



Customer Initiated Management Plan

Info Zone Record Number: R0000187164

Version Number: 1.0

Date: October 2015

Copyright

This document is protected by copyright vested in TasNetworks Energy Pty Ltd. No part of the document may be reproduced or transmitted in any form by any means including, without limitation, electronic, photocopying, recording or otherwise, without the prior written permission of TasNetworks. Any breach of the above obligations may be restrained by legal proceedings seeking remedies including injunctions, damages and costs.

Disclaimer

UNCONTROLLED WHEN PRINTED

This document has been prepared and made available solely for information purposes. Whist care was taken in the preparation of the information in this document, and it is provided in good faith, TasNetworks Energy make no representation or warranty (express or implied) as to the accuracy, reliability, or completeness of the information contained in this document, or its suitability for any intended purpose. TasNetworks Energy (which for the purposes of this disclaimer, includes all their related bodies corporate, officers, employees, contractors, agents and consultants, and those of their bodies corporate) shall have no liability for any loss or damage (including without limitation, liability to any person by reason of negligence or negligent misstatement) for any statements, opinions, information or matter (expressed or implied) arising out of, contained in, or derived from, or for any omissions from, the information in this document, except to the extent that liability under any applicable statute cannot be excluded. In all cases, anyone proposing to rely on or use the information in this document should independently verify and check the accuracy, completeness, reliability and suitability of that information and the reports and other information relied on by TasNetworks Energy in preparing this document, and should obtain independent and specific advice from appropriate experts or other sources.

Authorisations

Action	Name and title	Date
Prepared by	Ewan Sherman	6/10/2015
Reviewed by	Paul Connor	7/10/2015
Authorised by	Stephen Jarvis	15/10/2015
Review cycle	2 Years	

Responsibilities

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

Please contact the Network Planning Leader with any queries or suggestions.

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

© Tasmanian Networks Pty Ltd 2014

Record of revisions

Section number	Details
0.1	Prepared from Aurora Energy's <i>Customer Initiated Capital Works Management Plan v3</i> (ref - NW#30171121, AE302)
1.0	For issue

Table of Contents

Copyright.....	2
Disclaimer.....	2
Authorisations.....	2
Responsibilities	3
1 Purpose.....	6
2 Scope	6
3 Regulatory and Legislative Obligations	6
4 Strategic Alignment and Objectives.....	7
4.1 Asset Management Plans	8
4.2 Area Strategy reports (Area Development Plans)	8
5 Support Systems and Applications.....	9
5.1 Asset Management Information Systems	9
5.2 Asset Information	9
5.3 Asset Loading Information (Historian) Systems	9
6 Overview	9
6.1 Customer Initiated Capital Works.....	9
6.2 Pre-Connection Services	10
6.3 Non-Demand Network Alterations.....	10
6.4 Activity Management.....	11
7 Supporting Principles	12
7.1 Area Strategy Reports (Area development plans).....	12
7.2 TasNetworks Connection Pricing Policy 2017.....	12
7.3 Connection conditions	12
7.4 Customer service	12
7.5 Customer obligations.....	12
7.6 ‘Good electricity industry practice’	12
7.7 Essential service	13
7.8 Greater asset / network utilisation.....	13
8 Regulatory Framework.....	13
9 Connection Classes and Types	13
9.1 Connection class	13
9.1.1 Residential class.....	14
9.1.2 Commercial class	14
9.1.3 Irrigation class	15
9.1.4 Subdivision class	15

9.2	Connection class types.....	16
10	Forecasting methodology.....	17
10.1	Customer connection forecasts (volumes).....	17
10.2	Historical investment evaluation (unit rates).....	18
10.3	Expenditure forecasting approach	18
10.4	Expenditure forecast.....	19
10.5	Factors impacting expenditure forecast.....	19
10.5.1	Customer Choice.....	19
10.5.2	Delay in forecast expenditure	19
10.6	Revised expenditure forecast for DD17.....	19
11	Financial Summary	21
12	Related Standards and Documentation	22
	Appendix A – Summary of Customer Work Categories	23
	Appendix B – Superseded expenditure forecast	26

1 Purpose

The purpose of this document is to describe management strategy for customer initiated activities associated with the provision, modification or electrical connections to the distribution network, and relocation of electrical infrastructure, owned and operated by Tasmanian Networks Pty Ltd (TasNetworks). This plan provides:

- TasNetworks' approach to facilitating the establishment and/or modification of customer connections, and non-demand network alterations as requested by a third party or customer as reflected through its legislative and regulatory obligations, pricing policy, and strategic plans;
- The key programs underpinning its activities; and
- Forecast CAPEX and OPEX, to provide and deliver these programs until 2026/27, including the basis upon which these forecasts are derived.

2 Scope

This document covers all effort and expenditure associated with the negotiation, planning, solution development, design, construction and commissioning activities for establishing or modifying customer connections¹. This includes Customer Initiated Capital Works (CICW), Pre-connection Services, and Quoted Services (non-demand related).

Non-demand related network alterations are work activities separate from the CICW programs that have been requested by a third party or customer. This includes work activities such as asset relocation for road widening, pole relocations, or undergrounding.

Pre-connection services are the tasks associated with the administration of the connection application process and the preparation and finalisation of the asset construction design.

This document excludes:

- Network development activities including demand, quality, and reliability related capital works; and
- Maintenance and renewal activities including replacement of the service wire connection for condition based, fault replacement or similar circumstances.

3 Regulatory and Legislative Obligations

The Tasmanian electricity supply industry operates under both state and national regulatory regimes. TasNetworks, being a participant in the NEM, is required to develop, operate and maintain the transmission and distribution system in accordance with the National Electricity Rules (NER) and other local requirements under the terms of our licences issued by the Tasmanian Economic Regulator under the Tasmanian Electricity Supply Industry Act 1995. We are subject to a number of industry-specific, Tasmanian Acts and Regulations.

¹ For the purpose of this management plan the term customer connection relates to the physical provision of a new or upgraded service wire connection that makes supply to a single point for use by customer(s). Notwithstanding that the single point of supply may supply multiple customers (e.g. apartments / units) with multiple National Meter Identifiers (NMI).

Customer initiated expenditure is associated with the construction of new distribution assets or modification of existing assets, including network extensions and augmentations of the shared network to facilitate that connection or relocation request. Customer initiated works are developed in accordance with our asset management plans, strategic area plans, and planning principles, to ensure that the distribution network delivers:

- Compliance with regulatory obligations; and
- Safety, reliability and security of supply outcomes that meet customers' needs, by maintaining asset utilisation rates at appropriate levels at the lowest whole of life cost.

The regulations which are relevant to transmission and distribution network planning and development are:

- the National Electricity Rules (NER). These rules stipulate the requirements surrounding the electrical performance of the network. Of particular relevance to the distribution network is the Service Target Performance Incentive Scheme (STIPS);
- The NER (specifically Chapter 5 and 5.1) also stipulates our obligations for encouraging and managing new and modified customer connection services to the transmission and distribution networks;
- the *Electricity Supply Industry (Network Planning Requirements) Regulations 2007* (ESI). The ESI regulations define the minimum criteria for network performance following contingency events on the transmission network; and
- guidelines and standards applicable to the electricity industry as per the Tasmanian Electricity Code (TEC). The TEC contains arrangements for the regulation of the Tasmanian electricity supply industry which are not covered by the NER and are largely related to the distribution network. Of particular interest to network planning are the reliability requirements which outline the acceptable levels of reliability for various classifications of Tasmanian communities. Any excursions outside these requirements result in Guaranteed Service Level (GSL) payments to the impacted customers.

As a joint transmission and distribution network service provider, customer initiated development strategies in the distribution network considers TasNetworks' regulatory obligations for the transmission network.

4 Strategic Alignment and Objectives

TasNetworks Connection Pricing Policy 2017 provides the principles that will apply when a connection applicant seeks a new or modified connection to TasNetworks' distribution network and establishes the requirements for the provision of those customer connection services.

The Customer initiated management plan has been developed to align with TasNetworks' Connection Pricing Policy 2017, Asset Management Policy, and Strategic Objectives.

The asset management objectives focus on six key areas:

- Zero Harm will continue to be our top priority and we will ensure that our safety performance continues to improve.
- Cost performance will be improved through prioritisation and efficiency improvements that enable us to provide predictable and lowest sustainable pricing, to our customers.
- 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.

- Customer engagement will be improved to ensure that we understand customer needs, and incorporate these into our decision making to maximise value to them.
- Our program of work will be developed and delivered on time and within budget.
- Our asset management capability will be continually improved to support our cost and service performance, and efficiency improvements.

This management plan should be read in conjunction with relevant TasNetworks asset management plans, area strategy reports, and our design and construction manuals and standards.

4.1 Asset Management Plans

The suite of asset management plans have been developed to align with both TasNetworks' Asset Management Policy and Strategic Objectives.

The asset management policy, contained within the Strategic Asset Management Plan, states 'Consistent with our vision and purpose, we strive for excellence in asset management and are committed to providing a safe working environment, value for our customers, sustainable shareholder outcomes, care for our assets and the environment, safe and reliable network services, whilst effectively and efficiently managing our assets throughout their life-cycle'.

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 details the specific activities that need to be undertaken to address the identified issues.

4.2 Area Strategy reports (Area Development Plans)

For planning purpose, the transmission and distribution networks are managed as seven planning areas. An Area Strategy report exists for each planning area, which is used to capture and summarise location specific network information, economic and demand forecasts, and strategic network development plans. These reports are used to develop our combined transmission and distribution Annual Planning Report.

The Area Strategy reports contribute to the asset management objectives by building understanding, capabilities and strategies to realise early opportunities, whilst delivering safe and reliable network services. We do this to meet our customers' needs and the Rules requirements. The Area Strategy reports form a part of the end to end works program process, which identify the need, timing and opportunity, in the early phases of the planning and network development process.

The Business Plan states the key operational activities that are needed to operate our business effectively. These include:

- Forecasting of future network requirements;
- Develop solutions to network issues and manage design standards and policies; and
- Develop asset strategies including business cases for inclusion in the program of work.

The Area Strategy reports contribute directly to the above operational activities.

5 Support Systems and Applications

5.1 Asset Management Information Systems

TasNetworks utilises Asset Management Information Systems, which are maintained to contain up to date, detailed information to assist customer initiated works, and network development planning and works.

The network asset information is managed using a spatial data warehouse (G/Tech). This data base stores critical attributes for each asset and element, including the location, construction, rating, and its interconnection to the network.

A works management system (WASP) is used to manage network development activities and for the recording of asset performance.

5.2 Asset Information

Asset related information is stored and accessed through the asset management systems. Where asset information is insufficient audits are undertaken to gather the information.

5.3 Asset Loading Information (Historian) Systems

TasNetworks utilises Asset Loading Information Systems, which are maintained to store historical system loading data. This data is used for a range of customer connection analysis and network development planning activities.

The network asset loading information is managed by the NOCS team, and made available through PI historian.

6 Overview

6.1 Customer Initiated Capital Works

CICW activity is initiated and undertaken at the request of customers through a 'Connection Enquiry/Application to Connect' process (connection process), which includes assessing and subsequently agreeing to the conditions for connection to the network. This connection process focuses on facilitating and establishing the connection of new and modified private electrical infrastructure to TasNetworks' distribution network through either direct connection or via dedicated distribution connection assets (connection assets).

A customer connection to the network allows a customer to not only import energy (consume) from the network but also, in certain circumstances, generate (produce) and export energy into the network, e.g. rooftop photo-voltaic systems.

In determining the scope of work for a specific customer connection there are two (2) areas where infrastructure investment may be required:

- **Connection assets**, specific to that customer connection; and
- **Network alterations, expansion and extension works** (shared assets alterations) associated with strengthening the network specifically to facilitate only that customer connection.

CICW infrastructure investments for connection services therefore relate to:

- Building connection assets at the customer's premises;
- Modifying the existing network or building additional network; and
- Connecting connection assets to the network.

The specific technical requirements, commercial arrangements, location and type of customer connection, and capability or constraints of the existing network influence the magnitude of individual CICW projects.

Historically for larger load connection requests, e.g. 10 MW and greater, a joint distribution and transmission planning process between the Distribution Network Service Provider (DNSP) Aurora Energy Pty Ltd and the Transmission Network Service Provider (TNSP) Transend Networks Pty Ltd facilitated collective assessment and solution recognition for establishing optimum technical and commercial arrangements. This function is now coordinated solely by TasNetworks, as both the DNSP and TNSP, within Strategic Asset Management.

The CICW investment is further defined through a set of existing work categories within the Program of Work (POW) reflecting in more detail the nature, type and size of the connection assets required.

All CICW projects are prioritised with other projects within the POW, whilst recognising the customer's supply timing requirements, to ensure efficient resource and materials deployment within the POW.

The forecasting of customer connection numbers and network maximum demands (MD) whilst related, are separate activities. In particular, the demand forecast is informed by a gross state product (GSP) forecast, which is also utilised as a basis of the customer connection forecasts. The demand forecast is aimed at providing evidence of emerging system constraints upstream of new connections and locally within the High Voltage (HV) distribution networks. These emerging issues are a result of both increased customer connections and existing customer usage changes recognising external econometric, weather related and environmental influences. On the other hand, customer number forecasts demonstrate the requirements for new and modified connection investment more globally across the network.

6.2 Pre-Connection Services

Pre-Connection Services relate to the design, engineering, plant, and labour costs associated with the preparation of an Offer to Connect; for work activities associated with CICW and non-demand replacement activity.

6.3 Non-Demand Network Alterations

Non-demand related network alterations are work activities separate from the CICW programs, which have been requested by a third party or customer. This includes work activities such as asset relocation for road widening, pole relocations, or undergrounding.

Non-demand activity is initiated and undertaken at the request of customers through the 'Connection Enquiry/Application to Connect' process (connection process), which includes assessing and subsequently agreeing to the conditions of the requested works. This connection process focuses on facilitating the customers' requests and timeframe, as well as ensuring appropriate infrastructure is installed with the works i.e. cater for future growth, assets etc.

In determining the scope of work required for alternative control services, TasNetworks assess the request in conjunction with associated area strategies to ensure opportunity or 'bring-forward' investment by TasNetworks is managed sustainably.

Where additional infrastructure is installed or additional works undertaken with the non-demand customer initiated works, this expenditure is excluded from the Customer Initiated work categories; allocating this expenditure to other network streams as appropriate i.e. asset renewal or network development.

The specific asset type, technical capability or constraints of the existing network influence the magnitude of network alteration work. All works are delivered by the Works and Service Delivery unit, however for work requests associated with the HV distribution networks, the Strategic Asset management unit are engaged for strategic input.

All Quoted Services projects are prioritised with other projects within the POW, whilst recognising the customer's request timing requirements, to ensure efficient resource and materials deployment within the POW.

Non-demand related network alterations or Quoted Services describe alternative control services requested by a third party or customer, e.g. asset relocation for road widening, pole relocations, or undergrounding. Quoted Services also include all pre-connection services (Design and Engineering plant and labour) associated with preparing an Offer to Connect on request from customers.

6.4 Activity Management

Customer development activity is managed within TasNetworks through a number of areas of responsibility, including:

- The *Network Planning Team Leader*, facilitating ownership of the Customer Initiated Managing Plan;
- The *Network Planning Team*, facilitating the development of future POW volumes and budget forecasts;
- the Customer Service Group, negotiating the customer connection directly with the customer;
- the Strategic Asset Management (SAM) unit recognising the impact and technical requirements for the customer connection and influence on network development plans and strategies; and
- the Works & Service Delivery (WS&D) unit undertaking the design and construction², commissioning, audit, project finalisation, and management of work activities to establish and facilitate the customer connection; and
- the Finance team, journaling and reporting of customer initiated expenditure to the business.

² For some customer initiated works the design and construction activities may be contestable whereby the works may be undertaken by either WS&D or by the customer's external resources, as requested by the customer.

7 Supporting Principles

There are a number of key supporting principles that guide TasNetworks approach to Customer Initiated activity.

7.1 Area Strategy Reports (Area development plans)

The Network Planning team at TasNetworks has segregated the transmission and distribution networks into areas in order to communicate the strategies for managing current and emerging issues in each area, namely the Area Strategies.

To ensure the outcomes of the planning philosophy are met, customer initiated works are managed in conjunction with the area strategies. This is how customer initiated activity is influenced by TasNetworks strategic plans, and vice versa.

7.2 TasNetworks Connection Pricing Policy 2017

The Connection Pricing Policy 2017 provides the basis for the commercial arrangements and any on-going maintenance and contractual arrangements necessary for any customer connection to the distribution network. There is an obligation on both parties to establish a connection agreement to ensure that this happens and that such a customer connection meets specific legislative and regulatory requirements.

7.3 Connection conditions

In establishing a customer connection to the network, while satisfying the customer electrical supply requirements, the conditions and arrangements for that customer connection must ensure that the network and consequently other customer connections are not adversely affected.

All customer connections must comply with the obligations of the National Electricity Rules (NER), Tasmanian Electricity Code (TEC) and relevant Australian Standards.

7.4 Customer service

TasNetworks' customer charter provides the levels of expected service when establishing a customer connection to the network.

7.5 Customer obligations

Each application for a customer connection is assessed and investigated to ensure that operation of customer facilities has minimal impact on existing customer connections and complies with relevant legislative, commercial and technical obligations.

Customer installations must comply with the relevant rules, legislation and Australian Standards prior to connecting to the network.

7.6 'Good electricity industry practice'

In establishing a customer connection to the network, TasNetworks recognises infrastructure design and construction required for that connection must be in accordance with good electricity industry practice as defined in Chapter 14 of the Tasmanian Electricity Code.

7.7 Essential service

Additional considerations are given to the required infrastructure and connection assets where that customer connection has identified reliance of supply as an essential service in terms of emergency, safety and life support requirements.

7.8 Greater asset / network utilisation

In determining the optimum investment for a customer connection, recognition of the least cost, most prudent investment and maximum utilisation of the existing infrastructure is paramount to ensure the 'cost to serve' is minimised.

8 Regulatory Framework

Chapters 4, 5, 6 and 7 of the NER provide various minimum requirements and a framework for access arrangements to the network.

In particular, clause 6.1.3 states:

Access to direct control services and negotiated distribution services

(a) Subject to and in accordance with the Rules:

- (1) a person (a Service Applicant) may apply to a Distribution Network Service Provider for provision of direct control services or negotiated distribution services;
- (2) a Distribution Network Service Provider must provide direct control services or negotiated distribution services (as the case may be) on terms and conditions of access as determined under Chapters 4, 5, this Chapter 6 and Chapter 7 of the Rules.

(b) The terms and conditions of access are:

- (1) in relation to negotiated distribution services:
 - (i) the price of those services (including, if relevant, access charges); and
 - (ii) other terms and conditions for the provision of those services;
- (2) in relation to direct control services:
 - (i) the price of those services under the approved pricing proposal; and
 - (ii) other terms and conditions for the provision of those services.

TasNetworks is therefore required to provide offers to connect to all connection applicants on fair and reasonable terms and conditions.

Chapter 5 of the NER provides additional detail regarding the connection process and requirements for access to the network for a customer connection, including access standards.

9 Connection Classes and Types

9.1 Connection class

For the purposes of managing the CICW activities, the CICW category of work is segmented into four (4) connection classes. Each connection class reflects the nature 'of' and drivers for the connection service, the type of customer connection, the appropriate connection asset infrastructure, the complexity of supply requirements, and the customer's private installation. These connection classes include Residential, Commercial, Irrigation, and Subdivisions.

9.1.1 Residential class

Residential installations include residential construction activities. Connection assets associated with this connection class may include:

- Simple connections (LV connection):
 - customer connection service fuses; and / or
 - one (1) span of overhead service wire.
- Medium connections (LV connection):
 - customer connection service fuses; and / or
 - greater than one (1) span of overhead service wire and crossover;
 - small extension, overhead and/or underground, of the LV feeder; and
 - additional street furniture (i.e. turret or cabinet).
- Complex connections (LV connection):
 - customer connection service fuses; and / or
 - greater than one (1) span of overhead service wire and crossover;
 - large extension of the LV feeder;
 - extension of the HV feeder;
 - installation of a distribution transformer (predominantly pole-type); and
 - Upstream shared asset alterations may be required.

9.1.2 Commercial class

Commercial installations include agribusiness installations (but not irrigation supplies), supply for commercial construction activities, industrial developments and mining complexes. Connection assets associated with this connection class include:

- Simple connections (LV connection):
 - customer connection service fuses; and / or
 - greater than one (1) span of overhead service wire and crossover;
 - small extension, overhead and/or underground, of the LV feeder; and
 - additional street furniture (i.e. turret, cabinet or wall box).
- Medium connections (LV connection):
 - Large extension, overhead and/or underground, of the LV feeder;
 - Small extension, overhead and/or underground, of the HV feeder; and
 - installation of a distribution transformer (predominantly pole-type).
- Medium connections (HV connection):
 - small extension, overhead and/or underground, of the HV feeder;
 - installation of a HV isolator; and
 - Upstream shared asset alterations may be required.

- Complex connections (LV connection):
 - large extension, overhead and/or underground, of the HV feeder; and
 - installation of a distribution transformer (predominantly ground-type).
- Complex connections (HV connection):
 - large extension, overhead and/or underground, of the HV feeder;
 - installation of a HV isolator; and
 - Upstream shared asset alterations expected to be required.

9.1.3 Irrigation class

Irrigation installations include irrigation construction activities. That is, connection works associated with *customer connections* for the purpose of irrigating. Connection assets associated with this connection class may include:

- Simple connections (LV connection):
 - customer connection service fuses; and / or
 - one (1) span of overhead service wire; and
 - small extension, overhead and/or underground, of the LV feeder.
- Complex connections (LV connection):
 - customer connection service fuses; and / or
 - greater than one (1) span of overhead service wire;
 - large extension of the LV feeder;
 - large extension of the HV feeder;
 - installation of a distribution transformer (predominantly pole-type); and
 - Upstream shared asset alterations may be required.

9.1.4 Subdivision class

Subdivision developments include residential and commercial/industrial activities. Connection assets associated with this connection class, both residential and commercial, is based on basic infrastructure and typical loadings per block. The 'per block' assessment includes the electrical infrastructure and does not include civil works associated with any excavation, trenching, backfilling or reinstatement within the subdivision development. Connection assets associated with this connection class may include:

- Medium complexity connections
 - LV & HV feeders;
 - installation of a distribution transformer; and
 - possible upstream shared asset alterations may be required.

9.2 Connection class types

Generally the complexity of infrastructure and level of expenditure required for each connection class is influenced by:

- Load or maximum demand;
- Type of customer connection or technical requirements requested;
- Location (topography) of the customer connection; and
- Capability and topology of the existing network infrastructure to establish the customer connection.

Accordingly each connection class can be grouped into types with the aim of assisting forecasting the CICW investment allowances, and align with relevant regulatory reporting requirements. Table 1 below summarises the connection class type codes used to forecast CICW investment allowances including associated internal Work Levels, and POW Work Category Codes.

Quoted services investment is further defined through a set of existing work categories within the Program of Work (POW) reflecting in more detail the nature, type and size of the alteration required. With the aim of assisting budget forecasting and align with relevant regulatory reporting requirements these categories have been grouped as summarised in Table 1.

Table 1: Summary of Customer Connection types

Customer Class	Connection class type Code	Work Level Description	Work Level Code	Associated POW Work Category Codes ³
Subdivision	CSUDN	<i>Customer Initiated Subdivisions</i>	CSUD	SOSDC, SOSDI, SUSBD, LANDS, EASES.
Residential	CCONR ⁴	<i>Customer Initiated Connection Assets</i>	CCON	SUSCA, LANDC, EASEC
	CNMAR	<i>Customer Initiated Non-Major Works</i>	CNMA	DESDB, SOLCI, SOLCP, SOPOR, SUPOR, SOPOC
Irrigation	CNMAI	<i>Customer Initiated Non-Major Works</i>	CNMA	SOIRR, SOIRC
Commercial	CNMAC	<i>Customer Initiated Non-Major Works</i>	CNMA	SOGSI, SUGSI, LANDN ⁵ , EASEN ⁶
	CMAJC	<i>Customer Initiated Major Works</i>	CMAJ	CASYS, SUMPR, SOGSM, LANDM, EASEM
	CSUBC	<i>Customer Initiated Substations</i>	CSUB	SUSUB, LANDB, EASEB
Quoted Services (OPEX)	QUOTS	<i>Customer Initiated Quoted Services</i>	QUOT	QUREO, QUHIO, QUSCO, QUSUO, QUNSO, EASEQ, (includes pre-connection services)

³ POW Work Category Descriptions detailed in Appendix A

⁴ Not included in budget forecast – retained for reporting purposes only.

⁵ Work Category LANDN also used for non-major Residential and Irrigation connection classes.

⁶ Work Category EASEN also used for non-major Residential and Irrigation connection classes.

10 Forecasting methodology

TasNetworks creates forecasts of the number of new network connections split into the categories residential, commercial, irrigation and residential subdivisions (lots). These customer connection forecasts are then used; in conjunction with an analysis of historical spend, to determine the budget forecast for Customer Initiated activity in future programs of work.

10.1 Customer connection forecasts (volumes)

TasNetworks has opted to apply an econometric methodology to forecast new customer connections to the distribution network. This approach requires the estimation and testing of statistical relationships between the number of new connections and the underlying drivers that influence the number of new connections in Tasmania.

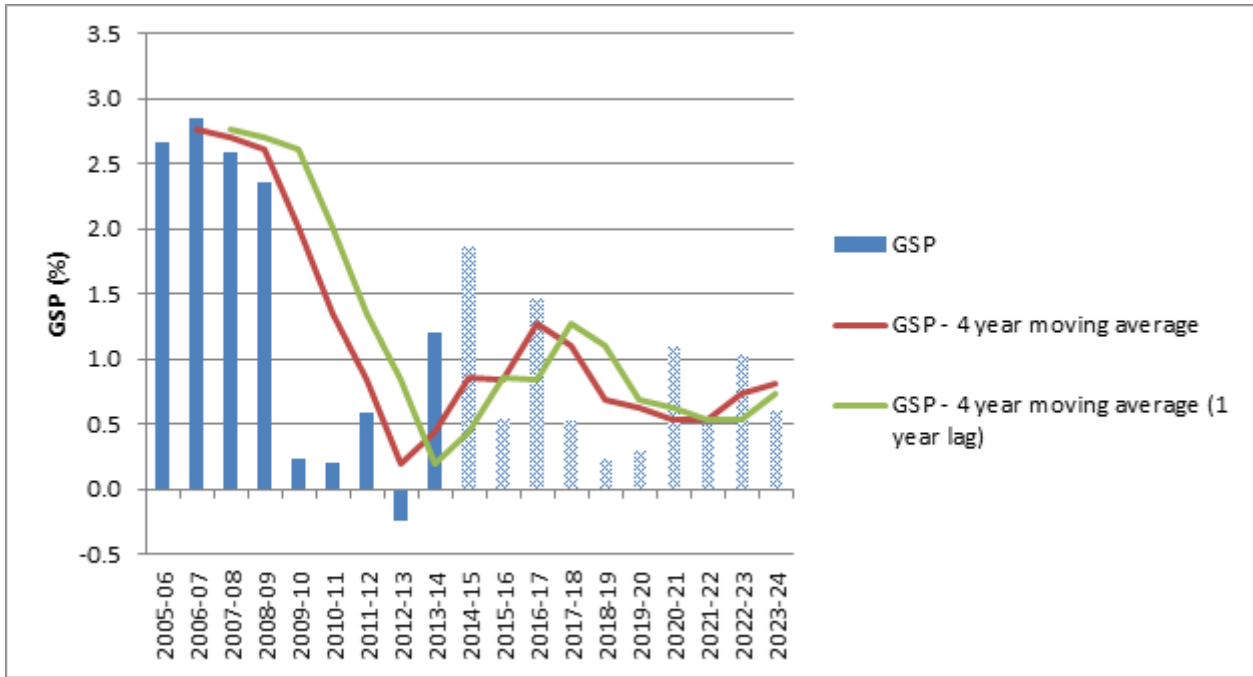
The customer connections forecast is created by conducting a trend analysis of historical customer project volumes by customer connection class and applying relevant econometric forecast drivers to map out long term trends. TasNetworks customer connection forecasts are driven by a strong correlation between the one year lag of the four year rolling average of gross state product (GSP), and the historical change in new customer connections. It is believed this reflects adequately the delay in the construction industry response to the prevailing economic conditions as well as the response to the trend in economic conditions rather than the economic conditions that exist at any point in time.

A relatively strong GSP result in FY14 (1.2%) is followed up by a forecast strong GSP in FY15 (1.9%) and FY17 (1.5%) and a period of relative weakness after FY17. This results in higher customer connection forecast for FY18 and FY19 as a result of the lagging impact of GSP on new customer connections. The output of the customer connection forecasts is used to establish volumes of work for customer initiated activity in future programs of work. Figure 1 below shows the forecast of GSP for reference.

For more information refer to the customer connection forecast report⁷. The GSP forecast was developed by the National Institute of Economic and Industry Research (NIEIR) for TasNetworks' annual load forecasting activities.

⁷ Customer Connection Forecast Report.docx (R0000163760)

Figure 1 - Forecast of Gross State Product - Tasmania



10.2 Historical investment evaluation (unit rates)

Using the new connections forecasts in comparison with historical spend in customer initiated categories, unit rates were established to determine the cost per customer-type to be connected to the distribution network. The minimum unit rate over the most recent three years of historical customer initiated spend was chosen as an appropriate rate to use in the forecasting of the POW budget. Unit rates applied to the forecast are provided in Table 2.

Table 2: Unit rates for customer initiated budget forecasts⁸

Customer class	Unit rate (\$/customer connection)
Residential	10,318
Commercial	39,026
Irrigation	37,366
Subdivisions	5,099

10.3 Expenditure forecasting approach

Customer initiated budgets are generally forecast by connection class type (Table 1) by applying the minimum historical unit rate to the new customer connection forecasts. This is applicable to the non-major and subdivision connection class types only.

The TasNetworks finance team journals costs between POW work categories in order to make sure the costs are correctly allocated to each work category. This can have the unintended result of

⁸ POW FC – customer.xlsx (R0000089612)

inconsistencies with connection volumes for a number of work categories. As a result the unit rate calculation method is not directly applicable to the following connection class types:

- customer initiated major works (CMAJR),
- customer initiated substations (CSUBS), and
- alternative control quoted services - OPEX (QUOTS).

These categories were forecast using an analysis of historical costs as a basis.

Major works and substations connection class type budgets are forecast according to recent historical spend and growth in the commercial customer category as commercial activity is the main driver for work in these areas.

Quoted services are kept steady across the forecast period.

10.4 Expenditure forecast

Customer budget forecasts are derived from new customer connection forecasts and recent historical unit rates for relevant work category codes.

The high growth in customer activity forecast for the years 17/18 and 18/19 results in a high budget forecast for those years, followed by a sharp decline and steady recovery and increase to the end of the period. Table 4, Appendix B provides historic and forecast expenditure for customer activities, in total and by connection class type.

10.5 Factors impacting expenditure forecast

10.5.1 Customer Choice

In 2016 TasNetworks plans to introduce contestability for the design and construction works associated with some customer initiated activity. This allows for developers and other planning authorities the choice to undertake components of the design and construction of distribution network assets using their own approved designers and contractors as an alternative to TasNetworks. This will be limited to certain streams of customer initiated works initially, however is expected to reduce the customer initiated capital and operational expenditure profiles.

10.5.2 Delay in forecast expenditure

Although we have a high confidence in the customer number forecast that underpins our expenditure forecast for customer initiated work, there is an expectation that large step changes in expenditure will not occur without significant changes in internal or government policy. Additional factors such as project timing, payment plans, and development approvals may also impact the expenditure profiles.

10.6 Revised expenditure forecast for DD17

TasNetworks has allowed a capped capital expenditure (CAPEX) profile over the period 2017/18-26/27; capped at \$21.7m per annum for the two year determination and throughout the forecast period. This is a reduction in forecast CAPEX, particularly over the two year determination, which has been estimated using the customer connections forecast methodology. The CAPEX profile has been capped to minimise uncertainty from factors not considered in the customer number forecast (such as Customer Choice). The total forecast capital over the period 2017-27 remains unchanged. Operational expenditure remains unchanged at \$2.31m in 16/17, increasing to \$3.31m from 17/18 to account for pre-connection services migrating from standard to alternative control.

Table 3 – Revised Forecast Expenditure; actual (13/14), LEOY⁹ (14/15) and forecast (16-27)¹⁰

Year	Customer class expenditure (\$,000,000)							
	CAPEX						Total CAPEX	OPEX
	Subdivision (CSUDN)	Residential (CNMAR)	Irrigation (CNMAI)	Commercial (CNMAC)	Major works (CMAJR)	Substations (CSUBS)		Quoted services (QUOTS)
2012/13	4.44	4.34	2.21	7.41	1.15	0.24	21.12	1.34
2013/14	4.19	3.92	2.18	5.62	1.01	0.92	21.17	3.33
2014/15	4.65	4.16	2.44	6.38	1.18	1.25	22.31	2.25
2015/16	4.28	4.46	2.63	7.47	2.29	1.25	25.68	2.31
2016/17	4.24	4.44	2.60	7.42	2.28	1.24	22.23	2.31
2017/18	4.43	3.97	2.86	7.10	2.14	1.19	21.70	3.31 ¹¹
2018/19	4.33	4.10	2.75	7.15	2.17	1.20	21.70	3.31
2019/20	4.00	4.51	2.38	7.31	2.27	1.23	21.70	3.31
2020/21	3.93	4.60	2.30	7.35	2.28	1.23	21.70	3.31
2021/22	3.82	4.74	2.18	7.40	2.32	1.24	21.70	3.31
2022/23	3.81	4.75	2.17	7.41	2.32	1.24	21.70	3.31
2023/24	4.04	4.46	2.43	7.29	2.25	1.22	21.70	3.31
2024/25	4.12	4.37	2.51	7.26	2.23	1.22	21.70	3.31
2025/26	4.12	4.37	2.51	7.26	2.23	1.22	21.70	3.31
2026/27	4.20	4.27	2.60	7.21	2.21	1.21	21.70	3.31
Total 17-19	8.77	8.07	5.61	14.24	4.32	2.39	43.40	6.61
Total 17-27	40.81	44.14	24.68	72.74	22.43	12.20	217.00	33.05

⁹ LEOY: Likely end of year - 10 months of actual data, 2 months of projected data.

¹⁰ POW FC – customer.xlsx (R0000089612)

¹¹ increase of \$1.0m to accommodate transfer of pre-connection services from standard control to alternative control.

11 Financial Summary

The capital and operational programs and expenditure identified in this management plan are necessary to manage forecast customer initiated activity within the determination period. All customer initiated projects are prioritised with other projects within the POW, whilst recognising the customer’s supply timing requirements, to ensure efficient resource and materials deployment within the POW.

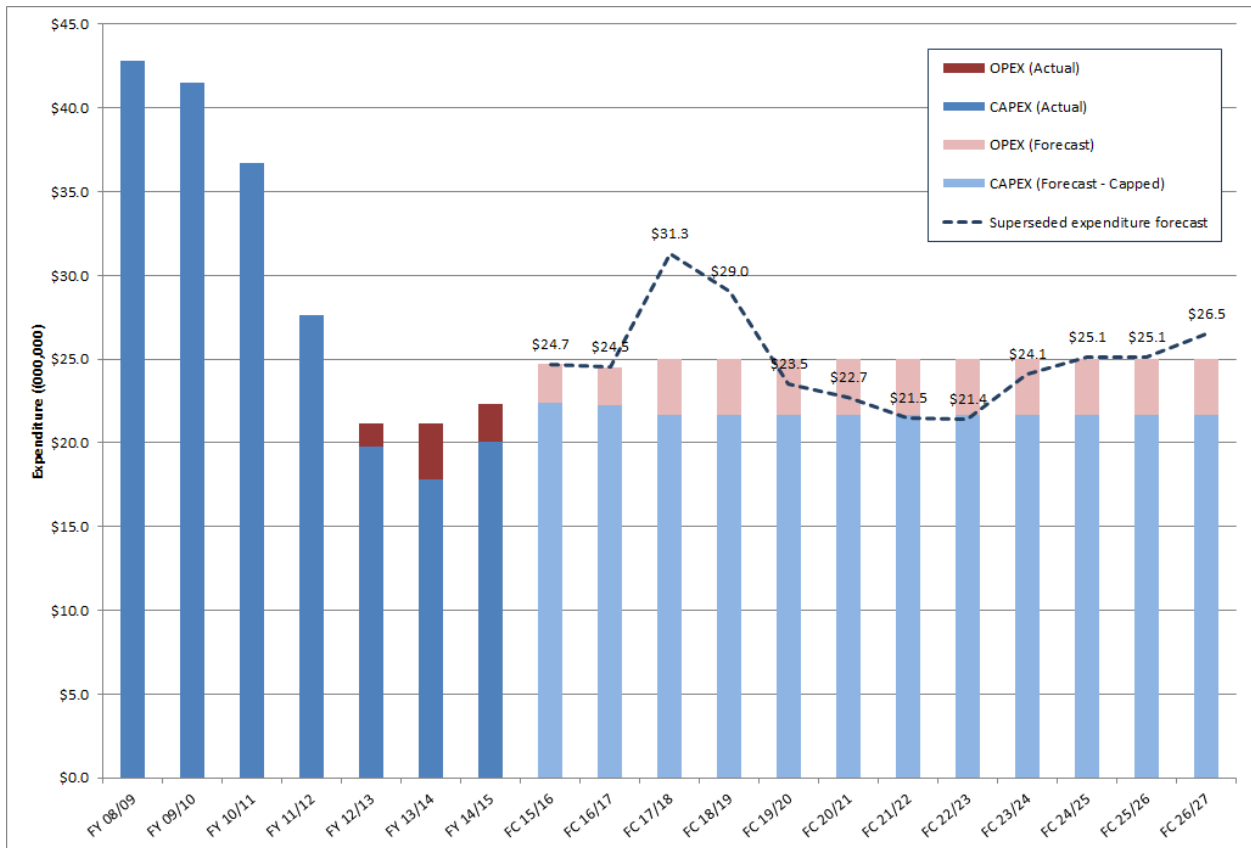
CAPEX TasNetworks proposes a total capital expenditure of \$217 million over the next 10 years (17/18-26/27), with a (capped) expenditure of \$21.7 million per annum.

OPEX TasNetworks proposes a total operational expenditure of \$33 million over the next 10 years (17/18-26/27), with an expenditure of \$3.3 million per annum.

Figure 2 below shows the revised capital and operational expenditure forecasts for customer initiated activity in relation to historical actuals.

The capped capital and operational expenditure forecasts are shown relative to the superseded expenditure forecast; where a large increase in expenditure was forecast over the two year determination. As discussed in Section 10.6, this CAPEX forecast has been capped at \$21.7m for to minimise uncertainty from factors not considered in the customer number forecast. The superseded expenditure forecast is available for reference in Appendix B.

Figure 2: Customer initiated capped forecast expenditure



12 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:

- Customer Pricing Policy 2017
- Customer Number Forecast 2015
- Customer Budget Forecasts
- Customer Choice
- Asset Management Plans
- Asset Management Policy
- Network Development Management Plan

Appendix A – Summary of Customer Work Categories

Customer Class	Work Category Code	Category Description	Information
Residential	DESDB	Preliminary drive by design (Retail)	
	SOLCI	Supply HV Low Consumption and IORs OH	Supply HV low consumption and Intermittently Occupied Residences (IOR) using overhead construction (OH)
	SOLCP	Supply LV Ext and Crossover Poles etc OH	Supply LV extensions and crossover poles etc OH
	SOPOR	Supply HV Perm Occupied Residence OH	Supply HV Permanently Occupied Residence (POR) using OH
	SUPOR	Supply Perm Occupied Residence UG	
	SOPOC	Supply HV Perm Occupied Residence OH - contestable	
	SUSCA	Supply service cables UG	
Commercial	CASYS	System Studies	
	SOGSI	Supply HV General Supply Installations OH	Supply HV general supply installations using OH
	SUGSI	Supply HV General Supply Install UG	Supply HV general supply installations using underground (UG)
	SUMPR	Supply HV Ground Major Project	Supply HV major ground project but not customer initiated relocations or similar activities
	SUSUB	Supply Build /Alter Distribution substation	
Irrigation	SOIRR	Supply HV irrigation OH	Supply irrigation using OH construction
	SOIRC	Supply HV irrigation OH - contestable	Supply irrigation using OH construction - contestable

Customer Class	Work Category Code	Category Description	Information
Subdivision	SOSDI	Supply Subdivision 5 lot min OH	Supply subdivision 5 lot min using OH construction
	SUSDB	Supply Subdivision n lots UG	Supply subdivision n lots (using UG construction)
Quoted Services	QUHIO	Services of a Higher Standard OPEX	
	QUNSO	Services of a Non-Standard Nature OPEX	
	QUREO	Relocation or Removal OPEX	
	QUSCO	Quoted Services Service Connections OPEX	
	QUSUO	OH & UG Subdivisions for Developers OPEX	
	EASEQ	Easements for quoted services	Costs directly associated with obtaining easements for alternative control services.

Customer Class	Work Category Code	Category Description	Information
Other	CIMIX	Customer Initiated Mixed	Used internally to capture multiple customer (and network) initiated work categories required for a single customer imitated project
	EASEB	Easements - Substations	Costs directly associated with obtaining easements for distribution substations. This includes easement costs for padmounted transformers and ground mounted switchgear. This excludes cable ingress and egress that supply the substation.
	EASEM	Easements - Major Works	Costs directly associated with obtaining easements for Major Works.
	EASEN	Easements - Non-Major Works	Costs directly associated with obtaining easements for Non-Major Works.
	EASES	Easements - Subdivisions	Costs directly associated with obtaining easements for Subdivisions.
	LANDB	Land Acquisition - Substations	Costs directly associated with acquiring land for distribution substations. This includes land for padmounted transformers and ground mounted switchgear. This excludes land costs associated with cable ingress and egress that supply the substation.
	LANDM	Land Acquisition - Major Works	Costs directly associated with acquiring land for Major Works.
	LANDN	Land Acquisition - Non-Major Works	Costs directly associated with acquiring land for Non Major Works.
	LANDS	Land Acquisition - Subdivisions	Costs directly associated with acquiring land for Subdivisions.

Appendix B – Superseded expenditure forecast

Table 4: CICW expenditure; actual (13/14), LEOY¹² (14/15) and forecast (2016-27)¹³

Year	Customer class expenditure (\$,000,000)							
	CAPEX						Total CAPEX	OPEX
	Subdivision (CSUDN)	Residential (CNMAR)	Irrigation (CNMAI)	Commercial (CNMAC)	Major works (CMAJR)	Substations (CSUBS)		Quoted services (QUOTS)
2012/13	4.44	4.34	2.21	7.41	1.15	0.24	19.79	1.34
2013/14	4.19	3.92	2.18	5.62	1.01	0.92	17.84	3.33
2014/15	4.65	4.16	2.44	6.38	1.18	1.25	20.06	2.25
2015/16	4.28	4.46	2.63	7.47	2.29	1.25	22.38	2.31
2016/17	4.24	4.45	2.60	7.42	2.28	1.24	22.23	2.31
2017/18	5.72	5.13	3.69	9.16	2.77	1.54	28.01	3.31 ¹⁴
2018/19	5.14	4.86	3.26	8.47	2.58	1.42	25.73	3.31
2019/20	3.73	4.21	2.22	6.82	2.11	1.14	20.23	3.31
2020/21	3.51	4.11	2.06	6.57	2.04	1.10	19.39	3.31
2021/22	3.20	3.96	1.82	6.19	1.94	1.04	18.15	3.31
2022/23	3.18	3.95	1.81	6.17	1.93	1.04	18.08	3.31
2023/24	3.88	4.28	2.33	6.99	2.16	1.17	20.81	3.31
2024/25	4.14	4.40	2.52	7.30	2.25	1.22	21.83	3.31
2025/26	4.14	4.40	2.52	7.30	2.25	1.22	21.83	3.31
2026/27	4.49	4.56	2.78	7.71	2.36	1.29	23.19	3.31
Total 17-19	10.86	9.99	6.95	17.63	5.34	2.96	53.74	6.61
Total 17-27	41.12	43.85	25.00	72.67	22.38	12.19	217.25	33.05

¹² LEOY: Likely end of year - 10 months of actual data, 2 months of projected data.

¹³ POW FC – customer.xlsx (R0000089612)

¹⁴ increase of \$1.0m to accommodate transfer of pre-connection services from standard control to alternative control.