TransGrid

Economic Benchmarking RIN Response - Basis of Preparation

30 OCTOBER 2015

Table of Contents

1. Introduction

On 19 December 2013, the Australian Energy Regulator (AER) issued TransGrid with a *Regulatory Information Notice Under Division 4 of Part 3 of the National Electricity (New South Wales) Law* (the 'Economic Benchmarking RIN'), requiring the business to prepare and submit certain information to support the AER's Economic Benchmarking activities. This Basis of Preparation document has been prepared to support the audited information package which is due to be submitted to the AER by 31 October 2015. The audited information package is comprised of:

1. The populated worksheets provided as Appendix A to the RIN;
2. The Basis of Preparation for each variable covered in the RIN worksheets;
3. Confidentiality Claims on any information included in the RIN worksheets;
4. Audit Report
5. Verification of the information by way of a Statutory Declaration in the form provided as Appendix C to the RIN.

2. Compliance with the Economic Benchmarking RIN Requirements

The Economic Benchmarking RIN outlines the requirements for the Basis of Preparation as follows:

a) demonstrate how the information provided is consistent with the requirements of this Notice;
b) explain the source from which TransGrid obtained the information provided
c) explain the methodology TransGrid applied to provide the required information, including any assumptions TransGrid made;
d) explain, in circumstances where TransGrid 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 for TransGrid to use Actual Financial Information or Actual Non-financial Information (as the case may be, depending on the variable.
    2) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is TransGrid's best estimate, given the information sought in this Notice.

To promote a common approach across the business to addressing the requirements of the Economic Benchmarking RIN, TransGrid has gathered information from across the business using a template prepared to respond to each of the AER's requirements. This is outlined in the table below.

Economic Benchmarking RIN Response - Basis of Preparation

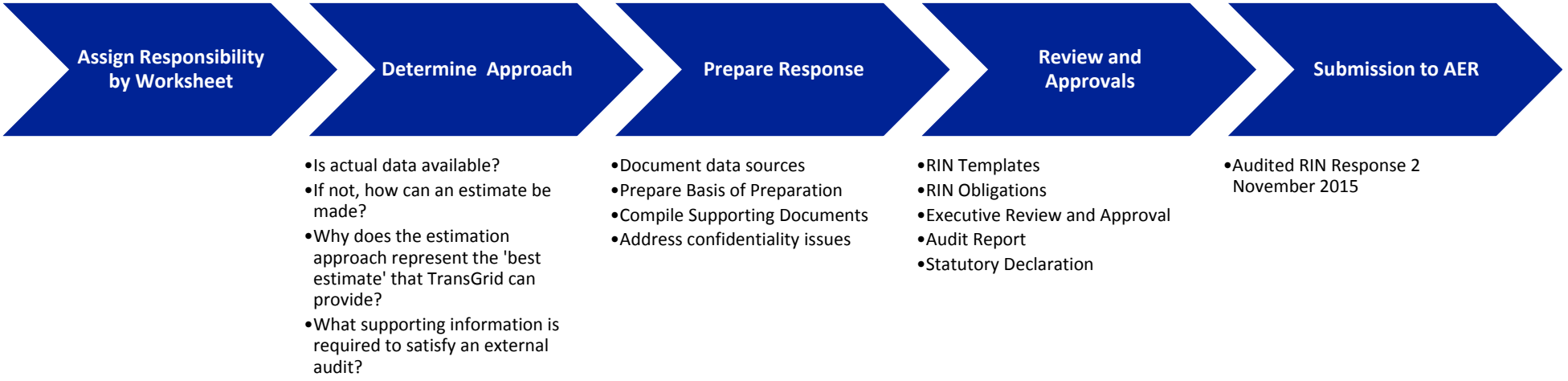
Data variable & TransGrid's interpretation		***Data sources, locations and 'owners'***	***Estimation or actual information, calculations and assumptions***		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[1]?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
'Variable_Code' & 'Variable' from worksheet	*If AER definition is not clear, document TransGrid interpretation and its rationale* ***Responds to RIN requirement a)***	*Specify source systems, reports, forms, other RIN variables etc* ***Responds to RIN Requirement b)***	*Yes/No* *If estimate is used for this variable, document:* • *Why an estimate was required, including why it was not possible to use Actual Financial Information or Actual Non-Financial Information* • *Estimate basis, including the approach used, assumptions made and reasons why the estimate is TransGrid's best estimate* ***Responds to RIN Requirement***	*Clear description of approach steps / methodology* ***Responds to RIN Requirement c)***	*Clearly describe any assumptions used and the rationale for each* ***Responds to RIN Requirement c)***

[1] 'Information presented in response to the Notice whose presentation is not Materially dependent on information recorded in the NSP's historical accounting records or other records used in the normal course of business, and whose presentation for the purposes of the Notice is contingent on judgments and assumptions for which there are valid alternatives, which could lead to a Materially different presentation in the response to the Notice.', **page 34, "Economic benchmarking RIN For transmission network service providers, Instructions and Definitions".**

			d)		

3. Preparation Process

TransGrid's high level process for preparing its response to the Economic Benchmarking RIN is outlined below.



3.1 Document Control

The RIN, Worksheets, Basis of Preparation and supporting documents are located on TransGrid's file servers. These documents will be retained to support the preparation of the annual information required in future years.

3.2 Governance

The information required under the RIN has been prepared by the responsible personnel within TransGrid and reviewed by their Group Manager prior to the consolidation into TransGrid's draft submission package. The draft submission package has then submitted to KPMG audit and subject to an external audit during September and October 2015. The final RIN package will be provided by 31 October 2015, inclusive of the Final Audit Report and signed Statutory Declaration.

4. Principles of Preparation

TransGrid's response to the Economic Benchmarking RIN has been prepared in accordance with the AER's document *Economic Benchmarking RIN for transmission network service providers, Instructions and Definitions, TransGrid (ABN 19 622 755 774)*, provided as Appendix B to the Economic Benchmarking RIN.

In accordance with the AER's instructions TransGrid has provided actual information using 'records used in the normal course of business' wherever this is possible. In cases where TransGrid has been unable to provide actual information, the variables have been estimated as follows:

- In the first instance, where actual information exists, but the presentation is contingent of a judgement or assumption, TransGrid has used actual information to prepare the variable and stated the judgment or assumption that has been made.
- Where actual information exists, but the information is incomplete over the historical period covered by the Economic Benchmarking RIN, TransGrid has used the actual information as far as practicable and stated the methodology used to estimate the remaining data.
- Where no actual information is recorded for the variable in the normal course of business, TransGrid has stated the methodology that it has used to estimate the variable required by the AER, including the assumptions made and the data sources used.

By following these principles of preparation, TransGrid considers that where estimates have been provided, these represent the best estimate available for each variable, noting that considerable uncertainty remains with respect to the AER's specific purpose(s) for the information.

TransGrid has prepared the schedules in compliance with the requirements of Accounting Standard AASB 108 Accounting Policies, Changes in Accounting Estimates and Errors and in compliance with the recognition, measurement and classification requirements of other relevant Accounting Standards, with the exception of the treatment of provisions in the RIN schedule 3.2.3 Provisions. TransGrid has completed schedule 3.2.3 Provisions in accordance with the requirements of the RIN schedules and notes that this is inconsistent with the relevant Accounting Standard. To the extent determined appropriate, the RIN schedules have been prepared in compliance with the disclosure requirements of the relevant Accounting Standards. TransGrid also notes that there has been a change to AASB 119 Employee Benefits which has impacted the expense recognised in relation to Defined Benefits.

5. Information Sources

Due to the combination of financial and non-financial data requested by the AER, including a number of variables that are not routinely reported, TransGrid has drawn data from a number of information sources that are used across its business. In most cases it has been necessary to undertake additional analysis to derive the specific variables that are required in the RIN response.

The key systems that have been relied on are summarised in the table below, and are referred to, in the detailed basis of preparation tables in section 7.

Information Source	Brief Description	Supports
AEMO Price and Demand Data Files	AEMO Price and Demand Data Files are publicly available historical records of National Electricity Market spot price and demand for each trading interval.	**Worksheet 3.5 Physical Assets**

Information Source	Brief Description	Supports
AEMO Settlement Statements	AEMO issued statements for intraregional and interregional settlement residues.	**Worksheet 3.1 Revenue**
AER Current Period Determination	The AER's final determination for the 2009/10 to 2013/14. Outlining the Efficiency Carry Forward revenue from the prior regulatory control period	**Worksheet 3.1 Revenue, Worksheet 3.3 Assets (RAB)**
AER Roll Forward Model	TransGrid's populated Roll Forward Models provided to the AER	**Worksheet 3.3 Assets (RAB)**
AER STPIS Letters	Annual letters from the AER confirming the revenue attributable to the Service Target Performance Incentive Scheme	**Worksheet 3.1 Revenue**
Bureau of Meteorology (BOM)	List and location of weather stations in NSW	**Worksheet 3.7 Operating Environment, Worksheet 3.7.4 Weather Stations**
Bush Fire Prone Lands	Spatial data set sourced from NSW Rural Fire Service	**Worksheet 3.7 Operating Environment**
Climate Zone Map	Spatial data set sourced from the Australian Bureau of Meteorology	**Worksheet 3.7 Operating Environment**
Ellipse	TransGrid's corporate asset management database	**Worksheet 3.5 Physical Assets, Worksheet 3.7 Operating Environment**
Invoices Received	Contractor invoices received for vegetation management works have been used to estimate the variables requested in Worksheet 8	**Worksheet 3.7 Operating Environment**
LAN	TransGrid's corporate IT network	Various (Document Locations)
LiDAR	Light Detection and Ranging data sourced from aerial surveys that is used to measure vegetation clearances from TransGrid's transmission line assets.	**Worksheet 3.7 Operating Environment**
Spot Height Data (25m)	Topographical information sourced from NSW Land and Property Information.	**Worksheet 3.7.4 Weather Stations**
System Operating Diagrams	High Voltage Operating Diagrams detail in plan view, single line format, the high voltage equipment, operational nomenclature and electrical connections for substations, switching stations and power station switchyards	**Worksheet 3.5 Physical Assets**
TAMIS	NSW Transmission System and TransGrid Asset Management Information System (TAMIS) is the Geographical Information System (GIS) used by TransGrid to manage its spatial asset data.	**Worksheet 3.5 Physical Assets, Worksheet 8 Operating Environment, Worksheet 3.7.4 Weather Stations**
TransGrid Regulatory Accounts	TransGrid's annual Regulatory Accounts which are prepared and submitted in accordance with the AER's requirements.	**Worksheet 3.2 Opex, Worksheet 3.2.3 Provisions**
TransGrid Electrical Data Book	A central record of electrical asset data regarding TransGrid's network that is published on the TransGrid Intranet.	**Worksheet 3.5 Physical Assets** **Worksheet 3.7 Operating Environment**
TransGrid Operating Manuals	Operating Manuals for TransGrid's assets outlining ratings for assets in each region of TransGrid's network.	**Worksheet 3.5 Physical Assets**
TRIM	TransGrid's corporate document management system	Various (Document Locations)
TUOS System	Transmission Use of System (TUOS) charges are TransGrid's primary source of revenue.	**Worksheet 3.1 Revenue** **Worksheet 3.4 Operational Data**

Information Source	Brief Description	Supports
	The TUOS System is the billing system that underpins TransGrid's invoicing and records the information from the various metering installations deployed across TransGrid's network.	**Worksheet 3.7 Operating Environment**
The Wire	TransGrid's Intranet	Various (Document Locations)
TransGrid Manuals & Policies	Used for the operation and maintenance of TransGrid's assets, these outline equipment information, standard practices and maintenance requirements.	**Worksheet 3.5 Physical Assets** **Worksheet 3.7 Operating Environment**

6. Confidentiality Claims

TransGrid has identified one issue where measures need to be taken to protect confidential information. This is summarised below:

Variable(s) affected	Issue	TransGrid Resolution
TOPED0102	Individual customers receiving supply at 330kV and 220kV can be identified if disaggregation is provided by voltage level.	In accordance with the AER's preparation guidelines, these figures have been aggregated into the variable TOPED0102 for the Public Version of the templates.

7. Detailed Basis of Preparation

The following sections outline the Basis for Preparation for each line item in the TransGrid Economic Benchmarking RIN.

7.1 Contents Worksheet

The Contents worksheet does not contain any information inputs.

7.2 Worksheet 1.0 Business & other details

Worksheet 1.0 Business & Other Details requires general business address and contact information.

7.3 Worksheet 3.1 Revenue

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[2]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TREV0101 From Fixed Customer (Exit Point) Charges	Connection Exit charges for distributors & direct connect customers based on fixed daily rate	From invoices generated by the Pricing team on the monthly basis using a core business TUOS billing system. Revenue from these invoices are summarised in the TUOS Data spreadsheets to facilitate internal financial reporting.	No	Prices for all customer connection points are calculated annually as per the AER approved Pricing Methodology. Approved (prices) by the Executive General Manager/Network Planning & Performance are published on TransGrid's website by 15 May. These (prices) are entered into the TUOS billing system and invoices for all customers are generated each month using the TUOS billing system.	-
TREV0102 From Variable Customer (Exit Point) Charges	This type of charge is not applicable for TransGrid, all exit charges are on fixed basis above	-	No	-	-

[2] 'Information presented in response to the Notice whose presentation is not Materially dependent on information recorded in the NSP's historical accounting records or other records used in the normal course of business, and whose presentation for the purposes of the Notice is contingent on judgments and assumptions for which there are valid alternatives, which could lead to a Materially different presentation in the response to the Notice.', **page 34, "Economic benchmarking RIN For transmission network service providers, Instructions and Definitions".**

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[2]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TREV0103 From Fixed Generator (Entry Point) Charges	Connection Entry charges for generators based on fixed daily rate	As per TREV0101	No	As per TREV0101	-
TREV0104 From Variable Generator (Entry Point) Charges	This type of charge is not applicable for TransGrid, all entry charges are on fixed basis above	-	No	-	-
TREV0105 From Fixed Energy Usage Charges (Charge per day basis)	Charges applied for a direct connect customer.	As per TREV0101	No	As per TREV0101	-
TREV0106 From Variable Energy Usage charges (Charge per kWh basis)	Energy based (per kWh rate) usage charges from loads customers.	As per TREV0101	No	As per TREV0101	-
TREV0107 From Energy based Common Service and General Charges	Energy based (per kWh rate) Common Service and Non-locational TUOS (previously called General Charges) from all loads customers.	As per TREV0101	No	As per TREV0101	-

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[2]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TREV0108 From Fixed Demand based Usage Charges	Revenue from charges based on a nominated/agreed demand basis	As per TREV0101	No	As per TREV0101	-
TREV0109 From Variable Demand based Usage Charges	Demand based (per kW rate) usage charges from all loads customers.	As per TREV0101	No	As per TREV0101	-
TREV0110 Revenue from other Sources	Intra-regional residues and Inter-regional Settlement residues auction proceeds, net financial transfers per TREV0201, , net adjustments of network support pass through amounts, revenue deferral and TUoS under/over collection adjustment for financial year.	From AEMO settlement statements, issued TUOS invoices, AER STPIS letters, TUOS revenue reconciliations	No	Other Revenue (TREV0205) + Revenue from Other Connected transmission Systems (TREV0201) +	-
TREV0201 From Other connected transmission networks	Net of financial transfers to & from other NSW/ACT market region TNSPs.	As per TREV0101	No	As per TREV0101	-

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[2]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TREV0202 From Distribution networks	Total amount charged to ActewAGL, Ausgrid, Essential Energy, Endeavour Energy less financial transfers in TREV0201	As per TREV0101	No	As per TREV0101	-
TREV0203 From Directly connected end–users	Total amounts charged to direct customers	As per TREV0101	No	As per TREV0101	-
TREV0204 From Generators	Total connection Entry charges for generators	As per TREV0101	No	As per TREV0101	-
TREV0205 Other revenue	Intra-regional residues and Inter-regional Settlement residues auction proceedsnet adjustments of network support pass through amounts, revenue deferral and TUOS under/over collection adjustment for financial year	From AEMO settlement statements, issued TUOS invoices, AER STPIS letters, TUOS revenue reconciliations	No	AEMO email a Final Settlements report each week with the intra-regional and inter-regional settlements figures, as well as a settlement residue auctions report on a quarterly basis. These figures are compiled into the Settlement residues spreadsheet. This forms part of the monthly account reconciliation process, confirming that the data within the spreadsheet is correct.	-

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[2]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TREV0301 EBSS	AER Approved EBSS revenue	Current regulatory determination	No	-	-
TREV0302 STPIS	AER Approved STPIS revenue	Approval letter from AER	No	-	-
TREV0303 Other	Any additional AER approved revenue for 'other' incentive schemes	-	No	-	-
TREV03 Total revenue of incentive schemes	Total of TREV0301, TREV0302 and TREV0303.	-	No	TREV0301 + TREV0302 + TREV0303.	-

Approved by (Group Manager): Nicola Tully, Manager/Prescribed Revenue and Pricing

7.4 Worksheet 3.2 Opex

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[3]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
Table 3.2.1 Current opex categories and cost allocations TOPEX0101 Maintenance – Lines & Cable To TOPEX0120 Network Support	As per Instruction and Definition provided	2014-15 Regulatory Accounts 'DISAGG Opex', 'RFS Inc Network' and DISAGG Inc' templates – Prescribed column. Categories of the Regulatory Account templates can be mapped to the EB 3.2 as follows: • Network Maintenance – TOPEX0101 to TOPEX0105 • Network Operations – TOPEX0106 to TOPEX0108 • Other Controllable Costs – TOPEX0109 to TOPEX0118 • Self Insurance Costs – TOPEX0119 The source data is extracted from Ellipse and re-categorised into regulatory categories based on Responsbility Centres.	N	Prepared in accordance with the requirements of the annual Regulatory Accounts.	Figures reconcile to the Regulatory accounts

[3] 'Information presented in response to the Notice whose presentation is not Materially dependent on information recorded in the NSP's historical accounting records or other records used in the normal course of business, and whose presentation for the purposes of the Notice is contingent on judgments and assumptions for which there are valid alternatives, which could lead to a Materially different presentation in the response to the Notice.', **page 34, "Economic benchmarking RIN For transmission network service providers, Instructions and Definitions".**

Economic Benchmarking RIN Response - Basis of Preparation

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[3]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable

Approved by (Group Manager): Nancy Yeung, Acting Manager /Corporate & Management Accounting

7.5 Worksheet 3.2.3 Provisions

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[4]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TOPEX03A Long Services Leave	As per Instruction and Definition provided	2014-15 TransGrid Financial Statements and Ellipse General Ledger translated into the Regulatory Accounts 'DISAGG ProvSum' (Prescribed portion)	N	Agrees to the Closing Balance from prior period	-
TOPEX0301A The carrying amount at the beginning of the period To TOPEX0314A The carrying amount at the end of the period	As per Instruction and Definition provided	2014-15 TransGrid Financial Statements and Ellipse General Ledger translated into the Regulatory Accounts 'DISAGG ProvSum' (Prescribed portion)	N	From the Provisons supporting detailed analysis, the opening balance, closing balance and movement details for Long Services Leave are extracted.	Separation between opex/capex and prescribed / nonprescribed is based on year end oncost adjustment splits from Ellipse, which are determined as follows as follows: • Opex/Capex – Based on the break up of the actual oncost recoveries to capex and opex during the period. • Capex adjustment to Business Streams – Based on the break up of active capital projects during the period.

[4] 'Information presented in response to the Notice whose presentation is not Materially dependent on information recorded in the NSP's historical accounting records or other records used in the normal course of business, and whose presentation for the purposes of the Notice is contingent on judgments and assumptions for which there are valid alternatives, which could lead to a Materially different presentation in the response to the Notice.', **page 34, "Economic benchmarking RIN For transmission network service providers, Instructions and Definitions".**

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[4]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
					Opex adjustments to Business Streams – Based on the break up of the actual oncost recoveries to the Business Streams during the period.
TOPEX03B Annual Leave	As per Instruction and Definition provided	2014-15 TransGrid Financial Statements and Ellipse General Ledger translated into the Regulatory Accounts 'DISAGG ProvSum' (Prescribed portion)	N	Agrees to the Closing Balance from prior period	-
TOPEX0301B The carrying amount at the beginning of the period To TOPEX0314B The carrying amount at the end of the period	As per Instruction and Definition provided	2014-15 TransGrid Financial Statements and Ellipse General Ledger translated into the Regulatory Accounts 'DISAGG ProvSum' (Prescribed portion)	N	From the Provisons supporting detailed analysis, the opening balance, closing balance and movement details for Annual Leave are extracted.	Separation between opex/capex and prescribed / nonprescribed is based on year end oncost adjustment splits from Ellipse, which are determined as follows as follows: • Opex/Capex – Based on the break up of the actual oncost recoveries to capex and opex during the period. • Capex adjustment to Business Streams – Based on the break up of active capital projects during the period. Opex adjustments to Business Streams – Based on the break up of the actual oncost recoveries to the Business Streams during the period.
TOPEX03C Workers' Compensation	As per Instruction and Definition provided	2014-15 TransGrid Financial Statements and Ellipse General Ledger translated into the Regulatory Accounts 'DISAGG ProvSum' (Prescribed portion)	N	Agrees to the Closing Balance from prior period	-

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[4]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TOPEX0301C The carrying amount at the beginning of the period To TOPEX0314C The carrying amount at the end of the period	As per Instruction and Definition provided	2014-15 TransGrid Financial Statements and Ellipse General Ledger translated into the Regulatory Accounts 'DISAGG ProvSum' (Prescribed portion)	N	From the Provisons supporting detailed analysis, the opening balance, closing balance and movement details for Insurance are extracted.	Separation between opex/capex and prescribed / nonprescribed is based on year end oncost adjustment splits from Ellipse, which are determined as follows as follows: • Opex/Capex – Based on the break up of the actual oncost recoveries to capex and opex during the period. • Capex adjustment to Business Streams – Based on the break up of active capital projects during the period. Opex adjustments to Business Streams – Based on the break up of the actual oncost recoveries to the Business Streams during the period.
TOPEX03D Defined Benefits Superannuation Schemes	As per Instruction and Definition provided	2014-15 TransGrid Financial Statements and Ellipse General Ledger translated into the Regulatory Accounts 'DISAGG ProvSum' (Prescribed portion)	N	Agrees to the Closing Balance from prior period	-
TOPEX0301D The carrying amount at the beginning of the period	As per Instruction and Definition provided	2014-15 TransGrid Financial Statements and Ellipse General Ledger translated into the Regulatory Accounts 'DISAGG ProvSum' (Prescribed portion)	N	From the Regulatory Accounts, the opening balance, closing balance and movement details for Superannuation are	As at 30.6.2014, 50% of TransGrid's EISS members are in-service and 50% are out of service. The out of service members are considered to be wholly prescribed as there is no meaningful way to allocate them the non

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[4]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
To TOPEX0314D The carrying amount at the end of the period				extracted.	prescribed work business streams. Allocating the remaining 50% of the defined benefit super movements and balance to prescribed and non prescribed business streams results in an immaterial allocation to non prescribed. As out of service members will continue to grow as more members retire, any allocation of defined benefit super to non prescribed business streams will continue to reduce.
TOPEX03E Short Term Incentives	As per Instruction and Definition provided	2014-15 TransGrid Financial Statements and Ellipse General Ledger translated into the Regulatory Accounts 'DISAGG ProvSum' (Prescribed portion)	N	Agrees to the Closing Balance from prior period	
TOPEX0301E The carrying amount at the beginning of the period To TOPEX0314E The carrying amount at the end of the period	As per Instruction and Definition provided	2014-15 TransGrid Financial Statements and Ellipse General Ledger translated into the Regulatory Accounts 'DISAGG ProvSum' (Prescribed portion)	N	From the Provisons supporting detailed analysis, the opening balance, closing balance and movement details for Short Term Incentives are extracted.	STIS is not part of the oncost process and is wholly accounted for as an expense in the P&L against account 250 - Short Term Incentive Scheme

Approved by (Group Manager): Nancy Yeung, Acting Manager /Corporate & Management Accounting

7.6 Worksheet 3.3 Assets(RAB)

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[5]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TABLE 3.3.1 – REGULATORY ASSET BASE VALUES TRAB0101 Opening Value To TRAB0107 Closing value for asset value	As per Instruction and Definition provided	Electricity Transmission Network Service Provider Roll Forward Model (RFM) , with TransGrid information	N	Prepared in accordance with the requirements of the AER Determination. This is the sum of all the "Asset Category" below. "As Commissioned" RAB used.	-
TABLE 3.3.2 – ASSET VALUE ROLL FORWARD Overhead Transmission Assets TRAB0201 Opening Value	As per Instruction and Definition provided	Electricity Transmission Network Service Provider Roll Forward Model (RFM) , with TransGrid information	N	Prepared in accordance with the requirements of the AER Determination. "As Commissioned" RAB used. In the RFM, the categories that are noted	As "as commissioned" RAB is used, there is no cables commissioned as far in 2009-14, hence all values under TL& Cable

[5] 'Information presented in response to the Notice whose presentation is not Materially dependent on information recorded in the NSP's historical accounting records or other records used in the normal course of business, and whose presentation for the purposes of the Notice is contingent on judgments and assumptions for which there are valid alternatives, which could lead to a Materially different presentation in the response to the Notice.', **page 34, "Economic benchmarking RIN For transmission network service providers, Instructions and Definitions".**

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[5]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
To TRAB0207 Closing value for asset value				as "Transmission Lines"	are attributed to TL Transmission Line Life Extension in the 2014-18 Regulatory Period has been included.
Underground Transmission Assets TRAB0301 Opening Value To TRAB0307 Closing value for asset value	As per Instruction and Definition provided	Electricity Transmission Network Service Provider Roll Forward Model (RFM) , with TransGrid information	N	Prepared in accordance with the requirements of the AER Determination. "As Commissioned" RAB used In the RFM, the categories that are noted as "Underground Cables"	-
Transmission Switchyards, Substations TRAB0401 Opening Value To TRAB0407 Closing value for asset value	As per Instruction and Definition provided	Electricity Transmission Network Service Provider Roll Forward Model (RFM) , with TransGrid information	N	Prepared in accordance with the requirements of the AER Determination. "As Commissioned" RAB used In the RFM, the categories that are noted as "Substations	-
Easements TRAB0501 Opening Value To	As per Instruction and Definition provided	Electricity Transmission Network Service Provider Roll Forward Model (RFM) , with TransGrid information	N	Prepared in accordance with the requirements of the AER Determination. "As Commissioned" RAB used In the RFM, the categories that are noted	-

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[5]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TRAB0507 Closing value for asset value				as "Land and Easements"	
Other Assets with Long Lives TRAB0601 Opening Value To TRAB0607 Closing value for asset value	As per Instruction and Definition provided	Electricity Transmission Network Service Provider Roll Forward Model (RFM) , with TransGrid information	N	Prepared in accordance with the requirements of the AER Determination. "As Commissioned" RAB used In the RFM, the categories that are noted as "SCADA and Communications", "SMHEA Assets", "Secondary Systems", "Communications", "Communications (short life)", "Equity Raising Costs"	-
Other Assets with Short Lives TRAB0701 Opening Value To TRAB0707 Closing value for asset value	As per Instruction and Definition provided	Electricity Transmission Network Service Provider Roll Forward Model (RFM) , with TransGrid information	N	Prepared in accordance with the requirements of the AER Determination. "As Commissioned" RAB used In the RFM, the categories that are noted as "Non-network Assets", "Business IT", "Minor Plant", "Motor Vehicles & Mobile Plant"	-
TABLE 3.3.3 – TOTAL DISAGGREGATED RAB ASSET VALUE TRAB0801 Overhead transmission assets (wires and towers/poles etc) To	As per Instruction and Definition	Electricity Transmission Network Service Provider Roll Forward Model (RFM) , with TransGrid	N	This is calculated as the average of the opening and closing RAB values for the	-

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[5]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TRAB0806 Other assets with short lives (please specify)	provided	information		Regulatory Year for each RAB Asset Category as per Page 22 of the Instruction.	
TABLE 3.3.4 – ASSET LIVES 4.4.1 Asset Lives – estimated service life of new assets TRAB0901 Overhead transmission assets To TRAB0905 Other assets with short lives	As per Instruction and Definition provided	Electricity Transmission Network Service Provider Roll Forward Model (RFM) , with TransGrid information	N	Calculation for Weighted Average Asset lives of new assets for each asset category, in accordance with Page 22 of the Instruction.	-
4.4.2 Asset Lives – estimated residual service life TRAB1001 Overhead transmission assets To TRAB1005 Other assets with short lives	As per Instruction and Definition provided	Electricity Transmission Network Service Provider Roll Forward Model (RFM) , with TransGrid information	No, actual information	This is calculated using Opening Asset Value divided by depreciation for the year.	As depreciation is already weighted averaged, the residual service life is considered weighted averaged.

Approved by (Group Manager):): Nancy Yeung, Acting Manager Corporate & Management Accounting

7.7 Worksheet 3.4 Operational Data

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[6]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
Table 3.4.1 Energy Delivery Energy Grouping by Downstream Connection Type TOPED0101 To other connected transmission networks	Energy supplied to transmission networks in adjacent NEM regions (i.e. flows related to interconnectors). In accordance with the first paragraph of the AER's instructions (5.1 Instructions on page 24) only exports have been considered (as these are flows being delivered by TransGrid's network)	TransGrid's TUOS billing system	N The data: • Are based on information used in the normal course of TransGrid's business; and • Are materially dependent on whether this category includes the parts of DNSPs' networks which serve a transmission function and are designated as transmission assets for pricing purposes.	Data have been obtained from revenue or statistical 15 minute metering registrations. For each of the categories, those 15 minute data have been summated to obtain figures for each regulatory (financial) year Energy calculations involve spreadsheets which sum the 15 minute registrations for the relevant period(s) and make any adjustments to achieve the appropriate units of measurement (for example, dividing by 1,000 to convert from kWh to MWh) Energy flow to other TNSPs was found by summing up interconnector exports from TransGrid's network. These are at Jindera-Wodonga, Buronga-Red Cliffs, and Murray–Dederang to Victoria and	DNSP transmission assets are not included in this calculation. Rounded to three significant figures

[6] 'Information presented in response to the Notice whose presentation is not Materially dependent on information recorded in the NSP's historical accounting records or other records used in the normal course of business, and whose presentation for the purposes of the Notice is contingent on judgments and assumptions for which there are valid alternatives, which could lead to a Materially different presentation in the response to the Notice.', **page 34, "Economic benchmarking RIN For transmission network service providers, Instructions and Definitions".**

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[6]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	Flows to other transmission networks have been taken to be flows to adjacent NEM Regions. Flows to other transmission networks within the NSW region of the NEM (to networks owned by DNSPs) have been included in "Flows to Distribution Networks"		As such, they are neither "Actual Information" nor "Estimated Information", as defined by the AER. However, as actual information has been used, excluding DNSP assets that serve a transmission function from the calculation, these data have been taken to be "Actual Information".	QNI to Queensland.	
Table 3.4.1 Energy Delivery Energy Grouping by Downstream Connection Type TOPED0102 To distribution networks	Energy supplied to the distribution networks has been taken to be the energy supplied to the distributors in NSW and the ACT, even though parts of Ausgrid's and Essential Energy's networks are considered to serve a transmission function Energy supplied to	TransGrid's TUOS billing system	N The data: • Are based on information used in the normal course of TransGrid's business; and • Are materially dependent on whether this category includes the parts of DNSPs' networks which serve a transmission function and are	As per TOPED0101 This was calculated as. the summation of energy flows leaving TransGrid's network. Industrial loads such as Tomago and Broken Hill mines are also included in this category in the Public Version, in accordance with the AER's Instructions.	As per TOPED0101

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[6]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	customers directly connected via dedicated connections owned by third parties such as a DNSP are included in TOPED0103.		designated as transmission assets for pricing purposes. As such, they are neither "Actual Information" nor "Estimated Information", as defined by the AER. However, as actual information has been used, including DNSP assets that serve a transmission function in the calculation, these data have been taken to be "Actual Information".		
Table 3.4.1 Energy Delivery Energy Grouping by Downstream Connection Type TOPED0103 to TOPD0112 To directly connected end-users	Energy supplied to customers directly connected via dedicated connections owned by third parties such as a DNSP (excluding customers whose identity could be deduced from the voltage of supply – Reported in TOPED0102) Aggregated data for customers supplied at 132 kV has been	TransGrid's TUOS billing system	N The data: • Are based on information used in the normal course of TransGrid's business; and • Are materially dependent on whether this category includes customers indirectly connected to TransGrid's network via dedicated feeders which are owned by	As per TOPED0101 This includes all industrial loads connected at 132 KV (ANM, Gadara, Cadia and North Parkes Mines)	Includes some industrial loads connected via dedicated feeders owned by DNSPs

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[6]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	provided. Those aggregated energy usage data cover Visy Gadara, Norske Skog, Cadia mine and North Parkes mine.		third parties such as DNSPs. As such, they are neither "Actual Information" nor "Estimated Information", as defined by the AER. However, as actual information has been used, which includes some industrial customers that are indirectly connected via the distribution network, these data have been taken to be Actual Information.		
Table 3.4.1 Energy Delivery Energy Grouping by Downstream Connection Type TOPD0113 Pumping and power station auxiliaries	Energy supplied to pumps and power station auxiliaries	TransGrid's TUOS billing system	N		
Table 3.4.1 Energy Delivery Energy Grouping by Downstream Connection	The total (gross) energy delivered by TransGrid's network at the locations where it connects to other	TransGrid's TUOS billing system	The total figure (TOPED01) is not 'Estimated Information'	Summation of metered energy delivered at the individual locations within each category. Only exports from TransGrid's network have been considered.	Other connected networks have been taken to be interconnections to adjacent states.

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[6]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
Type TOPED01 Total energy transported	party's networks.				Distribution networks have been taken to be DNSP networks, even though some parts of those networks may serve a transmission function. End-use customers directly connected via dedicated assets owned by a third party have been taken to be "Directly connected end-users".
Table 3.4.2 Connection Points[7] TOPCP0101 to	This variable is interpreted as locations of connections between	Based on AEMO TNIs, as described in their documents giving marginal loss factors TNIs which are not part of or directly connected to	Y Data are based on AEMO's definition of TNIs,	Metered data have been used to determine the direction(s) in which real power can flow at a particular location. The voltage has been taken to be the	The data for 2014/15 are the average of the numbers at the beginning and end of that financial

[7] Page 78 of the AER document relating to the preparation of economic benchmarking RINs defines a "Connection Point" as having the same definition as the NER. That definition is:

"The agreed point of *supply* established between *Network Service Provider*(s) and another *Registered Participant*, *Non-Registered Customer* or *franchise customer*".

This definition indicates that Connection Points are at the interface between TransGrid's networks and the networks of other parties. Subsequent guidance from the AER was that Transmission Node Identifiers (TNIs) should be used to identify Connection Points. Consistent with the original definition and the subsequent guidance, it has been assumed that Connection Points are at the interface of TransGrid's network with another party's network and must have a TNI.

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[6]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TOPCP0111 Number of entry points at each transmission voltage level	TransGrid's network and networks of other parties, where real power can flow directly into TransGrid's network and those locations have a Transmission Node Identifier (TNI). Where real power can flow both into and out of TransGrid's network at a particular location, and that location has a TNI, has been taken to be both an entry and an exit point. Connections having TNIs which have different voltage designations are considered to be different connection points. For example, at a particular substation if power can flow into TransGrid's network at two different voltages each of	TransGrid's network have been excluded. At a particular location (such as a TransGrid substation): • TNIs having different voltage designations are taken to be different connection points; • Where there is more than one TNI having the same voltage designation (such as for supplies to different customers) only one is counted. That is, there can only one connection point per voltage level at a particular location; • Where a TNI has been defined at a location where energy cannot flow directly to or from another party's network, that TNI is not a connection point. Entry points are the connection points (as defined above) at which energy can flow directly into TransGrid's network.	which are not part of TransGrid's records and are not used in TransGrid's normal course of business (other than for the completion of RINs). They are also materially dependent on assumptions such as whether a location can be both an entry and an exit point.	designated voltage of the TNI.The total number of entry (and exit) points at each voltage has been calculated by counting the number of those points operating at that voltage across TransGrid's network.	year.

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[6]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	which has a TNI, each constitutes a separate entry point.				
Table 3.4.2 Connection Points TOPCP0201 to TOPCP0212 Number of exit points at each transmission voltage level	This variable is interpreted as locations of connections between TransGrid's network and networks of other parties, where real power can flow directly out of TransGrid's network and those locations have a Transmission Node Identifier (TNI). Where real power can flow both into and out of TransGrid's network at a particular location, and that location has a TNI, has been taken to be both an entry and an exit point. Connections having TNIs which have different voltage designations are	As per TOPCP0101 - TOPCP0111 Exit points are the connection points at which energy can flow directly out of TransGrid's network.	Y As per TOPCP0101 - TOPCP0111	As per TOPCP0101 - TOPCP0111	As per TOPCP0101 - TOPCP0111

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[6]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	considered to be different connection points.For example, at a particular substation if power can flow out of TransGrid's network at two different voltages each of which has a TNI, each of those voltages constitutes a separate exit point.				
Table 3.4.3 System Demand Table 3.4.3.1 Annual system maximum demand characteristics – MW measure TOPSD0101 Transmission System coincident maximum demand	As per AER definition on page 24 of Economic Benchmarking RIN For transmission network service providers.	TransGrid's TUOS billing system	N The data are derived from information used in TransGrid's normal course of business. They are also materially dependent on whether flows to "Other connected transmission networks" is on an "as delivered" basis (in accordance with the first paragraph of the AER's instructions (5.1 Instructions on page 24) or on a "nett basis" in accordance with the second	Maximum demand calculations involve spreadsheets which calculate rolling half hour average demands, then calculate the maximum rolling half hour demand over the relevant period and adjusting to the required unit of measurement. Where reactive power data are available, the spreadsheets also calculate the reactive power loads at the time of the coincident and non-coincident maximum demands	Reported to three significant figures It has been assumed that all components of this total are to be calculated on a consistent basis, that is on an "as delivered" basis.

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[6]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
			paragraph of the AER's instructions (5.1 Instructions on page 24). As such they are neither Actual Information nor Estimated Information. However, as they are based on NEM metering data, they have been taken to be Actual Data.		
Table 3.4.3 System Demand Table 3.4.3.1 Annual system maximum demand characteristics – MW measure TOPSD0102 Transmission System coincident weather adjusted maximum demand 10% POE	As per AER definition on page 24 of Economic Benchmarking RIN For transmission network service providers.	TransGrid's TUOS billing system	Y These are based on AEMO's 2015 weather and day-type correction models for the NSW region of the NEM The approach adopted in estimating this parameter is the best available in the circumstances. The data are based on NEM metering and information from AEMO's NSW region forecasting process, both of which TransGrid uses in its	TransGrid does not produce weather corrected maximum demands for its transmission system. However, TransGrid has access to historical actual 10% and 50% POE (weather corrected) data for summer and winter maximum demands from the 2015 AEMO model for the NSW region of the NEM. TransGrid has worked out summer and winter relationships between AEMO's actual network maximum demands for the NSW region and TransGrid's actual maximum demands on its network. These relationships have been applied to AEMO's 10% and 50% POE historical maximum demands to obtain 10% and 50% PoE for TransGrid's network.	Assumed that the weather and day-type corrected historical series derived from AEMO weather and day-type correction models can be used to approximate weather and day-type corrected actuals for TransGrid's boundary. Reported to three significant figures

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[6]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
			normal course of business. They are also materially dependent on the assumption that there is a consistent relationship between the native maximum demand of the NSW region of the NEM and the gross maximum demand supplied by TransGrid's network. As such they are neither Actual Information nor Estimated Information (as defined by the AER). However, as AEMO's forecasting models will vary from year to year (as they are updated) and the outputs from that process will also vary from year to year, these data have been taken to be Estimated Information.		
Table 3.4.3 System Demand Table 3.4.3.1 Annual system maximum demand characteristics	As per AER definition on page 24 of Economic Benchmarking RIN For transmission network service	TransGrid's TUOS billing system	Y As per TOPSD0102.	As for TOPSD0102	Assumed that the weather and day-type corrected historical series derived from AEMO weather and day-type correction models can be used to

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[6]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
– MW measure TOPSD0103 Transmission System coincident weather adjusted maximum demand 50% POE	providers.				approximate weather and day-type corrected actuals for TransGrid's boundary. Reported to three significant figures.
Table 3.4.3 System Demand Table 3.4.3.1 Annual system maximum demand characteristics – MW measure TOPSD0104 Transmission System non-coincident summated maximum demand	As per AER definition page 24.	TransGrid's TUOS billing system	N As per TOPSD0101	These data are the summation of the local (non-coincident) maximum demands at each location where energy is supplied to other parties.	Reported to three significant figures. It has been assumed that all components of this total are to be calculated on a consistent basis that is on an "as delivered" basis.
Table 3.4.3 System Demand Table 3.4.3.1 Annual system maximum demand characteristics – MW measure TOPSD0105 Transmission System non-coincident weather adjusted summated	-	-	Y As per TOPSD0102	TransGrid does not produce weather and day-type corrected actual maximum demands (either coincident or non-coincident) for its bulk supply points. However, information from AEMO's 2015 "connection point" forecasts for the NSW region has been used. For each bulk supply point, TransGrid's actual (non-coincident) bulk supply	- It has been assumed that all components of this total are to be calculated on a consistent basis that is on an "as delivered" basis. Reported to three significant figures.

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[6]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
maximum demand 10% POE				point maximum demands has been scaled by the ratio of AEMO's corrected (non-coincident) maximum demands to AEMO's actual (non-coincident) maximum demand. For other locations, such as industrial loads, interconnectors, pumps and power station auxiliaries, for which meaningful correction models cannot be developed (as those loads are not necessarily weather or day-type dependent), actual maximum demands have been used The corrected (non-coincident) maximum demands for all bulk supply points and other locations were then summed.	
Table 3.4.3 System Demand Table 3.4.3.1 Annual system maximum demand characteristics – MW measure TOPSD0106 Transmission System non-coincident weather adjusted summated maximum demand 50% POE	-	-	Y As per TOPSD0103	As per TOPSD0105	It has been assumed that all components of this total are to be calculated on a consistent basis that is on an "as delivered" basis. Reported to three significant figures.

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[6]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
Table 3.4.3 System Demand Table 3.4.3.1 Annual system maximum demand characteristics – MVA measure TOPSD0201 Transmission System coincident maximum demand	As per AER definition page 24.	Variables: TOPSD0101 TOPSD0301	Y The data are materially dependent on how the data in MW are "translated" to data in MVA The approach adopted in estimating this parameter is the best available in the circumstances. Refer to note below	Divide Transmission System Coincident Maximum Demand (TOPSD0101) by Average Overall Network Power Factor Conversion between MVA and MW (TOPSD0301).	Accuracy is limited by the uncertainty inherent in the calculation of the average power factor. Refer to 'Note to TOPSD0201 and TOPSD0301'
Table 3.4.3 System Demand Table 3.4.3.1 Annual system maximum demand characteristics – MVA measure TOPSD0202 Transmission System coincident weather adjusted maximum demand 10% POE	-	- Variables: TOPSD0102 TOPSD0301	Y The data are materially dependent on how the data in MW are "translated" to data in MVA The approach adopted in estimating this parameter is the best available in the circumstances. Refer to note below	Divide Transmission System Coincident Maximum Demand 10%POE(TOPSD0102) by Average Overall Network Power Factor Conversion between MVA and MW (TOPSD0301	As for TOPSD0201
Table 3.4.3 System Demand Table 3.4.3.1 Annual system maximum demand characteristics	-	- Variables: TOPSD0103 TOPSD0301	Y The data are materially dependent on how the data in MW are "translated" to	Divide Transmission System Coincident Maximum Demand 50% POE (TOPSD0103) by Average Overall Network Power Factor Conversion between MVA and MW (TOPSD0301	As for TOPSD0201

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[6]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
– MVA measure TOPSD0203 Transmission System coincident weather adjusted maximum demand 50% POE			data in MVA The approach adopted in estimating this parameter is the best available in the circumstances. Refer to note below		
Table 3.4.3 System Demand Table 3.4.3.1 Annual system maximum demand characteristics – MVA measure TOPSD0204 Transmission System non-coincident summated maximum demand	As per AER definition page 24.	Variables: TOPSD0104 TOPSD0301	Y The data are materially dependent on how the data in MW are "translated" to data in MVA The approach adopted in estimating this parameter is the best available in the circumstances. Refer to note below	Divide Transmission System non-coincident weather summated maximum demand (TOPSD0104) by Average Overall Network Power Factor Conversion between MVA and MW TOPSD0301.	As for TOPSD0201
Table 3.4.3 System Demand Table 3.4.3.1 Annual system maximum demand characteristics – MVA measure TOPSD0205 Transmission System non-coincident weather	-	-	Y The data are materially dependent on how the data in MW are "translated" to data in MVA The approach adopted in estimating this parameter is the best available in the circumstances.	Divide Transmission System non-coincident weather adjusted summated maximum demand 10% PoE (TOPSD0105) by Average Overall Network Power Factor Conversion between MVA and MW TOPSD0301.	As for TOPSD0201.

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[6]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
adjusted summated maximum demand 10% POE			Refer to note below		
Table 3.4.3 System Demand Table 3.4.3.1 Annual system maximum demand characteristics – MVA measure TOPSD0206 Transmission System non-coincident weather adjusted summated maximum demand 50% POE	-	-	Y The data are materially dependent on how the data in MW are "translated" to data in MVA The approach adopted in estimating this parameter is the best available in the circumstances. Refer to note below	Divide Transmission System non-coincident weather adjusted summated maximum demand 50% PoE (TOPSD0106) by Average Overall Network Power Factor Conversion between MVA and MW TOPSD0301.	As for TOPSD0201
Table 3.4.3 System Demand Table 3.4.3.3 Power factor Power factor conversion between MVA and MW TOPSD0301 Average overall network power factor conversion between MVA and MW	As per AER definition on page 24.	TransGrid's TUOS billing system	Y These data are are not routinely calculated or used. The values are dependent on the method used to estimate them. The approach adopted in estimating this parameter is the best available in the circumstances.	TransGrid does not collect data to derive network wide power factors. However, there are data for reactive loading at some (but not all) bulk supply points. These data have been used to develop a broad approximation of system wide power factors. Refer to note below.	Refer to 'Note to TOPSD0201 and TOPSD0301

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[6]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
Table 3.4.3 System Demand Table 3.4.3.3 Power factor Power factor conversion between MVA and MW TOPSD0302 to TOPSD0312 Average power factor conversion for lines, per voltage level	This variable has been taken to be the power factor derived from the aggregate MW and MVAr flows, at the time of overall maximum demand, on TransGrid's lines which operate at the particular nominal voltage. Where TransGrid does not have any lines operating at a particular nominal voltage, the average power factor provided for those lines is unity.	TransGrid's SCADA system	Y These variables are based on iInformation taken from TransGrid's SCADA system, a corporate system which is used in TransGrid's normal course of business. They are also materially dependent on the assumption made in performing the calculations. As such they are neither Actual Information nor Estimated Information (as defined by the AER). However, they have been taken to be Estimated Information as: • the figures depend critically on assumptions made in deriving them; and • the concept of system wide average power factors has little meaning (see notes below).	Information on the MW and MVAr flows at each end of TransGrid lines at the time of the overall network maximum MW loading were extracted from TransGrid's SCADA system. For lines operating at each nominal voltage the aggregate MW and MVAr flows at the "sending end" (where real power flows into the line) and the "receiving end" (where real power flows out of the line) were calculated. The power factors of the aggregate sending end flows and the aggregate receiving end flows were calculated. The average of these two power factors was taken to be the average power factor for the lines operating at that nominal voltage. Refer also to notes below.	The assumptions include that the measure: • Relates to MW and MVAr flows at the time of the maximum MW loading on TransGrid's network, rather than being an average across the year. • Is based on the power factor of the aggregated MW and MVAr flows on all TransGrid lines operating at a particular nominal voltage, rather than being the average of the power factors derived for the individual lines. This assumption is critical as the outcomes of these two possible approaches are very different. For 132 kV lines, the first approach (that adopted for this

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[6]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
					RIN) gives an average power factor of 1.00 whereas the second approach gives 0.92.

Note to TOPSD0201 and TOPSD0301

The nature of transmission systems is that they are "better" at transmitting real power (MW) than reactive power (MVAr)[8]. Consequently, reactive power needs (to manage voltage levels) are met on a local basis, rather than a network wide basis. This involves the installation of reactive plant (such as shunt capacitors, shunt reactors, statcoms and static VAr compensators) at strategic locations, as well as utilisation of the reactive generation/absorption capability of generators. In some circumstances reactive plant may be installed in "downstream" networks, rather than at bulk supply points, if there is also a need to manage voltage levels (or reactive power loadings) within those networks.

As network wide reactive loads and their derivative network wide power factors, are not used, TransGrid does not routinely collect data to derive them. However, TransGrid does have reactive loading data for some (but not all) bulk supply points. Those data have been used to develop a broad approximation of system wide power factors. This has been done by:

- Deriving the real and reactive power loads for individual bulk supply points where data are available and usable[9] at the time of overall maximum (MW) demand for on TransGrid's network; and
- Summating those individual bulk supply point demands to derive the diversified (coincident, as delivered) maximum demand on TransGrid's network and the associated power factor.

---

8 This stems from the fact that the reactance of transmission lines and transformers is typically several (to many) times greater than their resistance. This leads to the voltage drops associated with reactive power flows through those network elements being commensurately higher than those associated with real power flows. Consequently, it is much more difficult to meet reactive power needs from "remote" locations than is the case for real power needs. This leads to reactive power needs being met on a "more local" basis.

9 At some locations the meters measure the real and reactive power flows on the customers lines supplied from the bulk supply point. In these cases, calculations are straight forward. At other locations, the meters measure the real and reactive power flows in the transformers at the bulk supply point. In these cases the reactive power flows are affected by any reactive plant connected to the low voltage busbar. Where reactive plant is also installed within the customer's networks, it is sometimes not possible to identify, and adjust for, the impact of TransGrid's reactive plant. Where this is the case, the particular bulk supply points have been excluded from the calculations.

The real and corresponding reactive power loads at the individual bulk supply points are derived from revenue[10] and in some cases statistical metering data. Generally, the statistical metering uses the same class of metering instruments (current transformers, voltage transformers and meters) as the revenue metering at that site.

TransGrid's bulk supply points provide supply at a number of voltages (between 11 kV and 330 kV) with supply from most being at 66 kV or below. Those supplies are at what can be considered to be the "edges" of TransGrid's network. Thus power factor data at bulk supply points do not necessarily provide any meaningful information about the power factors in other parts of TransGrid's network. As the system average power factor is only a very broad estimate, the figure is given to two only significant figures (to avoid a false sense of precision)..

Note to TOPSD0202 to TOPSD0212 and TOPSD0302 to TOPSD0312

As indicated in the note above, the control of voltage levels (and the consequent reactive power flows) is undertaken at a "local level". Consequently, the concept of a system wide power factor has little meaning. It is important to note that the "localised" control of voltage levels can result in the power factors of flows on lines in different parts of TransGrid's network differing. The approach adopted to estimate the average power factors for lines operating at particular nominal voltages masks this variability.

An alternative approach (which was not adopted) is to estimate the average power factor (based on the sending and treceiving end flows) for the individual lines operating at a particular nominal voltage and to take the average of those individual power factors. This approach captures the variability of power factors between lines (particularly if a measure of variability such as the standard deviation is also calculated) but has the disadvantage that it (inherently) treats lines with low flows as being "equally important" as lines with high flows.

TransGrid does not have any 275 kV, 110 kV, 88 kV, 66 kV, 33 kV, 22 kV, 11 kV or 6.6 kV lines but is required to provide "meaningful" entries for this variable. For lines of those voltages unity power factor has been entered.

Approved by (Group Manager): Nalin Pahalawaththa, Manager /Power System Analysis

10 The accuracy requirements for revenue metering installations are specified in the National Electricity Rules.

7.8 Worksheet 3.5 Physical Assets

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[11]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
Table 3.5.1.1 Overhead network length of circuit at each voltage TPA0101 to TPA0111	Overhead line total length operating at each voltage. TransGrid has no Transmission Line assets at 275kV, 110kV or lower	TransGrid Asset Management Information System (TAMIS)	N	All line information relevant to TransGrid was downloaded from TransGrid's Asset Management Information System (TAMIS).	No assumptions were made in calculations as the asset is static Circuits with sections of split phase arrangement are counted as a single length. Lines are reported at their operating voltage, although they may be constructed suitable for operation at a higher voltage.
Table 3.5.1.2 Underground cable circuit length at each	Underground cable circuit length at each voltage.	Project Records, cable schedules and drawings	N	Project Records, cable schedules and drawings	No assumptions were made in calculations as the asset is static.

[11] 'Information presented in response to the Notice whose presentation is not Materially dependent on information recorded in the NSP's historical accounting records or other records used in the normal course of business, and whose presentation for the purposes of the Notice is contingent on judgments and assumptions for which there are valid alternatives, which could lead to a Materially different presentation in the response to the Notice.', **page 34, "Economic benchmarking RIN For transmission network service providers, Instructions and Definitions".**

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[11]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
voltage TPA0201 to TPA0211	TransGrid has no Underground Cable assets at 500kV, 275kV, 220 kV, 110kV or lower				Cables are reported at their operating voltage, although they may be constructed suitable for operation at a higher voltage.
Table 3.5.1.3 Estimated overhead network weighted average MVA capacity by voltage class TPA0301 to TPA0311	This variable is interpreted as the sum of all {peak transmission circuit capacity * relevant circuit lengths} for all circuits at each voltage level , divided by the total circuit length for that voltage level TransGrid has no Transmission Line assets at 275kV, 110kV or lower	Uses other calculated value: TPA0101 to TPA0111 TransGrid Operating Manuals: OM304 Ratings of Main Grid Circuits • OM305 Ratings of Subsystem Circuits In Northern Region • OM 306 - Ratings Of Subsystem Circuits In Central Region • OM307 - Ratings of Subsystem Circuits In Southern Region AEMO Price and Demand data files	No	AEMO NSW price/demand data (30 minute) was used to determine the time of maximum demand for each FY. Line ratings vary on time of year and time of day, this AEMO data was used to determine which rating to use. **For 2015FY, the maximum demand was in November at 1600 hrs, so Spring Day ratings were used.** The version of OM304, OM305, OM306 or OM307 that was current at the time of maximum demand was obtained. The "Normal MVA" ratings applicable for the time of maximum demand for each line were entered into a spreadsheet which multiplied the rating with the length of the line (obtained as part of the TPA0101 to TPA0111 calculation) to give a MVA.km value. The sum of the MVA.km values was then divided by the determined kilometres for the voltage class in TPA0101 to TPA0111	Constrained values are included where applicable. E.g. A line rating may be constrained by terminal equipment (such as CT's, wavetraps, etc). In this case the constrained value will be entered, not the line rating Where the ratings are dependant on the loadflow direction, the most likely direction will be shown. This is based on: • Load will be going away from Generator sites • Load is assumed to flow from the higher voltage site, or site closest to the higher voltage network. Where a new line is commissioned or altered

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[11]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
					after the maximum demand event occurs, the rating shown will be the appropriate season's rating at the end of the financial year.
Table 3.5.1.4 Estimated underground network weighted average MVA capacity by voltage class TPA0401 to TPA0411	This variable is interpreted as the sum of all {peak transmission circuit capacity * relevant circuit lengths} for all underground circuits at each voltage level, divided by the total underground circuit lengths at that voltage level TransGrid has no Underground Cable assets at 500kV, 275kV, 220 kV, 110kV or lower	Uses other calculated value TPA0201 to TPA0211 TransGrid Operating Manual OM304 Ratings of Main Grid Circuits AEMO Price and Demand data files (from public website)	N	AEMO NSW price/demand data (30 minute) was used to determine the time of maximum demand for each FY. This file was used for all voltage classes. **For 2015FY, the maximum demand was in November at 1600 hrs. Note Cable 41 is considered to still use a winter rating in November.** The version of OM304 that was current at the time of maximum demand was obtained. The normal cyclic rating was multiplied by the length of the circuit to give an MVA.km value. The sum of the MVA.km values was then divided by the determined kilometres for the voltage class TPA0202 to TPA211 to determine a weighted average MVA.	It is assumed that the AER require Cyclic rating for underground cables.
Table 3.5.1.5 Installed transmission system transformer capacity TPA0501 Transmission	These were taken to be the sum of nameplate capacities of transformers with a primary winding	Ellipse: Equipment Register Tracing Data	N	1. Create valid list A valid list of transformers current at June 2015 was compiled. Non current records were filtered from the	When relocations were known to have happened. it was assumed that transformers were moved at the end of a financial

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[11]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
substations (eg 500 kV to 330 kV)	voltage rating of 220 kV and above and not used to supply load directly. .	Nameplate Data System operating diagrams and amendments GM AS S1 009 and amendments – In-Service and Spare Power Transformers and Reactors Equipment Manuals		equipment register data and reviewed to remove a small number of errors. 2. Process capacity values and crosscheck Nameplate ratings for each transformer was processed to a simple list form and this was then linked to the equipment register on equipment identifier and ratings reviewed and possible errors checked using operating diagram amendments. 3. Trace each year's data Tracing data was used to identify transformers in service for each financial year in the required range using the 2014 RIN information as the base. System spares were cross checked using amendments of GM AS S1 009.	year and for a replacement, no overlap was shown. Spare transformers temporarily connected to facilitate project staging were considered as remaining as spares. The quoted year is assumed to be the second year of a financial year period – eg: 2006 = 2005/2006. A frequency injection transformer located at Forbes (Asset ID: COSFB24K) was omitted. Its only function is for the injection of the DNSP ripple control into the network.
Table 3.5.1.5 Installed transmission system transformer capacity TPA0502 Terminal points to DNSP systems	Transformers primarily used to directly supply DNSP load.	As for TPA0501	No	As for TPA0501	As for TPA0501
Table 3.5.1.5 Installed transmission system	Transformers used to supply direct customers exclusively.	As for TPA0501 Information from Customer Access files and	N	As for TPA0501 Used to identify direct customer	As for TPA0501

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[11]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
transformer capacity TPA0503 Transformer capacity for directly connected end–users owned by the TNSP	Owned by TransGrid. One transformer (Equipment reference SWSGAD1A2) was identified that falls into this category.	Connection Agreements		connected transformers	
Table 3.5.1.5 Installed transmission system transformer capacity TPA0504 Transformer capacity for directly connected end–users owned by the end–user	Transformers used to supply direct customers exclusively. Owned by the customer. These transformers were separately identified and are not part of TransGrid's asset management system and their categorisation was obvious.	As for TPA0501 Information from Customer Access files and Connection Agreements	N	As for TPA0501 Used to identify direct customer connected transformers. Operating diagrams were also used to obtain transformer ratings.	As for TPA0501. End customer transformers were only counted if part of a prescribed connection.
Table 3.5.1.5 Installed transmission system transformer capacity TPA0505 Interconnector capacity	These were taken to be transformers used to directly connect interstate. None were identified.	As for TPA0501	No	As for TPA0501	As for TPA0501

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[11]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
Table 3.5.1.5 Installed transmission system transformer capacity TPA0506 Dedicated SVC transformers	SVC transformers are provided to connect SVCs to the network. They do not fit into the other provided categories	As for TPA0501	No	As for TPA0501	As for TPA0501
Table 3.5.1.6 Cold Spare Capacity TPA06 Cold Spare capacity	Transformers that are not connected to the network and are used as spares to cover against possible failure.	As for TPA0501	No	As for TPA0501	As for TPA0501

Approved by (Group Manager): Lance Wee, Manager/Asset Strategy

7.9 Worksheet 3.6 Quality of Services

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TQS0101 Lines outage rate – fault	TQS0102 / TQS0103	Refer to RIN variables TQS0102 and TQS0103	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data	TQS0101 = TQS0102 / TQS0103	NIL
TQS0102 Number of Lines fault outages	This variable is interpreted as the total number of instantaneous outages (fault outages as defined by the AER) on transmission line and/or underground cable circuits owned by TransGrid at 66kV and above. This measure has excluded outages (as defined in V4 of the AER STPIS) removed	The "QAPR Comment on Outage" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "NPR Outages List Linked Table" worksheet of spreadsheet RINB-36-01. The "QAPR Comment on Outage" Table in THEOS PC Stats.accdb is populated by importing data into it from THEOS (the business application used by Network Operations staff to record outage data), after having assigned every outage record in THEOS with an AER code. Selecting the appropriate AER code occasionally requires obtaining additional information from Opslog (a	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data	Every outage record in the "NPR Outages List Linked Table" worksheet of the RINB-36-01 spreadsheet whose AER code field (column L) is C or Z, and Component Type field (column P) is TL or UG, is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01.	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid.

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	from the count.	separate business application used as a diary/logbook by Network Operators).			
TQS0103 Number of defined Lines	This variable is interpreted as the total number (three phase equivalent) of transmission line and/or underground cable circuits owned by TransGrid at 66kV and above. This measure is an average number over twelve months in a calendar year.	The "tblCircuits_SettingData" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "Equipment Count Linked Table" worksheet of spreadsheet RINB-36-01. The data contained in the "tblCircuits_SettingData" table in THEOS PC Stats.accdb is regularly updated in an incremental manner, based on System Development Summaries periodically released by the Network Operations group.	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data	Every equipment record in the "Equipment Count Linked Table" worksheet of the RINB-36-01 spreadsheet whose Component field (column A) is TL or UG, has its AllCircuits count (column G) averaged across each month of the relevant calendar year.	Accuracy of the System Development Summary documents produced by the Network Operations group within TransGrid.
TQS0104 Transformer outage rate – fault	TQS0105 / TQS0106	Refer to RIN variables TQS0105 and TQS0106	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data	TQS0104 = TQS0105 / TQS0106	NIL
TQS0105 Number of Transformer fault outages	This variable is interpreted as the total number of instantaneous outages (fault outages as defined by the AER) on transformers owned by TransGrid at 66kV	The "QAPR Comment on Outage" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "NPR Outages List Linked Table" worksheet of spreadsheet RINB-36-01. The "QAPR Comment on Outage" Table in THEOS	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data	Every outage record in the "NPR Outages List Linked Table" worksheet of the RINB-36-01 spreadsheet whose AER code field (column L) is C or Z, and Component Type field (column P) is TX, is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	and above. This measure has excluded outages (as defined in V4 of the AER STPIS) removed from the count.	PC Stats.accdb is populated by importing data into it from THEOS (the business application used by Network Operations staff to record outage data), after having assigned every outage record in THEOS with an AER code. Selecting the appropriate AER code occasionally requires obtaining additional information from Opslog (a separate business application used as a diary/logbook by Network Operators).		spreadsheet RINB-36-01.	
TQS0106 Number of defined Transformers	This variable is interpreted as the total number (three phase equivalent) of transformers owned by TransGrid at 66kV and above. This measure is an average number over twelve months in a calendar year.	The "tblCircuits_SettingData" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "Equipment Count Linked Table" worksheet of spreadsheet RINB-36-01. The data contained in the "tblCircuits_SettingData" table in THEOS PC Stats.accdb is regularly updated in an incremental manner, based on System Development Summaries periodically released by the Network Operations group.	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data	Every equipment record in the "Equipment Count Linked Table" worksheet of the RINB-36-01 spreadsheet whose Component field (column A) is TX, has its AllCircuits count (column G) averaged across each month of the relevant calendar year.	Accuracy of the System Development Summary documents produced by the Network Operations group within TransGrid.
TQS0107 Reactive Plant outage rate – fault	TQS0108 / TQS0109	Refer to RIN variables TQS0108 and TQS0109	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data	TQS0107 = TQS0108 / TQS0109	NIL
TQS0108 Number of Reactive plant	This variable is interpreted as the total number of	The "QAPR Comment on Outage" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for	No, this variable was determined from the sources mentioned in the	Every outage record in the "NPR Outages List Linked Table" worksheet of the RINB-36-01 spreadsheet whose AER code field	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
fault outages	instantaneous outages (fault outages as defined by the AER) on Reactors and Capacitors at 66kV and above, and Static VAr Compensators (SVCs) at all voltages, owned by TransGrid. This measure has excluded outages (as defined in V4 of the AER STPIS) removed from the count.	only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "NPR Outages List Linked Table" worksheet of spreadsheet RINB-36-01. The "QAPR Comment on Outage" Table in THEOS PC Stats.accdb is populated by importing data into it from THEOS (the business application used by Network Operations staff to record outage data), after having assigned every outage record in THEOS with an AER code. Selecting the appropriate AER code occasionally requires obtaining additional information from Opslog (a separate business application used as a diary/logbook by Network Operators).	relevant columns. It is considered actual data	(column L) is C or Z, and Component Type field (column P) is CAP or RX or SVC, is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01.	Network Operations group within TransGrid
TQS0109 Number of defined Reactive Plant	This variable is interpreted as the total number (three phase equivalent) of Reactors and Capacitors at 66kV and above, and Static VAr Compensators (SVCs) at all voltages, owned by TransGrid. This measure is an average number over twelve months in a calendar year.	The "tblCircuits_SettingData" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "Equipment Count Linked Table" worksheet of spreadsheet RINB-36-01. The data contained in the "tblCircuits_SettingData" table in THEOS PC Stats.accdb is regularly updated in an incremental manner, based on System Development Summaries periodically released by the Network Operations group.	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data	Every equipment record in the "Equipment Count Linked Table" worksheet of the RINB-36-01 spreadsheet whose Component field (column A) is CAP or RX or SVC, has its AllCircuits count (column G) averaged across each month of the relevant calendar year.	Accuracy of the System Development Summary documents produced by the Network Operations group within TransGrid.

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TQS0110 Lines outage rate – forced	TQS0111 / TQS0103	Refer to RIN variables TQS0111 and TQS0103	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data	TQS0110 = TQS0111 / TQS0103	NIL
TQS0111 Number of Lines forced outages	This variable is interpreted as the total number of outages that are not instantaneous, however less than 24 hours' notice is given to the customer and/or AEMO (forced outages as defined by the AER) on transmission line and/or underground cable circuits owned by TransGrid at 66kV and above. This measure has excluded outages (as defined in V4 of the AER STPIS) removed from the count.	The "QAPR Comment on Outage" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "NPR Outages List Linked Table" worksheet of spreadsheet RINB-36-01. The "QAPR Comment on Outage" Table in THEOS PC Stats.accdb is populated by importing data into it from THEOS (the business application used by Network Operations staff to record outage data), after having assigned every outage record in THEOS with an AER code. Selecting the appropriate AER code occasionally requires obtaining additional information from Opslog (a separate business application used as a diary/logbook by Network Operators).	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data	Every outage record in the "NPR Outages List Linked Table" worksheet of the RINB-36-01 spreadsheet whose AER code field (column L) is B or E, and Component Type field (column P) is TL or UG, is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01.	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid
TQS0112 Transformers outage rate – forced	TQS0113 / TQS0106	Refer to RIN variables TQS0113 and TQS0106	No, this variable was determined from the sources mentioned in the relevant columns. It is	TQS0112 = TQS0113 / TQS0106	NIL

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
			considered actual data		
TQS0113 Number of Transformers forced outages	This variable is interpreted as the total number of outages that are not instantaneous, however less than 24 hours' notice is given to the customer and/or AEMO (forced outages as defined by the AER) on transformers owned by TransGrid at 66kV and above. This measure has excluded outages (as defined in V4 of the AER STPIS) removed from the count.	The "QAPR Comment on Outage" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "NPR Outages List Linked Table" worksheet of spreadsheet RINB-36-01. The "QAPR Comment on Outage" Table in THEOS PC Stats.accdb is populated by importing data into it from THEOS (the business application used by Network Operations staff to record outage data), after having assigned every outage record in THEOS with an AER code. Selecting the appropriate AER code occasionally requires obtaining additional information from Opslog (a separate business application used as a diary/logbook by Network Operators).	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data	Every outage record in the "NPR Outages List Linked Table" worksheet of the RINB-36-01 spreadsheet whose AER code field (column L) is B or E, and Component Type field (column P) is TX, is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01.	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid
TQS0114 Reactive Plant outage rate – forced	TQS0115 / TQS0109	Refer to RIN variables TQS0115 and TQS0109	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data	TQS0114 = TQS0115 / TQS0109	NIL
TQS0115 Number of Reactive Plant	This variable is interpreted as the total number of	The "QAPR Comment on Outage" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for	No, this variable was determined from the sources mentioned in the	Every outage record in the "NPR Outages List Linked Table" worksheet of the RINB-36-01 spreadsheet whose AER code field	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
forced outages	outages that are not instantaneous, however less than 24 hours' notice is given to the customer and/or AEMO (forced outages as defined by the AER) on Reactors and Capacitors at 66kV and above, and Static VAr Compensators (SVCs) at all voltages, owned by TransGrid. This measure has excluded outages (as defined in V4 of the AER STPIS) removed from the count.	only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "NPR Outages List Linked Table" worksheet of spreadsheet RINB-36-01. The "QAPR Comment on Outage" Table in THEOS PC Stats.accdb is populated by importing data into it from THEOS (the business application used by Network Operations staff to record outage data), after having assigned every outage record in THEOS with an AER code. Selecting the appropriate AER code occasionally requires obtaining additional information from Opslog (a separate business application used as a diary/logbook by Network Operators).	relevant columns. It is considered actual data	(column L) is B or E, and Component Type field (column P) is CAP or RX or SVC, is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01.	Network Operations group within TransGrid
TQS0116 Number of events greater than 0.05 system minutes per annum (X)	This is taken to be the number of unplanned outages in the relevant year entailing a loss of supply exceeding the 'X' threshold set by the AER for TransGrid (which is 0.05 system minutes) where the loss of supply also is greater	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "ENS Lost Load Linked Table" worksheet of spreadsheet RINB-36-01. The "ENS Lost Load" Table in THEOS PC Stats.accdb is populated by manually entering data into it using information sourced from THEOS (the business application used by Network Operations	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data.	Every outage record in the "ENS Lost Load Linked Table" worksheet of the RINB-36-01 spreadsheet which is not excluded (i.e. column N is false) and whose MWh value (column G) exceeds the threshold which is equivalent to 0.05 system minutes, is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	than 0.05 system minutes, subtracting any applicable exclusions as defined by the AER STPIS V4.	staff to record outage data) and/or Opslog (a separate business application used as a diary/logbook by Network Operators).		spreadsheet RINB-36-01. The mathematical relationship between MWh and system minutes is: *MWh = system minutes / 60 * (record MW demand)* The record MW demand was obtained from a spreadsheet on AEMO's website (shortcut RINB-36-02 & extract RINB-36-03), in cell B25 of the "NSW_Sum" worksheet.	
TQS0117 Number of events greater than 0.1 system minutes per annum (X)	This is taken to be the number of unplanned outages in the relevant year entailing a loss of supply exceeding the 'X' threshold set by the AER for TransGrid (which is 0.05 system minutes) where the loss of supply also is greater than 0.1 system minutes, subtracting any applicable exclusions as defined by the AER STPIS V4.	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "ENS Lost Load Linked Table" worksheet of spreadsheet RINB-36-01. The "ENS Lost Load" Table in THEOS PC Stats.accdb is populated by manually entering data into it using information sourced from THEOS (the business application used by Network Operations staff to record outage data) and/or Opslog (a separate business application used as a diary/logbook by Network Operators).	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data.	Every outage record in the "ENS Lost Load Linked Table" worksheet of the RINB-36-01 spreadsheet which is not excluded (i.e. column N is false) and whose MWh value (column G) exceeds the threshold which is equivalent to 0.1 system minutes, is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01. The mathematical relationship between MWh and system minutes is: *MWh = system minutes / 60 * (record MW demand)*	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
				The record MW demand was obtained from a spreadsheet on AEMO's website (shortcut RINB-36-02 & extract RINB-36-03), in cell B25 of the "NSW_Sum" worksheet.	
TQS0118 Number of events greater than 0.2 system minutes per annum (X)	This is taken to be the number of unplanned outages in the relevant year entailing a loss of supply exceeding the 'X' threshold set by the AER for TransGrid (which is 0.05 system minutes) where the loss of supply also is greater than 0.2 system minutes, subtracting any applicable exclusions as defined by the AER STPIS V4.	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "ENS Lost Load Linked Table" worksheet of spreadsheet RINB-36-01. The "ENS Lost Load" Table in THEOS PC Stats.accdb is populated by manually entering data into it using information sourced from THEOS (the business application used by Network Operations staff to record outage data) and/or Opslog (a separate business application used as a diary/logbook by Network Operators).	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data.	Every outage record in the "ENS Lost Load Linked Table" worksheet of the RINB-36-01 spreadsheet which is not excluded (i.e. column N is false) and whose MWh value (column G) exceeds the threshold which is equivalent to 0.2 system minutes, is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01. The mathematical relationship between MWh and system minutes is: *MWh = system minutes / 60 * (record MW demand)* The record MW demand was obtained from a spreadsheet on AEMO's website (shortcut RINB-36-02 & extract RINB-36-03), in cell B25 of the "NSW_Sum" worksheet.	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TQS0119 Number of events greater than 0.25 system minutes per annum (X)	This is taken to be the number of unplanned outages in the relevant year entailing a loss of supply exceeding the 'X' threshold set by the AER for TransGrid (which is 0.05 system minutes) where the loss of supply also is greater than 0.25 system minutes, subtracting any applicable exclusions as defined by the AER STPIS V4.	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "ENS Lost Load Linked Table" worksheet of spreadsheet RINB-36-01. The "ENS Lost Load" Table in THEOS PC Stats.accdb is populated by manually entering data into it using information sourced from THEOS (the business application used by Network Operations staff to record outage data) and/or Opslog (a separate business application used as a diary/logbook by Network Operators).	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data.	Every outage record in the "ENS Lost Load Linked Table" worksheet of the RINB-36-01 spreadsheet which is not excluded (i.e. column N is false) and whose MWh value (column G) exceeds the threshold which is equivalent to 0.25 system minutes, is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01. The mathematical relationship between MWh and system minutes is: *MWh = system minutes / 60 * (record MW demand)* The record MW demand was obtained from a spreadsheet on AEMO's website (shortcut RINB-36-02 & extract RINB-36-03), in cell B25 of the "NSW_Sum" worksheet.	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid
TQS0120 Number of events greater than 0.3 system minutes per annum (X)	This is taken to be the number of unplanned outages in the relevant year entailing a loss of supply exceeding the 'X' threshold set by	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "ENS Lost Load Linked Table" worksheet of spreadsheet RINB-36-	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data.	Every outage record in the "ENS Lost Load Linked Table" worksheet of the RINB-36-01 spreadsheet which is not excluded (i.e. column N is false) and whose MWh value (column G) exceeds the threshold which is equivalent to 0.3 system minutes, is counted across the	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	the AER for TransGrid (which is 0.05 system minutes) where the loss of supply also is greater than 0.3 system minutes, subtracting any applicable exclusions as defined by the AER STPIS V4.	01. The "ENS Lost Load" Table in THEOS PC Stats.accdb is populated by manually entering data into it using information sourced from THEOS (the business application used by Network Operations staff to record outage data) and/or Opslog (a separate business application used as a diary/logbook by Network Operators).		relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01. The mathematical relationship between MWh and system minutes is: *MWh = system minutes / 60 * (record MW demand)* The record MW demand was obtained from a spreadsheet on AEMO's website (shortcut RINB-36-02 & extract RINB-36-03), in cell B25 of the "NSW_Sum" worksheet.	
TQS0121 Number of events greater than 0.5 system minutes per annum (X)	This is taken to be the number of unplanned outages in the relevant year entailing a loss of supply exceeding the 'X' threshold set by the AER for TransGrid (which is 0.05 system minutes) where the loss of supply also is greater than 0.5 system minutes, subtracting	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "ENS Lost Load Linked Table" worksheet of spreadsheet RINB-36-01. The "ENS Lost Load" Table in THEOS PC Stats.accdb is populated by manually entering data into it using information sourced from THEOS (the business application used by Network Operations staff to record outage data) and/or Opslog (a separate business application used as a	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data.	Every outage record in the "ENS Lost Load Linked Table" worksheet of the RINB-36-01 spreadsheet which is not excluded (i.e. column N is false) and whose MWh value (column G) exceeds the threshold which is equivalent to 0.5 system minutes, is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01. The mathematical relationship between	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	any applicable exclusions as defined by the AER STPIS V4.	diary/logbook by Network Operators).		MWh and system minutes is: *MWh = system minutes / 60 * (record MW demand)* The record MW demand was obtained from a spreadsheet on AEMO's website (shortcut RINB-36-02 & extract RINB-36-03), in cell B25 of the "NSW_Sum" worksheet.	
TQS0122 Number of events greater than 0.75 system minutes per annum (X)	This is taken to be the number of unplanned outages in the relevant year entailing a loss of supply exceeding the 'X' threshold set by the AER for TransGrid (which is 0.05 system minutes) where the loss of supply also is greater than 0.75 system minutes, subtracting any applicable exclusions as defined by the AER STPIS V4.	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "ENS Lost Load Linked Table" worksheet of spreadsheet RINB-36-01. The "ENS Lost Load" Table in THEOS PC Stats.accdb is populated by manually entering data into it using information sourced from THEOS (the business application used by Network Operations staff to record outage data) and/or Opslog (a separate business application used as a diary/logbook by Network Operators).	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data.	Every outage record in the "ENS Lost Load Linked Table" worksheet of the RINB-36-01 spreadsheet which is not excluded (i.e. column N is false) and whose MWh value (column G) exceeds the threshold which is equivalent to 0.75 system minutes, is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01. The mathematical relationship between MWh and system minutes is: *MWh = system minutes / 60 * (record MW demand)* The record MW demand was obtained from a spreadsheet on AEMO's website (shortcut RINB-36-02 & extract RINB-36-	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
				03), in cell B25 of the "NSW_Sum" worksheet.	
TQS0123 Number of events greater than 1.0 system minutes per annum (X)	This is taken to be the number of unplanned outages in the relevant year entailing a loss of supply exceeding the 'X' threshold set by the AER for TransGrid (which is 0.05 system minutes) where the loss of supply also is greater than 1.0 system minutes, subtracting any applicable exclusions as defined by the AER STPIS V4.	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "ENS Lost Load Linked Table" worksheet of spreadsheet RINB-36-01. The "ENS Lost Load" Table in THEOS PC Stats.accdb is populated by manually entering data into it using information sourced from THEOS (the business application used by Network Operations staff to record outage data) and/or Opslog (a separate business application used as a diary/logbook by Network Operators).	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data.	Every outage record in the "ENS Lost Load Linked Table" worksheet of the RINB-36-01 spreadsheet which is not excluded (i.e. column N is false) and whose MWh value (column G) exceeds the threshold which is equivalent to 1.0 system minutes, is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01. The mathematical relationship between MWh and system minutes is: *MWh = system minutes / 60 * (record MW demand)* The record MW demand was obtained from a spreadsheet on AEMO's website (shortcut RINB-36-02 & extract RINB-36-03), in cell B25 of the "NSW_Sum" worksheet.	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TQS0124 Number of events greater than 0.05 system minutes per annum (Y)	This is taken to be the number of unplanned outages in the relevant year entailing a loss of supply exceeding the 'Y' threshold set by the AER for TransGrid (which is 0.25 system minutes) where the loss of supply also is greater than 0.05 system minutes, subtracting any applicable exclusions as defined by the AER STPIS V4.	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "ENS Lost Load Linked Table" worksheet of spreadsheet RINB-36-01. The "ENS Lost Load" Table in THEOS PC Stats.accdb is populated by manually entering data into it using information sourced from THEOS (the business application used by Network Operations staff to record outage data) and/or Opslog (a separate business application used as a diary/logbook by Network Operators).	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data.	Every outage record in the "ENS Lost Load Linked Table" worksheet of the RINB-36-01 spreadsheet which is not excluded (i.e. column N is false) and whose MWh value (column G) exceeds the threshold which is equivalent to 0.25 system minutes, is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01. The mathematical relationship between MWh and system minutes is: *MWh = system minutes / 60 * (record MW demand)* The record MW demand was obtained from a spreadsheet on AEMO's website (shortcut RINB-36-02 & extract RINB-36-03), in cell B25 of the "NSW_Sum" worksheet.	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid
TQS0125 Number of events greater than 0.1 system minutes per annum (Y)	This is taken to be the number of unplanned outages in the relevant year entailing a loss of supply exceeding the 'Y' threshold set by	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "ENS Lost Load Linked Table" worksheet of spreadsheet RINB-36-	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data.	Every outage record in the "ENS Lost Load Linked Table" worksheet of the RINB-36-01 spreadsheet which is not excluded (i.e. column N is false) and whose MWh value (column G) exceeds the threshold which is equivalent to 0.25 system minutes, is counted across the	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	the AER for TransGrid (which is 0.25 system minutes) where the loss of supply also is greater than 0.1 system minutes, subtracting any applicable exclusions as defined by the AER STPIS V4.	01. The "ENS Lost Load" Table in THEOS PC Stats.accdb is populated by manually entering data into it using information sourced from THEOS (the business application used by Network Operations staff to record outage data) and/or Opslog (a separate business application used as a diary/logbook by Network Operators).		relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01. The mathematical relationship between MWh and system minutes is: *MWh = system minutes / 60 * (record MW demand)* The record MW demand was obtained from a spreadsheet on AEMO's website (shortcut RINB-36-02 & extract RINB-36-03), in cell B25 of the "NSW_Sum" worksheet.	
TQS0126 Number of events greater than 0.2 system minutes per annum (Y)	This is taken to be the number of unplanned outages in the relevant year entailing a loss of supply exceeding the 'Y' threshold set by the AER for TransGrid (which is 0.25 system minutes) where the loss of supply also is greater than 0.2 system minutes, subtracting	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "ENS Lost Load Linked Table" worksheet of spreadsheet RINB-36-01. The "ENS Lost Load" Table in THEOS PC Stats.accdb is populated by manually entering data into it using information sourced from THEOS (the business application used by Network Operations staff to record outage data) and/or Opslog (a separate business application used as a	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data.	Every outage record in the "ENS Lost Load Linked Table" worksheet of the RINB-36-01 spreadsheet which is not excluded (i.e. column N is false) and whose MWh value (column G) exceeds the threshold which is equivalent to 0.25 system minutes, is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01. The mathematical relationship between	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	any applicable exclusions as defined by the AER STPIS V4.	diary/logbook by Network Operators).		MWh and system minutes is: *MWh = system minutes / 60 * (record MW demand)* The record MW demand was obtained from a spreadsheet on AEMO's website (shortcut RINB-36-02 & extract RINB-36-03), in cell B25 of the "NSW_Sum" worksheet.	
TQS0127 Number of events greater than 0.25 system minutes per annum (Y)	This is taken to be the number of unplanned outages in the relevant year entailing a loss of supply exceeding the 'Y' threshold set by the AER for TransGrid (which is 0.25 system minutes) where the loss of supply also is greater than 0.25 system minutes, subtracting any applicable exclusions as defined by the AER STPIS V4.	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "ENS Lost Load Linked Table" worksheet of spreadsheet RINB-36-01. The "ENS Lost Load" Table in THEOS PC Stats.accdb is populated by manually entering data into it using information sourced from THEOS (the business application used by Network Operations staff to record outage data) and/or Opslog (a separate business application used as a diary/logbook by Network Operators).	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data.	Every outage record in the "ENS Lost Load Linked Table" worksheet of the RINB-36-01 spreadsheet which is not excluded (i.e. column N is false) and whose MWh value (column G) exceeds the threshold which is equivalent to 0.25 system minutes, is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01. The mathematical relationship between MWh and system minutes is: *MWh = system minutes / 60 * (record MW demand)* The record MW demand was obtained from a spreadsheet on AEMO's website (shortcut RINB-36-02 & extract RINB-36-	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
				03), in cell B25 of the "NSW_Sum" worksheet.	
TQS0128 Number of events greater than 0.3 system minutes per annum (Y)	This is taken to be the number of unplanned outages in the relevant year entailing a loss of supply exceeding the 'Y' threshold set by the AER for TransGrid (which is 0.25 system minutes) where the loss of supply also is greater than 0.30 system minutes, subtracting any applicable exclusions as defined by the AER STPIS V4.	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "ENS Lost Load Linked Table" worksheet of spreadsheet RINB-36-01. The "ENS Lost Load" Table in THEOS PC Stats.accdb is populated by manually entering data into it using information sourced from THEOS (the business application used by Network Operations staff to record outage data) and/or Opslog (a separate business application used as a diary/logbook by Network Operators).	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data.	Every outage record in the "ENS Lost Load Linked Table" worksheet of the RINB-36-01 spreadsheet which is not excluded (i.e. column N is false) and whose MWh value (column G) exceeds the threshold which is equivalent to 0.3 system minutes, is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01. The mathematical relationship between MWh and system minutes is: *MWh = system minutes / 60 * (record MW demand)* The record MW demand was obtained from a spreadsheet on AEMO's website (shortcut RINB-36-02 & extract RINB-36-03), in cell B25 of the "NSW_Sum" worksheet.	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TQS0129 Number of events greater than 0.5 system minutes per annum (Y)	This is taken to be the number of unplanned outages in the relevant year entailing a loss of supply exceeding the 'Y' threshold set by the AER for TransGrid (which is 0.25 system minutes) where the loss of supply also is greater than 0.5 system minutes, subtracting any applicable exclusions as defined by the AER STPIS V4.	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "ENS Lost Load Linked Table" worksheet of spreadsheet RINB-36-01. The "ENS Lost Load" Table in THEOS PC Stats.accdb is populated by manually entering data into it using information sourced from THEOS (the business application used by Network Operations staff to record outage data) and/or Opslog (a separate business application used as a diary/logbook by Network Operators).	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data.	Every outage record in the "ENS Lost Load Linked Table" worksheet of the RINB-36-01 spreadsheet which is not excluded (i.e. column N is false) and whose MWh value (column G) exceeds the threshold which is equivalent to 0.5 system minutes, is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01. The mathematical relationship between MWh and system minutes is: *MWh = system minutes / 60 * (record MW demand)* The record MW demand was obtained from a spreadsheet on AEMO's website (shortcut RINB-36-02 & extract RINB-36-03), in cell B25 of the "NSW_Sum" worksheet.	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid
TQS0130 Number of events greater than 0.75 system minutes per annum (Y)	This is taken to be the number of unplanned outages in the relevant year entailing a loss of supply exceeding the 'Y' threshold set by	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "ENS Lost Load Linked Table" worksheet of spreadsheet RINB-36-	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data.	Every outage record in the "ENS Lost Load Linked Table" worksheet of the RINB-36-01 spreadsheet which is not excluded (i.e. column N is false) and whose MWh value (column G) exceeds the threshold which is equivalent to 0.75 system minutes, is counted across the	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	the AER for TransGrid (which is 0.25 system minutes) where the loss of supply also is greater than 0.75 system minutes, subtracting any applicable exclusions as defined by the AER STPIS V4.	01. The "ENS Lost Load" Table in THEOS PC Stats.accdb is populated by manually entering data into it using information sourced from THEOS (the business application used by Network Operations staff to record outage data) and/or Opslog (a separate business application used as a diary/logbook by Network Operators).		relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01. The mathematical relationship between MWh and system minutes is: *MWh = system minutes / 60 * (record MW demand)* The record MW demand was obtained from a spreadsheet on AEMO's website (shortcut RINB-36-02 & extract RINB-36-03), in cell B25 of the "NSW_Sum" worksheet.	
TQS0131 Number of events greater than 1.0 system minutes per annum (Y)	This is taken to be the number of unplanned outages in the relevant year entailing a loss of supply exceeding the 'Y' threshold set by the AER for TransGrid (which is 0.25 system minutes) where the loss of supply also is greater than 1.0 system minutes, subtracting	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "ENS Lost Load Linked Table" worksheet of spreadsheet RINB-36-01. The "ENS Lost Load" Table in THEOS PC Stats.accdb is populated by manually entering data into it using information sourced from THEOS (the business application used by Network Operations staff to record outage data) and/or Opslog (a separate business application used as a	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data.	Every outage record in the "ENS Lost Load Linked Table" worksheet of the RINB-36-01 spreadsheet which is not excluded (i.e. column N is false) and whose MWh value (column G) exceeds the threshold which is equivalent to 1.0 system minutes, is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01. The mathematical relationship between	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	any applicable exclusions as defined by the AER STPIS V4.	diary/logbook by Network Operators).		MWh and system minutes is: *MWh = system minutes / 60 * (record MW demand)* The record MW demand was obtained from a spreadsheet on AEMO's website (shortcut RINB-36-02 & extract RINB-36-03), in cell B25 of the "NSW_Sum" worksheet.	
TQS0118 Average outage duration	This is the average duration in minutes of all unplanned outages in a given year involving a loss of supply, which are not excluded (as defined by the AER STPIS V4).	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "ENS Lost Load Linked Table" worksheet of spreadsheet RINB-36-01. The "ENS Lost Load" Table in THEOS PC Stats.accdb is populated by manually entering data into it using information sourced from THEOS (the business application used by Network Operations staff to record outage data) and/or Opslog (a separate business application used as a diary/logbook by Network Operators).	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data	Every outage record in the "ENS Lost Load Linked Table" worksheet of the RINB-36-01 spreadsheet which is not excluded (i.e. column N contains FALSE), has its Lost Load Time Hrs (column E) averaged across the relevant calendar year. This is subsequently multiplied by 60 to convert from hours to minutes, which forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01.	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid
TQS0119 Failure of protection system	Number of events in a given year where the protection system does not operate for a fault or operates	The "QAPR Comment on Outage" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet	No, this variable was determined from the sources mentioned in the relevant columns. It is	Every outage record in the "NPR Outages List Linked Table" worksheet of the RINB-36-01 spreadsheet classified as a Protection Failure (i.e. column AL contains TRUE), is counted across the	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	where there is no actual fault.	"NPR Outages List Linked Table" worksheet of spreadsheet RINB-36-01. The "QAPR Comment on Outage" Table in THEOS PC Stats.accdb is populated by importing data into it from THEOS (the business application used by Network Operations staff to record outage data), after having assigned every outage record in THEOS with an AER code. Selecting the appropriate AER code occasionally requires obtaining additional information from Opslog (a separate business application used as a diary/logbook by Network Operators).	considered actual data	relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01.	within TransGrid
TQS0120 Material failure of Supervisory Control and Data Acquisition (SCADA) system	The number of TransGrid SCADA outage events advised by AEMO to TG in any given year.	Email from Terry Day (AEMO) received on 07/01/2015 (RINB-36-04).	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data.	This value was calculated by counting all occurrences of SCADA outages reported from AEMO to TG, for the relevant calendar year. AEMO is responsible for monitoring and reporting this variable.	Accuracy of data from AEMO.
TQS0121 Incorrect operational isolation of primary or secondary equipment	Number of events in a given year where the primary or secondary equipment is not properly isolated during scheduled or emergency maintenance. Incorrect isolation is defined as any accidental or deliberate action by a staff member or	The "QAPR Comment on Outage" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "NPR Outages List Linked Table" worksheet of spreadsheet RINB-36-01. The "QAPR Comment on Outage" Table in THEOS PC Stats.accdb is populated by importing data into it from THEOS (the business application used by Network Operations staff to record outage data), after having assigned every outage record in	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data.	Every outage record in the "NPR Outages List Linked Table" worksheet of the RINB-36-01 spreadsheet classified as an Incorrect Isolation (i.e. column AM contains TRUE), is counted across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01.	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	contractor that results in an unplanned outage. No data is available to indicate the occurrence of incorrect isolation action which did not lead to outages.	THEOS with an AER code. Selecting the appropriate AER code occasionally requires obtaining additional information from Opslog (a separate business application used as a diary/logbook by Network Operators).			
TQS02 Market Impact Parameter	The number of binding constraint dispatch periods with a marginal cost of constraint >$10/MWh due to TransGrid outages that are not excluded (according to the AER STPIS V4)	The "tblMITC_SettingData" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only Asset Performance & Systems staff). An extract of this table is provided in the worksheet "MIC Limked Table" worksheet of spreadsheet RINB-36-01. The "tblMITC_SettingData" Table in THEOS PC Stats.accdb is populated by manually entering data into it which is output from the MITC Reporting.xlsm spreadsheet. The MITC Reporting.xlsm spreadsheet is a macro enabled spreadsheet in which the user inputs relevant data from various sources including THEOS (the business application used by Network Operations staff to record outage data), Opslog (a separate business application used as a diary/logbook by Network Operators), ez2view (a software package developed by 3rd party vendor Global Roam, used to retrieve National Electricity Market data from AEMO), and NOS (AEMO's online database for network outage data resulting in market constraints).	No, this variable was determined from the sources mentioned in the relevant columns. It is considered actual data.	Every monthly penalty count record in the "MIC Linked Table" worksheet of the RINB-36-01 spreadsheet has its non-excluded penalty count (i.e. the number in column C) summed across the relevant calendar year and forms this value. This RIN variable (amongst various others) is presented in the "Economic RIN" worksheet of the spreadsheet RINB-36-01.	Accuracy of National Electricity Market data from AEMO, which is provided via the ez2view software and NOS. Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[12]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TQS03 System Losses	As per AER definition on Page 30	TransGrid's TUOS billing system	N	2014 calendar year data for the energy into TransGrid's network and the energy out of TransGrid's network have been extracted from the spreadsheets developed for the 2013/14 and 2014/15 RINs [January to June 2014 from the 2013/13 RIN and July to December 2014 from the 2014/15 RIN]. The AER definition was then applied.	Rounded to one significant figure commensurate with the precision of the input data.

Approved by (Group Manager): Lance Wee, Manager/Asset Strategy

7.10 Worksheet 3.7 Operating Environment

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[13]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TEF0101 Total number of maintenance spans	Where the contractor has claimed and been paid for maintenance work in a span it is counted as a maintenance span.	The data is sourced from the vegetation maintenance contractors who prepare an invoice input spreadsheet as part of their invoices submitted for vegetation maintenance.	N	A count of spans where payment has been claimed by the contractors. The data is calculated from invoices where the vegetation maintenance contractors have claimed against contract rates for work carried out on each span.	Where TransGrid staff have trimmed a tree or trees during a line inspection, this information has not been recorded, so these spans are not counted as maintenance spans.
TEF0102 Average Frequency of Cutting Cycle (Years)	The straight average of the vegetation maintenance period for each transmission line for the appropriate year. No weighting for line length was used.	Transmission Line Maintenance Plan contains the maintenance frequency tables	Y.	The vegetation maintenance cycle in years was listed for each circuit, then the average was taken. All lines were included in all years, not just those with Vegetation Maintenance Spans.	Where lines cross regional boundaries, the maintenance frequency for the region with the longer portion of the line was chosen. Line length was not taken into account, a 'simple' average was taken, as per the instructions: " The

[13] 'Information presented in response to the Notice whose presentation is not Materially dependent on information recorded in the NSP's historical accounting records or other records used in the normal course of business, and whose presentation for the purposes of the Notice is contingent on judgments and assumptions for which there are valid alternatives, which could lead to a Materially different presentation in the response to the Notice.', **page 34, "Economic benchmarking RIN For transmission network service providers, Instructions and Definitions".**

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[13]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
					average vegetation Maintenance Span Cycle can be calculated based on a simple average of all the Maintenance Span Cycles"
TEF0103 Average number of trees per maintenance span (0's)	Average number of trees per maintenance span is the number of trees maintained in that span, as trees not maintained are not counted.	The number of trees can generally be calculated using the contractor invoices, as the tree cutting rates are based upon hectare rates and hourly rates. The data is sourced from the vegetation maintenance contractors who prepare an invoice input spreadsheet as part of their invoices submitted for vegetation maintenance.	Y. The contractor invoices are based upon contract rates by either hectare or hourly rates. Work amounts for hectare rate work are agreed with the contractor before work based upon vegetation densities in an agreed format. These vegetation densities are used to determine a coverage percentage and an estimate of a number of trees to be maintained based upon canopy size. Hourly rate work has been estimated to be able to maintain certain numbers of trees per hour using the various types of maintenance.	Hourly rate total hours are converted to trees using a trees per hour figure for the various maintenance activities. Hectare rate total hectares maintained are converted to trees by a vegetation coverage density percentage multiplied by a number of trees per hectare at 100% coverage based on crown size suitable for the type of maintenance. A review of a sample of the calculated count of trees was carried out by the TransGrid easement officers to determine suitability of the calculations. Some spans identified too many trees, some too few, but in an overall sense, the calculations are deemed suitable. Due to the majority of managed vegetation being regrowth, it can be quite dense, and lead to very large numbers of trees	For hectare rates, the following vegetation crown densities apply: • Scattered is <5% coverage, use 3% • Light is 5-15% coverage, use 10% • Medium is 15-25% coverage, use 20% • Heavy (or high) is >25% coverage, use 40% as an average • Slashing is taken to be 40% coverage as slashing can only be used where trunks are less than 75mm thick at the cutting level. Vegetation crown sizes are estimated as the following:

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[13]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
					• Hectare Hand Clearing – 4 m^2 crown – 2500 trees/hectare @100% coverage • Hectare Mulching – 2 m^2 crown – 5000 trees/hectare @100% coverage • Hectare Slashing or Spraying – 2 m^2 crown – 5,000 trees/hectare @100% coverage For hourly rates, the following progress is estimated: • Hand clearing – 10 trees per hour • Hand clearing > 18° Slope – 5 trees per hour • 'Drive Through' – 10 trees per hour - Where a contractor goes with the inspector and trees are removed at the time

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[13]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
					• Spraying – 15 trees per hour, or 30 trees per hour with a spray truck • Slashing – 500 trees per hour • Pruning by climbing – 1 tree per hour • Pruning by EWP – 2 trees per hour • Tritter/Excavator – 70 trees per hour • Small Mulcher – 20 trees per hour • Medium Mulcher – 75 trees per hour • Large Mulcher – 100 trees per hour • Mechanical Pruning (Jaraff, etc) – 50 trees per hour
TEF0104 Average number of defects per vegetation maintenance span	A defect tree is a tree that is identified as being within the clearance requirements of GM AS L1 005 – "Maintenance of Easements and Access Tracks" at the	The results from TransGrid's Routine LiDAR scanning of the network for vegetation infringements.	Y .	For each Maintenance Span, LiDAR results were reviewed using a spatial analysis. Defect vegetation points were counted as one tree if they were within a 1m radius of each other. Total defect trees per maintenance span were then totalled.	Defect vegetation is in contravention to the requirements of GM AS L1 005 where maintenance work is expected to take into account regrowth prior to the next maintenance cycle such that

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[13]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	time of maintenance work A defect tree is counted if the identified tree was in a span where maintenance was carried out in the applicable year				vegetation never encroaches on safe clearances to conductors Multiple LiDAR shots are likely to be reported as within clearance requirements of GM AS L1 005, as the point density of the LiDAR is greater than the size of each tree. The routine used to group these into tree counts assumes a suitable radius of each point.
TEF0105 – Tropical Proportion Number of spans	Vegetation Maintenance Spans within the Bureau of Meteorology "Warm Humid Summer" zone	Climate zone map http://www.bom.gov.au/jsp/ncc/climate_averages/climate-classifications/index.jsp TAMIS (GIS system)	N	Climate zone digital map utilised to run query in GIS (TAMIS) based on spans within class "Warm Humid Summer" Vegetation Maintenance Spans within the Bureau of Meteorology "Warm Humid Summer" zone	-
TEF0106 Standard vehicle access	An area with no Standard Vehicle Access would not be accessible by a two wheel drive vehicle Value provided is length of network which is accessible by	Ellipse report on electronically recorded mains inspections carried out from 2009 to 2014. TAMIS report on electronically recorded mains inspections carried out from 2001 to 2010. Route line length figure provided in other areas of the RIN.	Y	A proportion of the network with accessible spans was calculated for previous RINs at 80.9% using prior inspection results, where access was regarded as OK or YES. It is considered appropriate to continue to use this proportion, and multiply it with the published line route length for 2015, and round to the nearest 100km.	The proportion of accessible structures is not generally going to change year to year. The same proportion is allocated each year to the actual route length of the system and rounded to the nearest 100km. What is considered

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[13]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	2WD vehicle				accessible by 2WD on any given day could easily change if it rained overnight. A gentle slope when wet on a grassed paddock will stop most 2WD vehicles.
TEF0107 – Altitude Length of line (km) above elevation 600 metres	Length of line with structures above 600m.	25m grid spot height data http://www.lpi.nsw.gov.au/mapping_and_imagery/spatial_data/topographic_data	N	The structure location referenced against spot heights within 30m to determine if elevation above 600m. If the structure was above then attached spans included for length calc	-
TEF0108 – Bushfire Risk Number of spans	Maintenance spans within RFS classification Category 1, 2 or buffer	Bush Fire Prone Lands (BFPL) http://www.rfs.nsw.gov.au/dsp_content.cfm?cat_id=1052	N	Digital map of BFPL used to run query against spans in either Category 1, 2 or buffer lands and allocate this list against maintenance spans only.	RFS web site documents all category 1, 2 and buffer lands as bush fire prone lands
TEF0201 Route line length	The length of line routes. Where a line is a double circuit line, or split phase, that section of the route is only counted once.	TransGrid Asset Management Information System (TAMIS)	N	Span lengths for all circuits were extracted from TAMIS. Route length was averaged from the two spans attached to dual circuit structures and added to single circuit spans	Route line lengh includes overhead lines and underground cables.
TEF0202 Variability of Dispatch	AER definition refers to non-thermal generators. Thermal generators have been taken to be generators using steam turbines.	TransGrid's TUOS billing system	Y The figure is based on NEM metering which is used as part of TransGrid's normal course of business. It is	Uses data calculated for Energy In as part of calculations for TQS03. This is total Energy Input into TransGrid network. Percentage is taken of 'non-thermal' generation to total Energy Input.	The definition refers to non-thermal generators. Thermal generators have been taken to be generators using steam turbines. Using that

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[13]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	Using this definition, non-thermal generators are wind turbines, hydro generators and open cycle gas turbines.		also materially dependent on whether the energy from non-thermal generators should be expressed as a proportion of total energy into TransGrid's network (from all "sources") or total energy into TransGrid's network from generators(that is, ignoring sources, such as interconnectors, where it is not possible to identify whether the energy was produced by thermal or non-thermal generators).		definition, the non-thermal generators are wind turbines, hydro generators and open cycle gas turbines. Energy supplied to TransGrid's network from embedded generators has been included in the calculations.
TEF0203 Concentrated Load Distance	AER definition refers to individual nodes with 30% capacity of generation/load. For a transmission network the size of TransGrid's, it would not be prudent to configure the network such that there is 30% or more of generation/load at risk for a major event at a	Data from that used to calculate TEF0201	Y As nodes within each group are separate, using groups of nodes does not automatically give a single figure for the concentrated load distance.	The definition of this parameter mentions nodes which have at least 30% of generation capacity or load connected to them. For a transmission network transporting the magnitude of load that TransGrid's network does, it would not be prudent to configure it in a way which places 30% or more of generation or load at risk for a major event at a single location. Consequently, no individual nodes within TransGrid's network meet the criteria. However, if groups of nodes in relatively close geographical proximity are	Groups of nodes in close geographical location are considered to be 30% of generation or load. The most widely separated groups are those in the Snowy Mountains area and in the Sydney basin. The average of the route line lengths between the closest nodes in the two areas and the two nodes

Data variable & TransGrid's interpretation		Data sources, locations and 'owners'	Estimation or actual information, calculations and assumptions		
Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition[13]? (Y/N)	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	single location. To satisfy criteria of 30% or more generation/load, groups of nodes are considered, allowing a concentrated load distance to be derived.			considered, rather than single nodes, it is possible to derive a concentrated load distance. In this case the most widely separated groups of nodes are those in the southern part of the state (including generation connected at Gullen Range, Capital, Uranquinty Murray, Upper Tumut and Lower Tumut) and in the Sydney basin (loads connected at Beaconsfield West, , Haymarket, Holroyd, Ingleburn, Liverpool, Macarthur, Regentville, Rookwood Road, Sydney East, Sydney North, Sydney South, Sydney West and Vineyard).	furthest apart.
TEF0204 Total number of spans	The total number of spans on the network	TransGrid Asset Management Information System (TAMIS)	N	A total count of all spans used to calculate route line length	.

Note to TEF0103

For hectare rates, the following vegetation crown densities apply:

- Scattered is <5% coverage, use 3%
- Light is 5-15% coverage, use 10%
- Medium is 15-25% coverage, use 20%
- Heavy (or high) is >25% coverage, use 40% as an average

- Slashing is taken to be 40% coverage as slashing can only be used where trunks are less than 75mm thick at the cutting level.

Vegetation crown sizes are estimated as the following:

- Hectare Hand Clearing – 4 m2 crown – 2500 trees/hectare @100% coverage
- Hectare Mulching – 2 m2 crown – 5000 trees/hectare @100% coverage
- Hectare Slashing or Spraying –2 m2 crown – 5,000 trees/hectare @100% coverage

For hourly rates, the following progress is estimated:

- Hand clearing – 10 trees per hour
- 'Drive Through' – 10 trees per hour - Where a contractor goes with the inspector and trees are removed at the time
- Spraying – 15 trees per hour, or 30 trees per hour with a spray truck
- Slashing – 500 trees per hour
- Pruning by climbing – 1 tree per hour
- Pruning by EWP – 2 trees per hour
- Tritter/Excavator – 70 trees per hour
- Small Mulcher – 20 trees per hour
- Medium Mulcher – 75 trees per hour
- Large Mulcher – 100 trees per hour
- Mechanical Pruning (Jaraff, etc) – 50 trees per hour

Approved by (Group Manager): Lance Wee, Manager/Asset Strategy (all variables except TEF0202 & TEF0203)

Approved by (Group Manager): Nalin Pahalawaththa/Power System Analysis (TEF0202 & TEF0203)