TransGrid

Regulatory Information Notice

Category Analysis 2016/17

17 October 2017

Contents

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 7 March 2014, 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 Category Analysis 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 in the following regulatory templates 2.1 Expenditure Summary' to '2.11 Provisions', and '2.13 Insurance & Self-insurance' and '2.15 Step changes, and '4.1 Asset Age Profile' to '4.3 MD & utilisation-spatial', and '5.1(a) ECFM' and '5.1(b) EBSS', '5.2. STPIS' and '6.4. Shared assets'.

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.

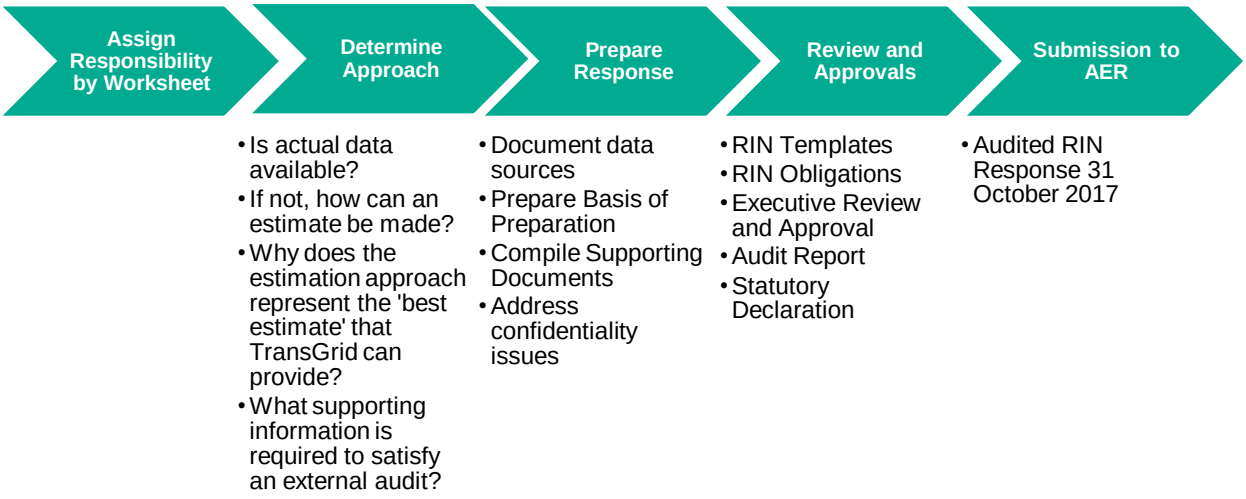
3.6 When reporting an audit opinion or making an attestation report on the regulatory templates presented by TransGrid, an auditor or assurance practitioner shall opine or attest by reference to TransGrid's basis of preparation.

To promote a common approach across the business to addressing the requirements of the Category Analysis 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 Connection Point Forecast 2017	AEMO connection point forecasts 2017 are used in applying weather correction (both 10% POE and 50% POE) for non-coincident maximum demand	5.3 maximum demand (MD) - Network Level
AEMO EFI 2017	Electricity Forecasting Insights (2017) by Australian Energy Market Operator (AEMO), used for applying weather correction (both 10% POE and 50% POE) for system maximum demand	5.3 MD - Spatial
Aerial Laser Survey (ALS)	Refer to LiDAR	2.7 Vegetation Management
Distribution Network Service Provider (DNSP) Forecasts	Forecasts provided to TransGrid from Distribution Network Service Providers (e.g. Ausgrid, Essential Energy, Endeavour Energy)	5.4 MD & Utilisation - Spatial
Economic Benchmarking RIN Data Templates	The Data Templates submitted to the AER in response to the Economic Benchmarking RIN	2.8 Maintenance, 5.2 Asset Age Profile
Ellipse	TransGrid's ERM system, including asset, business and financial reporting Finance data cube refers to the process of querying TransGrid's financial information from the Ellipse ERM system	2.6 Non-network Expenditure, 2.2 Repex, 2.3 Augex, 2.5 Connections, 2.6 Non-network Expenditure, 2.7 Vegetation Management, 2.8 Maintenance, 2.10 Overheads, 2.11 Labour , 2.12 Input Tables, 5.2 Asset Age Profile
Fleet Database	Fleet is a TransGrid approved application to manage TransGrid's fleet of mobile plant and motor vehicles. The system reports on purchase details, running costs, vehicle usage & FBT attributed to individual motor vehicles and mobile plant. It has direct interfaces to Ellipse to ensure data content is consistent	2.6 Non-network
Invoices Received	Contractor invoices received for vegetation management works have been used to estimate the variables requested in Template 2.7	2.7 Vegetation Management
IT Configuration Management System	TransGrid utilise a bespoke configuration management database (CMDB) incorporated within the TransGrid Application Framework (TAF). TAF is integrated with the request system for the provisioning and de-provisioning of hardware and software.	2.6 Non-network
LiDAR	Light Detection and Ranging data sourced from aerial surveys that is used to measure vegetation clearances from TransGrid's transmission line assets.	2.7 Vegetation Management
Maintenance Plans	Used for the operation and maintenance of TransGrid's assets, these outline equipment information, standard practices and maintenance requirements.	2.7 Vegetation Management, 2.8 Maintenance
Operating Manuals	Record the ratings of each circuit on the TransGrid network	2.2 Repex, 2.3 Augex, 2.5 Connections, 5.2 Asset Age Profile, 5.4 MD & Utilisation - Spatial

Information Source	Brief Description	Supports
Opex Model	TransGrid's opex model used for the preparation of the regulatory proposal and the annual regulatory accounts.	2.8 Maintenance, 2.11 Labour, 2.12 Input Tables
Project planning & project management documents	Various individual documents used for planning, approval and delivery purposes. This record more detailed project specific information that is not recorded in TransGrid's other systems at a project level.	2.3 Augex, 2.5 Connections, 2.8 Maintenance, 5.2 Asset Age Profile
QAPR	Quarterly Asset Performance Report, an internal report on outages that is generated each quarter from the THEOS System	2.2 Repex, 2.8 Maintenance
Renewal and Maintenance Strategies	Defines the renewal and maintenance strategies for TransGrid's Transmission Line fleet. In doing this it applies the overarching asset management strategy and objectives, and relevant Lifecycle Strategies.	5.2 Asset Age Profile
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	2.2 Repex, 5.2 Asset Age Profile
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.	2.2 Repex, 2.7 Vegetation Management, 2.8 Maintenance, 5.2 Asset Age Profile
THEOS	TransGrid's outage recording/reporting system	2.2 Repex, 2.7 Vegetation Management
TransGrid Regulatory Accounts	TransGrid's annual regulatory accounts which are prepared and submitted in accordance with the AER's requirements	2.1 Expenditure Summary, 2.2 Repex, 2.3 Augex Project Data, 2.5 Connections, 2.6 Non-network, 2.7 Vegetation Management, 2.8 Maintenance, 2.10 Overheads, 2.11 Labour, 2.12 Input Tables
TransGrid Electrical Data Book	A central record of electrical asset data regarding TransGrid's network that is published on the TransGrid Intranet (The Wire).	2.2 Repex – Substations Reactive plant by Reactive Capacity , 2.7 Vegetation Management, 2.8 Maintenance, 5.2 Asset Age Profile, 5.4 MD & Utilisation – Spatial
TransGrid 30 Year Asset Management Plan	A long term asset management plan prepared for the TransGrid networks	2.8 Maintenance
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.	5.3 MD - Network Level, 5.4 MD & Utilisation - Spatial

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 2.2 Repex: 2.2.1 Expenditure	Expenditure associated with asset replacements	Repex	Market Sensitive Cost Inputs Market Intelligence	Disclosure may provide the ability to determine TransGrid's unit rates for procurement of equipment and installation / replacements of assets.	Disclosure may result in suppliers tendering to a set price previously accepted, not their most competitive. The same goes for non-regulated revenue opportunities. Competitors may not provide best price, only a price that would trump a TransGrid bid. This would be a poor result for the customer.
Worksheet 2.5 Connections: 2.5.1 Expenditure on connection projects	Expenditure associated with connections	Connections	Market Sensitive Cost Inputs Market Intelligence	Disclosure may provide the ability to determine TransGrid's unit rates for procurement for labour and materials.	Disclosure may result in suppliers tendering to a set price previously accepted, not their most competitive. The same goes for non-regulated revenue opportunities. Competitors may not provide best price, only a price that would trump a TransGrid bid. This would be a poor result for the customer.
Worksheet 2.11 Labour: 2.11.1 Cost metrics + 2.11.2 Descriptor metrics	This contains information relating to individuals' remuneration arrangements.	Staff numbers & remuneration	Information affecting the security of the network Personal Information Other	RIN categories enable identification of Labour information including information on individuals' remuneration.	TransGrid Key Management Personnel (predominantly executive) are seen by Federal Government security agencies as being particularly vulnerable to coercion and influence by foreign threats counter to Australia's national security interests. This is mitigated to an extent by requiring those individuals to be vetted to particular levels of 'secret' clearance with those security agencies. Revealing sensitive information about those individuals may aid foreign threats in planning campaigns of targeted coercion of such individuals.
Worksheet 5.4 MD and utilisation-spatial: Industrial/ Broken Hill Mine, Tomago 330kV, ANM, Gadara, Orange 132kV, Parkes 132kV, Boggabri East, Boggabri North	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 2.1 to 2.12, 5.2 to 5.4

The Basis of Preparation outlines the necessary explanations with regards to the preparation of the RIN template, as per section 2 above. Blue indicated financial information and green indicates non-financial information, in line with the AER colour coding in the templates.

7.3.1 Worksheet 2.1 Expenditure Summary

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
2.1.1 - PRESCRIBED TRANSMISSION SERVICES CAPEX (as incurred)					
Replacement Expenditure	The total expenditure for regulated replacement capital projects, exclusive of capitalised overheads and reported on an 'as incurred' basis. Grouping is based on Portfolio Groupings in Ellipse. For Repex, we have included: • Major Proj-Presc Security Comp • Major Proj-Presc Replacement • Asset renewal strategies	TransGrid financial records reported from Ellipse and Business Reporting and 2016-17 Regulatory Accounts. Supporting information reported here in RIN 2.1 is in line with that in RIN 2.12 Input Tables.	No	N/A	N/A
Connections	The total expenditure for regulated connection capital projects, exclusive of capitalised overheads and reported on an 'as incurred' basis. Grouping is based on Portfolio groupings in Ellipse. For connections, we have included: • Major Proj-Pres Connections	TransGrid financial records reported from Ellipse and Business Reporting and 2016-17 Regulatory Accounts. Supporting information and list of projects are in line with RIN 2.5 Connections and RIN 2.12 input tables.	No	N/A	N/A
Augmentation Expenditure	The total expenditure for regulated augmentation capital projects, exclusive of capitalised overheads and reported on an 'as incurred' basis. Grouping is based on Portfolio groupings in Ellipse. For Augmentation, we have included: • Major Proj-Presc Aug-Main Grid • Major Proj-Pres Aug-Sub Sys • Major Proj-Pres Strat Property	TransGrid financial records reported from Ellipse and Business Reporting and 2016-17 Regulatory Accounts. Supporting information reported here in RIN 2.1 is in line with that in RIN 2.3 Augex – Table 2.3.3, as well as RIN 2.12 Input Tables.	No	N/A	N/A
Non-Network	The total expenditure for regulated non network capital projects, exclusive of capitalised overheads and reported on an 'as incurred' basis. Grouping is based on Portfolio	TransGrid financial records reported from Ellipse and Business Reporting and 2016-17 Regulatory Accounts Supporting information reported here in RIN 2.1 is in line with that in RIN 2.6	No	N/A	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
	groupings in Ellipse. For non-network, we have included: • Support –Facilities & Buildings • Support – IT • Support - Motor Vehicles • Support - Plant & Equipment	Non Network, as well as RIN 2.12 Input Tables.			
Capitalised Network Overheads	The network support costs allocated to capital projects.	TransGrid financial records reported from Ellipse and Business Reporting. Information reported here in RIN 2.1 is in line with that in RIN 2.10 Overhead.	Yes	Support costs allocated to capital projects are separately shown in the Finance cube. These support costs are then categorised into Network or Corporate Overheads based on the Responsible Center ("RC") that incurred the costs.	N/A
Capitalised Corporate Overheads	The corporate support costs allocated to capital projects.	TransGrid financial records reported from Ellipse and Business Reporting. Information reported here in RIN 2.1 is in line with that in RIN 2.10 Overhead.	Yes	Support costs allocated to capital projects are separately shown in the Finance cube. These support costs are then categorised into Network or Corporate Overheads based on the Responsible Center ("RC") that incurred the costs.	N/A
Balancing Item	The value required to reconcile to TransGrid's Regulatory Accounts.	Balancing item relate to prescribed NCIPAP projects which do not fall under the categories noted above. Amount and treatment of NCIPAP projects is consistent with NCIPAP projects reported in historical capex schedule in the Regulatory Account.	No	N/A	N/A
2.1.2 - PRESCRIBED TRANSMISSION SERVICE OPEX by Category					
Vegetation Management	The Vegetation Management Expenditure reported in RIN 2.7	TransGrid financial records reported from Ellipse and Business Reporting. RIN 2.1 Expenditure Summary figures reconcile to; • Land & Easement opex amount in the Economic Benchmarking RIN Schedule 3.2, adjusted for Access Track Maintenance expenditure	No	N/A	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
		reported in schedule 2.8. The categories within EB RIN schedule 3.2 reconcile to the categories for Regulatory Accounts DISAGG Inc and DISAGG Opex. Information reported here in RIN 2.1 is in line with that in RIN 2.7 Vegetation.			
Maintenance	The Maintenance Expenditure reported in RIN 2.8	TransGrid financial records reported from Ellipse and Business Reporting. RIN 2.1 Expenditure Summary figures reconcile to; • Total maintenance opex less land & easement in the Economic Benchmarking RIN Schedule 3.2, adjusted for Access Track Maintenance expenditure. The categories within EB RIN schedule 3.2 reconcile to the categories for Regulatory Accounts DISAGG Inc and DISAGG Opex. Information reported here in RIN 2.1 is in line with that in RIN 2.8 Maintenance.	No	N/A	N/A
Non-Network	The Non-Network operating expenditure reported in RIN 2.6	TransGrid financial records reported from Ellipse and Business Reporting and 2016-17 Regulatory Accounts. Consistent with prior period, TransGrid includes the non-network opex in network / corporate overheads; hence the amount here is zero.	No	N/A	N/A
Network Overheads	The opex component of the total network overheads reported in RIN 2.10	TransGrid financial records reported from Ellipse and Business Reporting. RIN 2.1 Expenditure Summary figures for this variable reconcile to EB RIN schedule 3.2 for • Total maintenance support & asset management • Total operations	No	N/A	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
		• Total Grid Planning Information reported here in RIN 2.1 is in line with that in RIN 2.10 Overhead.			
Corporate Overheads	The opex component of the total corporate Overheads reported in RIN 2.10	TransGrid financial records reported from Ellipse and Business Reporting. RIN 2.1 Expenditure Summary figures for this variable reconcile to EB RIN schedule 3.2 for • Insurance • Rates, taxes & charges • Property management • Environmental • Corporate Governance • Customer relations • Regulatory • Finance • Information technology • HR & Payroll • Defined Benefit Superannuation Adjustment Information reported here in RIN 2.1 is in line with that in RIN 2.10 Overhead.	No	N/A	N/A
Balancing Item	The value required to reconcile to TransGrid's Regulatory Accounts	N/A – Nil Balancing item	N/A	N/A	N/A

7.3.2 Worksheet 2.2 Repex

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
2.2.1 REPLACEMENT EXPENDITURE, VOLUMES AND ASSET FAILURES BY ASSET CATEGORY					
Expenditure					
Transmission Towers	Expenditure associated with projects deemed as being structure replacement from the Repex Capital budget.	Report provided by Finance on expenditure of commissioned projects.	Yes	Material projects ending in 2016/17 have been allocated based on a combination of the capitalisation sheets, construction contract schedule items, cost breakdowns for internal labour, standard costing and pro-rated. Costs for asset replacement strategy projects are directly attributable to a number of categories. The structures included were entirely on Line 970. This structure replacement project also included replacing one earthwire with OPGW. Most of the OPGW works were separated in discrete work orders. The expenditure sum of these work orders are approximately equal to the lower bound of the per kilometre rates of previously completed OPGW works. The expenditure was assumed to be the total costs minus the OPGW work orders. The shared components, such as design and access tracks were not able to be split, hence the RIN value is an estimate.	• Any expenditure from the contracts that is not directly attributable to an item or grouping of items has been prorated across the attributable items. • Standard estimate splits from our estimating database are used in some instances to obtain the required level of details as the capitalisation sheets do not record the required information. • Additional items have been added to allow for directly comparable scopes for costing the asset replacement strategy works and the major project replacements.
Transmission Tower Support Structures	Expenditure associated with projects deemed as being support structure replacements (e.g. crossarm replacements, whole structure insulator replacements, etc).	Report provided by Finance on expenditure of commissioned projects.	No	Material projects ending in 2016/17 have been allocated based on a combination of the capitalisation sheets, construction contract schedule items, cost breakdowns for internal labour, standard costing and pro-rated. Costs for asset replacement strategy projects are directly attributable to a number of	• Any expenditure from the contracts that is not directly attributable to an item or grouping of items has been prorated across the attributable items. • Standard estimate splits from our estimating database are used in some instances to obtain 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
				categories. There were no support structure project closed off during 2016/17FY.	required level of details as the capitalisation sheets do not record the required information. • Additional items have been added to allow for directly comparable scopes for costing the asset replacement strategy works and the major project replacements.
Conductors	Expenditure associated with projects deemed as being conductor replacements.	Report provided by Finance on expenditure of commissioned projects.	No	Material projects ending in 2016/17 have been allocated based on a combination of the capitalisation sheets, construction contract schedule items, cost breakdowns for internal labour, standard costing and pro-rated. Costs for asset replacement strategy projects are directly attributable to a number of categories. There were no conductor replacement projects closed off during 2016/17FY.	• Any expenditure from the contracts that is not directly attributable to an item or grouping of items has been prorated across the attributable items. • Standard estimate splits from our estimating database are used in some instances to obtain the required level of details as the capitalisation sheets do not record the required information. • Additional items have been added to allow for directly comparable scopes for costing the asset replacement strategy works and the major project replacements.
Transmission Cables	Expenditure associated with projects deemed as being transmission cable replacements.	Report provided by Finance on expenditure of commissioned projects.	No	There were no Transmission Cables commissioned in 2017FY.	• Any expenditure from the contracts that is not directly attributable to an item or grouping of items has been prorated across the attributable items. • Standard estimate splits from our estimating database are used in some instances to obtain the required level of details as the capitalisation sheets do not record the required information. • Additional items have been added to allow for directly comparable scopes for costing the asset replacement strategy works 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
					major project replacements.
Substation Switchbays	Expenditure associated with projects deemed as being HV assets in substation switchbays replacements. This does not include replacements associated with operating, which is typically on an urgent basis.	For projects identified as ready for service during 2016/17, financial data originates from Ellipse and extracted from the finance cube.	Yes	TransGrid costs are extracted directly from Ellipse system however cost breakdowns for individual components are not available, estimation is used to allocated costs to various components of large scale projects	Material projects ending in 2016/17 have been allocated based on a combination of the capitalisation sheets, construction contract schedule items, cost breakdowns for internal labour, standard costing and pro-rated. Costs for asset replacement strategy projects are directly attributable to a number of categories.
Substation Power Transformers	Expenditure associated with projects deemed as being power transformer replacements. This does not include replacements associated with operating, which is typically on an urgent basis.	For projects identified as ready for service during 2016/17, financial data originates from Ellipse and extracted from the finance cube.	Yes	TransGrid costs are extracted directly from Ellipse system however cost breakdowns for individual components are not available, estimation is used to allocated costs to various components of large scale projects	Material projects ending in 2016/17 have been allocated based on a combination of the capitalisation sheets, construction contract schedule items, cost breakdowns for internal labour, standard costing and pro-rated. Costs for asset replacement strategy projects are directly attributable to a number of categories.
Substation Reactive Plant	Expenditure associated with projects deemed as being reactive plant replacements. Other means single phase 33kV air core reactor replacements This does not include replacements associated with operating, which is typically on an urgent basis.	For projects identified as ready for service during 2016/17, financial data originates from Ellipse and extracted from the finance cube.	Yes	TransGrid costs are extracted directly from Ellipse system however cost breakdowns for individual components are not available, estimation is used to allocated costs to various components of large scale projects	Material projects ending in 2016/17 have been allocated based on a combination of the capitalisation sheets, construction contract schedule items, cost breakdowns for internal labour, standard costing and pro-rated. Costs for asset replacement strategy projects are directly attributable to a number of categories.
SCADA, Network Control and Protection Systems	Expenditure associated with projects deemed as being SCADA, Control, Communications, Protection, Metering replacements and associated ancillary requirements or their operation (including	For projects identified as ready for service during 2016/17, financial data originates from Ellipse and extracted from the finance cube. Summarised in: Finance 1 - RIN CA 2.2	Yes	TransGrid costs are extracted directly from Ellipse system however cost breakdowns for individual components are not available, estimation is used to allocated costs to various components of large scale projects	Values for large projects have been allocated according to the percentage distribution of directly attributable values. For example where design costs are matched 1:1, then the percentage of total design attributed to [protection

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
	cabling, infrastructure, batteries, AC supply). This does not include replacements associated with day to day operations, which is typically on an urgent basis.	REPEX all others FY17.xlsx RIN 2.2 - EP001 - P0000144.xlsx RIN 2.2 REPEX - ARS commissioned 2016-17.xlsx.xlsx		Asset Renewal programs are directly assigned values	assets is then applied to the remaining expenditure which may be of a more obscure definition such as "Construction"
Other	Expenditure associated with projects deemed as being asset replacements that are excluded from categories above.	Report provided by Finance on expenditure of commissioned projects.	Yes	Capitalisation sheets, construction contract schedule items, cost breakdowns for internal labour for each project provided by Finance. These items are generally discrete projects or a specific assent management strategy program. All costs are actuals except for the following: Building – Due to the recording of works against major projects, an actual value of building costs against secondary systems renewal projects could not be established. Therefore an estimate of the contribution of total costs associated with buildings has been calculated through the percentage contribution of design effort attributable to buildings against total design effort.	The two structure refurbishments were completed to allow OPGW installation has been costed as structure works. No quantities are shown for the Oil Filled Cables "other projects" because neither projects resulted in replacement of HV cable itself. Providing a number could be misleading (discrete items, route length impacted, etc.). Each item was one single project (one cable bridge, condition monitoring system on one cable circuit (items at multiple locations), etc.).
Asset Replacements					
Transmission Towers	Units of asset replaced associated with Replacement Expenditure projects as defined above.	Project documentation.	No	If a project was included in the report provided by Finance then the project documentation will be inspected and quantities tabulated. The number of structures noted requiring replacement for each project is included. There is some structure refurbishment Repex expenditure. As this does not	Structures are only included if the project is closed out during 2017FY. This will cause a mismatch in section 5.2 which reports structure installation at June 30 2017.

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
				alter the asset age profile it has been included in the "Other Asset" category.	
Transmission Tower Support Structures	Units of asset replaced associated with Replacement Expenditure projects as defined above.	Project documentation.	No	The number of support structures noted requiring replacement for each project is included. There are no support structures included in the 2017FY RIN.	Support Structures are only included if the project is closed out during 2017FY. Some insulator replacements were completed in 2017FY but these projects were still in delivery at June 30 2017.
Conductors	Units of asset replaced associated with Replacement Expenditure projects as defined above.	Project documentation.	No	The horizontal circuit length requiring replacement is used. There were no conductor replacements in 2017FY RIN.	Conductor replacements are only included if the project was closed out in 2017FY.
Transmission Cables	Units of asset replaced associated with Replacement Expenditure projects as defined above.	Project documentation.	No	The cable route length of cable replaced as per design drawings. As the Underground Cable Repex will not change the Asset Age Profile, it has been included in the "Other Asset" category.	Only projects that were closed out in 2017FY are included.
Substation Switchbays	Units of asset replaced associated with Replacement Expenditure projects as defined above.	Works Delivery's project tracking database. PTO's project tracking database	No	Category classification of each asset replacement are manually added. The categories are confirmed by checking HVODs, Project Approval Documents and project descriptions. Asset Replacement numbers are obtained by producing a pivot table from the list	It is assumed that data within TransGrid's systems is accurate and recorded in a timely manner
Substation Power Transformers	Units of asset replaced associated with Replacement Expenditure projects as defined above.	Works Delivery's project tracking database. PTO's project tracking database	No	Category classification of each asset replacement are manually added. The categories are confirmed by checking HVODs, Project Approval Documents and project descriptions. Asset Replacement numbers are obtained by producing a pivot table from the list	It is assumed that data within TransGrid's systems is accurate and recorded in a timely manner
Substation Reactive Plant	Units of asset replaced associated with Replacement Expenditure projects as defined above.	Works Delivery's project tracking database. PTO's project tracking database	No	Category classification of each asset replacement are manually added. The categories are confirmed by checking HVODs, Project Approval Documents and project descriptions. Asset Replacement numbers are obtained by	It is assumed that data within TransGrid's systems is accurate and recorded in a timely manner

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
				producing a pivot table from the list	
SCADA, Network Control and Protection Systems	An asset replaced as part of replacement works where the associated project has been completed during FY2016/17	Data is from "Asset Replacements 2016*-17.xlsx" provided by project delivery group and was originally gathered through Ellipse and Works Delivery Replacement Tracking SharePoint site	No	All assets with projects completed in FY2016/17. Assets manually confirmed by project delivery and replacement assets manually confirmed through Ellipse data register and PDGS approved assets	It is assumed that data within TransGrid's systems is accurate and recorded in a timely manner
Other	An asset replaced as part of replacement works where the associated project has been completed during FY2016/18	Data is from "Asset Replacements 2016*-17.xlsx" provided by project delivery group and was originally gathered through Ellipse and Works Delivery Replacement Tracking SharePoint site	No	All assets with projects completed in FY2016/17. Assets manually confirmed by project delivery and replacement assets manually confirmed through Ellipse data register and PDGS approved assets	It is assumed that data within TransGrid's systems is accurate and recorded in a timely manner
Asset Failures					
Transmission Towers	The failure of any entire transmission structure, subcategorised by voltage and single/multiple circuit. Failure of an asset is defined as when the asset causes an unplanned outage of non-transient nature, or otherwise enters into a state of unfit for use (condition based asset replacements/repairs not included). Failures due to external causes (e.g. thunderstorms) have been excluded. The failures are quantified by the number of outages caused.	Data have been obtained from the 'QAPR Comment on Outage' table from within the THEOS PC Stats Access database stored on TransGrid's shared drive (with secure access for only required staff), which in turn is populated from the outage records in THEOS (the business database application used by Network Operations staff to record outage data). An extract of this data has been provided in the RINB-2-2-01 spreadsheet, in the 'NPR Outages List Linked Table' worksheet. The 'Category Analysis RIN' worksheet uses this table to count up the number of asset failures for each category. The TransGrid December	No	Every outage record in the 'QAPR Comment on Outage' table within the THEOS PC Stats Access database contains a 'RIN Category' field which is populated with the applicable RIN asset group and category combination (as defined in the AER RIN template) for that outage. This 'RIN Category' field is represented by column AW in the 'NPR Outages List Linked Table' worksheet within RINB-2-2-01. Each numerical value in this column corresponds to a unique RIN asset group and category combination. For each asset group and category combination, the frequency of the corresponding numerical value is counted and reported across the relevant financial year.	It is assumed that every asset failure that has occurred has caused an unplanned outage that is recorded by Network Operations staff in THEOS, as per standard procedure.

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
		2015 Electrical Data Book (RINB-2-2-02) has been used to determine the voltage and whether the transmission asset is single or multiple circuit.			
Transmission Tower Support Structures	The failure of any individual component of a transmission structure (e.g. insulators, cross-arms) but not the entire structure, subcategorised by voltage and single/multiple circuit. Failure of an asset is defined as when the asset causes a fault outage of non-transient nature, or otherwise enters into a state of unfit for use (condition based asset replacements/repairs not included). Failures due to external causes (e.g. thunderstorms) have been excluded. The failures are quantified by the number of outages caused.	Data have been obtained from the 'QAPR Comment on Outage' table from within the THEOS PC Stats Access database stored on TransGrid's shared drive (with secure access for only required staff), which in turn is populated from the outage records in THEOS (the business database application used by Network Operations staff to record outage data). An extract of this data has been provided in the RINB-2-2-01 spreadsheet, in the 'NPR Outages List Linked Table' worksheet. The 'Category Analysis RIN' worksheet uses this table to count up the number of asset failures for each category. The TransGrid December 2015 Electrical Data Book (RINB-2-2-02) has been used to determine the voltage and whether the transmission asset is single or multiple circuit.	No	Every outage record in the 'QAPR Comment on Outage' table within the THEOS PC Stats Access database contains a 'RIN Category' field which is populated with the applicable RIN asset group and category combination (as defined in the AER RIN template) for that outage. This 'RIN Category' field is represented by column AW in the 'NPR Outages List Linked Table' worksheet within RINB-2-2-01. Each numerical value in this column corresponds to a unique RIN asset group and category combination. For each asset group and category combination, the frequency of the corresponding numerical value is counted and reported across the relevant financial year.	It is assumed that every asset failure that has occurred has caused an unplanned outage that is recorded by Network Operations staff in THEOS, as per standard procedure.
Conductors	The failure of any conductor on a transmission line, subcategorised by voltage and rating. Overhead earth-wires have been classified	Data have been obtained from the 'QAPR Comment on Outage' table from within the THEOS PC Stats Access	No	Every outage record in the 'QAPR Comment on Outage' table within the THEOS PC Stats Access database contains a 'RIN Category' field which is	It is assumed that every asset failure that has occurred has caused an unplanned outage that is recorded by Network Operations staff in

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
	into the 'Other' category. Failure of an asset is defined as when the asset causes a fault outage of non-transient nature, or otherwise enters into a state of unfit for use (condition based asset replacements/repairs not included). Failures due to external causes (e.g. thunderstorms) have been excluded. The failures are quantified by the number of outages caused.	database stored on TransGrid's shared drive (with secure access for only required staff), which in turn is populated from the outage records in THEOS (the business database application used by Network Operations staff to record outage data). An extract of this data has been provided in the RINB-2-2-01 spreadsheet, in the 'NPR Outages List Linked Table' worksheet. The 'Category Analysis RIN' worksheet uses this table to count up the number of asset failures for each category. The TransGrid December 2015 Electrical Data Book (RINB-2-2-02) has been used to determine the voltage. The TransGrid Operating Manuals, i.e. documents RINB-2-2-03, RINB-2-2-04, RINB-2-2-05 & RINB-2-2-06, have been used to source the conductor rating.		populated with the applicable RIN asset group and category combination (as defined in the AER RIN template) for that outage. This 'RIN Category' field is represented by column AW in the 'NPR Outages List Linked Table' worksheet within RINB-2-2-01. Each numerical value in this column corresponds to a unique RIN asset group and category combination. For each asset group and category combination, the frequency of the corresponding numerical value is counted and reported across the relevant financial year.	THEOS, as per standard procedure.
Transmission Cables	The failure of any transmission cable, subcategorised by voltage and insulation type. Failure of an asset is defined as when the asset causes a fault outage of non-transient nature, or otherwise enters into a state of unfit for use (condition based asset replacements/repairs not included). Failures due to external causes (e.g. thunderstorms) have been	Data have been obtained from the 'QAPR Comment on Outage' table from within the THEOS PC Stats Access database stored on TransGrid's shared drive (with secure access for only required staff), which in turn is populated from the outage records in THEOS (the business database application used by Network Operations	No	Every outage record in the 'QAPR Comment on Outage' table within the THEOS PC Stats Access database contains a 'RIN Category' field which is populated with the applicable RIN asset group and category combination (as defined in the AER RIN template) for that outage. This 'RIN Category' field is represented by column AW in the 'NPR Outages List Linked Table' worksheet within RINB-2-2-01. Each numerical value in this column corresponds to a	It is assumed that every asset failure that has occurred has caused an unplanned outage that is recorded by Network Operations staff in THEOS, as per standard procedure.

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
	excluded. The failures are quantified by the number of outages caused.	staff to record outage data). An extract of this data has been provided in the RINB-2-2-01 spreadsheet, in the 'NPR Outages List Linked Table' worksheet. The 'Category Analysis RIN' worksheet uses this table to count up the number of asset failures for each category. The TransGrid December 2015 Electrical Data Book (RINB-2-2-02) contains voltage and insulation information.		unique RIN asset group and category combination. For each asset group and category combination, the frequency of the corresponding numerical value is counted and reported across the relevant financial year.	
Substation Switchbays	The failure of any components within a substation switchbay, subcategorised by voltage and the following equipment types: CB, Disconnector, Earth Switch, VT, CT, GIS Module, and Other. Failure of an asset is defined as when the asset causes a fault outage of non-transient nature, or otherwise enters into a state of unfit for use (condition based asset replacements/repairs not included). Failures due to external causes (e.g. thunderstorms) have been excluded. The failures are quantified by the number of outages caused.	Data have been obtained from the 'QAPR Comment on Outage' table from within the THEOS PC Stats Access database stored on TransGrid's shared drive (with secure access for only required staff), which in turn is populated from the outage records in THEOS (the business database application used by Network Operations staff to record outage data). An extract of this data has been provided in the RINB-2-2-01 spreadsheet, in the 'NPR Outages List Linked Table' worksheet. The 'Category Analysis RIN' worksheet uses this table to count up the number of asset failures for each category.	No	Every outage record in the 'QAPR Comment on Outage' table within the THEOS PC Stats Access database contains a 'RIN Category' field which is populated with the applicable RIN asset group and category combination (as defined in the AER RIN template) for that outage. This 'RIN Category' field is represented by column AW in the 'NPR Outages List Linked Table' worksheet within RINB-2-2-01. Each numerical value in this column corresponds to a unique RIN asset group and category combination. For each asset group and category combination, the frequency of the corresponding numerical value is counted and reported across the relevant financial year.	It is assumed that every asset failure that has occurred has caused an unplanned outage that is recorded by Network Operations staff in THEOS, as per standard procedure.
Substation Power Transformers	The failure of power transformers subcategorised by voltage and	Data have been obtained from the 'QAPR Comment on	No	Every outage record in the 'QAPR Comment on Outage' table within the	It is assumed that every asset failure that has occurred has caused an

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
	MVA rating. Failure of an asset is defined as when the asset causes a fault outage of non-transient nature, or otherwise enters into a state of unfit for use (condition based asset replacements/repairs not included). Failures due to external causes (e.g. thunderstorms) have been excluded. The failures are quantified by the number of outages caused.	Outage' table from within the THEOS PC Stats Access database stored on TransGrid's shared drive (with secure access for only required staff), which in turn is populated from the outage records in THEOS (the business database application used by Network Operations staff to record outage data). An extract of this data has been provided in the RINB-2-2-01 spreadsheet, in the 'NPR Outages List Linked Table' worksheet. The 'Category Analysis RIN' worksheet uses this table to count up the number of asset failures for each category. The TransGrid December 2015 Electrical Data Book (RINB-2-2-02) has been used to determine the transformer voltages and ratings.		THEOS PC Stats Access database contains a 'RIN Category' field which is populated with the applicable RIN asset group and category combination (as defined in the AER RIN template) for that outage. This 'RIN Category' field is represented by column AW in the 'NPR Outages List Linked Table' worksheet within RINB-2-2-01. Each numerical value in this column corresponds to a unique RIN asset group and category combination. For each asset group and category combination, the frequency of the corresponding numerical value is counted and reported across the relevant financial year.	unplanned outage that is recorded by Network Operations staff in THEOS, as per standard procedure.
Substation Reactive Plant	The failure of reactive plant subcategorised by voltage and the following reactive plant types: SVCs, Capacitors, Oil Filled Reactors, and Other. Note that failures of capacitors or reactors within an SVC, or any equipment within the SVC building, are classified as SVC failures. Failure of an asset is defined as when the asset causes a fault outage of non-transient nature, or otherwise enters into a state of unfit for use (condition based	Data have been obtained from the 'QAPR Comment on Outage' table from within the THEOS PC Stats Access database stored on TransGrid's shared drive (with secure access for only required staff), which in turn is populated from the outage records in THEOS (the business database application used by Network Operations staff to record outage data). An extract of this data has	No	Every outage record in the 'QAPR Comment on Outage' table within the THEOS PC Stats Access database contains a 'RIN Category' field which is populated with the applicable RIN asset group and category combination (as defined in the AER RIN template) for that outage. This 'RIN Category' field is represented by column AW in the 'NPR Outages List Linked Table' worksheet within RINB-2-2-01. Each numerical value in this column corresponds to a unique RIN asset group and category combination. For each asset group and	It is assumed that every asset failure that has occurred has caused an unplanned outage that is recorded by Network Operations staff in THEOS, as per standard procedure.

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
	asset replacements/repairs not included). Failures due to external causes (e.g. thunderstorms) have been excluded. The failures are quantified by the number of outages caused.	been provided in the RINB-2-2-01 spreadsheet, in the 'NPR Outages List Linked Table' worksheet. The 'Category Analysis RIN' worksheet uses this table to count up the number of asset failures for each category. The TransGrid December 2015 Electrical Data Book (RINB-2-2-02) has been used to determine the reactive plant voltages.		category combination, the frequency of the corresponding numerical value is counted and reported across the relevant financial year.	
SCADA, Network Control and Protection Systems	The failure of all SCADA, Network Control and Protection equipment subcategorised by the following types: Protection Assets, Control Assets, Communications Assets and Metering Assets. Note that this category does not include the Material Failures of SCADA as reported in the previous Economic RIN to the AER. Failure of an asset is defined as when the asset causes a fault outage of non-transient nature, or otherwise enters into a state of unfit for use (condition based asset replacements/repairs not included). Failures due to external causes (e.g. thunderstorms) have been excluded. The failures are quantified by the number of outages caused.	Data have been obtained from the 'QAPR Comment on Outage' table from within the THEOS PC Stats Access database stored on TransGrid's shared drive (with secure access for only required staff), which in turn is populated from the outage records in THEOS (the business database application used by Network Operations staff to record outage data). An extract of this data has been provided in the RINB-2-2-01 spreadsheet, in the 'NPR Outages List Linked Table' worksheet. The 'Category Analysis RIN' worksheet uses this table to count up the number of asset failures for each category.	No	Every outage record in the 'QAPR Comment on Outage' table within the THEOS PC Stats Access database contains a 'RIN Category' field which is populated with the applicable RIN asset group and category combination (as defined in the AER RIN template) for that outage. This 'RIN Category' field is represented by column AW in the 'NPR Outages List Linked Table' worksheet within RINB-2-2-01. Each numerical value in this column corresponds to a unique RIN asset group and category combination. For each asset group and category combination, the frequency of the corresponding numerical value is counted and reported across the relevant financial year.	It is assumed that every asset failure that has occurred has caused an unplanned outage that is recorded by Network Operations staff in THEOS, as per standard procedure.

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
2.2.2 SELECTED ASSET CHARACTERISTICS					
Asset Volumes currently in commission					
Conductors	The type of conductor installed on TransGrid's transmission network identified by route length (KM)	TransGrid Spatial System (TSS)	No	Calculations are based on total length of conductors.	Calculations are based on total circuit length of conductor. Where a circuit has a split phase configuration, it is counted twice. This calculation has only been performed on phase conductors not earthwires. Circuit length of conductor is used (twin conductor not counted twice, three phases not counted three times)
Total MVAr By SVC (2.2.2)	Asset volumes: The combined nominal maximum reactive power rating for all SVCs in service at the end of the financial year. This is capacitive for TransGrid SVCs. Asset replacements: The total nominal maximum reactive output of SVCs replaced in the year.	Small number of SVCs manually counted. Ratings from the Electrical Data Book.	No	Manual count. Check: Asset volume = Asset volume in prior year + asset volume installed in current FY- asset volume decommissioned in current FY. Asset replacement column presents the total installed during the FY.	N/A
Total MVARs by Capacitors (2.2.2)	Asset volumes: The combined nominal reactive power rating for all capacitors in service at the end of the financial year. Asset replacements: The combined nominal reactive power rating for all capacitors replaced in the year.	Capacitors identified using asset count data prepared for schedule 5.2. Rating information is cross checked using Operating Diagrams. Manual review of Operating Diagrams for the small number of projects identified	No	Manual count. Check: Asset volume = Asset volume in prior year + asset volume installed in current FY- asset volume decommissioned in current FY. Asset replacement column presents the total installed during the FY.	N/A
Total MVArs by Oil Filled reactors (2.2.2)	Asset volumes: The combined nominal reactive power rating for all oil filled SHUNT reactors in service at the end of the financial year.	Reactors identified using asset count data prepared for schedule 5.2. Rating information is cross checked using Operating Diagrams.	No	Manual count. Check: Asset volume = Asset volume in prior year + asset volume installed in current FY- asset volume decommissioned in current FY.	Series reactors are excluded as they do not provide voltage support for 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
	Asset replacements: The combined nominal reactive power rating for all oil filled SHUNT reactors replaced in the year.			Asset replacement column presents the total installed during the FY.	
Asset Replacements					
Conductors	The type of conductor replaced or installed for line rearrangements for substation replacement projects by route length (KM).	Project Line Schedules	No	These values were calculated from design drawings	Line rearrangements for other project requirements is not counted as replacement expenditure, e.g. for line deviations. Earthwire replacement and reuse of conductors have not been included.
Substation Reactive Plant	Summation of all replaced reactive plant' MVAr rating in FY16/17	Ellipse TRB 601 REPORT; Extract Tracing information Reactive plant capacity as shown on High Voltage Operating Diagrams	No	Summation of all replaced reactive plant' MVAr rating	

7.3.3 Worksheet 2.3 Augex project 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
2.3.1 AUGEX ASSET DATA - SUBSTATIONS					
Expenditure					
Augmentation Project	Augmentation projects are major projects relating to augmentation of the network in order to improve the quality of the network and to meet regulatory obligations.	TransGrid financial records reported from Ellipse and Business Reporting based on "portfolio grouping description" and "asset type description". Portfolio groupings 'Major Pro-Presc Aug-Main Grid', 'Major Pro-Presc Aug – Sub Grid', and 'Major Pro-Presc Strategic Property' are included. AER guidelines require further disclosure of substation ready for service in FY16/17 if the life to date project costs are above $5 million therefore reference is drawn from "asset type description" to classify the projects into three categories "Substations", "Lines" and "Other Assets". The classification is reviewed and verified by Asset Management. For projects ready for service in 2016/17 no substation or transmission line projects were above $5 million therefore no further detailed disclosure is required.	No	Total life to date project costs for each project ready for service in FY16/17 are analysed and there is no project above the $5million benchmark therefore all projects are disclosed in the Non-material projects line. All projects are summarised together and indexed by CPI (CPI inflation is Mar-Mar up to FY14 and Dec-Dec (point to point) from FY15 for the weighted average of eight capital cities as published by the Australian Bureau of Statistics (ABS) (Series ID: A2325846C).	No assumptions or estimations made except for the CPI indexation.
Substation and Project Summary Information	As per AER RIN definition	Project planning documents. No disclosure required for FY16-17. Refer explanation in 'Augmentation Project' above.	No	Values captured from project documents.	No assumptions were made as data was extracted straight from project plans.
Plant & Equipment Volume	As per AER RIN definition	Project planning documents.	No	Values captured from project documents.	No assumptions were made as data was extracted straight from project plans.

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
		No disclosure required for FY16-17. Refer explanation in 'Augmentation Project' above.			
Plant & Equipment Expenditure	Procurement costs of the plant / equipment.	TransGrid financial records reported from Ellipse and Business Reporting. Categorisation of costs is based on expense element classification in Ellipse. No disclosure required for FY16-17. Refer explanation in 'Augmentation Project' above.	No	Detailed project transaction report is run for each project, and expenditures for each project are analysed to obtain the transformer, switchgear, reactive plant and other plant & equipment costs.	No assumptions were made as data was extracted straight from Ellipse and Business Reporting.
Installation Labour Volume	The number of hours allocated to labour expenditure	TransGrid financial records reported from Ellipse and Business Reporting. No disclosure required for FY16-17. Refer explanation in 'Augmentation Project' above.	No	Detailed project transaction report is run for each project which includes the internal labour hours costed to the project.	Categorisation of labour volume is based on the expense element classification in Ellipse.
Installation Labour Expenditure	TransGrid labour costs directly charged to the work orders of the Augmentation projects	TransGrid financial records reported from Ellipse and Business Reporting. Categorisation of costs is based on expense element classification in Ellipse. No disclosure required for FY16-17. Refer explanation in 'Augmentation Project' above.	No	Detailed project transaction report is run for each project, and expenditures for each project are analysed to obtain the labour costs.	No assumptions were made as data was extracted straight from Ellipse and Business Reporting.
Expenditure – Civil Works	Costs allocated to civil works including buildings, earthworks, drainage, landscaping, roads and fencing.	TransGrid financial records reported from Ellipse and Business Reporting. Categorisation of costs is based on expense element classification in Ellipse. No disclosure required for FY16-17.	No	Detailed project transaction report is run for each project, and expenditures for each project are analysed to obtain the civil works costs.	No assumptions were made as data was extracted straight from Ellipse and Business Reporting.

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
		Refer explanation in 'Augmentation Project' above.			
Expenditure – Other Direct	Direct costs charged to the Augmentation projects other than plant & equipment procurement, labour and civil works.	TransGrid financial records reported from Ellipse and Business Reporting. Categorisation of costs is based on expense element classification in Ellipse. No disclosure required for FY16-17. Refer explanation in 'Augmentation Project' above.	No	Detailed project transaction report is run for each project, and expenditures for each project are analysed to obtain other direct costs.	No assumptions were made as data was extracted straight from Ellipse and Business Reporting.
Years Incurred	The period the augmentation project took place.	Project documentation No disclosure required for FY16-17. Refer explanation in 'Augmentation Project' above.	No	Information from relevant project documentation.	N/A
Related Party Contract Margin	The Regulatory Information Notice issued under Division 4 of Part 3 of the National Electricity (New South Wales) Law dated 7 March 2014 included definitions and Interpretation which have been used to guide the assessment for Related Party. The dollar amount of profit a Related Party gains above its total actual costs under a Related Party Contract with TransGrid. This profit may include margins, management fees or incentive payments.	TransGrid does not have related party contracts in relation to augmentation projects.	No	TransGrid does not have related party contracts in relation to augmentation projects.	TransGrid does not have related party contracts in relation to augmentation projects.
Related Party Contract Total	The Regulatory Information Notice issued under Division 4 of Part 3 of the National Electricity (New South Wales) Law dated 7 March 2014 included definitions and Interpretation which have been used to guide the assessment for Related Party.	TransGrid does not have related party contracts in relation to augmentation projects.	No	TransGrid does not have related party contracts in relation to augmentation projects.	TransGrid does not have related party contracts in relation to augmentation projects.

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
	Total expenditures on finalised Contract between TransGrid and a Related Party for the provision of goods and/or services				
Non Related Party Contracts	This category is defined as Contracts that do not fall within the definition of a Related Party Contract.	TransGrid financial records reported from Ellipse and Business Reporting. No disclosure required for FY16-17. Refer explanation in 'Augmentation Project' above.	No	Detailed project transaction report is run for each project, and expenditures for each project are analysed to obtain other direct costs.	Categorisation of costs is based on expense element classification in Ellipse and plant and equipment costs reallocated as appropriate.
Land Purchases Expenditure	Expenditures incurred to acquire land	TransGrid financial records reported from Ellipse and Business Reporting. Categorisation of costs is based on expense element classification in Ellipse. No disclosure required for FY16-17. Refer explanation in 'Augmentation Project' above.	No	Detailed project transaction report is run for each project, and expenditures for each project are analysed to obtain land purchase costs.	No assumptions were made as data was extracted straight from Ellipse and Business Reporting.
Non material projects	Augmentation projects ready for service in FY16/17 where the total project cost is less than $5 million	Refer 'Augmentation Project'	No	Refer 'Augmentation Project'	Refer 'Augmentation Project'
Plant & Equipment Expenditure & Volume					
Transformers [Units added]	As per AER RIN definition	Project documentation No disclosure required for FY16-17. Refer explanation in 'Augmentation Project' above.	No	There is no AUGEX projects that greater than 5 million in this financial year	N/A
Transformers [MVA added]	As per AER RIN definition	Project documentation No disclosure required for FY16-17. Refer explanation in 'Augmentation Project' above.	No	There is no AUGEX projects that greater than 5 million in this financial year	N/A
Switchgear [Insulation]	As per AER RIN definition	Project documentation No disclosure required for FY16-17. Refer explanation in 'Augmentation	No	There is no AUGEX projects that greater than 5 million in this financial year	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
		Project' above.			
Switchgear [Units added]	As per AER RIN definition	Project documentation No disclosure required for FY16-17. Refer explanation in 'Augmentation Project' above.	No	There is no AUGEX projects that greater than 5 million in this financial year	N/A
Reactive Plant [Plant Type]	As per AER RIN definition	Project documentation No disclosure required for FY16-17. Refer explanation in 'Augmentation Project' above.	No	There is no AUGEX projects that greater than 5 million in this financial year	N/A
Reactive Plant [Units Added]	As per AER RIN definition	Project documentation No disclosure required for FY16-17. Refer explanation in 'Augmentation Project' above.	No	There is no AUGEX projects that greater than 5 million in this financial year	N/A
Installation (Labour)	As per AER RIN definition	Project documentation No disclosure required for FY16-17. Refer explanation in 'Augmentation Project' above.	No	There is no AUGEX projects that greater than 5 million in this financial year	N/A
2.3.2 AUGEX ASSET DATA - LINES					
Expenditure					
Total Direct Expenditure - Non-material projects	Augmentation projects are major projects relating to augmentation of the network in order to improve the quality of the network and to meet regulatory obligations. AER guidelines require further disclosure of lines ready for service in FY16/17 if the life to date project costs are above $5 million therefore reference is drawn from "asset type description" to classify the projects into three categories "Substations", "Lines" and "Other Assets". The classification is reviewed and verified by Asset Management.	TransGrid financial records reported from Ellipse and Business Reporting based on "portfolio grouping description" and "asset type description". Portfolio groupings 'Major Pro-Presc Aug-Main Grid', 'Major Pro-Presc Aug – Sub Grid', and 'Major Pro-Presc Strategic Property' are included.	No	Total life to date project costs for each project ready for service in FY16/17 are analysed and there is no project above the $5million benchmark therefore all projects are disclosed in the Non-material projects line. All projects are summarised together and indexed by CPI (CPI inflation is Mar-Mar up to FY14 and Dec-Dec (point to point) from FY15 for the weighted average of eight capital cities as published by the Australian Bureau of Statistics (ABS) (Series ID: A2325846C).	No assumptions or estimations made except for the CPI indexation.

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
Line and Project Summary					
Line ID					
Project Id	Project ID defined by TransGrid	Project planning documents / Project Line schedules.	No	Values captured from project documents and schedules	There were no material line augmentation projects closed out in 2016/17.
Project Type	The type of augmentation work completed on the transmission line.	Project planning documents / Project Line schedules.	No	Values captured from project documents and schedules	No assumptions were made as data was extracted straight from project plans and schedules. There were no material line augmentation projects closed out in 2016/17.
Project Trigger	Reason for Augex project	Project planning documents / Project Line schedules.	No	Value captured from project documentation.	No assumptions were made as the answer was extracted straight from project documentation.
Voltage (KV)	The rated operation voltage of the line or cable installed.	Project planning documents / Project Line schedules.	No	Values captured from project documents and schedules	No assumptions were made as data was extracted straight from project plans and schedules. There were no material line augmentation projects closed out in 2016/17.
Route line length added (KM)	Net route length of lines or cables added.	Line Schedules / Cable installation records.	No	Value captured from line schedules or cable installation records.	No assumptions were made as data was extracted straight from project plans and schedules. There were no material line augmentation projects closed out in 2016/17.
Plant & Equipment Expenditure & Volume					
Towers/Poles (including Structures and civil works) [Configuration]	The structure configuration resulting from the augmentation project.	Project planning documents / Project Line schedules.	No	Values captured from project documents and schedules.	No assumptions were made as data was extracted straight from project plans and schedules. There were no material line augmentation projects closed out in 2016/17.
Towers/Poles (including Structures and civil works) [Towers/Poles	The number of structures added to TransGrid's network due to this augmentation project.	Project planning documents / Project Line schedules.	No	Values captured from project documents and schedules.	No assumptions were made as data was extracted straight from project plans and schedules. There were no material line augmentation projects closed out in

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
Added]					2016/17.
Towers/Poles (including Structures and civil works) [Towers/Poles Upgraded	The number of structures upgraded in TransGrid's network due to this augmentation project.	Project planning documents / Project Line schedules.	No	Values captured from project documents and schedules.	No assumptions were made as data was extracted straight from project plans and schedules. There were no material line augmentation projects closed out in 2016/17.
Lines and Cables [Type]	Drop box choice of Underground Cable or Overhead Line. Selected as appropriate.	Project planning documents / Project Line schedules.	No	Values captured from project documents and schedules.	No assumptions were made as data was extracted straight from project plans and schedules. There were no material line augmentation projects closed out in 2016/17.
Lines and Cables [Rating (MVA) Pre]	The normal ratings for the transmission line or cable prior to the augmentation being undertaken with the season used based upon the maximum demand time for that year.	Grid operating manuals: OM 304 RATINGS OF MAIN GRID CIRCUITS OM 305 RATINGS OF SUBSYSTEM CIRCUITS IN NORTHERN REGION OM 307 RATINGS OF SUBSYSTEM CIRCUITS IN SOUTHERN REGION OM 306 RATINGS OF SUBSYSTEM CIRCUITS IN CENTRAL REGION	No	Values captured from TransGrid operating manuals.	For the pre ratings it is necessary to obtain superseded data from previous versions of the grid operating manuals from System operations. There were no material line augmentation projects closed out in 2016/17.
Lines and Cables [Rating (MVA) Post]	The normal ratings for the transmission line or cable after the augmentation being undertaken with the season used based upon the maximum demand time for that year.	Grid operating manuals: OM 304 RATINGS OF MAIN GRID CIRCUITS OM 305 RATINGS OF SUBSYSTEM CIRCUITS IN NORTHERN REGION OM 307 RATINGS OF SUBSYSTEM CIRCUITS IN SOUTHERN REGION OM 306 RATINGS OF SUBSYSTEM CIRCUITS IN CENTRAL REGION	No	Values captured from TransGrid operating manuals.	There were no material line augmentation projects closed out in 2016/17.
Lines and Cables	The long time contingency ratings for	Grid operating manuals:	No	Values captured from TransGrid	For multiple circuit lines of 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
[N-1 Emergency Rating (MVA) Pre]	the transmission line or cable prior to the augmentation being undertaken with the season used based upon the maximum demand time for that year.	OM 304 RATINGS OF MAIN GRID CIRCUITS OM 305 RATINGS OF SUBSYSTEM CIRCUITS IN NORTHERN REGION OM 307 RATINGS OF SUBSYSTEM CIRCUITS IN SOUTHERN REGION OM 306 RATINGS OF SUBSYSTEM CIRCUITS IN CENTRAL REGION		operating manuals.	same voltage the ratings have been added together. There were no material line augmentation projects closed out in 2016/17.
Lines and Cables [N-1 Emergency Rating (MVA) Post]	The long time contingency ratings for the transmission line or cable after the augmentation being undertaken with the season used based upon the maximum demand time for that year.	Grid operating manuals: OM 304 RATINGS OF MAIN GRID CIRCUITS OM 305 RATINGS OF SUBSYSTEM CIRCUITS IN NORTHERN REGION OM 307 RATINGS OF SUBSYSTEM CIRCUITS IN SOUTHERN REGION OM 306 RATINGS OF SUBSYSTEM CIRCUITS IN CENTRAL REGION	No	Values captured from TransGrid operating manuals.	For multiple circuit lines of the same voltage the ratings have been added together. There were no material line augmentation projects closed out in 2016/17.
Circuit KM added	The additional circuit length added to the TransGrid's network due to the augmentation project.	Project planning documents / Project Line schedules.	No	Values captured from project documents and schedules.	No assumptions were made as data was extracted straight from project plans and schedules. There were no material line augmentation projects closed out in 2016/17.
Installation (Labour)	The number of hours allocated to labour expenditure	TransGrid financial records reported from Ellipse and Business Reporting.	No	Detailed project transaction report is run for each project, and expenditures for each project are analysed to obtain the labour costs.	Categorisation of costs is based on expense element classification in Ellipse.
Non material projects	Augex projects less than $5M	TransGrid financial records reported from Ellipse and Business Reporting.	No	Refer to 'Total Direct Expenditure - Non-material projects' above.	Refer to 'Total Direct Expenditure - Non-material projects' above.

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
2.3.4 AUGEX - TOTAL EXPENDITURE					
Expenditure					
Substations Lines Other assets Total Augmentation capex	Major projects relating to augmentation of the network in order to improve the quality of the network and to meet regulatory obligations.	TransGrid financial records reported from Ellipse and Business Reporting based on "portfolio grouping description" and "asset type description". Portfolio groupings 'Major Pro-Presc Aug-Main Grid', 'Major Pro-Presc Aug – Sub Grid', and 'Major Pro-Presc Strategic Property' are included. AER guidelines require further disclosure of substation or transmission line projects costs incurred in FY16/17 therefore reference is drawn from "asset type description" to classify the total projects costs incurred in FY16/17 to three categories "Substations", "Lines" and "Other Assets". The classification is reviewed and verified by Asset Management.	No	Projects are extracted from Ellipse Finance cube. Reference is made to the Portfolio Grouping in Ellipse and other relevant sources to determine the project category for reporting in RIN.	No assumptions were made as data was extracted straight from Ellipse and Business Reporting.

7.3.4 Worksheet 2.5 Connections

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
2.5.1 EXPENDITURE ON CONNECTION PROJECTS					
Connection Project	Capital projects relating to new assets, secondary system changes or communications augmentations in response to requests from regulated customers, including other Network Service Providers. Total project costs are reported for connection projects available for service in FY16/17.	Connection projects are extracted from TransGrid's financial records (using Ellipse Finance cube) based on Portfolio Grouping of "Major Proj-Pres Connection". Connection projects are reconciled to 2016-17 Regulatory Accounts and RAB.	No	N/a	This is not applicable; projects are directly extracted from the Finance cube.
Direct Materials Costs	Raw materials, standard parts, specialised parts and sub-assemblies required in the execution of Connection projects.	Direct material costs are extracted using the Finance cube, information is further drilled down to Cost Category "Materials" is used to obtain the Direct Materials Costs. Direct material costs are reported on a nominal basis.	No	N/a	Overhead (support cost allocated) is excluded from the amounts reported as per AER requirements. Direct material costs are reported as per recorded in the project ledger.
Direct Labour Expenditure	Labour costs directly charged to the work orders of the Connection projects.	Direct material costs are extracted using the Finance cube, information is further drilled down to Cost Category for each Connection project. Cost category "Labour" is used to obtain the Direct Labour Costs. Direct labour costs are reported on a nominal basis.	No	N/a	Overhead (support cost allocated) is excluded from the amounts reported as per AER requirements. Direct labour costs are reported as per recorded in the project ledger.
2.5.2 DESCRIPTION OF CONNECTION PROJECTS					
Connection Rating (MVA)	Normal cyclic rating	Operating manuals, ratings advice, or project initiation documents (such as Project Approval Documents (PAD), Needs Statements).	No	Information obtained from rating advices, relevant operating manuals and project documents.	The lowest normal rating (for the seasons or months for which ratings were given in an Operating Manual) were used. Line rating advice data was used to calculate the rating if not already in an Operating Manual.
Connection Voltage (KV)	Nominal voltage	Operating manuals or project initiation documents (such as Project Approval Documents (PAD), Needs	No	Information obtained from rating advices, relevant operating manuals, project documents and	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
		Statements), substation drawings.		substation drawings.	
Underground/ Overhead	Whether the Connection point (entry or exit) is underground or overhead	Project documentation including Project Approval Documents (PADs), Need Statements, HV Operating Diagrams.	No	Information obtained from project documents and substation drawings.	The physical point at which the asset ceases to be a TransGrid asset and becomes a customer (e.g. Essential Energy) asset.
Year connection project completed	Financial year end date that the project is complete and the asset is in service.	TransGrid financial records reported from Ellipse and Business Reporting. Project documentation.	No	"Actual Finish Date" is obtained from the Finance Cube Report, in conjunction with the Project Close Out Report, Project Management Report and Ellipse Project Information, which is signed off by Manager/Portfolio Management.	N/A

7.3.5 Worksheet 2.6 Non-network 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
2.6.1 NON-NETWORK EXPENDITURE					
OPEX					
IT & Communications					
Client device expenditure	Expenditure on access devices including (virtual) desktops, laptops, tablets and smartphones	TransGrid financial records reported from Ellipse	No	Summation of all financial transactions for expense element 287	All Client device expenditure is recorded against (account 287)
Recurrent expenditure	Expenditure that is periodic and required to support continuing IT Service delivery.			All operating expenditure not recorded against account 287 or work orders associated with one off business initiatives	Operating expenditure not specifically categorised against work orders raised for business initiatives is recurrent in nature.
Non-recurrent expenditure	Expenditure of a one-off nature associated with a business initiative that is not a capital project			All operating expenditure recorded against work orders associated with one off business initiatives	Non-recurrent - expenditure on Operating Model Review and ACE initiatives
Motor Vehicles					
Car	Motor Vehicle Opex by vehicle type	TransGrid's Regulatory Accounts TransGrid Fleet Database	No	OPEX costs are based on actual costs incurred in FY16/17. Data was obtained from "Regulated" account codes 585 and 756 with expense codes 266 (Fuel), 269 (Tyres), 270 (Spare Parts), 317 (Purchased Services) and 439 (Maintenance). Transaction data was extracted from the Fleet database to enable the actual	Depreciation and insurance costs are excluded from the operating costs on the basis that these operating costs are accounted for elsewhere in the RIN templates. 100% Private Use Contract Officer vehicles are excluded.
Light commercial vehicle					
Elevated work platform (LCV)					
Elevated work platform (HCV)					
Heavy commercial vehicle					

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
				costs from TransGrid Accounts to be proportioned by Asset Category.	
Buildings and Property					
Total buildings and property expenditure	Building and Property operating expenditure classified as non-network in TransGrid's regulatory accounting statements.	TransGrid financial records reported from Ellipse and Business Reporting. TransGrid includes other non-network opex as overheads (as in RIN 2.1 Expenditure Summary), hence the amount here is zero.	No	N/a	N/a
Other					
Other expenditure	Other non-network operating expenditures	TransGrid financial records reported from Ellipse and Business Reporting. TransGrid includes majority of other non-network opex as overheads (as in RIN 2.1 Expenditure Summary), with the exception of opex costs associated with miscellaneous fleet assets.	No	N/a	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
CAPEX					
IT & Communications					
Client device expenditure	Capital expenditure on Non-Network IT by 'Client Device', 'Recurrent' and 'Non-Recurrent' sub-categories. Prepared on an as commissioned basis, in nominal $.	TransGrid financial records reported from Ellipse and Business Reporting. Information was extracted from Ellipse Finance Data Cube based on portfolio grouping "Support – IT".	No	Information was extracted from the Finance Data Cube. Figures are actual balances and exclude capitalised support cost (element 400). Each project was classified to the recurrent, non-recurrent or client device categories.	Each project is allocated to an ICT category based on the nature of the project. The ICT categories map to a RIN category as per the table below: End User Infrastructure - Client Device Expenditure Midrange - Recurrent Expenditure Applications - Non-Recurrent LAN / RAS - Recurrent Expenditure Gateway - Recurrent Expenditure WAN - Recurrent Expenditure ICT Management - Non-Recurrent Mainframe - Recurrent Expenditure Storage - Recurrent Expenditure Application projects and ICT Management were classified as non-recurrent expenditure as these projects establish new IT services. End user infrastructure is Client Device Expenditure. Remainder are Recurrent Expenditure as these are cyclical replacement projects (i.e. upgrades/replacements of the existing IT Infrastructure).
Recurrent expenditure					
Non-recurrent expenditure					
Motor Vehicles					
Car	Motor Vehicle Capex by vehicle type	TransGrid's Regulatory Accounts TransGrid Fleet Database	No	Capital expenditure for FY16/17 was obtained from the Regulatory Accounts for 'Mobile Plant' (5739) and 'Motor Vehicles' (5777) categories. The value of motor vehicles are then adjusted to reduce the rebates received from suppliers.	For project numbers starting with 5739, assets identified as an Elevated Work Platform (LCV and HCV) or Heavy Commercial Vehicle are separated with all other assets deemed to be a Miscellaneous Plant and defined as "Other". For project numbers starting with 5777, only transactions with a valid purchase order number are deemed to be an actual capital purchase, with other transactions excluded as they are deemed to be journals or accruals. Assets with a Vehicle
Light commercial vehicle					

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
Elevated work platform (LCV)				'Motor Vehicles' include the Asset Categories Car and Light Commercial Vehicle, and 'Mobile Plant' includes Asset Categories Elevated Work Platform (LCV and HCV) and Heavy Commercial Vehicle	Class of "Light Commercial" or a Vehicle Model of "Ranger", "Amarok" or "Landcruiser" are deemed to be a Light Commercial Vehicle with all other assets treated as a Car. 100% Private Use Contract Officer vehicles are excluded. Where costs cannot be accurately allocated to an Asset Category, the cost is allocated to Miscellaneous Plant "Other" for 5739 and Light Commercial Vehicle for 5777. Verification done by Finance and variations adjusted to align with Finance figures - The summary identified a difference of $524.02 in project 5739. The 5739 variation relates to support costs and as such has been removed from vehicle category "Miscellaneous Plant" as this is where most effort was applied in 2016/17.
Elevated work platform (HCV)					
Heavy commercial vehicle					
Buildings and Property					
Total buildings and property expenditure	Building and Property capital expenditure classified as non-network in TransGrid's regulatory accounting statements. This is reported under portfolio grouping "Support-Facilities & Buildings". Due to the nature of the asset class, as incurred is considered the same as commissioned.	TransGrid financial records reported from Ellipse and Business Reporting. Information was extracted from the Finance Data Cube based on portfolio grouping "Support-Facilities & Buildings".	No	N/A	No assumptions are made
Other					
Other expenditure	Miscellaneous Plant, fleet and Office Machines reported included in portfolio grouping	TransGrid financial records reported from Ellipse and Business Reporting based on	No	N/A	No assumptions are made on "Support - plant & equipment"; classification of motor vehicles as "Other expenditure" are based on assessment by Fleet team using methodology described in "Motor Vehicles - CAPEX" section above.

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
	"Support – Plant & Equipment" and items applicable within "Support – Motor Vehicles"	portfolio grouping "Support - Plant & Equipment" and "Support - Motor Vehicles". Information was extracted from the Finance Data Cube.			
2.6.2 ANNUAL DESCRIPTOR METRICS - IT & COMMUNICATIONS EXPENDITURE					
IT & COMMUNICATIONS					
Employee Numbers	Employees engaged in prescribed Transmission services work	Ellipse HR system	Yes	Employees (FTE rather than headcount) in the Business Revenue and Growth and Telecommunications Business unit have been excluded	The value is estimated as the actual allocations of staff between prescribed and non-prescribed is variable. Headcount is not appropriate as part time employees cannot be directly compared across organisations.
User Numbers	Personnel with access to TransGrid IT Services engaged in prescribed Transmission services work	Active Directory	Yes	Users includes only active P (permanent) and C (contractor) accounts and is reduced to exclude non-prescribed users.	The value is estimated as the actual allocations of staff between prescribed and non-prescribed is variable.
Number of devices	Access devices including (virtual) desktops, laptops, tablets and smartphones	TransGrid Configuration Management Database	Yes	Number reduced to exclude non prescribed employees	As the database is live and manually maintained data quality is not 100% so the number is an estimate. Only deployed devices are counted and the device status in particular may not be accurate.

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
2.6.3 ANNUAL DESCRIPTOR METRICS - MOTOR VEHICLES					
Asset Category (Motor Vehicles)	Standalone Elevated Work Platforms are defined as Elevated Work Platform (LCV), whereas elevated work platforms mounted to a truck are defined as an Elevated Work Platform (HCV) Mobile plant items such as trailers, excavators, mowers, tractors, forklifts etc. are defined as "Other" and are shown separately.	TransGrid Fleet Database	No	Data was obtained from the TransGrid Fleet database for active vehicles as at 30/06/17.	Includes replaced vehicles that were active or on short term loan. Mobile plant items such as trailers, excavators, mowers, tractors, forklifts etc. plus lifting appliances (cranes and hoists) and other vehicle mounted plant items are defined as "Other" and are have been excluded from all metrics. Capital and Operating costs for "Other" items have been provided as a separate line item. 100% Private Use Contract Officer vehicles are excluded from all data as these are unregulated assets.
CAR					
Average kilometres travelled	Average Kilometres travelled by vehicle type	TransGrid Fleet Database	No	Average kilometres for vehicle types from TransGrid Fleet Database during FY16/18	Annual kilometres are based on vehicles fitted with an odometer. 100% Private Use Contract Officer vehicles are excluded.
Number purchased	Total number of vehicles purchased	TransGrid Fleet Database	No	Number of vehicle purchases by vehicle type recorded in TransGrid Fleet Database.	100% Private Use Contract Officer vehicles are excluded.
Number leased	Total number of vehicles leased	No vehicles leased	No	N/a	N/a
Number in fleet	Total number of vehicles in the fleet by vehicle type	TransGrid Fleet Database	No	Total vehicles by vehicle type recorded in TransGrid Fleet Database and active as at the 30th June 2017.	100% Private Use Contract Officer vehicles are excluded. Vehicles that have been removed from the TransGrid Fleet and sent for sale have been included in the numbers as they are still active in the Fleet database.

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
Proportion of total fleet expenditure allocated as regulatory expenditure	Proportion of the fleet (by vehicle type) that are allocated to regulatory expenditure	TransGrid Fleet Database	No	100% cost allocation has been assumed on the basis that 100% Private Use vehicles have been excluded (Non Regulated Assets)	100% Private Use Contract Officer vehicles are excluded. As there is no means of determining the type of work performed whilst using a motor vehicle and that as the majority of the work performed is prescribed, the assumption was made that all vehicle usage is related to prescribed work.
LIGHT COMMERCIAL VEHICLE					
Average kilometres travelled	Average Kilometres travelled by vehicle type	TransGrid Fleet Database	No	Average kilometres for vehicle types from TransGrid Fleet Database during FY16/18	Annual kilometres are based on vehicles fitted with an odometer. 100% Private Use Contract Officer vehicles are excluded.
Number purchased	Total number of vehicles purchased	TransGrid Fleet Database	No	Number of vehicle purchases by vehicle type recorded in TransGrid Fleet Database.	100% Private Use Contract Officer vehicles are excluded.
Number leased	Total number of vehicles leased	No vehicles leased	No	n/a	N/a
Number in fleet	Total number of vehicles in the fleet by vehicle type	TransGrid Fleet Database	No	Total vehicles by vehicle type recorded in TransGrid Fleet Database and active as at the 30th June 2017.	100% Private Use Contract Officer vehicles are excluded. Vehicles that have been removed from the TransGrid Fleet and sent for sale have been included in the numbers as they are still active in the Fleet database.
Proportion of total fleet expenditure allocated as regulatory expenditure	Proportion of the fleet (by vehicle type) that are allocated to regulatory expenditure	TransGrid Fleet Database	No	100% cost allocation has been assumed on the basis that 100% Private Use vehicles have been excluded (Non Regulated Assets)	100% Private Use Contract Officer vehicles are excluded. As there is no means of determining the type of work performed whilst using a motor vehicle and that as the majority of the work performed is prescribed, the assumption was made that all vehicle usage is related to prescribed work.
ELEVATED WORK PLATFORM (LCV)					
Average kilometres travelled	Average Kilometres travelled by vehicle type	TransGrid Fleet Database	No	Average kilometres for vehicle types from TransGrid Fleet Database during FY16/18	Annual kilometres are based on vehicles fitted with an odometer. 100% Private Use Contract Officer vehicles are 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
Number purchased	Total number of vehicles purchased	TransGrid Fleet Database	No	Number of vehicle purchases by vehicle type recorded in TransGrid Fleet Database.	100% Private Use Contract Officer vehicles are excluded.
Number leased	Total number of vehicles leased	No vehicles leased	No	N/a	N/a
Number in fleet	Total number of vehicles in the fleet by vehicle type	TransGrid Fleet Database	No	Total vehicles by vehicle type recorded in TransGrid Fleet Database and active as at the 30th June 2017.	100% Private Use Contract Officer vehicles are excluded. Vehicles that have been removed from the TransGrid Fleet and sent for sale have been included in the numbers as they are still active in the Fleet database.
Proportion of total fleet expenditure allocated as regulatory expenditure	Proportion of the fleet (by vehicle type) that are allocated to regulatory expenditure	TransGrid Fleet Database	No	100% cost allocation has been assumed on the basis that 100% Private Use vehicles have been excluded (Non Regulated Assets)	100% Private Use Contract Officer vehicles are excluded. As there is no means of determining the type of work performed whilst using a motor vehicle and that as the majority of the work performed is prescribed, the assumption was made that all vehicle usage is related to prescribed work.
ELEVATED WORK PLATFORM (HCV)					
Average kilometres travelled	Average Kilometres travelled by vehicle type	TransGrid Fleet Database	No	Average kilometres for vehicle types from TransGrid Fleet Database during FY16/18	Annual kilometres are based on vehicles fitted with an odometer. 100% Private Use Contract Officer vehicles are excluded.
Number purchased	Total number of vehicles purchased	TransGrid Fleet Database	No	Number of vehicle purchases by vehicle type recorded in TransGrid Fleet Database.	100% Private Use Contract Officer vehicles are excluded.
Number leased	Total number of vehicles leased	No vehicles leased	No	N/a	N/a
Number in fleet	Total number of vehicles in the fleet by vehicle type	TransGrid Fleet Database	No	Total vehicles by vehicle type recorded in TransGrid Fleet Database and active as at the 30th June 2017.	100% Private Use Contract Officer vehicles are excluded. Vehicles that have been removed from the TransGrid Fleet and sent for sale have been included in the numbers as they are still active in the Fleet database.

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
Proportion of total fleet expenditure allocated as regulatory expenditure	Proportion of the fleet (by vehicle type) that are allocated to regulatory expenditure	TransGrid Fleet Database	No	100% cost allocation has been assumed on the basis that 100% Private Use vehicles have been excluded (Non Regulated Assets)	100% Private Use Contract Officer vehicles are excluded. As there is no means of determining the type of work performed whilst using a motor vehicle and that as the majority of the work performed is prescribed, the assumption was made that all vehicle usage is related to prescribed work.
HEAVY COMMERCIAL VEHICLE					
Average kilometres travelled	Average Kilometres travelled by vehicle type	TransGrid Fleet Database	No	Average kilometres for vehicle types from TransGrid Fleet Database during FY16/18	Annual kilometres are based on vehicles fitted with an odometer. 100% Private Use Contract Officer vehicles are excluded.
Number purchased	Total number of vehicles purchased	TransGrid Fleet Database	No	Number of vehicle purchases by vehicle type recorded in TransGrid Fleet Database.	100% Private Use Contract Officer vehicles are excluded.
Number leased	Total number of vehicles leased	No vehicles leased	No	N/a	N/a
Number in fleet	Total number of vehicles in the fleet by vehicle type	TransGrid Fleet Database	No	Total vehicles by vehicle type recorded in TransGrid Fleet Database and active as at the 30th June 2017.	100% Private Use Contract Officer vehicles are excluded. Vehicles that have been removed from the TransGrid Fleet and sent for sale have been included in the numbers as they are still active in the Fleet database.
Proportion of total fleet expenditure allocated as regulatory expenditure	Proportion of the fleet (by vehicle type) that are allocated to regulatory expenditure	TransGrid Fleet Database	No	100% cost allocation has been assumed on the basis that 100% Private Use vehicles have been excluded (Non Regulated Assets)	100% Private Use Contract Officer vehicles are excluded. As there is no means of determining the type of work performed whilst using a motor vehicle and that as the majority of the work performed is prescribed, the assumption was made that all vehicle usage is related to prescribed work.

7.3.6 Worksheet 2.7 Vegetation Management

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
2.7.1 DESCRIPTOR METRICS BY ZONE					
Route line length within zone	The length of line routes. Where a line is a double circuit or split phase line, 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.	Only a single vegetation zone is used, as TransGrid's network is not subject to different systems or regulations for different areas of the state. No underground cable route length is included.
Number of maintenance spans	Where the contractor has claimed and been paid for maintenance work in a span, or where self-performed work has been undertaken during the financial year, it is counted as a maintenance span.	The data is sourced from the vegetation maintenance contractors who are contracted to perform maintenance work for TransGrid, in addition to self-performed work by TransGrid easement officers. The contractors prepare an invoice input spreadsheet as part of their invoices submitted for vegetation maintenance. In regards to self-performed work, 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 "average number of trees per maintenance span" for details of the scoping and invoicing process. Where TransGrid easement officers have trimmed lopped or sprayed a tree or trees during a line inspection and this information has been recorded by them in their work logs, it will also be included as a maintenance span. The data was cross-checked to ensure a span was not counted twice if it was noted on multiple invoices of internal works schedule.	N/A
Total length of maintenance spans	The total length of the spans counted as Maintenance Spans.	Span lengths are sourced from TransGrid Spatial System (TSS).	No	A sum of span lengths for each span counted as a Maintenance Span.	The whole span length is counted for each Maintenance Span. TransGrid does not directly record the length of the areas that were maintained in the spans.
Average number of trees per	Average number of trees per maintenance span is	Determined during scoping stage of works (described in	Yes	The nature of vegetation maintenance makes providing actual tree counts not	When this estimate was not completed the contractor invoice was used.

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
maintenance span	the number of trees maintained in that span, as trees not maintained are not counted.	detail in this item) tree count estimates are included on the work plans. If this tree count estimate was not available then the number of trees was calculated using the contractor invoices, as the tree cutting rates are based upon hectare rates and hourly rates. The data is sourced from the vegetation maintenance contractors who prepare an invoice input spreadsheet (schedule of rates) as part of their invoices submitted for vegetation maintenance. These input spreadsheets also contain the scoping stage tree counts noted on the work plan. Where TransGrid staff has maintained vegetation during a line inspection this information has been recorded it has been included in the tree counts. The basis for the internal counts is based off defect work orders and diary entries. Accounts Payable reports provided lists of invoices paid on each vegetation management work order. This was reconciled against		practical. Dense vegetation maintained by mulching / slashing can remove tens of thousands of 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	For hectare rates, the following vegetation crown densities apply: • Scattered is <5% coverage, use 3% • Light is 5-15% coverage, use 10% • Medium is 15-25% coverage, use 20% • Heavy (or high) is >25% coverage, use 40% as an average • Slashing is taken to be 40% coverage as slashing can only be used where trunks are less than 75mm thick at the cutting level. Vegetation crown sizes are estimated as the following: • Hectare Hand Clearing – 4 m2 crown – 2500 trees/hectare @100% coverage • Hectare Mulching – 2 m2 crown – 5000 trees/hectare @100% coverage • Hectare Slashing or Spraying – 2 m2 crown – 5,000 trees/hectare @100% coverage For hourly rates, the following progress is estimated: • Hand clearing – 10 trees per hour • 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 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

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
		invoice spreadsheets to ensure that the complete list of invoices was used in the preparation.		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 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.	
Length of vegetation corridors	The length of land upon which vegetation is maintained not including grassland/farmland and gullies where vegetation is not maintained.	TransGrid Spatial System (TSS). Vegetation, ground and conductor survey data identified from Aerial Laser Surveys LiDAR.	Yes	TransGrid does not currently directly record vegetation types on easements or spans where no vegetation management is required. Vegetation that will not encroach clearances is unable to be excluded. As estimate is therefore provided based on LIDAR and NSW LPI data.	It is assumed that a Gully is an area where the span length is larger than 300m and the approximate ground height is lower than approximate conductor sag + 10m. It is assumed that a "vegetated zone" is any area which has at least 1 vegetation survey point within 1m2

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
				This data is loaded against TransGrid's easements in the TSS GIS application and the total length is calculated. Vegetation can exist in gullies without encroaching clearances so where a gully exists (from LPI data) in a span then the whole span is excluded from the vegetated length (unable to determine where vegetation maintenance zone ends). This would somewhat offset the lengths of vegetated corridors with low growing vegetation that does not require maintenance.	
Average width of vegetation corridors	The average width of land along which vegetation is maintained.	TransGrid Spatial System (TSS).	Yes	TransGrid does not directly record vegetation corridor widths for every section of lines. The average width of vegetation corridors is calculated as the total area of TransGrid's standard easement widths for each voltage level divided by the route line length for the vegetated areas above.	It is assumed that combined easements which occur generally in the vicinity of substations does not materially affect the average width of vegetation corridors and has not been considered in the calculation.
Average frequency of cutting cycle	The straight average of the vegetation maintenance period for each transmission line for the appropriate year.	Easement Maintenance Plan contains the maintenance frequency tables.	Yes	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, this parameter would also need to consider non-routine (defect) works. This makes providing an actuals average frequency down to the span level onerous. The vegetation maintenance cycle in years (noted on a line by line basis) was taken from the Maintenance Plan	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
				and a weighted average (number of spans based) was calculated.	
2.7.2 EXPENDITURE METRICS BY ZONE					
Tree Trimming	Expenditure that occurs in the management of individual trees.	TransGrid's Regulatory Accounts 'Land & Easement Maintenance' Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Easement Contractor Invoices The data used to disaggregate the total is sourced from Materials and expenses recorded against vegetation management work orders in Ellipse.	Yes	The total 'Land and Easements' category reported in the Regulatory Accounts needs to be split to complete the RIN template. It has been disaggregated based on analysis of the work orders. The total Routine and Non-Routine Materials and Expense for easement maintenance work is the Contractor costs for managing easement vegetation. Standard Jobs on the work order have been used to identify the categorisation (inspection, other or maintenance (both tree trimming and vegetation corridor clearance)). There is no element to further separate tree trimming and corridor clearance. A maintenance work order can cover multiple spans which have both trimming and corridor clearance requirements. This parameter is therefore an estimate. The vegetation maintenance contractors prepare an invoice input spreadsheet as part of their invoices submitted for vegetation maintenance. The schedule of rates within these invoices are then used to calculate the split between Tree trimming and Vegetation corridor clearance for all vegetation management expenses recorded in the TransGrid Ellipse system. The schedule of rates reflect the underlying activities performed by the contractors - work carried out on	Where the TransGrid line inspector has identified and consequently trimmed/removed one or more trees during a line inspection (internal works), it is not a significant tree trimming cost. The proportion of work classified as tree trimming is 1.96 times that of the vegetation corridor clearance based on the proportion of the split of dollars per the underlying activities performed by the contractors. This was used to appropriately split the costs from the Regulatory Accounts and Ellipse.

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
				individual trees (generally hand clearing) or on an area of trees (generally machine clearing). This tree trimming / corridor ratio is applied to the maintenance total spend to report the RIN tree trimming parameter.	
Vegetation Corridor Clearance	Expenditure that occurs in the management of areas of the easement other than individual trees.	TransGrid's Regulatory Accounts 'Land & Easement Maintenance' Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Easement Contractor Invoices The data used to disaggregate the total is sourced from Materials and expenses recorded against vegetation management work orders in Ellipse.	Yes	The total 'Land and Easements' category reported in the Regulatory Accounts needs to be split to complete the RIN template. It has been disaggregated based on analysis of the work orders. The total Routine and Non-Routine Materials and Expense for easement maintenance work is the Contractor costs for managing easement vegetation. Standard Jobs on the work order have been used to identify the categorisation (inspection, other or maintenance (both tree trimming and vegetation corridor clearance)). There is no element to further separate tree trimming and corridor clearance. A maintenance work order can cover multiple spans which have both trimming and corridor clearance requirements. This parameter is therefore an estimate. The vegetation maintenance contractors prepare an invoice input spreadsheet as part of their invoices submitted for vegetation maintenance. The schedule of rates within these invoices are then used to calculate the split between Tree trimming and Vegetation corridor clearance for all vegetation management expenses recorded in the TransGrid Ellipse system. The schedule of rates reflect	Where the TransGrid line inspector has identified and consequently trimmed/removed one or more trees during a line inspection (internal works), it is not a significant tree trimming cost. The proportion of work classified as tree trimming is 1.96 times that of the vegetation corridor clearance based on the proportion of the split of dollars per the underlying activities performed by the contractors. This was used to appropriately split the costs from the Regulatory Accounts and Ellipse.

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 underlying activities performed by the contractors - work carried out on individual trees (generally hand clearing) or on an area of trees (generally machine clearing). This tree trimming / corridor ratio is applied to the maintenance total spend to report the RIN tree vegetation corridor clearance parameter.	
Inspection	Expenditure solely for the inspections for vegetation management.	TransGrid's Regulatory Accounts 'Land & Easement Maintenance' Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data	No	All costs recorded against vegetation inspection work orders.	These inspection jobs include a small portion of contractor liaison costs as some inspection jobs are completed in conjunction with the contractor.
Audit	Expenditure solely for the purpose of auditing	TransGrid does not record the proportion of its costs on Audit separately from the Contractor liaison expenditure	N/A	Auditing on contractor work occurs at the same time as supervision of the contractor on site. TransGrid does not record expenditure on audits of vegetation separately so the costs are unable to be split. Costs will be included in contractor liaison expenditure.	N/A
Contractor Liaison Expenditure	Expenditure that occurred during the management of external contractors for vegetation management	TransGrid's Regulatory Accounts 'Land & Easement Maintenance' Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data The data used to disaggregate the total is sourced from Labour	Yes	This value is any labour and expenditure costs recorded by TransGrid staff against vegetation maintenance work orders. This parameter is an estimate as it includes costs of auditing contractor work, which occurs at the same time as the supervision of the contractor on site. TransGrid does not record expenditure on audits of vegetation separately so the costs are unable to be split.	This does not include any contractor liaison costs incurred during inspection work.

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
		recorded against vegetation management work orders in Ellipse.			
Other vegetation management expenditure	Other vegetation management expenditure which has not been captured by the previous fields, for example, Aerial Laser Survey costs for the TransGrid network.	TransGrid's Regulatory Accounts 'Land & Easement Maintenance' and Ellipse reports. Costs recorded against Aerial Laser Survey work orders.	No	Any labour and expenditure costs recorded by TransGrid staff against aerial laser survey work orders.	All vegetation maintenance expenditure outside the Routine LiDAR scanning has been captured in the other fields.
Financial Totals	Expenditure that occurred for the management maintenance of vegetation.	TransGrid's Regulatory Accounts 'Land & Easement Maintenance' Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data	No	Financial totals in relation to maintenance activities are taken from the Regulatory Accounts. This information has been agreed to the underlying financial information in Ellipse.	N/A
2.7.3 - DESCRIPTOR METRICS ACROSS ALL ZONES - UNPLANNED VEGETATION EVENTS					
Number of fire starts caused by vegetation grow-ins (NSP responsibility)	Fires caused by electrical faults due to growth of vegetation within TransGrid's vegetation management corridor.	THEOS - TransGrid's Outage Management System.	No	Every fault of the TransGrid's transmission line is investigated and reported on. All outages recorded against category "TREE", "Fire" or "Bushfire" in THEOS have been extracted. From follow up reports it is identified whether the fault was due to grow-in, fall-in or blow-in. All TransGrid line outages were reviewed to check for misallocation of outage reason.	No assumptions are necessary as each fault was investigated.
Number of fire starts caused by vegetation blow-ins and fall-ins (NSP responsibility)	Fires caused by electrical faults due to vegetation within TransGrid's vegetation management corridor falling or blowing into the transmission line.	THEOS - TransGrid's Outage Management System.	No	Every fault of the TransGrid's transmission line is investigated and reported on. All outages recorded against category "TREE", "Fire" or "Bushfire" in THEOS	No assumptions are necessary as each fault was investigated.

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
				have been extracted. From follow up reports it is identified whether the fault was due to grow-in, fall-in or blow-in. All TransGrid line outages were reviewed to check for misallocation of outage reason.	
Number of outages caused by vegetation grow-ins (NSP responsibility)	Outages caused by electrical faults due to growth of vegetation within TransGrid's vegetation management corridor.	THEOS - TransGrid's Outage Management System.	No	Every fault of the TransGrid's transmission line is investigated and reported on. All outages recorded against category "TREE", "Fire" or "Bushfire" in THEOS have been extracted. From follow up reports it is identified whether the fault was due to grow-in, fall-in or blow-in. All TransGrid line outages were reviewed to check for misallocation of outage reason.	No assumptions are necessary as each fault was investigated.
Number of outages caused by vegetation blow-ins and fall-ins (NSP responsibility)	Outages caused by electrical faults due to vegetation within TransGrid's vegetation management corridor falling or blowing into the transmission line.	THEOS - TransGrid's Outage Management System.	No	Every fault of the TransGrid's transmission line is investigated and reported on. All outages recorded against category "TREE", "Fire" or "Bushfire" in THEOS have been extracted. From follow up reports it is identified whether the fault was due to grow-in, fall-in or blow-in. All TransGrid line outages were reviewed to check for misallocation of outage reason.	No assumptions are necessary as each fault was investigated.
Number of fire starts caused by vegetation grow-ins (other party responsibility)	Fires caused by electrical faults due to growth of vegetation outside of TransGrid's vegetation management corridor.	THEOS - TransGrid's Outage Management System.	No	Every fault of the TransGrid's transmission line is investigated and reported on. All outages recorded against category "TREE", "Fire" or "Bushfire" in THEOS have been extracted. From follow up reports it is identified whether the fault was due to grow-in, fall-in or blow-in. All	No assumptions are necessary as each fault was investigated.

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
				TransGrid line outages were reviewed to check for misallocation of outage reason.	
Number of fire starts caused by vegetation blow-ins and fall-ins (other party responsibility)	Fires caused by electrical faults due to vegetation outside of TransGrid's vegetation management corridor falling or blowing into the transmission line.	THEOS - TransGrid's Outage Management System.	No	Every fault of the TransGrid's transmission line is investigated and reported on. All outages recorded against category "TREE", "Fire" or "Bushfire" in THEOS have been extracted. From follow up reports it is identified whether the fault was due to grow-in, fall-in or blow-in. All TransGrid line outages were reviewed to check for misallocation of outage reason.	No assumptions are necessary as each fault was investigated.
Number of outages caused by vegetation grow-ins (other party responsibility)	Outages caused by electrical faults due to growth of vegetation outside of TransGrid's vegetation management corridor.	THEOS - TransGrid's Outage Management System.	No	Every fault of the TransGrid's transmission line is investigated and reported on. All outages recorded against category "TREE", "Fire" or "Bushfire" in THEOS have been extracted. From follow up reports it is identified whether the fault was due to grow-in, fall-in or blow-in. All TransGrid line outages were reviewed to check for misallocation of outage reason.	No assumptions are necessary as each fault was investigated.
Number of outages caused by vegetation blow-ins and fall-ins (other party responsibility)	Outages caused by electrical faults due to vegetation outside of TransGrid's vegetation management corridor falling or blowing into the transmission line.	THEOS - TransGrid's Outage Management System.	No	Every fault of the TransGrid's transmission line is investigated and reported on. All outages recorded against category "TREE", "Fire" or "Bushfire" in THEOS have been extracted. From follow up reports it is identified whether the fault was due to grow-in, fall-in or blow-in. All TransGrid line outages were reviewed to check for misallocation of outage reason.	No assumptions are necessary as each fault was investigated.

7.3.7 Worksheet 2.8 Maintenance

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
2.8.1 DESCRIPTOR METRICS FOR ROUTINE & NON-ROUTINE MAINTENANCE					
TRANSMISSION LINES MAINTENANCE					
Transmission Towers Asset Quantity at year end 2016-17	The number of transmission structures (including steel towers, wood poles, concrete poles and steel poles) on TransGrid's network.	TransGrid Spatial System (TSS)	No	Structure counts were totalled from TSS reports	There are no support structures on TransGrid's network that are recorded or maintained separately to the structures.
Transmission Towers Asset Quantity Inspected / Maintained 2016-17	The number of transmission structures (including steel towers, wood poles, concrete poles and steel poles) inspected / maintained on TransGrid's network.	Asset Inspection Manager (AIM) data extract Note, this is a new data source.	No	Asset Inspection Manager (AIM) contains the results for each individual structure inspected. Note: Previous RIN submissions were estimates for this item. All transmission line inspection data is extracted. Each record is on a structure basis with a unique ID. The total provided is the number of unique ID's in the report (not number of records as some structures may have been inspected twice).	TransGrid conducts aerial inspections of every structure annually with the exception of the far west 220kV and far North West 132 kV network which is inspected by air once every two years. For the purpose of this RIN, structure inspections are only counted for ground, climbing or underground wood pole structure inspections.
Transmission Towers Average Age of Asset Group 2016-17	The average age of transmission structures on TransGrid's network.	TransGrid Spatial System (TSS)	Yes	The age of each structure is calculated, then the sum of these is divided by the number of structures.	Generally, maintenance replacements of a wood pole in a two pole structure are not included in the age of the structure. Where a new structure is known to have been installed, it is included. The age of structures noted in TSS is based off a previous review of various sources (such as Line schedules, Line Data Cards, Electrical Databook, Easement Plan register dates). On some lines (generally older), construction data is

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
					was not well recorded and best guess was used based on available previously mentioned documents. Dates are stored on a calendar year basis, not financial year. For the purposes of this RIN it was assumed build year was equal to the commissioning financial year.
Transmission Towers Inspection Cycle	The average frequency of inspection on transmission structures in TransGrid's network.	The Transmission Line Maintenance Plan contains the inspection frequency tables for transmission line structures. Step-change Note: there have been significant changes to the Maintenance Plan for structure inspection. Inspections are now more detailed but less frequent.	No	The inspection cycle in years was listed for each circuit, then the average of the ground inspection was taken. This is a weighted average based on the number of structures.	TransGrid conducts aerial inspections of every structure annually with the exception of the far west 220kV network which is inspected by air once every two years. FY2017 was a year that these areas were NOT flown. It is assumed that climbing inspections was the required method by the AER as these inspections capture condition data (aerial report on exception) and on a per structure basis climbing costs more than the above mentioned aerial inspection.
Transmission Towers Maintenance Cycle	The average frequency of maintenance on transmission structures in TransGrid's network.	The Transmission Line Maintenance Plan contains the maintenance frequency tables for transmission line structures and conductors.	Yes	The Maintenance cycle in years was listed for each line section, and then the average was taken. Lines which have no routine maintenance (no wood poles and no grillage foundations) do not contribute to the average maintenance cycle calculation.	Only routine maintenance is considered. For Transmission Lines there are only routine maintenance conducted on: - Wood Poles (UGIs) - Steel Towers (Grillage Foundations) Where line is mixed construction insufficient detail was available to appropriately weight calculation. It was assumed maintenance was performed on every structure of that line section.
Transmission towers support structures Asset Quantity at year end 2016-17	The number of transmission structures (including steel towers, wood poles, concrete poles and steel poles) on TransGrid's network. The number of transmission support	TransGrid Spatial System (TSS)	No	Structure counts were totalled from TSS reports	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
	structures on TransGrid's network.				
Transmission towers support structures Asset Quantity Inspected / Maintained 2016-17	The number of transmission towers support structures (e.g. crossarms or insulator sets) inspected / maintained on TransGrid's network.	Asset Inspection Manager (AIM) data extract Note, this is a new data source.	Yes	all transmission line inspection data is extracted. Each record is on a structure basis with a unique ID. The total provided is the number of unique ID's in the report (not number of records as some structures may have been inspected twice). Only climbing inspections are counted.	Support structures are not maintained separately. It is assumed that one structure is one support structure. TransGrid conducts aerial inspections of every structure annually with the exception of the far west 220kV and far North West 132 kV network which is inspected by air once every two years. For the purpose of this RIN, Transmission tower support structure inspections/maintenance are only counted for climbing inspections.
Transmission towers support structures Average Age of Asset Group 2016-17	The average age of transmission tower support structures on TransGrid's network.	N/A - Parameter not provided	N/A	Parameter not provided.	There are no support structures on TransGrid's network that are recorded or maintained separately to the structures.
Transmission towers support structures Inspection Cycle	The average frequency of inspection on transmission structures in TransGrid's network.	N/A - Parameter not provided	N/A	Parameter not provided.	There are no support structures on TransGrid's network that are recorded or maintained separately to the structures.
Transmission towers support structures Maintenance Cycle	The average frequency of maintenance on transmission tower support structures in TransGrid's network.	N/A - Parameter not provided	N/A	Parameter not provided.	There are no support structures on TransGrid's network that are recorded or maintained separately to the structures.
Conductors Asset Quantity at year end 2016-17	The route length of conductors on TransGrid's transmission network.	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.	N/A
Conductors	The route length of	List of completed thermovision work	No	Where a work order existed	TransGrid conducts aerial inspections of every

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
Asset Quantity Inspected / Maintained 2016-17	conductors inspected on TransGrid's transmission network.	orders from Ellipse in 2016-17.		for a thermovision inspection the length of this line (from TSS Span report) was included in the conductor inspected count.	structure annually with the exception of the far west 220kV and far North West 132 kV network which is inspected by air once every two years. FY2017 was a year that these areas were NOT flown. Total route inspected by air was 10,286km. For the purpose of this RIN conductor inspections are only counted if the line was subject to a thermovision or specific OHEW corrosion inspection. There were a number of lines which were subject to a thermovision in 2017FY.
Conductors Average Age of Asset Group 2016-17	The average age of conductors on TransGrid's transmission network.	TransGrid Spatial System (TSS)	Yes	For conductors and cables, the average age is calculated on a per kilometre basis.	For cables and conductors, average age per kilometre is assumed as the requested value by the AER. Segments of Transmission Lines that are built as split phase will have the length of that segment counted twice (as it has double the amount of conductor). Dates are stored on a calendar year basis, not financial year. For the purposes of this RIN it was assumed build year was equal to the commissioning financial year. The age of conductors is based off a previous review of various sources (such as Line schedules, Line Data Cards, Electrical Databook, Easement Plan register dates). On some lines (generally older), construction data is was not well recorded and best guess was used based on available previously mentioned documents.
Conductors Inspection Cycle	The average frequency of inspection on conductors in TransGrid's network.	The Transmission Line Maintenance Plan contains the inspection frequency tables for conductors.	Yes	The inspection cycle in years was listed for each circuit, then the average was taken. This is a weighted average	TransGrid conducts aerial inspections of every structure annually with the exception of the far west 220kV network which is inspected by air once every two years.

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
	Only specific conductor inspections included			based on the number of structures.	Only conductor specific routine inspections are considered, such as thermovision inspections. Defect (non-routine) inspections are not included. This value was an estimate due to calculation on a per span basis, not by conductor length.
Conductors Maintenance Cycle	The average frequency of maintenance on conductors in TransGrid's network.	The Transmission Line Maintenance Plan contains the maintenance frequency tables for transmission line structures and conductors.	No	There is no maintenance activity carried out on transmission line conductors.	Only routine maintenance is considered (defect, or condition based excluded).
Transmission Cables Asset Quantity at year end 2016-17	The route length of transmission cables on TransGrid's network based on operating voltage.	Electrical Data Book (HV Cables). Drawings (132kV HV Cables within substations).	Yes	Each cable circuit installation was listed in a spreadsheet along with its length. The total route length was then calculated.	The Electrical Data Book is used for lengths of 330kV cables. 132kV underground cables within substations are estimated off substation layout drawings. Accurate length of circuit is not available (hence estimated information). Note that Cables 43/44 share the same route, so the length has only been included once. It is therefore assumed that the AER requires this method as it was classified as a dual circuit underground cable when it was added in the 2015FY RIN 2.3 AUGEX. Note that in the 5.3 age profile Cable 43 and 44 are counted as separate circuits. Cable 9S4 shares its route with a section of Cable 42. It was installed separately and is a discrete circuit and was included in a previous RIN in section 2.3 AUGEX. Its route has been included here.
Transmission Cables Asset Quantity Inspected / Maintained 2016-17	The route length inspected / maintained of transmission cables on TransGrid's	Cable data summary spreadsheet (data from various sources, refer EB RIN 3.5 Physical Assets)	No	100% of the underground cable network is inspected yearly, so the quantity inspected is equivalent to the total amount of UG cable	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
	network.			assets.	
Transmission Cables Average Age of Asset Group 2016-17	The average age of transmission cables on TransGrid's network. This is a weighted average based on circuit length	Electrical Databook (HV Cables). Drawings (132kV HV Cables within substations).	No	Each cable circuit installation was listed in a spreadsheet along with its length and commissioning year. The average age is calculated on a per kilometre basis.	Average age per route kilometre is assumed as the requested value by the AER. Date commissioned is stored as calendar year. Birthday assumed 1st Jan. Average age is at June 30. This has been changed to be consistent with overhead lines. Step change note: Cable 43/44 was previously calculated using circuit kilometres. With this calculation the average age is 15.33 years.
Transmission Cables Inspection Cycle	The average frequency of inspection on cables in TransGrid's network on a length based weighted average.	The Underground Cable Assets Maintenance Plan contains the inspection frequency tables for cables and associated infrastructure	No	For underground cables the whole route inspection for each cable was listed. Inspection cycle was given as a weighted sum of the circuit length.	Cables – Inspection was assumed as the whole route patrol. Cable 43/44, which shares the same route is only counted once in the weighted sum.
Transmission Cables Maintenance Cycle	The average frequency of maintenance on cables in TransGrid's network on a length based weighted average.	The Underground Cable Assets Maintenance Plan contains the maintenance frequency tables for cables and associated infrastructure.	Yes	For cable maintenance the most expensive maintenance (on an annual basis) type for each circuit was used. Maintenance cycle was given as a weighted sum of the circuit length.	Only routine maintenance is considered (hence estimate). There are several different cable maintenance tasks. Without specific AER direction, the most expensive annualised item was chosen in an attempt to best represent cable maintenance requirements.
SUBSTATIONS EQUIPMENT & PROPERTY MAINTENANCE					
Substation switchbays (incl Reactive Plant) Asset Quantity at year end 2016-17	Total number of in-service switchbays within TransGrid's substation TransGrid has interpreted this data requirement to be similar to that used for worksheet 5.2 – i.e.: as a requirement to identify the population age profile of the	Switchbay list from FME server (FME output report : SERVER_RIN_Switchbays)	No	Sum of all in-service Ellipse bays shown as in service as at the end of the specified financial year. 'Non-real' Ellipse bays created for the purpose of the data model are excluded.	The following switchbays are excluded : - Switchbays in negotiated (third party) substations (or part of the substation); - spare switchbays in FY16/17 - out of service switchbays in FY16/17

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
	switchbays installed as at the end of the financial year.				
Substation switchbays (incl Reactive Plant) Asset Quantity Inspected/ Maintained 2016-17	Total number of switchbays (excluding transformer bays) maintained routinely in the last financial year	Ellipse TRR620 REPORT 'TRR620 Report_All closed routine maint on Switchbay HV assets' and the list produced above	No	Sum of all switchbays which have been included in the list produced above and have routine maintenance work orders completed (closed) in the last financial year. Inspection work orders are excluded.	Only work orders that are related to major plant in substations (Busbar, Capacitor Bank, Circuit Breaker, Current Transformer, Isolator(Disconnector), Reactor, SVC and Voltage Transformer) which are classified as routine maintenance are used
Substation switchbays (incl Reactive Plant) Average age of asset group 2016-17	Average age of asset group 2016-17	1. Switchbay list from FME server (FME output report : SERVER_RIN_Switchbays) 2. Extracted high voltage equipment fitment tracing information from Ellipse 5 3. Appendix B – Schedule of Substations and Switching Stations in TransGrid Network Management Plan 2013-2018	No	Sum of total in service years of all switchbays divided by total number of switchbays which are commissioned prior to the end of the specified financial year	Assumed: 1.Commission dates for all switchbays recorded in Ellipse are accurate with the only exceptions listed below; 2. Age of the switchbay does not change regardless of whether any HV plant items within the switchbay have been replaced 3. For switchbays with first tracing date as 1st Jan 1994, the first tracing dates are corrected to the commission year of the substation which is published in Appendix B – Schedule of Substations and Switching Stations in TransGrid Network Management Plan 2013-2018. 4. For switchbays that have different first tracing information in Ellipse 8 and Ellipse 5, tracing information in Ellipse 5 is used since older tracing information for HV equipment in some substations were not copied across from Ellipse 5 into Ellipse 8 at the time of system upgrade.
Substation switchbays (incl Reactive Plant) Inspection Cycle	Average number of inspections per year per switchbay.	Corporate document - D2003/2312 Maintenance Plan - Substations Assets	No	Standard inspection interval of 6 months taken from the Substation Maintenance Plan.	NA
Substation switchbays (incl Reactive Plant) Maintenance Cycle	Average frequency of routine maintenance of any high voltage asset within all valid switchbays included in FY16/17	1. MAINTENANCE PLAN – SUBSTATION ASSETS Section 8.4 Service Interval for Circuit Breaker & Section 10.6.1 Service Intervals for Instrument Transformers 2. Maintenance schedules report from	No	For each valid switchbay, filter all non high voltage equipment related scheduled maintenance. Produce a pivot table to find the shortest maintenance	Only routine maintenance of high voltage equipment has been accounted for. Secondary system maintenance such as calibration of CVT unbalance relay, VT burden checks, relay maintenance 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
		Ellipse – 'MSTsExtract – RIN 2.8 Maintenance cycles.xlsx'		cycle scheduled for each switchbay and calculate the average maintenance frequency for all included switchbays.	All operation based maintenances are excluded from average maintenance frequency calculation.
Substation power transformers Asset Quantity at year end 2016-17	Total number of in-service transformers within TransGrid's substation	1. Ellipse TRB 601 REPORT; 2. The Excel file '2017TransFormerWorkSheet'	No	Sum of all in-service non spare transformers as at the end of the specified financial year. Customers and negotiated transformers are excluded.	As explained in the BoP – Transformer Capacity parts 6.1.5 and 6.1.6
Substation power transformers Asset Quantity Inspected/ Maintained 2016-17	Total number of transformers maintained routinely in the last financial year	Ellipse TRR620 REPORT 'TRR620 Report_All closed routine maint on Transformers' and the list produced above	No	Sum of all transformers which have been included in the list produced above and have routine maintenance work orders completed (closed) in the last financial year	Only work orders that are related to power transformers in substations (exclude Auxiliary Transformers) which are classified as routine maintenance are used
Substation power transformers Average age of asset group 2016-17	Average age of asset group 2016-17	The Excel file '2017TransFormerWorkSheet' Ellipse TRB 601 REPORT;	No	'2017TransFormerWorkSheet' used previously for Economic Benchmarking RIN, was reused for Substation Power Transformers.	As explained in the BoP – Transformer Capacity parts 6.1.5 and 6.1.6
Substation power transformers Inspection Cycle	Average number of inspections per year per transformer.	Corporate document - D2003/2312 Maintenance Plan - Substations Assets	No	Standard inspection interval of 6 months taken from the Substation Maintenance Plan.	NA
Substation power transformers Maintenance Cycle	Average frequency of routine maintenance of all transformers (Both in service and cold spare) included in FY16/17	1. MAINTENANCE PLAN – SUBSTATION ASSETS Section 9.5.3 Power Transformer, Auxiliary Transformer and Oil Reactor Service Intervals 2. Maintenance schedules report from Ellipse – 'MSTsExtract – RIN 2.8 Maintenance cycles.xlsx'	No	Major transformers have either 4 yearly or 6 yearly maintenance For each valid transformer, filter major maintenances. Use pivot table to extract maintenance cycle and calculate the average frequency	Only major maintenance of transformers are included in the calculation. The annual operation of on-load tap changers and oil sampling are excluded from maintenance cycles calculation. All operation based maintenances are excluded from average maintenance frequency calculation. Diverter Switch maintenance is not counted separately as it is aligned with major maintenance.
Substation property Asset Quantity at	All prescribed substations under	Substation list from FME server (SQL on Ellipse database)	No	Sum of all in-service prescribed substations as at	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
year end 2016-17	TransGrid's ownership			the end of the specified financial year. Future, Out Of Service, and negotiated substations are excluded.	
Substation property Asset Quantity Inspected/ Maintained 2016-17	Total number of substations maintained routinely in the last financial year	Ellipse TRR620 REPORT 'TRR620 Report_All closed substation property maintenance' and the list produced above	No	Sum of all substations property which have been included in the list produced above and have routine maintenance work orders completed (closed) in the last financial year	TransGrid notes that for some assets, such as substation property, different types of maintenance are conducted several times per year under different work orders. Where this has occurred, TransGrid only counted the asset as having been maintained once.
Substation property Average age of asset group 2016-17	Average age of asset group 2016-17	Substation list from FME server (SQL on Ellipse database)	No	Average age of substations	N/A
Substation property Inspection Cycle	Average number of inspections per year per site.	Corporate document - D2003/2312 Maintenance Plan - Substations Assets	No	Average inspection cycle of all substations	NA
Substation property Maintenance Cycle	Average frequency of routine maintenance of all substations property and fire systems	MAINTENANCE PLAN – SUBSTATION ASSETS – Section 13.3 Fire Protection Systems and equipment. Fire Protection Manual Operations and Maintenance document (TRIM No: D2003/1777)	No	As per maintenance policy – all substations require quarterly fire system maintenance. Maintenance cycles in years: 0.25	N/A
SCADA & NETWORK CONTROL MAINTENANCE					
SCADA & network control maintenance Asset Quantity at year end 2016-17	The number of Control devices in the Network (RTUs, HMIs, IEDs), Independent of combined devices.	Information is extracted from Ellipse and copied from RIN 5.2 - Age Profile	No	Sum of same classification in RIN 5.2	N/A
SCADA & network control maintenance Asset Quantity Inspected/ Maintained 2016-17	Number of Inspection, Preventative, Corrective, Condition Based maintenance tasks carried out to maintain the operation of the individual assets	Information is extracted from Ellipse and filtered according to correct classification	No	Direct extract from Ellipse system and appropriate filters applied then summation of totals	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
SCADA & network control maintenance Average age of asset group 2016-17	Average age based on financial years	Information is extracted from Ellipse and calculated from RIN 5.2 - Age Profile	Yes	Average age of same classification from RIN 5.2 - Age Profile.	Where dates are missing in the system, values from RIN 21015/16 used
SCADA & network control maintenance Inspection Cycle	No Inspections	D2014/12155 SSA Plan - Maintenance - Routine and Non-routine - Substation Automation Systems	No	N/A	N/A
SCADA & network control maintenance Maintenance Cycle	No preventative maintenance	D2014/12155 SSA Plan - Maintenance - Routine and Non-routine - Substation Automation Systems	No	N/A	N/A
PROTECTION SYSTEMS MAINTENANCE					
Protection systems maintenance Asset Quantity at year end 2016-17	The number of main Protection relays in the network	Information is extracted from Ellipse and copied from RIN 5.2 - Age Profile	No	Sum of same classification in RIN 5.2	Assumed data is correctly entered into TransGrid systems.
Protection systems maintenance Asset Quantity Inspected/ Maintained 2016-17	Number of Inspection, Preventative, Corrective, Condition Based maintenance tasks carried out to maintain the operation of the individual assets	Information is extracted from Ellipse and filtered according to correct classification	No	Direct extract from Ellipse system and appropriate filters applied then summation of totals	
Protection systems maintenance Average age of asset group 2016-17	Average age based on financial years	Information is extracted from Ellipse and calculated from RIN 5.2 - Age Profile	No	Average age of same classification from RIN 5.2 - Age Profile	N/A
Protection systems maintenance Inspection Cycle	Average time in years for a single protection asset to be tested	D2014/12155 SSA Plan - Maintenance - Routine and Non-routine - Substation Automation Systems	No	The relay population broken down by population and asset type was measured against the maintenance frequency as stated in the Maintenance Plan to establish a single figure for Maintenance	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
				frequency	
Protection systems maintenance Maintenance Cycle	Average time in years for a single protection scheme to be tested	D2014/12155 SSA Plan - Maintenance - Routine and Non-routine - Substation Automation Systems	No	The relay population broken down by population and asset type was measured against the maintenance frequency as stated in the Maintenance Plan to establish a single figure for Maintenance frequency	N/A
OTHER MAINTENANCE ACTIVITY					
Other maintenance activity Asset Quantity at year end 2016-17	Metering - The number of meters in the network Telecommunications - The Number of Terminal Equipment, MUXs, Base Stations, PLC, VF Intertrips, and MW Assets on the Network	Data copied from RIN Schedule 5.2	No	Sum of same classification in RIN 5.2	N/A
Other maintenance activity Asset Quantity Inspected/ Maintained 2016-17	Number of Inspection, Preventative, Corrective, Condition Based maintenance tasks carried out to maintain the operation of the individual assets	Information is extracted from Ellipse and filtered according to correct classification	No	Direct extract from Ellipse system and appropriate filters applied then summation of totals	N/A
Other maintenance activity Average age of asset group 2016-17	Average age based on financial years	Information is extracted from Ellipse and calculated from RIN 5.2 - Age Profile	Metering - No Telecommunications - Yes	Metering - Direct extract from Ellipse Telecommunications - Assets have applied some missing data from RIN 2015/16	
Other maintenance activity Inspection Cycle	Metering - Average time interval in years for a single metering asset to be tested	Metering - D2016/10668 SSA Plan - Maintenance - Market Metering Systems Telecommunications - D2014/12155	Metering - No Telecommunications - Yes	Metering -Figures come directly from Maintenance Plan (Inspections)	Metering - N/A Telecommunications - inspection intervals taken as 6monthly to represent site inspections which

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
	Telecommunications - Average time interval in years for a telecommunications system to be inspected.	SSA Plan - Maintenance - Routine and Non-routine - Telecommunications Systems		Telecommunications - Inspection figures averaged per site basis in Appendices B & C of the Maintenance Plan. Figures for Maintenance taken directly from the plan	are generally at this interval with some exceptions.
Other maintenance activity Maintenance Cycle	Metering - Average time interval in years for a single metering asset to be tested Telecommunications - Average time interval in years for a telecommunication's system to be maintained.	Metering - D2016/10668 SSA Plan - Maintenance - Market Metering Systems Telecommunications - D2014/12155 SSA Plan - Maintenance - Routine and Non-routine - Telecommunications Systems	Metering - No Telecommunications - Yes	Metering -Figures come directly from Maintenance Plan "Revenue and Check Meters - Electronic" Telecommunications - Inspection figures averaged per site basis in Appendices B & C of the Maintenance Plan. Figures for Maintenance taken directly from the plan	Metering - N/A Telecommunications - Majority of assets requiring maintenance have a 3/4 year cycle. As such, 3 years was taken as the estimate as some assets have a shorter maintenance cycle (1-2 years). Based on best judgement, 3 years frequency is a confident estimate.
2.8.2 COST METRICS FOR ROUTINE AND NON-ROUTINE MAINTENANCE					
Routine & non-routine maintenance FINANCIAL TOTALS	Labour and expense costs on maintenance of equipment consistent with the definitions below	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model	No	Financial totals in relation to maintenance activities are taken from the Regulatory Accounts. This information has been agreed to the underlying financial information in Ellipse.	N/A
TRANSMISSION LINES MAINTENANCE					
Transmission towers Routine Maintenance 2016-17	Labour and expense costs on routine inspection and maintenance of Transmission Towers consistent with the definitions used in the Opex model.	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model	No	Labour, materials and expenditure costs recorded by TransGrid staff against routine maintenance and inspection work orders. Standard Jobs and Component Codes on the work order have been used to identify the asset classification.	It is assumed that Inspection costs are included under Routine Maintenance Direct Costs. Standard Job and Component Code table is used to define the classifications. Insulator and fittings have been included as part of routine maintenance on structure costs.

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
				Where the asset classification cannot be determined from the standard job or component code, the individual work orders costs have been classified.	
Transmission towers Non-Routine Maintenance 2016-17	Labour and Expense costs on defect and MOPS maintenance of transmission towers consistent with the definitions used in the Opex model	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model	No	Labour, materials and expenditure costs recorded by TransGrid staff against defect work orders. Standard Job and Component Code table is used to define the classifications.	Major operating projects (MOPS) have been included as part of Defect expenses. Insulator and fittings have been included as part of defect maintenance on structure costs.
Transmission tower support structures Routine Maintenance 2016-17	Labour and expense costs on routine inspection and maintenance of Transmission Tower support structures consistent with the definitions used in the Opex model.	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model	No	Labour, materials and expenditure costs recorded by TransGrid staff against routine maintenance and inspection work orders. Standard Jobs and Component Codes on the work order have been used to identify the asset classification. Where the asset classification cannot be determined from the standard job or component code, the individual work orders costs have been classified.	It is assumed that Inspection costs are included under Routine Maintenance Direct Costs. Standard Job and Component Code table is used to define the classifications. Insulator and fittings have been included as part of routine maintenance on structure costs.
Transmission tower support structures Non-Routine Maintenance 2016-17	Labour and Expense costs on defect and MOPS maintenance of transmission towers support structures consistent	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model	No	Labour, materials and expenditure costs recorded by TransGrid staff against defect work orders. Standard Job and	Major operating projects (MOPS) have been included as part of Defect expenses. Insulator and fittings have been included as part of defect maintenance on structure costs.

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
	with the definitions used in the Opex model			Component Code table is used to define the classifications.	
Conductors Routine Maintenance 2016-17	Labour and expense costs on routine inspection of conductors consistent with the definitions used in the Opex model.	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model	No	Labour, materials and expenditure costs recorded by TransGrid staff against routine maintenance and inspection work orders. Standard Jobs and Component Codes on the work order have been used to identify the asset classification. Where the asset classification cannot be determined from the standard job or component code, the individual work orders costs have been classified.	It is assumed that Inspection costs are included under Routine Maintenance Direct Costs. Standard Job and Component Code table is used to define the classifications. Insulator and fittings have been included as part of routine maintenance on structure costs.
Conductors Non-Routine Maintenance 2016-17	Labour and Expense costs on defect and MOPS maintenance of conductors consistent with the definitions used in the Opex model	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model	No	Labour, materials and expenditure costs recorded by TransGrid staff against defect work orders. Standard Job and Component Code table is used to define the classifications.	Major operating projects (MOPS) have been included as part of Defect expenses. Insulator and fittings have been included as part of defect maintenance on structure costs.
Transmission cables Routine Maintenance 2016-17	Labour and expense costs on routine inspection and maintenance of Transmission Cables consistent with the definitions used in the Opex model.	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model	No	Labour, materials and expenditure costs recorded by TransGrid staff against routine maintenance and inspection work orders.	It is assumed that Inspection costs are included under Routine Maintenance Direct Costs. Standard Job and Component Code table is used to define the classifications.
Transmission cables	Labour and Expense costs on defect and	TransGrid Regulatory Accounts Ellipse Financial Data	No	Labour, materials and expenditure costs recorded	Major operating projects (MOPS) have been included as part of Defect expenses. The Cable

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
Routine Maintenance 2016-17	MOPS maintenance of Transmission Cables consistent with the definitions used in the Opex model	Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model		by TransGrid staff against defect work orders. Standard Job and Component Code table is used to define the classifications.	Inspection/testing on Cable 41 was the cause of a large step change.
SUBSTATIONS EQUIPMENT & PROPERTY MAINTENANCE					
Substation switchbays (incl Reactive plant) Routine Maintenance 2016-17	Labour and expense costs on routine inspection and maintenance of switchbay including all ancillary equipment to complete schemes consistent with the definitions used in the Opex model.	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model	No	Labour, materials and expenditure costs recorded by TransGrid staff against routine maintenance and inspection work orders. Standard Jobs and Component Codes on the work order have been used to identify the asset classification. Where the asset classification cannot be determined from the standard job or component code, the individual work orders costs have been classified.	It is assumed that all records are correctly entered into works management system (Ellipse)
Substation switchbays (incl Reactive plant) Non-Routine Maintenance 2016-17	Labour and Expense costs on defect and MOPS maintenance of switchbays including all ancillary equipment to complete schemes consistent with the definitions used in the Opex model	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model	No	Labour, materials and expenditure costs recorded by TransGrid staff against defect work orders. Standard Job and Component Code table is used to define the classifications.	It is assumed that all records are correctly entered into works management system (Ellipse)
Substation power transformers Routine Maintenance 2016-	Labour and expense costs on routine inspection and maintenance of	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data	No	Labour, materials and expenditure costs recorded by TransGrid staff against routine maintenance and	It is assumed that all records are correctly entered into works management system (Ellipse)

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
17	power transformers including all ancillary equipment to complete schemes consistent with the definitions used in the Opex model.	Operating Expenditures model		inspection work orders. Standard Jobs and Component Codes on the work order have been used to identify the asset classification. Where the asset classification cannot be determined from the standard job or component code, the individual work orders costs have been classified.	
Substation power transformers Non-Routine Maintenance 2016-17	Labour and Expense costs on defect and MOPS maintenance of power transformers including all ancillary equipment to complete schemes consistent with the definitions used in the Opex model	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model	No	Labour, materials and expenditure costs recorded by TransGrid staff against defect work orders. Standard Job and Component Code table is used to define the classifications.	It is assumed that all records are correctly entered into works management system (Ellipse)
Substation property Routine Maintenance 2016-17	Labour and expense costs on routine inspection and maintenance of substations property including all ancillary equipment to complete schemes consistent with the definitions used in the Opex model.	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model	No	Labour, materials and expenditure costs recorded by TransGrid staff against routine maintenance and inspection work orders. Standard Jobs and Component Codes on the work order have been used to identify the asset classification. Where the asset classification cannot be determined from the standard job or component code, the	It is assumed that all records are correctly entered into works management system (Ellipse)

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
				individual work orders costs have been classified.	
Substation property Non-Routine Maintenance 2016-17	Labour and Expense costs on defect and MOPS maintenance of substations property including all ancillary equipment to complete schemes consistent with the definitions used in the Opex model	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model	No	Labour, materials and expenditure costs recorded by TransGrid staff against defect work orders. Standard Job and Component Code table is used to define the classifications.	It is assumed that all records are correctly entered into works management system (Ellipse)
SCADA & NETWORK CONTROL MAINTENANCE					
SCADA & network control maintenance Routine Maintenance 2016-17	Labour and expense costs on routine inspection and maintenance of Control and SCADA systems including all ancillary equipment to complete schemes consistent with the definitions used in the Opex model.	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model	No	Labour, materials and expenditure costs recorded by TransGrid staff against routine maintenance and inspection work orders. Standard Jobs and Component Codes on the work order have been used to identify the asset classification. Where the asset classification cannot be determined from the standard job or component code, the individual work orders costs have been classified.	It is assumed that all records are correctly entered into works management system (Ellipse)
SCADA & network control maintenance Non-Routine Maintenance 2016-17	Labour and Expense costs on defect and MOPS maintenance of Control and SCADA systems including all ancillary equipment to complete schemes consistent	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model	No	Labour, materials and expenditure costs recorded by TransGrid staff against defect work orders. Standard Job and Component Code table is used to define the classifications.	It is assumed that all records are correctly entered into works management system (Ellipse)

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
	with the definitions used in the Opex model				
PROTECTION SYSTEMS MAINTENANCE					
Protection systems maintenance Routine Maintenance 2016-17	Labour and expense costs on routine inspection and maintenance of protection systems including all ancillary equipment to complete schemes consistent with the definitions used in the Opex model.	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model	No	Labour, materials and expenditure costs recorded by TransGrid staff against routine maintenance and inspection work orders. Standard Jobs and Component Codes on the work order have been used to identify the asset classification. Where the asset classification cannot be determined from the standard job or component code, the individual work orders costs have been classified.	It is assumed that all records are correctly entered into works management system (Ellipse)
Protection systems maintenance Non-Routine Maintenance 2016-17	Labour and Expense costs on defect and MOPS maintenance of protection systems including all ancillary equipment to complete schemes consistent with the definitions used in the Opex model	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model	No	Labour, materials and expenditure costs recorded by TransGrid staff against defect work orders. Standard Job and Component Code table is used to define the classifications.	It is assumed that all records are correctly entered into works management system (Ellipse)
OTHER MAINTENANCE ACTIVITY					
Other maintenance activity Definition	Telecommunications and Metering as defined in RIN 5.2 - Age Profile	Renewal and Maintenance Strategies (Automation and Telecommunications)	No	Standard Job and Component Code table is used to define the classifications.	It is assumed that all records are correctly entered into works management system (Ellipse)
Other maintenance	Measured in whole	TransGrid Regulatory Accounts	No	Standard Job and Component	It is assumed that all records are correctly

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
activity Unit of measure	dollars	Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model		Code table is used to define the classifications.	entered into works management system (Ellipse)
Other maintenance activity Routine Maintenance 2016-17	Labour and expense costs on routine inspection and maintenance of Telecommunications and Metering systems including all ancillary equipment to complete schemes consistent with the definitions used in the Opex model.	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model	No	Labour, materials and expenditure costs recorded by TransGrid staff against routine maintenance and inspection work orders. Standard Jobs and Component Codes on the work order have been used to identify the asset classification. Where the asset classification cannot be determined from the standard job or component code, the individual work orders costs have been classified.	It is assumed that all records are correctly entered into works management system (Ellipse)
Other maintenance activity Non-Routine Maintenance 2016-17	Labour and Expense costs on defect and MOPS maintenance of Telecommunications and Metering systems including all ancillary equipment to complete schemes consistent with the definitions used in the Opex model	TransGrid Regulatory Accounts Ellipse Financial Data Ellipse Work Order Data Ellipse Standard Job Data Operating Expenditures model	No	Labour, materials and expenditure costs recorded by TransGrid staff against defect work orders. Standard Job and Component Code table is used to define the classifications.	It is assumed that all records are correctly entered into works management system (Ellipse)

7.3.8 Worksheet 2.10 Overheads

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
2.10.1 NETWORK OVERHEADS EXPENDITURE					
Table 2.10.1 Network Overheads Expenditure Overhead amounts for Prescribed Services	Network overhead expenditure is equal to the following categories from EB RIN 3.2: - Maintenance Support and Asset Management TOPEX0106A - Operations / Control Room TOPEX0107A - Grid Planning TOPEX0107A The Opex line items reported are consistent with TransGrid's Revenue proposal opex line items and definitions.	TransGrid financial records reported from Ellipse and Business Reporting. The prescribed opex component of overheads in RIN 2.10 equals the Network Operations component in the 2016-17 Regulatory Account (DISAGG Inc and DISAGG Opex). Using TransGrid financial records, on which the Regulatory accounts are based, the schedule is prepared. Overhead costs allocated and capitalised are added back to determine the total overhead costs. Maintenance Support and Asset Management Support costs have been allocated based on nature of cost incurred, primarily with reference to the Responsibility Centres. TransGrid's cost allocation process does not break down network overheads into maintenance support and asset management. Similarly, TransGrid also does not maintain a split of capitalised network overhead into the categories as per this RIN schedule.	Yes	Overheads for Asset Management and Maintenance Support are disaggregated into the reported categories by using proportionate allocations. Network overheads related to capital work are calculated based on the overhead recovery (expense element 402) within each regulatory category. The prescribed portion is derived by the proportion of the total overhead recovery (expense element 402) by regulatory category against the overhead charge (expense element 400) for prescribed capital projects.	The allocation of capitalised overhead expenditure is consistent with the classification of costs in its corresponding overhead recovery account (expense element 402).
Table 2.10.1 Network Overhead expenditure Overhead amounts	Total Negotiated Overhead expenditure is equal to actual expenditure costed to negotiated Activity	TransGrid financial records reported from Ellipse and Business Reporting.	Yes	The negotiated opex component of overheads in RIN 2.10 equals the negotiated overhead component of Other	The allocation of negotiated overhead expenditure is consistent with the allocation of prescribed overhead costs to the categories of this RIN schedule.

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
for Negotiated Services	Centres and EE400 - *Support Cost Allocation charge*. This expenditure represents the support cost allocated to negotiated projects. Total Negotiated Overhead expenditure is allocated to the following categories based on the proportion split of Prescribed plus Capex Overhead between these categories: - Network Overheads, and - Corporate Overheads			Controllable Costs in the 2016-17 Regulatory Accounts (DISAGG Inc and DISAGG Opex). The negotiated services overhead costs are obtained from account extract filtered by AC, which align with the amounts reported in Regulatory accounts. TransGrid does not maintain a split of negotiated overhead into the categories as per this RIN schedule.	
Table 2.10.1 Network Overhead expenditure Overhead amounts for Unregulated Services	Total Unregulated Overhead expenditure is equal to actual expenditure costed to unregulated Activity Centres and EE400 - *Support Cost Allocation charge*. This expenditure represents the support cost allocated to unregulated projects. Total Unregulated Overhead expenditure is allocated to the following categories based on the proportion split of Prescribed plus Capex Overhead between these categories: - Network Overheads,	TransGrid financial records reported from Ellipse and Business Reporting.	Yes	The Unregulated opex component of overheads in RIN 2.10 equals the Unregulated overhead component of Other Controllable Costs in the 2016-17 Regulatory Accounts (DISAGG Inc and DISAGG Opex). The unregulated services overhead costs are obtained from account extract filtered by AC, which align with the amounts reported in Regulatory accounts. TransGrid does not maintain a split of unregulated overhead into the categories as per this RIN schedule.	The allocation of unregulated overhead expenditure is consistent with the allocation of prescribed overhead costs to the categories of this RIN schedule.

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
	and - Corporate Overheads.				
2.10.2 CORPORATE OVERHEADS EXPENDITURE					
Corporate overheads					
Table 2.10.2 Corporate Overheads expenditure	Corporate Overhead expenditure is equal to the following categories from the EB RIN 3.2: - Insurance TOPEX0109A - Rates & Taxes TOPEX0110A - Property Management TOPEX0111A - Environmental TOPEX0112A - Corporate Governance TOPEX0113A - Customer Relations TOPEX0114A - Regulatory TOPEX0115A - Finance TOPEX0116A - Information technology TOPEX 0117A - HR & Payroll TOPEX0118A - Defined Benefit Superannuation AdjustmentTOPEX0119A The Opex line items reported are consistent with TransGrid's Revenue proposal opex line items and definitions, with the exception of TOPEX0119 Defined	TransGrid financial records reported from Ellipse and Business Reporting. The prescribed opex component of corporate overheads in RIN 2.10 equals the Other Controllable Costs and Defined Benefit Superannuation Adjustment in the 2016-17 Regulatory Accounts (DISAGG Inc and DISAGG Opex). Using TransGrid financial records, on which the Regulatory accounts are based, the schedule is prepared. Capitalised Corporate overheads are obtained by account extract filtered by AC. TransGrid does not maintain a split of capitalised corporate overhead into the categories as per this RIN schedule.	Yes	Corporate overheads related to capital work are calculated based on the overhead recovery (expense element 402) within each regulatory category. The prescribed portion is derived by the proportion of the total overhead recovery (expense element 402) by regulatory category against the overhead charge (expense element 400) for prescribed capital projects.	The allocation of capitalised overhead expenditure is consistent with the classification of costs in its corresponding overhead recovery account (expense element 402).

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
	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 2.10.2 align with the Opex line items reported in the Regulatory Accounting Statements which are prepared in accordance with Australian Accounting Standards.				
Table 2.10.2 Corporate Overheads expenditure Overhead amounts for Negotiated Services	Total Negotiated Overhead expenditure is equal to actual expenditure costed to negotiated Activity Centres and EE400 - *Support Cost Allocation charge*. This expenditure represents the support cost allocated to	TransGrid financial records reported from Ellipse and Business Reporting.	Yes	The negotiated services opex component of Corporate Overhead in RIN 2.10 equals the negotiated overhead component of Other Controllable Costs in the 2016-17 Regulatory Accounts (DISAGG Inc and DISAGG Opex).	The allocation of negotiated overhead expenditure is consistent with the allocation of prescribed overhead costs to the categories of this RIN schedule.

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
	negotiated projects. Total Negotiated Overhead expenditure is allocated to the following categories based on the proportion split of Prescribed plus Capex Overhead between these categories: - Network Overheads, and - Corporate Overheads.			Using TransGrid financial records, on which the Regulatory accounts are based, the schedule is prepared. Capitalised Corporate overheads are obtained by account extract filtered by AC. TransGrid does not maintain a split of negotiated overhead into the categories as per this RIN schedule.	
Table 2.10.2 Corporate Overheads expenditure Overhead amounts for Unregulated Services	Total Unregulated Overhead expenditure is equal to actual expenditure costed to unregulated Activity Centres and EE400 - *Support Cost Allocation charge*. This expenditure represents the support cost allocated to unregulated projects. Total Unregulated Overhead expenditure is allocated to the following categories based on the proportion split of Prescribed plus Capex Overhead between these categories: - Network Overheads, and - Corporate Overheads.	TransGrid financial records reported from Ellipse and Business Reporting.	Yes	The unregulated services opex component of Corporate Overhead in RIN 2.10 equals the unregulated overhead component of Other Controllable Costs in the 2016-17 Regulatory Accounts (DISAGG Inc and DISAGG Opex). Using TransGrid financial records, on which the Regulatory accounts are based, the schedule is prepared. Capitalised Corporate overheads are obtained by account extract filtered by AC. TransGrid does not maintain a split of unregulated overhead into the categories as per this RIN schedule.	The allocation of unregulated overhead expenditure is consistent with the allocation of prescribed overhead costs to the categories of this RIN schedule.

Note to Overheads

Overhead expenditures incurred that are attributable to capital works but not directly recorded against individual capital projects are capitalised.
Examples of these overhead costs include review of design standards, management of overall capital program (not directly charged to individual capital project), formulating environmental, property and power system procurement policy and procedures. Typically these costs are incurred in the Planning and Operations, and Works Delivery business units. These costs are re-allocated to the capital projects through the Support Cost Allocation process.

7.3.9 Worksheet 2.11 Labour

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
2.11.1 COST METRICS PER ANNUM					
Total Labour expenditure	Total labour costs were extracted from financial records, based on total expenditures, in line with information for CA RIN 2.1 Expenditure Summary and Reconciliation, 2.10 Overheads and 2.12 Input Tables.	TransGrid Regulatory Accounts Ellipse Financial Data Operating Expenditures model	No	Total labour costs were extracted from the general ledger records, based on total expenditures, in line with information for RIN 2.1 Expenditure Summary and Reconciliation, 2.10 Overheads and 2.12 Input Tables.	No assumptions made for the calculation of total labour costs. These costs reconcile to the audited financial statements for 2016/17.
Corporate overheads					
Allocation to ASL	Assumptions were made to classify labour into AER categories using organisation structure of Business Units, groups, reporting levels and employee salary	Ellipse Report TRB870	Yes	Position Data from Ellipse report	Assumptions were made to classify labour into AER categories. Details are provided in the note below.
ASL	In accordance with the Workforce Profile Report Data Specification. Total Hours Paid for the year times by 7. Then divide by standard work hours per week for a full time job times by the number of days in the reference period. Reference period refers to the payment summary period of 25/06/16 to 23/06/17 Ordinary Hours portion of Total Paid Hours are adjusted by % of labour costs allocated to non-prescribed ordinary time work activities	Workforce Profile Report (TRBWFP) from Ellipse for the reporting period As the report is run for the period to match payment summaries with the dates of 25/06/16 to 23/06/17 classed as estimate	Yes	Calculation: (Total Paid Hours*7)/(364*7) Total Paid hours: Value from TRBWFP Total Number of hours paid reference period minus flex time taken (SQL of MSF888 to sum flex hours taken) Ordinary Hours portion of Paid Hours are adjusted by % of labour costs allocated to non-prescribed ordinary time work activities	In accordance with the Workforce Profile Report Data Specification. Total Hours Paid for the year times by 7. Then divide by standard work hours per week for a full time job times by the number of days in the reference period. Reclassifications and restructures have resulted in movement between different categories, whilst staff movements of exits and hires throughout the period have resulted in net reductions. Ordinary Hours portion of Paid Hours are adjusted by % of labour costs allocated to non-prescribed ordinary time work activities

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
Total Labour expenditure	Total labour costs were extracted from financial records for the business units as listed in the footnote below.	TransGrid Regulatory Accounts Ellipse Financial Data Operating Expenditures model	Yes	Total corporate overhead labour costs is taken from the labour components of the corporate overhead category in the RIN 2.10 Overhead. The allocation to each of the employee categories are based on the proportion of gross earnings of the employee level against the total of the category. Corporate overheads include direct labour costs which were capitalised.	The split of total labour costs into individual sub- categories for each cell was based on the ASLs split between the different categories. The categories are based on the RC and AC classifications consistent with the opex and capex model.
Average productive work hours per ASL	Total Paid hours: Value from TRBWFP Total Number of hours paid reference period minus flex time taken (SQL of MSF888 to sum flex hours taken) Overtime Hours is the number of hours of paid overtime worked by the employee during the reference period Total Leave Taken refers to the sum of leave taken by the employee including annual, paid sick leave, unpaid sick leave, carers leave, long service leave, maternity leave, paternity leave, family and community services leave and unpaid leave. Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed work activities (ordinary time and overtime) Reference period refers to the payment summary period of 25/06/16 to 23/06/17	Workforce Profile Report (TRBWFP) from Ellipse for the reporting period As the report is run for the period to match payment summaries with the dates of 25/06/16 to 23/06/17 and is adjusted by training rate and a non-prescribed labour costed rate this is classed as estimate	Yes	(Total Hours Paid + Overtime Hours) - Total Leave Taken Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed work activities	Total Number of Hours Paid Annual Reference Period includes paid leave and excludes workers paid by third party, unpaid leave, overtime, allowances, additional hours worked under flex-time. Overtime Hours is the number of hours of paid overtime worked by the employee during the reference period Total Leave Taken refers to the sum of leave taken by the employee including annual, paid sick leave, unpaid sick leave, carers leave, long service leave, maternity leave, paternity leave, family and community services leave and unpaid leave. Adjusted by % of costs allocated to training Adjusted by % of labour costs

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
					allocated to non-prescribed work activities
Stand down occurrences per ASL	A count per employee of how many times they used the Stand Down work codes in the timesheet in Ellipse. Classed as estimate as the number of instances of stand down is calculated by the ASL value which is an adjusted figure	SQL of Ellipse work codes in MSF891	Yes	An SQL query was run on the Work Code F1 from Ellipse 8 go live (April 2013) on the MSF891 file.	n/a
Network overheads					
Allocation to ASL	Assumptions were made to classify labour into AER categories using organisation structure of Business Units, groups, reporting levels and employee salary	Ellipse Report TRB870	Yes	Position Data from Ellipse report	Assumptions were made to classify labour into AER categories. Details are provided in the note below.
ASL	In accordance with the Workforce Profile Report Data Specification. Total Hours Paid for the year times by 7. Then divide by standard work hours per week for a full time job times by the number of days in the reference period. Reference period refers to the payment summary period of 25/06/16 to 23/06/17 Ordinary Hours portion of Paid Hours are adjusted by % of labour costs allocated to non-prescribed ordinary time work activities	Workforce Profile Report (TRBWFP) from Ellipse for the reporting period As the report is run for the period to match payment summaries with the dates of 25/06/16 to 23/06/17 classed as estimate	Yes	Calculation: (Total Paid Hours*7)/(364*7) Total Paid hours: Value from TRBWFP Total Number of hours paid reference period minus flex time taken (SQL of MSF888 to sum flex hours taken) Ordinary Hours portion of Paid Hours are adjusted by % of labour costs allocated to non-prescribed ordinary time work activities	In accordance with the Workforce Profile Report Data Specification. Total Hours Paid for the year times by 7. Then divide by standard work hours per week for a full time job times by the number of days in the reference period. Reclassifications and restructures have resulted in movement between different categories, whilst staff movements of exits and hires throughout the period have resulted in net reductions. Ordinary Hours portion of Paid Hours are adjusted by % of labour costs allocated to non-prescribed ordinary time work activities

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
Total Labour expenditure	Total labour costs were extracted from financial records for the business units as listed in the footnote below.	TransGrid Regulatory Accounts Ellipse Financial Data Operating Expenditures model	Yes	Total network overhead labour costs is taken from the labour components of the network overhead category in the RIN 2.10 Overhead. The allocation to each of the employee categories are based on the proportion of gross earnings of the employee level against the total of the category. Network overheads include direct labour costs which were capitalised.	The split of total labour costs into individual sub- categories for each cell was based on the ASLs split between the different categories. The categories are based on the RC and AC classifications consistent with the opex and capex model.
Average productive work hours per ASL	Total Paid hours: Value from TRBWFP Total Number of hours paid reference period minus flex time taken (SQL of MSF888 to sum flex hours taken) Overtime Hours is the number of hours of paid overtime worked by the employee during the reference period Total Leave Taken refers to the sum of leave taken by the employee including annual, paid sick leave, unpaid sick leave, carers leave, long service leave, maternity leave, paternity leave, family and community services leave and unpaid leave. Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed work activities (ordinary time and overtime) Reference period refers to the payment summary period of 25/06/16 to 23/06/17	Workforce Profile Report (TRBWFP) from Ellipse for the reporting period As the report is run for the period to match payment summaries with the dates of 25/06/16 to 23/06/17 and is adjusted by training rate and a non-prescribed labour costed rate this is classed as estimate	Yes	(Total Hours Paid + Overtime Hours) - Total Leave Taken Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed work activities	Total Number of Hours Paid Annual Reference Period includes paid leave and excludes workers paid by third party, unpaid leave, overtime, allowances, additional hours worked under flex-time. Overtime Hours is the number of hours of paid overtime worked by the employee during the reference period Total Leave Taken refers to the sum of leave taken by the employee including annual, paid sick leave, unpaid sick leave, carers leave, long service leave, maternity leave, paternity leave, family and community services leave and unpaid leave. Adjusted by % of costs allocated to training Adjusted by % of labour costs

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
					allocated to non-prescribed work activities
Stand down occurrences per ASL	A count per employee of how many times they used the Stand Down work codes in the timesheet in Ellipse. Classed as estimate as the number of instances of stand down is calculated by the ASL value which is an adjusted figure	SQL of Ellipse work codes in MSF891	Yes	An SQL query was run on the Work Code F1 from Ellipse 8 go live (April 2013) on the MSF891 file.	n/a
Total direct network labour					
Allocation to ASL	Assumptions were made to classify labour into AER categories using organisation structure of Business Units, groups, reporting levels and employee salary	Ellipse Report TRB870	Yes	Position Data from Ellipse report	Assumptions were made to classify labour into AER categories. Details are provided in the note below.
ASL	In accordance with the Workforce Profile Report Data Specification. Total Hours Paid for the year times by 7. Then divide by standard work hours per week for a full time job times by the number of days in the reference period. Reference period refers to the payment summary period of 25/06/16 to 23/06/17 Ordinary Hours portion of Paid Hours are adjusted by % of labour costs allocated to non-prescribed ordinary time work activities	Workforce Profile Report (TRBWFP) from Ellipse for the reporting period As the report is run for the period to match payment summaries with the dates of 25/06/16 to 23/06/17 classed as estimate	Yes	Calculation: (Total Paid Hours*7)/(364*7) Total Paid hours: Value from TRBWFP Total Number of hours paid reference period minus flex time taken (SQL of MSF888 to sum flex hours taken) Ordinary Hours portion of Paid Hours are adjusted by % of labour costs allocated to non-prescribed ordinary time work activities	In accordance with the Workforce Profile Report Data Specification. Total Hours Paid for the year times by 7. Then divide by standard work hours per week for a full time job times by the number of days in the reference period. Reclassifications and restructures have resulted in movement between different categories, whilst staff movements of exits and hires throughout the period have resulted in net reductions. Ordinary Hours portion of Paid Hours are adjusted by % of labour costs allocated to non-prescribed ordinary time work activities

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
Total Labour expenditure	Total labour costs were extracted from financial records for the business units as listed in the footnote below.	TransGrid Regulatory Accounts Ellipse Financial Data Operating Expenditures model	Yes	Total direct network labour costs is taken from the labour components of the direct network category in the RIN 2.10 Overhead. The allocation to each of the employee categories are based on the proportion of gross earnings of the employee level against the total of the category. Direct network labour only relates to maintenance activities.	The split of total labour costs into individual sub- categories for each cell was based on the ASLs split between the different categories. The categories are based on the RC and AC classifications consistent with the opex and capex model.
Average productive work hours per ASL	Total Paid hours: Value from TRBWFP Total Number of hours paid reference period minus flex time taken (SQL of MSF888 to sum flex hours taken) Overtime Hours is the number of hours of paid overtime worked by the employee during the reference period Total Leave Taken refers to the sum of leave taken by the employee including annual, paid sick leave, unpaid sick leave, carers leave, long service leave, maternity leave, paternity leave, family and community services leave and unpaid leave. Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed work activities (ordinary time and overtime) Reference period refers to the payment summary period of 25/06/16 to 23/06/17	Workforce Profile Report (TRBWFP) from Ellipse for the reporting period As the report is run for the period to match payment summaries with the dates of 25/06/16 to 23/06/17 and is adjusted by training rate and a non-prescribed labour costed rate this is classed as estimate	Yes	(Total Hours Paid + Overtime Hours) - Total Leave Taken Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed work activities	Total Number of Hours Paid Annual Reference Period includes paid leave and excludes workers paid by third party, unpaid leave, overtime, allowances, additional hours worked under flex-time. Overtime Hours is the number of hours of paid overtime worked by the employee during the reference period Total Leave Taken refers to the sum of leave taken by the employee including annual, paid sick leave, unpaid sick leave, carers leave, long service leave, maternity leave, paternity leave, family and community services leave and unpaid leave. Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed

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
					work activities
Stand down occurrences per ASL	A count per employee of how many times they used the Stand Down work codes in the timesheet in Ellipse. Classed as estimate as the number of instances of stand down is calculated by the ASL value which is an adjusted figure	SQL of Ellipse work codes in MSF891	Yes	An SQL query was run on the Work Code F1 from Ellipse 8 go live (April 2013) on the MSF891 file.	n/a
2.11.2 DESCRIPTOR METRICS					
Corporate overheads					
Ordinary time Per ASL 2016-17	Total Paid hours: Value from TRBWFP Total Number of hours paid reference period minus flex time taken (SQL of MSF888 to sum flex hours taken) Total Leave Taken refers to the sum of leave taken by the employee including annual, paid sick leave, unpaid sick leave, carers leave, long service leave, maternity leave, paternity leave, family and community services leave and unpaid leave. Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to ordinary time non-prescribed work activities Reference period refers to the payment summary period of 25/06/16 to 23/06/17	Workforce Profile Report (TRBWFP) from Ellipse for the reporting period As the report is run for the period to match payment summaries with the dates of 25/06/16 to 23/06/17 and is adjusted by training rate and non-prescribed labour cost rate this is classed as estimate	Yes	Using the value from TRBWFP Total Number of hours paid reference period minus flex time taken (SQL of MSF888 to sum flex hours taken) and subtracting the sum of the leave taken in the TRBWFP report Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed work activities Reference period refers to the payment summary period of 25/06/16 to 23/06/17	Total Number of Hours Paid Annual Reference Period; includes paid leave and excludes workers paid by third party, unpaid leave, overtime, allowances, additional hours worked under flex-time. Total Leave Taken refers to the sum of leave taken by the employee including annual, paid sick leave, unpaid sick leave, carers leave, long service leave, maternity leave, paternity leave, family and community services leave and unpaid leave. Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed work activities Divide by FTE (ASL) Calculate average by AER level and category

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
Ordinary time Hourly rate per ASL 2016-17	Gross Earnings /FTE Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed ordinary time work activities Calculate average by AER level and category NOTE: The data can appear to have outliers as termination payments are included in this rate calculation as they are classified as being 'Labour costs – other earnings' Calculate average by AER level and category	Workforce Profile Report (TRBWFP) from Ellipse for the reporting period As the report is run for the period to match payment summaries with the dates of 25/06/16 to 23/06/17 and is adjusted by training rate and non-prescribed labour costed rate this is classed as estimate	Yes	Gross Earnings YTD divided by Ordinary Time Hours Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed ordinary time work activities	Gross Earnings /FTE Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed work activities Calculate average by AER level and category NOTE: The data can appear to have outliers as termination payments are included in this rate calculation as they are classified as being 'Labour costs – other earnings'
Overtime Per ASL 2016-17	Overtime Hours is the number of hours of paid overtime worked by the employee during the reference period Adjusted by % of labour costs allocated to non-prescribed overtime work activities	Workforce Profile Report (TRBWFP) from Ellipse for the reporting period As the report is run for the period to match payment summaries with the dates of 25/06/16 to 23/06/17 and adjusted by the non-prescribed overtime labour cost rate this is classed as estimate	Yes	Overtime Hours/FTE Averaged by AER Level and category Adjusted by % of labour costs allocated to non-prescribed overtime work activities	Overtime Hours is the number of hours of paid overtime worked by the employee during the reference period Adjusted by % of labour costs allocated to non-prescribed overtime work activities
Overtime Hourly rate per ASL 2016-17	Overtime Earnings/Overtime Hours Calculate average by AER level and category Adjusted by % of labour costs allocated to non-prescribed overtime work activities	Workforce Profile Report (TRBWFP) from Ellipse for the reporting period As the report is run for the period to match payment summaries with the dates of 25/06/16 to 23/06/17 and adjusted by the non-prescribed overtime labour cost rate this is classed as estimate	Yes	The Overtime Hourly Rate was calculated by dividing the Total Overtime Earnings by the Overtime Hours. Adjusted by % of labour costs allocated to non-prescribed overtime work activities	Overtime Earnings/Overtime Hours Calculate average by AER level and category
Network overheads					
Ordinary time Per ASL 2016-17	Total Paid hours: Value from TRBWFP Total Number of hours paid reference	Workforce Profile Report (TRBWFP) from Ellipse for the reporting period	Yes	Using the value from TRBWFP Total Number of hours paid reference period minus flex time	Total Number of Hours Paid Annual Reference Period; includes paid leave and

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
	period minus flex time taken (SQL of MSF888 to sum flex hours taken) Total Leave Taken refers to the sum of leave taken by the employee including annual, paid sick leave, unpaid sick leave, carers leave, long service leave, maternity leave, paternity leave, family and community services leave and unpaid leave. Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to ordinary time non-prescribed work activities Reference period refers to the payment summary period of 25/06/16 to 23/06/17	As the report is run for the period to match payment summarise with the dates of 25/06/16 to 23/06/17 and is adjusted by training rate and non-prescribed labour cost rate this is classed as estimate		taken (SQL of MSF888 to sum flex hours taken) and subtracting the sum of the leave taken in the TRBWFP report Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed work activities Reference period refers to the payment summary period of 25/06/16 to 23/06/17	excludes workers paid by third party, unpaid leave, overtime, allowances, additional hours worked under flex-time. Total Leave Taken refers to the sum of leave taken by the employee including annual, paid sick leave, unpaid sick leave, carers leave, long service leave, maternity leave, paternity leave, family and community services leave and unpaid leave. Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed work activities Divide by FTE (ASL) Calculate average by AER level and category
Ordinary time Hourly rate per ASL 2016-17	Gross Earnings /FTE Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed ordinary time work activities Calculate average by AER level and category NOTE: The data can appear to have outliers as termination payments are included in this rate calculation as they are classified as being 'Labour costs – other earnings'	Workforce Profile Report (TRBWFP) from Ellipse for the reporting period As the report is run for the period to match payment summarise with the dates of 25/06/16 to 23/06/17 and is adjusted by training rate and non-prescribed labour costed rate this is classed as estimate	Yes	Gross Earnings YTD divided by Ordinary Time Hours Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed ordinary time work activities	Gross Earnings /FTE Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed work activities Calculate average by AER level and category NOTE: The data can appear to have outliers as termination payments are included in this rate calculation as they are classified as being 'Labour

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
	Calculate average by AER level and category				costs – other earnings'
Overtime Per ASL 2016-17	Overtime Hours is the number of hours of paid overtime worked by the employee during the reference period Adjusted by % of labour costs allocated to non-prescribed overtime work activities	Workforce Profile Report (TRBWFP) from Ellipse for the reporting period As the report is run for the period to match payment summaries with the dates of 25/06/16 to 23/06/17 and adjusted by the non-prescribed overtime labour cost rate this is classed as estimate	Yes	Overtime Hours/FTE Averaged by AER Level and category Adjusted by % of labour costs allocated to non-prescribed overtime work activities	Overtime Hours is the number of hours of paid overtime worked by the employee during the reference period Adjusted by % of labour costs allocated to non-prescribed overtime work activities
Overtime Hourly rate per ASL 2016-17	Overtime Earnings/Overtime Hours Calculate average by AER level and category Adjusted by % of labour costs allocated to non-prescribed overtime work activities	Workforce Profile Report (TRBWFP) from Ellipse for the reporting period As the report is run for the period to match payment summaries with the dates of 25/06/16 to 23/06/17 and adjusted by the non-prescribed overtime labour cost rate this is classed as estimate	Yes	The Overtime Hourly Rate was calculated by dividing the Total Overtime Earnings by the Overtime Hours. Adjusted by % of labour costs allocated to non-prescribed overtime work activities	Overtime Earnings/Overtime Hours Calculate average by AER level and category
Total direct network labour					
Ordinary time Per ASL 2016-17	Total Paid hours: Value from TRBWFP Total Number of hours paid reference period minus flex time taken (SQL of MSF888 to sum flex hours taken) Total Leave Taken refers to the sum of leave taken by the employee including annual, paid sick leave, unpaid sick leave, carers leave, long service leave, maternity leave, paternity leave, family and community services leave and unpaid leave. Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to ordinary time non-	Workforce Profile Report (TRBWFP) from Ellipse for the reporting period As the report is run for the period to match payment summaries with the dates of 25/06/16 to 23/06/17 and is adjusted by training rate and non-prescribed labour cost rate this is classed as estimate	Yes	Using the value from TRBWFP Total Number of hours paid reference period minus flex time taken (SQL of MSF888 to sum flex hours taken) and subtracting the sum of the leave taken in the TRBWFP report Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed work activities Reference period refers to the payment summary period of 25/06/16 to 23/06/17	Total Number of Hours Paid Annual Reference Period; includes paid leave and excludes workers paid by third party, unpaid leave, overtime, allowances, additional hours worked under flex-time. Total Leave Taken refers to the sum of leave taken by the employee including annual, paid sick leave, unpaid sick leave, carers leave, long service leave, maternity leave, paternity leave, family and community services leave and unpaid leave.

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
	prescribed work activities Reference period refers to the payment summary period of 25/06/16 to 23/06/17				Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed work activities Divide by FTE (ASL) Calculate average by AER level and category
Ordinary time Hourly rate per ASL 2016-17	Gross Earnings /FTE Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed ordinary time work activities Calculate average by AER level and category NOTE: The data can appear to have outliers as termination payments are included in this rate calculation as they are classified as being 'Labour costs – other earnings' Calculate average by AER level and category	Workforce Profile Report (TRBWFP) from Ellipse for the reporting period As the report is run for the period to match payment summaries with the dates of 25/06/16 to 23/06/17 and is adjusted by training rate and non-prescribed labour costed rate this is classed as estimate	Yes	Gross Earnings YTD divided by Ordinary Time Hours Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed ordinary time work activities	Gross Earnings /FTE Adjusted by % of costs allocated to training Adjusted by % of labour costs allocated to non-prescribed work activities Calculate average by AER level and category NOTE: The data can appear to have outliers as termination payments are included in this rate calculation as they are classified as being 'Labour costs – other earnings'
Overtime Per ASL 2016-17	Overtime Hours is the number of hours of paid overtime worked by the employee during the reference period Adjusted by % of labour costs allocated to non-prescribed overtime work activities	Workforce Profile Report (TRBWFP) from Ellipse for the reporting period As the report is run for the period to match payment summaries with the dates of 25/06/16 to 23/06/17 and adjusted by the non-prescribed overtime labour cost rate this is classed as estimate	Yes	Overtime Hours/FTE Averaged by AER Level and category Adjusted by % of labour costs allocated to non-prescribed overtime work activities	Overtime Hours is the number of hours of paid overtime worked by the employee during the reference period Adjusted by % of labour costs allocated to non-prescribed overtime work activities
Overtime Hourly rate per ASL 2016-17	Overtime Earnings/Overtime Hours Calculate average by AER level and category	Workforce Profile Report (TRBWFP) from Ellipse for the reporting period As the report is run for the period to	Yes	The Overtime Hourly Rate was calculated by dividing the Total Overtime Earnings by the Overtime Hours.	Overtime Earnings/Overtime Hours Calculate average by AER level and category

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
	Adjusted by % of labour costs allocated to non-prescribed overtime work activities	match payment summaries with the dates of 25/06/16 to 23/06/17 and adjusted by the non-prescribed overtime labour cost rate this is classed as estimate		Adjusted by % of labour costs allocated to non-prescribed overtime work activities	

Note to Labour Classification Levels

To align TransGrid's staff classifications to the required AER template classifications the following assumptions were made:

Executive: Positions at an EGM level

Senior Manager: Positions that have 'Reporting level' as a Group Manager

Manager: Positions that have 'Reporting Level' as Branch Manager, Team Leader or Business Manager – unless Works Delivery Team Leaders. Works delivery Team Leaders are to be classified into Direct Labour Skilled Electrical workers rather than network overheads as their roles supervise electrical workers in the field and contribute directly to work undertaken in the field.

Professional: Positions that are not team leaders or managers but are SP28 or higher or IEAs or SCOs

Semi Professional: Positions that are SP16-SP27 and that are not administrative or business support positions.

Support Staff: Positions that are admin/support roles SP12-SP20

Interns, Junior Staff and Apprentices - Graduates, MD scholars, Industrial Work Experience and Trainee Engineering Officers

Apprentices – Electrical and Lineworker Apprentices

Skilled Electrical Worker - Positions in WD that require electrical/trans line apprenticeship to have been completed or staff classification of operators

Skilled Non Electrical Workers - Positions that specify a trade other than electrical/trans line apprenticeship completed

Unskilled Workers - Positions that have a staff classification in Ellipse as Power Worker

Note on Definition of Overheads'

TransGrid notes that the AER's definition of 'Overheads' and 'Direct' labour that is required for the population of this template differs to that used in the normal course of business. In particular TransGrid highlights that a significant proportion of labour costs described as 'Network Overheads' relates directly to project work that would ultimately be capitalised.

Note on Definition of AER Levels

AER levels were determined by both the Business Unit the employee belonged to and by their AER Category as follows:

Exclude: Business Growth

Corporate Overheads Internal Labour Costs:

Consists of the following business units/categories:

Corporate Services

Executive manager
Senior Manager
Manager
Professional
Semi Professional
Support Staff
Intern, Junior Staff, Apprentice

Finance

Executive manager
Senior Manager
Manager
Professional
Semi Professional
Support Staff
Intern, Junior Staff, Apprentice

Legal Governance & Risk

Executive manager
Senior Manager
Manager
Professional
Semi Professional
Support Staff
Intern, Junior Staff, Apprentice

CEO Office

Executive manager
Senior Manager
Manager
Professional
Semi Professional
Support Staff
Intern, Junior Staff, Apprentice

Strategy & Regulation

Executive manager
Senior Manager
Manager
Professional
Semi Professional
Support Staff
Intern, Junior Staff, Apprentice

Network Overheads Internal Labour Costs:

Consists of the following business units/categories:

Network Planning & Operations

Executive manager
Senior Manager
Manager
Professional
Semi Professional
Support Staff
Intern, Junior Staff, Apprentice

Works Delivery

Executive manager
Senior Manager
Manager
Professional
Semi Professional
Support Staff
Intern, Junior Staff, Apprentice

Total Direct Network Labour:

Consists of the following business units/categories:

Works Delivery

Skilled Electrical Worker
Skilled non electrical worker
Unskilled worker
Apprentice

7.3.10 Worksheet 2.12 Input tables

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
2.12 INPUT TABLES					
Vegetation Management					
Direct Material Expenditure	GL Account Extract and using TransGrid financial records, which are the basis for 2016-17 Regulatory Accounts. Regulatory accounts 2016-17: Vegetation Management plus Routine Maintenance plus Non Routine Maintenance (RIN) equals Network Maintenance (Regulatory Accounts DISAGG Inc and Disagg Opex)	- Regulatory accounts - CA RIN 2.7 Vegetation Management Vegetation management is "Land & Easement" in the Regulatory Opex Model categories less Access Track Maintenance expenditure. The reported amount is split into the subcategories in RIN 2.7	No	Costs for Direct Materials / Direct Labour / Contract Cost / Other Costs are split based on Cost Category and / or Expense Element. Contract costs are defined as expenditures in relation to expense elements 436 - Outsourced-Easement Maintenance and 438 - Outsourced-Equipment Installs.	N/A
Direct Labour Expenditure					
Contract Expenditure					
Other Expenditures					
Related Party Contract Expenditure					
Related Party Contract Margin					
FINANCIAL TOTALS					
Routine Maintenance					
Direct Material Expenditure	GL Account Extract and using TransGrid financial records, which are the basis for 2016-17 Regulatory Accounts. Regulatory accounts 2016-17: Vegetation Management plus Routine Maintenance plus Non Routine Maintenance (RIN) equals Network Maintenance (Regulatory Accounts DISAGG Inc and Disagg Opex)	- Regulatory accounts - CA RIN 2.8 Maintenance	No	Costs for Direct Materials / Direct Labour / Contract Cost / Other Costs are split based on Cost Category and / or Expense Element. Contract costs are defined as expenditures in relation to expense elements 436 - Outsourced-Easement Maintenance and 438 - Outsourced-Equipment Installs.	N/A
Direct Labour Expenditure					
Contract Expenditure					
Other expenditure					
Related Party Contract Expenditure					
Related Party Contract Margin					
FINANCIAL TOTALS					
Non-Routine Maintenance					
Direct Material Expenditure	GL Account Extract and using TransGrid financial records, which are the basis for 2016-17	- Regulatory accounts - CA RIN 2.8 Maintenance	No	Costs for Direct Materials / Direct Labour / Contract Cost / Other Costs are split based on Cost Category and / or	N/A
Direct Labour 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
Contract Expenditure Other expenditure Related Party Contract Expenditure Related Party Contract Margin FINANCIAL TOTALS	Regulatory Accounts. Regulatory accounts 2016-17: Vegetation Management plus Routine Maintenance plus Non Routine Maintenance (RIN) equals Network Maintenance (Regulatory Accounts DISAGG Inc and Disagg Opex)			Expense Element. Contract costs are defined as expenditures in relation to expense elements 436 - Outsourced-Easement Maintenance and 438 - Outsourced-Equipment Installs.	
Overheads					
Direct Material Expenditure Direct Labour Expenditure Contract Expenditure Other expenditure Related Party Contract Expenditure Related Party Contract Margin FINANCIAL TOTALS	GL Account Extract and using TransGrid financial records, which are the basis for 2016-17 Regulatory Accounts. Regulatory accounts 2016-17: Prescribed opex component of overheads (RIN) equals Network Operations plus Other Controllable Costs plus Defined Benefit Superannuation Adjustment (DISAGG Inc and DISAGG Opex).	- Regulatory accounts - CA RIN 2.10 Overheads	Yes	Allocation to each of the Direct Materials / Direct Labour / Contract Cost / Other Costs categories are done on a pro-rata allocation of costs pre-support cost allocations. The pre-support cost allocation is, in turn, based on Cost Category and / or Expense Element. Contract costs are defined as expenditures in relation to expense elements 436 - Outsourced-Easement Maintenance and 438 - Outsourced-Equipment Installs.	The pre-support cost proportions are reflective of the support costs expenditure profile.
Augmentation					
Direct Material Expenditure Direct Labour Expenditure Contract Expenditure Other expenditure Related Party Contract Expenditure Related Party Contract	As per AER instruction	Extract 2016-17 financial data from Finance Cube, which are the basis for 2016-17 Regulatory Accounts. RIN 2.3 Augex	No	Costs for Direct Materials / Direct Labour / Contract Cost / Other Costs are split based on Cost Category and / or Expense Element. Contract costs are defined as expenditures in relation to expense element 438 -	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
Margin				Outsourced-Equipment Installs.	
FINANCIAL TOTALS					
Connections					
Direct Material Expenditure	As per AER instruction	Extract 2016-17 financial data from Finance Cube, which are the basis for 2016-17 Regulatory Accounts. RIN 2.5 Connections	No	Costs for Direct Materials / Direct Labour / Contract Cost / Other Costs are split based on Cost Category and / or Expense Element. Contract costs are defined as expenditures in relation to expense element 438 - Outsourced-Equipment Installs.	N/A
Direct Labour Expenditure					
Contract Expenditure					
Other expenditure					
Related Party Contract Expenditure					
Related Party Contract Margin					
FINANCIAL TOTALS					
Replacement					
Direct Material Expenditure	As per AER instruction	Extract 2016-17 financial data from Finance Cube, which are the basis for 2016-17 Regulatory Accounts. RIN 2.2 Replacements Costs for Direct Materials / Direct Labour / Contract Cost / Other Costs are split based on Cost Category and / or Expense Element. Contract expenditure excludes related party transactions for the year ended 30 June 2017. this is consistent with the related party transactions reported within the regulatory accounts for capital expenditure. Related party expenditure by asset are based on work carried out by the contractor for the year ended 30 June 2017.	No	The % of allocation is worked out by analysing actual labour/material/ expenses for total projects costs for REPEX projects commissioned in FY16/17 as reported in RIN CA 2.2 REPEX. The % is then applied to labour/material/expenses of REPEX costs incurred in FY16/17 to work out cost per asset category.	N/A
Direct Labour Expenditure					
Contract Expenditure					
Other expenditure					
Related Party Contract Expenditure					
Related Party Contract Margin					
FINANCIAL TOTALS					
Non-network Expenditure					
Direct Material Expenditure	As per AER instruction	Extract 2016-17 financial data from Finance Cube, which are the basis for 2016-17 Regulatory Accounts.	No	Costs for Direct Materials / Direct Labour / Contract Cost / Other Costs are split based on Cost Category and / or Expense Element.	N/A
Direct Labour Expenditure					
Contract Expenditure					
Other 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
Related Party Contract Expenditure		RIN 2.6 Non Network		Contract costs are defined as expenditures in relation to expense element 438 - Outsourced-Equipment Installs.	
Related Party Contract Margin					
FINANCIAL TOTALS					

7.3.11 Worksheet 5.2 Asset age profile

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
5.2.1 ASSET AGE PROFILE					
Transmission towers					
Asset Category	Transmission Towers by Highest Operating Voltage; Circuit Configuration Installed Assets - Quantity currently in commission by year	TransGrid Spatial System (TSS) Structure Report	No	Categories in TSS report	N/A
Economic Life - Mean	Average of Economic Life of each asset category.	Renewal and Maintenance Strategies	No	For each structure an analysis is made whether it is a coastal or inland structure, then the nominal Economic Life for all structure types is averaged by asset category.	TransGrid has a specified economic life for each asset type. Further the economic life of each asset type varies geographically (costal/inland). Mean is the average economic life of all asset types over the population in each asset category..
Economic Life - Standard Deviation	Standard Deviation of Economic Life of each asset category.	Renewal and Maintenance Strategies	No	For each structure an analysis is made whether it is a coastal or inland structure, then the standard deviation of the economic life for the structure population in each asset category is calculated (Excel STDEV function).	The standard deviation is calculated from the specified economic life of all asset types in across the population in each asset category. TransGrid does not specify a standard deviation for each particular asset type.
Installed Assets -> Quantity currently in commission by year [1910-11 to 2016 -17]	Asset Age Profile Transmission Towers by Highest Operating Voltage; Circuit Configuration Installed Assets - Quantity currently in commission by	TransGrid Spatial System (TSS) Structure Report	Yes	TSS records the construction date of all structures on the TransGrid system, This data was extracted and categorised according to voltage and circuit configuration.	The age of structures noted in TSS is based off a previous review of various sources (such as Line schedules, Line Data Cards, Electrical Databook, Easement Plan register dates). On some lines (generally older), construction data was not well recorded and best guess was used based on available previously mentioned documents. Dates are stored on a calendar year basis, not financial year. For the purposes of this RIN it was assumed build year was equal to the commissioning financial 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
	year				
Transmission tower support structures					
Asset Category	Support Structures by Highest Operating Voltage; Circuit Configuration	N/A - no support structures listed in template.	Yes	TransGrid do not separate asset data for support structures from towers themselves	There have been some past projects to replace wooden cross arms separate to wood poles, and some insulator replacement projects, hence inclusion in previous RIN section 2.2 (Repex) schedules. However these are not significant in the scheme of separation of these from the tower structures themselves.
Economic Life - Mean	Average and Standard Deviation of Economic Life of each asset type.	N/A - no support structures listed in template.	Yes	TransGrid do not separate asset data for support structures from towers themselves	There have been some past projects to replace wooden cross arms separate to wood poles, and some insulator replacement projects, hence inclusion in previous RIN section 2.2 (Repex) schedules. However these are not significant in the scheme of separation of these from the tower structures themselves.
Economic Life - Standard Deviation	Average and Standard Deviation of Economic Life of each asset type.	N/A - no support structures listed in template.	Yes	TransGrid do not separate asset data for support structures from towers themselves	There have been some past projects to replace wooden cross arms separate to wood poles, and some insulator replacement projects, hence inclusion in previous RIN section 2.2 (Repex) schedules. However these are not significant in the scheme of separation of these from the tower structures themselves.
Installed Assets -> Quantity currently in commission by year [1910-11 to 2016 -17]	Quantity of transmission tower support structures as at 30/6/17 categorised by construction date	N/A - no support structures listed in template.	Yes	TransGrid do not separate asset data for support structures from towers themselves	There have been some past projects to replace wooden cross arms separate to wood poles, and some insulator replacement projects, hence inclusion in previous RIN section 2.2 (Repex) schedules. However these are not significant in the scheme of separation of these from the tower structures themselves.
Conductors					
Asset Category	Overhead conductors installed (circuit lengths)	Renewal and Maintenance Strategies As per "Installed Assets"	Yes	Renewal and Maintenance Strategies As per "Installed Assets"	N/A
Economic Life - Mean	Average and Standard Deviation of Economic Life of each asset type.	Renewal and Maintenance Strategies	No	For each span an analysis is made whether it is a coastal or inland, then the nominal Economic Life is averaged by asset category.	The calculation is based on the quantity of spans in service, it is not based on length. TransGrid has a specific economic life based on geographic region (coastal/inland). It does not vary on conductor type. Mean is the average economic life over the all asset types over the population in each asset category.
Economic Life - Standard Deviation	Average and Standard Deviation of Economic Life of each asset type.	Renewal and Maintenance Strategies	No	For each span an analysis is made whether it is a coastal or inland span, then the standard deviation of	The calculation is based on the quantity of spans in service, it is not based on length. The standard deviation is calculated from the specified economic life

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 Economic Life for span population of that asset category (Excel STDEV function).	across the population in each asset category. TransGrid does not specify a standard deviation for each particular asset type.
Installed Assets -> Quantity currently in commission by year [1910-11 to 2016 -17]	Length of transmission conductors in service as at 30/6/17 categorised by construction date.	TransGrid Spatial System (TSS) Span Report	Yes	This data has been extracted and categorised according to the voltage and rating (summer day rating). The same rating table for EB RIN was used. Where it was noted that a circuit was constrained by terminal equipment the rating of the line component was checked manually and appropriately categorised.	The age profile has been calculated using circuit lengths not route length. Also segments of Transmission Lines that are built as split phase will have the length of that segment counted twice (as it has double the amount of conductor). Dates are stored on a calendar year basis, not financial year. For the purposes of this RIN it was assumed build year was equal to the commissioning financial year. No account has been made for any sections of conductors replaced for defects or failures. The age profile is based on operating voltage. For example, if a line is built for 330kV operation but only operating at 132kV, it will be categorised as a 132kV line. Whilst the ratings have been corrected removing terminal constraints, where a line uses multiple types of conductors the most constraining rating was assumed for the whole length. The age of conductors is based off a previous review of various sources (such as Line schedules, Line Data Cards, Electrical Databook, Easement Plan register dates). On some lines (generally older), construction data was not well recorded and best guess was used based on available previously mentioned documents. Note that as part of connection agreement revisions TransGrid took ownership of some 66kV and 132kV with field coupling points. These circuits are predominately strung on 132kV and 330kV respectively multiple circuit structures.
Transmission cables					
Asset Category	Transmission Cables by Highest Operating Voltage	Renewal and Maintenance Strategies As per "Installed Assets"	No	Renewal and Maintenance Strategies As per "Installed Assets"	N/A
Economic Life -	Average and	Renewal and Maintenance	No	All TransGrid cables have a	Based on economic life only

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
Mean	Standard Deviation of Economic Life of each asset type.	Strategies		40 year economic life.	
Economic Life - Standard Deviation	Average and Standard Deviation of Economic Life of each asset type.	Renewal and Maintenance Strategies	No	All TransGrid cables have a 40 year economic life.	Based on economic life only. TransGrid does not specify a standard deviation for each particular asset type.
Installed Assets -> Quantity currently in commission by year [1910-11 to 2016 -17]	Length of transmission cables in service as at 30/6/17 categorised by construction date.	Electrical Data Book Project Records (EDMS) Ellipse fitment information	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. The commissioning date of these cables comes from Ellipse bay fitments.	For small cable sections exact lengths may not have been recorded and have been estimated from available project data. The age profile is based on operating voltage. For example, if a cable is built for 330kV operation but only operating at 132kV, it will be categorised as a 132kV cable. Small lengths of high voltage cables <=66kV which may exist around / within high voltage substations have not been considered.
Substation switchbays					
Asset Category	The term 'module' in GIS module was interpreted as a bay that typically comprised a circuit breaker, isolator(s), earth switch(es), CT(s) and a VT in GIS switchboard. A module was assumed to be identical to an outage group as shown in WMS scoping diagrams.	As for [A] below	No	As for [A] below	As for [A] 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?	How the values for this variable are calculated	Assumptions made to allow calculation / estimation of the variable
Economic Life - Mean	Average Economic Life of each asset type.	Renewal and Maintenance Strategies	Yes	All TransGrid switchbay assets have a 40 year economic life.	The actual service life of switch bay assets depends on the replacement decision which varies due to a number of factors: such as their defects, risk posed, type issues, network requirements etc. Hence, only standard economic life is used.
Economic Life - Standard Deviation	Standard Deviation of Economic Life of each asset type.	Renewal and Maintenance Strategies	Yes	Square root of the economic life mean	The square root of the economic life mean is used as proxy instead of zero. This is following AER's guideline regarding standard deviation on page 73 under Economic life of an asset section in Explanatory statement Final regulatory information notices to collect information for category analysis published in March 2014.
Installed Assets -> Quantity currently in commission by year [1910-11 to 2016 -17]	**[A] GENERAL** - Only those assets that were categorised 'IS' (acronym for 'In Service') were included. Scrapped, spare units not installed and non-prescribed assets were excluded for this review. TransGrid has interpreted the requirement for "INSTALLED ASSETS -> QUANTITY CURRENTLY IN COMMISSION BY YEAR" as a requirement to identify the numbers of equipment items installed in each year, from the population of equipment current	Last Financial Year's RIN submission Ellipse Database : Component Register Summary Report TRB601 Equipment Register, Tracing Data, TransGrid System Drawings: High Voltage Operating Diagrams (HVOD's) and WMS Scoping Diagrams.	No.	This variable was calculated based on compiled data from Ellipse TRB 601 report. It was cross checked (spot checks) using HVOD's and WMS Scoping diagrams In preparation for the compilation of RIN data an Ellipse report was run at the end of June to obtain a 'snapshot' of equipment data at that time. Population profiles were based on these reports. Transformer population data was obtained separately for the Economic RIN and this information was re-used. Spot checks were done to correct a small number of errors. GIS equipment rows were identified for separate reporting and were counted	Date extracted from Ellipse database was correct. Tracing information were correct HVOD's and WMS scoping diagrams were correct. Only their latest versions were used as required.

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
	in commission. This will allow a population profile to be established.			manually.	
Substation power transformers					
Asset Category	As for [A] above	As for [A] above	No	As for [A] above	As for [A] above
Economic Life - Mean	Average Economic Life of power transformers	Renewal and Maintenance Strategies	Yes	All TransGrid transformer assets have a 45 year economic life.	The actual service life of power transformers depends on the replacement decision which varies due to a number of factors: such as their defects, risk posed, type issues, network requirements etc. Hence, only standard economic life is used.
Economic Life - Standard Deviation	Standard Deviation of Economic Life of power transformers	Renewal and Maintenance Strategies	Yes	Square root of the economic life mean	The square root of the economic life mean is used as proxy instead of zero. This is following AER's guideline regarding standard deviation on page 73 under Economic life of an asset section in Explanatory statement Final regulatory information notices to collect information for category analysis published in March 2014.
Installed Assets -> Quantity currently in commission by year [1910-11 to 2016 -17]	As for [A] above	The Excel file '2017TransFormerWorkSheet'	No This spreadsheet has also been used to provide Economic Benchmarking RIN data.	For consistency, the Excel file '2017TransFormerWorkSheet' used previously for Economic Benchmarking RIN, was reused for Substation Power Transformers.	Improved information on nameplate age has been collected in a field survey. Hence, nameplate 'year of manufacture' is now used for consistent and more easily traceable age related data.
Substation reactive plant					
Asset Category	Assets used to provide voltage support were included under this Asset Group. Tertiary Earthing Capacitors (TEC) used for protection purposes were excluded. Fault current limiting reactors on feeders, and on transformer	As for [A] above	No	As for [A] above	As for [A] above

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
	neutrals were excluded. Two major oil filled series reactors at Sydney South Substation have been excluded.				
Economic Life - Mean	Average Economic Life of each asset type.	Renewal and Maintenance Strategies	Yes	All TransGrid Capacitor and oil filled Reactor assets have a 30 year economic life. SVC asset have a 20 year economic life	The actual service life of reactive plant depends on the replacement decision which varies due to a number of factors: such as their defects, risk posed, type issues, network requirements etc. Hence, only standard economic life is used.
Economic Life - Standard Deviation	Standard Deviation of Economic Life of each asset type.	Renewal and Maintenance Strategies	Yes	Square root of the economic life mean	The square root of the economic life mean is used as proxy instead of zero. This is following AER's guideline regarding standard deviation on page 73 under Economic life of an asset section in Explanatory statement Final regulatory information notices to collect information for category analysis published in March 2014.
Installed Assets -> Quantity currently in commission by year [1910-11 to 2016 -17]	Other means : 132 kV GAS FILLED REACTORS	As for [A] above	No	As for [A] above	As for [A] above
SCADA, network control and protection systems					
Asset Category	Protection - Main Protection Relay Control - Device for the remote control and monitoring of a substation Communications - Device for the transmission of data between sites	Renewal and Maintenance Strategies (Automation, Market Metering and Telecommunications)	No	Direct extract from Ellipse	No assumptions made.

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
	Metering - Device for the measurement of energy throughput				
Economic Life - Mean	The expected economic life of each system	Renewal and Maintenance Strategies (Automation, Market Metering and Telecommunications)	No	All assets, straight out of Renewal and Maintenance Strategies. Protection taken as weighted average from three types of assets with three different lives.	No assumptions made.
Economic Life - Standard Deviation	The standard deviation to the installed asset base with regard to its age	Ellipse	Protection - No Control - Yes Communications - Yes Metering - No	Ellipse 2010 "STDEV()" function applied to all asset categories	Protection - N/A Control - Records extracted directly from Ellipse. Where only a year was recorded for replacement date – it is assumed this date is the end of the financial year. As recorded years have a proposed economic life of 15 years, this has been used throughout (e.g. if replacement year proposed is 2025 then assumed install date is 30/06/2010). Where no year is recorded, RIN 2015/16 data was used to fill in the missing installation years. Communications - Records extracted directly from Ellipse. Where only a year was recorded for replacement date – it is assumed this date is the end of the financial year. As recorded years have a proposed economic life of 15 years, this has been used throughout (e.g. if replacement year proposed is 2025 then assumed install date is 30/06/2010). Where no year is recorded, RIN 2015/16 data was used to fill in the missing installation years. Metering - N/A
Installed Assets -> Quantity currently in commission by year [1910-11	All asset counts based on year first commissioned Protection - The	Ellipse - Direct data (covers 80-90% of asset data) SSA - Assessments - Technical Performance -	Protection - No Control - Yes Communications -	Protection - Direct extract from Ellipse Control - Direct extract from Ellipse, where only	Protection - N/A Control - Records extracted directly from Ellipse. Where only a year was recorded for replacement date – it is assumed this date is the end of the financial 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
to 2016 -17]	number of main Protection relays in the network Control - The number of Control devices in the Network (RTUs, HMIs, IEDs), Independent of combined devices. Communications - The Number of Terminal Equipment, MUXs, Base Stations, PLC, VF Intertrips, and MW Assets on the Network Metering - The number of meters in the network	Protection and Metering - Defects Up To and Including July 2017.xlsx SSA - Assessments - Technical Performance - Telecommunications and Control - Defects Up To and Including July 2017.xlsx	Yes Metering - No	proposed replacement year available, 15 years are subtracted and applied as 30/Jun of that year. Communications - Direct extract from Ellipse, where only proposed replacement year available, 15 years are subtracted and applied as 30/Jun of that year. Metering - Direct extract from Ellipse	As recorded years have a proposed economic life of 15 years, this has been used throughout (e.g. if replacement year proposed is 2025 then assumed install date is 30/06/2010). Where no year is recorded, RIN 2015/16 data was used to fill in the missing installation years. Communications - Records extracted directly from Ellipse. Where only a year was recorded for replacement date – it is assumed this date is the end of the financial year. As recorded years have a proposed economic life of 15 years, this has been used throughout (e.g. if replacement year proposed is 2025 then assumed install date is 30/06/2010). Where no year is recorded, RIN 2015/16 data was used to fill in the missing installation years. Metering - N/A
Other - Not Applicable					

7.3.12 Worksheet 5.3 Maximum demand – network level

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
5.3.1 RAW AND WEATHER CORRECTED CONINCIDENT MD AT NETWORK LEVEL (summed at transmission connection point)					
Raw network coincident MD	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	Raw network 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 2016-17 have been considered for calculation of this variable.	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.
Date MD occurred	Date the raw network coincident maximum demand occurred	TransGrid's TUOS billing system	No	Date on which the raw network coincident Maximum Demand occurred for the relevant FY.	Date relevant to TransGrid network, as per above for occurred over rolling half
Half hour time period MD occurred	The half-hourly period during which the raw coincident maximum demand occurred	TransGrid's TUOS billing system	No	This pertains to half hour ended time period within which the MD occurred. As metering data is obtained over 15 minute intervals, rolling half hour average data is used (for example, average of 00:15 and 00:30 is used as the half hourly average demand at 00:30).	The maximum of summated rolling half-hourly averages in TransGrid's bulk supply points (BSPs) over rolling half hour periods on an as-delivered basis considered in identifying MD. The relevant half-hourly period is the reported number.
Winter/summer peaking	Determination of whether the TransGrid network peak above has occurred over summer or winter, in order to understand overall network capacity at the time of TransGrid network peak.	TransGrid's TUOS billing system	No	Determined by reference to when the MD occurred by ref months of winter or summer. As per TransGrid Operating Manuals: · Months of winter are defined as June, July and August. · Months of summer are defined as December, January and February.	The season during which the half-hour time period MD occurred.
Embedded generation	Generation connected to a network (such as distributors' networks) supplied from a particular bulk supply point. The load supplied from TG's	N/A	N/A	Data is required to be reported on an "as delivered by TransGrid's network basis". Loads supplied by embedded generation are not supplied by TransGrid's network. Consequently,	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
	network excludes load supplied directly from other sources such as generators embedded within distribution networks. Under this RIN, TransGrid is required to provide data "as delivered by its network". Consequently, embedded generation does not contribute to the load supplied from TransGrid's network.			the figures provided by TransGrid have no component of load supplied from embedded generation.	
Weather corrected (10% POE) network coincident MD	Network coincident maximum demand with weather correction applied (using AEMO NEFR) 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) AEMO NSW RAW MD 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. AEMO is accountable for its production. The source data (TransGrid RAW MD) is based on the TUOS billing system, and the weather correction from AEMO's 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.
Weather corrected (50% POE) network coincident MD	Network coincident maximum demand with weather correction applied (using AEMO NEFR) to the raw maximum demand to obtain a 50% POE maximum demand.	TransGrid's TUOS billing system AEMO 2017 Electricity Forecasting Insights	Yes	(AEMO50% POE/AEMONSW RAW MD) x TransGrid RAW MD a) TransGrid RAW MD is the TransGrid raw network coincident MD b) AEMO NSW RAW MD is the NSW raw MD as reported by AEMO, and c) AEMO 50% POE is the 50% POE MD	TransGrid does not produce weather corrected maximum demands for its transmission system. AEMO is accountable for its production. The source data (TransGrid RAW MD) is based on the TUOS billing system, and the weather correction from AEMO's 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.

7.3.13 Worksheet 5.4 Maximum demand and utilisation – spatial

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
5.4.1 NON-COINCIDENT & COINCIDENT MAXIMUM DEMAND					
Connection Point Rating	"Connection Point Rating" is interpreted as the capability of TransGrid's Bulk Supply Points (BSP) to supply current and future customer connections. Transmission systems can be limited by a range of factors including thermal ratings, voltage stability, transient stability and small signal (oscillatory) stability. These factors can be influenced by the magnitude and distribution of loads and generation across the network. They can also vary with time of day (day/night) and between seasons	Operating diagrams and operating manuals. Electrical Data Book.	No	Summation of transformer nameplate ratings &/or transmission line ratings at connection point	The connection point rating is determined as follows: · Where the bulk supply point is the "lower" voltage busbar of a substation, the summated nameplate ratings of the transformers supplying that busbar. · Where the bulk supply point is the "higher" voltage busbar of a substation, a tee connection or a switching station, the lessor of the summated normal summer day rating(s) of either: a) TransGrid's transmission line(s) connected at that point, or b) The customer's transmission line(s) connected at that point, or c) The summated nameplate ratings of the customer's transformer(s) supplied via the customer's line(s).
Raw Adjusted MD (MW)	The maximum demand delivered at the bulk supply point, averaged over a rolling half hour period, adjusted for load transfers where applicable.	TransGrid's TUOS billing system & DNSP	No	The demand over any rolling half-hourly period for each BSP during the relevant FY is calculated, and adjusted for load transfers where applicable. The maximum half-hourly period over the relevant FY is then taken as the adjusted raw MD.	No assumptions. This is based on actual data.
Raw Adjusted MD (MVA)	Metered reactive loading data are not available at all bulk supply points. Where they are available, data has been used to calculate the actual MVA loading at the time of the relevant maximum MW loading.	TransGrid's TUOS billing system & DNSP	Yes	MVA = sqrt (MW squared + MVAr squared)	Where metered MW and MVAr data are available, they have been used to calculate the MVA loadings. Where MVAr data is not available, the MVA loadings have been used on the system power factors, and as such, the number is an estimate.
Date MD occurred	Date the BSP maximum demand occurred	TransGrid's TUOS billing system & DNSP	No	Date on which the raw coincident and non-coincident Maximum Demand	No assumptions. This is based on actual 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
				occurred for the relevant FY.	
Half hour time period MD occurred	This variable has been taken to be the half hour period during which the relevant maximum demand (in MW) occurred. This is the half hour period ending at the nominated time.	TransGrid's TUOS billing system & DNSP	No	This pertains to half hour ended time period within which MD occurred.	No assumptions. This is based on actual data.
Winter/Summer Peaking	Determination of whether the TransGrid network peak above has occurred over summer or winter, in order to understand overall network capacity at the time of TransGrid network peak.	TransGrid's TUOS billing system & DNSP	No	Determined whether the MD occurred in the months of winter or summer.	No assumptions. This is based on actual data.
Adjustments - Embedded generation	Generation connected to a network (such as distributors' networks) supplied from a particular bulk supply point. Under this RIN, TransGrid is required to provide data "as delivered by its network". The load supplied from TG's network excludes load supplied directly from other sources such as generators embedded within distribution networks. Consequently, embedded generation does not contribute to load supplied from TransGrid's network.	N/A	N/A	Data are required to be reported on and "as delivered by TransGrid's network basis". Loads supplied by embedded generation are not supplied by TransGrid's network. Consequently, the figures provided by TransGrid have no component of load supplied from embedded generation.	N/A
Weather Corrected MD 10% POE (MW)	Weather correction applied to the TransGrid adjusted BSP MD to produce TG BSP 10% POE MD.	TransGrid's TUOS billing system AEMO Connection Point forecast 2017	Yes	(AEMO10% POE/AEMONSW RAW MD) x TransGrid adjusted BSP MD Where: a) "TransGrid adjusted BSP MD" refers to the raw adjusted MD for each BSP in the schedule b) AEMO NSW RAW is the NSW raw MD as reported by AEMO; and c) AEMO 10% POE is the 10% POE	TransGrid does not produce weather corrected maximum demands for its transmission system. AEMO is accountable for its production. The source data is based on the TUOS billing system, and the weather correction based on AEMO's 2017 Connection Point Forecast data containing raw and weather corrected actuals.

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
				MD as reported by AEMO.	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. For industrial loads supplied directly from BSPs, weather correction is not applicable, as load is not weather dependent.
Weather Corrected MD 10% POE (MVA)	As for 'Weather corrected MD 10% PoE (MW)	TransGrid's TUOS billing system & AEMO Connection Point forecasts 2017.	Yes	Where both MW and MVAr data are available, MVA were calculated based on those data. Where MVAr data are not available, the "system average" power factor has been used.	As for 'Weather corrected MD 10% PoE (MW)'. In addition, where metered MW and MVAr data are available they have been used to calculate the MVA loadings. Where MVAr data is not available, the MVA loadings have been based on the system power factor; as such, the number is an estimate.
Weather corrected Coincident MD 50% PoE (MW)	Weather correction applied to the TransGrid adjusted BSP MD to produce TG BSP 50% POE MD.	TransGrid's TUOS billing system AEMO Connection Point forecast 2017	Yes	(AEMO50% POE/AEMONSW RAW MD) x TransGrid adjusted BSP MD Where: a) "TransGrid adjusted BSP MD" refers to the raw adjusted MD for each BSP in the schedule b) AEMO NSW RAW is the NSW raw MD as reported by AEMO; and c) AEMO 50% POE is the 50% POE MD as reported by AEMO.	TransGrid does not produce weather corrected maximum demands for its transmission system. AEMO is accountable for its production. The source data is based on the TUOS billing system, and the weather correction based on AEMO's 2017 Connection Point Forecast data containing raw and weather corrected actuals. 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. For industrial loads supplied directly

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
					from BSPs, weather correction is not applicable, as load is not weather dependent.
Weather corrected Coincident MD 50% PoE (MVA)	As for 'Weather corrected MD 50% PoE (MW)	TransGrid's TUOS billing system & AEMO Connection Point forecasts 2017.	Yes	Where both MW and MVAr data are available, MVA were calculated based on those data. Where MVAr data are not available, the "system average" power factor has been used.	As for 'Weather corrected MD 50% PoE (MW)'. In addition, where metered MW and MVAr data are available they have been used to calculate the MVA loadings. Where MVAr data is not available, the MVA loadings have been based on the system power factor; as such, the number is an estimate.