TransGrid

Regulatory Information Notice

Economic Benchmarking 2016/17

17 October 2017

Contents

TransGrid

1. Introduction

TransGrid operates and manages the major high voltage electricity transmission network in NSW and the ACT as a *transmission network service provider*, connecting generators, distributors and major end users. TransGrid is the trading name for the NSW Electricity Networks Operations Pty Ltd (ACN 609 169 959) as a Trustee for the NSW Electricity Networks Operations Trust (ABN 70 250 995 390). Prior to 16 December 2015, it was a State Owned Corporation (SOC) owned by the NSW government.

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 'RIN'), requiring the business to prepare and submit certain information to support the AER's regulatory responsibilities. This Basis of Preparation document has been prepared to support the audited information package that is due to be submitted to the AER by 31 October 2017. The whole RIN 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, including any Confidentiality Claims (this document);
3. Audit & Review Report by the independent auditor provided as Appendix B to the RIN
4. Verification of the information by way of a Statutory Declaration in the form provided as Appendix C to the RIN.

2. Compliance with the RIN Requirements

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

3. BASIS OF PREPARATION

3.1 TransGrid must explain, the basis upon which TransGrid prepared information to populate the input cells (basis of preparation), for all information ..

3.2 The basis of preparation must be a separate document (or documents) that TransGrid submits with its completed regulatory templates.

3.3 The basis of preparation must follow a logical structure that enables auditors, assurance practitioners and the AER to clearly understand how TransGrid has complied with the requirements of this Notice.

3.4 At a minimum, the basis of preparation must:

(a) demonstrate how the information provided is consistent with the requirements of the Notice;

(b) explain the source from which TransGrid obtained the information provided;

(c) explain the methodology TransGrid used to provide the required information, including any assumptions TransGrid made; and

(d) explain circumstances where TransGrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

(i) why an estimate was required, including why it was not possible for TransGrid to use actual information;

(ii) 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 the Notice.

3.5 TransGrid may provide additional detail beyond the minimum requirements if TransGrid considers it may assist a user to gain an understanding of the information presented in the regulatory templates.

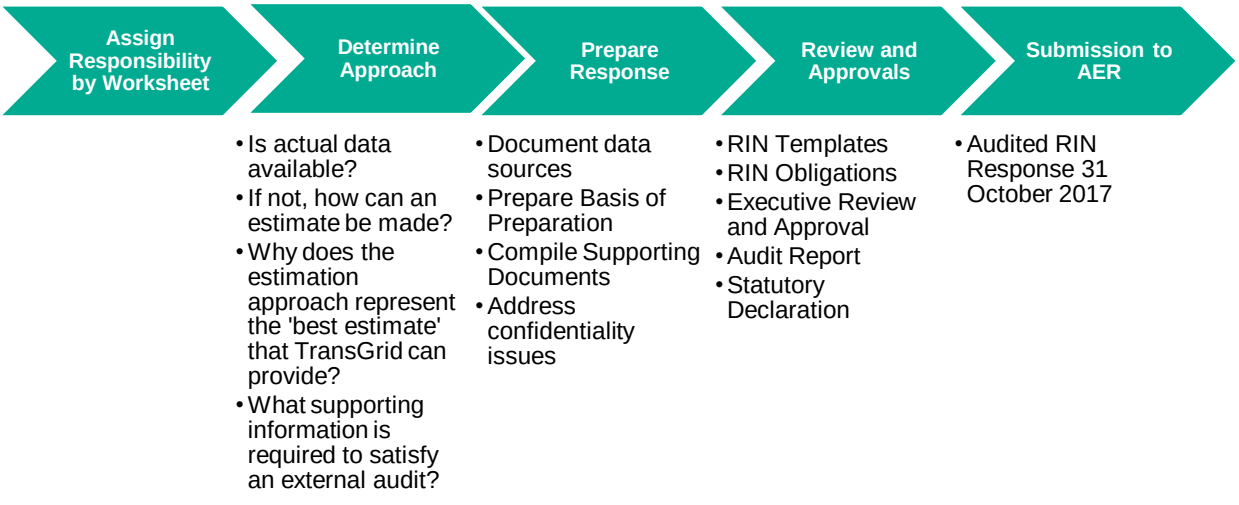
3.6 When reporting an audit opinion or making an attestation report on the regulatory templates presented by TransGrid, an auditor or assurance practitioner shall opine or attest by reference to TransGrid's basis of preparation.

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.

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 d)***	*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)***

3. Preparation Process

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



[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".**

3.1 Document Control

The RIN Templates, Basis of Preparation and supporting documents for the Annual RINs 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, termed "data collectors", who populate the RIN templates and the relevant sections of the Basis of Preparation. This information is then reviewed internally to check the validity of the data collected by "data reviewer". "Data approvers" provide sign-offs to individual sections of the RINs and the associated BOPs. This internally verified information is presented to the auditors, PwC, who then verify the information with data collectors and other relevant persons within TransGrid. A management representation letter is provided to the auditor (PwC) on accuracy of data, and validity of estimates as the best available by TransGrid.

4. Principles of Preparation

TransGrid's response to the RIN has been prepared in accordance with the AER issued "*Regulatory Information Notice Under Division 4 of Part 3 of the National Electricity (New South Wales) Law"* to TransGrid.

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.

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 judgement or assumption that has been made.
- Where actual information exists, but the information is incomplete over the time period or by the categories required by the 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 mentioned above. To the extent determined appropriate, the RIN schedules have been prepared in compliance with the disclosure requirements of the relevant Accounting Standards.

5. Information Sources

Due to the combination of financial and non-financial data requested by the AER, including a number of items that are not routinely reported, TransGrid has drawn data from a large 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 information that is required in the RIN response.

The key systems and information sources 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
AEMO Settlement Statements	AEMO issued statements for intraregional and interregional settlement residues.	Worksheet 3.1 Revenue
AEMO Connection Point Forecast 2017	AEMO connection point forecasts (2017) are used in applying weather correction for non-coincident maximum demand	Worksheet 3.4 Operational data
AEMO EFI 2017	Electricity Forecasting Insights (2017) by Australian Energy Market Operator (AEMO), used for applying weather correction for system maximum demand	Worksheet 3.4 Operational Data
AER Current Period Determination	The AER's final determination for the 2014/15 to 2017/18.	Worksheet 3.1 Revenue, Worksheet 3.3 Assets (RAB)
AER Roll Forward Model	AER's Roll Forward Model populated by capex and disposals data from the Regulatory Accounts 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
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	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
Maintenance Plans	Used for the operation and maintenance of TransGrid's assets, these outline equipment information, standard practices and maintenance requirements.	Worksheet 3.7 Operating Environment
Spot Height Data (25m)	Topographical information sourced from NSW Land and Property Information.	Worksheet 3.7
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
TransGrid Spatial System (TSS) – formerly 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. The formal name of the TAMIS system has recently been changed to TSS.	Worksheet 3.5 Physical Assets, Worksheet 3.7 Operating Environment
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	A central record of electrical asset data regarding TransGrid's network that is published on the TransGrid Intranet.	Worksheet 3.5 Physical Assets

Information Source	Brief Description	Supports
Book		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. 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 3.1 Revenue Worksheet 3.4 Operational Data 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 directly connected customers, whose data is confidential. Further, demand data of NSW customers is subject to privacy requirements under Clause 7.2 of the *Transmission Operators License under the Electricity Supply Act (1995) NSW* granted to NSWEN on 16 December 2015.

TransGrid has identified the following issues where measures need to be taken to protect confidential information. This is summarised below:

Data affected	Description	Topic	Category	Reasoning for category	Why disclosure would be detrimental, and why this outweighs benefits
Worksheet 3.1 Revenue: **3.1.1 Revenue grouping by chargeable quantity + 3.1.2 Revenue grouping by type of connected equipment + 3.1.3 Revenue (penalties) allowed (deducted) through incentive schemes**	This data relates directly to individual customers annual transmission charges. i.e. It can be used to identify individual customers.	Revenue	Personal Information	RIN categorisation enables identification of: 1. Customer loads for directly connected customers; and 2. Customers receiving prudent discounts and the annual prudent discount charge for each customer.	Disclosure of this information concerning directly connected customers provides market data that may impact their business performance. There is no benefit from disclosing this information. Prudent discount contracts are commercial in confidence. The details are not publically disclosed. There are no benefits from disclosing this information.
Worksheet 3.4 Operational Data: TOPED0103 to TOPD0112 To directly connected end-users	Certain TransGrid BSPs are predominantly (or exclusively) connected to direct customers.	Load	Personal Information Other	RIN categorisation enables identification of: 1. Customer loads for directly connected customers	NSWEN's Transmission Operator's License included mandatory provisions in relation to keeping customer data confidential

7. Detailed Basis of Preparation

The following sections outline the Basis for Preparation for each line item in the RIN Templates.

7.1 Contents Worksheet

The Contents Worksheet does not require any input by TransGrid.

7.2 Worksheet 1.0 Business & Other Details

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

7.3 Worksheets 3.1 to 3.7

The Basis of Preparation outlines the necessary explanations with regards to the preparation of the RIN template, as per section 2 above.

7.3.1 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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
3.1.1 REVENUE GROUPING BY CHARGEABLE QUANTITY					
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 EM/Strategy and Regulation 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.	N/A
TREV0102 From Variable Customer (Exit Point) Charges	This type of charge is not applicable for TransGrid, all exit charges are on fixed basis above	N/A	No	N/A	N/A
TREV0103From Fixed Generator (Entry Point) Charges	Connection Entry charges for generators based on fixed daily rate	As per TREV0101	No	As per TREV0101	N/A
TREV0104 From Variable Generator (Entry Point) Charges	This type of charge is not applicable for TransGrid, all entry charges are on fixed basis above	N/A	No	N/A	N/A
TREV0105 From Fixed Energy Usage Charges (Charge per day basis)	Charges applied for a direct connect customer.	As per TREV0101	No	As per TREV0101	N/A
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	N/A
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	N/A

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?	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	N/A
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	N/A
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 under/over collection adjustment for financial year.	From AEMO settlement statements, issued transmission service invoices, AER STPIS letters, revenue reconciliations	No	Other Revenue (TREV0205) + Revenue from Other Connected transmission Systems (TREV0201)	N/A
3.1.2 REVENUE GROUPING BY TYPE OF CONNECTED EQUIPMENT					
TREV0201 From Other connected transmission networks	Net of financial transfers to & from other NSW/ACT market region TNSPs, and net inter-regional TUOS. (for FY17 this includes ActewAGL, Ausgrid, Directlink and the net MLEC charge to Powerlink Queensland and AEMO Victoria.).	As per TREV0101	No	As per TREV0101	N/A
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	N/A
TREV0203 From Directly	Total amounts charged to direct customers	As per TREV0101	No	As per TREV0101	N/A

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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
connected end–users					
TREV0204 From Generators	Total connection Entry charges for generators	As per TREV0101	No	As per TREV0101	N/A
TREV0205 Other revenue	Intra-regional residues and Inter-regional Settlement residues auction proceeds net adjustments of network support pass through amounts, revenue deferral and under/over collection adjustment for financial year	From AEMO settlement statements, issued transmission service invoices, AER STPIS letters, 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.	N/A
3.1.3 REVENUE (penalties) ALLOWED (deducted) THROUGH INCENTIVE SCHEMES					
TREV0301 EBSS	AER Approved EBSS revenue for the current regulatory year ($,nominal)	Current regulatory determination (current regulatory year)	No	N/A	N/A
TREV0302 STPIS	AER Approved STPIS revenue for calendar year (i.e. 2015 calendar year for FY17).	Approval letter from AER	No	N/A	N/A
TREV0303 Other	Any additional AER approved revenue for 'other' incentive schemes	N/A	No	N/A	N/A
TREV03 Total revenue of incentive schemes	Total of TREV0301, TREV0302 and TREV0303.	N/A	No	TREV0301 + TREV0302 + TREV0303.	N/A

7.3.2 Worksheet 3.2 Operating Expenditure

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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
3.2.1 OPEX CATEGORIES					
Table 3.2.1 Current opex categories and cost allocations TOPEX0101 Maintenance – Lines & Cable To TOPEX0119 Defined Benefit Superannuation	The Opex line items reported are consistent with TransGrid's Revenue proposal opex line items and definitions, with the exception of TOPEX0119 Defined Benefit Superannuation Adjustment. TOPEX0119 relates to an adjustment made to reverse out the Defined Benefit superannuation cash contribution in Prescribed Opex and added back the Defined Benefit superannuation accounting expense for compliance with Australian Accounting Standard AASB 119. As required by the "Economic Benchmarking RIN for TNSP Instructions and Definitions Nov 2013", opex line items reported in Table 3.2.1 align with the Opex line items reported in the Regulatory Accounting Statements which are prepared in accordance with Australian Accounting Standards. Prescribed Opex in Table 3.2.1 is equal to the following Ellipse P&L categories: - Labour - Materials - Operating Expenses - Statutory & External Charges - Support Costs - Defined Benefit Super Adjustment It should be noted that the Prescribed Opex in Table 3.2.1 needs to be adjusted for the following items to arrive at the Prescribed Opex used as the base year opex for TransGrid's 2018/19 to 2022/23 revenue	2016-17 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 - Defined Benefit Superannuation Adjustment – TOPEX0119	No	Prepared in accordance with the requirements of the annual Regulatory Accounts. The source data is extracted from Ellipse and re-categorised into regulatory categories based on Responsibility Centres, Activity Centres and Expense Element codes.	Figures reconcile to the Regulatory accounts

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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	reset: . Remove the Defined Benefit Super Adjustment . Adjustment from accrual to cash basis for employee benefits provisions comprising long service leave, annual leave and incentives (refer to RIN 3.2.3)				

7.3.3 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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
3.2.3 Provisions					
TOPEX03A Long Service Leave					
Opening balance	Last year's closing balance	Last year's closing balance	No	Last year's closing balance	N/A
Additional provisions - opex component	The provision breakdowns are consistent with the audited NSWEN Aggregated financial statements for FY17 prepared in accordance with Australian Accounting Standards.	2016-17 NSWEN Aggregated Audited Financial Statements and Ellipse General Ledger for the long service leave provision and the working papers used for the preparation of the Regulatory Accounts 'DISAGG ProvSum' schedule. (Including only the prescribed portion).	No	The total Provision values from the NSWEN Aggregated Accounts are allocated to Prescribed and Non-Prescribed Services based on the labour on costs costed to prescribed and non-prescribed activities.	N/A
Additional provisions - capex component					
Additional provisions - other component					
Amounts used - opex component					
Amounts used - capex component					
Amounts used - other component					
Unused amounts reversed - opex component					
Unused amounts reversed - capex component					
Unused amounts reversed - other component					
The increase during the period in the discounted amount arising from the passage of time and the effect of any change in the discount rate - opex component					
The increase during the period in the discounted amount arising from the passage of time and the effect of any change in the discount rate - capex component					

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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
The increase during the period in the discounted amount arising from the passage of time and the effect of any change in the discount rate - other component					
Closing balance					
TOPEX03B Annual Leave					
Opening balance	Last year's closing balance	Last year's closing balance	No	Last year's closing balance	N/A
Additional provisions - opex component	The provision breakdowns are consistent with the audited NSWEN Aggregated financial statements for FY17 prepared in accordance with Australian Accounting Standards.	2016-17 NSWEN Aggregated Audited Financial Statements and Ellipse General Ledger for annual leave provision and the working papers used for the preparation of the Regulatory Accounts 'DISAGG ProvSum' schedule. (Including only the prescribed portion).	No	The total Provision values from the NSWEN Aggregated Accounts are allocated to Prescribed and Non-Prescribed Services based on the labour on costs costed to prescribed and non-prescribed activities.	N/A
Additional provisions - capex component					
Additional provisions - other component					
Amounts used - opex component					
Amounts used - capex component					
Amounts used - other component					
Unused amounts reversed - opex component					
Unused amounts reversed - capex component					
Unused amounts reversed - other component					
The increase during the period in the discounted amount arising from the passage of time and the effect of any change in the discount rate - opex component					
The increase during the period in the discounted					

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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
amount arising from the passage of time and the effect of any change in the discount rate - capex component					
The increase during the period in the discounted amount arising from the passage of time and the effect of any change in the discount rate - other component					
Closing balance					
TOPEX03C Defined Benefit Superannuation Scheme					
Opening balance	Last year's closing balance	Last year's closing balance	No	Last year's closing balance	N/A
Additional provisions - opex component	The provision breakdowns are consistent with the audited NSWEN Aggregated financial statements for FY17 prepared in accordance with Australian Accounting Standards.	2016-17 TransGrid Financial Statements and Ellipse General Ledger translated into the working papers for the preparation of the Regulatory Accounts 'DISAGG ProvSum' schedule. (Including only the prescribed portion).	No	The additional provision movement was costed directly to Prescribed Opex in the General Ledger and the amount used against the provision was treated as Prescribed Opex consistent with the costing for the additional provision movement. Actuarial gains/losses were costed directly to Equity in the General Ledger and accordingly shown as Other in the RIN schedule.	N/A
Additional provisions - capex component					
Additional provisions - other component					
Amounts used - opex component					
Amounts used - capex component					
Amounts used - other component					
Unused amounts reversed - opex component					
Unused amounts reversed - capex component					
Unused amounts reversed - other component					
The increase during the period in the discounted amount arising from the passage of time and 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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
effect of any change in the discount rate - opex component					
The increase during the period in the discounted amount arising from the passage of time and the effect of any change in the discount rate - capex component					
The increase during the period in the discounted amount arising from the passage of time and the effect of any change in the discount rate - other component					
Closing balance					
TOPEX03D Employee Incentives Scheme					
Opening balance	Last year's closing balance	Last year's closing balance	No	Last year's closing balance	N/A
Additional provisions - opex component	The provision breakdowns are consistent with the audited NSWEN Aggregated financial statements for FY17 prepared in accordance with Australian Accounting Standards.	2016-17 NSWEN Aggregated Audited Financial Statements and Ellipse General Ledger for the Incentives provision and the working papers used for the preparation of the Regulatory Accounts 'DISAGG ProvSum' schedule. (Including only the prescribed portion).	No	The Incentives expense amounts were costed directly to Prescribed Services' opex cost centres in the General Ledger and the payments from the provision were treated as Prescribed Opex in nature consistent with the costings for the expense.	N/A
Additional provisions - capex component					
Additional provisions - other component					
Amounts used - opex component					
Amounts used - capex component					
Amounts used - other component					
Unused amounts reversed - opex component					
Unused amounts reversed - capex component					
Unused amounts reversed - other					

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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
component					
The increase during the period in the discounted amount arising from the passage of time and the effect of any change in the discount rate - opex component					
The increase during the period in the discounted amount arising from the passage of time and the effect of any change in the discount rate - capex component					
The increase during the period in the discounted amount arising from the passage of time and the effect of any change in the discount rate - other component					
Closing balance					

7.3.4 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	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
3.3.1 REGULATORY ASSET BASE VALUES (for total asset base)					
TRAB0101 Opening value	As per Instruction and Definition provided by the AER.	Electricity Transmission Network Service Provider Roll Forward Model (RFM), with TransGrid information	No	Prepared in accordance with the requirements of the AER Determination. This is the sum of all the "Asset Category" below. "As Commissioned" RAB used.	Classified expenditure into asset classes in line with activity centre (WIP AC) used in RFM/PTRM. Where asset classes does not exist in WIP AC (e.g. secondary systems, cables and transmission line life extensions) we used % allocation consistent with latest CAM/PTRM submitted in the revenue proposal updated following conversations with the AER. Where the project doesn't appear in the list then we have referred back to the Final AER approved decision CAM from the last revenue reset. Two projects have been manually adjusted to align with what was commissioned in the fixed assets system.
TRAB0102 Inflation addition					
TRAB0103 Straight line depreciation					
TRAB0105 Actual additions (recognised in RAB)					
TRAB0106 Disposals					
TRAB0107 Closing value					
3.3.2 ASSET VALUE ROLL FORWARD FOR OVERHEAD TRANSMISSION ASSETS					
TRAB0201 Opening value	As per Instruction and Definition provided by the AER.	Electricity Transmission Network Service Provider Roll Forward Model (RFM), with TransGrid information	No	Prepared in accordance with the requirements of the AER Determination. "As Commissioned" RAB used. In the RFM, the categories that are noted as "Transmission Lines"	Asset category Transmission Lines & Cables (09-14) forms part of the overhead transmission assets category opening value. During the 2009-14 periods there were no cable assets commissioned, as such this asset category only includes overhead transmission assets commissioned during 2009-14. Transmission Line Life Extension in the 2014-18 Regulatory Period has been included.
TRAB0202 Inflation addition					
TRAB0203 Straight line depreciation					
TRAB0205 Actual additions (recognised in RAB)					
TRAB0206 Disposals					

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	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TRAB0207 Closing value					Classified expenditure into asset classes in line with activity centre (WIP AC) used in RFM/PTRM. Where asset classes does not exist in WIP AC (e.g. secondary systems, cables and transmission line life extensions) we used % allocation consistent with latest CAM/PTRM submitted in the revenue proposal updated following conversations with the AER. Where the project doesn't appear in the list then we have referred back to the Final AER approved decision CAM from the last revenue reset. Two projects have been manually adjusted to align with what was commissioned in the fixed assets system.
FOR UNDERGROUND TRANSMISSION ASSETS					
TRAB0301 Opening value TRAB0302 Inflation addition TRAB0303 Straight line depreciation TRAB0305 Actual additions (recognised in RAB) TRAB0306 Disposals TRAB0307 Closing value	As per Instruction and Definition provided by the AER.	Electricity Transmission Network Service Provider Roll Forward Model (RFM), with TransGrid information	No	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"	Classified expenditure into asset classes in line with activity centre (WIP AC) used in RFM/PTRM. Where asset classes does not exist in WIP AC (e.g. secondary systems, cables and transmission line life extensions) we used % allocation consistent with latest CAM/PTRM submitted in the revenue proposal updated following conversations with the AER. Where the project doesn't appear in the list then we have referred back to the Final AER approved decision CAM from the last revenue reset. Two projects have been manually adjusted to align with what was commissioned in the fixed assets system.
FOR TRANSMISSION SWITCHYARDS, SUBSTATIONS					
TRAB0401 Opening value TRAB0402 Inflation	As per Instruction and Definition provided by the AER except Substations	Electricity Transmission Network Service Provider Roll Forward Model (RFM), with TransGrid information	No	Prepared in accordance with the requirements of the AER Determination.	Substations category does not include Substations land as this is included in easements. It is not possible 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	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
addition TRAB0403 Straight line depreciation TRAB0405 Actual additions (recognised in RAB) TRAB0406 Disposals TRAB0407 Closing value	category does not include Substations land as this is included in easements.			"As Commissioned" RAB used In the RFM, the categories that are noted as "Substations"	separate out the existing "land and easements" asset category between substation land and other. Classified expenditure into asset classes in line with activity centre (WIP AC) used in RFM/PTRM. Where asset classes does not exist in WIP AC (e.g. secondary systems, cables and transmission line life extensions) we used % allocation consistent with latest CAM/PTRM submitted in the revenue proposal updated following conversations with the AER. Where the project doesn't appear in the list then we have referred back to the Final AER approved decision CAM from the last revenue reset. Two projects have been manually adjusted to align with what was commissioned in the fixed assets system.
FOR EASEMENTS					
TRAB0501 Opening value TRAB0502 Inflation addition TRAB0503 Straight line depreciation TRAB0505 Actual additions (recognised in RAB) TRAB0506 Disposals TRAB0507 Closing value	As per Instruction and Definition provided by the AER except Substations category does not include Substations land as this is included in easements.	Electricity Transmission Network Service Provider Roll Forward Model (RFM), with TransGrid information	No	Prepared in accordance with the requirements of the AER Determination. "As Commissioned" RAB used in the RFM, the categories that are noted as "Land and Easements"	Substations category does not include Substations land as this is included in easements. It is not possible to separate out the existing "land and easements" asset category between substation land and other.
FOR "OTHER" ASSETS WITH LONG LIVES					
TRAB0601 Opening value	As per Instruction and Definition provided by the	Electricity Transmission Network Service Provider Roll Forward Model	No	Prepared in accordance with the requirements of the AER	Classified expenditure into asset classes in line with activity centre (WIP

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	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TRAB0602 Inflation addition TRAB0603 Straight line depreciation TRAB0605 Actual additions (recognised in RAB) TRAB0606 Disposals TRAB0607 Closing value	AER.	(RFM), with TransGrid information		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"	AC) used in RFM/PTRM. Where asset classes does not exist in WIP AC (e.g. secondary systems, cables and transmission line life extensions) we used % allocation consistent with latest CAM/PTRM submitted in the revenue proposal updated following conversations with the AER. Where the project doesn't appear in the list then we have referred back to the Final AER approved decision CAM from the last revenue reset. Two projects have been manually adjusted to align with what was commissioned in the fixed assets system.
FOR "OTHER" ASSETS WITH SHORT LIVES					
TRAB0701 Opening value TRAB0702 Inflation addition TRAB0703 Straight line depreciation TRAB0705 Actual additions (recognised in RAB) TRAB0706 Disposals TRAB0707 Closing value	As per Instruction and Definition provided by the AER.	Electricity Transmission Network Service Provider Roll Forward Model (RFM), with TransGrid information	No	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"	Classified expenditure into asset classes in line with activity centre (WIP AC) used in RFM/PTRM.
3.3.3 TOTAL DISAGGREGATED RAB ASSET VALUES					
TRAB0801 Overhead transmission assets (wires and towers/poles etc) TRAB0802 Underground transmission assets	As per Instruction and Definition provided by the AER.	Electricity Transmission Network Service Provider Roll Forward Model (RFM), with TransGrid information	No	This is calculated as the average of the opening and closing RAB values for the Regulatory Year for each RAB Asset Category as per Page 22 of the Instruction.	Classified expenditure into asset classes in line with activity centre (WIP AC) used in RFM/PTRM. Where asset classes does not exist in WIP AC (e.g. secondary systems, cables and transmission line life extensions) we used % allocation consistent with latest CAM/PTRM submitted in the 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	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
(cables, ducts etc)					proposal updated following conversations with the AER. Where the project doesn't appear in the list then we have referred back to the Final AER approved decision CAM from the last revenue reset. Two projects have been manually adjusted to align with what was commissioned in the asset system.
TRAB0803 Substations, switchyards, transformers etc with transmission function					
TRAB0804 Easements					
TRAB0805 "Other" assets with long lives					
TRAB0806 "Other" assets with short lives					
3.3.4 ASSET LIVES					
ASSET LIVES - ESTIMATED SERVICE LIFE OF NEW ASSETS					
TRAB0901 Overhead transmission assets	As per Instruction and Definition provided by the AER	AER Final Determination 14-18 Attachment 5 - regulatory depreciation - April 2015 (page 10)	No	Calculation for Weighted Average Asset lives of new assets for each asset category, in accordance with Page 22 of the Instruction.	N/A
TRAB0902 Underground transmission assets					
TRAB0903 Switchyard, substation and transformer assets					
TRAB0904 "Other" assets with long lives					
TRAB0905 "Other" assets with short lives					
ASSET LIVES - ESTIMATED RESIDUAL SERVICE LIFE					
TRAB1001 Overhead transmission assets	Straight-line depreciation for the year reflects the use of the regulated asset base by the relevant categories below	N/A	No	This is calculated using Opening Asset Value divided by depreciation for the year, based on the figures in Table 3.3.2	N/A
TRAB1002 Underground					

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	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
transmission assets					
TRAB1003 Switchyard, substation and transformer assets					
TRAB1004 "Other" assets with long lives					
TRAB1005 "Other" assets with short lives					

7.3.5 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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
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). Both exports and imports have been considered, with each being added for the four relevant interconnectors. 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"	TransGrid's TUOS billing system	No	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 imports and exports to or from TransGrid's network, irrespective of direction of flow. These are at Jindera-Wodonga, Buronga-Red Cliffs, and Murray–Dederang to Victoria and QNI to Queensland.	DNSP transmission assets are not included in this calculation.
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. Energy supplied to customers directly connected via dedicated connections owned by third parties such as a DNSP are included in TOPED0103.	TransGrid's TUOS billing system	No	This was calculated as the summation of energy flows leaving TransGrid's network. 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	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.

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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
				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).	
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 provided.	TransGrid's TUOS billing system	No	This was calculated as the energy flows to each of the industrial loads connected at 330kV, 220kV and 132 kV.	Includes some industrial loads connected via dedicated feeders owned by DNSPs
TOPED0113 Pumping and Power Station Auxiliaries	Energy supplied to pumps and power station auxiliaries	TransGrid's TUOS billing system	No	This was calculated as the energy flows to major pumps and generator auxiliaries from the transmission network.	None
TOPED01 Total energy transported	The total (gross) energy delivered by TransGrid's network at the locations where it connects to other party's networks.	TransGrid's TUOS billing system	No	Summation of metered energy delivered at the individual locations within each category. TOPED0101 includes both exports from and imports to TransGrid's network.	Other connected networks have been taken to be interconnections to adjacent states. 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".
3.4.2 CONNECTION POINTS					
Number of entry points at each transmission voltage level					
TOPCP0101 to TOPCP0111 Number of entry points at each transmission voltage level	This variable is interpreted as locations of connections between TransGrid's network and generators at TransGrid's network at locations that have a Transmission Node Identifier (TNI).	Based on AEMO TNIs, as described in their documents giving marginal loss factors.	No	At a particular location (such as a TransGrid substation): · TNIs are taken to define the node, and connection points are counted at the nominal connection voltage	TNIs which are not part of or directly connected to TransGrid's network have been excluded.

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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
				· Entry connections are generator only connections where TransGrid is the relevant TNSP. · Bidirectional flows across connection points not associated with generators are not classified an entry point · Where there is more than one TNI having the same voltage designation (such as for supplies to different customers or multiple generator connection) only one is counted. That is, there can only one connection point per voltage level at a particular location; · The voltage has been taken to be the designated voltage of the physical connection point associated with the TNI. The data for 2016/17 are the average of the numbers at the beginning and end of that financial year.	
Number of exit points at each transmission voltage level					
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).	Based on AEMO TNIs, as described in their documents giving marginal loss factors	No	At a particular location (such as a TransGrid substation): · TNIs are taken to define the node, and connection points are counted at the nominal connection voltage · Entry connections are generator only connections where TransGrid is the relevant TNSP. · Bidirectional flows across connection points not associated with generators are classified an exit point · Interconnectors are classified as exit points · Where there is more than one TNI having the same voltage designation (such as for supplies to	TNIs which are not part of or directly connected to TransGrid's network have been excluded.

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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
				different customers or multiple customer connections) only one is counted. That is, there can only one connection point per voltage level at a particular location; · The voltage has been taken to be the designated voltage of the physical connection point associated with the TNI. The data for 2016/17 are the average of the numbers at the beginning and end of that financial year.	
3.4.3 SYSTEM DEMAND					
3.4.3.1 - Annual system maximum demand characteristics – MW measure					
TOPSD0101 Transmission System coincident maximum demand	Raw network demand only in TransGrid's bulk supply points (BSPs) over rolling half hour periods on an as-delivered basis considered in identifying MD.	TransGrid's TUOS billing system	No	Transmission system coincident MD in TransGrid's network is calculated as the maximum of the summated rolling half hour period demands for each and every BSP and other locations within TransGrid's network. All half hours periods for all days within FY 2015-16 have been considered for calculation of this variable.	Reported to three significant figures Raw network demand only in TransGrid's BSPs over rolling half hour periods on an as-delivered basis considered in identifying MD.
TOPSD0102 Transmission System coincident weather adjusted maximum demand 10% POE	This is the network coincident maximum demand with weather correction applied to the raw maximum demand to obtain a 10% POE maximum demand	TransGrid's TUOS billing system, AEMO 2017 Electricity Forecasting Insights	Yes	(AEMO10% POE/AEMONSW RAW MD) x TransGrid RAW MD a) TransGrid RAW MD is the TransGrid raw network coincident MD b) AEMONSW RAW is the NSW raw MD as reported by AEMO, and c) AEMO10% POE is the 10% POE MD.	TransGrid does not produce weather corrected maximum demands for its transmission system. The source data is based on the TUOS billing system and the AEMO 2017 Electricity Forecasting Insights. The response is 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 delivered by TransGrid's network.
TOPSD0103 Transmission	This is the network coincident maximum demand with weather	TransGrid's TUOS billing system, AEMO 2017	Yes	(AEMO50% POE/AEMONSW RAW MD) x TransGrid RAW MD	TransGrid does not produce weather corrected maximum demands for its

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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
System coincident weather adjusted maximum demand 50% POE	correction applied to the raw maximum demand to obtain a 50% POE maximum demand	Electricity Forecasting Insights		a) TransGrid RAW MD is the TransGrid raw network coincident MD b) AEMONSW RAW is the NSW raw MD as reported by AEMO, and c) AEMO50% POE is the 50% POE MD.	transmission system. The source data is based on the TUOS billing system and the AEMO 2017 Electricity Forecasting Insights. The response is 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 delivered by TransGrid's network.
TOPSD0104 Transmission System non-coincident summated maximum demand	This is the summation of raw maximum demands at TransGrid's downstream connection and supply locations irrespective of when they occur in the year.	TransGrid's TUOS billing system	No	Transmission system non-coincident summated MD in TransGrid's network is calculated as the summated rolling half hour period local maximum demands for each and every BSP and other locations within TransGrid's network. All half hours periods for all days within FY 2016-17 have been considered for calculation of this variable.	It has been assumed that all components of this total are to be calculated on a consistent basis, i.e. on an "as delivered" basis. Reported to three significant figures.
TOPSD0105 Transmission System non-coincident weather adjusted summated maximum demand 10% POE	This is the summation of the weather corrected MD at TransGrid's Down-stream connection and supply locations at the 10 % POE level irrespective of when they occur in the year.	TransGrid's TUOS billing system, AEMO Connection Point forecasts 2016	Yes	The maximum demand for each BSP is calculated using (AEMO10% POE/AEMONSW RAW MD) x TransGrid RAW MD where: a) TransGrid RAW MD is the sum of TransGrid raw MD for each BSP b) AEMONSW RAW is the NSW raw MD as reported by AEMO connection point forecasts, and c) AEMO10% POE is the 10% POE MD, as reported by AEMO connection point forecasts. The figure is adjusted (as per CA RIN 5.4) for load transfers where appropriate. For certain industrial loads, no weather correction is made, as loads are not weather dependent. The corrected (non-coincident) maximum demand for each bulk	TransGrid does not produce weather corrected maximum demands for individual BSPs. The source data is based on TUOS billing system and 2017 AEMO Connection Point Forecast data containing weather corrected and raw maximum demand 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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
				supply point and other locations was then summed to obtain this variable.	
TOPSD0106 Transmission System non-coincident weather adjusted summated maximum demand 50% POE	This is the summation of the weather corrected MD at TransGrid's Down-stream connection and supply locations at the 50 % POE level irrespective of when they occur in the year.	TransGrid's TUOS billing system, AEMO Connection Point forecasts 2016	Yes	The maximum demand for each BSP is calculated using (AEMO50% POE/AEMONSW RAW MD) x TransGrid RAW MD where: a) TransGrid RAW MD is the sum of TransGrid raw MD for each BSP b) AEMONSW RAW is the NSW raw MD as reported by AEMO connection point forecasts, and c) AEMO50% POE is the 50% POE MD, as reported by AEMO connection point forecasts. The figure is adjusted (as per CA RIN 5.4) for load transfers where appropriate. For certain industrial loads, no weather correction is made, as loads are not weather dependent. The corrected (non-coincident) maximum demand for each bulk supply point and other locations was then summed to obtain this variable.	TransGrid does not produce weather corrected maximum demands for individual BSPs. The source data is based on TUOS billing system and 2017 AEMO Connection Point Forecast data containing weather corrected and raw maximum demand data.
3.4.3.2 - Annual system maximum demand characteristics – MVA measure					
TOPSD0201 Transmission System coincident maximum demand	This is the network coincident raw maximum demand , converted to MVA	Variables: TOPSD0101 TOPSD0301	Yes	Divide Transmission System Coincident Maximum Demand MW number (TOPSD0101) by Average Overall Network Power Factor (TOPSD0301) for conversion to MVA.	Accuracy is limited by the uncertainty inherent in the calculation of the average power factor. Refer to 'Note to TOPSD0201 and TOPSD0301'
TOPSD0202 Transmission System coincident weather adjusted maximum demand 10% POE	This is the weather corrected network coincident maximum demand at the 10 % POE level. MW values are converted to MVA.	Variables: TOPSD0102 TOPSD0301	Yes	Divide Transmission System Coincident Maximum Demand 10% POE (TOPSD0102) by Average Overall Network Power Factor (TOPSD0301) for conversion to MVA.	As per TOPSD0201 The data is materially dependent on availability of MVAr data, and accuracy of power factor estimates in their absence.
TOPSD0203 Transmission System coincident weather adjusted	This is the network coincident weather corrected maximum demand at the 50% POE level at the time when this summation is	Variables: TOPSD0103 TOPSD0301	Yes	Divide Transmission System Coincident Maximum Demand 50% POE (TOPSD0103) by Average Overall Network Power Factor	As per TOPSD0201 The data is materially dependent on availability of MVAr data, and accuracy of power factor estimates in their

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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
maximum demand 50% POE	greatest. MW values are converted to MVA.			(TOPSD0301) for conversion to MVA.	absence.
TOPSD0204 Transmission System non-coincident summated maximum demand	This is the actual unadjusted summation of actual raw maximum demand at TransGrid's downstream connection and supply locations irrespective of when they occur in the year. MW values are converted to MVA.	Variables: TOPSD0104 TOPSD0301	Yes	Divide Transmission System non-coincident weather summated maximum demand (TOPSD0104) by Average Overall Network Power Factor (TOPSD0301) for conversion to MVA.	As per TOPSD0201 The data is materially dependent on availability of MVAr data, and accuracy of power factor estimates in their absence.
TOPSD0205 Transmission System non-coincident weather adjusted summated maximum demand 10% POE	This is the weather corrected summation of MD at TransGrid's downstream connection and supply locations (i.e. individual BSPs) at 10% POE level, irrespective of when they occur in the year. MW values are converted to MVA.	Variables: TOPSD0105 TOPSD0301	Yes	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) for conversion to MVA.	As per TOPSD0201 The data is materially dependent on availability of MVAr data and accuracy of power factor estimates in their absence.
TOPSD0206 Transmission System non-coincident weather adjusted summated maximum demand 50% POE	This is the weather corrected summation of maximum demand at TransGrid's downstream connection and supply locations at 50% POE level, irrespective of when they occur in the year. MW values are converted to MVA.	Variables: TOPSD0106 TOPSD0301	Yes	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 per TOPSD0201 The data is materially dependent on availability of MVAr data and accuracy of power factor estimates in their absence.
3.4.3.2 - POWER FACTOR Power factor conversion between MVA and MW					
TOPSD0301 Average overall network power factor conversion between MVA and MW	Total system MW divided by total system MVA, as on day of TransGrid network maximum demand	TransGrid's TUOS billing system	Yes	TransGrid does not collect data to derive network wide power factors. However, there is data for reactive loading at some (but not all) bulk supply points. This data has been used to develop a broad approximation of system wide power factors. Refer to note below.	Refer to 'Note to TOPSD0201 and TOPSD0301'
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	TransGrid's SCADA system	Yes	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	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.

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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	voltage. Where TransGrid does not have any lines operating at a particular nominal voltage, the average power factor provided for those lines is unity.			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.	· Is based on the power factor of the aggregated MW and MVAr flows on all TransGrid lines operating at a particular nominal voltage. TransGrid does not have any assets with metered MVArs at 275kV, 110kV or lower. Hence these values of 1 are provided only in keeping with the RIN instructions.

Note to TOPSD0201 and TOPSD0301

The nature of transmission systems is that they are "better" at transmitting real power (MW) than reactive power (MVAr) [1] . 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[2] 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.

The real and corresponding reactive power loads at the individual bulk supply points are derived from revenue [3] 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).

[1] 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.

[2] 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.

[3] The accuracy requirements for revenue metering installations are specified in the National Electricity Rules.

7.3.6 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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
3.5.1 TRANSMISSION SYSTEM CAPACITIES					
Table 3.5.1.1 Overhead network length of circuit at each voltage TPA0101 to TPA0109	Overhead line total length operating at each voltage. TransGrid has no Transmission Line assets at 275kV, 110kV, 88kV, 22kV or lower.	TransGrid Spatial System (TSS)	No	All line information relevant to TransGrid was downloaded from TransGrid Spatial System (TSS)	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. The 33kV line is strung with double circuit 132kV structures; neither end terminates at a TransGrid substation.
Table 3.5.1.2 Underground cable circuit length at each voltage TPA0201 to TPA0211	Underground cable circuit length at each voltage. TransGrid has no Underground Cable assets at 500kV, 275kV, 220kV, 110kV, or lower.	Electrical Data Book Project Records (EDMS)	No	TransGrid's Electrical Database (published as the Electrical Data Book) records the commissioning date of segments of transmission cable circuits. For high voltage cables within substations, the length of the cables has been estimated from project drawings	No assumptions were made in calculations as the asset is static. 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, 88kV, 22kV 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	No	Line ratings vary on time of year and time of day, TUOS was used to determine date/time of maximum demand and thus which rating to use. For FY17, the maximum demand was in January at 1645 hrs, so Summer Day ratings were used. Note that FY16 RIN used winter night ratings. The version of OM304, OM305, OM306 or OM307 that was current at the time of maximum demand was obtained.	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 dependent on the load flow 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 the site closest to the higher voltage network.

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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
		Southern Region TUOS for time of maximum demand determination For the 33kV line, as neither end terminates at a TransGrid substation the connection agreement was used.		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	Where a new line is commissioned or altered after the maximum demand event occurs, the rating shown will be the appropriate season's rating at the end of the financial year. This instance did not occur in FY17.
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 transmission 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. TUOS for time of maximum demand determination	No	Cable ratings can vary on time of year, TUOS was used to determine date/time of maximum demand and thus which rating to use. For FY17, the maximum demand was in January at 1645 hrs, so winter night ratings were used. Note that FY16RIN used winter night ratings. 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. Note that a 19.7 km 330 kV cable was derated in FY17 due to backfill issues.	It is assumed that the AER require Cyclic rating for underground cables

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?	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 TPA0501 to TPA0506	These were taken to be the sum of nameplate capacities of transformers with a primary winding voltage rating of 220 kV and above and not used to supply load directly. TPA0502 Terminal points to DNSP systems : Transformers primarily used to directly supply DNSP load. TPA0503 Transformer capacity for directly connected end–users owned by the TNSP : Transformers used to supply direct customers exclusively. Owned by TransGrid. None were identified. 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. TPA0505 Interconnector capacity : These were taken to be transformers used to directly connect interstate. None were identified. TPA0506 Other: Dedicated SVC transformers - SVC transformers are provided to connect SVCs to the network. They do not fit into the other provided categories	Ellipse: Equipment Register Tracing Data Nameplate Data System operating diagrams and amendments GM AS S1 009 and amendments – In-Service and Spare Power Transformers and Reactors Equipment Manuals	No	1. The final worklist was built based on the worksheet from the previous year 2. Create valid list A valid list of transformers current at June 2017 was compiled Non-current records were filtered from the equipment register data and reviewed to remove a small number of errors. 3. 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. 4. Trace each year's data Tracing data was used to identify transformers in service for each financial year in the required range using the 2016 RIN information as the base.	When relocations were known to have occurred, it was assumed that transformers were moved at the end of a financial 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 – e.g.: 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.

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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
Table 3.5.1.6 Cold Spare Capacity TPA06	In service or cold standby transformers that are not connected to the network and are used as spares to cover against possible failure.	As for TPA05	No	System spares were cross checked using amendments of corporate document: D2003/2182 In Service and Spare Power Transformers and Reactors.	As for TPA05

7.3.7 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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
3.6.1 SERVICE COMPONENT					
Service Parameter 1 - Average circuit outage rate					
TQS0101 Lines outage rate – fault	TQS0102 / TQS0103	Refer to RIN variables TQS0102 and TQS0103	No	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 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 staff requiring access). 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). Each of these outage records in the THEOS PC Stats database is assigned 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	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.
TQS0103 Number of defined Lines	This variable is interpreted as the total number (three phase equivalent) of transmission line and/or underground cable circuits	The "tblCircuits_SettingData" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only staff	No	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	Accuracy of the System Development Summary documents and/or High Voltage Operating Diagrams 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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	owned by TransGrid at 66kV and above. This measure is an average number over twelve months in a calendar year.	requiring access). 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 and/or High Voltage Operating Diagrams released by the Network Operations group.		its AllCircuits count (column G) averaged across each month of the relevant calendar year.	
TQS0104 Transformer outage rate – fault	TQS0105 / TQS0106	Refer to RIN variables TQS0105 and TQS0106	No	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 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 staff requiring access). 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). Each of these outage records in the THEOS PC Stats database is assigned with an AER code. Selecting the appropriate AER code occasionally requires obtaining additional information from	No	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 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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
		Opslog (a separate business application used as a diary/logbook by Network Operators).			
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 staff requiring access). 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 and/or High Voltage Operating Diagrams released by the Network Operations group.	No	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 and/or High Voltage Operating Diagrams produced by the Network Operations group within TransGrid.
TQS0107 Reactive Plant outage rate – fault	TQS0108 / TQS0109	Refer to RIN variables TQS0108 and TQS0109	No	TQS0107 = TQS0108 / TQS0109	NIL
TQS0108 Number of Reactive plant fault outages	This variable is interpreted as the total number of 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.	The "QAPR Comment on Outage" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only staff requiring access). 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	No	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 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.	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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
		application used by Network Operations staff to record outage data). Each of these outage records in the THEOS PC Stats database is assigned 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).			
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 staff requiring access). 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 and/or High Voltage Operating Diagrams released by the Network Operations group.	No	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 and/or High Voltage Operating Diagrams produced by the Network Operations group within TransGrid.
TQS0110 Lines outage rate – forced	TQS0111 / TQS0103	Refer to RIN variables TQS0111 and TQS0103	No	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	The "QAPR Comment on Outage" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only staff	No	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	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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	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.	requiring access). 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). Each of these outage records in the THEOS PC Stats database is assigned 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).		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.	
TQS0112 Transformers outage rate – forced	TQS0113 / TQS0106	Refer to RIN variables TQS0113 and TQS0106	No	TQS0112 = TQS0113 / TQS0106	NIL
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 staff requiring access). 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	No	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

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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
		Operations staff to record outage data). Each of these outage records in the THEOS PC Stats database is assigned 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).			
TQS0114 Reactive Plant outage rate – forced	TQS0115 / TQS0109	Refer to RIN variables TQS0115 and TQS0109	No	TQS0114 = TQS0115 / TQS0109	NIL
TQS0115 Number of Reactive Plant 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 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.	The "QAPR Comment on Outage" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only staff requiring access). 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). Each of these outage records in the THEOS PC Stats database is assigned with an AER code. Selecting the appropriate AER code occasionally requires obtaining additional information from Opslog (a separate business application used as a	No	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 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.	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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
		diary/logbook by Network Operators).			
Service Parameter 2 - Loss of supply event frequency - number in ranges specified					
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 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 staff requiring access). 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	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 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
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	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only staff requiring access). An extract of this table is provided in the worksheet "ENS Lost Load Linked Table" worksheet of	No	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,	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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	loss of supply also is greater than 0.1 system minutes, subtracting any applicable exclusions as defined by the AER STPIS V4.	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).		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.	
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 staff requiring access). 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	No	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 *	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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
		Operators).		(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.	
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 staff requiring access). 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	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	This is taken to be the number of unplanned outages in the relevant year entailing a loss of supply	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access	No	Every outage record in the "ENS Lost Load Linked Table" worksheet of the RINB-36-01 spreadsheet which is not	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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
annum (X)	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 0.3 system minutes, subtracting any applicable exclusions as defined by the AER STPIS V4.	for only staff requiring access). 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).		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.	
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 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 staff requiring access). 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	No	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.	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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
		record outage data) and/or Opslog (a separate business application used as a diary/logbook by Network Operators).		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.	
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 staff requiring access). 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	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-36-03), 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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
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 staff requiring access). 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	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
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	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only staff requiring access). 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	No	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	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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	defined by the AER STPIS V4.	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).		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.	
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 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.	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only staff requiring access). 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	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	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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
				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 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 staff requiring access). 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	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
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	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only staff requiring access). An extract of this table is provided in the worksheet "ENS Lost Load Linked Table" worksheet of	No	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	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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	loss of supply also is greater than 0.25 system minutes, subtracting any applicable exclusions as defined by the AER STPIS V4.	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).		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.	
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 staff requiring access). 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	No	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 *	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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
		Operators).		(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.	
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 staff requiring access). 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	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	This is taken to be the number of unplanned outages in the relevant year entailing a loss of supply	The "ENS Lost Load" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access	No	Every outage record in the "ENS Lost Load Linked Table" worksheet of the RINB-36-01 spreadsheet which is not	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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
annum (Y)	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 0.75 system minutes, subtracting any applicable exclusions as defined by the AER STPIS V4.	for only staff requiring access). 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).		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-36-03), 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 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 staff requiring access). 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	No	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.	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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
		record outage data) and/or Opslog (a separate business application used as a diary/logbook by Network Operators).		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.	
Service Parameter 3 - Average outage duration					
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 staff requiring access). 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	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
Service Parameter 4 - Proper operation of equipment - number of failure events					
TQS0119 Failure of protection system	Number of events in a given year where the protection system does not operate for a fault or	The "QAPR Comment on Outage" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with	No	Every outage record in the "NPR Outages List Linked Table" worksheet of the RINB-36-01 spreadsheet classified as a	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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	operates where there is no actual fault.	secure access for only staff requiring access). 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).		Protection Failure (i.e. column AL 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.	
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 03/01/2016 (RINB-36-04).	No	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 contractor that results in an	The "QAPR Comment on Outage" table within the THEOS PC Stats.accdb database stored on TransGrid's shared drive (with secure access for only staff requiring access). 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"	No	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	Accuracy of the record data sources (THEOS and/or Opslog) maintained by the Network Operations group within TransGrid

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Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	unplanned outage. No data is available to indicate the occurrence of incorrect isolation action which did not lead to outages.	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).		the spreadsheet RINB-36-01.	
3.6.2 - MARKET IMPACT COMPONENT					
TQS02 Market Impact Parameter	The number of binding constraint dispatch periods with a marginal cost of constraint >$10/MW 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 staff requiring access). An extract of this table is provided in the worksheet "MIC Linked 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	No	Every monthly penalty count record in the "MIC Linked Table" worksheet of the RINB-36-01 spreadsheet has its non-excluded penalty count 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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
		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).			
3.6.3 - SYSTEM LOSSES					
TQS03 System Losses	{(Energy into TransGrid – Energy out of TransGrid)/Energy into TransGrid)}*100	TransGrid's TUOS billing system	No	This is defined as {(Energy into TransGrid – Energy out of TransGrid)/Energy into TransGrid)}*100 2016 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 2015/16 and 2016/17 RINs [January to June 2016 from the 2015/16 RIN and July to December 2016 from the 2016/17 RIN].	Rounded to 2 significant figures

7.3.8 Worksheet 3.7 Operating Environment Factors

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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
TEF01 3.7.1 - TERRAIN FACTORS					
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. Logs from work completed by internal staff where vegetation maintenance occurred on the spans were also added to the list of maintenance spans.	No	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. Refer to TEF0103 for details of the scoping and invoicing process. Where TransGrid staff have trimmed, lopped or sprayed a tree or trees during a line inspection and this information has been recorded it will also be included as a maintenance span. The data was checked to ensure a span was not counted twice if it was noted on multiple invoices of internal works schedule.	N/A
TEF0102 Average Frequency of Cutting Cycle (Years)	The straight average of the vegetation maintenance period for each transmission line for the appropriate year weighted on span count basis.	Transmission Line Maintenance Plan contains the maintenance frequency tables. TransGrid Spatial System (TSS) report provides the number of spans for each line section noted in the Maintenance Plan.	Yes	The vegetation maintenance cycle in years (noted on a line by line basis) was taken from the Maintenance Plan and a weighted average (number of spans based, not length) was calculated.	TransGrid does not currently directly record spans where no vegetation management is required. Scheduled "Hotspot" maintenance details are also not readily available at a span level. Further, an "actual" of this parameter would also need to consider non-routine (defect) works. This makes providing an actuals average frequency down to the span level onerous, hence parameter is an estimate.
TEF0103 Average number of trees per maintenance span	Total number of trees (>3m in height that could grow to the extent where clearances are	Determined during scoping stage of works. If this information was not available early on before the process improvement then the	Yes	The nature of vegetation maintenance makes providing actual tree counts not practical. Dense vegetation maintained by mulching / slashing can remove tens of thousands of	When this estimate was not completed the contractor invoice was used. For hectare rates, the following

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Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
(0's)	encroached) maintained (lopped, removed, slashed, mulched, etc) divided by the total number of maintenance spans.	number of trees can generally be calculated using the contractor invoices, as the tree cutting rates are based upon hectare rates and hourly rates. These calculations are detailed in CA RIN 2.7. The data is sourced from the vegetation maintenance contractors who prepare an invoice input spreadsheet as part of their invoices submitted for vegetation maintenance. Where TransGrid staff have removed trees or lopped during a line inspection and this information has been recorded it has been included in the tree counts.		trees per span. Easements works are scoped between the TransGrid Easement Officer and the contractor. When scoping vegetation maintenance work an attempt is made to gauge the number of trees being removed, pruned and/or mulched or sprayed by selecting an indicative square metre area that best represents the average vegetation cover within the span and then simply counting the number of trees within the selected area. This number of trees is then multiplied by the total number of square metres being maintained to obtain the total number of trees to be maintained in the span. Often, with a small number of trees being removed or pruned, the individual trees will be counted. This is recorded on a span by span basis and issued to the contractor as a work plan. This method was introduced in FY16. Refer to 2016FY RIN for details on how the validity was tested. The method was not retested for the 2017FY RIN. Where a new estimate was unavailable the count was determined using contractor invoices (input spreadsheets) as follows: Hourly rate total hours are converted to trees using a trees per hour figure for the various maintenance activities as per the 'Assumptions made to allow calculation / estimation of the variable' column.' Hectare rate total hectares maintained as per the supporting schedules of the contractor invoices are converted to trees by a vegetation coverage density percentage multiplied by a number of trees per hectare at 100% coverage	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 • 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 • 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

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				based on crown size suitable for the type of maintenance. Before invoices are submitted the TransGrid Easement Officer will inspect the work and sign off the work plan as completed to their satisfaction. This will allow the contractor to submit their invoice. This invoice input spreadsheet includes the agreed tree count. The invoices are submitted along with the signed off work plan to Accounts Payable and a central contract coordinator. When the invoice is loaded by Accounts Payable a notification will be sent to the Easement Officer for endorsement. The claim will be checked for consistency with the work plan and endorsed if appropriate. It will then go to the Easement Team Leader for approval.	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 "Maintenance Plan - Easements and Access Tracks" at the time of LiDAR scan.	The results from TransGrid's Routine LiDAR scanning of the network for vegetation infringements.	Yes	Defect trees are identified by LiDAR using a spatial analysis. Multiple LiDAR shots are likely to be reported as within clearance requirements of "Maintenance Plan - Easements and Access Tracks", as the point density of the LiDAR is greater than the size of each tree. Analysis is made to calculate the quantity of defect trees, which may not match actuals onsite, hence the "estimated" description of this variable. 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. A defect tree is counted if the identified tree was in a span where maintenance was carried out in the applicable year.	Defect vegetation is in contravention to the requirements of "Maintenance Plan - Easements and Access Tracks" where maintenance work is expected to take into account regrowth prior to the next maintenance cycle such that vegetation never encroaches on safe clearances to conductors The routine used to group these into tree counts assumes a suitable radius of each point.
TEF0105 Tropical Proportion	Vegetation Maintenance Spans within the Bureau	Climate Zone Map	No	Climate zone digital map utilised to run query in GIS (TSS) based on spans within class	N/A

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Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
Number of spans	of Meteorology "Warm Humid Summer" zone			"Warm Humid Summer", and compare this list against maintenance spans only.	
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 2WD vehicle.	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. Details of all access tracks are currently being loaded into TSS. Condition rating will be added progressively.	Yes	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. Up to date actuals are not available. Details of all access tracks are currently being loaded into TSS. Condition rating will be added progressively. It is considered appropriate to continue to use this proportion, as it is not generally going to change year to year. The proportion was multiplied with the published line route length for 2017 and rounded to the nearest 100km. Route line length = 11,351 km Std vehicle access = 11,351* 80.9% = 9,182km ≈9,200 km	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 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.	No	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 calculation	N/A
TEF0108 - Bushfire Risk Number of spans	Maintenance spans within RFS classification of Category 1, 2 or buffer	NSW RFS Bush Fire Prone Lands (BFPL)	No	Digital map of BFPL used to run query against spans in either Category 1, 2or 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.
TEF02 3.7.2 - NETWORK CHARACTERISTICS					
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 Spatial System (TSS)	No	Span lengths for all circuits were extracted from TSS. Route length was averaged from the two spans attached to dual circuit structures and added to single circuit spans	Route line length includes overhead lines and underground cables.
TEF0202 Variability of dispatch	AER definition refers to non-thermal generators. Thermal generators have been taken to be	TransGrid's TUOS billing system	Yes	The figure is based on NEM metering which is used as part of TransGrid's normal course of business. It is also materially dependent on whether the energy from non-thermal	The definition refers to non-thermal generators. Thermal generators have been taken to be generators using steam turbines.

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Variable reference & AER description	TransGrid's interpretation of data variable	Data sources	Is this variable 'Estimated Information' as per AER definition?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
	generators using steam turbines. Using this definition, non-thermal generators are wind turbines, hydro generators and open cycle gas turbines.			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). 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.	Using that 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 single location. To satisfy criteria of 30% or more generation/load, groups of nodes are considered, allowing a concentrated load distance to be derived.	Data from that used to calculate TEF0201	Yes	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 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	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 furthest apart.

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				basin (loads connected at Beaconsfield West, Haymarket, Holroyd, Ingleburn, Liverpool, Macarthur, Regentville, Rookwood Road, Sydney East, Sydney North, Sydney South, Sydney West and Vineyard).	
TEF0204 - Total number of spans	The total number of spans on the network	TransGrid Spatial System (TSS)	No	A total count of all spans used to calculate route line length	N/A