLE
	EXISTING UNDERGROUND PILOT CABLE
	EXISTING UNDERGROUND PILOT CABLE TO BE ABANDONED
	PROPOSED UNDERGROUND FIBRE CABLE
	EXISTING UNDERGROUND FIBRE CABLE
	EXISTING UNDERGROUND FIBRE CABLE TO BE ABANDONED
	PROPOSED PUBLIC LIGHTING CABLE 6mm <sup>2</sup> TWIN & 6mm <sup>2</sup> EARTH IN 40mm CONDUIT
	EXISTING PUBLIC LIGHTING CABLE
	EXISTING PUBLIC LIGHTING CABLE TO BE ABANDONED
	ABANDONED PUBLIC LIGHTING CABLE
	PROPOSED CONSUMERS CABLES
	EXISTING CONSUMERS CABLES
	EXISTING CONSUMERS CABLES TO BE ABANDONED

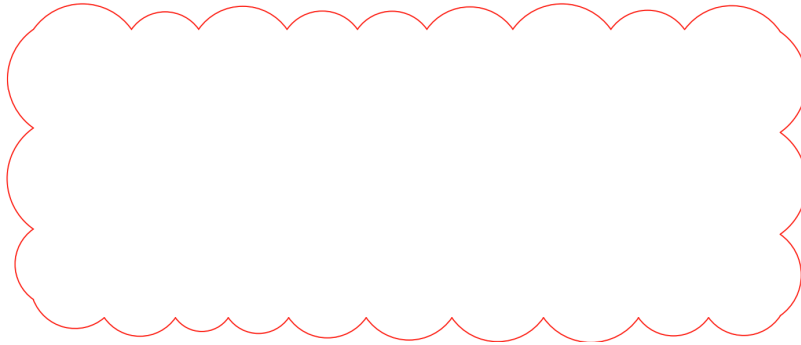
### H.2.6 Miscellaneous Line Styles

	WATER MAIN
	SEWER MAIN
	GAS MAIN
	TELSTRA CABLES
	RECYCLED WATER MAIN
	STORM WATER PIPES
	DTEI CABLES
	RAILWAY CABLES
	OPTICAL FIBRE
	275kV OVERHEAD TRANSMISSION LINE
	132kV OVERHEAD TRANSMISSION LINE
	66kV OVERHEAD MAINS
	33kV OVERHEAD MAINS
	19kV OVERHEAD MAINS
	11kV OVERHEAD MAINS
	7.6kV OVERHEAD MAINS
	LV OVERHEAD MAINS
	ABANDONED OR NOT ENERGISED CABLES
	BUSHFIRE RISK AREA
	MEDIUM BUSHFIRE RISK AREA (MBFRA)
	RAILWAY LINE
	RURAL FENCE
	KERB LINE
	CYCLONE FENCE ON CONCRETE FOOTING
	EXISTING 275kV OVERHEAD TRANSMISSION LINE

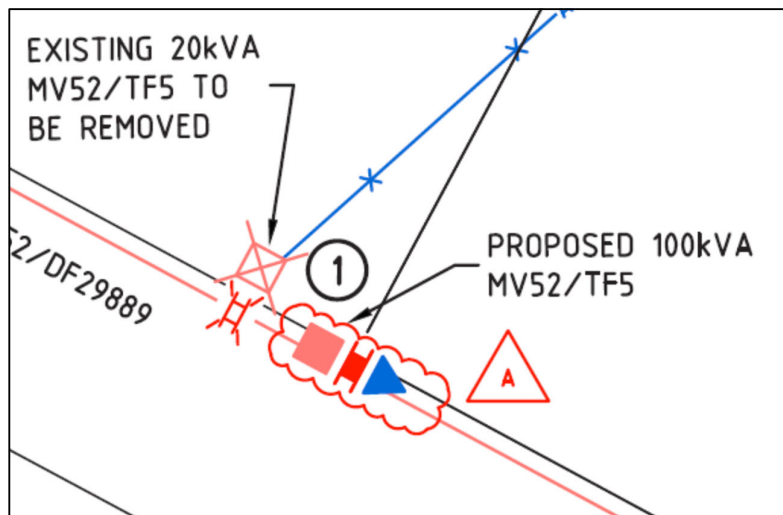
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## I. Revision Identifiers

### I.1 Revision Cloud



### I.2 Example Revision Cloud



### I.3 Example Corresponding Revision Identifier

POLE SCHEDULE											
POLES				HIGH VOLTAGE ARRANGEMENT							
POLE	EXISTING	PROP.	PROP. FOOTING	EXISTING ARRGT.	PROP. ARRGT.	E-DRAWINGS	X-ARM SI NO.	DEVICE SI NO.	COND.	REMARKS	
1	WA1105 TO BE REMOVED	WB1215	E1808/06 SINK 1m DEEPER	HV FLAT X-ARM & 20kVA T/F	HV FLAT X-ARM & 100kVA T/F	E1235 SHT.1 ARRGT.1 E1281 SHT.1 ARRGT.2 E1277 SHT.2 ARRGT.4 E1003		ZA1703	TF5	7/.080 Cu	REPLACE POLE APPROX. 1m SOUTH EAST OF EXISTING POLE (DD19028114). INSTALL 100kVA (LA5336). INSTALL MEN EARTHING.
2	WA1105 TO BE REMOVED	-	-	-	-	-	-	-	-	-	

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