Asset Management Plan

Telecommunications Network Management Systems (TNMS)

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Authorisations

Action	Name and title	Date
Prepared by		30/09/2022
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Responsibilities

This document is the responsibility of the Substation Asset Strategy Team, Tasmanian Networks Pty Ltd, ABN 24 167 357 299 (hereafter referred to as "TasNetworks").

The approval of this document is the responsibility of the General Manager, Strategic Asset Management.

Please contact the Substation Asset Strategy Leader with any queries or suggestions.

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

Disclaimer

Reference documents

R954721 – TasNetworks Strategic Asset Management Plan

R40766 – TasNetworks Asset Management Policy

R909655 – TasNetworks Risk Management Framework

Record of revisions

Revision	Details	Date
1.0	Initial revision	1/10/2017
2.0	R24 revision	30/09/2022

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1. Purpose

The purpose of this document is to describe for Telecommunications Network Management Systems and related assets:

- TasNetworks' approach to asset management, as reflected through its legislative and regulatory obligations and strategic plans;
- The key projects and programs underpinning its activities; and
- Forecast CAPEX and OPEX, including the basis upon which these forecasts are derived.

2. Scope

This document covers the following prescribed telecommunications assets:

- Software applications used to monitor, configure and maintain telecommunications equipment, such as switches, routers, multiplexers, microwave radio links, DC power systems and telecommunication site environmental monitoring; and
- Software applications used to control access to the telecommunications equipment.

The scope of this document excludes the following:

- Non-Prescribed telecommunications assets and systems;
- Prescribed assets covered under other Telecommunications portfolio asset management plans;
- Transmission and distribution electricity network operational and management systems;
- Transmission and distribution electricity network Supervisory Control and Data Acquisition systems (**SCADA**);
- Virtual and/or physical servers and associated storage access networks (**SAN**);
- Operating systems and associated supporting software such as anti-virus, patch-management, DNS and Windows Active Directory Services; and
- Corporate and Administrative Information Technology systems and assets managed by the Information Technology group, including Software applications used to monitor and track voice call data and configure Trunk Mobile Radio terminals.

3. Management strategy and objectives

This asset management plan has been developed to align with both TasNetworks' Asset Management Policy, Strategic Asset Management Plan and Strategic Objectives. This management plan describes the asset management strategies and programs undertaken to manage the Telecommunication's Network Management Systems.

The strategic objectives of the telecommunications network are detailed in the Telecommunication's Site Infrastructure Asset Management Plan.

4. Description of the asset portfolio

4.1 Core functions

The Telecommunications network management systems allow TasNetworks to operate and monitor its Telecommunications Network as defined under the ITU-T telecommunication network management standard FCAPS framework. Its functions include:

- **Fault Management (F)**
  - Collection, logging, display and analysis of network events and alarms; and
  - Forwarding of events to remote staff via SMS, email or voice auto-diallers.
- **Configuration Management (C)**
  - Remote configuration of network equipment;
  - Backup of network equipment configuration, change tracking and configuration compliance; and
  - Provisioning and modification of network services.
- **Accounting (A)**
  - Inventory and asset reporting of network equipment.
- **Performance (P)**
  - Retrieval and storage of network performance data such as utilisation, packet loss, jitter and latency and error rates; and
  - Alerting of performance threshold violations.
- **Security (S)**
  - User access, authentication and accounting for network management system users and user groups.

4.2 Telecommunications Management System Categories

The Telecommunications Management Systems are classified in the following broad categories:

- Manager of Manager or Umbrella event management systems;
- Management for Simple Network Management Protocol (**SNMP**) equipment;
- Network Configuration Management systems;
- Management of Optical Transport and Time Division Multiplexing (**TDM**) based network elements;
- Management of specialist Microwave radio equipment;
- Management of Programmable Logic Controllers (**PLC**) equipment;
- Management of MPLS based equipment; and
- Other Diagnostic and Management Systems.

An explanation of these categories is provided in the following section.

4.2.1 Manager of Manager or Umbrella event management systems

The Manager, or Managers, provides collection and consolidation of events, alarms and system status of telecommunications assets. The systems provide integration to other NMS applications for event collection and the forwarding or events for after-hours notification.

The current application is [redacted]

4.2.2 Management of Simple Network Management Protocol (SNMP) equipment

These systems provide performance management and monitoring of all generic Simple Network Management Protocol (**SNMP**) based equipment.

The current application is [redacted]

4.2.3 Network Configuration Management systems

This system provides the automated configuration backup, real-time change control and configuration change tracking of all Command Line Interface (**CLI**) based equipment.

The current system is [redacted]

4.2.4 Management of Optical Transport and Time Division Multiplexing (TDM) based network elements

These systems provide management and monitoring functions of all optical transport, DWDM and TDM equipment. In addition to the standard FCAPS functions, the system provides network topology and service management.

The current applications are [redacted]

Note**:** [redacted]

4.2.5 Management of specialist Microwave radio equipment

This system provides management and monitoring function for specialist older NEC Microwave radio equipment (PassolinkNeo).

The current application is [redacted]

Note: [redacted]

4.2.6 Management of Programmable Logic Controllers (PLC) equipment

These systems are used to configure and display alarm status information from all TasNetworks' telecommunications PLC equipment.

The current applications are [redacted]

4.2.7 Management of Multiple Protocol Layered Switching (MPLS) based equipment

In addition to the standards FCAPS functions, this system provides specific MPLS based network functions such as:

- network discovery
- protocol and service analysis
- performance testing and reporting
- and network integrity checks

The current application is [redacted]

Note: [redacted]

4.2.8 Security Management of Firewall equipment

This system was initially used to configure [redacted] Network Firewalls. However this function has now been migrated [redacted]

Consideration is being given to the utilisation of this application for the configuration of Internet Protocol Security (**IPSec**) tunnels to carrier radio equipment.

The current application is [redacted]

4.2.9 Other Diagnostic and Management Systems

These systems and software are other utilities that are used to manage the telecommunications network and equipment such as Secure Services Host clients, File Transfer Protocol clients, Authentication servers, Remote Access Software and other tools.

4.3 Licenses and Support Agreements

The current licences and support agreements are listed in Table 1.

Table 1 - Software licences and support agreements

Manufacturer	Model	Operating System	State	License Agreement	Support agreement end date	Licence Type	Licence Count
Content has been redacted for public release.							
Total number of licenses and support agreements							1822

5. Associated risk

5.1 Risk management framework

TasNetworks has developed a Risk Management Framework for the purposes of assessing and managing its business risks, and for ensuring a consistent and structured approach for the management of risk is applied.

An assessment of the risks associated with the Telecommunications Network Management Systems has been undertaken in accordance with the Risk Management Framework.

Due to the level of risk identified in some of the assessment criteria a requirement to actively manage these risks has been identified.

5.2 Asset risks

5.2.1 CIC Draft Rules

The Australian Government Department of Home Affairs Critical Infrastructure Centre has also developed 'Draft rules for the electricity sector – for costing' (CIC Draft Rules). This document outlines six hazards, two of which can impact the ability of the telecommunications network management systems to meet its strategic objectives. These are as follows:

- Cybersecurity hazards; and
- Material hazards.

5.2.1.1 Cybersecurity

The cyber security hazards relating to Telecommunications Network Management Systems have been detailed in the Bearer Network Asset Management Plan.

5.2.1.2 Material risk rules

The telecommunications group manages material risks by ensuring that the configuration of the network management systems are not remotely accessible outside of TNOCS. There is no external third party vendor access is provided to the system.

5.2.2 Product vendor technical support

Product vendor support can be required by operational support staff to assist in the diagnosis of complex network management system faults. With the loss of this support the diagnosis of some fault types may be become more difficult or not possible. This can lead to an increased risk of unplanned outages, and/or duration of unplanned outages.

5.2.3 Loss of TNOCS

Risk of loss of primary operational control centre is mitigated by the maintenance of a backup control centre site.

6. Whole of life management plan

The strategy to manage the Telecommunications Network Management Systems assets is designed to align with software licence agreement and support agreement of the systems.

The products and systems used to implement the Telecommunications Network Management Systems have life cycles and support cycles similar to Information Technology software assets.

The typical length of support/licence agreements of these products is approximately 3 years.

To align with the vendor/manufacturer release schedules, this asset management plan proposes 3-yearly cyclic capital upgrades/replacements of Telecommunications Network Management Systems.

This strategy will manage the risks to TasNetworks' business operations and ensure that the Telecommunications Network is managed with supported products and systems.

This strategy will also ensure that the Telecommunications Network Management Systems will have the capacity to cater for future growth in the prescribed telecommunications network asset and customer base.

6.1 Preventive and corrective maintenance (OPEX)

6.1.1 Preventative Maintenance (TPBSO)

The preventative maintenance performed on Telecommunications Network Management Systems is heavily Information Technology based and consists of:

- Applying software patches and updates;
- Backup routines of systems and operational data;
- Updating device drivers and firmware when required;
- Managing access controls and permissions;
- Protection against cybersecurity risks such as malicious software, sabotage and intrusion;
- Routine testing to ensure correct operations;
- Maintaining physical server hardware if required; and
- Maintaining virtual servers/machines if required.

The preventative maintenance practices are designed to manage risks to the Telecommunications Network Management Systems in between major capital upgrades and to keep the TasNetworks' Telecommunications running to the required levels of service.

6.1.2 Summary of Opex expenditure

The operational expenditure of Network Management Systems assets is captured under TPBSO which is reported under the Site Infrastructure Asset Management Plan.

6.2 Reliability and quality maintained (CAPEX)

6.2.1 TNOCS Network Management Software (TPBSC)

This program is proposed to allow for the renewal of network management systems in line with a 3 yearly renewal cycle. This programme will allow TNOCS to upgrade software as new versions are released ensuring that cybersecurity risks are mitigated. Additionally, the maintenance of vendor technical support will ensure that operational support staff are able to diagnose and troubleshoot network faults. If this

program is not progressed, there may be an increased risk of unplanned outages, and/or duration of unplanned outages.

6.2.2 Details of future Capex projects/programs

Table 1 Program/project details

Project/Program description	Functional area	Document Id. (IES)	Link to HBRM initiative
TNOCS Network Management Software	TPBSC	R24_IES_T_TC_TPBSC_R_Network Manag. Software	R24_T_TC_TPBSC_R_Network Manag. Software