TasNetworks
Delivering your power

Transmission Economic Benchmarking RIN, 2018-19

Basis of Preparation

Introduction

TasNetworks (Tasmanian Networks Pty Ltd, ABN 24 167 357 299) is the owner and operator of the electricity transmission network in Tasmania.

This Basis of Preparation (**BoP**) forms part of the response of TasNetworks to the Regulatory Information Notice (**RIN**) issued in November 2013 by the Australian Energy Regulator (**AER**), under Division 4 of Part 3 of the National Electricity (Tasmania) Law, for the purposes of collecting information for economic benchmarking.

The information and explanatory material included in this BoP relate to TasNetworks' activities as Tasmania's licensed Transmission Network Service Provider (**TNSP**) during the 2018-19 Regulatory Year (referred to throughout this document as the current reporting period).

AER's Instructions

The AERs instructions in completing the category analysis RIN is to provide a BoP that demonstrates how the information provided in response to the RIN request complies with the requirement of the RIN. The minimum requirements of the BoP as per schedule 2 of the notice are set out below

Table 1 - AER Requirements of the BoP

2.2 (a)	demonstrate how the information provided is consistent with the requirements of the notice.
(b)	explain the source from which we obtained the information provided.
(c)	explain the methodology we applied to provide the required information, including any assumptions made.
(d)	explain, in circumstances where we cannot provide input for a variable using actual information and therefore must provide input using estimated information: (1) why an estimate was required, including why it was not possible to use actual information; (2) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is our best estimate, given the information sought in the notice.

Definitions and interpretation

AER	Australian Energy Regulator
AMIS	Asset Management Information System
CAM	Cost Allocation Method
DBill	TasNetworks' Market and Billing System
DM	TasNetworks' Electronic Document Management System
Gentrack	TasNetworks' Market Systems Database
GIS	Geographical Information System
GTech	Intergraph G/Technology Geographic Information System
OTTER	Office of the Tasmanian Economic Regulator
POW	Programme of Work
RIS	Ratings Information System
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SAP	TasNetworks' asset management, finance, procurement, human resources and payroll system
SCS	Standard Control Services
SDW	Spatial Data Warehouse
SOM	TasNetworks' Service Order Management system
UG	Underground (cable)
Secondary Systems	Encompasses protection systems, SCADA and Network Control
Substations Primary Systems	Encompasses power transformers, switchbays, transmission cables and reactive plant
TasNetworks	Refers to Tasmanian Networks Pty Ltd, acting in its capacity as a licensed Distribution Network Service Provider in the Tasmanian jurisdiction of the National Electricity Market.
Telecommunications	Encompasses any telecommunications related asset
Transmission Lines	Encompasses towers, support structures and conductors
WASP	TasNetworks' program-of-work management system (Works, Assets, Solutions and People), which was retired on 3 March 2018

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Template 3.1 Revenue

Table 3.1.1: Revenue grouping by chargeable quantity	**Consistency of information with the requirements of the RIN** The information in Table 3.1.1 has been presented in accordance with the definitions and requirements of the RIN. Revenue information presented has been split in accordance with the categories in the templates. Only prescribed transmission revenues have been included in the worksheet.
	Source of information Reported prescribed transmission revenues have been extracted from TasNetworks' metering and billing system or summary information prepared from TasNetworks' metering and billing system which reconciles to TasNetworks' financial accounts.
	Methodology and assumptions made All revenues reported have been allocated to the chargeable quantity that most closely reflects the basis upon which the revenue was charged by TasNetworks. No assumptions were necessary in the preparation of the worksheet.
	Use of estimates No estimates have been required in the collation and presentation of this information.
Table 3.1.2: Revenue grouping by type of connected equipment	**Consistency of information with the requirements of the RIN** The information in Table 3.1.2 has been presented in accordance with the definitions and requirements of the RIN. Revenue information presented has been split in accordance with the categories in the templates. Only prescribed transmission revenues have been included in the worksheet.
	Source of information Reported prescribed transmission revenues have been extracted from TasNetworks' metering and billing system or summary information prepared from TasNetworks' metering and billing system which reconciles to TasNetworks' financial accounts.
	Methodology and assumptions made All revenues reported have been allocated to the chargeable quantity that most closely reflects the basis upon which the revenue was charged by TasNetworks. No assumptions were necessary in the preparation of the worksheet.
	Use of estimates No estimates have been required in the collation and presentation of this information.
Table 3.1.3: Revenue (penalties) allowed (deducted)	**Consistency of information with the requirements of the RIN** The information in Table 3.1.3 has been presented in accordance with the definitions and requirements of the RIN. Revenue information presented has been split in accordance with the categories in the templates. Only prescribed transmission revenues have been included in the worksheet.

through incentive schemes	**Source of information** • The Service Target Performance Incentive Scheme (STPIS) reward included in the worksheet is based on the actual reward approved for the financial year and recovered through invoiced prescribed revenues. • Post Tax Revenue Model (for Efficiency Benefit Sharing Scheme).
	Methodology and assumptions made The rewards of the incentive schemes have been reflected in the year that the penalty or reward is applied. The reported STPIS reward was extracted from the information maintained in the pricing model for the financial year. The Efficiency Benefit Sharing Scheme value is the unsmoothed amount as per the AERs revenue determination. No assumptions were necessary in the preparation of the worksheet.
	Use of estimates No estimates have been required in the collation and presentation of this information.

Template 3.2 Operating expenses

Table 3.2.1: Opex categories	**Consistency of information with the requirements of the RIN** The information in Table 3.2.1 has been presented in accordance with the definitions and requirements of the RIN. Only prescribed transmission opex has been included in the worksheet. Opex has been prepared for all Regulatory Years in accordance with TasNetworks' Cost Allocation Approach and directions within the Information Guidelines for the most recent completed Regulatory Year.
	Source of information Information was extracted from the audited Regulatory Financial Statements. The reported Opex is consistent with information reported in the audited Regulatory Financial Statements.
	Methodology and assumptions made No assumptions were necessary in the preparation of the worksheet.
	Use of estimates No estimates have been required in the collation and presentation of this information.
Table 3.2.3: Provisions	**Consistency of information with the requirements of the RIN** The information in Table 3.2.3 has been presented in accordance with the definitions and requirements of the RIN. Only provisions for prescribed transmission services have been included in the worksheet.
	Source of information Opening and closing balances for annual leave, long service leave, superannuation and other minor provisions were taken from the audited Regulatory Financial Statements. Amounts incurred and charged against the provision during the period, being annual leave or long service leave taken or paid out for departures, were taken from the payroll system. Amounts incurred and charged against the provision during the period were taken from the detailed superannuation general ledger accounts. The reported provisions are consistent with information previously reported in the audited Regulatory Financial Statements.
	Methodology and assumptions made ***Annual leave*** Increases to the provision were derived as the reconciling item as all other factors were known. ***Long service leave*** Increases to the provision were derived as the reconciling item as all other factors were known. ***Superannuation*** Increases to the provision during the period was derived as the reconciling item as all other factors were known. Interest incurred on the defined benefit liability and actuarial gains and losses have been classified as neither operating nor capital expenditure.

	Other provisions Other minor provisions include provisions for redundancies, workers compensation, timebank and provisions for employee incentives. Amounts incurred and charged against the provisions during the period, increases to the provisions and reversals of unused amounts of the provisions were taken from the general ledger. ***Split between Operating and Capital Expenditure*** The provisions balances and movements have been allocated between opex and capex using labour dollars as the driver.
	Use of estimates No estimates have been required in the collation and presentation of this information**.**

Template 3.3 Assets (regulatory asset base)

Table 3.3.1: Augex asset data - Substateions	**Consistency of information with the requirements of the RIN** The RAB financial information has been prepared in accordance with the RAB Framework as outlined in the RIN.
	Source of information The reported RAB information has been sourced from the reconciliations of property, plant and equipment (and the underlying detailed asset records) for prescribed transmission assets.
	Methodology and assumptions made • Information reported in table 3.3.1 is the aggregate of the asset value roll forward presented by asset in table 3.3.2. • Regulatory asset base (RAB) financial information includes data on overhead lines, underground cables, transformers and other assets.
	Use of estimates No estimates have been required in the collation and presentation of this information.
Table 3.3.2: Asset value roll forward	**Consistency of information with the requirements of the RIN** The RAB financial information has been prepared in accordance with the RAB Financial Reporting Framework as outlined in the RIN.
	Source of information The reported RAB information has been sourced from the reconciliations of property, plant and equipment (and the underlying detailed asset records) for prescribed transmission assets.
	Methodology and assumptions made • Regulatory asset base (RAB) financial information includes data on overhead lines, underground cables, transformers and other assets. • Aggregate RAB values were able to be directly attributed to the disaggregated asset categories by reviewing the underlying detailed asset records and allocating them directly to the asset categories as required. • For each asset category presented: o Opening values agreed with the previous year's closing values o The inflation addition reflects a CPI increase to the opening net book value of the assets o Straight line depreciation is calculated based upon the estimated useful lives of the assets o Regulatory depreciation is the net of the inflation addition and the straight line depreciation o Recorded additions are based on the cost of the assets for regulatory accounting purposes o Roll forward model adjustments have been captured in the actual additions for the financial year o Recorded disposals are based on actual assets that were sold or scrapped in the financial year o Closing values are derived from the sum of all elements noted above

	Use of estimates No estimates have been required in the collation and presentation of this information.
Table 3.3.3: Total disaggregated regulatory asset base asset values	**Consistency of information with the requirements of the RIN** The RAB financial information has been prepared in accordance with the RAB Framework as outlined in the RIN. Information reported in table 3.3.3 has been taken from the average of the opening and closing value of each asset class presented in the asset value roll forward table at 3.3.2 as per the requirement of the RIN.
	Source of information The reported RAB information has been sourced from the reconciliations of property, plant and equipment for prescribed transmission assets.
	Methodology and assumptions made Regulatory asset base (RAB) financial information includes data on overhead lines, underground cables, transformers and other assets.
	Use of estimates No estimations have been required in the collation and presentation of this information. Information is based on actual information, historical accounting records or other records used in the ordinary course of business.
Table 3.3.4: Asset lives	**Consistency of information with the requirements of the RIN** The RAB financial information has been prepared in accordance with the RAB Framework. The useful lives presented are calculated as a weighted average of the entire asset class calculated in accordance with the instructions in the RIN.
	Source of information The reported RAB information has been sourced from the reconciliations of property, plant and equipment (including the underlying detailed asset records) for prescribed transmission assets.
	Methodology and assumptions made Regulatory asset base (RAB) financial information includes data on overhead lines, underground cables, and transformers and other assets. Assets are allocated a useful life at acquisition based on the useful lives historically prescribed to relevant assets per the applicable revenue determinations.
	Use of estimates No estimates have been required in the collation and presentation of this information**.**

Template 3.4 Operational data

Table 3.4.1: Energy delivery	**Consistency of information with the requirements of the RIN** The information provided is consistent with the requirement of the RIN in that the amount of electricity transported through the network has been taken from the downstream settlement location, and includes energy imported and exported over Basslink.
	Source of information Information has been sourced from TasNetworks' metering system, which captures energy supplied to other connected transmission networks, distribution networks and end-users.
	Methodology and assumptions made Energy supplied to other connected transmission networks over Basslink is measured on the Tasmanian side of the network for both imports and exports. Energy delivery to other connected transmission networks over Basslink is the sum of import energy and export energy. Energy supplied to distribution networks and directly connected end users and pumping stations is measured at the downstream settlement location which does not include transmission losses.
	Use of estimates No estimates have been required in the collation and presentation of this information.
Table 3.4.2: Connection point numbers	**Consistency of information with the requirements of the RIN** The information provided is consistent with the RIN in that connection point numbers have been reported as the average number of connection points on the first and last days of the regulatory year under system normal conditions.
	Source of information Information has been sourced from TasNetworks' metering system which contains details of all actual connection points.
	Methodology and assumptions made Generation connections have been considered as entry points, and directly connected customers, distribution connections and auxiliary loads have been considered as exit points. Basslink has been considered in the presentation of the connection point numbers as an exit point only, and not as an entry point.
	Use of estimates No estimates have been required in the collation and presentation of this information.
Table 3.4.3: System demand	**Consistency of information with the requirements of the RIN** Information reported has been determined in accordance with the definitions provided in the RIN in that the data presented represents weather adjusted maximum demand where required.
	Source of information Information has been sourced from TasNetworks' metering system which contains details of coincident and non-coincident maximum system demand by connection point measured at the low voltage side of the supply transformers.

Methodology and assumptions made

Basslink has been considered in the presentation of the coincident and non-coincident maximum transmission system demand information.

Coincident and non-coincident maximum system demand MVA information was calculated using metering data MW and MVAr of each connection point at each half hour and obtaining the maximum values.

In calculating MVA, export MW and net MVAr (i.e., export MVAr – import MVAr) were accounted (square root of summation of MW squared and MVAr squared). The non-coincident MVA values are the summated MVA of the connection points at the time of maximum MW. Non-coincident MW and MVA calculation and weather correction are based on 2018 winter (1 June to 31 August) and 2018/19 summer (1 December to 28 February) recorded maximum demand values instead of financial year values. The reason to consider whole season data is that the weather corrected data are available only for the season maximum demand.

Ellerslie Road (near Hobart) weather station data were used for weather connection of coincident maximum MW and MVA as the load allocated to this weather station is higher than others and majority of the weather sensitive loads are in and around Hobart.

Average overall network power factor conversion is the average total megawatts divided by average total megavolt-amperes. Average power factor conversion for 220 kV lines is the average total megawatts divided by average total megavolt-amperes of 220 kV connection points except Basslink.

Average power factor conversion for lines is the average total megawatts divided by average total megavolt-amperes of connection points:

- 110KV lines average of 110KV connection points;
- 44KV lines average of 44KV connection points;
- 33KV lines average of 33KV connection points;
- 22KV lines average of 22KV connection points;
- 11KV lines average of 11KV connection points; and
- 6.6KV lines average of 6.6KV connection points.

Coincident and non-coincident weather adjusted maximum demand is derived based on the following methodology and assumptions:

- Based on historic daily maximum and minimum temperatures obtained from Bureau of Meteorology, daily effective temperatures have been calculated in accordance with the definition provided by NIEIR, which is defined as the weighted average of the overnight minimum and the previous daily maximum. The daily minimum was assigned a weight of 0.8, while the previous day's maximum a weight of 0.2 in this calculation.
- Annual minimum effective temperatures for the period from 1970 to current regulatory year were extracted from the calculated daily effective temperatures.
- The temperatures at 10% and 50% probability of exceedance were derived from the annual minimum effective temperatures for the period from 1970 to current regulatory year.
- In weather correction of system coincident and non-coincident maximum demand, each connection point maximum demand was weather corrected based on its closest weather station data.
- Daily maximum demand has been taken from metering data and effective temperature data has been taken from previous calculations for weekdays for the current reporting period.
- The assumption has been made that Basslink flow is not dependent on weather, and this load has not been forecast to change with the 10% or 50% probability of exceedance. However, the demand of the major industrial companies is included when deriving the temperature sensitivity in order to avoid the complexity of the calculation.

	• Weather adjustments for winter and summer (seasons) have been done separately. December to March are considered summer months. June to September are considered winter months. • The difference between the probability of exceedance temperature and the lowest of the daily effective temperature or the historic maximum of annual lowest effective temperatures has been multiplied by the load sensitivity to determine the total change in demand for the probability of exceedance. • Summation of weather correction maximum demand of each connection is taken as system non-coincident weather adjusted summated maximum demand. • In calculating coincident weather adjusted maximum demand in MVA, weather adjusted maximum demand in MW was calculated for the MW demand at the time of maximum MVA (in 2018-19, maximum MVA and maximum MW occurred at the same time). Then coincident weather adjusted MVA maximum demand was calculated proportionate to the raw data. Non-coincident demand was also calculated using the same ratio.
	Use of estimates No estimates have been required in the collation and presentation of this information.

Template 3.5 Physical assets

Table 3.5.1: Transmission system capacities	**Consistency of information with the requirements of the RIN** Data has been reported on the quantities and capacities of physical assets. Data has been disaggregated into the overhead network, underground cable and transformers where necessary.
	Source of information Information regarding the route length measurements and continuous load ratings has been sourced from the SAP Asset Management Information System (AMIS), Ratings Information System (RIS) and Geographical Information System (GIS), and corrected for the transmission line projects completed in 2017/18 and 2018/19.
	Methodology and assumptions made • In determining the length of the overhead network circuits for table 3.5.1.1, information was extracted from the GIS for the current reporting period, and for energised service status only. • The values for table 2.2.2 were calculated with parallel lines counted separately, however the values for 3.5.1.1 were calculated with parallel lines counted as a single circuit, and, as such, the values in table 2.2.2 and 3.5.1.1 do not reconcile. • In determining the length of the underground cable circuits for table 3.5.1.2, information was extracted from AMIS. • For tables 3.5.1.3 and 3.5.1.4, the weighted average megavolt-amperes capacity was calculated from circuit rating and circuit length data from TasNetworks' asset management information systems, consistent with the definition provided in the RIN. The estimated average capacity used in the calculation for transmission lines was the maximum winter capacity. Only those overhead network and underground cable circuits owned by TasNetworks were included in the calculations, not those assets managed by TasNetworks but owned by third parties. The length of the overhead network and underground cable circuits has been taken from tables 3.5.1.1 and 3.5.1.2. Cable MVA rating details are based on engineering assessment of manufacturer data and installation method and for new installation are provided by the contractor for entering into SAP. • Transformer information was extracted from SAP and is the maximum continuous loading rating as detailed on name plate for table 3.5.1.5. • For the Basslink interconnector the available load details are in MWs. The power factor value detailed in table 3.4.3.3 (TOPSD0305) for 220 kV lines was applied to arrive at the MVA value reported in TPA0505 (interconnector capacity). The MW value (500MW continuous) was obtained from Basslink website (www.basslink.com.au) to give a total MVA of 520MVA. • To assist with determining the transformer capacity for directly connected end–users owned by the TNSP (TPA0503) reference was made to TasNetworks' 'Transmission Customer Engagement' intranet portal to ascertain which customers TasNetworks has and which substation they are supplied from. Further confirmation using substation Power Circuit One Line Diagrams (PCOLD) or operational diagrams ensured that the substations in question only had a direct connect customer as the single point load and no supply to the DNSP. • The capacity for directly connected end-user assets owned by the end-user (TPA0504) was determined by referencing site data sheets as transformer capacity is not known. • For table 3.5.1.6, the asset management information system was interrogated for details of any listed spare assets.
	Use of estimates No estimations have been required in the collation and presentation of this information.

Template 3.6 Quality of service

Table 3.6.1: Service component	**Consistency of information with the requirements of the RIN** The information provided is consistent with the RIN in that the data reported is consistent with STPIS data unless otherwise stated.
	Source of information Information for table 3.6.1 is sourced from TasNetworks' service standards compliance template as published by the AER on its website.
	Methodology and assumptions made The definition used for determining information is included in the document "AER Final decision - Electricity TNSP Service Target Performance Incentive Scheme v4 - December 2012" which is available from the AER web site.
	Use of estimates No estimations have been required in the collation and presentation of this information.
Table 3.6.2: Market impact component	**Consistency of information with the requirements of the RIN** The information provided is consistent with the RIN.
	Source of information Information for table 3.6.2 is sourced from TasNetworks' service standards compliance template as published by the AER on its website.
	Methodology and assumptions made The definition used for determining information is included in the document "AER Final decision - Electricity TNSP Service Target Performance Incentive Scheme v4 - December 2012" which is available from the AER web site.
	Use of estimates No estimations have been required in the collation and presentation of this information.
Table 3.6.3: System losses	**Consistency of information with the requirements of the RIN** The information provided is consistent with the RIN. System losses are calculated by calendar year.
	Source of information Information is obtained from TasNetworks' national electricity market (NEM) wholesale metering and billing system.
	Methodology and assumptions made System losses (TQS03) is calculated as in accordance with the RIN: $$\frac{(Electricity\ inflows - electricity\ outflows) \times 100}{electricity\ inflows}$$ where: • Electricity inflows is the total electricity inflow into TasNetworks' transmission network

	including from generation, other connected TNSPs at the connection point, and connected DNSPs as measured by revenue meters. • Electricity outflows is the total electricity outflow into the networks of connected distribution network service providers, other transmission networks and directly connected end-users as measured by revenue meters.
	Use of estimates No estimations have been required in the collation and presentation of this information.

Template 3.7 Operating environment factors

Table 3.7.1: Terrain factors

Consistency of information with the requirements of the RIN

Information has been provided regarding terrain factors in accordance with the definitions included within the RIN.

Source of information

- Total number of vegetation maintenance spans information has been sourced from completed work orders which have been issued to vegetation management contractors.
- Average vegetation maintenance span cycle information has been sourced from the Transmission Line Easement Asset Management Plan.
- Average number of trees per vegetation maintenance cycle information has been sourced from completed work orders which have been issued to vegetation management contractors. The density of vegetation within the spans has been determined by:
    - using vegetation density data collected by contractors approximately 10 years ago; and/or
    - viewing the spans via an online medium (e.g. Google Earth) and, through experience, assigning a particular density to the vegetation in like areas (it is assumed that the vegetation densities assigned by TasNetworks align with those used by the contractors that collected similar data 10 years ago).
- To determine the average number of trees per maintenance span that are being actively managed, TasNetworks has incorporated both maintenance and inspection activities for the spans being maintained.
- TasNetworks has used data provided by Forestry Tasmania in quantifying 'Medium' vegetation density.
- Information for the quantification of other vegetation density categories was sourced internally through experience of TasNetworks' easements and the types of vegetation typically encountered.
- Average number of defects per vegetation maintenance span information has been sourced from work orders, which include information as to whether a defect has been noted within a span.
- Structures that intersect with standard vehicle access roads within a nominated radius were identified with reference to TasNetworks' Geographical Information System in consultation with Asset Officers.
- Span lengths were extracted from the Asset Management Information System.
- The altitude of each structure was extracted from the Asset Management Information System, which derives its altitude data for each tower from manually inputted data obtained through the analysis of contour maps.
- To determine the number of spans in bushfire risk areas a Tasmanian bushfire likelihood map was obtained from the Department of Primary Industries, Parks, Water and Environment (DPIPWE) showing the five levels of 'likelihood' for bushfire start. From this map, areas of 'Almost Certain' or 'Likely' bushfire likelihood within Tasmania were ascertained. This data was sourced in 2014.

Methodology and assumptions made

Total number of vegetation maintenance spans

Information has been extracted from the asset management system for completed work orders. No assumptions were required for the majority of work orders. A small number of work orders included a scope of works that seemed larger than that suggested by actual expenditure. In the absence of any additional information it has been assumed that the scope of works is correct.

Average number of trees per vegetation maintenance span

The average number of trees per vegetation maintenance span has been arrived at by multiplying the span length (for the span where the maintenance was completed) by the easement width by the determined density of vegetation within each of the spans (the 'density factor'). It has been assumed that all 110 kV transmission lines have an easement width of 50 metres, and 220 kV lines have a width of 60 metres.

Average number of defects per vegetation maintenance span

The majority of defects per vegetation maintenance span are grouped and recorded as a single defect if they occur, regardless of the number of defects within the span. It is assumed that the number of spans where multiple defects have been recorded is not material.

Tropical proportion

Based on the definition of Tropical Spans within the RIN and as defined by the Australian Bureau of Meteorology Australian Climate Zones Map, this is not applicable to Tasmanian vegetation.

Standard vehicle access

A 10 metre radius was applied to each structure to determine if they intersect with standard vehicle access roads. Asset Officers were consulted for confirmation of the accessibility of the structures. Only those structures that are accessible all year round were included for the purposes of presenting this data. It has been assumed that if standard vehicle access is possible to a tower, then access to the span forward from that tower is also possible, and it is this span length that has been counted.

TasNetworks has reported this variable as the route line length not accessible to standard vehicles.

Altitude

For each structure that is installed at 600 metres above sea level or higher, the forward span length was counted to determine the Route Line Length.

TasNetworks' altitude measurements have been made at the tower base. Therefore there may be a very small number of towers whereby the conductor attachment point is in excess of 600 metres, yet the tower base is below 600 metres, and hence the structure and associated span forward, would not be counted.

Use of estimates

Unless specified below, no estimates have been used in the collation and presentation of this information.

Average number of trees per vegetation maintenance span

The determined density factor has been broken down into four bands, and an estimate has been required to assign the number of trees in each band of density (through practical experience and through an assessment of aerial photos for each easement where vegetation maintenance has occurred). This estimate has been required as information has historically been impracticable to collect and maintain. The level of accuracy for these vegetation densities is considered to be very low for the 'Medium' and 'High' categories.

- Pasture = 5 trees per Ha
- Low = 50 trees per Ha
- Medium = 1300 trees per Ha (approximately equal to typical Forestry Tasmania plantation density)

	• High = 2000 trees per Ha TasNetworks does not currently have the capability or asset information to take into account vegetation density variation due to changes in easement geography or vegetation height. Accordingly the quantities reported are all trees within the span rather than those which may require active management.
Table 3.7.2: Network characteristics	**Consistency of information with the requirements of the RIN** Information has been provided regarding network characteristics in accordance with the definitions included within the RIN.
	Source of information • The total route line length has been sourced from information maintained within AMIS. • Variability of dispatch information has been sourced from historical metering information. • Concentrated load distance information has been sourced from the GIS. • The total number of spans has been sourced from information maintained within AMIS.
	Methodology and assumptions made ***Route line length*** Information was extracted from AMIS. All asset service statuses are included in the information presented. ***Variability of dispatch*** Variability of dispatch was determined with reference to historical metering information from Hydro, Wind, Gas and Diesel generation. The component of energy generated by renewable energy (hydro and wind powered stations) is expressed as a percentage of the total energy generated. ***Concentrated load distance*** Information has been extracted from the GIS. Sheffield Substation has been selected as the generation node and Greater Hobart as the load centre to meet the AER definition. ***Total number of spans*** The total number of spans has been has been extracted from the AMIS. All asset service statuses are included in the information presented.
	Use of estimates No estimations have been required in the collation and presentation of this information. Information is based on actual information, historical accounting records or other records used in the ordinary course of business.


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