Asset Management Plan

Emergency Response

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Authorisations

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Review cycle	2.5 Years	

Responsibilities

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

Please contact the Network Operations and Control Team Leader with any queries or suggestions.

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

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Record of revisions

Revision	Details
1.0	Original issue
2.0	Document revised

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1 Purpose

The purpose of this document is to describe:

- TasNetworks' approach to asset management, as reflected through its legislative and regulatory obligations and strategic plans;
- The actions, responsibilities, resources and timescales required to implement the emergency response activities associated with management of the performance of the distribution network, system access and fault management;
- The key programs underpinning its activities;
- The escalation and communications arrangements during emergencies; and
- The operational expenditure forecast, including the basis upon which these forecasts are derived.

2 Scope

The management plan covers operational emergency response programs and activities conducted on the distribution network.

This management plan does not cover operational emergency response programs and activities for transmission assets, telecommunications assets and privately owned assets.

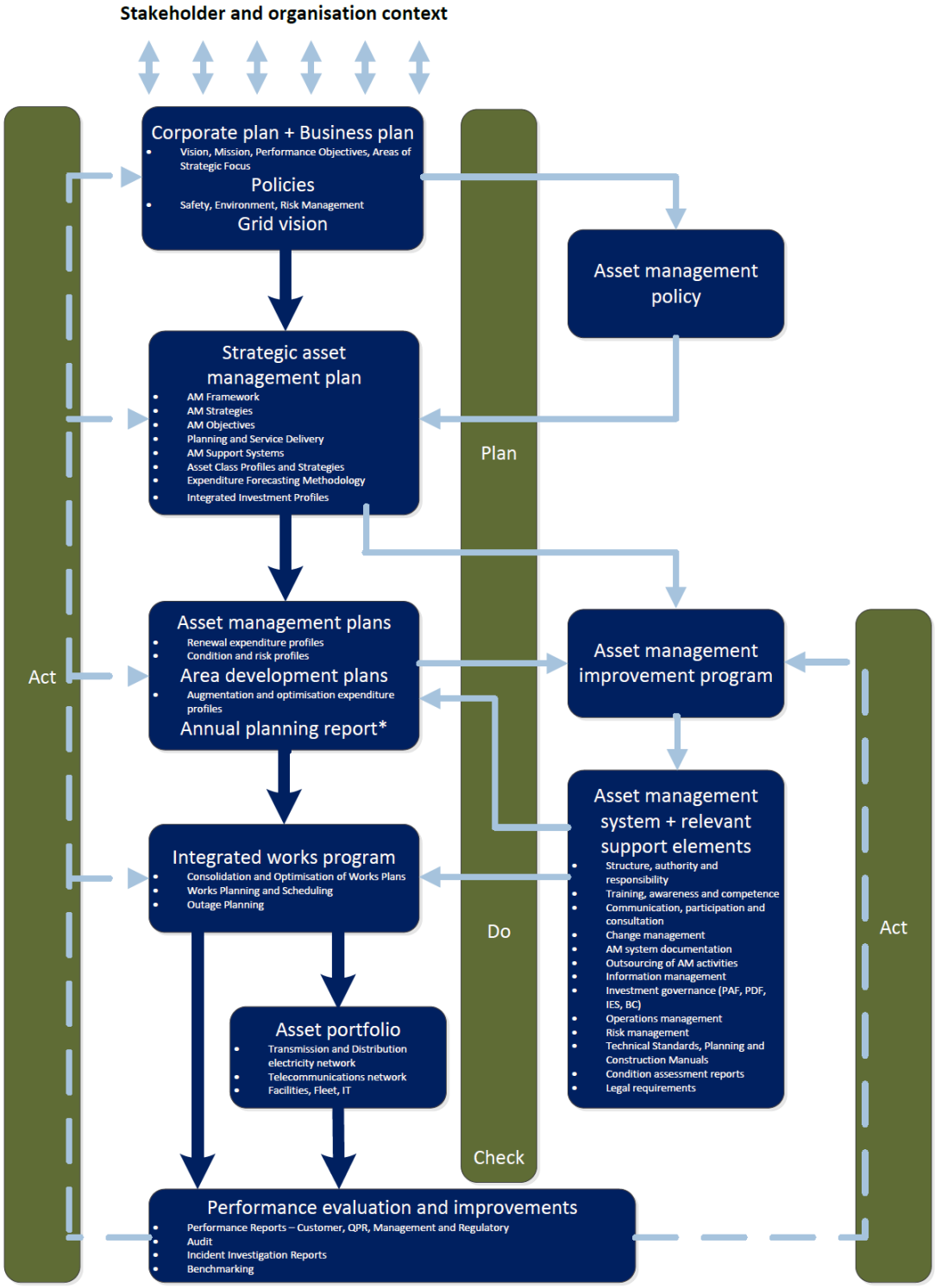
3 Strategic Alignment and Objectives

This asset management plan has been developed to align with both TasNetworks' Asset Management Policy and Strategic Objectives.

It is part of a suite of documentation that supports the achievement of TasNetworks strategic performance objectives and, in turn, its mission. The asset management plans identifies the issues and strategies relating to network system assets and detail the specific activities that need to be undertaken to address the identified issues.

Figure 1 represents TasNetworks documents that support the asset management framework. The diagram highlights the existence of, and interdependence between, the Plan, Do, Check, Act components of good asset management practice. The emergency response asset management plan is a key document within the document framework.

Figure 1 – TasNetworks Asset Management Documentation Framework



* The Annual Planning Report (APR) is a requirement of sections 5.12.2 and 5.13.2 of the National Electricity Rules (NER) and also satisfies a licence obligation to publish a Tasmanian Annual Planning Statement (TAPS). The APR is a compilation of information from the Area Development Plans and the Asset Management Plans.

The strategic objectives for the emergency response management plan are:

a) Safety will continue to be our top priority and we will continue to ensure that our safety performance continues to improve;
b) Service performance will be maintained at current overall network service levels, whilst service to poorly performing reliability communities will be improved to meet regulatory requirements;
c) Cost performance will be improved through prioritisation and efficiency improvements that enable us provide predictable and lowest sustainable pricing to our customers;
d) Customer engagement will be improved to ensure that we understand customer needs, and incorporate these into our decision making to maximise value to them;
e) Our program of work will be developed and delivered on time and within budget; and
f) Our asset management capability will be continually improved to support our cost and service performance, and efficiency improvements.

This asset management plan describes the asset management strategies and programs developed to manage the operational emergency response expenditure, with the aim of achieving these objectives.

4 Asset Support Systems

4.1 Systems

TasNetworks maintains an asset management information system (**AMIS**) that contains detailed information relating to distribution networks assets, incident and failures. AMIS is a combination of people, processes and technology applied to provide the essential outputs for effective asset management.

Non-financial asset information associated with system management, system access and fault management of TasNetworks owned assets are stored in TasNetworks asset registers (**WASP** and **G/Tech**), a spatial data warehouse (**SDW**), SCADA system and TasNetworks' risk management and safety system (**RMSS**) for incident reporting.

TasNetworks is in the process of implementing an enterprise resource planning system (SAP) that will supersede WASP, G/Tech and RMSS,and allow for more effective and efficient whole of life asset management. The transition to SAP is scheduled to take place in February 2018.

To determine the boundary between TasNetworks owned and privately owned connection assets, TasNetworks uses the Point of Supply as defined in the Tasmanian Electricity Code (**TEC**).

The TEC defines the Point of Supply as:

- In the case of an electrical installation supplied by an underground electric line, the load side terminals of the service protection equipment at the end of the underground electric line; and
- In the case of an electrical installation supplied by an overhead electric line, the first point of connection of that electric line on the land, being:
    a) Where the electric line is carried onto the land by one or more poles, the first pole on the land carrying that electric line;
    b) Where the electric line is connected directly to the premises on that land, that connection to the premises; or

c) Where it is not possible to determine a point of supply in accordance with (a) or (b) above, the point at which the electric line crosses the boundary of the land.

Any assets on the supply-side of the Point of Supply are considered TasNetworks owned, any assets on the load-side of the Point of Supply are considered privately owned.

5 Description of the Assets

The primary TasNetworks owned assets covered by the Emergency Response Asset Management Plan are outlined in Table 1 and Table 2.

Table 1: Asset statistics (approximate figures) [1]

Asset	As at 30th June 2016	As at 30th June 2017
Customer installations (Total)	286,637	289,186
Residential	240,770	242,897
Non-residential *(Commercial / industrial)*	45,867	46,289
Overhead (km) – High Voltage	15,234	15,280
Underground (km) – High Voltage	1,237	1,245
Overhead (km) – Low Voltage	4,945	4,920
Underground (km) – Low Voltage	1,265	1,279
Poles	229,996	232,634
Distribution substations	32,514	32,719
Distribution feeders (Total)	412	412
Sub-transmission[2]	25	25
Distributed sub-transmission[2]	10	7
Connection point distribution feeder[2]	273	270
Zone substation distribution feeder	129	136

[1] Excludes service lines

[2] Sub-transmission, distributed sub transmission and connection point feeder count varies due to previous definitions used and a minor zone substation being out of service

Table 2: Zone substation statistics

Zone Substation	No. of feeders	Connected MVA	Installed Capacity MVA	Firm Capacity MVA	2016/17 Maximum Demand MVA
East Hobart	11	105.110	90	60	31.88
Sandy Bay	13	106.101	90	60	41.00
West Hobart	16	120.688	90	60	39.85
Bellerive	8	29.233	45	22.5	17.26
Claremont	9	57.618	45	22.5	18.98
Derwent Park	10	67.834	45	22.5	21.21
Geilston Bay	9	57.618	45	22.5	18.98
New Town	8	56.818	45	22.5	21.94
Cambridge	12	58.482	40	20	16.60
Trial Harbour	3	11.734	40	20	1.99
New Norfolk	3	31.852	10	7.5	7.01
Richmond	3	28.147	5	2.5	3.11
Gretna	2	8.891	2	1	1.15
Wayatinah	2	1.540	2	0	0.43
Howrah	8	49.804	50	25	16.57
Summerleas	14	30.189	25	0	12.14
Rosny Park	7	25.760	25	0	14.92

Other downstream assets are also covered by this asset management plan but are not specifically listed. Assets in this category include those such as:

- service lines;
- service fuses;
- fixtures and fittings to connect components together;
- meter panels;
- protection schemes;
- luminaires and lamps;
- current transformers for metering installations; and
- high voltage (HV) metering voltage transformers for metering installations.

6 Associated Risk

TasNetworks has developed a Risk Management Framework for the purposes of:

- demonstrating the commitment and approach to the management of risk – how it is integrated with existing business practices and processes and ensure risk management is not viewed or practiced as an isolated activity;
- setting a consistent and structured approach for the management of all types of risk; and
- providing an overview on how to apply the risk management process.

For activities associated with emergency response management, the risk assessment is based on:

- probability of failure (not meeting business requirement); and
- consequence of failure.

Business risks are analysed utilising the 5x5 corporate risk matrixes, as outlined in the TasNetworks Risk Management Framework as at February 2015. Relevant strategic business risk factors that apply to each asset types that are associated with the TasNetworks emergency reponse programs are detailed in the following sections.

6.1 Emergency and unscheduled power system response and repair

Failure to respond and repair the distribution network following a fault or asset failure may result in:

- the inability for TasNetworks to restore customer supply, including vulnerable customers (life support);
- leaving the network in a potentially unsafe condition (including potentially hazardous voltages and fire starts) resulting in unacceptable community risks;
- guaranteed service level (GSL) payments for failure to restore supply in required timeframes;
- negative community and regulatory publicity for TasNetworks from customer complaints and poor service; and
- penalties under the Australian Energy Regulator's (AER) service performance improvement incentive scheme (STPIS).

Relevant strategic business risk factors that apply are outlined in Table 3.

Table 3: Risk assessment for emergency and unscheduled power system response and repair

Risk Category	Risk	Likelihood	Consequence	Risk Rating
Safety and People	Damage to personnel and/or the general public. Potential shock resulting in injury or death due to electrocution.	Unlikely	Major	High
Financial	Loss of revenue that results due to exceeding service performance targets.	Possible	Minor	Low
Customer	Material supply interruption to customers.	Likely	Minor	Medium
Regulatory Compliance	Regulatory non-compliance due to failure or damage of network	Possible	Moderate	Medium

	assets.			
Network Performance	Damage to plant and equipment with asset failure or damage that leads to poor network performance outcomes	Likely	Minor	Low
Reputation	Local or state publicity that results due to the incident.	Likely	Minor	Medium
Environment and Community	Damage to the general public and / or the environment.	Possible	Major	High

6.2 System Reconfigurations

Reconfiguration of the system is undertaken for:

- compliance with National Electricity Rules (NER);
- maintaining network performance and customer reliability;
- mitigating against TasNetworks asset failure; and
- supporting system reliability from transmission constraints.

Relevant strategic business risk factors that apply are outlined in Table 4.

Table 4: Risk assessment for system configurations

Risk Category	Risk	Likelihood	Consequence	Risk Rating
Safety and People	Risk of unsafe operation of electrical equipment due to overloaded circuits.	Possible	Major	Medium
Financial	Failed asset replacement, loss of revenue that results due to exceeding service performance targets, and customer Guaranteed Service Level payments.	Possible	Moderate	Med
Customer	Supply interruption resulting from failure.	Possible	Moderate	Med
Regulatory Compliance	Regulatory non-compliance with the National Electricity Rules.	Almost certain	Moderate	High
Network Performance	Supply interruption from overloaded system.	Possible	Minor	Low
Reputation	Negative publicity resulting from load and voltage non-compliance.	Possible	Moderate	Medium
Environment and Community	Damage and failure of customer or community electrical infrastructure.	Possible	Minor	Low

7 Management Plan

7.1 Historical

TasNetworks' emergency response management practices have been stable for a number of years. Operational expenditure in this area has also been relatively stable and is primarily impacted by major event days (MEDs) - days when abnormal conditions, such as major weather events or bushfires, grossly affect the reliability of the distribution network beyond its design and/or operational limits.

Figure 2 presents the historical number of MEDS and the average SAIDI impact of MEDS on service performance. Although the service impact of MEDS days over the past five years has been relatively steady, there has been an increasing trend in the number of major event days.

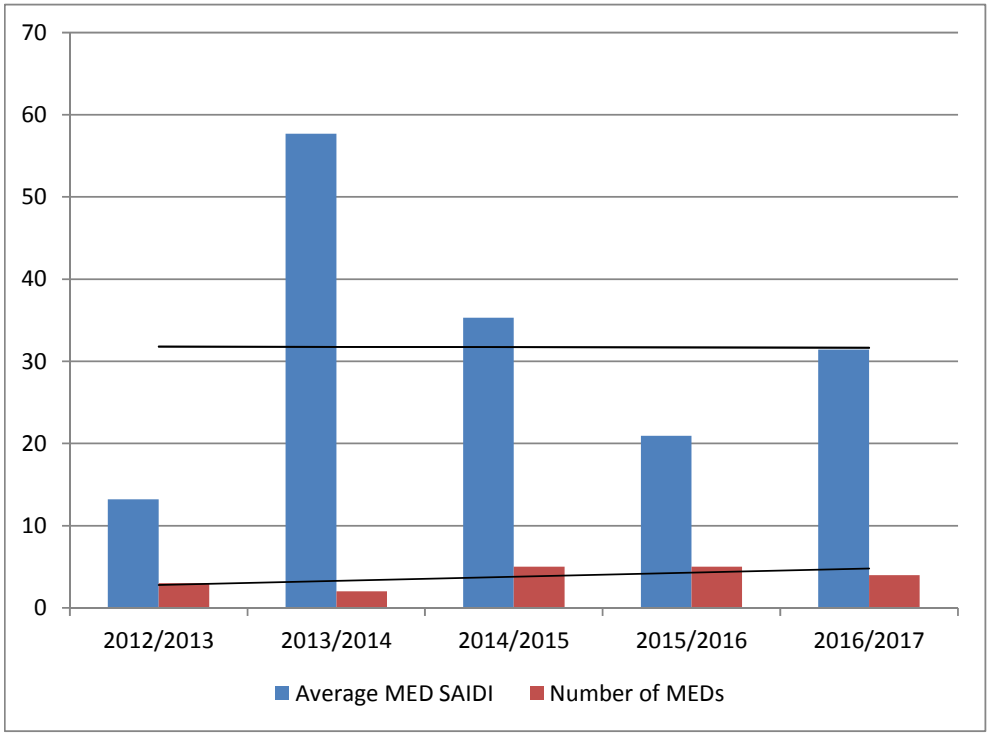


Figure 2: Historical number and average SAIDI impact of major event days

7.2 Strategy

TasNetworks manages the real time operation of the network to ensure that the network is operated safely and within operating and load limits. It is a business imperative that the activities conducted by TasNetworks deliver:

- maintained reliability;
- no serious injury or loss of life arising from the operation of the distribution network;
- no serious environmental impacts to fauna and flora; and
- no prosecutions for breaches of legislative compliance.

The three key processes for emergency response to assist in delivering this management plan are:

1. System management – the overall management (monitoring and control) of the performance of the network;

2. System access – the safe and efficient provision of access to the power system for asset management activities such as construction and maintenance; and

3. Fault management – the efficient and effective management of power system faults or emergency situations that involve the power system.

7.2.1 Fault management

Fault management is a business as usual activity to ensure the safe and efficient operation of the power system and compliance with legislative and regulatory obligations. TasNetworks manages emergency and unscheduled power system response and repair activities through a number of work programs:

- emergency response – major repair (EMMAJ);
- emergency and unscheduled power system response and repair (EMRES);
- emergency fault management – availability costs (EMRES – NS AVA); and
- emergency management – customer damage to asset (EMDAA).

Forecasted volumes and expenditure against these work programs are based on historical volumes and expenditure.

7.2.1.1 Emergency response – major repair (EMMAJ)

This work program covers the operational activities associated with attending and rectifying system faults and emergencies major repairs. This work is reactive in nature and is predominantly driven by external events, such as adverse weather and failure of network assets. These events can result in network outages and/or damage to assets, and associated interruptions to customer supply. When this occurs, TasNetworks needs to undertake activities (and incur costs) to:

- ensure the safety of the community and TasNetworks employees;
- identify and repair damaged assets; and
- restore supply to customers.

Sites are assessed by skilled employees when they attend faults and emergencies to identify if major repairs are required.

7.2.1.2 Emergency and unscheduled power system response and repair (EMRES)

Emergency works are conducted to maintain a safe and secure system, and to minimise the number of customers affected by a supply outage, as well as the duration of any supply interruption.

This work program covers the operational activities associated with managing and attending system faults and emergencies, including:

- ensuring the distribution system does not pose a health and safety risk to the general public;
- providing information to customers – keeping the customer informed about interruptions including extent, cause and probable restoration time;
- repairing the faulty assets;

- providing system access to enable the faulty asset to be prepared for repair – if the fault requires specialist crews;
- restoring supply; and
- providing information to asset management staff on the interruption.

7.2.1.3 Emergency fault management – availability costs (EMRES – NS AVA)

This work program covers the operational costs associated with having an on-call staff roster available to attend system faults and emergencies when they occur. This work program is required to ensure that suitably skilled and authorised persons are available statewide seven days per week, 24 hours per day to ensure:

- the distribution system does not pose a health and safety risk to the general public;
- information to customers is provided – keeping the customer informed about interruptions including extent, cause and probable restoration time;
- repair of faulty assets in a timely manner;
- system access is provided to enable the faulty asset to be repaired for repair – if the fault requires specialist crews;
- supply is restored; and
- asset management are provided with appropriate information on the interruption.

No repair work is carried out under this work program.

7.2.1.4 Emergency management – customer damage to asset (EMDAA)

This work program covers operational activities associated with attending and rectifying system faults and emergencies caused by third parties. This work is reactive in nature and is predominantly driven by external events, such as vehicles coming into contact with network assets. These events can result in network outages and/or damage to assets, and associated interruptions to customer supply. When this occurs, TasNetworks needs to undertake activities (and incur costs) to:

- ensure the safety of the effected assets and the community;
- restore supply to customers;
- repair damaged assets;
- report details of the third party; and
- identify costs of fault response and asset repair due to the third party.

When possible, TasNetworks takes actions to recover costs from customers.

7.2.2 System management

System management is a business as usual activity to ensure the safe, reliable and efficient operation of the power system and compliance with legislative and regulatory obligations. The System Reconfigurations works program (SOSRE) covers the operational activities associated with network system management for reliability, load, safety, voltage and system stability, and constraints purposes.

System reconfiguration may be required due to:

- requirements for an alternate network supply to customers where the normal supply has become unavailable;
- minimise supply impacts to customers through segmentation of the network;
- loading issues;
- voltage issues;

- system constraints;
- planned network related works

Forecasted volumes and expenditure against this work program is based on historical volumes and expenditure.

7.3 Benchmarking

TasNetworks participates and works closely with distribution companies in key industry forums such as CIGRE (International Council on Large Electric Systems), Institute of Electrical and Electronics Engineers (IEEE), American National Standards Institute (ANSI), and Energy Networks Australia (ENA), to compare asset management practices and performance to ensure we keep abreast of industry good practice and contemporary asset management. In addition, affiliation and representation on Australian Standard and other international standards bodies helps TasNetworks maintain influence on designs and standards and ensure that TasNetworks maintains a strong asset management focus with the objective being continually improvement.

7.4 Investment Evaluation

Investment evaluation is undertaken using TasNetworks' investment evaluation tool, in accordance with TasNetworks Gated Investment Framework. Investment Evaluation Summaries (IES) are used to provide information in support of a work category for inclusion in the operational works program. This information provides a record of the investment as it progresses from initiation to finalisation and is required to support a request for funding approval. The IES aims to improve the efficiency and delivery of the investment justification and approval process and is a requirement for regulatory and governance purposes.

7.5 Summary of Programs

Table 5 provides a summary of all of the programs described in this management plan.

Table 5: Summary of emergency response asset management plan work programs

Work Program	Work Category	Description
Non-routine maintenance	EMMAJ	Emergency Response - Major Event
	EMRES	Emergency and Unscheduled Power System Response and Repair
	EMRES NS AVA	Emergency and Unscheduled Power System Response and Repair - Availability of Skilled Staff
	SOSRE	System Reconfigurations
Unregulated	EMTNA	Emergency Management - Customer Damage to TasNetworks Asset

8 Financial Summary

8.1 Proposed Operational Expenditure Plan

The operational programs identified in this management plan are necessary to manage operational and safety risks and maintain network reliably at an acceptable level. The proposed volumes and expenditure for the individual work programs are based on average historical volumes and expenditure.

9 Responsibilities

Maintenance and development of this management plan is the responsibility of the Leader Asset Strategy and Performance.

Implementation of this management plan is the responsibility of the Group Leader Field Operations and Leader Network Operations.

Approval of this management plan is the responsibility of the Asset Strategy and Performance Leader.

A review of this asset management plan will be conducted every 2.5 years or upon changes to applicable standards, rules, codes or legislation.

10 Related Standards and Documentation

The following documents have been used to either in the development of this management plan, or provide supporting information to it:

1. TasNetworks Asset Management Policy
2. TasNetworks Business Plan 2017/18
3. TasNetworks Risk Framework March 2015
4. All other asset management plans that exist for Distribution Network Assets
5. TasNetworks Gated Investment Framework