



Standard

Drawing Management Standard

Record Number: R2613716

Version: 3.0

Date: April 2024

Authorisations

Action	Name and title	Date
Prepared by	Greg Hall (Network Asset Data Specialist)	17/11/2023
Reviewed by	Jennifer Roe (Leader Network Asset Data)	11/04/2024
Authorised by	Jennifer Roe (Leader Network Asset Data)	11/04/2024
Review cycle	2 Years	

Responsibilities

This document is the responsibility of the Network Asset Data Leader, Tasmanian Networks Pty Ltd, ABN 24 167 357 299 (hereafter referred to as 'TasNetworks').

Please contact the Asset Strategy Team with any queries or suggestions.

- Implementation All TasNetworks staff and contractors.
- Compliance All group managers.

© Tasmanian Networks Pty Ltd 2023

Minimum Requirements

The requirements set out in TasNetworks' documents are minimum requirements that must be complied with by all TasNetworks team members, contractors, and other consultants.

The end user is expected to implement any practices which may not be stated but which can be reasonably regarded as good practices relevant to the objective of this document.

Record of Revisions

Version	Description	Date
1	Original Issue	23/12/2015
2	References to 'TRIM' replaced with 'CM10'	10/06/2021
3	Document format revised	11/04/2024

Table of Contents

1. General.....	4
1.1 Purpose.....	4
1.2 Scope	4
1.3 Responsibilities and Stakeholders	4
1.4 Definitions	5
1.5 References.....	6
2. Drawing Requests	7
2.1 Requests for Existing Drawings	7
2.2 Information to Be Provided With Requests	7
2.3 Issue of Existing Drawings	7
2.3.1 Drawing Format	7
2.3.2 Drawings for Project Work.....	7
2.3.3 Drawings for Information Only	7
2.4 New Drawing Number Requests	7
3. Drawing Identification Numbering System.....	8
3.1 Drawing Sheet Numbering	10
4. Drawing Life Cycle Process	11
4.1 Drawing Revision Identification	12
4.2 Concept Drawings.....	12
4.3 Design Stage	13
4.4 Superseded or Cancelled Drawings.....	13
4.5 Construction and Commissioning	13
4.6 'As Installed' Drawing Updates	14
4.7 Drawing Updates in EDRMS	14
4.8 Isolated Drawing Error Rectification	14
4.9 Management of Drawings with Simultaneous Projects.....	14
4.10 Drawing Check and Approval	15
4.11 Drawing Issue and Distribution	15
5. Drawing Management System.....	15

1. General

1.1 Purpose

The purpose of the standard is to provide all stakeholders with the information necessary to effectively access and manage TasNetworks' drawing records.

This standard defines the responsibilities, procedures and processes related to the management of drawing records, including:

- Interaction with the TasNetworks Electronic Document and Record Management System (EDRMS).
- Control of drawing alteration and revision
- Authorisation of drawing changes.

1.2 Scope

This standard applies to all asset related drawings which are developed and maintained by, or on behalf of TasNetworks.

1.3 Responsibilities and Stakeholders

TasNetworks' Drawing Management Team is responsible for the following activities related to the management of drawing records:

- Control of drawings stored in the EDRMS
- Quality control check on all drawings against the Drawing Drafting Standard.
- Quality check on all drawing border inclusions.
- Provide and update where necessary all border and other templates used in the production of drawings for and/or by TasNetworks.

Stakeholders that are involved in accessing, using and updating drawing records include, but are not limited to:

- TasNetworks - Drawing Management Team
 - Project Managers and Project Engineers
 - Asset Management & Risk Team
 - Operational Personnel.
- External service providers e.g. Contractors and Consultants.

1.4 Definitions

Term	Definition
Approved:	Authorisation of a drawing to be used by, or on behalf of TasNetworks.
Archived drawing:	An older drawing that has been archived in EDRMS.
‘As Installed’:	A drawing which shows equipment as currently installed. ‘As Built’ and ‘As Installed’ have the same meaning.
CAD:	Computer Aided Design. Within this standard, CAD refers to an electronic drawing provided in ‘.dwg’ or ‘.dgn’ format which may include an embedded ‘.gp4’ file.
‘Cancelled’:	The status of a drawing that is no longer required to depict the arrangement or configuration of equipment which has been removed from service or made redundant. Refer to Drawing Drafting Standard for further information on drawing cancellation. Cancelled drawings will be archived.
Checked:	The verification of technical adequacy and completeness of a drawing or the part of a drawing which has been altered.
‘Checked-in’:	The status of a current drawing when it is stored in the EDRMS.
‘Checked-out’:	The status of a drawing when it checked out of the EDRMS for the purpose of alteration.
CM10:	Hewlett Packard Content Manager [the EDRMS for all TasNetworks drawings.
Concept Definition:	The overall project concept including concept drawings.
Concept Design Drawing:	A drawing specifically drafted for tendering or proposal purposes and whose life is limited to the tender only.
Critical Drawings:	Drawings which are required to safely operate TasNetworks’ electrical network. The list comprises of the Power Circuit One-Line Diagram (PCOLD), the Metering and Protection One-Line Diagram (MPOLD), Operational Diagram (OD), One Line Diagram (OLD), Single Line Diagram (SLD), Standard Drawing (SD) and System Diagrams.
Design House:	The appointed designer. They may be internal to TasNetworks or an external party e.g. engineering consulting firm.
Drawing:	Pictorial, tabular or graphical representation of technical design. Drawings may also contain a map or a representation of geographical features.
Drawing Type:	Indicates the differing drawing characteristics including General Arrangement, Layout, Details, Assembly, Block Diagram, Schematic and Schedules. Details found within the Drawing Drafting Standard
Drawing Team:	The TasNetworks team who allocates drawing identification numbers, responsible for maintaining a register of controlled drawings.
Drawing Register:	A database which lists drawings and their current revision status, together with other metadata.
Drawing Status:	Defines where the Drawing sits in its lifecycle.

Term	Definition
DWG:	CAD format files with a '.dwg' file extension used by drafters to create or modify drawings.
DGN:	CAD format files with a '.dgn' file extension used by drafters to create or modify drawings.
EDRMS:	Electronic Document and Record Management System. TasNetworks currently uses HP CM10.
GP4:	A scanned amendable drawing image with a file extension of '.gp4', which may be used in conjunction with a .dwg file.
Issue:	The issue of drawings, in electronic or hard copy formats to personnel or organisations.
Metadata:	Data assigned to attributes of a drawing record that assist in defining the record and sourcing it in a database.
Operational Information:	Information such as operating diagrams (MPOLD, OD, PCOLD, and WPD) utilised for transmission system operation.
Original:	The status of a drawing representing the first registration of a drawing in the EDRMS by TasNetworks.
PDF:	(Portable Document Format) An electronic image file of a particular type with a file extension '.pdf'.
Previously As Installed:	A drawing status that indicates previous revisions of an 'As Installed' drawing exist.
Previous Standard:	A status that indicates the Standard is not the current version and should be used for reference only.
Redline Mark-ups:	A hard copy 'Construction' drawing which is marked in red ink to indicate agreed changes during construction or commissioning. These changes are subject to the check and approval process.
Standard Drawing:	A predefined drawing template that contains TasNetworks standard information and designs that are controlled by the Technical Drawing Coordinator and stored within the EDRMS.
Superseded:	The status of a drawing that has been replaced by a new drawing. Refer to Drawing Drafting Standard for further information on superseding of drawings.
TIF:	(Tagged Image Format) An electronic image file of a particular type with a file extension '.tif'.
Transmittal:	A tracking document that is sent along with drawing files.

1.5 References

R2587284	Drawing Drafting Standard (V2.0)
R2466381	Asset Nomenclature Standard (Device Ids)
D14/1148	Next Number List - TasNetworks

2. Drawing Requests

2.1 Requests for Existing Drawings

All requests for the issue of existing drawing, irrespective of the purpose for which they are required, shall be directed to the Drawing Team

The party initiating/managing the work e.g. Project Manager, shall be responsible for identifying all the existing drawings that they require access to. Initial requests for drawings shall not be made from parties external to TasNetworks.

Only those drawings which are specifically required to facilitate project design and/or construction are requested from the Drawing Team.

Drawings that are issued for project work are 'Checked out', which limits other parties in accessing those drawings.

Drawings request to the Drawing Team shall be via the 'drawings@TasNetworks.com.au' email address.

2.2 Information to Be Provided With Requests

The request to the Drawing Team for access to drawings must provide the following information:

- (a) A list of the drawings required, by record and drawing number.
- (b) Project Title
- (c) Project Number
- (d) Project Manager
- (e) Technical Reps (Internal and external if appropriate)
- (f) If the work will be undertaken by an external party, the name of the company
- (g) Proposed date of return to the EDRMS to the drawing team.

2.3 Issue of Existing Drawings

2.3.1 Drawing Format

Drawings which are issued by the drawing Team for the development of a project shall be issued as CAD files.

2.3.2 Drawings for Project Work

All requested drawings provided in CAD format shall:

- (a) be registered as 'Checked-Out' by the Drawing Team in the EDRMS.
- (b) have their metadata updated with details of who the drawing was checked out to, why, and when it was checked out.

2.3.3 Drawings for Information Only

Drawings which are requested for information only on a project shall be issued in CAD format and shall not be altered.

These drawings shall not be 'checked-out' of the EDRMS and shall not be returned to the EDRMS.

2.4 New Drawing Number Requests

All new drawing numbers shall be requested via email drawings@TasNetworks.com.au.

The request must indicate the:

- (a) location to which the new drawing(s) will relate to
- (b) proposed drawing title
- (c) likely date that the drawing(s) will be available for registration in the EDRMS.

The Drawing Team shall:

- (a) check the drawing register to determine the next available drawing number(s).
- (b) check the EDRMS to ensure that the proposed drawing number is not already in use.
- (c) update the drawing register if it is available for use, with:
 - the detail of the proposed drawing(s).
 - who requested the drawing number.
 - when the drawing is likely to be completed.
- (d) provide the new drawing number(s) to the requester.
- (e) provide the drawing requester with an electronic template border(s).

3. Drawing Identification Numbering System

All drawings shall have a unique identification number made up of the following code 'A-BBB-CCCC-DD-EEE'.

The components for the drawing number are defined in Tables 1 to 4.

A list of historical drawing number formats used by TasNetworks and its predecessors is provided in Appendix A.

Table 1: Definition of drawing number format (Drawing Group and Asset Location)

A – Drawing Group	BBB – Asset Location
C - Communications	Telecommunication assets.
D - Distribution network	Distribution assets. For site specific drawings, the first three characters of the plate id e.g.T10 ****. For standard designs '809'.
F - Facilities	Facilities assets.
L – Transmission Network	The asset location numbers for transmission assets are defined in the Asset Nomenclature Standards (Device Ids) standard R2466381.
Z - Transmission and Zone	

Table 2: Definition of drawing number format

CCCC - Unique number identification	Description
0001	Critical one-line diagrams e.g. ODs, PCOLDS, MPOLDS.
0002	Communication sites
0008	Site General Arrangements
0100 - 8999	General detail drawings
9000 - 9999	'Concept' drawings
0001 - 9999	Distribution site identification. Last four digits of plate id e.g. T** 1234.

Table 3: Drawing type

DD – Drawing type	Description
AC ¹	One line diagram
AS	Assembly and steelwork details
BD	Block diagram
BL ¹	Bay face layout
CP ¹	Charger alarms and programming details
DI	Drawing index or general notes
DS ¹	Detail survey
ED ¹	Ethernet wiring layout
EL ¹	Earthing layout
FL ¹	Fibre layout
FO	Makers folder or manual
GA	General arrangement
GS	Schedule
KL ¹	Krone termination layout
LY	Layout
MD	Makers drawing
MP	Metering and protection one line diagram
OD	Operational diagram
PP	Plan and profile
RH ¹	Radiation hazard
RL ¹	Equipment room layout
RP	Route plan
RU	Telecommunications and RTU drawing

DD – Drawing type	Description
SD	Standard drawing
SH	Schematic diagram
SI	Site drawing
SL ¹	Site layout
SY	System block diagram
TC	Transmission cable
TD	Tower drawing
TL	Transmission line

Note 1: Telecommunications drawings only

Table 4: Sheet numbers

EE	Description
001	First sheet
002	Second sheet
003	Third sheet (Numbering continued as required)

Historically TasNetworks has used a number of alternative numbering formats for drawings. A list of these historical formats is provided in Appendix A.

3.1 Drawing Sheet Numbering

TasNetworks' requirement for sheet numbering of drawings, is that one specific drawing number may incorporate several sheet numbers provided that each sheet is of a related drawing type.

An example of the acceptable use of sheet numbers is shown below for a distribution and transmission systems assets is shown in tables 5 and 6.

Table 5: Drawing sheet numbers - Distribution

Drawing number	Sheet No.	Drawing Title
D-T10-3010-OL-	001	One line diagram
D-T10-3010-GA-	002	Substation general arrangement
D-T10-3010-LY-	003	Substation earthing layout
D-T10-3010-LY-	004	Switchgear layout
D-T10-3010-LY-	005	Substation lighting layout
D-T10-3010-AS-	006	Concrete bases assembly and steelwork details

Table 6: Drawing sheet numbers - Transmission

Drawing number	Sheet No.	Drawing Title
Z-131-0100-DI-	001	No.1 Panel Drawing Index
Z-131-0100-LY-	002	No.1 Panel Layout Diagram
Z-131-0100-SH-	003	No.1 Panel Schematic
Z-131-0100-SH-	004	No.1 Panel Schematic
Z-131-0100-WD-	005	No.1 Panel Wiring Diagram
Z-131-0100-WD-	006	No.1 Panel Wiring Diagram

4. Drawing Life Cycle Process

Drawings may exist in a number of different statuses as they pass from one stage to another e.g. design through to construction and commissioning.

These stages consist of:

- (a) 'Concept'
- (b) 'Preliminary'
- (c) 'Approved for Construction'
- (d) 'As-Installed'.

All drawing status changes shall follow an approved change management process, with appropriate drawing sign-offs occurring for each change of status.

The change of status shall be managed by the Project Manager/Contractor's change management system.

The drawing status shall be identified by its revision status. Details of the revision statuses are provided in Section 4.1.

4.1 Drawing Revision Identification

All new drawings will be identified with a drawing number when they are stored into the EDRMS. Where subsequent check-outs of drawings occurred their revision status shall be revised in accordance with Table 7.

Table 7: Revision Statuses

Drawing Type	Revision Status	
	New Drawing	Existing Drawing (e.g. for drawing already rev 'B')
'Concept' drawing	\$	-
'Concept' drawing revision	\$1 etc.	-
'Design' Drawing fully approved and ready for 'Construction'.	\$1	B1
Design drawing revision occurring as part of design or construction stages.	\$2	B2
'As Installed'	A	C
'Superseded' or 'Cancelled'.	-	C

4.2 Concept Drawings

Concept drawings are generally for tendering or proposals; the following is the life cycle process of a Concept Drawing:

- (a) Drawings on which TasNetworks shall design a conceptual definition may be copied from the current "As Installed" drawings residing in EDRMS. These drawings shall not be checked-out of the EDRMS.
- (b) The drawing copy shall have all previous alteration boxes and approvals removed and shall become a new drawing.

Where no existing 'As Installed' drawings are available, a new drawing shall be developed for the project definition.

All project conceptual definition drawings shall be numbered with a drawing number using the function grouping series described in Section

- (c) Project conceptual definition drawings once checked and approved shall be checked-in to the EDRMS complete with the "Concept Design" border mark before issue for tender or suchlike. Subsequent revisions shall follow the revision process in Section 4.1.
- (d) A 'Not for Construction' stamp will be added to the drawing showing the date.

4.3 Design Stage

For all project drawings, the most current revision of them shall be stored in the EDRMS. The following requirements shall also be adhered to:

- (a) Current 'As Installed' drawings issued for alteration will be checked out and issued to the TasNetworks Project Manager from the EDRMS via the Drawing Team.
- (b) New drawings templates shall be provided during the design phase of the project.
- (c) All new or modified drawings shall be revised as defined in Section 4.1.
- (d) All design drawings by TasNetworks will bear a drafted, designed, checked and approval signature and under control of a TasNetworks Transmittal.
- (e) All design drawings will bear a "DESIGN" border mark.
- (f) On receipt of submitted design drawings, the Drawing Team shall check all new drawings for conformity to TasNetworks Drafting Standard. Non-compliant drawing shall have non-compliances identified and be returned to the submitter, with the action required to achieve compliance.
- (g) Checked-out drawings not required for modification will simply be removed from the EDRMS.

4.4 Superseded or Cancelled Drawings

Any superseded or cancelled drawings shall be revised to the next revision, with a brief description and a border mark on the drawing to reflect this.

For further details on drafting changes to the drawings, refer to the Drawing Drafting Standard.

4.5 Construction and Commissioning

The construction and commissioning drawing management process is as follows:

- (a) Following the design approval process and the request for construction EDRMS check-out, drawings will be border marked "CONSTRUCTION" and an alteration block shall be inserted by the project design house and issued for construction.
- (b) Once acceptance testing and construction is complete, the drawings will:
 - be labelled "As Constructed"
 - have legible 'redline' mark ups then to cover all variances form the original design construction drawing.
 - have the appropriate representative ink sign off and date in the construction alteration block.

All construction drawings will bear a construction block ink signature and date regardless of whether changes were made to the particular drawing which then completes the drawing package hand over obligation. This complete set of red line drawings will be fit for drafter tracing or the subsequent site acceptance testing or commissioning team use.

- (c) Once site acceptance testing or commissioning is complete the commissioning representative will add any further redline changes to the drawing package and sign and date the construction alteration block in the appropriate place.

- (d) All clear redline mark ups will reflect any and all changes from site works. A single change affecting several drawings will be reflected on all the affected drawing to the quality of the provided construction drawing.
- (e) Once all the redline changes, signatures and dates have been applied to the drawings they shall be fit for tracer drafting, design house sign off and final TasNetworks approval.
- (f) Once final TasNetworks approval has been given, all signatures and dates will be electronically added to the CAD files and provided to the TasNetworks drawing team.

4.6 'As Installed' Drawing Updates

The fully signed redline drawing package as a project deliverable shall be drafted, checked and approved by the project representative e.g. project engineer against the agreed changes and any other minor changes made.

The construction alteration block shall be deleted and replaced by an alteration block with the next letter revision.

The alteration block will contain the term "As Installed" along with the revision description relating to the project changes.

The border mark will be changed from "CONSTRUCTION" to "As Installed". All reviews, approvals and dates will be drafted onto the CAD file.

TasNetworks shall provide the final approval of all 'As built' drawings before final check-in to the EDRMS.

As part of the 'As installed' check in process a 'pdf' version of the drawing shall also be created and stored in the EDRMS.

4.7 Drawing Updates in EDRMS

Following formal drawing approval, electronic CAD drawings which are 'As installed', 'Superseded' or 'Cancelled' shall be issued to the Drawing Team with a drawing transmittal who shall then update the drawing register and check-in the drawings to the EDRMS .

Any redline drawings with ink signatures will be disposed.

4.8 Isolated Drawing Error Rectification

Errors identified within existing drawings of an isolated nature (e.g. a "typo" or other obvious mistake) and not such that may change the design in any measure, shall preferably be redlined on a hard copy of the current 'As Installed' revision of the drawing. The drawing will then be signed and dated by the author plus a check signature from either a manager or associate employee. The mark-up is then emailed to the Drawing Team. Drawing errors identified that may change the design will proceed as a revision by the Drawing Team.

4.9 Management of Drawings with Simultaneous Projects

The implementation of simultaneous projects on the same site using the same source drawings is not a preferred, and shall be by exception only. However, when there is a need for multi-projects to occur, the Project Manager(s) shall liaise with the Drawing Team in obtaining permission to issue the necessary drawings to another project team.

The Drawing Team shall be responsible for tracking the status of the subject drawings by liaising with the project team/organisation to which they are issued and agree upon the arrangements

and timescale for the subsequent third party work 'As Installed' drawings to be made available to other interested users.

4.10 Drawing Check and Approval

All drawings records shall be appropriately checked and approved prior to being submitted Drawing Team for storage in to the EDRMS.

4.11 Drawing Issue and Distribution

TasNetworks drawings shall only be considered controlled when viewed electronically within the EDRMS.

All printed drawings are controlled versions of the drawing.

5. Drawing Management System

TasNetworks' drawings reside in the in electronic drawings records management system (EDRMS). The EDRMS system is managed by the Drawing Team.

Drawings stored in the EDRMS are available to all users via the 'Scope' application located on The Zone.

Appendix A

Table 8: Historical drawing identification numbers

Number format	Description
A-XXXXX to A4-XXXXX	Drawings originally developed by the Hydro Electric Corporation (Pre 1998).
B1-XXXXX	
C-XXXXX	
O-XXXXX	
TSD-XX-XXX-XXXX-XXX	Substation drawings created by Transend Networks (1998-2014)
KS-3XX	Distribution kiosk substation, underground network and public lighting standard designs developed as part of the 'Customer Choice' project (2015-2016).
UG-3XX	
PL-XXX	
D-BS1-XXX-XX-AAA	Distribution building substation, standard designs (2016-2023)
D-KS1-XXXX-XX-XXX	Distribution kiosk substations, standard designs (2017-2021)
D-OH1- XXXX-XX-XXX	Distribution overhead network, standard designs (2014-2023)