Asset Management Plan

Asset Management Information System (AMIS)

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Responsibilities

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Record of Revisions

Section number	Detail
	New Document
All sections	Whole of document update

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1 General

1.1 Purpose

The purpose of this Asset Management Plan (**AMP**) is to define the management strategy for the Asset Management Information System (**AMIS**). This plan describes the necessary asset-information, tools, applications, processes and interfaces required to support the strategic, tactical and operational management of network assets in accordance with the approved Asset Management Policy.

1.2 Scope

The Asset Management Information System Asset Management Plan (**AMIS AMP**) focuses on the AMIS systems, software components, data and information that are currently commissioned and those that are scheduled to be commissioned or decommissioned as part of the AMIS Improvement Program (**AMISIP**). Whilst TasNetworks AMIS is based upon the Enterprise Asset Management (**EAM**) modules of the SAP Enterprise Resource Planning (**ERP**), management of SAP itself is not considered within the scope of this AMP, however the data contained within pertaining to network asset data is in scope.

1.2.1 Objectives

The key objective is to provide a single source reference document that presents essential information required to manage and administer the AMIS.

The AMIS AMP will be the basis upon which asset information management will be continuously improved across TasNetworks.

1.3 Acronyms and definitions

AMP	Asset Management Plan
AMIP	Asset Management Improvement Program
AMIS	Asset Management Information System
AMISIP	Asset Management Information System Improvement Program
AMP	Asset Management Plan
CoE	Centre of Excellence
COTS	Commercial Off The Shelf
EAM	Enterprise Asset Management
ERP	Enterprise Resource Planning
GIS	Geographic Information System
IIMM	International Infrastructure Management Manual 2015

ISO 55000/1/2	The International Standards Organisation (ISO) standard for infrastructure asset management. The suite comprises 3 standards; ISO 55000, 55001 and 55002
SAP	TasNetworks Enterprise Resource Planning environment
NAICoE	Network Asset Information Centre of Excellence

1.4 References

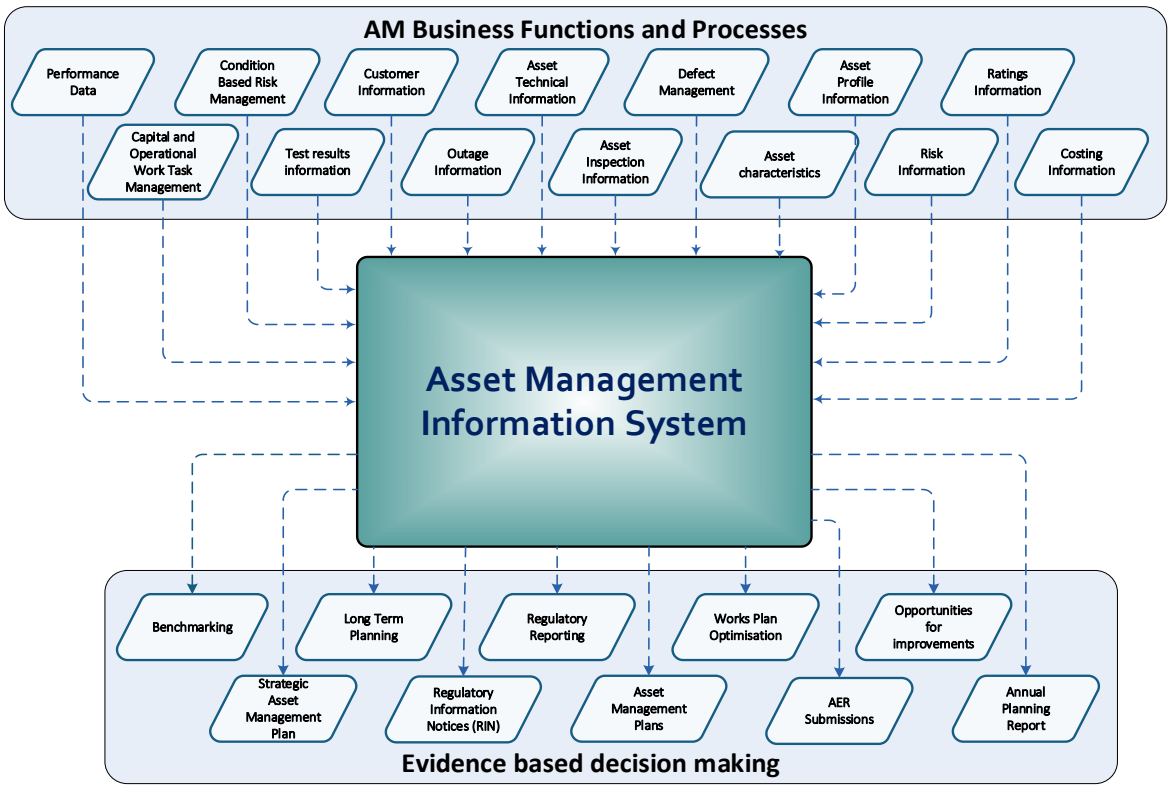
Link to Business Plan	TasNetworks Three Year Business Plan 2021-24, May 2021
R40766	Asset Management Policy, August 2022 (Version 4)
R1076005	TasNetworks Strategy on a Page 2022-23
R150	Information Management Policy, September 2021 (Version 4)
R909654	Risk Management Framework, June 2022 (Version 5)
R764285	TasNetworks Transformation RoadMap 2025

2 Asset Management Information System Description

2.1 Introduction

The overarching management model that underpins the AMIS is outlined in Figure 1. The model shows the interconnection between asset management business functions and evidence-based decision making outputs.

Figure 1 AMIS Management Model



TasNetworks has adopted ISO55000/1/2 (**ISO55000**) and the International Infrastructure Management Manual (**IIMM**) as industry best appropriate practice guides to asset management.

Based on these documents AMIS is defined as:

> "the combination of people, processes, applications and technology applied to provide the essential outputs for effective asset management such as reduced risk, enhanced network performance, enhanced regulatory compliance, effective asset knowledge management, effective resource utilisation and optimum infrastructure investment."

The key business drivers for an effective AMIS include, but are not limited to:

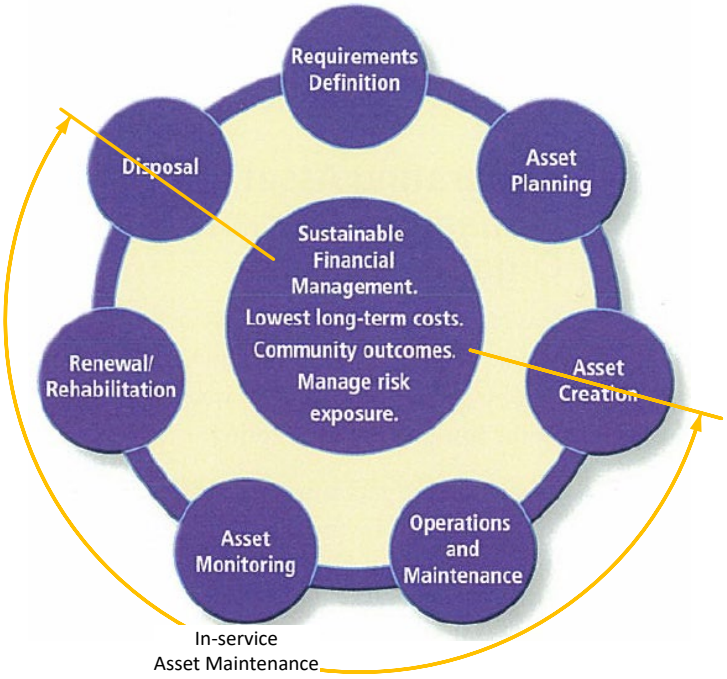
- Supporting cost effective management of physical assets – by providing information and tools to assess and determine the optimal time to replace or augment an asset rather than continuing to maintain it; or the best balance of planned and unplanned maintenance;
- Creating and maintaining relevant standards pertaining to the Network Asset Data contained within the AMS;

- Improved data management and analysis – including developing and safeguarding asset data integrity ; and
- Providing process improvements to ensure efficient and effective processes are in place resulting in more accurate data

AMIS delivers this across the asset life cycle (Figure 2) that includes the following:

- Asset creation;
- Asset operations;
- Asset monitoring;
- Asset renewal and rehabilitation;
- Asset decommissioning; and
- In-service asset maintenance.

Figure 2 The Asset Management Life-cycle

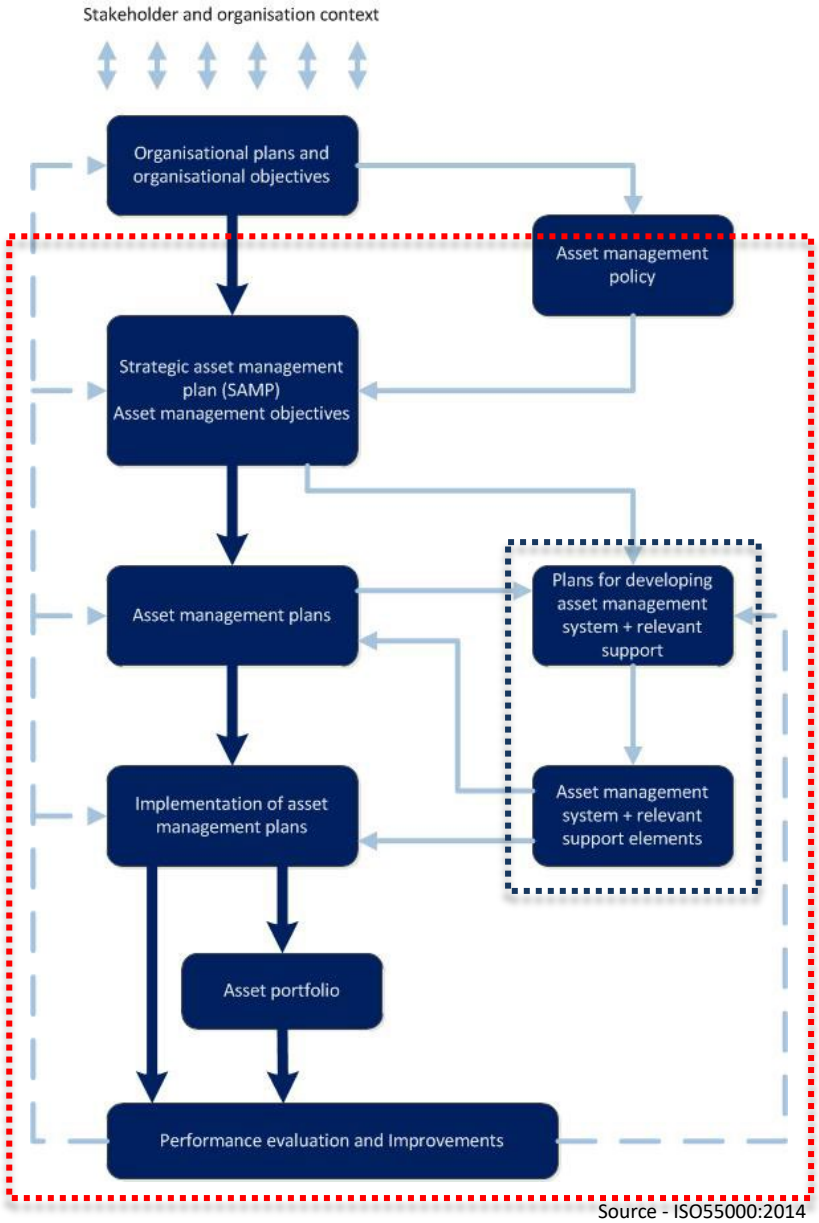


Source - IIM Manual - 2011

Note - Descriptions of each life cycle element can be found in the IIMM.

The relationship between the key elements of an asset management system is shown in Figure 3. The dashed red box designates the boundary of the Asset Management System as defined by ISO55000:2014. The dashed dark blue box represent the AMIS and associated support elements.

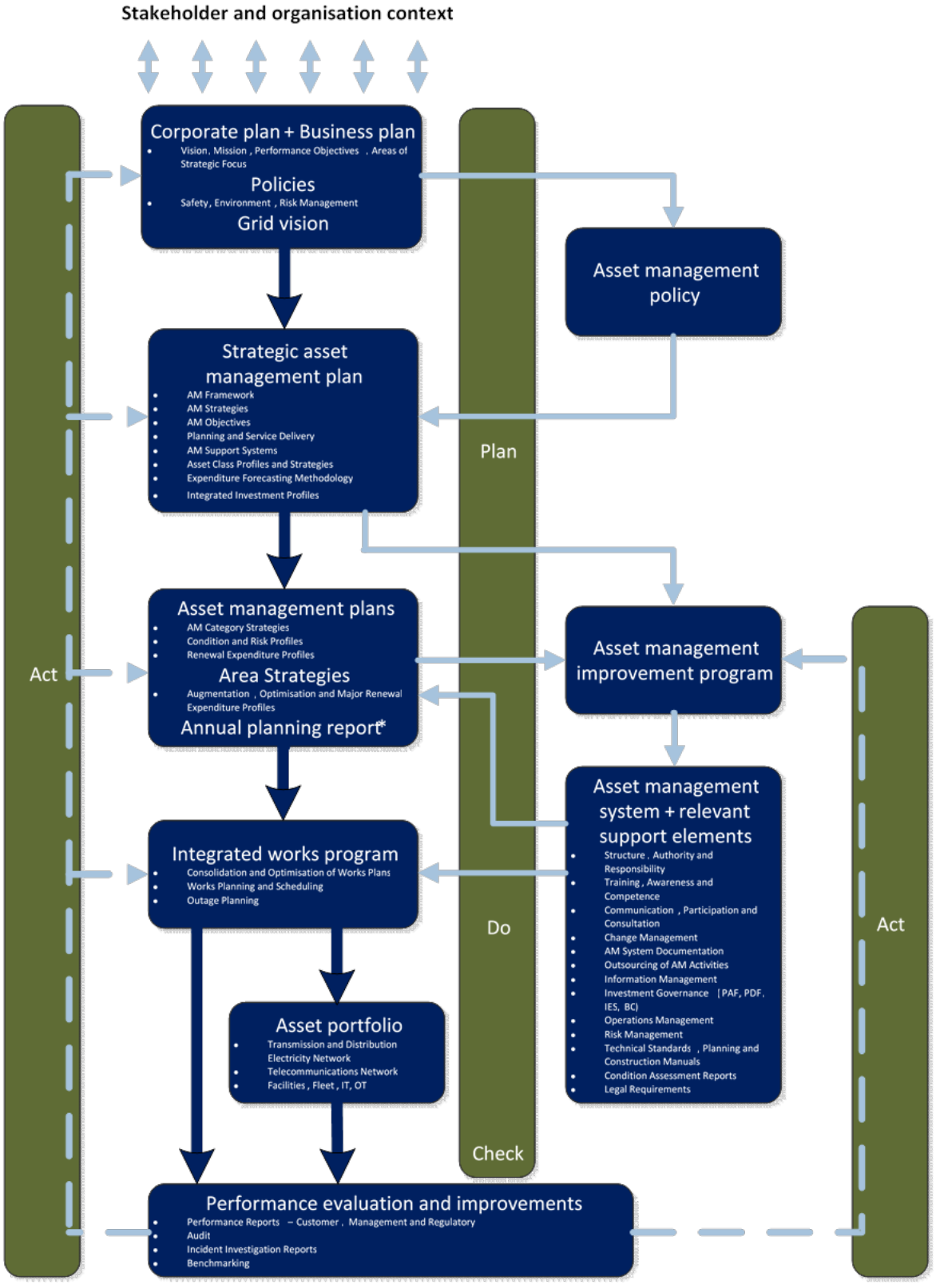
Figure 3 Key Elements of an Asset Management System



Source - ISO55000:2014

The asset management documentation framework required to support life-cycle asset management is shown in Figure 4. Each document is shown linked to the relevant Asset Management System element in line with ISO55000.

Figure 4 Asset Management Documentation Framework



2.2 AMIS objectives

The AMIS objectives are to assist in sustaining and improving overall performance of the transmission and distribution networks, including but not limited to:

- ensuring holistic asset information is collected, maintained and readily accessible to support evidence-based asset management decision making;
- enhancing the visibility of, accessibility to and trust in asset information holdings across the business; and
- developing effective AMIS improvement practices that support the life cycle asset management in accordance with ISO55000:2014 and the IIMM.

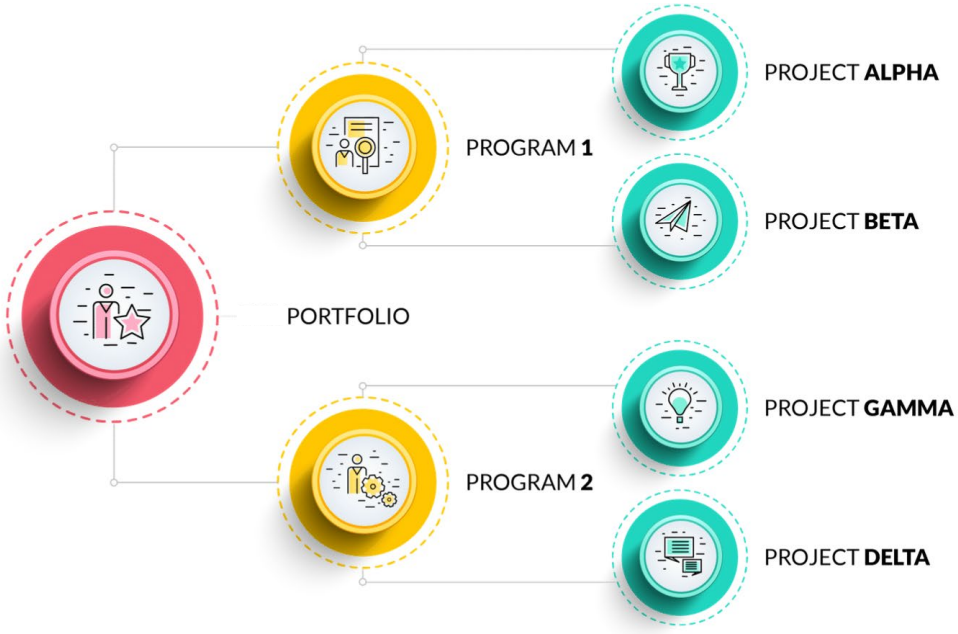
A fully functioning AMIS will support the business to achieve the following:

- improved long term strategic network asset management capability;
- enhanced network performance;
- reduced network asset related risk;
- improved network asset knowledge management;
- enhanced network regulatory compliance;
- optimised resource use; and
- optimised network asset infrastructure investment.

Once met these objectives will support the requirements of the TasNetworks Three Year Business Plan 2021-2024 (Objective 7) and Asset Management Policy by significantly improving the quality, completeness, integrity and consistency of asset information, systems and processes at all levels.

2.3 AMIS portfolio and capabilities

Figure 5 Portfolio, program and project diagram



A group of related projects is often organised as a program of work.

Portfolio is the name we give to a collection of often unrelated programs.

Previous AMIS plans have resulted in significant increases in asset information holdings across the business, further underpinning the need of a fit-for-purpose AMIS.

The AMIS portfolio is being progressively expanded and includes the elements as listed below:

- network asset register and information;
- network asset information management standards;
- network asset business intelligence reporting;
- network performance reporting;
- network asset risk management;
- network asset defect management;
- network asset condition monitoring; and
- network asset long term works management.

2.4 AMIS systems, tools and applications

AMIS is based upon the Enterprise Asset Management (**EAM**) modules of the SAP ERP. AMIS is also supplemented with Commercial Off The Shelf (**COTS**) tools or customised in-house developed solutions for specialised engineering and asset management applications. In addition, interfaces have been built in-house to integrate with other business software in the particular geographic information system (**GIS**).

2.4.1 AMIS management methodologies and tools

To assist with maintaining the AMIS, consistent with TasNetworks standard methodologies, key tools and practices have been developed to ensure that quality services are delivered to the business.

The key tools and practices include, but are not limited to:

- stakeholder engagement agreements;
- master data change process;
- handover packs including checklists;
- task prioritisation;
- program and project communication plans;
- release checklists including release notes;
- system administration guides;
- system user guides;
- Network Asset Breakdown Structure;
- Network Asset Nomenclature Standards;
- Network Asset Data Integrity Standards;
- training notes and documentation;
- User Acceptance Testing (**UAT**) and sign-off; and
- peer review process.

2.5 Geographic information system and asset management system relationship

A GIS and AMS should work as partner systems in an AMIS. The GIS is a geographic representation of the AMS data and information and enriches the value and usage of the AMS data. GIS is globally accepted as an effective solution for recording, reporting and managing spatial asset information.

An effectively integrated GIS provides the ability to carry out many spatial functions for example mapping asset defects against preventative work tasks to see if there is any correlation, or spatially identify a network fault and identify the closest available work crew to respond via thematic mapping and specialised queries.

Some of the key aspects of GIS are:

- a single topologically correct model of the assets for each asset class; this eliminates redundant data;
- modelling the actual connectivity between adjacent connected assets. This allows electrically tracing components along the path, both upstream and downstream;
- use of the same connectivity models by specialist analysis software (e.g. Sincal) as a single source of truth rather than creating separate, redundant models of the same network;
- creating maps as an alternate reporting output where varied content and scales are required;
- GIS provides planning support where short, medium and long terms planning scenarios can be efficiently recorded, and recalled, updated and re-run as required, and
- the ability to locate assets with defects against preventive work tasks to see if there is any correlation, or the ability to identify the location of a network fault and identify the closest available work crew to dispatch.

Examples of GIS outputs include, but are not limited to:

- identification of current and past works against assets by location;
- fault types and number of incidents against assets by location;
- condition of assets by location;
- mapping of risk categories against assets by location;
- age distribution profiles of assets by location;
- future asset replacements by locations; and
- distribution of planned/unplanned maintenance by location.

2.5.1 Benefits and usage of the GIS

GIS is used throughout the whole of TasNetworks to varying degrees depending on the necessity to visualise information.

A key business requirement is the ability to identify and locate assets on a map. A wholly integrated GIS provides this capability by presenting different views of network asset information and ultimately supporting the network asset management decision making process.

The introduction of SAP-EAM has provided an opportunity to directly interface the GIS to the EAM.

This integration has provided a number of the following benefits:

- allowed network asset information to be accessible to all users from a single source;

- allowed network asset information to be accessed from either the GIS or SAP depending on required outputs;
- allowed asset information to be displayed in multiple views, spatially on a map; and
- allowed network asset information to be displayed thematically using symbology, colour coding, etc. For example the ability to geographically display condition data to show condition trending over time.

Improvements on the above will be delivered through the implementation of the GIS Strategy.

2.6 Asset Management Improvement Program

An overarching Asset Management System has been developed in accordance with the requirements of international standard ISO55001:2014 – Asset Management – Management System – Requirements (as referenced in the Asset Management Policy).

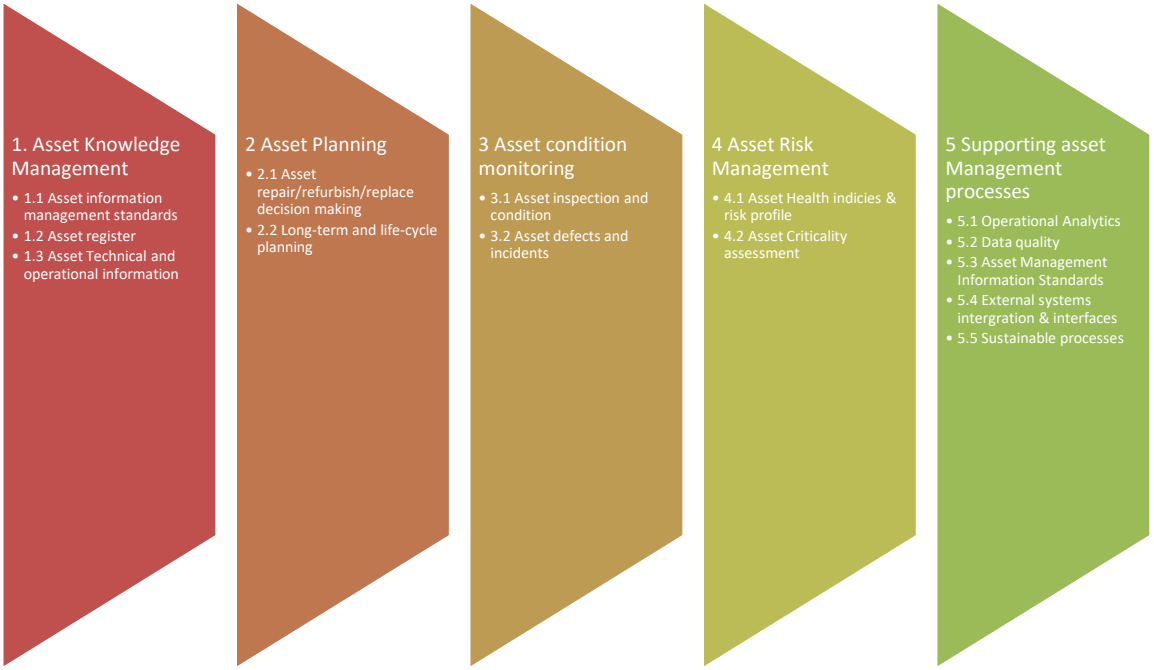
Key asset management improvement areas are being addressed through the Asset Management Improvement Program (**AMIP**). A core component of the AMIP is the delivery of the Asset Management Information System Improvement Program (**AMISIP**) (see section 2.6.1).

2.6.1 AMISIP program of work

The AMISIP serves as an ongoing framework for continual improvement. The AMISIP contains a prioritised list of areas for improvement to ensure the identified discrepancies are addressed. Figure 7 shows the high level AMISIP program of work initiatives.

As AMISIP outcomes and deliverables are completed this will enable a continuous improvement approach to be taken with the AMIS. AMISIP outputs will also be used to enable and support other projects and innovations across the business.

Figure 6 AMIS Improvement Program Elements & Initiatives



3 Strategic alignment

3.1.1 Strategy alignment

The TasNetworks Strategy on a page presents how TasNetworks will deliver its strategic goal through:

- engaging with customers to understand their needs;
- ensuring the one business asset management system;
- information and processes support asset managers to make informed;
- evidence-based asset management decisions.

Strategic and operational performance business objectives relevant to the AMISIP are derived from the approved TasNetworks Strategy. The program aligns to the following areas of the Strategy:

- we care for our customers and make their experience easier;
- we keep safe, building trusting relationships, and enable our people to deliver value;
- we manage our assets to deliver safe and reliable services, while transforming our business; and
- we operate our business to deliver sustainable shareholder outcomes.

The business initiatives reflected in TasNetworks Transformation Roadmap 2025 (January 2018) for transition to the future that have synergy with this AMP are as follows:

- Voice of the customer: We'll keep investing in support systems that make it easy for you to do business with us and help us understand your needs, so that either directly or through partnerships, we deliver services you value.
- Network and operations productivity: We'll improve how we deliver the field works program, continue to seek cost savings and use productivity targets to drive our business.
- Business productivity: We're transforming our business support systems to reduce costs and add value.
- Electricity and telecoms network capability: To meet your energy needs and ensure power system security, we'll invest in the network to make sure it stays in good condition, even while the system grows more complex. For instance, we'll need more sophisticated management, operating and protection schemes for intermittent power generation and to enable new technologies.
- Predictable and sustainable pricing: Because we want to deliver the lowest sustainable prices, we'll transition our pricing to better reflect the way you produce and use electricity and provide you with greater choice and control over your energy use.
- Enabling and harnessing new technologies and services: By investing in technology and customer service, we'll be better able to host the technologies you're embracing. We'll aim to make the most of your investments in distributed energy resources for the benefit of all.
- Workforce of the future: Our people are integral to delivering power to you. We'll keep developing knowledge and skills to continuously improve systems and processes, embrace new technologies and provide you with great service.

3.1.2 Asset Management Policy

The Asset Management Policy outlines how TasNetworks delivers electricity and telecommunication network services to create value for customers, owners and the community.

Consistent with TasNetworks corporate vision and purpose, the policy sets out the overall principles and approach required to achieve excellence in asset management.

This policy includes a number of specific commitments relevant to this AMP examples of these include the following:

- continuously develop and maintain a complete asset register and documentation system for all TasNetworks assets;
- manage the assets, including asset information, to meet strategic goals outlined in the corporate plan;
- apply contemporary condition assessment and risk management techniques to manage risks and opportunities;
- continually adapt, benchmark and improve asset management strategies and practices and contemporary asset management techniques consistent with industry best practice; and
- develop and continually improve asset management information systems and processes to optimise asset management efficiencies and decision making processes.

3.1.3 Information Management Policy

The AMISIP will be delivered with reference to the Information Management Policy. Effective Information Management supports the business in meeting legislative requirements as well as with achieving Information Management related business process improvement.

This means TasNetworks will undertake the following:

- recognise the importance of information as an asset;
- identify the strategic significance of information and use it to add value to the organisation; and
- ensure that all information is appropriately identified, captured, managed and discoverable throughout its life-cycle; and that all staff and contractors are individually responsible for contributing to this outcome with respect to the information they author or receive.

4 Risk management

4.1 Risk assessment

The key operational risks that have been identified with respect to AMIS and the associated mitigation strategies are outlined below in Table 1.

Table 1 Key Risks and Mitigation Strategies

Risk	Mitigation
Benefits of AMIS are not fully realised	Business processes will be reviewed/updated or developed and accountabilities assigned as part of each development and implementation. Training needs analyses will be undertaken and subsequent training of system users will be conducted.

Risk	Mitigation
AMIS does not satisfy evolving regulatory needs	Monitoring of the regulatory environment and revenue cap decision will be undertaken to ensure that any new information that becomes available is considered for incorporation in the AMIS. Outcomes and learnings from previous revenue resets are taken into consideration when developing programs for AMIS enhancements.

4.2 Risk categories

Continued investment in the AMIS will assist in part to mitigate the following risks.

Table 2 Summary of Risks

Risk category	Risk
Financial	Unreliable asset management information, processes and systems results in the inability to effectively justify expenditure.
	Unreliable asset management information, processes and systems results in reduced ability to determine optimal strategy for asset maintenance, refurbishment or replacement resulting in under/over expenditure.
	Unreliable asset management information, processes and systems results in reduced network performance leading to possible significant regulatory penalties.
Customer	Unreliable asset management information, processes and systems results in an unacceptable increase in unscheduled outages and a follow-on decline in network reliability.
Regulatory, policy, legal, and compliance	Unreliable asset management information, processes and systems results in an inability to effectively support regulatory compliance.
	Unreliable asset management information, processes and systems results in an inability to demonstrate effective long-term asset management planning due.
	Unreliable asset management information, processes and systems results in an inability to undertake evidence-based decision making.
Infrastructure and assets	Unreliable and inaccurate asset information results in suboptimal asset maintenance, refurbishment and/or replacement leading to a decline in network reliability.
Brand and reputation	Unreliable asset management information, processes and systems results in an inability to achieve the Company's strategic goals.
	Unreliable asset management information, processes and systems results in an inability to achieve compliance with statutory, legal and regulatory obligations.
Environment and community	Unreliable asset management information, processes and systems results in non-conformance with internal and external environmental policies and regulations.
Health, safety, and environment	Unreliable asset management information, processes and systems exposes Field workers to potential accident/injury as they unknowingly make decisions using poor quality information.
	Unreliable asset management information, processes and systems results in possible exposure to hazardous substances/materials.
People and talent	Unreliable asset management information and complex processes result in a decline in engagement.

Risk category	Risk
Business continuity management	Poor data management and process may result in cyber breaches.

5 AMIS life-cycle management

5.1 AMIS planning

Strategic AMIS planning involves considering a number of key aspects, including but not limited to the following:

- corporate business planning;
- regulatory submissions;
- completing the development of AMISIP; and
- implementing the requirements of the AMISIP.

5.2 Focus areas

There are several major initiatives that are key focus areas for the AMISIP. These are further embedding SAP-EAM, creating a Network Asset Information Centre of Excellence (**NAICoE**) and increasing maturity in asset risk management. These areas are further described below.

5.2.1 Embedding SAP-EAM

AMIS principles will continue to exist and be incorporated into SAP-EAM. This will strengthen TasNetworks ability to continue to manage its assets effectively. Improved asset information management will see an increase in confidence in the data and will further enhance future asset management documentation.

SAP-EAM has presented other opportunities to further enhance the ability to continue improving and delivering mature asset management outcomes.

As previously described AMIS is now based upon the new SAP-EAM platform. This platform has provided a single contemporary tool set upon which both distribution and transmission asset management practices can be enacted. The new SAP platform was successfully delivered in early 2018. This provided the foundation upon which the AMISIP will leverage. Many opportunities to refine and mature business processes and asset information practices exist. Core concepts underpinning the AMISIP to embed SAP include:

- Increasing data quality
- Refining and improving processes
- Increasing user familiarity
- Ensuring full utilisation of the application

5.2.2 Network Asset Information Centre of Excellence

TasNetwork does not currently have in existence a Centre of Excellence (**CoE**), it is envisaged in order to move closer towards a contemporary asset data accessibility and management capability that a NAICoE be designed, implemented and maintained.

Gartner describes effective CoEs as “concentrating existing expertise and resources in a discipline or capability to attain and sustain world-class performance and value.” Therefore the objective of the NAICoE is to provide TasNetworks with a ‘portal’ to access relevant Network Asset data in a centralised spot to achieve an effective CoE for Network Asset Information.

Figure 7 Generic Centre of Excellence diagrammatic representation

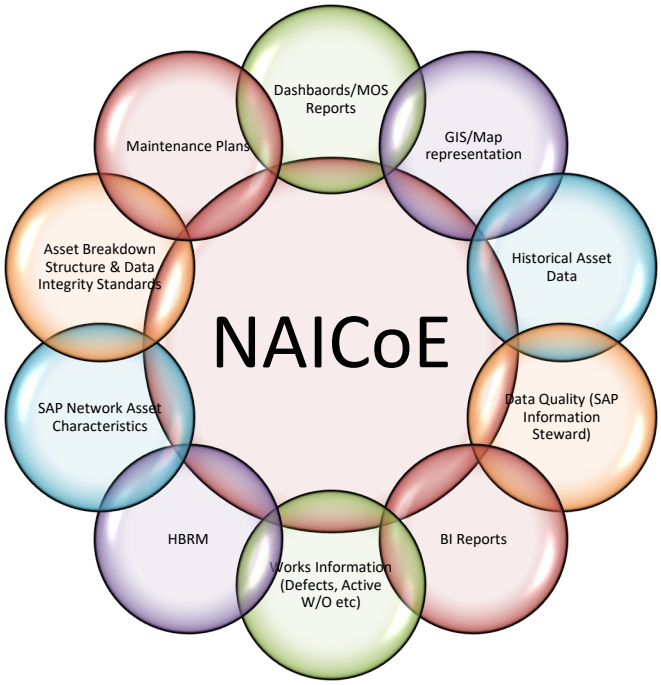


Figure 8 TasNetworks Network Asset Information Centre of Excellence

Currently there exist a limited mechanism to facilitate the generation of fundamental asset management profile information. The currency, accuracy and availability of this information is of vital importance to TasNetworks as it will be used to:

Generate and provide fundamental asset management profile information for

- replacement, refurbishment and/or maintenance strategies;
- specific strategies to address identified performance, condition, design and capacity issues; and
- asset trend and forecasting – imperative that historical information is included in the warehouse.

Provide ad-hoc on demand reporting for Network Asset Data and information required by strategic engineers and engineers for asset management decision making.

The generation of asset management profile matrices and charts for use within specific documentation and reports such as:

- Strategic Asset Management Plan;
- Asset Management Plans;
- International Transmission Operations and Maintenance Study;
- Regulatory Information Notices; and
- Australian Energy Regulator Revenue proposals

Efficiency in accessing multiple sources of data and linking them in particular to historical asset information directly is of continual importance to determine and influence network asset replacement programs and maintenance.

The NAICoE will enable the business to access Network Asset Data and Information in a variety of ways e.g. Scorecards, Dashboards, BI Reports and GIS Outputs being singular or combined outputs as represented in Figure 9.

5.2.3 Asset risk management

A significant component of the AMISIP includes the application of condition based risk management systems and practices extended to cover major network asset classes. Quantification of risk across these asset classes will strategically support the demonstration of prudency and efficiency of future revenue proposals.

The development and application of a comprehensive, robust and well supported asset risk management system will provide significant benefits in terms of efficiently managing network assets throughout the life-cycle. It will enable key information about assets to be analysed and presented quantitatively. Quantitative outputs from the asset risk management system will include:

- likelihood of asset failures (predictions for individual assets or populations of assets);
- consequences of asset failures (presented in dollar terms);
- optimum replacement timing (calculated based on the likelihood and consequence of failure);
- risk profiles of an asset population;
- impacts of changing the timing of asset replacements (can be assessed in risk and dollar terms); and
- alternative maintenance, refurbishment and replacement plans can be developed, compared and optimised.

6 Future opportunity

A number of future opportunities have been identified as having potential benefit to TasNetworks. Operational Analytics (**OA**) is being increasingly adopted globally and is allowing utilities to change problem solving/decision making from a historical review of what happened to a predictive view of the future.

OA is an element of enterprise business analytics that encompasses data collection, reporting, dashboards, and queries. It is the process of examining an organisation's data and applying a combination of statistical and quantitative technologies to extract useful asset knowledge. Analytics provide users with interactive, ad hoc information generated through data mining and pattern analysis to identify new insights.

In terms of AMISIP, OA will focus on improving the effectiveness and efficiency of asset management business processes and decisions. In this context, OA will specifically consider managing assets, analysing operating efficiency and managing risk.