Jemena Electricity Networks (Vic) Ltd

Response to the Category Analysis Regulatory Information Notice for regulatory year 2014

Basis of preparation

Information from the 2014 regulatory year

Public

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Jemena
Vital Service. Vital Planet.

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JEN response to Category Analysis Regulatory Information Notice for 2009-13 regulatory years

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GLOSSARY

ACS	Alternative Control Service
AER	Australian Energy Regulator
BOM	Bureau of Meteorology
CAM	Cost Allocation Method
CFA	Country Fire Authority
CIS	Customer Information System
CMOS	Customer Minutes Off Supply
CPI	Consumer Price Index
CY	Calendar Year
DLF	Distribution Loss Factor
DNSP	Distribution Network Service Providers
DRC	Depreciated Replacement Cost
DUoS	Distribution Use of System
EBSS	Efficiency Benefit Sharing Scheme
EBT	Economic benchmarking asset categories
EDPR	Electricity Distribution Price Review
ERP	Enterprise Resource Planning
ESC	Essential Services Commission
FQ	Fee and quote based services
FY	Financial Year
GIS	Geospatial Information System
GL	General Ledger
HV	High Voltage
IMS	Interval Meter Store
JAM	Jemena Asset Management Pty Ltd
JAM6	Jemena Asset Management 6 Pty Ltd
JEN	Jemena Electricity Networks (Vic) Limited
KPI	Key Performance Indicators
LV	Low Voltage
MD	Maximum Demand
MED	Major Event Day
MVA	Megavolt Amperes
MVAr	Megavolt Ampere Reactive
MW	Mega Watts

NEL	National Electricity Law
NMI	National Meter Identifiers
NPV	Net Present Value
NS	Network Services
OH	Overhead
OMS	Outage Management System
ORG	Office of the Regulator General
P&L	Profit and Loss
PF	Power Factor
RAB	Regulated Asset Base
RAS	Regulatory Accounting Statements
RFM	Roll-forward model
RIN	Regulatory Information Notice
SCS	Standard Control Services
STPIS	Service Target Performance Incentive Scheme
TNSP	Transmission Network Service Provider
TT	Thomastown Terminal
UG	Underground
VMS	Vegetation Management System
WACC	Weighted Average Cost of Capital
WBS	Work Breakdown Structure

OVERVIEW

1. This basis of preparation document has been prepared by Jemena Electricity Networks (Vic) Ltd (**JEN**) in response to the category analysis Regulatory Information Notice (**RIN**), covering calendar year 2014. RIN data templates and accompanying audit report and review report(s) are due to the Australian Energy Regulator (**AER**) by 30 April 2015. The RIN was served upon JEN by the AER under the National Electricity Law (**NEL**) on 7 March 2014.

2. Section 1.2 of Schedule 2 of the RIN requires JEN to prepare a 'basis of preparation' in accordance with the requirements specified in Schedule 1. This document—JEN's basis of preparation (for each variable and any other information):

    1. demonstrates how the information provided is consistent with the requirements of the RIN
    2. explains the source from which JEN obtained the information provided
    3. explains the methodology JEN applied to provide the required information, including the assumptions (if any) JEN made
    4. explains, in circumstances where JEN cannot provide input for a variable using actual information and therefore must provide input using estimated information:
        a) why an estimate is required, including why it is not possible for JEN to use actual financial Information or actual non-financial information (as the case may be, depending on the variable)
        b) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is JEN's best estimate, given the information sought in the RIN.

3. The RIN requires that the basis of preparation—for every variable in the Excel templates—explains the basis upon which JEN prepared information to populate the input cells. JEN notes that the AER intends to publish JEN's basis of preparation along with the RIN Excel templates.

4. JEN considers this basis of preparation complies with the AER requirement that the basis of preparation must follow a logical structure that enables auditors, assurance practitioners and the AER to clearly understand how JEN has complied with the requirements of the RIN. JEN has structured this basis of preparation to align with sections, worksheets and tables of the same numerical reference in the Excel templates (i.e. section *2.2 Repex* of this basis of preparation document refers to worksheet *2.2 Repex* in the Excel templates).

5. JEN has included in its basis of preparation all other information JEN prepared in accordance with the requirements of the RIN.

PROCESS REQUIREMENTS

6. JEN's basis of preparation will be independently reviewed and verified by statutory declaration. In relation to providing an audit opinion, or making an attestation report on the Excel templates presented by JEN, the auditor shall provide an opinion or attest by reference to JEN's basis of preparation. That is, the auditor will review JEN's basis of preparation when conducting their audit of actual information and issuing their review document of estimated information.

BEST ESTIMATES

7. Where JEN cannot populate an input cell in the Excel templates with actual information, it has provided its best estimate, considering data availability constraints, JEN's limited knowledge of how the information may be applied or interpreted by the AER and JEN being unaware of a superior estimation technique at the time. Accordingly, JEN cautions the AER from using this data to inform regulatory decisions without first confirming with JEN its understanding of the methodologies used, availability of data and any other limitations that may exist.

8. Due to the requirement for JEN to populate input cells relating to a number of previous years, JEN has estimated some variables.

9. Where JEN has provided an estimate, it has, in its basis of preparation, explained:

    1. why it could not use actual information
    2. the basis upon which the estimate was made including detail of the methodology applied, and
    3. why it is JEN's best estimate.

DEFINITION OF ACTUAL INFORMATION

10. JEN has adopted the AER's definition of 'actual information' in its response to the RIN. The RIN and explanatory statement define actual information as:

> *Information presented in response to the Notice whose presentation is Materially dependent on information recorded in JEN's historical accounting records or other records used in the normal course of business, and whose presentation for the purposes of the Notice is not 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.*
>
> *'Accounting records' include trial balances, the general ledger, subsidiary accounting ledgers, journal entries and documentation to support journal entries. Actual financial information may include accounting estimates, such as accruals and provisions, and any adjustments made to the accounting records to populate JEN's regulatory accounts and responses to the Notice. 'Records used in the normal course of business', for the purposes of non-financial information, includes asset registers, geographical information systems, outage analysis systems, and so on.*

WHERE JEN HAS BLACKED OUT CELLS

11. In some limited circumstances, JEN has blacked out input cells. These circumstances are limited to those that the RIN and its explanatory statement clearly identify as potentially not applicable to JEN.

12. The only circumstance where the AER determined that a variable could potentially be not applicable to JEN is when JEN does not currently measure the information in accordance with the variable requirement and the AER considers that it would be both:

- unnecessarily burdensome for JEN to estimate the information
- illogical for JEN to enter '0' in response to the variable when posed as a question.

13. These cells are shaded orange in the clean Excel templates

14. For each variable identified in the RIN and the Excel templates (through orange shading) as potentially not applicable to JEN, JEN has considered whether the variable is actually applicable to it.

15. Where the variable is actually applicable to JEN, JEN has completed the variable in accordance with the RIN and its explanatory statement. However, where specified above, in some cases JEN has blacked out the cells relating to that variable rather than input information. This does not mean that JEN has not responded to part of the RIN. Rather, it means that, in the circumstances set out above, the correct response required by the RIN is a blacked out cell. JEN has not applied any other use of blacked out or empty cells.

HOW JEN'S RESPONSE TO EACH VARIABLE MEETS THE REQUIREMENTS OF THE RIN

JEN considers that all information provided in this response—for each variable and any other information—is consistent with the requirements of the RIN. This is evident in that:

- JEN has provided complete Microsoft Excel workbooks attached at Appendix A of the RIN that accord to the RIN and the principles and requirements in Appendix E of the RIN
- JEN has provided a basis of preparation that demonstrates JEN's compliance with each of the information requirements. JEN's basis of preparation, for each variable and any other information:
  - Explains the source from which JEN obtained the information provided
  - Explains the methodology JEN applied to provide the required information, including any assumptions made
  - Where JEN has estimated information, its basis of preparation explains why an estimate was required, including why it was not possible for JEN to use actual information, and explains the basis of the estimate, including the approach used, assumptions made and why JEN considers the estimate to be JEN's best estimate
- JEN has provided supporting information or documentation used to comply with the requirements of the RIN
- JEN has provided the audit and review reports in accordance with the requirements of the RIN.

JEN HAS COLOUR CODED ITS RESPONSE TO EACH VARIABLE IN THE RIN

16. JEN has colour-coded both the templates and the basis of preparation to disclose the level of robustness of estimated information submitted in JEN's response to the RIN.

17. Actual data has been colour coded green and is considered to be reliable for the purpose of informing regulatory decisions. Estimated data that has been colour coded yellow is considered a good estimate and could be used to inform regulatory decisions also. Data that has been colour coded orange or red is considered a highly subjective estimate and should not be used to inform regulatory decision-making in JEN's view.

18. Below is a copy of JEN's colour coding schedule, including the definitions that distinguish between colour classifications.

Colour Code	Availability of data from NSP's primary system	Additional work around/estimation techniques
Green	Available and verifiable	**Simple** – no additional work or minor work around (e.g. source data from a secondary system)
Yellow	Available but with some gaps	**Moderate** – estimate based on statistically significant sample size
Orange	Little or no data available	**Complex** – estimate based on formula, standard parameters or other source
Red	Little or no data available	**Subjective** – based on significant estimates, judgements and assumptions
Black	Not applicable to relevant NSP	Not applicable to relevant NSP

2. EXPENDITURE

2.1 EXPENDITURE SUMMARY & RECONCILIATION

General Approach

19. Although some of the data that flows into the expenditure summary template is a mix of actual and estimate data, JEN has made the assumption that the entire template is an estimate. This is consistent with JEN's prior year submission.

2.1.1 STANDARD CONTROL SERVICES CAPEX

Actual information

Variable	Source and why actual	Methodology	Assumptions
Capitalised Corporate Overhead	The data is sourced from actual template of 2.10 Overheads	Refer to the Basis of Preparation for 2.10 Overheads	None
Customer Contributions	This information is sourced directly from JEN's SAP ERP system.	This data is derived from a defined general ledger account.	None

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Replacement Expenditure (Repex)	The data is sourced from the estimate template of 2.2 Repex	Refer to the Basis of Preparation for 2.2 Repex.	Refer to the Basis of Preparation for 2.2 Repex.	Refer to the Basis of Preparation for 2.2 Repex.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Connections	The data is sourced from the estimate template of 2.5 Connections.	Refer to the Basis of Preparation for 2.5 Connections. JEN was able to separate the Connections activities into SCS, Fee based and Quoted services. JEN extracted master data from its ERP system for Connection type activities. With input from experienced engineers, and based on the activity codes, JEN manually categorised these activities into SCS, Fee based and Quoted services. Note that Connections includes Fee based and Quoted services that are "connection" in nature.	Refer to the Basis of Preparation for 2.5 Connections.	Refer to the Basis of Preparation for 2.5 Connections
Augmentation Expenditure (Augex)	The data is sourced from the estimate template of 2.3 Augex	Refer to the Basis of Preparation for 2.3 Augex.	Refer to the Basis of Preparation for 2.3 Augex.	Refer to the Basis of Preparation for 2.3 Augex.
Non-Network	The data is sourced from template 2.6 Non-Networks where the bulk of the information is estimated.	Refer to the Basis of Preparation for 2.6 Non-Networks.	Refer to the Basis of Preparation for 2.6 Non-Networks.	Refer to the Basis of Preparation for 2.6 Non-Networks.
Capitalised Network Overheads	The data is sourced from the estimate template of 2.10 Overheads	Refer to the Basis of Preparation for 2.10 Overheads.	Refer to the Basis of Preparation for 2.10 Overheads.	Refer to the Basis of Preparation for 2.10 Overheads.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Balancing Item	The balancing item is the outcome from the reconciliation made to SCS Capex reported in the RIN submissions. As the items making up the balance consist of estimated items and/or items not reported in RIN submissions, it is estimated data. Refer to Appendix A.	Refer to Appendix A – Balancing Items Reconciliation for details of the balancing items	As Balancing Items is not reported as a separate category in the RIN submissions, JEN has deemed this data as an estimate.	JEN is not aware of a superior estimation technique.

2.1.2 STANDARD CONTROL SERVICES OPEX BY CATEGORY

Actual Information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Corporate Overheads	The data is sourced from the actual template in 2.10 Overheads.	Refer to the Basis of Preparation 2.10 Overheads.	Refer to the Basis of Preparation 2.10 Overheads. . It is assumed that IT non network costs are included in the “Corporate overhead expenditure - Overhead expenditure before allocation standard control services” section of template 2.10 Overheads, To avoid the impact of double counting, JEN removed the IT costs that were disclosed in the non-network template.	Refer to the Basis of Preparation 2.10 Overheads.

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Vegetation Management	The data is sourced from the estimate template in 2.7 Vegetation Management.	Refer to the Basis of Preparation 2.7 Vegetation Management.	Refer to the Basis of Preparation 2.7 Vegetation Management.	Refer to the Basis of Preparation 2.7 Vegetation Management.
Maintenance	The data is sourced from the estimate template in 2.8 Maintenance.	Refer to the Basis of Preparation 2.8 Maintenance.	Refer to the Basis of Preparation 2.8 Maintenance.	Refer to the Basis of Preparation 2.8 Maintenance.
Emergency Response	The data is sourced from the estimate template in 2.9 Emergency Response.	Refer to the Basis of Preparation 2.9 Emergency Response.	Refer to the Basis of Preparation 2.9 Emergency Response.	Refer to the Basis of Preparation 2.9 Emergency Response.
Non-Network	The data is sourced from the estimate template in 2.6 Non-Networks (IT, Motor Vehicle and Building & Property costs)	Refer to the Basis of Preparation 2.6 Non-Networks.	Refer to the Basis of Preparation 2.6 Non-Networks.	Refer to the Basis of Preparation 2.6 Non-Networks.
Network Overheads	The data is sourced from the estimate template in 2.10 Overheads	Refer to the Basis of Preparation for 2.10 Overheads.	Refer to the Basis of Preparation for 2.10 Overheads.	Refer to the Basis of Preparation for 2.10 Overheads.
Balancing item	The balancing item is the outcome from the reconciliation made to SCS opex reported in the RIN submissions. As the items making up the balance consist of estimated items and/or items not reported in RIN submissions, it is estimated data. Refer to Appendix A.	Refer to Appendix A – Balancing Items Reconciliation for details of the balancing items	As Balancing Items is not reported as a separate category in the RIN submissions, JEN has deemed this data as an estimate.	JEN is not aware of a superior estimation technique.

2.1.3 ALTERNATIVE CONTROL SERVICES CAPEX

Actual Information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Capitalised Corporate Overheads	The data is sourced from actual template of 2.10 Overheads	Refer to the Basis of Preparation for 2.10 Overheads	None	N/A

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Capitalised Network Overheads	The data is sourced from the estimate template of 2.10 Overheads	Refer to the Basis of Preparation for 2.10 Overheads.	Refer to the Basis of Preparation for 2.10 Overheads.	Refer to the Basis of Preparation for 2.10 Overheads.
Connections	The data is sourced from the estimate template of 2.5 Connections.	Refer to “Connections” in section 2.1.1 above. JEN notes that although it disclosed connections costs as part of Fee and Quoted Services, these should also be disclosed as ACS Connections, with the “duplication” impact disclosed in the “balancing Item” line item.	Refer to the Basis of Preparation for 2.5 Connections.	Refer to the Basis of Preparation for 2.5 Connections
Metering	The data is sourced from template 4.2 Metering The estimated cost category with reference to template 4.2. JEN used allocation to apply costs to the service subcategories.	Refer to the Basis of Preparation for Other Metering in template 4.2 estimate.	Refer to the Basis of Preparation for Other Metering in template 4.2 estimate.	Refer to the Basis of Preparation for Other Metering in template 4.2 estimate.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Public Lighting	The data is sourced from the estimate template of 4.1 Public Lighting.	Refer to the Basis of Preparation for 4.1 Public Lighting.	Refer to the Basis of Preparation for 4.1 Public Lighting.	Refer to the Basis of Preparation for 4.1 Public Lighting.
Fee & Quoted	The data is sourced from the estimate templates of 4.3 Fee-Based and 4.4 Quoted Services	Refer to the Basis of Preparation for 4.3 Fee-Based and 4.4 Quoted Services. JEN included the following items as capex: • Routine Connections -customers <100 amps that was sourced from table 4.3.1 in template 4.3 • Customer recoverable works that was sourced from table 4.3.1 in template 4.4 • Routine Connections > 100 amps that was sourced from table 4.4.1 in template 4.4	Refer to the Basis of Preparation for 4.3 Fee-Based and 4.4 Quoted Services	Refer to the Basis of Preparation for 4.3 Fee-Based and 4.4 Quoted Services.
Balancing Item	The balancing item is the outcome from the reconciliation of ACS Capex reported in the RIN submissions and the inputs from the templates in RIN C As the items making up the balance consist of estimated items and/or items not reported in RIN submissions, it is hence deemed an estimated data. Refer	Refer to Appendix A – Balancing items reconciliation for details of the balancing items	Refer to Appendix A – Balancing items. This item is solely dependent on assumptions made and explained in other templates.	Refer to Appendix A – Balancing items. This item is solely dependent on best estimates made and explained in other templates.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	to Appendix A			

2.1.4 ALTERNATIVE CONTROL SERVICE OPEX

Actual information

Corporate Overheads	The data is sourced from actual template of 2.10 Overheads	n/a	None	n/a
Non Network	Data is based on the ACS component for IT Opex which uses the JEN CAM to calculate these costs.	n/a	None	n/a
Corporate Overheads	The data is sourced from actual template of 2.10 Overheads	Refer to the Basis of Preparation for 2.10 Overheads	None	N/A

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Metering	The data is sourced from the estimate template in 4.2 Metering. The estimated cost categories with reference to template 4.2 are as follows: • Meter Testing • Meter Investigation • Scheduled Meter Reading • Meter Maintenance • Remote Meter Reading • IT Infrastructure - Opex • Communications Infrastructure -	Refer to the Basis of Preparation for each estimated cost category in 4.2 Metering.	Refer to the Basis of Preparation for each estimated cost category in 4.2 Metering.	Refer to the Basis of Preparation for each estimated cost category in template 4.2

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	Opex Other Metering – Opex part representing asset strategy & planning and AMI transitional business activities costs			
Connections	The data is sourced from the estimate template of 2.5 Connections.	Refer to "Connections" in section 2.1.1 above. JEN notes that although it disclosed connections costs as part of Network and Corporate Overheads, these should also be disclosed as ACS Connections, with the "duplication" impact disclosed in the "balancing Item" line item.	Refer to the Basis of Preparation for 2.5 Connections.	Refer to the Basis of Preparation for 2.5 Connections
Network Overheads	The data is sourced from the estimate template of 2.10 Overheads	Refer to the Basis of Preparation for 2.10 Overheads.	Refer to the Basis of Preparation for 2.10 Overheads.	Refer to the Basis of Preparation for 2.10 Overheads.
Public Lighting	The data is sourced from the estimate template in 4.1 Public Lighting.	Refer to the Basis of Preparation for 4.1 Public Lighting.	Refer to the Basis of Preparation for 4.1 Public Lighting.	Refer to the Basis of Preparation for 4.1 Public Lighting.
Fee & Quoted	The data is sourced from the estimate templates in 4.3 Fee-Based & 4.4 Quoted Services.	Refer to the Basis of Preparation for 4.3 Fee-Based & 4.4 Quoted Services. JEN included the following items as opex: • Various opex type items, which include energisation, de-energisation, service truck visits, reserve feeder maintenance, wasted truck visits, etc. These were sourced	Refer to the Basis of Preparation for 4.3 Fee-Based & 4.4 Quoted Services.	Refer to the Basis of Preparation for 4.3 Fee-Based & 4.4 Quoted Services.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		from table 4.3.1 of template 4.3. Various opex type items that includes Supply abolishment, Emergency recoverable works, After hour's truck by appointment. These, were sourced from table 4.4.1 of template 4.4.		
Balancing Items	The data is sourced from the actual template in 2.10 Overheads under the heading Corporate Overheads ACS. This balancing item represents the duplication of IT opex that is included in Corporate overheads. Refer to Appendix A	Refer to the Basis of Preparation 2.10 Overheads.	Refer to the Basis of Preparation 2.10 Overheads.	Refer to the Basis of Preparation 2.10 Overheads.

2.1.5 DUAL FUNCTION ASSETS CAPEX

20. Not applicable.

2.1.6 DUAL FUNCTION ASSETS OPEX BY CATEGORY

21. Not applicable.

22. APPENDIX A – Balancing Item Reconciliation

JEN RIN C - SCHEDULE OF "BALANCING ITEMS" - EXPENDITURE SUMMARY TEMPLATE 2.1	Amount
TABLE 2.1.1 - STANDARD CONTROL SERVICES CAPEX	
Public Lighting - Duplication of costs as it appears in both the Repex and Public lighting templates	(788.393)
Connections - Duplication of direct costs Metering back office functions. This also appears in the Metering template	(1,607.098)
Alternate control services share of Non Network (Motor Vehicle)	(263.115)
Connections - Duplication of direct costs for overhead and underground activities (CMZ / CMU). These also appear in Fee Based and Quoted templates.	(2,671.129)
Connections - Duplication of overhead costs for overhead and underground activities (CMZ / CMU). These also appear in Fee Based and Quoted templates.	(750.757)
Other	41.000
TOTAL	(6,039.492)
TABLE 2.1.2 - STANDARD CONTROL SERVICES OPEX	
ACS component of Non Network overheads	(637.612)
Non Network IT cost duplication that appears in Non Network Opex and Corporate Overheads	(4,968.525)
TOTAL	(5,606.138)
TABLE 2.1.3 - ALTERNATIVE CONTROL SERVICES CAPEX	
Alternate control services share of Non Network (Motor Vehicle)	263.115
Connections - Duplication of direct costs for overhead and underground activities (CMZ / CMU). These also appear in Fee Based and Quoted templates.	(2,671.129)
Metering - Duplication of network overhead that is part of Quoted Services	(60.981)
Other	3.000
TOTAL	(2,465.996)
TABLE 2.1.4 - ALTERNATIVE CONTROL SERVICES OPEX	
Connections - Duplication of overhead costs for overhead and underground activities (CMZ / CMU). These also appear in Fee Based and Quoted templates.	(750.757)
Non Network IT cost duplication that appears in Non Network Opex and Corporate Overheads	(637.612)
Other	1.557
TOTAL	(1,386.812)

2.2 REPEX

2.2.1 REPLACEMENT EXPENDITURE, VOLUMES AND ASSET FAILURES BY ASSET CATEGORY

Actual information

Variable	Source and why actual	Methodology	Assumptions
ASSET FAILURE - VOLUMES (for all of table 2.2.1)	Asset Failures Source of data: Outage Management System (OMS) – Outage notification report (accidental) for all except public lighting assets. This data was able to be provided without estimation due to the completeness of the outage notification report (accidental). For public lighting assets the data is sourced from SAP Notifications. The notification is created against the specific light that requires replacement. This allows the attributes of the public light such as whether it is located on a Major Road or Minor Road to be analysed and reported on.	The report is filtered by: 1. Year -> 2014 2. Outage type -> ACR (AC), Feeder (FD), Distribution Substations (DS), Low Voltage (LV), Line Fuse (LF), Premises (PR), and Switching Zone (SZ) 3. Primary cause of description that aligns with the definition of asset failure. - Asset – Electrical Failure - Asset – Mechanical Damage - Asset – Rot or Termites - Asset – Underground - Elements – Aged and deteriorated - Misc – No Identified Cause	No assumptions were made.
POLES BY: HIGHEST	The data is sourced from project cost line item reports	**Pole Staking:** Used existing JEN BRIO Query ***Staked Poles By Feeder*** to extract details	• The poles were replaced in the year that they were booked to the job.

Variable	Source and why actual	Methodology	Assumptions
OPERATING VOLTAGE ; MATERIAL TYPE; STAKING (IF WOOD) (ASSET REPLACEMENTS)	from JEN's internal SAP systems. These reports detail actual pole numbers booked to the relevant Work Breakdown Structure (WBS) Elements over 2014 with additional details from associated Plant Maintenance (PM) Orders and Equipment records. As the data is maintained within JEN's internal systems, it is considered actual information.	of poles staked for the 2014 calendar year. **Pole Replacement:** **Extract from SAP for Calendar Year 2014:** SAP report S_ALR_87013543 was used to extract Total Cost data (excluding settlement) from projects linked to Pole Replacement activities (AAA and BAA-RPL, RPH, RPS for JSAP) including details of WBS Elements and associated PM Orders. From this report JEN extracted the Materials Expenditure Actuals figure and extracted details of materials (poles) booked to this Activity during 2014. This data was used to determine the number of poles replaced under these activities for the year (poles booked equals poles replaced). From these PM Orders (pole replacement jobs worked on for the specified period), a list of the linked equipment records and the associated equipment characteristics was generated. These associated characteristics along with the Functional Location linked to the relevant PM Order were used to determine the split of poles replaced by classification and voltage. The Split of Pole Replacement quantities between Urban and Short Rural were determined by considering the Feeder associated with the highest voltage on the pole. The feeders designated as Short Rural are • COO-011 • SA0-002 • SBY-011 • SBY-014 • SBY-032 • SHM-011 All other distribution and subtransmission feeders are designated Urban.	• The number of poles booked to these PM Orders over 2014 equals the number of poles replaced. • The classification (use and voltage) of the pole removed is representative of the pole installed. • Where the classification of the replaced pole could not be ascertained then it was determined by the pole size. Ie 11m = LV pole

Variable	Source and why actual	Methodology	Assumptions
		Note: JEN has removed the costs associated with the project "Emergency Asset Replacement – Mickleham works" from HV Poles replacement costs as this work is not part of HV Pole Replacement and was charged to an external party.	
POLE TOP STRUCTURES BY: HIGHEST OPERATING VOLTAGE (ASSET REPLACEMENTS)	The data is sourced from project cost line item reports from JEN's internal SAP systems. These reports detail actual crossarm numbers booked to the relevant WBS Elements over 2014 with additional details from associated PM Orders and Equipment records. As the data is maintained within JEN's internal systems, it is considered actual information.	**Extract from SAP for calendar year 2014:** SAP report S_ALR_87013543 were used to extract Total Cost data (excluding settlement) from projects linked to Crossarm Replacement activities (AAA and BAA-RXL, RXH, RXS), including details of WBS Elements and associated PM Orders. From this report JEN extracted the Materials Expenditure Actuals figure and extracted details of all materials (crossarms) booked to these Activities over 2014. This data was used to determine the number of crossarms replaced under these activities for the year. For crossarms booked to RPH (HV Crossarm Replacement). The functional locations linked to the PM Orders were used to determine the relevant voltage. Crossarms of type L11 to L55 are LV. For the remaining HV and ST crossarms, the functional locations linked to the associated PM Orders were used to determine the specific voltages.	• The crossarms were replaced in the year that they were booked to the job. • The number of crossarms booked to these PM Orders over the period in question equals the number of crossarms replaced.

Variable	Source and why actual	Methodology	Assumptions
OVERHEAD CONDUCTORS BY: HIGHEST OPERATING VOLTAGE; NUMBER OF PHASES (AT HV) (ASSET REPLACEMENTS)	The data is sourced from project cost line item reports from JEN's internal SAP systems. These reports detail actual Overhead Conductor lengths booked to the relevant WBS Elements over 2014 with additional details from associated Project Systems (PS) Networks, PM Orders and equipment records. As the data is maintained within JEN's internal systems, it is considered actual information.	**Extract from for calendar year 2014:** SAP report S_ALR_87013543 was used to extract Total Cost data (excluding settlement) from projects linked to OH Conductor Replacement activities (AAA and BAA-ROH, ROA, ROL) including details of WBS Elements and associated PM Orders. From this report JEN extracted the Materials Expenditure Actuals figure and extracted details of all materials (Overhead Conductor) booked to these activities for the year. This data was used to determine the length of OH conductor replaced under these activities for the year. From these PM Orders (Overhead Conductor jobs worked on for 2014), a list of the linked equipment records and the associated equipment characteristics was generated. These associated characteristics along with the Functional Location linked to the relevant PM Order were used to determine the split of Overhead Conductor replaced by classification and voltage and to facilitate the derivation of the route length from the length of conductor booked. Where this data was not readily available individual PM Orders and/or PS Networks were individually interrogated to determine these details. The Split of OH Conductor Replacement quantities between Urban and Short Rural were determined by considering the Feeder associated with the OH conductor replaced. The feeders designated as Short Rural are • COO-011 • SA0-002 • SBY-011 • SBY-014 • SBY-032 • SHM-011 All other distribution and subtransmission feeders are designated Urban.	• Overhead Conductor was replaced in the year that it was booked to the job. • The length of Overhead conductor booked to the job equals the length of individual Overhead conductors replaced.

Variable	Source and why actual	Methodology	Assumptions
UNDERGROUND CABLES BY: HIGHEST OPERATING VOLTAGE (ASSET REPLACEMENTS)	The data is sourced from project cost line item reports from JEN's internal SAP systems. These reports detail actual UG Cable lengths booked to the relevant WBS Elements over the defined period with additional details from associated PM Orders and Equipment records. As the data is maintained within JEN's internal systems, it is considered actual information.	**Extract from SAP for calendar year 2014:** SAP report S_ALR_87013543 were used to extract Total Cost data (excluding settlement) from projects linked to UG Cable Replacement activities (AAA and BAA-RUA, RUC, RUS) including details of WBS Elements and associated PM Orders. From this report, JEN extracted the Materials Expenditure Actuals figure and extracted details of all materials (Underground Cable) booked to these Activities for the year. This data was used to determine the length of UG cable replaced under these activities for the year. From these PM Orders (Underground Cable Replacement jobs worked on for the specified period), a list of the linked equipment records and the associated equipment characteristics was generated. These associated characteristics along with the Functional Location linked to the relevant PM Order were used to determine the split of Underground Cable replaced by classification and voltage. The split of UG Cable Replacement quantities between Urban and Short Rural was determined by considering the Feeder associated with the UG Cables replaced. The feeders designated as Short Rural are • COO-011 • SA0-002 • SBY-011 • SBY-014 • SBY-032 • SHM-011 All other distribution and subtransmission feeders are designated Urban.	• All Underground Cable was replaced in the year that it was booked to the job. • The length of cable booked to the job equals the length of cable replaced.

Variable	Source and why actual	Methodology	Assumptions
TRANSFORMERS BY: MOUNTING TYPE; HIGHEST OPERATING VOLTAGE ; AMPERE RATING; NUMBER OF PHASES (AT LV) (ASSET REPLACEMENTS)	The data is sourced from project cost line item reports from JEN's internal SAP systems. These reports detail actual transformers booked to the relevant WBS Elements over the defined period. As the data is maintained within JEN's internal systems, it is considered actual information.	**Extract from SAP for calendar year 2014:** SAP report S_ALR_87013543 were used to extract Total Cost data (excluding settlement) from projects linked to Transformer Replacement activities (AAA-RHA, RHB, RHD, RHK), including details of WBS Elements and associated PM Orders. From this report JEN was able to determine the Materials Expenditure Actuals figure and extract details of all materials (transformers) booked to these Activities over the year. This information was used to determine the number of transformers replaced under these activities for the year. The material description, which contains the transformer voltage, rating and phase details, was used to determine the split of transformers by these attributes as required in the template. Note: 1). JEN has redistributed the replacement cost for a portion of Ground Outdoor / Indoor Chamber Mounted; >33kV & <= 66kV; >15MVA and <=40MVA into > 11 kV & < = 22 kV Circuit Breaker; in order to correctly represent the expenditure associated with the asset replaced. 2). JEN has deliberately put zero for the number of asset replacements in the asset category: Ground Outdoor / Indoor Chamber Mounted; >33kV & <= 66kV; >15MVA and <=40MVA. The reason for this is that all of the expenditure has been on the establishment phase of projects that will be constructed in 2015 and therefore no asset was installed in 2014.	• The transformers were replaced in the year that they were booked to the job. • The number of transformers booked to these jobs over the period in question equals the number of transformers replaced.

Variable	Source and why actual	Methodology	Assumptions
SWITCHGEAR BY: HIGHEST OPERATING VOLTAGE; SWITCH FUNCTION (ASSET REPLACEMENTS)	The data is sourced from project cost line item reports from JEN's internal SAP systems. These reports detail actual switchgear booked to the relevant WBS Elements over the defined period. As the data is maintained within JEN's internal systems, it is considered actual information.	**Extract from SAP for calendar year 2014:** **Fuse & Switch Replacement:** SAP report S_ALR_87013543 were used to extract Total Cost data (excluding settlement) from projects linked to Switchgear Replacement activities (AAA and BAA-RHE, RHG, RHH, RHJ, RHL, RHO, RHF, RXF, RXJ, RHI), including details of WBS Elements and associated PM Orders. From this report, JEN was able to determine the Materials Expenditure Actuals figure and extract details of all materials (switchgear) booked to these Activities over the year. This information was used to determine the number of items of switchgear replaced under these activities for the year. The material description was used to determine the split of switchgear items by these attributes. **Circuit Breaker Replacement:** The number of CB replacements was determined by extracting the list of SAP equipment type ZS_CCT_BRK that have been set to status RMVD and then determining which of those have been replaced (new equipment exists in SAP) and using the Status Change date to determine the Year of replacement. The voltage was determined by considering the Zone Substation to which the equipment was linked.	• The Switchgear items were replaced in the year that they were booked to the job.

Variable	Source and why actual	Methodology	Assumptions
PUBLIC LIGHTING BY: ASSET TYPE; LIGHTING OBLIGATION (ASSET REPLACEMENTS)	The public lighting asset replacements have also been reported in the Public Lighting Tab 4.1. Public Light (luminaire) replacement work is recorded using SAP Notifications. The notification is created against the specific light that requires replacement. Public Lighting Pole replacement work is also recorded using SAP Notifications. The notification is created against the specific pole that requires replacement. The other source of data is the monthly reports from the public lighting prime contractor. This allows the attributes of the public light such as whether it is located on a Major Road or Minor Road to be analysed and reported on.	By extracting the SAP notifications related to specific SAP Public Lighting Codes we can determine the quantity of Public Light replacement activities and categorise them according to Major and Minor Roads. Similarly, by extracting the SAP notifications related to specific SAP Public Lighting Codes and using monthly PL Pole replacement quantities supplied to us by our prime public lighting contractor, we can determine the quantity of public light pole replacement activities. The relevant SAP Public Lighting Codes (MAQ) were; **RLJ** (Replace Single Light on Main Road) – All notifications with activity code RLJ relate to “Major Road Light Replacement”. **RLM** (Replace Single Light Minor Road) – All notifications with activity code RLM relate to “Minor Road Light Replacement”. **RPA** (Public Lighting Pole Replacement on Main Road) – All notifications with activity code RPA relate to “Major Road Light Pole Replacement”. **RPB** (Public Lighting Pole Replacement on Minor Road) – All notifications with activity code RPB relate to “Minor Road Light Pole Replacement”.	Jemena uses a prime contractor for public lighting services and as such the public lighting replacement work is recorded using SAP notifications and the above mentioned Public Lighting Codes (MAQ). It has been assumed that public lighting replacement work that is performed by resources other than the prime contractor have also been consistently recorded using SAP notifications.

Variable	Source and why actual	Methodology	Assumptions
SCADA, NETWORK CONTROL AND PROTECTION SYSTEMS BY: FUNCTION (ASSET REPLACEMENTS)	The data is sourced from JEN's internal SAP systems. SAP extracts equipment lists and details of associated equipment status changes. As the data is maintained within JEN's internal systems, it is considered actual information.	**Field Devices (Zone Sub Relays & SCADA):** The list of ZS_RELAY equipment that had been set to a status of removed (RMVD) in 2014 was extracted and the RMVD date was used in conjunction with this list to determine the quantities of Zone Substation Relays replaced in each year. In this category, SCADA projects are also included. Note: 1). JEN has deliberately put zero for the number of asset replacements in the asset category: Field Devices (ZS Relays and SCADA). The reason for this is that all of the expenditure has been on the establishment phase of projects that will be constructed in 2015 and therefore no asset was installed in 2014.	• The ZS Relay equipment status of **INAK / RMVD** was set in the year that the service was removed. • All Zone Sub Relays that were removed (set to RMVD) were subsequently replaced.

Variable	Source and why actual	Methodology	Assumptions
OTHER BY: FUNCTION (ASSET REPLACEMENTS)	The data is sourced from JEN's internal SAP systems. SAP extracts equipment lists and details of associated equipment status changes. As the data is maintained within JEN's internal systems, it is considered actual information.	**Surge Diverter:** SAP report S_ALR_87013543 was used to extract Total Cost data (excluding settlement) from projects linked to Switchgear Replacement activities (AAA and BAA-RXD, RXE), including details of WBS Elements and associated PM Orders. From this report, JEN was able to determine the Materials Expenditure Actuals figure and extract details of all materials (switchgear) booked to these Activities over the year. This information was used to determine the number of items of surge diverter replaced under these activities for the year. The material description was used to determine the split of switchgear items by these attributes. **Earths:** SAP report S_ALR_87013543 was used to extract Total Cost data (excluding settlement) from projects linked to Earths projects, including details of WBS Elements and associated PM Orders. **ZS Property:** SAP report S_ALR_87013543 was used to extract Total Cost data (excluding settlement) from projects linked to ZS Property projects, including details of WBS Elements and associated PM Orders. **Vibration Dampers / Armour Rods:** The number of vibration dampers and armour rods was determined by extracting the number of equipment with an installation date of 2014 from the Geographical Information System (GIS).	• The Surge diverter items were replaced in the year that they were booked to the job. •It is assumed there is correlation between number of projects and asset replacements. •

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
GENERAL COMMENTS (apply to expenditure column for all asset groups); REPLACEMENT EXPENDITURE, ASSET CATEGORY	REPEX direct expenditure data for 2014 was sourced from JEN's internal SAP system. Although JEN was able to source the data at the asset group level and to some degree at the asset category level from its ERP systems, JEN provided its best estimate for areas within the asset category that are not recorded in its ERP systems.	REPEX expenditure data disclosed in JEN's response to the category analysis RIN is sourced from SAP, the ERP system that JEN uses to capture its financial and some operational information. Activities or networks (cost collectors) are set up to collect costs at a micro level. These activities/networks are designed to collect costs based on the activity on which an individual works and to accept any external costs associated with that activity. Note that the SAP network codes are also designed to identify the Regulatory category i.e. Public Lighting, ACS. JEN uses time writing to capture internal labour costs. Jemena has been improving its capturing of time writing data over the past few years. Where practical and appropriate all employees time write to an activity/network or a client e.g. JEN. These form the direct costs incurred for a respective activity. Repex expenditure categorisation is based upon activity and service category codes in JEN's SAP system as well as ensuring all expenditure line items were assigned the appropriate categorisations. Expenditure data, categorised as described above, was entered into the relevant sections of the template.	None	Direct expenditure data for 2014 was sourced from the JEN SAP system and reconciled back to JEN's Regulatory Accounts. JEN deems this to be the best estimate as the expenditure assigned to the Asset category level is based on the most relevant actual data—actual volumes recorded and expenditure assigned to the asset group level in SAP. JEN is unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		In order to populate the relevant sections of the template, categorisation choices for “Class”, “Sub-class” and “Voltage” were derived from a project master-file data sheet. All expenditure line items were assigned to the appropriate classifications based upon project activity and project description. The first (and highest) level category used was “Class” These classes corresponded to the high level data input requirements of the category analysis RIN template. The following nine classes were used: - OH Conductors - Other - Poles - Pole top Structures - Public Lighting - Service Lines - Switchgear - Transformers - UG Cables The second level category used was “Sub-class” These sub-classes corresponded to more detailed level data input requirements of the category analysis RIN template. The following twenty sub-classes were used: - Bus - Capacitor Bank - Circuit Breakers		

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		- Connectors - Distribution Transformers - Earths - HV Installation - OH Conductors - Other - Poles - Public Lighting - Public Light Poles - Relays - Service Lines - Staking - Structures - Switchgear - UG Cables - ZSS Property - ZSS Transformers The third (and lowest) level category used was "Voltage" These voltages corresponded to the most detailed level data input requirements of the category analysis RIN template. The following three voltages were used: - High Voltage - Low Voltage - Sub-transmission The information gathered (by the process		

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		described above) was analysed and sorted in excel (via v-lookup function and pivot tables) to provide an input sheet for entry of the data into Table 2.2.1 of the category analysis RIN template. Where JEN's expenditure categories did not precisely match the template classifications further analysis was performed on the detailed project data to allocate costs within high level asset categories across the detailed line items contained in the category analysis RIN template. To achieve the lowest level of expenditure to the asset category, the cost assigned to the Asset Group was split by the actual volume record for the year.		
SERVICE LINES BY: CONNECTION VOLTAGE; CUSTOMER TYPE; CONNECTION COMPLEXITY (EXPENDITURE)	REPEX direct expenditure data for Service Lines replacement 2014 was sourced from JEN's internal SAP system. Although JEN was able to source the data at the asset group level (service lines) and to some degree at the asset category level from its ERP systems, JEN provided its best estimate for areas within the asset category that are not recorded in its ERP systems such as the split between residential and commercial service lines.	The total expenditure for service lines was split into residential and commercial/industrial using the known ratio for volume replaced between the two categories.	It is assumed that the known proportion of residential and industrial/commercial service lines replaced to be the best indicator to split to the total expenditure of service lines into residential and commercial/industrial.	JEN considers this a reasonable methodology for estimating the expenditure split required and that the error is considered immaterial. JEN is unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
SERVICE LINES BY: CONNECTION VOLTAGE; CUSTOMER TYPE; CONNECTION COMPLEXITY (VOLUME)	The data is sourced from JEN's internal SAP system. An equipment list edit transaction IH08 is used to extract the details of SAP equipment type **LV COND** that have been set to status **RMVD** for the 2014 period. A portion of the service lines replaced was captured in the SAP system. Accordingly, estimation was required for JEN to determine the split of rural and commercial/industrial.	The asset replacement volume for service lines was split into residential and commercial/industrial using the known ratio for volume replaced between the two categories.	It is assumed that the known proportion of residential and industrial/commercial service lines replaced to be the best indicator to split to the asset replacement of service lines into residential and commercial/industrial.	JEN considers this a reasonable methodology for estimating the services type split required and that the error is considered immaterial. JEN is unaware of a better estimation methodology.
OTHER BY: FUNCTION (ASSET REPLACEMENTS)	Connectors are not recorded as individual equipment in our Geographical Information System (GIS) and therefore the volumes was required to be estimated.	**Connectors:** The asset replacement volume for non-tension connectors was determined by dividing the total project cost by an estimated unit rate for a set of non-tension connectors.	It is assumed that the unit rate that has been used is indicative of the actual unit rate for the 2014 projects.	JEN considers this a reasonable methodology for estimating the volume of sets of non-tension connectors because of the degree of confidence in the total project cost and the unit rate that has been used in the estimation process. JEN is unaware of a better estimation methodology.

2.2.2 SELECTED ASSET CHARACTERISTICS

Actual information

Variable	Source and why actual	Methodology	Assumptions
OVERHEAD CONDUCTORS BY: CONDUCTOR LENGTH BY FEEDER TYPE and	Total overhead conductors in 5.2 Age Profile	The total overhead conductor was extracted from the system according to its feeder functional location. The AER definition of a rural short and urban feeder has been used to match the feeder functional location.	The assumptions are outlined in the basis of preparation for Tab 5.2 Age Profile. There were no additional assumptions made in determining the asset volumes by asset group.
OVERHEAD CONDUCTORS BY: CONDUCTOR LENGTH MATERIAL TYPE	Total overhead conductors in 5.2 Age Profile	The total overhead conductor was extracted from the system according to its material type.	The assumptions are outlined in the basis of preparation for Tab 5.2 Age Profile. There were no additional assumptions made in determining the asset volumes by asset group.
(ASSET REPLACEMENTS (all)	To determine the volume of asset replacements by Asset Group, the volume of asset replacement by Asset Category has been used in conjunction with the definition of Rural Short and Urban Feeders. This is possible because the feeder that the replaced asset is connected to is known. The source of this data is JEN's internal SAP systems and for this reason, it is considered actual information.	The AER definition of a Rural Short and Urban Feeder has been used. The methodology for determining the asset replacements is documented in the relevant section of this basis of preparation.	The assumption for determining the asset replacements is documented in the relevant section of this basis of preparation. There were no additional assumptions made in determining the asset replacements by asset group.

Variable	Source and why actual	Methodology	Assumptions
TRANSFORMERS BY: TOTAL MVA (Asset volumes currently in commission)	The data is sourced from project cost line item reports in JEN's internal SAP systems. These reports provide detail of actual transformers booked to the relevant WBS Elements over the defined period. As the data is maintained within JEN's internal systems, it is considered actual information.	**Extract from SAP for calendar year 2014:** SAP report S_ALR_87013543 was used to extract Total Cost data (excluding settlement) from projects linked to Transformer Replacement activities (AAA and BAA-RHA, RHB, RHD, RHK), including details of WBS Elements and associated PM Orders. From this report JEN was able to determine the Materials Expenditure Actuals figure and extract details of all materials (transformers) booked to these Activities over the year. This information was used to determine the number and total rating of transformers replaced under these activities for each year. The material description, which contains the transformer KVA, rating was used to determine the value for the TOTAL MVA REPLACED for each year.	• The transformers were replaced in the year that they were booked to the job. • The number of transformers booked to these jobs over the period in question equals the number of transformers replaced. • The MVA rating of the transformers booked to these jobs equals the MVA rating of the transformers removed.

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
ASSET VOLUMES TOTAL POLES BY: FEEDER TYPE ASSET VOLUMES: UNDERGROUND CABLES	Actual allocation of the volume of poles and underground cable to the urban and rural short categories as of December 2014 is not captured in JEN's internal system, and accordingly this was required to be estimate.	The calculation that was used to estimate the allocation of the volume of poles and underground cable to the urban and rural short categories is based on the known proportion of these assets to urban and rural short as of March 2015, applied to the total volume of poles and length of underground cables as of December 2014.	It is assumed that the known proportion of these assets to urban and rural short as of March 2015 to be the same with the proportional volume of poles and length of underground cables as of December 2014.	JEN considers this a reasonable methodology for estimating the quantity required and that the risk of error is considered immaterial. JEN is unaware of a better estimation methodology.

2.3 AUGEX PROJECT DATA

23. General Approach

24. JEN has provided information allocated on a calendar year basis. It is assumed that the template column headings of 2013-14 are a mistake and should be 2014. In tables 2.3.1 and 2.3.2 where projects are required to be reported on project close JEN has reported these in real 2014 dollars.

Variable	Methodology	Assumptions
Classification of Projects	JEN "Augex" projects and expenditure are classified by JSAP project codes beginning with DOA, DSA, DSJ, DSS, DZA, GPA (Augex related land purchases only), PRA and PQA. A list and yearly breakdown of cost for all JEN "Augex" projects for open projects or projects with any expenditure incurred in 2014 was run using SAP for the purpose of categorising projects and applying the AER's materiality thresholds. These projects were categorised into the requested Augex categories in table 2.3.4 based on the project code, the project description, or where in doubt, using the business case. Categorisation is consistent with prior years.	'Other assets' projects were defined as: • Feeder Voltage conversion projects. These projects do not fall into any one category (i.e. they are not standard feeder augmentation projects and involve a mix of distribution substation and HV feeder works). • Communications projects. These do not fall into any one category. For example communications fibre loop does not fall into the RIN definition of zone-substation or HV feeder. Note: JEN separates projects where a new HV feeder requires a new circuit breaker at the zone-substation. The feeder works have been categorised as HV feeder, and the circuit breaker works within the zone-substation have been categorised as 'zone substations'. JEN considers these assumptions are reasonable to give the AER the desired information for capacity related projects in the categories it has requested.
Material Projects (over Threshold)	The projects have been separated into the separate categories using the project list as identified above. This was then used to identify material projects, i.e. projects over the relevant thresholds, ($5M for zone substation and subtransmission lines, $500k for HV feeders, and $50k for LV feeders).	Projects thresholds were applied on total nominal actual expenditure including overheads.

Variable	Methodology	Assumptions
Project Close	Project close has been determined by the year in which the project was set to close in its SAP system by comparing it to its status at the start of the current and previous years.	This assumes projects are not re-opened. Note that the as incurred expenditure in table 2.3.3.2 will not align with the quantities reported on project close as in 2.3.3.1, and could not be used to form a yearly unit rate. Material projects that are not complete will have cost in table 2.3.3.2 but no volume in 2.3.3.1. In addition projects in tables 2.3.3.1 and 2.3.3.2 which were not closed in 2013 may become "material" in 2014. JEN had 2 such HV feeder projects and 1 LV feeder project in 2014. Previously presented information has been restated to reflect that these projects are material as of 2014. JEN has provided updated disclosure in 2.3.3.2.

2.3.1 AUGEX ASSET DATA – SUBTRANSMISSION SUBSTATIONS, SWITCHING STATIONS AND ZONE SUBSTATIONS

Actual information

25. JEN had no zone substation projects over the $5M threshold, or any zone substation land purchase or easement projects, which were closed off in 2014. JEN had only 2 non-material projects which were closed in 2014.

Variable	Source and why actual	Methodology	Assumptions
Years incurred	These were the years in which the projects reported had any expenditure incurred in accordance with the breakdown from JEN SAP system.	The total direct cost split by year was used to determine the years of expenditure.	None
Land Purchases and Easements (expenditure)	JEN had zero zone-substation land purchase or easement projects which closed in 2014. This field was therefore input as zero.	N/A	None

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Total Direct (expenditure)	Prior to 2013 there were embedded overheads included in the labour rate, according to the RIN definitions. These have been removed using a percentage relevant to the year in which the labour cost was incurred. As such this has been classified as an estimate. The costs were also escalated to real $2014.	JEN has obtained the calendar year breakdown of each of projects cost into direct material, direct labour, direct contractors, direct other, overhead and margin from its SAP system to obtain the direct cost. Prior to 2013 there were embedded overheads included in the labour rate, according to the RIN definitions. These have been removed using a percentage relevant to the year in which the labour cost was incurred. As such this has been classified as an estimate. The yearly split of this cost was escalated to $2014 dollars using the relevant inflation index.	It is also reliant on the estimate made for direct labour expenditure prior to 2013.	Given the previous embedded overhead component in the labour rates charged to projects JEN considers this the best method to obtain the direct cost of the project.

2.3.2 AUGEX ASSET DATA – SUBTRANSMISSION LINES

26. Material Projects

27. JEN had no subtransmission line projects, or any subtransmission line land purchase or easement projects, which were closed off in 2014.

Actual information

Variable	Source and why actual	Methodology	Assumptions
Land Purchases and Easements (expenditure)	JEN had zero subtransmission line land purchase or easement projects which closed in 2014. This field was therefore input as zero.	N/A	None
Total Direct (expenditure)	JEN had zero non material subtransmission line land purchase or easement projects which closed in 2014. This field was therefore input as zero.	N/A	None

28.

2.3.3 AUGEX DATA – HV/LV FEEDERS AND DISTRIBUTION SUBSTATIONS

2.3.3.1 Descriptor metrics

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
HV Feeder Augmentations (volume)	JEN has not recorded the actual added or upgraded overhead lines or underground cables for each (material) project and so these must be estimated.	JEN has gone through the business case, scope of works, design drawings or GIS where required for each material project and estimated the km of overhead added or upgraded. This often involved using GIS to confirm the lengths and what work was actually performed. Note that the as incurred expenditure in table 2.3.3.2 will not align with the quantities reported in 2.3.3.1, and could not be used to form a yearly unit rate as mentioned above. Also note that material projects that are not complete will have cost in table 2.3.3.2 but no volume in 2.3.3.1.	Unless evidence was found to the contrary when examining the design or GIS it was assumed that the business case and scope of works were accurate. It was assumed that thermal uprating and re-conductoring were upgrades.	JEN considers this a reasonable methodology for estimating the quantity required. JEN is not aware of a superior estimation technique.
LV Feeder Augmentations (volume)	JEN has not recorded the actual added or upgraded overhead lines or underground cables for each (material) project and so these must be estimated.	JEN has reviewed each business case, scope of works, and design drawings or GIS where required for each material project and estimated the km of overhead added or upgraded. This often involved using GIS to confirm the lengths and what work was actually performed. Note that the as incurred expenditure in table 2.3.3.2 will not align with the quantities	Unless evidence was found to the contrary when examining the design drawings or GIS it was assumed that the business case and scope of works were accurate. It was assumed that thermal uprating and re-conductoring were upgrades.	JEN considers this a reasonable methodology for estimating the quantity required. JEN is not aware of a superior estimation technique.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		reported in 2.3.3.1, and could not be used to form a yearly unit rate as mentioned above. Also note that material projects that are not complete will have cost in table 2.3.3.2 but no volume in 2.3.3.1.		
Distribution Substation Augmentations (volume)	JEN has not recorded the actual added or upgraded quantity of distribution substations for each project and so these must be estimated.	JEN has reviewed each business case, scope of works, and design drawings or GIS where required and to estimate the quantity added or upgraded of each of the requested types of substations. Note that the as incurred expenditure in table 2.3.3.2 will not align with the quantities reported in 2.3.3.1, and could not be used to form a yearly unit rate as mentioned above. Also note that material projects that are not complete will have cost in table 2.3.3.2 but no volume in 2.3.3.1.		JEN considers this a reasonable methodology for estimating the quantity required. JEN is not aware of a superior estimation technique.

2.3.3.2 Cost metrics

29. As mentioned above projects in tables 2.3.3.1 and 2.3.3.2 which were not closed in 2013 may become "material" in 2014. JEN had 2 such HV feeder projects and 1 LV feeder project in 2014. Previously presented information has been restated to reflect that these projects are material as of 2014. JEN has provided updated disclosure in the table below.

	TOTAL DIRECT EXPENDITURE ($000's)	
PROJECT TYPE	2012	2013
HV Feeder Augmentations - Overhead Lines	8.63	169.68
HV Feeder Augmentations - Underground Cables	11.39	253.15
HV Feeder Non-Material Projects	- 20.02	- 422.84
LV Feeder Augmentations - Overhead Lines	0	10.25
LV Feeder Augmentations - Underground Cables	0	0
LV Feeder Non-Material Projects	0	-10.25

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
HV feeder augmentations (expenditure)	JEN projects are not separated into overhead and underground. Each individual project also did not have a cost split into overhead and underground categories. Also the expenditure information used to obtain this category was based on the methodology to split out augmentation capex into the required categories in table 2.3.4	JEN has estimated the percentage overhead and underground for each of its material projects by using the business case and cost estimates. The percentage overhead or underground estimated for each project was then applied to the project costs which were used to derive table 2.3.4.	It is assumed that the business case and cost estimates are a reasonable basis for estimating proportion of underground or overhead. Where a new overhead switch was installed as part of an underground feeder project all cost has been allocated into underground feeder. Where there were parts of the cost estimate relevant to both overhead line and underground augmentations (i.e.	JEN considers this a reasonable methodology for estimating the quantity required. JEN is not aware of a superior estimation technique.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	as outlined above.	Note that the as incurred expenditure in table 2.3.3.2 will not align with the quantities reported on project close as in 2.3.3.1, and could not be used to form a yearly unit rate. Material projects that are not complete will have cost in table 2.3.3.2 but no volume in 2.3.3.1.	design) these were ignored in determining the percentage split.	
LV feeder augmentations (expenditure)	JEN projects are not separated into overhead and underground. Each individual project did also not have a cost split into overhead and underground categories. Also the expenditure information used to obtain this category was based on the methodology to split out augmentation capex into the required categories in table 2.3.4 as outlined above.	JEN has estimated the percentage of overhead and underground for each of its material projects using the business case and cost estimates. The percentage of overhead or underground estimated for each project was then applied to the project costs which were used to derive table 2.3.4. Note that the as incurred expenditure in table 2.3.3.2 will not align with the quantities reported on project close as in 2.3.3.1, and could not be used to form a yearly unit rate. Material projects that are not complete will have cost in table 2.3.3.2 but no volume in 2.3.3.1.	It is assumed that the business case and cost estimates are a reasonable basis for estimating proportion of underground or overhead. Where a new overhead switch was installed as part of an underground feeder project all cost has been allocated into underground feeder. Where there were parts of the cost estimate relevant to both overhead line and underground augmentations (i.e. design) these were ignored in determining the percentage split. Note: JEN had no material LV underground feeder projects in 2014.	JEN considers this a reasonable methodology for estimating the quantity required. JEN is not aware of a superior estimation technique.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Distribution Substation Augmentations (expenditure)	JEN has used the methodology as described above for table 2.3.3.1 to estimate whether a project belonged to pole, ground mounted, or indoor substation. Also the expenditure information used to obtain this category was based on the methodology to split out augmentation capex into the required categories in table 2.3.4 as outlined above.	JEN has used the methodology as described above for table 2.3.3.1 to estimate whether a project belonged to pole, ground mounted, or indoor substation. The expenditure was then extractor by project type from the project costs which were used to derive table 2.3.4. Note that the as incurred expenditure in table 2.3.3.2 will not align with the quantities reported in 2.3.3.1, and could not be used to form a yearly unit rate as mentioned above.	The substation type is as identified in 2.3.3.1 above.	JEN considers this a reasonable methodology for estimating the quantity required. JEN is not aware of a superior estimation technique.

2.3.4 AUGEX DATA – TOTAL EXPENDITURE

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Table 2.3.4 (Expenditure)	Augex expenditure data for 2014 was sourced from the JEN SAP system and reconciled back to JEN's Regulatory Accounts. Augex expenditure is reported as an estimate in this template as the Augex expenditure data was derived and further categorised in to the sub-categories required using the methodology as outlined in	Augex expenditure categorisation was based upon activity and service category codes of the projects in JEN's SAP system as well as information provided by JEN Engineers. JEN Finance worked with JEN Engineers to ensure all expenditure line items were assigned the appropriate categorisations. In addition, the Augex expenditure data was further categorised in to the sub-categories required as outlined in section 2.3 "General	N/A	JEN considers this the best way it could accurately extract and categorise the direct expenditure data required. JEN is not aware of a superior estimation technique.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	section 2.3 “General Approach” above. As a result of this process, assumptions were made that make the expenditure data for each sub category an estimate rather than actual.	Approach” above. Expenditure data, categorised as described above, was entered into the relevant sections of RIN C Template sheet 2.3.4. It was also used to populate the Augex section of RIN C Template sheet “2.1.2 – Inputs tables”.		

2.5 CONNECTIONS

2.5.1 DESCRIPTOR METRICS

Actual information

Variable	Source and why actual	Methodology	Assumptions
General comments for Actual and Estimated Information	The allocation between Residential, Commercial, Subdivision and Embedded Generation Connections is based on the Activity Codes that have been used in SAP.	The basis of the information is the Regulatory Accounts. From this point we identified the internal orders which had settled their accounts. • Projects settled their accounts to the Asset Base or Regulatory Accounts. These Projects in many cases are based on an aggregated or summarised project for many Work Orders which either settled directly to the Project or had been resourced billed at the end of a year. This causes difficulty in reconciling volumes and costs for a specific period. • As a result, the information is based on actual	• It has been assumed that there was a consistent definition and usage of Activity Codes in the period 2009 to 2014.

Variable	Source and why actual	Methodology	Assumptions
		costs but the categories and splits of expenditure and volumes have been based on an estimated percentage split.	
RESIDENTIAL UNDERGROUND CONNECTIONS (000'S) RESIDENTIAL OVERHEAD CONNECTIONS (000'S) COMMERCIAL/INDUSTRIAL UNDERGROUND CONNECTIONS (000'S) COMMERCIAL/INDUSTRIAL OVERHEAD CONNECTIONS (000'S)	From 2009 to mid-2014 the source of the data is the Customer Information System (CIS+). Post mid-2014, SAP is the source of customer connection information. This data is based on actual service orders by category and date.	The service orders are created at the time of the connection request. The date, category and service are confirmed at the completion of the work.	No assumptions have been made.
RESIDENTIAL DISTRIBUTION SUBSTATION INSTALLED (MVA ADDED) COMMERCIAL/INDUSTRIAL DISTRIBUTION SUBSTATION INSTALLED (MVA ADDED)	The source of the data is SAP. The data is based on the actual MVA nameplate rating of the substations posted to the SAP projects during the period.	SAP transaction CJI3 provides the project category by year and also provides the material use posted during this period. The MVA description is available from the SAP material master.	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
SUBDIVISION DISTRIBUTION SUBSTATION INSTALLED (MVA ADDED)	The source of the data is SAP. The data is based on the actual MVA nameplate rating of the substations posted to the SAP projects during the period.	SAP transaction CJI3 provides the project category by year and also provides the material use posted during this period. The MVA description is available from the SAP material master.	No assumptions have been made.
SUBDIVISION DISTRIBUTION SUBSTATIONS INSTALLED (000'S)	The source of the data is SAP. The data is based on the actual volume of the substations posted to the SAP projects during the period.	SAP transaction CJI3 provides the project category by year and also provides the material use posted during this period. The number of substations is available from the SAP material master.	No assumptions have been made.
RESIDENTIAL DISTRIBUTION SUBSTATIONS INSTALLED (000'S) COMMERCIAL/INDUSTRIAL DISTRIBUTION SUBSTATIONS INSTALLED (000'S)	The source of the data is SAP. The data is based on the actual volume of the substations posted to the SAP projects during the period.	SAP transaction CJI3 provides the project category by year and also provides the material use posted during this period.	No assumptions have been made.
RESIDENTIAL AUGMENTATION LV (TOTAL SPEND ($000'S)	The source of the data is SAP. The data is based on the actual expenditure posted to the SAP projects during the period.	The actual expenditure for this variable is determined by SAP activity mapping methodology. The two SAP activities and the back-office support for new connections that are relevant for the connection subcategory "Residential" expenditure are: • Activities 'Dual and Multiple Occupancy' and 'Services'.	

Variable	Source and why actual	Methodology	Assumptions
		• Back office charges for new connections derived from SAP AMI ledger. This is the expenditure incurred for the services directly support new meter connections. Both of these SAP activities (including back office charges for new connections) involve minor augmentation on the LV network only, and as such 100% of capital expenditure associated with these two SAP activities would be captured under this variable, as well as connection classification "Simple residential connection LV" in Table 2.5.2.	
RESIDENTIAL AUGMENTATION HV (TOTAL SPEND $000'S) RESIDENTIAL DISTRIBUTION SUBSTATION (TOTAL SPEND $000'S)	The source of the data is SAP. The data is based on the actual expenditure posted to the SAP projects during the period.	Using the SAP activity mapping methodology, these two variables are not applicable within JEN Works Program definitions, and as such the expenditure is zero.	
RESIDENTIAL MEAN DAYS TO CONNECT RESIDENTIAL CUSTOMER WITH LV SINGLE PHASE CONNECTION (0'S)	The source of the data is the Customer Information System (CIS+). This data is based on actual service orders by category and date.	This data is based on actual service orders by category and date. The service order is created and an Initiated Date is assigned at the top of the service order. The service order is physically completed and an Effective Date is assigned. The Mean Days is calculated.	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
RESIDENTIAL VOLUME OF GSL BREACHES FOR RESIDENTIAL CUSTOMERS (0'S)	The source of the data is the databases used to manage GSL's. The data is collected within the Stakeholder Relations area.	The volume of GSL breaches are collated from the relevant business areas; New Connections, Appointments and Asset Performance. These are then validated and summated.	No assumptions have been made.
RESIDENTIAL VOLUME OF CUSTOMER COMPLAINTS RELATING TO CONNECTION SERVICES (0'S)	The source of the data is the Oracle Claims Database.	The volume of customer complaints is from direct contact with the customer. Each customer is assessed prior to being categorised as a complaint.	No assumptions have been made.
RESIDENTIAL GSL PAYMENTS ($000'S)	The source of the data is JEN's internal databases used to manage GSL's. The data is collected within the Stakeholder Relations area.	The volume of GSL payments are collated from the relevant business areas; New Connections, Appointments and Asset Performance. These are then validated and summated.	No assumptions have been made.
EMBEDDED GENERATION UNDERGROUND CONNECTIONS (000'S) EMBEDDED GENERATION OVERHEAD CONNECTIONS (000'S)	The source of the Embedded Generation is the Geographical Information System (GIS).	Extracted all embedded generators from GIS and then filtered on the Asset Status of "Existing" and then filtered by Installed Date. Details on whether the embedded generator was connected underground or overhead were extracted from GIS. Note that LV service class with "More than 1 connected" has been excluded from the count, as this ID does not contain any embedded generator connection. The embedded generator connection either does no exist or has a different ID (which is already included in the count).	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
EMBEDDED GENERATION DISTRIBUTION SUBSTATIONS INSTALLED (MVA ADDED) EMBEDDED GENERATION DISTRIBUTION SUBSTATIONS INSTALLED (000's) EMBEDDED GENERATION DISTRIBUTION SUBSTATIONS INSTALLED (total spend $000's) EMBEDDED GENERATION AUGMENTATION HV (NET CIRCUIT KM ADDED) EMBEDDED GENERATION AUGMENTATION HV (TOTAL SPEND $000's) EMBEDDED GENERATION AUGMENTATION LV (NET CIRCUIT KM ADDED) EMBEDDED GENERATION AUGMENTATION LV (TOTAL SPEND $000's)	There are no recorded materials or costs incurred for JEN for Embedded generation connections.	N/A	There is an assumption that the lack of recorded costs signifies a lack of incurred costs.

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
SUBDIVISION UNDERGROUND CONNECTIONS (000'S) SUBDIVISION OVERHEAD CONNECTIONS (000'S)	Although the number of pits installed are actual data extracted from GIS, these two variables are considered an estimate because the number of connections is assumed to be 1.7 times the number of pits installed.	The number of connections is estimated based on the actual number of pits installed (using GIS and SAP service codes CHH and CHL) multiplied by a factor of 1.7. On average, each pit services 1.7 connections. Refer to variable "SUBDIVISION COST PER LOT ($)" in Table 2.5.1 for how this factor is calculated.	The assumption is each pit will service 1.7 connections.	It is considered to be the best estimate as this represents an average number of connections serviced by each pit over the longer term, which is more useful for the benchmark unit price. JEN is unaware of a superior estimation methodology.
RESIDENTIAL AUGMENTATION HV (NET CIRCUIT KM ADDED) RESIDENTIAL AUGMENTATION LV (NET CIRCUIT KM ADDED) COMMERCIAL/INDUSTRIAL AUGMENTATION HV (NET CIRCUIT KM ADDED) COMMERCIAL/INDUSTRIAL AUGMENTATION LV (NET CIRCUIT KM ADDED) SUBDIVISION AUGMENTATION HV (NET	The source of the data is SAP. The data is based on the actual volume (length) of the conductor or cable posted to the SAP projects during the period. Although the GIS is the asset database and recorded the length of conductor and cable installed on the network, there has not been a relationship between the SAP project and the length of conductor or cable installed.	SAP transaction CJI3 provides the project category by year and also provides the material use posted during this period. The material posted was then broken down into cable and conductor and summated.	It has been assumed that where there has not been a transformer allocated to the project then there are no HV network augmentations performed. Further, it has been assumed that for HV underground cable; • for 3 core cables, the length of cable used is equal to the circuit length. For 1 core cable, the circuit length is the length of cable used divided by 3. It has been assumed that for HV overhead conductor; • any conductor less than or equal to 19/2mm and 7/4.50mm would be classified as HV. It has been assumed that for LV underground cable;	This is the best estimate because it uses the material that has been allocated to the project to estimate the net circuit km added. JEN is unaware of a superior estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
CIRCUIT KM ADDED) SUBDIVISION AUGMENTATION LV (NET CIRCUIT KM ADDED)			• That for 4 or 2 core cable the length of cable used is equal to the circuit length. For 1 core cable, the circuit length is the length of the cable used divided by 4. It has been assumed that for LV overhead conductor; • any conductor other than 19/2mm and 7/4.50mm would be classified as LV.	
COMMERCIAL/INDUSTRIAL AUGMENTATION HV (TOTAL SPEND $000'S) COMMERCIAL/INDUSTRIAL AUGMENTATION LV (TOTAL SPEND $000'S) COMMERCIAL/INDUSTRIAL DISTRIBUTION SUBSTATION (TOTAL SPEND $000'S)	This variable is an estimate because we do not capture costs in SAP directly in accordance with the 'Descriptor Metric' categories as set out in the RIN. Although the actual expenditure for these variables are determined by SAP activity mapping methodology, projects that consist of costs associated with HV, LV and distribution substations augmentation are estimated based on a sample of projects cost split into these 'Descriptor Metrics' categories calculated in 2013.	The cost collectors within JEN's SAP system relating to connections have been used to establish this estimate. JEN uses mapping tables to map the cost collectors in the RIN categories e.g. connections. The actual expenditure for these variables were estimated by using the SAP activity mapping methodology as follows: • Commercial/ Industrial Simple Connection LV expenditure in Table 2.5.2 was allocated 100% to Commercial/ Industrial Augmentation LV expenditure; • Commercial/ Industrial Complex Connection HV (customer connected at HV) expenditure in Table 2.5.2 was allocated 100% to Commercial/ Industrial Augmentation HV	2013 sample remains representative of 2014.	This is the best estimate at the time because the methodology applies is consistent with JEN's SAP activity-based costing system, the application of Connections projects within Works Program definitions and their alignment with RIN definitions.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		expenditure; and • Commercial/ Industrial Complex Connection HV (customer connected at LV, minor HV works) and Complex Connection HV (customer connected at LV, upstream asset works) expenditures in Table 2.5.2 were split based on a sample of projects and evaluation of material costs to determine the split as follows: – Distribution Substation: 73% – Augmentation HV: 18% – Augmentation LV: 9% All costs were then amalgamated to produce the final result. Note that the Commercial/ Industrial Complex Connection Sub-transmission expenditure in Table 2.5.2 is not applicable for these variables.		
SUBDIVISION AUGMENTATION HV (TOTAL SPEND $000'S) SUBDIVISION AUGMENTATION LV (TOTAL SPEND $000'S)	This variable is an estimate because we do not capture costs in SAP directly in accordance with the 'Descriptor Metric' categories as set out in the RIN. Although the actual expenditure for these variables are determined by SAP activity mapping methodology, projects that consist of costs associated	The cost collectors within JEN's SAP system relating to connections have been used to establish this estimate. JEN uses mapping tables to map the cost collectors in the RIN categories e.g. connections. The actual expenditure for these variables were estimated by using the SAP activity mapping methodology as follows: • Subdivision Complex Connection LV expenditure in Table 2.5.2 was	2013 sample remains representative of 2014.	This is the best estimate at the time because the methodology applies is consistent with JEN's SAP activity-based costing system, the application of Connections projects within Works Program definitions and their alignment with RIN definitions.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
SUBDIVISION DISTRIBUTION SUBSTATION (TOTAL SPEND $000'S)	with HV, LV and distribution substations augmentation are estimated based on a sample of projects cost split into these 'Descriptor Metrics' categories calculated in 2013.	allocated 100% to Subdivision Augmentation LV expenditure; and • Subdivision Complex Connection HV (no upstream asset works) expenditure in Table 2.5.2 was split based on a sample of projects and evaluation of material costs to determine the split as follows: – Distribution Substation: 30% – Augmentation HV: 40% – Augmentation LV: 30% All costs were then amalgamated to produce the final result. Note that the Subdivision Complex Connection HV (with upstream asset works) expenditure in Table 2.5.2 generally have no expenditure and therefore no allocation is made to these variables.		
SUBDIVISION COST PER LOT ($)	This variable is an estimate because we do not capture costs in SAP in accordance with this requirement as set out in the RIN. The data is recorded only as a component of the whole project cost.	The estimate is based on whole of project costs and the number of service pits installed multiplied by the lots per pit factor. The lots per pit factor as determined from the average connections per pit for the period 2009 to 2013. This lots per pit factor was determined by extracting from GIS all of the External Plan References (XPR) installed since 1 January 2009.	It has been assumed that the methodology used to calculate the number of services per pit is representative of the construction in the field.	This is the best estimate because it uses the material that has been allocated to the project and the GIS data to be to be analysed to estimate the number of services connected for the number of pits installed. JEN is unaware of a superior estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		The XPR are a polygon in the GIS that covers the extents of the design drawing. All underground pits that were inside or touching each XPR were extracted. All underground nominal service cables (the connection between the pit and the supply point (customer meter)) that were inside or touching each XPR were also extracted. All pits and nominal service cables within each polygon were counted, and from the counts we calculated the average number of services supplied from a pit. SAP transaction CJI3 provides the project category by year and also provides the numbers of pits posted during this period. The “K” factor was then used to determine the number of serviced lots. Using the total cost of the subdivision (including transformers, HV and LV) divided by the number of lots, the cost per lot is determined.		

2.5.2 COST METRICS BY CONNECTION CLASSIFICATION

Actual information

Variable	Source and why actual	Methodology	Assumptions
EMBEDDED GENERATION SIMPLE CONNECTION LV (000'S)	The source of the Embedded Generation is the Geographical Information System (GIS).	Extracted all embedded generators from GIS and then filtered on the Asset Status of “Existing” and then filtered by Installed Date.	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
EMBEDDED GENERATION COMPLEX CONNECTION HV (small capacity) (000'S) EMBEDDED GENERATION COMPLEX CONNECTION HV (large capacity) (000'S)		Details on whether the embedded generator was connected underground or overhead were extracted from GIS. Note that LV service class with “More than 1 connected” has been excluded from the count, as this ID does not contain any embedded generator connection. The embedded generator connection is either does not exist or has a different ID (which is already included in the count).	
EMBEDDED GENERATION SIMPLE CONNECTION LV ($000'S) EMBEDDED GENERATION COMPLEX CONNECTION HV (small capacity) ($000'S) EMBEDDED GENERATION COMPLEX CONNECTION HV (large capacity) ($000'S)	There are no recorded costs incurred for Jemena in the connection of an embedded generator.	N/A	There is an assumption that the lack of recorded costs signifies a lack of incurred costs.
RESIDENTIAL SIMPLE CONNECTION LV ($000'S)	These costs are taken from SAP and filtered based on the activity codes.	Costs for all projects are extracted from SAP and then filtered based on service code to give a total cost for residential simple LV connections.	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
RESIDENTIAL COMPLEX CONNECTION LV ($000'S) RESIDENTIAL COMPLEX CONNECTION HV ($000'S)	There are no recorded costs incurred for Jemena for complex residential connections.	N/A	There is an assumption that the lack of recorded costs signifies a lack of incurred costs.
COMMERCIAL/INDUSTRIAL SIMPLE CONNECTION LV ($000'S)	These costs are taken from SAP and filtered based on the activity codes.	Costs for all projects are extracted from SAP and then filtered based on service code to give a total cost for commercial/industrial simple LV connections.	No assumptions have been made.
COMMERCIAL/INDUSTRIAL COMPLEX CONNECTION HV (CUSTOMER CONNECTED AT HV) ($000'S)	These costs are taken from SAP and filtered based on the activity codes.	Costs for all projects are extracted from SAP and then filtered based on service code to give a total cost for commercial/industrial complex HV connections.	No assumptions have been made.
COMMERCIAL/INDUSTRIAL COMPLEX CONNECTION SUB-TRANSMISSION ($000'S)	There are no recorded costs incurred or connections for Jemena for sub-transmission commercial/industrial connections.	N/A	There is an assumption that the lack of recorded costs and connections signifies a lack of incurred costs.
RESIDENTIAL SIMPLE CONNECTION LV (000'S)	These costs are taken from SAP and CIS+ which record the number of connections.	Reports were run against the SAP and CIS+ systems to report on the number of residential simple LV connections that were completed in 2014.	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
RESIDENTIAL COMPLEX CONNECTION LV (000'S) RESIDENTIAL COMPLEX CONNECTION HV (000'S)	There are no recorded connections for residential complex HV or LV connections.	N/A	There is an assumption that the lack of recorded connections signifies a lack of connections performed.
SUBDIVISION COMPLEX CONNECTION LV ($000'S) SUBDIVISION COMPLEX CONNECTION HV (NO UPSTREAM ASSET WORKS) ($000'S)	These costs are taken from SAP and filtered based on the activity codes.	Costs for all projects are extracted from SAP and then filtered based on service code to give a total cost for subdivision connections.	No assumptions have been made.

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
COMMERCIAL/INDUSTRIAL COMPLEX CONNECTION HV (CUSTOMER CONNECTED AT LV, MINOR HV WORKS) ($000'S) COMMERCIAL/INDUSTRIAL COMPLEX CONNECTION HV	This is an estimate rather than an actual because there are not specific activity codes to differentiate between minor HV works and upstream asset works.	There has been as estimate of 80% of expenditure falling under Complex Connection HV (customer connected at LV, minor HV works) and 20% of expenditure falling under Complex connection HV (customer connected at LV, upstream asset works).	The assumption is that the 80/20 split used is a close approximation of the actual split of costs based on engineer' knowledge	This is the best estimate available with the information currently collected in SAP. JEN is unaware of a superior estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
(CUSTOMER CONNECTED AT LV, UPSTREAM ASSET WORKS) ($000'S)		This estimate has been formed based on an engineering judgment.		
COMMERCIAL/INDUSTRIAL SIMPLE CONNECTION LV (000's) COMMERCIAL/INDUSTRIAL COMPLEX CONNECTION HV (CUSTOMER CONNECTED AT LV, MINOR HV WORKS) (000'S) COMMERCIAL/INDUSTRIAL COMPLEX CONNECTION HV (CUSTOMER CONNECTED AT LV, UPSTREAM ASSET WORKS) (000'S) COMMERCIAL/INDUSTRIAL COMPLEX CONNECTION HV (CUSTOMER CONNECTED AT HV) (000'S) COMMERCIAL/INDUSTRIAL COMPLEX CONNECTION SUB-TRANSMISSION (000'S)	This is an estimate rather than an actual because there is no relationship between connection volumes and the different commercial/industrial categories.	There has been an estimate that the proportion split of cost between the commercial/industrial sub-categories is the same as the proportional split between the number of projects that make up the commercial/residential expenditure.	The assumption is that the number of projects in each activity code is representative of the number of connections performed.	This is the best estimate available with the information currently collected in SAP and CIS+. JEN is unaware of a superior estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
SUBDIVISION COMPLEX CONNECTION LV (000'S) SUBDIVISION COMPLEX CONNECTION HV (NO UPSTREAM ASSET WORKS) (000'S) SUBDIVISION COMPLEX CONNECTION HV (WITH UPSTREAM ASSET WORKS) (000'S)	Although the number of pits installed are actual data extracted from GIS, these two variables are considered an estimate because the number of connections are assumed to be 1.7 times the number of pits installed.	The number of connections is estimated based on the actual number of pits installed (using GIS and JSAP service codes CHH and CHL) multiplied by a factor of 1.7. On average, each pit services 1.7 connections. Refer to variable "SUBDIVISION COST PER LOT ($)" in Table 2.5.1 for how this factor is calculated. JSAP service code CHL represents "Subdivision Complex Connection LV", and CHH represents "Subdivision Complex Connection HV (No Upstream Asset Works)".	The assumption is each pit will service 1.7 connections. This assumption is determined from the average connections per pit for the period 2009 to 2013.	It is considered to be the best estimate as this represents an average number of connections serviced by each pit over the longer term, which is more useful for the benchmark unit price. JEN is unaware of a superior estimation methodology.

2.6 NON-NETWORK EXPENDITURE

2.6.1 NON-NETWORK EXPENDITURE

Actual information

Variable	Source and why actual	Methodology	Assumptions
2.6.1 Buildings and Property **Capex**	This information is considered actual information as it is sourced directly from SAP, the internal Enterprise Resource Planning (**ERP**) system that JEN uses to capture its financial and other information. JEN's costs are derived from internal and external sources. Internal costs are labour costs and are captured through time writing. Where practical and appropriate, all Jemena employees time write to an activity/network code or client e.g., JEN. These form direct costs together with external costs sourced from receipting against purchase orders. At a macro level, JEN's cost collection process uses a combination of SAP functionality e.g. projects, cost and profit centres. At a micro level, JEN uses activity and network codes which roll up to a project code, to collect costs. All property capex related costs use the above functionality within SAP.	The cost of Buildings and Property capex are derived from extracting financial transactions from SAP. A standard project cost report for the calendar year; discloses the building and property costs. The activity codes and respective costs that align to property costs are listed on the report. The activity codes used in projects determine the classification of costs to this category.	No assumptions have been made in providing this information.

Other Expenditure	JEN's cost collection process is noted above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX). Information is sourced from SAP, the ERP system that JEN uses to capture its financial information. These are trailers and small equipment items.	The variable reflects miscellaneous equipment purchases.	Nil

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
2.6.1 IT and Communications **Capex** ***Client Devices***	This information is sourced from SAP, the ERP system that JEN uses to capture its financial information. The client devices cost is considered an estimate because JEN does not directly capture costs in accordance with the categories set out in this template. Experienced IT personnel use their judgement to further categorise the data, therefore it is deemed to be an estimate. In addition, the information contains network overheads which need to be removed as the template requires the disclosure	***Client device expenditure*** consists of desktop and laptop computers, desk and mobile phones as well as other hand held devices. This conforms to the AER definition which is as follows: *"Client Devices Expenditure is expenditure related to a hardware device that accesses services made available by a server. Client Devices Expenditure includes hardware involved in providing desktop computers, laptops, tablets and thin client interfaces and handheld end user computing devices including smart phones, tablets and laptops."* JEN's cost collection process is noted above.	There are no assumptions made.	JEN is not aware of a superior estimation technique.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	of only the direct costs.	The cost of client devices capex is derived by extracting financial transactions from SAP via a standard project cost report. Client Devices expenditure is identified from this report by experienced IT personnel who classify this cost into various categories as required by this template.		

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
2.6.1 IT and Communications **Capex** ***Recurrent Expenditure***	This information is sourced from SAP, the ERP system that JEN uses to capture its financial information. The recurrent cost is considered an estimate because JEN does not directly capture costs in accordance with the categories set out in this template. Experienced IT personnel use their judgement to further categorise the data, therefore it is deemed to be an estimate. In addition, the information contains network overheads which need to be removed as the template requires the disclosure of only the direct costs.	***Recurrent expenditure*** is any cost incurred for systems development that cater for -business growth, enhancements and change, systems upgrades, systems replacement and retirements. This conforms to the AER definition which is as follows: *""Recurrent expenditure is expenditure that returns time after time with respect to the particular category of expenditure. Temporally, expenditure that would be expected to be reasonably consistent from regulatory period to regulatory period (taking into account volume and unit cost drivers) would be recurrent expenditure.* *Examples of recurrent IT & Communications expenditure may include cyclic replacement of assets and related costs (hardware, software, training etc.)."* JEN's cost collection process is noted above. The cost of recurrent capex is derived by extracting financial transactions from SAP through a standard project cost report. Recurrent expenditure was identified from this report by	There are no assumptions made	JEN is not aware of a superior estimation technique.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		experienced IT personnel who classify this information into various categories as required by this template.		
2.6.1 IT and Communications **Capex** ***Non-Recurrent Expenditure***	This information is sourced from SAP, the ERP system that JEN uses to capture its financial information. The non-recurrent cost is considered an estimate because JEN does not directly capture costs in accordance with the categories set out in this template. Experienced IT personnel use their judgement to further categorise the data, therefore it is deemed to be an estimate. In addition to this, the information contains network overheads which need to be removed as the template requires the disclosure of only the direct costs.	***Non-recurrent expenditure*** Consist of new IT systems being implemented for the first time or one-off type expenditures. This conforms to the AER definition which is as follows: *"Non-recurrent expenditure is likely to include projects, particularly major projects, that are one off and not ongoing in nature (e.g. major IT or Communications systems upgrades)."* JEN's cost collection process is described above. The cost of non-recurrent capex is derived by extracting financial transactions from SAP through a standard project cost report. Non-recurrent expenditure is identified from this report by experienced IT personnel who classify this information into various categories as required by this template.	There are no assumptions made.	JEN is not aware of a superior estimation technique.
2.6.1 IT and Communications **Opex**	This information is sourced from SAP, the ERP system that JEN uses to capture its financial information.	Jemena has an IT Services Cost Model which records all IT opex items. The model is used to allocate these costs over its business units	JEN assumes that client device expenditure is consistent year on year as a percentage of overall IT expenditure. JEN also assumes that the cost incurred from the period Jul12-Jun13 is	JEN is not aware of a superior estimation technique.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Client Devices	Client devices expenditure is an estimate because JEN does not capture costs in accordance with this category.	based on various cost drivers.	representative of split.	
2.6.1 IT and Communications **Opex** ***Recurrent Expenditure***	This information is sourced from SAP, the ERP system that JEN uses to capture its financial information. Recurrent expenditure is an estimate because JEN does not capture costs in accordance with categories set out in this template.	Total IT opex is sourced from SAP, the ERP system that JEN uses to capture its financial information. To avoid double counting, the client devices expenditure has been removed as it has been reported above.	The level of details necessary to distinguish between recurrent and non-recurrent expenditure have not been provided to JEN. Therefore, JEN's experienced IT personnel make the assumption that all the IT operating costs, excluding client devices are of a recurrent nature.	JEN is not aware of a superior estimation technique. Generally, the IT operating costs are typically recurrent in nature and by service agreements with minimal one-off abnormal expenditures from one year to the next.
2.6.1 IT and Communications **Opex** ***Non - Recurrent Expenditure***	Nil	Nil	Nil	Nil

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
2.6.1 Motor Vehicles **Capex**	The information is sourced from SAP, the ERP system that JEN uses to capture its financial information. Motor Vehicle costs are considered an estimate because JEN does not directly capture costs in accordance with the categories set out in this template. Experienced Fleet Management personnel use their judgement to further categorise the data, therefore it is deemed to be an estimate.	Motor Vehicle capital expenditure is generally external cost and is derived from cost of purchases processed directly to the asset using SAP purchase orders. These costs are allocated to a particular asset class type in SAP. An Asset Acquisitions report is run in SAP, filtered for the motor vehicle asset classes, and lists all the purchases made during the calendar year for that asset class. It gives details of the asset numbers, acquisition amounts, acquisition date and asset description. JEN's Fleet Management team allocates the costs by referring to the unique asset numbers listed on the report to determine the appropriate regulatory asset category. During this process, there could be transactions found to be more of equipment rather than motor vehicles in nature. These amounts are therefore, excluded from the Motor Vehicles category and reported separately in the "Other" category.	All assets are categorised by their physical and operational characteristics.	JEN is not aware of a superior estimation technique.
2.6.1 Motor Vehicles **Opex**	The information is sourced from SAP, the ERP system that JEN uses to capture its financial information.	JEN's fleet expenditure includes costs such as vehicle registration fees, insurance, fuel, tolls, service and maintenance costs. The costs are derived from extracting financial	JEN has made the assumption that kilometres travelled by a vehicle, is a key cost driver of total motor vehicle expenditure.	JEN is not aware of a superior estimation technique.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	Motor Vehicle operating expenditure is reported as an estimate because SAP does not categorise the costs in accordance with the categories set out in this template. Source of average kilometres for each vehicle category is a Monthly Fuel Usage Report maintained and provided by the Fleet Management Company contracted by Jemena (Toyota Fleet Management).	transactions from SAP. Specific general ledger accounts are used to capture the fleet costs. Using these general ledger accounts as key parameters, costs are extracted from SAP using a standard report. *Allocation of Operating Expenditure to the various Motor Vehicle categories:* As SAP does not categorise fleet costs in accordance with the requirements of this template, they are allocated on a weighted average basis, calculated as follows: The kilometres travelled per vehicle type divided by the total kilometres travelled by all motor vehicles per year. The average for each vehicle type thus arrived at, is then applied to the total motor vehicle operating expenditure to provide the category breakdown as required by this template.		

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
2.6.1 Buildings and Property **Opex**	Buildings and property expenditure include operational and maintenance costs of the following sites and its associated fittings and fixtures: 1. 321 Ferntree Gully Road, Mount Waverley (**Axxess Park**) 2. 34 King William Street, Broadmeadows (**Broadmeadows Depot**) 3. 351 Burwood Highway, Forest Hill (**Forest Hill**) 4. Levels 9 & 10, 737 Bourke Street, Docklands (**Docklands**) 5. 247-251 St Albans Road, Sunshine (**Sunshine**) 6. 77 Keilor Road Drive, Tullamarine (**Tullamarine**) This information is sourced from SAP, the ERP system that JEN uses to capture its financial information. JEN's cost collection process is noted above.	A specific project is created in SAP to collect all the building and property costs of the various Jemena properties. Using this project code, costs are extracted from SAP by running a standard report. The amount captured in this report is then annualised and JEN is being allocated appropriate percentages of the total costs. The allocations are as follows: • Axxess Park 40% • Broadmeadows Depot 100% • Forest Hill 40% • Docklands 40% • Sunshine 100% • Tullamarine 100% Due to the absence of direct allocation data, management decided to use these percentages (based on experience) until a better allocation method is derived.	No assumptions have been made in providing this information.	JEN is not aware of a superior estimation technique.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
2.6.1 Other Expenditure **Capex**	This information is sourced from SAP, the ERP system that JEN uses to capture its financial information. JEN's cost collection process is noted above. This category is considered an estimate as it captures all non-network capital expenditure that could not be allocated above in the IT and communications, Motor Vehicles, or the Buildings and Property categories. JEN estimated the modifications to the EPV vehicles. trailers, forklifts and tool boxes.	As disclosed above, an Asset Acquisitions report is run in SAP, filtered for the motor vehicle asset classes, and lists all the purchases made during the calendar year. It details the asset numbers, acquisition amounts, acquisition dates and asset descriptions. During this process, if transactions are found to be more of equipment than motor vehicle in nature, these amounts are then excluded from the Motor Vehicles category and reported separately in the "Other" category.	No assumptions have been made in providing this information.	JEN is not aware of a superior estimation technique.

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2.6.2 ANNUAL DESCIPTOR METRICS – IT & COMMUNICATIONS EXPENDITURE

Actual information

Variable	Source and why actual	Methodology	Assumptions
2.6.2 **Employee Numbers**	The employee numbers reported under this template are sourced from the Template 2.11 Labour, and hence, inherits the status of 'actual'.	The employee numbers reported under this template are sourced from Template 2.11 Labour. Please refer to the basis of preparation of template 2.11.	Please refer to the basis of preparation for Template 2.11 Labour, for details.

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
User Numbers	This variable is estimated because JEN does not currently capture user numbers. It is assumed to be the same as the employee numbers reported above and is sourced from Template 2.11 Labour.	Overall user numbers are estimated based on the number of employee numbers reported above. All employees are given access to the corporate network and communications systems. Field staff have a number of ways to remotely access corporate applications when they are away from Jemena offices. Please refer to the basis of preparation for Template 2.11 Labour.	JEN assumes that the user numbers are equal to the employee numbers reported above.	As every employee is allocated an account, JEN is in the opinion that this is the best estimate and is unaware of a better estimation methodology.
Number of Devices	Number of devices reported in this template is the actual figures at a given point in time – in this case at	The number of devices reported in this template for desktops, laptops and tablet machines are derived from the asset	None.	JEN is not aware of a superior estimation technique.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	the end of 2014. The figure reported is a composite of all of the following: • Personal computers (laptop and desktop) • Tablets • Smartphones	management auditing tool which is used to track devices attached to the network. Smartphone figures are tracked through our contracts with mobile communications service providers.		

2.6.3 ANNUAL DESCRIPTOR METRICS – MOTOR VEHICLES

Actual information

Variable	Source and why actual	Methodology	Assumptions
2.6.3 **CAR Average Kilometres Travelled**	A Monthly Fuel Usage Report provided by the Fleet Management Company contracted by Jemena (Interleasing).	Data is sourced from the Fleet Management company fuel data reports - based on the fuel card usage. This report identifies each vehicle by registration number and records the kilometre readings at the time of fuel refill. The report includes the Vehicle Reference (which is used to allocate the readings to the various motor vehicle categories of this RIN) the business unit and location. The report is in a rolling data format and retains kilometre readings for the previous 12 months. The annual kilometres are derived by subtracting the beginning of January reading from the end December reading for each vehicle, and then dividing the total kilometres by the number of vehicles for the car category. Therefore, the average kilometres for this category are derived directly from this report.	No assumptions have been made in providing this information.
2.6.3 **CAR Number Purchased**	The information is sourced from SAP, the ERP system that JEN uses to capture its financial and some operational information.	The number of cars purchased is sourced from SAP. An Asset Acquisitions report was run to extract the data and lists all the purchases made for the Motor Vehicles asset class within the calendar year. This report details the asset numbers, acquisition amounts, acquisition dates and asset descriptions and therefore is used to calculate the number of cars purchased.	

Variable	Source and why actual	Methodology	Assumptions
2.6.3 **CAR** **Number Leased**	n/a Jemena fleet is owned, not leased.	n/a	n/a
2.6.3 **CAR** **Number in Fleet**	A Monthly Fuel Usage Report provided by the Fleet Management Company contracted by Jemena (Interleasing).	The number in fleet was calculated by referring to the "Summary of vehicles" identified as 'Active' on the monthly fuel card usage report.	'Active' vehicles are assumed to be in the service.
2.6.3 **CAR** **Proportion of Total Fleet Expenditure**	All fleet expenditure is allocated as regulatory expenditure, and therefore the proportion of total fleet expenditure is 100%	n/a	None
2.6.3 **LIGHT COMMERCIAL VEHICLE** **Average Kilometres Travelled**	A Monthly Fuel Usage Report provided by the Fleet Management Company contracted by Jemena (Interleasing).	Data is sourced from the Fleet Management company fuel data reports and, based on fuel card usage. This report identifies each vehicle by registration number and records the kilometre readings at the time of fuel fill. The report includes the Vehicle Reference (which is used to allocate the readings to the various motor vehicle categories of this RIN), the business unit and location. The report is in a rolling data format and retains kilometre readings for the previous 12 months. The annual kilometres were derived by subtracting the beginning of January reading from the end December reading for each vehicle, and then dividing the total kilometres by the number of vehicles for the Light Commercial Vehicle category. Therefore, the average kilometres for this category were derived directly from this report.	No assumptions have been made in providing this information.

Variable	Source and why actual	Methodology	Assumptions
2.6.3 **LIGHT COMMERCIAL VEHICLE** **Number Purchased**	The information is sourced from SAP, the ERP system that JEN uses to capture its financial and some operational information.	The number of Light Commercial Vehicles purchased is sourced from SAP. An Asset Acquisitions report is run to extract the data and lists all the purchases made under the Motor Vehicles asset class within the calendar year. This report details the asset numbers, acquisition amounts, and acquisition dates and asset descriptions and therefore is used to calculate the number of Light Commercial Vehicles purchased.	All assets area categorised by their physical and operational characteristics.
2.6.3 **LIGHT COMMERCIAL VEHICLE** **Number Leased**	n/a Jemena fleet is owned, not leased.	n/a	n/a
2.6.3 **LIGHT COMMERCIAL VEHICLE** **Number in Fleet**	A Monthly Fuel Usage Report provided by the Fleet Management Company contracted by Jemena (Interleasing).	The number in fleet was calculated by referring to the "Summary of vehicles" identified as 'Active' on the monthly fuel card usage report.	'Active' vehicles are assumed to be in the service.
2.6.3 **LIGHT COMMERCIAL VEHICLE** **Proportion of Total Fleet Expenditure**	All fleet expenditure is allocated as regulatory expenditure, and therefore the proportion of total fleet expenditure is 100%	n/a	None

Variable	Source and why actual	Methodology	Assumptions
2.6.3 **ELEVATED WORK PLATFORM (LCV) Average Kilometres Travelled**	This is not a type of equipment used by JEN.	n/a	n/a
2.6.3 **ELEVATED WORK PLATFORM (LCV) Number Purchased**	This is not a type of equipment used by JEN.	n/a	n/a
2.6.3 **ELEVATED WORK PLATFORM (LCV) Number Leased**	This is not a type of equipment used by JEN.	n/a	n/a
2.6.3 **ELEVATED WORK PLATFORM (LCV) Number in Fleet**	This is not a type of equipment used by JEN.	n/a	n/a

Variable	Source and why actual	Methodology	Assumptions
2.6.3 **ELEVATED WORK PLATFORM (LCV)** **Proportion of Total Fleet Expenditure**	This is not a type of equipment used by JEN.	n/a	n/a
2.6.3 **ELEVATED WORK PLATFORM (HCV)** **Average Kilometres Travelled**	The information is sourced from a Monthly Fuel Usage Report provided by the Fleet Management Company contracted by Jemena (Interleasing). JEN considers the information to be actual information given that the data is maintained within JEN's internal reporting systems.	Data is sourced from the Fleet Management company fuel data reports based on the fuel card usage. This report identifies each vehicle by registration number and records the kilometre readings at the time of fuel fill. The report includes the Vehicle Reference (which is used to allocate the readings to the various motor vehicle categories of this RIN), the business unit and location. The report is in a rolling data format and retains kilometre readings for the previous 12 months. The annual kilometres were derived by subtracting the beginning of January reading from the end December reading for each vehicle, and then dividing the total kilometres by the number of vehicles for the Elevated Work Platform (HCV) category. Therefore, the average kilometres for this category are derived directly from this report.	No assumptions have been made in providing this information.

Variable	Source and why actual	Methodology	Assumptions
2.6.3 **ELEVATED WORK PLATFORM (HCV) Number Purchased**	The information is sourced from SAP, the ERP system that JEN uses to capture its financial and some operational information. JEN considers the information to be actual information given that the data is maintained within JEN's internal reporting systems.	The number of Elevated Work Platforms (HCV) purchased is sourced from SAP. An Asset Acquisitions report is run to extract the data and lists all the purchases made for the Motor Vehicle asset classes within the calendar year. This report details the asset numbers, acquisition amounts, acquisition dates and asset descriptions, and therefore is used to calculate the number of HCV's purchased.	All assets area categorised by their physical and operational characteristics, in accordance with the Fleet Management Strategy JEM ST0051.
2.6.3 **ELEVATED WORK PLATFORM (HCV) Number Leased**	None	n/a	n/a
2.6.3 **ELEVATED WORK PLATFORM (HCV) Number in Fleet**	The information is sourced from a Monthly Fuel Usage Report provided by the Fleet Management Company contracted by Jemena (Interleasing). JEN considers the information to be actual information given that the data is maintained within JEN's internal reporting systems.	The number in fleet is calculated by referring to the "Summary of vehicles" identified as 'Active' on the monthly fuel card usage report.	'Active' vehicles are assumed to be in service.
2.6.3 **ELEVATED WORK PLATFORM (HCV) Proportion of Total Fleet Expenditure**	All fleet expenditure is allocated as regulatory expenditure, and therefore the proportion of total fleet expenditure is 100%.	n/a	None

Variable	Source and why actual	Methodology	Assumptions
2.6.3 **HEAVY COMMERCIAL VEHICLE** **Average Kilometres Travelled**	The information is sourced from a Monthly Fuel Usage Report provided by the Fleet Management Company contracted by Jemena (Interleasing). JEN considers the information to be actual information given that the data is maintained within JEN's internal reporting systems.	Data is sourced from the Fleet Management company fuel data reports based on fuel card usage. This report identifies each vehicle by registration number and records the kilometre readings at the time of fuel fill. The report includes the Vehicle Reference (which is used to allocate the readings to the various motor vehicle categories of this RIN), the business unit and location. The report is in a rolling data format and retains kilometre readings for the previous 12 months. The annual kilometres are derived by subtracting the beginning of January reading from the end December reading for each vehicle, and then dividing the total kilometres by the number of vehicles for the Heavy Commercial Vehicle category. Therefore, the average kilometres for this category are derived directly from this report.	No assumptions have been made in providing this information.
2.6.3 **HEAVY COMMERCIAL VEHICLE** **Average Kilometres Travelled**	The information is sourced from a Monthly Fuel Usage Report provided by the Fleet Management Company contracted by Jemena (Interleasing). JEN considers the information to be actual information given that the data is maintained within JEN's internal reporting systems.	Data is sourced from the Fleet Management company fuel data reports based on fuel card usage. This report identifies each vehicle by registration number and records the kilometre readings at the time of fuel fill. The report includes the Vehicle Reference (which is used to allocate the readings to the various motor vehicle categories of this RIN), the business unit and location. The report is in a rolling data format and retains kilometre readings for the previous 12 months. The annual kilometres are derived by subtracting the beginning of January reading from the end December reading for each vehicle, and then dividing the total kilometres by the number of vehicles for the Heavy Commercial Vehicle category. Therefore, the average kilometres for this category are derived directly from this report.	No assumptions have been made in providing this information.

Variable	Source and why actual	Methodology	Assumptions
2.6.3 **HEAVY COMMERCIAL VEHICLE** **Number Leased**	None	n/a	n/a
2.6.3 **HEAVY COMMERCIAL VEHICLE** **Number in Fleet**	A Monthly Fuel Usage Report provided by the Fleet Management Company contracted by Jemena (Interleasing). JEN considers the information to be actual information given that the data is maintained within JEN's internal reporting systems.	The number in fleet is calculated by referring to the "Summary of vehicles" identified as 'Active' on the monthly fuel card usage report.	'Active' vehicles are assumed to be in the service.
2.6.3 **HEAVY COMMERCIAL VEHICLE** **Proportion of Total Fleet Expenditure**	All fleet expenditure is allocated as regulatory expenditure, and therefore the proportion of total fleet expenditure is 100%.	n/a	None

2.7 VEGETATION MANAGEMENT

2.7.1 DESCRIPTOR METRICS BY ZONE

Actual information

Variable	Source and why actual	Methodology	Assumptions
Low Bushfire Risk Area (**LBRA**) and Hazardous Bushfire Risk Area (**HBRA**), Route line length within zone (km) for "Urban and CBD" and "Rural" feeders	Jemena's Geographical Information (GIS) is the single source of actual data for route line length. The data is extracted directly from the GIS at the end of 2014. The data extracted from GIS was provided with identifiers for 2 zone and 2 feeder categories.	A program has been developed within the GIS to determine the route length of the network. The methodology used was to determine where there were single circuits between poles and where there were multiple circuits between poles. Where there are multiple circuits the span length between poles has only been included once. The span length of the single circuits has then been added to determine the total route length. Computer code is written to extract six files, they are: 1) List of all LV overhead mains spans (From poles and To pole) by feeder and in the LBRA, 2) list of all HV overhead mains spans in the LBRA, 3) list of all overhead ST spans in the LBRA, and files 4, 5 and 6 are the same but for spans in the HBRA. These six files are then combined and duplicate spans (From poles and To pole) are eliminated from the list. The resultant list contains only unique spans which are allocated to a feeder giving the	Only overhead conductor route length was to be considered, that is underground cable route length was excluded. Length of overhead services from poles to premises was excluded from the route length calculation. All conductor recorded as Usage "service" is not included in this variable.

Variable	Source and why actual	Methodology	Assumptions
		ability to split the data between Urban and Rural feeders. The GIS records information against every pole enabling the split between LBRA and HBRA. As specified in the RIN, service lines are not included in this variable. The length of any underground cable is also not included here.	
LBRA and HBRA, Number of maintenance spans (0's) for "Urban and CBD" and "Rural" feeders	This variable is reported as actual information for 2014 as the data is directly sourced from JEN's Vegetation Management System (VMS). The data is collected in the field and entered into data collection devices and is then loaded into the VMS. Reports are run directly from the VMS.	The data collected in the field and loaded into the vegetation management company's VMS includes the feeder that the span is connected to (thus allowing it to be determined whether the feeder is rural or urban), and whether the span is in a HBRA or LBRA. Note: In previous years these variables quoted the number of "vegetated" spans. We identified that JEN misinterpreted this information in previous submitted category analysis RIN responses. A Vegetated span is one where "active vegetation management practices" are likely to be required within the next five years. For 2014 "active vegetation management practices" has been interpreted as a span to which a crew was dispatched to cut or remove a tree for electric line clearance purposes during the calendar year.	It is assumed that "active vegetation management practices" defined in the RIN for "Vegetation Maintenance Span" means: a span to which a crew was dispatched to cut or remove a tree for electric line clearance purposes during the calendar year.

Variable	Source and why actual	Methodology	Assumptions
LBRA and HBRA, Length of vegetation corridors (km) for "Urban and CBD" and "Rural" feeders	JEN has no recorded vegetation corridors.	If JEN had any vegetation corridors they would be recorded in the VMS.	No assumptions have been made in providing this information.
LBRA and HBRA, Average frequency of cutting cycle (years) for "Urban and CBD" and "Rural" feeders	This variable is reported as actual information for 2014 because the data can be directly sourced from the 2014 annual Jemena Electric Line Clearance Management Plan (ELCMP).	There is no methodology to be applied to this response. The information is simply maintained within the ELCMP for 2014.	No assumptions have been made in providing this information.

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
LBRA and HBRA, Total length of maintenance spans (km) for "Urban and CBD" and "Rural" feeders	This variable was estimated for all years. The VMS does not record the length of spans. The VMS records the pole number which represents the span closer to the zone substation from that pole. This variable is also not recorded in the GIS as a characteristic against each span and therefore required to be estimated.	Using the Route length data the average route span length was calculated. The average route span length was multiplied by the number of Maintenance Spans reported from the VMS.	In most cases, all voltages are cleared in the same single visit.	This is the best estimate because it has been calculated using a programmed methodology that is able to be repeated and is considered to provide an accurate result. JEN is unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
LBRA and HBRA, Average number of trees per maintenance span (0's) for “Urban and CBD” and “Rural” feeders	This variable was estimated for 2014. The VMS does not record the number of trees actually requiring maintenance. The VMS records the number of maintenance spans but not the number of trees per maintenance span.	Average number of trees obtained from a physical survey of 400 spans conducted in Mar 2014. The 400 spans were divided in to four (4) categories and each had 100 spans surveyed, the categories are: – LBRA, urban feeder, – LBRA, rural feeder, – HBRA, urban feeder and, – HBRA, rural feeder. The survey scope was as follows: – Only trees which are the responsibility of JEN (based on the current version of Electric Line Clearance Act 1998) were counted. – Trees/shrubs which would never impinge on the clearance space were not counted. – Trees that would impinge on the clearance space in the next 5 years were counted. – Spans with trees that didn’t need cutting or no trees were not included in the survey.	Based on local knowledge the spans selected for survey are considered to be representative in each of the four (4) categories.	The estimate is JEN's best estimate because the methodology is representative and provides reasonable accuracy. Other photographic data sources such as Normalised Difference Vegetation Index (NDVI) and National Vegetation Information System (NVIS) do not lend themselves to accurate estimates of trees per maintenance span. Also these systems require significant resources and time to be applied. JEN is unaware of a better estimation methodology.

2.7.2 COST METRICS BY ZONE

Response to additional requirements in the RIN under section 12 VEGETATION MANAGEMENT EXPENDITURE

31. Specifically for item; "12.7 For each vegetation management zone identified in 12.1 above, provide in the basis of preparation:"

Requirement	Response
(a) a list of regulations that impose a material cost on performing vegetation management works (including, but is not limited to, bushfire mitigation regulations);	Electricity Safety Act 1998 Electricity Safety (Bushfire Mitigation) Regulations 2013 Electricity Safety (Electric Line Clearance) Regulations 2010 Electricity Safety Management Scheme Electricity Safety (Installations) Regulations 2009 AS4373 (Pruning of Amenity Trees) Environment Protection and Biodiversity Conservation Act 1999 Flora and Fauna Guarantee Act 1988 Occupational Health and Safety Act Occupational Health & Safety (Plant) Regulations 1995 Green Book - Code of Practice on electrical safety for distribution businesses in the Victorian Electrical Supply Industry AS 1418.10 (Cranes, Hoists and Winches)
(b) a list of self-imposed standards from JEN's vegetation management program which apply to that zone; and	JEN Electric Line Clearance Management Plan JEN Bushfire Mitigation Plan JEN Customer Complaints Procedure VEM 20-50 Assessment Procedure (Jemena) VEM 10-05 Safety Observer/Offsider, Emergency Response & Single Person Work Procedure VEM 10-09 Guidelines for Conforming to Electrical Safety Requirements VEM 10-08 EWP Procedure VEM 10-06 Tree Climbing Procedure HSP 05-13 Working at Heights

Requirement	Response
	VEM 21-03 Management of Threatened Flora and Fauna VEM 20-02 Hazardous Tree and 56M Management Procedure
(c) an explanation of the cost impact of regulations and self-imposed standards on performing vegetation management work.	The cost of managing vegetation in accordance with regulations and self-imposed standards is increasing year to year due but not limited to the following factors; **Literal compliance** The 2010 Regulations saw a significant change from the requirement to have vegetation compliant in the HBRA during the period of 1 November each year to the end of the declared fire period (Typically 31 March the following year). This required a change to our program from annual vegetation management work in the HBRA and 3 yearly in the LBRA to potentially a biannual cut in the HBRA and an annual cut in the LBRA. This has resulted in an approximate increase of 300% in resources to both assess and cut vegetation around power lines to meet these requirements. **Habitat Trees** The 2010 Regulations also added the requirement for DNSPs to ensure that Fauna with a conservation status in Victoria of "vulnerable", "endangered" or "critically endangered" is identified. Once a tree that contains threatened fauna has been identified then cutting or removal of that tree must be undertaken outside of the breeding season for that species wherever practicable. JEN has engaged the services of a qualified environmental officer to undertake a review of the network and constantly monitor cutting programs to ensure that threatened fauna is protected. **Consultation** In the 2005 Regulations, a minimum notice period was specified (14 days) before cutting, with no expiration date of the period. In the 2010 Regulations this was changed and a 60 day window for trees to be actioned in. When that window is exceeded the customers must be re-notified. This has the effect of increased time spent notifying customers, increased time reapplying for suppression and it alters the annual program. Vegetation program management costs are also increasing due to increasing customer expectations. This has resulted in additional consultation with customers, community groups and councils. **Service Lines** There is an increased focus on the management and clearing of service lines (section 84(2)(a) of the Electricity Safety Act).

Requirement	Response
	JEN was required to increase the number of personnel assessing service lines due to the more stringent requirement to notify all customers with vegetation infringing the regulated space around a service line. In contrast, the previous regulations only required customers that had solid contact between their tree and the service line to be notified. JEN has also engaged a vegetation expert to manage this program and to follow up customers that have service lines with solid contact to ensure they clear trees for which they are responsible under the Electricity Safety Act. JEN's administration costs have also risen with the requirement to send out multiple letters to customers with offending vegetation if they fail to clear it within the predefined period. **Other Responsible Person (ORP) Follow Up** As with Service Lines, Energy Safe Victoria have increased their focus on JEN to have a program in place to ensure that ORPs such as councils (prior to 1 April 2014 also included Vic Roads, Metro Rail, Melbourne Water, etc.) maintain their trees in accordance with the Electricity Safety Act and subordinate Regulations. JEN has also engaged a vegetation company (Dual role including Other Responsible Person (ORP), private electric lines and service lines management) to manage this program and to follow up ORPs with non-compliances to ensure they clear their trees from overhead electric lines. JEN also absorbs costs for provision of network management (e.g. reclose suppression and processing of Permit to Work applications) to ORPs for cutting offending trees which were not cleared in a timely manner. This renders these trees unsafe to be cut by normal crews. In general terms, the closer the tree is to electric lines when it needs to be cut, the more expensive safety requirements make the work. Normal crews generally work well outside the clearance space and therefore are the least cost option. Although shut-downs are generally the most expensive, Live Line crews are more expensive than normal crews. Not all councils are alike and most cite inadequate budgets as the reason for non-compliance, which in turn makes the program more expensive for the council and for JEN. **HSE** In order to comply with the Occupational Health and Safety Act JEN is constantly reviewing all components of their operations and investing time and resources into equipment, training, auditing and monitoring all crews to ensure that we have a safe workforce and community. **Victorian Bushfires Royal Commission (VBRC) Recommendations** These recommendations were enforced using "directions". Directions were made using mechanisms existing in the Electricity

Requirement	Response
	Safety Act 1998, specifically Section 141(2)(d) of the Electricity Safety Act 1998 requiring Jemena to amend our Electricity Safety Management Scheme. *RECOMMENDATION 30* *The State amend the regulatory framework for electricity safety to require that distribution businesses adopt, as part of their management plans, measures to reduce the risks posed by hazard trees—that is, trees that are outside the clearance zone but that could come into contact with an electric power line having regard to foreseeable local conditions.* The implementation of Recommendation 30 required JEN to develop a Hazard Tree assessment and cutting program for the Hazardous Bushfire Risk Area. This program is additional to JEN's existing electric line clearance programs, and adding significant cost. *RECOMMENDATION 31* *Municipal councils include in their municipal fire prevention plans for areas of high bushfire risk provision for the identification of hazard trees and for notifying the responsible entities with a view to having the situation redressed.* ESV are also requiring JEN to "assist" municipal councils (per Recommendation 31) to meet their Hazard Tree management obligation and electric line clearance generally. This is adding significant cost to JEN's vegetation management program. *RECOMMENDATION 34* *The State amend the regulatory framework for electricity safety to strengthen Energy Safe Victoria's mandate in relation to the prevention and mitigation of electricity-caused bushfires and to require it to fulfil that mandate.* There were eight (8) recommendations made directly targeting the major electricity companies in Victoria. Of these three (3) were vegetation related, listed below as Recommendations 30, 31 and 34. Energy Safe Victoria (ESV) used the mandate of Recommendation 34 to strengthen Acts and Regulations in their jurisdiction, resulting in additional cost to JEN.

32. The response provided in the table above applies to both the LBRA zone and the HBRA zone.

Actual information

Variable	Source and why actual	Methodology	Assumptions
LBRA and HBRA, Tree trimming (excluding hazard trees) ($000's) LBRA and HBRA, Inspection ($000's) HBRA, Hazard tree cutting ($000's)	The source of the information is the VMS. The data is collected in the field and entered into data collection devices and is then loaded into the VMS. Reports are run directly from the VMS.	JEN outsources its vegetation management,maintenance to an expert service provider in this field. This information was provided by the vegetation management company using reports from the VMS.	No assumptions have been made in providing this information.
LBRA Hazard tree cutting ($000's)	JEN has not initiated any hazard tree cutting programs in this zone (LBRA). This data is captured by the vegetation management company.	This information was provided by the vegetation management company using reports from the VMS.	No assumptions have been made in providing this information.
LBRA and HBRA, Ground clearance ($000's)	JEN has not initiated any ground clearance programs. This data is captured by the vegetation management company.	This information was provided by the vegetation management company using reports from the VMS.	No assumptions have been made in providing this information.
LBRA and HBRA, Vegetation corridor clearance ($000's)	JEN has not initiated any vegetation corridor clearance programs. This data is captured by the vegetation management company.	This information was provided by the vegetation management company using reports from the VMS.	No assumptions have been made in providing this information.
LBRA and HBRA, Tree replacement program costs ($000's)	JEN has not initiated any tree replacement programs. Any trees replaced are on a case by case basis negotiated with the customer.	This information was provided by the vegetation management company using reports from the VMS.	No assumptions have been made in providing this information.

General Comments Applicable to Table 2.7.2 Expenditure Metrics by Zone

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
General Comments; Table 2.7.2 Expenditure Metrics by Zone.	Information is sourced from SAP, the ERP system that JEN uses to capture its financial information. As, expenditure is incurred, it is captured by activity (cost collectors). Activity codes can be used to identify various maintenance activities. Some overheads applied to the direct costs have been removed for this template, as the requirement is to disclose direct costs only. As the activities in SAP are not setup to aggregate into the regulatory categories, estimates have been made to meet the requirements of the templates. The activities are allocated (% based) into categories e.g. routine, condition based and emergency.	Vegetation Management items disclosed in the RIN's template are sourced from SAP, the ERP system that JEN uses to capture its financial and some operational information. Conceptually, JEN's cost collection process uses a combination of cost and profit centres to collect costs at the macro level. Activities or networks are set up to collect costs at a micro level. These activities/networks are designed to collect costs based on the activity on which an individual works and to accept any external costs associated with that activity e.g. Faults, Emergencies, and Standards and Procedures. Note that the SAP network codes are also designed to identify the Regulatory category i.e. SCS, Public Lighting, ACS, etc. JEN uses time writing to capture internal labour costs. Jemena has been improving its capturing of time writing data over the past few years. Where practical and appropriate all employees time write to an activity/network or a client e.g. JEN. These form the direct costs incurred for a respective activity. JEN allocates overheads to these activities based on its internal policies and in accordance with the AER	The primary purpose of these activities is for Vegetation Management works.	This is deemed to be the best method of estimation for the basis for the cost as activities directly assigned to Vegetation works because the cost of the Asset Planning, Standards and Asset Recording activities has been allocated in proportion to the actual costs charged to Vegetation Management.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		approved Cost Allocation Method (**CAM**) The direct spend in Routine, Condition Based Maintenance and Emergency uses activity costing methodologies to capture of cost. Overhead percentages calculated for – Materials overheads (Store) – Non Labour (Tools, Training) – Regional and Property – Contract administration. and is deducted from the activity cost collectors. Direct Labour, Materials, Contracts & Other are derived from General Ledger account groupings, with network Overheads adjusted from respective account grouping. Itemised costing of vegetation management activities was provided by our vegetation management company. These itemised costs were then used to allocate the total annual expenditure across the variables in table 2.7.2.		

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
LBRA and HBRA, Audit ($000's)	As per general comments above.	JEN's audit contract coordinator prepared an estimate of the time spent auditing vegetation management services for the 2014 year. The vegetation management company advised that the "other vegetation management costs…" they provided includes a 20% proportion for "audits". The combined Jemena and vegetation management company estimated audit costs form the response to this variable.	There was no requirement to make an assumption to split the auditing cost between LBRA and HBRA because the "other vegetation management costs" were provided as actuals, split by LBRA and HBRA. The assumption was made that the "other vegetation management costs for the LBRA and HBRA respectively include a 20% proportion for auditing.	JEN and its vegetation management service provider have always conducted vegetation management audits. The estimates provided by Jemena (contract coordinator) and the vegetation management service provider are based on current audit programs. JEN in unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
LBRA and HBRA, Contractor Liaison expenditure ($000's)	An individual cost collector in SAP was not available for 2014.	The Team Leader Infrastructure Protection who manages the contract coordination team provided an estimate for 2014. The estimate is based on the amount of time spent in 2014 by the contract coordinator to managing the vegetation management contractor.	The contract coordinator only worked on "Contractor Liaison" for the entire estimated time allocated to this variable.	The equivalent of one full time employee is a reasonable estimate of the actual resources allocated to this activity. JEN in unaware of a better estimation methodology.
LBRA and HBRA, Other Vegetation Management Costs not specified in sheet ($000's)	As per general comments above.	For 2014, JEN's vegetation management contractor provided the cost for this variable combined with the cost of Audits conducted. The contractor advised that an appropriate ratio between "other vegetation management costs…" and "audits" is 80:20. This ratio was calculated, by JEN's vegetation management contractor, based on resource requirements for the 2014 Audit schedule. The total audit requirement was estimated to be the dollar equivalent of 20% of the total cost provided by JEN's vegetation management contractor for this variable. This ratio was applied to calculate this variable.	Based on the 2014 audit schedule it is assumed that the equivalent of 20% of the cost provided by JEN's vegetation management contractor is spent on auditing and 80% is spent on items not specified anywhere else on this sheet.	The ratio 80:20 is considered realistic for "other vegetation management costs…" to "audits" when considering the resource requirement for the 2014 audit program. JEN in unaware of a better estimation methodology.

2.7.3 DESCRIPTOR METRICS ACROSS ALL ZONES – UNPLANNED VEGETATION EVENTS

Actual information

Variable	Source and why actual	Methodology	Assumptions
Number of fire starts caused by vegetation grow-ins (NSP responsibility) (0's)	This data was sourced from reports prepared for and audited by the AER in accordance with the F-factor scheme requirements. This data is considered actual because it was prepared in compliance with the requirements of the F-factor scheme.	In the RIN table submitted to the AER for the F-factor scheme all fire starts which did not result in burnt vegetation were filtered out. The "Fault description" field was read and sorted in to these four (4) fire start variables.	All vegetation related fire start events are reported (e.g. by the public, fire control authority, or Jemena personnel) and when reported are recorded accurately in the JEN reporting systems. If the data is unclear who the Responsible Person is for electric line clearance then JEN is assumed to be the Responsible Person.
Number of fire starts caused by vegetation blow-ins and fall-ins (NSP responsibility) (0's)	This data was sourced from reports prepared for and audited by the AER in accordance with the F-factor scheme requirements. This data is considered actual because it was prepared in compliance with the requirements of the F-factor scheme.	In the RIN table submitted to the AER for the F-factor scheme all fire starts which did not result in burnt vegetation were filtered out. The "Fault description" field was read and sorted in to these four (4) fire start variables.	All vegetation related fire start events are reported (e.g. by the public, fire control authority, or Jemena personnel) and when reported are recorded accurately in the JEN reporting systems. If the data is unclear who the Responsible Person is for electric line clearance then JEN is assumed to be the Responsible Person.
Number of fire starts caused by vegetation grow-ins (Other Party Responsibility) (0's)	This data was sourced from reports prepared for and audited by the AER in accordance with the F-factor scheme requirements. This data is considered actual because it was prepared in compliance with the requirements of the F-factor scheme.	In the RIN table submitted to the AER for the F-factor scheme all fire starts which did not result in burnt vegetation were filtered out. The "Fault description" field was read and sorted in to these four (4) fire start variables.	All vegetation related fire start events are reported (e.g. by the public, fire control authority, or Jemena personnel) and when reported are recorded accurately in the JEN reporting systems. If the data is unclear who the Responsible Person is for electric line clearance then JEN is assumed to be the Responsible Person.
Number of fire starts caused by vegetation blow-ins and fall-ins (Other	This data was sourced from reports prepared for and audited by the AER in accordance with the F-factor scheme requirements. This data is considered actual because it was	In the RIN table submitted to the AER for the F-factor scheme all fire starts which did not result in burnt vegetation were filtered out. The "Fault description" field was read and sorted in to these	All vegetation related fire start events are reported (e.g. by the public, fire control authority, or Jemena personnel) and when reported are recorded accurately in the JEN reporting systems.

Variable	Source and why actual	Methodology	Assumptions
Party Responsibility) (0's)	prepared in compliance with the requirements of the F-factor scheme.	four (4) fire start variables.	If the data is unclear who the Responsible Person is for electric line clearance then JEN is assumed to be the Responsible Person.

2.8 MAINTENANCE

2.8.1 DESCRIPTOR METRICS FOR ROUTINE AND NON-ROUTINE MAINTENANCE

Actual information

Variable	Source and why actual	Methodology	Assumptions
ASSET QUANTITY - AT YEAR END	Information is sourced from SAP and GIS. This data was able to be provided without estimation due to the completeness of JEN's age profile data.	For All Assets: Sum of all assets as per asset category at the respective year end - 2014.	No assumptions have been made
ASSET QUANTITY - INSPECTED/ MAINTAINED	Information is sourced from SAP. Reference was made to the appropriate SAP Plant Maintenance (PM) Orders that were assigned to the maintenance activity. This information is actual with the exception of inspections / maintenance on pole tops, overhead line and service line maintenance and underground	The methodology included analysing all of the SAP Plant Maintenance (PM) Orders that were assigned to the relevant maintenance activity codes. All PM orders were extracted as were the associated tasks from SAP. The tasks were classified as per the AER's Maintenance Asset Category where appropriate.	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
	cables, which were estimated and are discussed in the estimated section.		
INSPECTION CYCLE / MAINTENANCE CYCLE	Information is sourced from SAP.	All planned maintenance and inspection tasks are documented and managed using the SAP Plant Maintenance (PM) module functionality. The functionality has enabled Jemena to establish maintenance plans in SAP. A maintenance cycle or inspection cycle is associated with each maintenance plan. By directly interrogating SAP, the inspection / maintenance cycle is determined. Where there are multiple cycles applicable for the same maintenance asset category, the cycle is to reflect the highest cost activity.	Not all asset categories have a maintenance cycle. This is because some asset categories are solely inspection driven and do not have maintenance performed. This is the reason for the 'nil' figures for the maintenance cycle for some asset categories.

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
ASSET QUANTITY - INSPECTED/ MAINTAINED	Information is sourced from SAP. The pole and asset inspection activity involves pole, pole top, overhead conductor, underground cable termination, substation, switchgear and overhead service conductor inspection. The volume of pole top, overhead line and service line maintenance are broken down by pole tops and overhead lines; and service lines was estimated because JEN does not record the volume of inspections in these maintenance asset categories separately.	**Pole top, overhead line and service line maintenance – pole tops and overhead lines.** For each pole, the inspection record, (including the inspection date) is recorded in SAP. The methodology for determining the number of poles that were inspected each year involved extracting these pole inspection records from SAP. The number of pole tops inspected each year was determined by interrogating GIS for the total number of crossarms connected to the poles inspected in 2014. **Pole top, overhead line and service line maintenance – service lines.** The number of inspected service lines was estimated based on the pole inspection zones that were inspected in each year and the number of overhead services in that zone. Given that the inspection of some pole inspection zones spans across years, the decision was made to allocate the inspection zone, and hence the number of services inspected to the year that the majority of pole inspections were completed. **Overhead asset inspection – line patrolled.**	For pole tops, overhead lines and service lines, the volume of assets inspected has been allocated to the 'predominant' year that the inspection zone was inspected. For pole tops, the assumption has been made that the average number of crossarms per pole is representative of the number of pole tops inspected per year. For overhead line length the assumption has been made that the ratio of circuit km to route km can be applied consistently across all inspection zones to determine the route km of line patrolled.	This is the best estimate because it uses the most relevant actual data as the basis of the estimate. The actual number of poles inspected per year and the actual number of pole tops connected to those poles was used to determine the number of pole tops inspected. The actual route line length was used to determine the route km patrolled per year. The length of overhead services was not used in this calculation JEN in unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		The number of route km of line patrolled was determined from the total number of poles inspected in 2014 multiplied by the average span length. The average span length, for this variable, is the route line length (overhead and underground) divided by the total number of poles.		
AVERAGE AGE OF ASSET GROUP	Information is sourced from SAP and GIS. This data was able to be provided with some estimation of the date of installation.	Estimated installation dates were taken from the methodology used for template 5.2	Assumptions have been outlined in the basis of preparation for template 5.2	This method makes use of all the available actual installation dates plus estimated dates which have been rigorously scrutinised for accuracy. JEN in unaware of a better estimation methodology.

2.8.2 COST METRICS FOR ROUTINE AND NON-ROUTINE MAINTENANCE

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
General Comment: Table 2.8.2 Cost Metrics for Routine and Non-Routine Maintenance	Information is sourced from SAP, the ERP system that JEN uses to capture its financial information. As expenditure is incurred, it is captured by activity (cost collectors). Activity codes can be used to identify various maintenance activities. Some overheads applied to the	Maintenance items disclosed in the RIN's template are sourced from SAP, the ERP system that JEN uses to capture its financial and some operational information. Conceptually, JEN's cost collection process uses a combination of cost and profit centres to collect costs at the macro level. Activities or networks are set up to collect costs at a micro level. These activities/networks are designed to collect costs based on the activity on which an individual works and to accept any	JEN has a comprehensive model which underpins the maintenance costs disclosed in the RIN responses and previous Regulatory Accounting Statements. This model identifies the Direct Labour, Direct Materials, Contractor, Other Costs and Related Party Margins based on allocations from	This JEN's best estimate as JEN consider it to be the only workable method, other than manually assessing individual activity / network / internal order data for 2014. However, this would be highly time consuming and the allocation % proposed would not be

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	direct costs have been removed for this template, as the requirement is to disclose direct costs only. As the activities in SAP are not setup to aggregate into the regulatory categories, further work to categorise the data to meet the requirements of the templates has been performed.	external costs associated with that activity e.g. Faults, Emergencies, and Standards and Procedures. Note that the SAP network codes are also designed to identify the Regulatory category i.e. SCS, Public Lighting, ACS, etc. JEN uses time writing to capture internal labour costs. Jemena has been improving its capturing of time writing data over the past few years. Where practical and appropriate all employees time write to an activity/network or a client e.g. JEN. These form the direct costs incurred for a respective activity. JEN allocates overheads to these activities based on its internal policies and in accordance with the AER approved Cost Allocation Method (**CAM**) The direct spend in Routine, Condition Based Maintenance and Emergency uses activity costing methodologies to capture cost. Overhead percentages calculated for – Materials overheads (Store) – Non Labour (Tools, Training) – Regional and Property – Contract administration and is deducted from the activity cost collectors. Direct Labour, Materials, Contracts & Other are derived from General Ledger account groupings, with network Overheads adjusted from respective account grouping.	SAP. Where applicable, embedded overheads have been removed from these costs using an agreed allocation methodology. Costs not recorded in the activities but applicable to the RIN C template were apportioned to the template. The activities were allocated (% based) into these categories (routine, condition based and emergency) based on business experience. This allocation methodology was applied in JEN's category analysis RIN response for 2014.	significantly different. JEN in unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		Costs recorded in the Direct Asset Support activities have been treated as direct costs for category RIN purposes and allocated to the Emergency and Maintenance templates. The costs have been allocated to Maintenance and Emergency in line with the split in JEN's response to the economic benchmarking RIN. These were apportioned to activities using the direct labour cost as the basis. The following activities make up the Asset Support Costs – APA Std & Policies Dev & Maint – APC Asset Strategic Planning – APE Asset Performance Validation – APG Maintain Asset Records.		

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
POLE TOP, OVERHEAD LINE & SERVICE LINE MAINTENANCE Non-Routine Maintenance	As per general comment above	The list of SAP activities include; – MOL Straightening Leaning Poles – MOM O/H Line Maintenance. - Pole Top Structures – MOS Overhead Service Adjustment – MOT Pole Top And O/H Repair Thermal Survey – NOE Earth Testing	As per general comment above	As per general comment above
POLE INSPECTION AND TREATMENT Routine Maintenance	As per general comment above	The list of SAP activities include; – NOA Overhead Asset Inspection – NPA Pole Inspection – NPD Termite Treatment The activity code NOA-Overhead Asset Inspection has been assigned to the Pole Inspection and Treatment category as the nature of the work assigned is Pole inspection.	As per general comment above	As per general comment above
OVERHEAD ASSET INSPECTION Routine Maintenance	As per general comment above	The list of SAP activities include; – MHT Distribution Substation Thermal Survey – NOC Line Switch Minor Adjustment – NOF Subtransmission/Feeder Thermal Surveys	As per general comment above	As per general comment above

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
NETWORK UNDERGROUND CABLE MAINTENANCE: BY VOLTAGE and BY LOCATION LV - 11 to 22 kV, Non-Routine Maintenance; 33 kV and above, Routine and Non-Routine Maintenance; Location, Routine and Non-Routine Maintenance	As per general comment above	The list of SAP activities include; – MUB Pits Maintained – MUG Pillar Maintenance – MUH Pillar Defects – MUI LV Cable And Joint Repairs – MUJ HV Cable And Joint Repairs Note the above activities readily identify the voltage of the maintenance activity enabling appropriate category allocation. The RIN categories for Location are CBD or Non-CBD. Since JEN have no feeders defined as CBD all "Network Underground Cable Maintenance" is allocated to the Non-CBD location.	As per general comment above	As per general comment above

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE Routine and Non-Routine Maintenance	As per general comment above	The list of SAP activities include; – MHA Distribution HV Installation Maintenance – MHD Distribution Substation Defects Maintenance – MHG Distribution Substation Grounds Maintenance – MHO Distribution Substation Oil Sample & Testing – MHP Distribution Substation Inspection – MHR Distribution Substation Maintenance – MSA Distribution Switchgear Maintenance – NVI Investigation Of Voltage Complaints – NXS Transformer Load Testing	As per general comment above	As per general comment above

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
ZONE SUBSTATION EQUIPMENT MAINTENANCE Routine and Non-Routine Maintenance	As per general comment above	The list of SAP activities include; – MZA Zone Substation Equipment Maintenance Primary – MZB Zone Substation Equipment Maintenance Secondary – MZC Zone Substation Defect Maintenance Primary – MZD Zone Substation Defect Maintenance Secondary – MZE Zone Substation Communications Routine – MZF Zone Substation Defect Communication Defect – MZI Zone Substation Inspection & Audits	As per general comment above	As per general comment above
ZONE SUBSTATION PROPERTY MAINTENANCE Routine and Non-Routine Maintenance	As per general comment above	The list of SAP activities include; – MPA Zone Substation Property Maintenance – MPB Zone Substation Property Maintenance Defects – MPC Zone Substation Property Maintenance Monthly Minor	As per general comment above	As per general comment above

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
SCADA & NETWORK CONTROL MAINTENANCE Non-Routine Maintenance	As per general comment above	The list of SAP activities include; – ADC Planned Maintenance-SCADA	As per general comment above	As per general comment above
PROTECTION SYSTEMS MAINTENANCE Routine and Non-Routine Maintenance	As per general comment above	The list of SAP activities include; – MHC ACR Inspection And Maintenance	As per general comment above	As per general comment above

2.9 EMERGENCY RESPONSE

2.9.1 EMERGENCY RESPONSE EXPENDITURE

Actual information

Variable	Source and why actual	Methodology	Assumptions
(B) MAJOR EVENTS O&M EXPENDITURE ($000'S)	There were no major storms (Tropical cyclone of Category 1 or above as classified by the Australian Bureau of Meteorology) in 2014 and therefore this is not applicable to Jemena.	Not applicable.	Not applicable.
(C) MAJOR EVENT DAYS O&M EXPENDITURE ($000'S)	Information is sourced from SAP. JEN uses activity based costing for the capture of costs in cost collectors. JEN also used a module in SAP - Plant	The methodology included analysing all of the SAP Plant Maintenance (PM) cost collectors that were assigned to the Emergency activity code for the major event days. This is a standard SAP report.	Only the cost assigned on the actual major event day has been reported. The RIN template makes the assumption that the

Variable	Source and why actual	Methodology	Assumptions
	Maintenance (PM) where cost collectors were assigned to the Emergency activity for the following event days is the basis for the actual information. The single major event day for 2014 was; – 24 June 2014	The MED threshold has been calculated for the 2014 Regulatory Year in accordance with the requirements in the STPIS in RIN A Template 1d	works are carried out on the actual day and don't overflow in the next day (after 12:00am), which is not always the case.

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
(A) TOTAL EMERGENCY RESPONSE EXPENDITURE ($000'S)	Information is sourced from SAP, the ERP system that JEN uses to capture its financial information. As, expenditure is incurred, it is captured by activity (cost collectors). Activity codes can be used to identify various maintenance activities. Some overheads applied to the direct costs have been removed for this template, as the requirement is to disclose direct costs only. As the activities in SAP are not setup to aggregate into the regulatory categories, estimates have been made to meet the requirements of the templates. The activities are allocated (% based) into categories e.g.	Maintenance items disclosed in the RIN template are sourced from SAP, the ERP system that JEN uses to capture its financial and some operational information. Conceptually, JEN's cost collection process uses a combination of cost and profit centres to collect costs at the macro level. Activities or networks are set up to collect costs at a micro level. These activities/networks are designed to collect costs based on the activity on which an individual works and to accept any external costs associated with that activity e.g. Faults, Emergencies, and Standards and Procedures. Note that the SAP network codes are also designed to identify the Regulatory category i.e. SCS, Public Lighting, ACS, etc. JEN uses time writing to capture internal labour costs. Jemena has been improving its capturing of time writing data over the past few years. Where practical and appropriate all	The primary purpose of these activities is for maintenance and emergency works. It has also been assumed that all of the costs captured on the Major Event Days relate to that major event.	This is deemed to be the best method of estimation for the basis for the cost as activities directly assigned to Emergency works because the cost of the Asset Planning, Standards and Asset Recording activities has been allocated in proportion to the actual costs charged to Emergency Response. JEN in unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	routine, condition based and emergency.	employees time write to an activity/network or a client e.g. JEN. These form the direct costs incurred for a respective activity. JEN allocates overheads to these activities based on its internal policies and in accordance with the AER approved Cost Allocation Method (**CAM**) The direct spend in Routine, Condition Based Maintenance and Emergency uses activity costing methodologies to capture of cost. Overhead percentages calculated for – Materials overheads (Store) – Non Labour (Tools, Training) – Fleet – 2009 & 2010 only) – Regional and Property – Contract administration. and is deducted from the activity cost collectors. Direct Labour, Materials, Contracts & Other are derived from General Ledger account groupings, with network Overheads adjusted from respective account grouping.		

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		Costs recorded in the Direct Asset Support activities have been treated as direct costs for category analysis RIN purposes and allocated to the Emergency and Maintenance templates. The costs have been allocated to Maintenance and Emergency in line with the split in the economic benchmarking RIN. There were apportioned to activities using the direct labour cost as the basis. The following activities make up the Asset Support Costs – APA Std & Policies Dev & Maint – APC Asset Strategic Planning – APE Asset Performance Validation – APG Maintain Asset Records.		

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2.10 OVERHEADS

2.10.1 NETWORK OVERHEADS EXPENDITURE

Actual information

Variable	Source and why actual	Methodology	Assumptions
2.10.1 Network Overheads Actual	The following items are disclosed as actual information as they are sourced from JEN's response to the Economic Benchmarking RIN (see AER defined variable codes in the Economic Benchmarking RIN template for variables DOPEX0115A DOPEX0120A and DOPEX0121A) or a GL account. – Advertising /Marketing – GSL payments – Levies	Activity costs are sourced from SAP, the Enterprise Resource Planning (**ERP**) system that JEN uses to capture its financial and some operational information. Conceptually, JEN's cost collection process uses a combination of cost and profit centres to collect costs at the macro level. Activities or networks are set up to collect costs at a micro level. These activities/networks are designed to collect costs based on the activity on which an individual works and to accept any external costs associated with that activity e.g. Faults, Emergencies, and Standards and Procedures. Note that the SAP network codes are also designed to identify the Regulatory category i.e. SCS, Regulatory, ACS, etc. Jemena uses time writing to capture internal labour costs. Jemena has been improving its capturing of time writing data over the past few years. Where practical and appropriate, all employees time write to an activity/network and/client e.g. JEN. These form the direct costs incurred for a respective activity. JEN allocates overheads to these activities based on its internal policies and in accordance with the AER-approved CAM.	As JEN uses a high degree of time writing data into various activity codes, JEN assumes that the data collected is accurate.

Variable	Source and why actual	Methodology	Assumptions
Metering (Smartnet – customer service)	Information is sourced from SAP, the ERP system that JEN uses to capture its financial information. As expenditure is incurred, it is captured by general ledger and activity (cost collectors). Both general ledger and activity codes can be used to identify various cost activities. There are cases where metering incurs indirect costs, including Customer Contact & Back Office, Management, Finance & HR, Service Delivery & Contract Management, Premises and a Corporate Cost Allocation from the Jemena group cost allocation methodology. As these costs are maintained within JEN's internal SAP reporting systems, it is considered actual information.	The methodology includes analysing all of the SAP cost codes that were assigned to the Metering indirect costs. This is completed by our finance and operational staff. These metering indirect costs are sourced from the Financial Model. This model derives the costs from SAP with an extract of all the financial transactions that are assigned to these activity codes.	Nil assumptions

Estimated Information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
2.10.1 Network Overheads Estimated	Although JEN was able to source some data as required in the template from its ERP systems, JEN does not collect costs at all of the six mandatory levels for network overheads as required by the RIN and therefore JEN provided its best estimate to categorise these costs.	JEN uses its Enterprise Resource Planning (**ERP**) system, SAP to collect costs. These can be in the form of GL accounts and other functions such as Work Break Down Structures (**WBS**) and Networks/Activities. WBS and Networks are used to collect to costs at a lower level. Essentially JEN uses various functions within its ERP system to collect costs. External supplier costs are captured into its		JEN considers that its approach to use the underlying cost collection data from SAP is the best approach and will likely produce the most reasonably accurate outcomes. JEN is not aware of a superior estimate technique to disclose

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		ERP system by receipting costs against JEN issued purchase orders that identify the appropriate cost collectors. Overhead Expenditure Before Allocation – Standard Control Services (Gross including capitalised overheads) *Network Overheads (Operating Expenditure):* The network overheads operating expenditure is derived by extracting JEN's financial transactions from SAP. Each of these transactions is then appropriately classified into the regulatory categories of this template by referring to either the activity/network code or the general ledger account it is charged to. JEN maintains a schedule that maps all activity/network codes to the appropriate regulatory category. *Capitalised Overheads:* JEN capitalises some of its overheads, sourced from the network type activities (generally Operational and Asset Management in nature) and corporate type activities (generally IT and Health and Safety activities). Over the years JEN always looks to improve its methodology of overhead allocation. These improvements are generated from enhancements to its time		the costs into these categories.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		writing systems and surveys. JEN's ERP system is designed to apply a level of overheads to its capex activities (WBS/Networks) JEN applies this by calculating a percentage of overhead to be applied over the capex spend for the year. The calculation used is: *Direct Budget Overheads ÷ Total Budget Capex Program = Percentage of Applied Overhead* Examples of these are: – Direct Support Activities (**DSA**) that are capital (ie. [Capex Program - Planning]in nature .It is not practical for Program Managers and Snr Management to record time against a multitude of specific cost collectors. They time write to broader cost collectors, which are then distributed over the specific cost collectors usually based on the underlying direct costs of the respective cost collectors. – Asset Management – Residual costs (costs not cleared in cost centres) are similarly allocated to regulatory defined categories, using time surveys or underlying allocators. As defined by the RIN, JEN must allocate its network overheads into six mandatory		

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		categories. The compilation of the network overheads operating expenditure data (described above) generates a percentage which is used to allocate the capitalised network overheads into the six mandatory categories. <u>Overhead before allocation – alternative control services (Gross including capitalised overheads)</u> ACS network overheads operating expenditure is derived by extracting JEN's financial transactions from SAP. Each of these transactions is then appropriately classified into the regulatory categories of this template by referring to either the activity/network code or the general ledger account it is charged to. JEN maintains a schedule that maps all activity/network codes to the appropriate regulatory category. <u>Capitalised overheads</u> This is discussed above.		

Estimated Information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
2.10.1 Network Overheads Estimated	Although JEN was able to source some data as required in the template from its ERP systems, JEN does not collect costs at all of the six mandatory levels for network overheads as required by the RIN and therefore JEN provided its best estimate to categorise these costs.	JEN uses its Enterprise Resource Planning (**ERP**) system, SAP to collect costs. These can be in the form of GL accounts and other functions such as Work Break Down Structures (**WBS**) and Networks/Activities. WBS and Networks are used to collect to costs at a lower level. Essentially JEN uses various functions within its ERP system to collect costs. External supplier costs are captured into its ERP system by receipting costs against JEN issued purchase orders that identify the appropriate cost collectors. Overhead Expenditure Before Allocation – Standard Control Services (Gross including capitalised overheads) *Network Overheads (Operating Expenditure):* The network overheads operating expenditure is derived by extracting JEN's financial transactions from SAP. Each of these transactions is then appropriately classified into the regulatory categories of this template by referring to either the activity/network code or the general ledger account it is charged to. JEN maintains a	The use of the underlying data in JEN's costs collectors is reasonably correct.	JEN considers that its approach to use the underlying cost collection data from SAP is the best approach and will likely produce the most reasonably accurate outcomes. JEN is not aware of a superior estimate technique to disclose the costs into these categories.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		schedule that maps all activity/network codes to the appropriate regulatory category. *Capitalised Overheads:* JEN capitalises some of its overheads, sourced from the network type activities (generally Operational and Asset Management in nature) and corporate type activities (generally IT and Health and Safety activities). Over the years JEN always looks to improve its methodology of overhead allocation. These improvements are generated from enhancements to its time writing systems and surveys. JEN's ERP system is designed to apply a level of overheads to its capex activities (WBS/Networks) JEN applies this by calculating a percentage of overhead to be applied over the capex spend for the year. The calculation used is: *Direct Budget Overheads ÷ Total Budget Capex Program = Percentage of Applied Overhead* Examples of these are: – Direct Support Activities (**DSA**) that are capital (ie. [Capex Program - Planning]in nature .It is not practical for Program Managers and Snr Management to record time against a multitude of specific cost collectors.		

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		They time write to broader cost collectors, which are then distributed over the specific cost collectors usually based on the underlying direct costs of the respective cost collectors. – Asset Management – Residual costs (costs not cleared in cost centres) are similarly allocated to regulatory defined categories, using time surveys or underlying allocators. As defined by the RIN, JEN must allocate its network overheads into six mandatory categories. The compilation of the network overheads operating expenditure data (described above) generates a percentage which is used to allocate the capitalised network overheads into the six mandatory categories. <u>Overhead before allocation – alternative control services (Gross including capitalised overheads)</u> ACS network overheads operating expenditure is derived by extracting JEN's financial transactions from SAP. Each of these transactions is then appropriately classified into the regulatory categories of this template by referring to either the activity/network code or the general ledger account it is charged to. JEN maintains a schedule that maps all activity/network		

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		codes to the appropriate regulatory category. <u>Capitalised overheads</u> This is discussed above.		

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2.10.2 CORPORATE OVERHEADS EXPENDITURE

Actual information

Variable	Source and why actual	Methodology	Assumptions
2.10.2 Corporate Overheads Office of the CEO	Corporate overhead are actuals that reconciles with the Enterprise Support Function allocation Which forms part of the audited annual RIN.	Corporate overheads charged to JEN are recorded at a cost centre level at the source of origination (Jemena Ltd). Corporate overheads from Jemena are recorded in designated cost centres within JEN. Jemena provides a breakdown of the corporate overheads by cost centre. Each corporate overhead accounting record within JEN in SAP contains the details of the related Jemena cost centre. Costs of cost centres that carryout the functions of the Office of the CEO, such as executive oversight and board liaison on asset and financial management, stakeholder relations, and human resources, have been recorded under this variable. The total of Office of the CEO expenditure has an ACS and SCS	

Variable	Source and why actual	Methodology	Assumptions
Finance	Corporate overhead are actuals that reconciles with the Enterprise Support Function allocation which forms part of the audited annual RIN.	Corporate overheads charged to JEN are recorded at a cost centre level at the source of origination (Jemena Ltd). Each cost centre can be aligned to the variables in the RIN. Cost centres that capture the costs of functions given below have been recorded under this variable: • Executive oversight of overall financial management; • Management of financial and management reporting (internal and external) and regulatory reporting; • Management of Jemena's fund raising, debt and equity holder relations and treasury functions; • Management of planning functions, including finance strategy, budgeting, forecasting and asset valuation; • Management of indirect and direct tax compliance and planning; • Management of finance systems, financial accounting, accounts payable, accounts receivable and payroll; • Business partnering for business planning, support for regulatory and information services, and enterprise support function cost centre management; • Management of internal audits; • Management of continuous finance improvements; and • Management of business planning and continuous improvements. The total Finance expenditure has an ACS and SCS	
Legal and Secretariat	Corporate overhead are actuals that reconciles with the Enterprise Support Function allocation Which forms part of the audited annual RIN.	Corporate overheads charged to JEN are recorded at a cost centre level at the source of origination (Jemena Ltd). Corporate overheads from Jemena are recorded in designated cost centres within JEN. Jemena provides a breakdown of the corporate overheads by cost centre. Each corporate overhead accounting record within JEN in SAP contains the details of the related Jemena cost centre. Costs of cost centres that carryout Legal and Secretariat activities such as given below have been recorded under this variable: Management and advice on economic regulation, environmental law, employment law,	

Variable	Source and why actual	Methodology	Assumptions
		property law, and company law; and the role of company secretary. The total Legal and Secretariat expenditures have an ACS and SCS	
Human Resources	Corporate overhead are actuals that reconciles with the Enterprise Support Function allocation which forms part of the audited annual RIN.	Corporate overheads charged to JEN are recorded at a cost centre level at the source of origination (Jemena Ltd Corporate overheads from Jemena are recorded in designated cost centres within JEN. Jemena provides a breakdown of the corporate overheads by cost centre. Each corporate overhead accounting record within JEN in SAP contains the details of the related Jemena cost centre. Costs of cost centres that carryout the functions given below have been recorded under this variable: • Management of recruitment and remuneration benefit services; • Management of employee HSE training, performance, quality and adverse impact on the environment; and • Management of corporate communications to all stakeholders, including customers, employees, neighbours, state and federal governments and regulators. The total Human Resources expenditures have an ACS and SCS	
Regulatory	Corporate overhead are actuals that reconciles with the Enterprise Support Function allocation which forms part of the audited annual RIN.	Corporate overheads charged to JEN are recorded at a cost centre level at the source of origination (Jemena Ltd). Corporate overheads from Jemena are recorded in designated cost centres within JEN. Jemena provides a breakdown of the corporate overheads by cost centre. Each corporate overhead accounting record within JEN in SAP contains the details of the related Jemena cost centre. Cost centres that capture the costs of following activities have been recorded under this variable: • Managing regulatory obligations and price reviews; and • Consultations and regulatory relationships with governments, regulators and market operators The total Regulatory expenditure has an ACS and SCS	

Variable	Source and why actual	Methodology	Assumptions
Insurance	Corporate overhead are actuals that reconciles with the Enterprise Support Function allocation which forms part of the audited annual RIN.	Corporate overheads charged to JEN are recorded at a cost centre level at the source of origination (Jemena Ltd). Corporate overheads from Jemena are recorded in designated cost centres within JEN. Jemena provides a breakdown of the corporate overheads by cost centre. Each corporate overhead accounting record within JEN in SAP contains the details of the related Jemena cost centre. Cost centres that capture the costs of activities given below have been recorded under this variable: • Procurement of insurance; and • Management of risk, including for bushfire and other natural disasters The total Insurance expenditure has an ACS and SCS	
Non-network IT support	Corporate overhead are actuals that reconciles with the Enterprise Support Function allocation which forms part of the audited annual RIN.	Corporate overheads charged to JEN are recorded at a cost centre level at the source of origination (Jemena Ltd). Corporate overheads from Jemena are recorded in designated cost centres within JEN. Jemena provides a breakdown of the corporate overheads by cost centre. Each corporate overhead accounting record within JEN in SAP contains the details of the related Jemena cost centre. Cost centres that capture the costs of providing and managing IT infrastructure and services have been recorded under this variable. The total Information Technology expenditure has an ACS and SCS	

35.

2.11 LABOUR

2.11.1 COST METRICS PER ANNUM

Actual information

36. None to report

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
All information within 2.11.1 Cost metrics per annum	Jemena (**JEM**) uses its Enterprise Resource Planning (**ERP)** system, SAP to process its payroll transactions. These transactions capture employee information relating to hours worked, rate per hour, various types of leave, overtime, bonus and termination/redundancy payments, payroll tax, etc. JEM uses a payroll reporting tool, "**Spinifex**" to extract payroll data required in the RIN template. Within JEM's SAP system, each employee is assigned a distribution cost centre. For direct employees engaged to work exclusively on the JEN asset, payroll data is allocated directly to JEN. For employees who work across the Jemena	JEN used an extract of all Jemena employee data by distribution cost centre to identify staff aligned to the JEN business unit. The report captures all employee ID's that have charged time to JEN cost centres. The RIN requires labour expenditure be categorised into AER defined categories. JEN categorised it's labour expenditure by mapping employees by cost centre that are associated with Corporate, Network and Network Direct categories for JEN. JEN is required to further classify the employees into "Labour Classification Levels" i.e. Exec Management, Senior Manager, etc. JEN further categorised it's labour expenditure by providing the employee CY2013 data to the appropriate Managers and HR reporting analysts who reviewed and amended it to reflect CY2014 employee categories as required by the	The allocation to JEN is based on time writing / Assessment cycles allocation / FTE survey results. Stand down hours were used instead of occurrence (see Appendix F: definition) as information is not available in the system. To calculate the stand down hours per Average Staffing Levels (**ASL**), JEN used the total stand down hours from Spinifex and divided by the total ASL for JEN in the corresponding employee category. JEN does not expect that employee unit rates e.g. rate per hour or hours per ASL will materially change by the percentage allocator.	This approach is the most reasonable given the availability of data. JEN is not aware of a superior technique.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	portfolio of assets (i.e. finance, HR, regulation, legal etc.), it attributes the time reported against the JEN asset and only that allocation of time is incurred in JEN's accounts. From here, percentage allocators are applied to categorise the payroll data into the RIN defined categories— therefore the information must be claimed as estimates.	template. To determine the employees associated with JEN, a Spinifex report was run for all employees for CY2014. To calculate the total labour expenditure amount, the Spinifex report was filtered with the parameters: JEN cost centres provided by Business Unit (**BU)**. This report shows total actual payment, hours and rate per hour for CY2014 (ordinary and overtime). JEN used the Jemena group cost allocation methodology to allocate Corporate data to JEN. JEN has applied a percentage of their time allocated to JEN plus a percentage of their time allocated to the corporate level, multiplied by the adjusted fair value percentage relevant to JEN. In table 2.11.1 Calculations are applied to determine: **Average productive work hours per ASL (0's):** (Total Cost Remuneration (TCR) hours + base hours-leave hours + overtime hours)/ASL, • *TCR = base salary* • *ASL = Average Staffing Level. One ASL is one full-time equivalent employees undertaking standard control services*		

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		work receiving salary or wages (Paid FTE) over the entire year. • For Non-Corporate staff the ASL is the time charged against the JEN Asset during the year converted to full time equivalent. For Corporate staff the ASL is the employees in corporate cost centre during the year converted to full time equivalent then multiplied by the time writing percentage.		

2.11.2 EXTRA DESCRIPTOR METRICS FOR CURRENT YEAR

Actual information

37. None.

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
All information in 2.11.2 Extra descriptor metrics for current year	This table requires JEN to provide various metrics for C2014 labour costs. The source of the information is described above.	The basis for estimate is described above. JEN provides below, the formula to calculate the metrics as required by this template.	The allocation to JEN is based on time writing / Assessment cycles allocation / FTE survey results. As the information/allocation is not	This approach is the most reasonable given the availability of data. JEN is not aware of a superior technique. Employee unit rates e.g. rate

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	Similar to above, percentage allocators are applied to categorise the payroll data into the RIN defined categories—therefore the information must be claimed as estimates.	The following are for JEN cost and JEN ASL only. **Average productive work hours per ASL - ordinary time (0's)**: (TCR hour + base hour-leave hour)/ ASL **Average productive work hours hourly rate per ASL - ordinary time (0's):** (TCR rate + base rate-leave rate)/ Average productive work hour per ASL –ordinary time **Average productive work hours per ASL - overtime (0's):** Overtime hours,(from Spinifex)/ASL **Average productive work hours hourly rate per ASL - overtime (0's):** Overtime rate/ASL.	available in the system, the **Average productive work hours ordinary time hourly rate per ASL** excludes • All direct costs associated with non-productive work hours related to ordinary time hours spent on standard control services (e.g. costs associated with annual leave accrued from working ordinary hours). • Other earnings, on costs and taxes. It includes • Ordinary time salaries and wages in the year. The **Average productive work hours overtime hourly rate per ASL** excludes • All direct costs associated with non-productive hours related to overtime hours spent on standard control services. • Other earnings, on costs and taxes. It includes Overtime salaries and wages in the year.	per hour or hours per ASL will not materially changed by the percentage allocator.

2.12 INPUT TABLES

Actual information

Variable	Source and why actual	Methodology	Assumptions
Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX) Connections	This information is considered an actual as it is sourced directly from SAP, the Enterprise Resource Planning (ERP) system that JEN uses to capture its financial and other information. JEN's costs are derived from internal and external sources. Internal costs are labour costs and are captured via time writing. Where practical and appropriate, all Jemena employees time write to an activity/network code or client e.g., JEN. These form direct costs together with external costs sourced from receipting against purchase orders. At a macro level, JEN's cost collection process uses a combination of SAP functionality e.g. projects, cost and profit centres. At a micro level, JEN uses activity and network codes which roll up to a project or cost centre to collect costs.	Both CAPEX and OPEX costs are derived from extracting financial transactions from SAP. The extracts have various activities and general ledger codes that produce the cost stack. The general ledger account and/or activity codes are used to determine the following cost categories: • **Direct Materials** • **Direct labour** • **Direct Contractor** • **Direct Other** • **Related Party Contract Margin** Note: No items exist for **Related Party Contract.** JEN takes the interpretation of substance over form. Although most of its costs are from related party companies, JEN split its costs into the categories as listed above rather than disclosing them under the related party contract category.	No assumptions have been made in providing this information.

Variable	Source and why actual	Methodology	Assumptions
EMERGENCY RESPONSE	JEN considers this information as the information is sourced from JEN's internal SAP system. JEN uses Activity Costing for the capture of costs in cost collectors. JEN also uses a module in SAP - Plant Maintenance (PM) where cost collectors are assigned to the Emergency.	The methodology includes analysing all of the SAP Plant Maintenance (PM) cost collectors that are assigned to the Emergency activity code. The costs are validated by engineers who are responsible for the costs against these activities. This is a standard SAP report.	Only the cost assigned on the actual major event day has been reported. The RIN template makes the assumption that the works are carried out on the actual day and don't overflow in the next day (after 12:00am), which is not always the case.
METERING	Metering costs are allocated to the following cost categories in the Actual Template: ***Direct Material Cost:*** The Direct Material Cost is considered an actual as it is sourced directly from SAP, the Enterprise Resource Planning (ERP) system that JEN uses to capture its financial and other information. Direct Material costs reported are meter purchase costs which are external costs sourced from receipting against purchase orders. Project codes are used in this process that enables capex expenditure to be recognised. **Direct Labour Costs:** The Direct Labour costs are captured in SAP payroll. On a monthly basis payroll provided the amounts paid to relevant employees, from SAP, which are allocated based on the type of services performed. The salary payment allocations to services have slightly varied across reporting years, so direct labour costs have been estimated.	The methodology includes analysing all of the SAP cost codes that are assigned to the meter purchases by our finance and operational staff. The costs of meter purchase are sourced from the monthly Financial Model for Type 4 meters. This model derives the cost of meters from an SAP extract of all the financial transactions that are assigned to specific project codes. Meter purchasing costs for Type 5 and Type 6 meters are obtained directly from SAP. The type of metering services performed, to which payroll costs were allocated each month, were reviewed and categorised as either direct or indirect costs. Payroll costs allocated each month were then able to be categorised as direct or indirect. The methodology used treated the Contract cost as	An assumption has been made that only meter purchase costs are reported under this direct material cost category. In categorising the payroll charges as direct or indirect, each service was reviewed to determine whether it was a direct metering operation, or could be described as an overhead (or support service) related to the direct costs. Payroll costs were allocated throughout the year to services based on the feedback of the individual employees.

Variable	Source and why actual	Methodology	Assumptions
	Contract Cost: Contract costs are reported as an estimate as they represent the balance of the total yearly costs, after deducting the Direct Material and Labour costs. As Direct Labour costs are estimated, Contract costs inherently become an estimate too. ***Other Cost:*** Other Costs is sourced from the capex reports from JEN's SAP system.	the balance of total yearly costs after excluding the Direct Material and Direct Labour costs. As above under the variable Template 2.12 – Input Tables Expenditure (Opex & Capex).	
NON-NETWORK *Buildings and Property* Capex	JEN's cost collection process is noted above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX). Information is sourced from SAP, the ERP system that JEN uses to capture its financial information.	Building and Property costs are sourced from SAP and information is agreed to the transaction listing.	JEN has made the assumption that the building and property capex incurred is entirely direct materials.
Other Expenditure	JEN's cost collection process is noted above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX). Information is sourced from SAP, the ERP system that JEN uses to capture its financial information.	The variable reflects miscellaneous equipment purchases.	Nil

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX) Global description for Estimate with details contained below	Information is sourced from SAP, the ERP system that JEN uses to capture its financial information. As, expenditure is incurred, it is captured by general ledger and activity (cost collectors). Both general ledger and activity codes can be used to identify various cost activities. Some overheads are applied to the direct costs that need to be removed for this template, as the requirement is to disclose direct costs only. As activity's in SAP are not setup to aggregate into the regulatory categories, experienced Engineers further categorise the data to meet the requirements of the templates. As the Engineers use their judgement in the categorisation, of these costs, they then become	Conceptually, JEN's CAPEX and OPEX cost collection process uses a combination of project codes, cost centres and profit centres to collect costs at the macro level. By extracting the SAP costs the general ledger account and the activity codes can be used to determine the following cost categories: • **Direct Materials** • **Direct labour** • **Direct Contractor** • **Direct Other** • **Related Party Contract Margin** No items exist for **Related Party Contract.** JEN takes the interpretation of substance over form. Although most of its costs are from related party companies, JEN split its costs into the categories as listed above rather than disclose them under the related party contract category. The percentage of overhead for each category of cost in each year is calculated. This is then applied to the cost extracted from the system and is used to arrive at the total cost stack. This basis of estimation is applicable to Vegetation Management, Routine Maintenance, Non-Routine Maintenance, Augmentation, Connections, Emergency	Where applicable embedded overheads have been removed from these costs using an allocation methodology.	JEN is not aware of a superior estimation technique.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	an estimate.	Response, Public Lighting and Replacement Expenditure.		
VEGETATION MANAGEMENT	As above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX).	As above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX). JEN allocates the expenditure to direct material, direct labour, direct sub-contractors and direct other on a weighted average basis. These direct costs are sourced from JEN's general ledger. Refer to Template 2.7 BOP for further details.	As above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX).	As above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX).
ROUTINE MAINTENANCE	As above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX).	As above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX). Refer to Template 2.8 BOP for further details.	As above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX).	As above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX).
NON-ROUTINE MAINTENANCE	As above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX).	As above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX). Refer to Template 2.8 BOP for further details.	As above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX).	As above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX).
OVERHEADS	Although JEN is able to source some data as required in the template from its ERP system (as described above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX), for items where JEN could not provide actual data it provides its best estimate for these items.	JEN records its overhead costs in cost centres, from these cost centres JEN can capitalise some of these costs or charge some to opex and maintenance activities, with the residual costs allocated over the regulatory categories. *Capitalised Overheads:* JEN applies overheads to capex activities that by calculating a % overhead to be applied over the capex spend for the year. The calculation used it: *Direct Budget Overheads ÷ Total Budget Capex Program = Applied Overhead %* JEN's ERP system has the functionality to apply the percentage to applicable capex spend.	The cost centre analysis of the DSA and corporate cost centres is used as the primary allocator to split data into the categories of this template.	JEN is not aware of a superior estimation technique.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		Examples of these are: • Direct Support Activities (***DSA***) – it is not practical for program managers and senior management to record time against a multitude of specific cost collectors. Instead, they time write to a catch-all cost collector, which is then distributed over the specific cost collectors, usually based on the underlying direct costs of the respective cost collectors. • Asset management – residual costs (costs not cleared in cost centres) are similarly allocated to regulatory defined categories, using surveys or underlying allocators. *Opex and Maintenance Overheads:* JEN collects its overheads in cost centres and allocates overheads to capex, opex and maintenance activities. A similar practice as described above applies to maintenance activities, where percentage overheads are calculated and applied to those activities. These are embedded as part of the total direct costs of the activity. As the RIN requires only direct costs to be disclosed in all maintenance type templates, overhead components are captured as part of the Network overhead section of this template. A requirement of this template is that JEN must disclose the overhead costs by 'Network Overheads' and 'Corporate Overheads' in to the following categories: • **Direct Materials** • **Direct labour** • **Direct Contractor**		

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		• **Direct Other** • **Related Party Contract Margin** However, as JEN does not collect costs to the level above, it interrogates the data from its ERP system and works out various allocators to enable the allocation of the overheads into the prescribed categories. ***Network Overheads:*** JEN has specific cost centres and activity codes that charge costs to DSA and residual network cost centre costs. Allocators are established by completing a cost centre analysis of these particular cost centres. The analysis involves categorising the general ledger accounts used into the various materials, labour, contractor etc. cost categories. ***Corporate Overheads:*** Corporate overheads are analysed in annual RINs as 'Labour' and 'Non-Labour'. The analysis involves categorising the general ledger accounts used. Accordingly Labour is classified as 'Direct labour' in this RIN. 'Direct Material' costs are either zero or insignificant in the reported periods. Therefore any insignificant costs are classified as 'Other'. Contract costs cannot be easily separated in the general ledger and hence classified as Other'.		
AUGMENTATION	Direct augmentation expenditure is sourced from SAP, JEN's ERP system. Although JEN is able to source the data at the asset group level and to some degree	Please see above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX) for global description on the basis for estimate. To further categorise the augmentation expenditure to the	JEN assumes data is accurately recorded against augmentation expenditure projects in the SAP system.	JEN is not aware of a superior estimation technique. However, the details

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	at the asset category level from its ERP systems, JEN provides its best estimate for areas within the asset category that is not recorded in its ERP systems. Further work is performed by qualified JEN Engineers who analysed the data, assigning expenditure to line items to the required categories. The method for performing this task is described in the Basis of Preparation for Template 2.3.	requirements of this template, the JEN engineers assigned the costs to the appropriate categories based upon the activity and service codes. In order to populate the relevant sections of the template, categorisation choices for six "Activity Descriptions" are derived from a project master-file data sheet developed by JEN Engineers, outside the ERP system. All expenditure line items are assigned to the appropriate classifications based upon project activity and project description. The engineer's mapped the various Augex projects into the categories listed below, as JEN does not collect the costs to the level required by the template. The six "Activity Descriptions" used are: (1) Subtransmission substations, Switching stations, Zone substations (2) Subtransmission lines (3) HV Feeders (4) Distribution substations (5) LV Feeders (6) Other assets In addition, any land purchases and easements expenditures relating to HV Feeders, Distribution Substations and LV Feeders are identified. The information is analysed and sorted in excel (via v-lookup function and pivot tables) to provide an input sheet for entry of the data into the "Augmentation" section of the RIN C Template Input Table.		reported as an estimate because further work is required to be performed upon the base data. Qualified JEN Engineers categorised the data in the format required to populate this template.
CONNECTIONS	As above under the variable	As above under the variable Template 2.12 – Input Tables	As above under the variable	As above under the

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX).	**EXPENDITURE** (OPEX & CAPEX). Refer to Template 2.5 BOP for further details.	Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX).	variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX).
EMERGENCY RESPONSE	N/A	N/A	N/A	N/A
PUBLIC LIGHTING	As above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX).	Please see above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX) for global description on the basis for estimating public lighting capex. Refer to Template 4.1 BOP for further details.	As above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX).	As above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX).
METERING	N/A	N/A	N/A	N/A
FEE-BASED SERVICES	CAPEX which is in line with the description above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX). OPEX is calculated by using the percentage derived from direct materials, labour, costs and other as a percentage of the total cost stack in CY14.	A percentage allocation for each cost categories is calculated based on CY14's cost stack (e.g. direct labour as a percentage of total direct costs). This percentage is applied to the total amount of direct costs to derive the direct cost categories as required in this template. In accordance with the instructions for completion of this RIN, Connection expenditures are included in both the "Fee-Based Service" expenditure section and the "Connection" section of this template.		JEN is not aware of a superior estimation technique.
QUOTED SERVICES	As noted above under the variable Fee-based Services	As noted above under the variable Fee-based Services	As noted above under the variable Fee-based Services	As noted above under the variable Fee-based Services
REPLACEMENT EXPENDITURE	Direct replacement expenditure data for is sourced from SAP,	Please see above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX) for global	JEN assumes data is accurately recorded against	JEN is not aware of a superior estimation

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	JEN's ERP system. Although JEN is able to source the data at the asset group level and to some degree at the asset category level from its ERP systems, JEN provides its best estimate for areas within the asset category that is not recorded in its ERP systems. Further work is performed by qualified JEN Engineers who analysed the data, assigning expenditure to line items to the required categories. The method for performing this task is described in the basis for estimate.	description on the basis for estimate. The replacement expenditure categorisation is based upon activity and service category codes in SAP as well as information provided by JEN Engineers to ensure all expenditure line items are assigned the appropriate categorisations. In order to populate the relevant sections of the template, categorisation choices for "Class", "Sub-class" and "Voltage" are derived from a project master-file data sheet developed by JEN Engineers, outside the ERP system. All expenditure line items are assigned to the appropriate classifications based upon project activity and project description. The first (and highest) level category used is "Class" These classes corresponded to the high level data input requirements of this template. The following classes are used: • OH Conductors • Other • Poles • Poletop Structures • Public Lighting • Service Lines • Switchgear • Transformers • UG Cables	replacement expenditure line items in the SAP system.	technique.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		The second level category used is “Sub-class” These sub-classes corresponded to more detailed level data input requirements for this template. The following sub-classes are used: • Bus • Capacitor Bank • Circuit Brakers • Connectors • Distribution Transformers • Earths • HV Installation • OH Conductors • Other • Poles • Public Lighting • Public Light Poles • Relays • Service Lines • Staking • Structures • Switchgear • UG Cables • ZSS Property • ZSS Transformers The third (and lowest) level category used is “Voltage” These voltages corresponded to the most detailed level		

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		data input requirements of the RIN C Template The following three voltages are used: • High Voltage • Low Voltage • Sub-transmission The information gathered (by the process described above) is analysed and sorted in excel (via v-lookup function and pivot tables) to provide an input sheet for entry of the data into the "Replacement" section of this template. Where JEN's expenditure categories do not precisely match the template classifications, the JEN Engineers further analyse the detailed project data to allocated costs within high level asset categories across the detailed line items contained in this template. In accordance with the instructions for completion of this RIN, public lighting expenditures are included in both the "Replacement" expenditure section and the "Public Lighting" section of this template.		
NON-NETWORK *IT and Communications* Opex	CAPEX which is in line with the description above under the variable Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX). Information is sourced from SAP, the ERP system that JEN uses to capture its financial information. IT capex is considered an estimate because JEN does not	IT costs are attributed using causal drivers, including ownership and use of applications, number of service requests and number of PCs used as a share of total Jemena PC's.	None	JEN is not aware of a superior estimation technique.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Capex	directly capture costs in accordance with the cost categories of this template. The judgement of experienced IT personnel is required to further categorise the data,	The costs have been categorised to the following : ***Direct Labour*** Actual labour by calendar year is available for total corporate costs. The IT labour costs as a percentage of the total labour corporate costs were applied to JEN's total direct opex costs to derive the direct labour costs. ***Other Costs:*** This is the balancing item of IT costs from the general ledger, excluding direct labour noted above. Several methods are used to allocate the costs to the various categories: • For all other projects, the business cases are used to allocate the cost to the various categories. The business case provides a split of costs between direct materials, labour and other costs. • To further breakdown the labour costs, if the business case did not specify directly, a standard allocation of 15% internal labour and 85% external (contract) is used and is determined by experienced IT personnel. Motor vehicle operating expenditure was entirely allocated to the direct materials and other categories.	Jemena only maintains and uses a small number of internal staff members for capital projects, the 15% represents a typical project profile of internal labour costs and 85% external. The business case category percentage costs share of total projects costs are the same as the final actual costs when the project is completed. JEN has made the assumption that motor vehicle expenditure incurred by JEN is entirely direct materials.	JEN is not aware of a superior estimation technique.
Motor Vehicles Opex	Information is sourced from SAP, the ERP system that JEN uses to capture its financial information. However, it is considered an estimate because JEN does not	The cost for motor vehicles is arrived at from purchases made directly to the asset using SAP purchase orders. As	JEN has made the assumption that motor vehicle capital expenditure incurred by JEN is entirely direct materials.	JEN is not aware of a superior estimation technique

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	directly capture costs in accordance with the cost categories of this template.	such, the costs are entirely allocated to the direct materials category.		
Capex		Building and Property operating expenditures are allocated between Direct Labour, Contract Cost and Other Costs. Where the costs of a site are derived from a general ledger extract, the costs are allocated to the cost categories of this template based on the general ledger account description. For all other sites, the entire costs were allocated to the "Other" cost category.		JEN is not aware of a superior estimation technique
	.			
Buildings and Property Opex	Information is sourced from SAP, the ERP system that JEN uses to capture its financial information. However, it is considered an estimate because JEN does not directly capture costs in accordance with the cost categories of this template.	'Other' capex include items such as trailers, forklifts and tool boxes. These costs are arrived at from purchases made directly to the asset using SAP purchase orders. As such, the costs are entirely allocated to the direct materials category.	JEN has made the assumption that the majority of building and property expenditure should be classified to the 'Other' cost category.	JEN is not aware of a superior estimation technique
Other Capex	Information is sourced from SAP, the ERP system that JEN uses to capture its financial information. However, it is considered an estimate because JEN does not directly capture costs in accordance with the cost categories of this template.		JEN has made the assumption that 'Other' capital expenditure incurred by JEN is entirely direct materials.	JEN is not aware of a superior estimation technique

4. ALTERNATIVE CONTROL SERVICES

4.1 PUBLIC LIGHTING

4.1.1 DESCRIPTOR METRICS OVER CURRENT YEAR

Actual information

Variable	Source and why actual	Methodology	Assumptions
Current population of lights	Jemena's Geographical Information (GIS) is the single source of actual data for the public lighting inventory. The data is extracted directly from the GIS. The GIS represents the current state of the network and is therefore considered "actual".	The GIS is the single source of the public lighting physical inventory, therefore we are able to count the number and type of luminaires. The actual data was obtained by running a report directly from GIS. The data was exported to a text file and imported into Microsoft Excel where a pivot table was used to determine the current light types and their quantities.	No assumptions have been made in providing this information.

4.1.2 DESCRIPTOR METRICS ANNUALLY

Actual information

Variable	Source and why actual	Methodology	Assumptions
Light Installation – Volume of Works and Expenditure – Major Road Light Installation & Minor Road Light Installation	Not applicable.	Not applicable.	In line with the AER – Explanatory Statement Final category Analysis, Clause: 17.6 it was deemed that the volumes associated with this variable is related to a negotiated public lighting service and is not required to be reported.
Light Installation – Volume of Works and Expenditure – Number of Poles Installed	Not applicable.	Not applicable.	In line with the AER – Explanatory Statement Final category Analysis, Clause: 17.6 it was deemed that the volumes associated with this variable is related to a negotiated public lighting service and is not required to be reported.

Variable	Source and why actual	Methodology	Assumptions
Light Installation – Volume of Works and Expenditure – Total Cost	Not applicable.	Not applicable.	In line with the AER – Explanatory Statement Final category Analysis, Clause: 17.6 it was deemed that the expenditure associated with this variable is related to a negotiated public lighting service and is not required to be reported.
Light Replacement Volume of Works and Expenditure – Major Road Light Replacement & Minor Road Light Replacement	Light replacement work is recorded using SAP Notifications. The notification is created against the specific light that requires replacement. The other source of data is the monthly reports from the public lighting prime contractor. This allows the attributes of the public light such as whether it is located on a Major Road or Minor Road to be analysed and reported.	By extracting the SAP notifications related to specific SAP Public Lighting Codes we can determine the quantity of light replacement activities and categorise them according to Major and Minor Roads. The SAP Public Lighting Codes (MAQ) were; RLJ (Replace Single Light on Main Road) – All notifications with activity code RLJ relate to “Major Road Light Replacement”. RLM (Replace Single Light Minor Road) – All notifications with activity code RLM relate to “Minor Road Light Replacement”. The public lighting notifications were extracted from SAP for 2014 and analysed.	Jemena uses a prime contractor for public lighting services and as such, the public lighting replacement work is recorded using SAP notifications and the above mentioned Public Lighting Codes (MAQ). It has been assumed that public lighting replacement work that is performed by resources other than the prime contractor have also been consistently recorded using SAP notifications. It has been assumed that the words “MAJOR ROAD LIGHT INSTALLATION VOLUME (000'S)”, and “MINOR ROAD LIGHT INSTALLATION VOLUME (000'S)” means “REPLACEMENT” rather than “INSTALLATION”

Variable	Source and why actual	Methodology	Assumptions
Light Replacement Volume of Works and Expenditure – Number of Poles Installed	Jemena's Geographical Information (GIS) is the single source of actual data for public lighting pole replacement. The data is extracted directly from the GIS. The GIS represents the current state of the network and is therefore considered "actual".	The GIS is the single source of the public lighting historic inventory, therefore we are able to count the number of removed public lighting poles. The actual data was obtained by running a report directly from GIS to look at all removed public lighting poles on the network. The list of removed poles were then filtered further using GIS to determine the number of poles that were removed and replaced with new poles.	It has been assumed that the words "NUMBER OF POLES INSTALLED (000'S)" means "REPLACEMENT" rather than "INSTALLATION"

Variable	Source and why actual	Methodology	Assumptions
Light Replacement Volume of Works and Expenditure Total Cost	This information is sourced from SAP, the ERP system that JEN uses to capture its financial information. As, expenditure is incurred, it is captured in such a fashion that activity (cost collectors) codes can be used to identify public lighting replacement expenditure.	By extracting the SAP costs related to specific SAP Public Lighting Activities we can determine the total direct expenditure of light replacement activities. The public lighting costs were extracted from SAP for 2014 and analysed. Direct Expenditure consists of; - Direct Material expenditure - Direct Labour expenditure - Direct Contractors expenditure - Direct Other expenditure Costs do not include Direct Overheads and Corporate Overheads.	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
Light Maintenance Volume of Works and Expenditure – Major Road Light Maintenance & Minor Road Light Maintenance	Light maintenance works is recorded using SAP Notifications. The other source of data is the monthly reports from the public lighting prime contractor. The majority of the notifications are created by the 24x7 call centre which takes calls from the public regarding lights that require maintenance. The other significant contributor to the volume of light maintenance is as a result of lights that are identified as requiring maintenance through the routine patrols and through the bulk relamping program. The notification is created against the specific light that requires replacement. This allows the attributes of the public light such as whether it is located on a Major Road or Minor Road to be analysed and reported.	By extracting the SAP notifications related to specific SAP Public Lighting Codes we can determine the quantity of light maintenance activities and categorise them according to Major and Minor Roads. The SAP Public Lighting Codes (MAQ) were; MLF (Main Road Public Lighting Fault) – All notifications with activity code MLF relate to “Major Road Light Maintenance”. MRB (Bulk Lamp Replacement – Minor Roads) – All bulk lamp replacements are considered a maintenance activity performed on Minor Roads. MRF (Minor Road Public Lighting Fault) – All notifications with activity code MRF relate to “Minor Road Light Faults”. The public lighting notifications were extracted from SAP for 2014 and analysed.	Jemena uses a prime contractor for public lighting services and as such the public lighting maintenance work is recorded using SAP notifications and the above mentioned Public Lighting Codes (MAQ). It has been assumed that public lighting maintenance work that is performed by resources other than the prime contractor have also been consistently recorded using SAP notifications. It has been assumed that the words “MAJOR ROAD LIGHT INSTALLATION VOLUME (000'S)”, and “MINOR ROAD LIGHT INSTALLATION VOLUME (000'S)” means “MAINTENANCE” rather than “INSTALLATION”

Variable	Source and why actual	Methodology	Assumptions
Light Maintenance Volume of Works and Expenditure – Number of Poles Installed	Light maintenance works is recorded using SAP Notifications. The other source of data is the monthly reports from the public lighting prime contractor. The majority of the notifications are created by the 24x7 call centre which takes calls from the public regarding lights that require maintenance. The notification is created against the specific light that requires maintenance. This allows the attributes of the public light such as whether it is located on a Major Road or Minor Road to be analysed and reported.	By extracting the SAP notifications related to specific SAP Public Lighting Codes we can determine the quantity of light maintenance activities and categorise them according to Major and Minor Roads. The SAP Public Lighting Codes (MAQ) were; MLR (Public Light Pole Repairs Main Road) - All notifications with activity code MLR relate to “Maintenance of a Public Light Pole” and are considered maintenance activities performed on Major Roads. MRR (Public Lighting Pole Repairs Minor Road) - All notifications with activity code MRR relate to “Maintenance of a Public Light Pole” and are considered maintenance activities performed on Minor Roads. The public lighting notifications were extracted from SAP for 2014 and analysed.	Jemena uses a prime contractor for public lighting services and as such the public lighting maintenance work is recorded using SAP notifications and the above mentioned Public Lighting Codes (MAQ). It has been assumed that public lighting maintenance work that is performed by resources other than the prime contractor have also been consistently recorded using SAP notifications. It has been assumed that the words “NUMBER OF POLES INSTALLED (000'S)” means “MAINTAINED” rather than “INSTALLED”

Variable	Source and why actual	Methodology	Assumptions
Light Maintenance Volume of Works and Expenditure Total Cost	This information is sourced from SAP, the ERP system that JEN uses to capture its financial information. As, expenditure is incurred, it is captured in such a fashion that activity (cost collectors) codes can be used to identify public lighting maintenance expenditure.	By extracting the SAP costs related to specific SAP Public Lighting Activities we can determine the total direct expenditure of public light maintenance activities. The public lighting costs were extracted from SAP for 2014 and analysed. Direct Expenditure consists of; - Direct Material expenditure - Direct Labour expenditure - Direct Contractors expenditure - Direct Other expenditure Costs do not include Direct Overheads and Corporate Overheads.	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
Quality of Supply – Mean Days to Rectify or Replace Public Lighting Assets (days) & Volume of GSL Breaches & GSL Payments	Light maintenance works are recorded using SAP Notifications. The majority of the notifications are created by the 24x7 call centre which takes calls from the public regarding lights that require maintenance. The notification is created against the specific light that requires maintenance. This allows the attributes of the public light such as whether it is located on a Major Road or Minor Road, whether it is a GSL eligible light and the number of days to rectify or replace the light to be analysed and reported.	The methodology is documented in Jemena Document No. **JEN PR 0500** - JEN AER Public Lighting Reporting Procedure. By extracting the SAP notifications related to specific SAP Public Lighting Codes we can determine the required quality of supply variables. Each SAP notification has the following information associated with it; - Location of the light - Attributes of the light - Whether or not a GSL is applicable - Defect start time and date - Defect end time and date - Duration of defect The public lighting notifications were extracted from SAP for 2014 and analysed.	No assumptions have been made in providing this information.

Variable	Source and why actual	Methodology	Assumptions
Quality of Supply – Volume of Customer Complaints	Customer complaints are managed by Stakeholder Relations. Stakeholder Relations may receive complaints through the following means: - Phone call to our Call Centre - Email - Phone call direct to Jemena - Internal referral of an email or phone call Stakeholder Relations stores and maintains all customer complaints in the "Claims Database".	Customer complaints can be classified into two categories: 1. A complaint that results from inaction of a previous action. For example, a customer may call about a light out and the light is still not repaired within the set time and the customer calls again to express dissatisfaction that light is still out. 2. A complaint is lodged on initial contact, whether by phone or email, expressing dissatisfaction. For example, a customer may call to express dissatisfaction with field crew who have damaged their front yard while performing public light maintenance. Both categories of complaints are considered legitimate complaints and are stored in the Claims Database with relevant detail.	No assumptions have been made in providing this information. All data is an actual and can be traced back to a complaint on the Claims Database.

Estimated information

38. There is no estimated information for this section.

39.

4.1.3 COST METRICS

Actual information

Variable	Source and why actual	Methodology	Assumptions
Major Road Light Installation	Not applicable.	Not applicable.	In line with the AER – Explanatory Statement Final category Analysis, Clause: 17.6 it was deemed that the expenditure associated with this variable is related to a negotiated public lighting service and is not required to be reported.
Minor Road Light Installation	Not applicable.	Not applicable.	In line with the AER – Explanatory Statement Final category Analysis, Clause: 17.6 it was deemed that the expenditure associated with this variable is related to a negotiated public lighting service and is not required to be reported.

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Major Road Light Replacement **&** **Minor Road Light Replacement**	Light Replacement works is recorded using SAP Notifications. The expenditure associated with performing this work is recorded against SAP projects. Each SAP project is associated with an SAP Activity Code.	By extracting the SAP notifications related to specific SAP Public Lighting Codes we can determine the quantity of light replacement activities and categorise them according to Major and Minor Roads. By extracting the SAP costs related to specific SAP Public Lighting Activities we can determine the total direct expenditure of light replacement activities. The SAP Public Lighting Codes (MAQ) were;	Jemena is unable to calculate the unit rate for each light type within the major road or minor road category and therefore we have been required to make the assumption that the material cost for each type of light has minimal impact on the overall unit rate. Therefore we have assumed that all light types in the same category are the same unit rate. For example, replacements performed on lights on minor roads are set to the same	This is the best estimate because it uses the best available information. Future enhancements to asset management IT systems will be required to be able to provide the required level of detail. JEN is unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		RLJ (Replace Single Light on Main Road) RLM (Replace Single Light Minor Road) Therefore the unit cost for a major and minor road light replacement has been calculated using the cost to replace the major and minor road lights (total cost less the pole replacement cost) divided by the total number of major and minor road lights that were replaced. Jemena is unable to calculate a separate unit rate for major and minor roads or for each light type within each category.	cost per unit rate regardless of light type.	
Major Road Light Maintenance **&** **Minor Road Light Maintenance**	Light Maintenance works is recorded using SAP Notifications. The expenditure associated with performing this work is recorded against SAP projects. Each SAP project is associated with an SAP Activity Code.	By extracting the SAP notifications related to specific SAP Public Lighting Codes we can determine the quantity of light maintenance activities and categorise them according to Major and Minor Roads. By extracting the SAP costs related to specific SAP Public Lighting Activities we can determine the total direct expenditure of light maintenance activities. The SAP Public Lighting Codes (MAQ) were; MLF (Main Road Public Lighting Fault) MRB (Bulk Lamp Replacement – Minor	Jemena is unable to calculate the unit rate for each light type within the major road or minor road category and therefore we have been required to make the assumption that the material cost for each type of light has minimal impact on the overall unit rate. Therefore we have assumed that all light types in the same category are the same unit rate. For example, maintenance performed on lights on minor roads is set to the same cost per unit rate regardless of light type.	This is the best estimate because it uses the best available information. Future enhancements to asset management IT systems will be required to be able to provide the required level of. JEN is unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		Roads) MRF (Minor Road Public Lighting Fault) Therefore the unit cost for a major and minor road light maintenance has been calculated using the cost to maintain the major and minor road lights (total cost less the pole maintenance cost) divided by the total number of major and minor road lights that were maintained. Jemena is unable to calculate a separate unit rate for major and minor roads or for each light type within each category.		

4.2 METERING

4.2.1 METERING DESCRIPTOR METRIC

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Meter volumes	Accurate actuals required interrogation of the Asset Data Base for 2014. The meter volume data is	Estimates are determined by linear interpolation of actuals. Actuals are available for: - December 2013 & 2014	Meter growth is linear Meter classification Type 4 = AMI (<160MWh) Type 5 = Non AMI interval	The alternate approach of retrospective Data Base interrogation requires tracking install & removal dates. This is less accurate, particularly for

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	retrieved at the end of each year from JEN's two SAP systems (legacy and new)—SAP-ISU for Type 4 meters and CIS+ for Type 5 and Type 6 meters	Estimation for year average = (Dec target year + Dec previous year)/2 The source of actual data is from AMI-SAP for Type 4 meters and CIS+ for Type 5 and 6 meters, which are Jemena's Customer Information Systems	Type 6 Accumulation - Peak & Off Peak	Type 5&6 meters which are tracked in an older IT system. JEN is unaware of a better estimation methodology.

4.2.2 COST METRICS (VOLUME & COST)

40. Under category analysis RIN Table 4.2.2 Metering Cost Metrics, the costs include Capex costs (Note 1), Opex direct costs and related party margins.

41. Note1: The Capex expenditure comprises both direct and indirect costs where the direct costs are associated with the AMI meter installation and program delivery directly eg. Meter purchase and contractor costs. The indirect costs are those related to staff who manage the AMI program delivery, MRO audit fees and fleet & vehicles costs.

Actual information

Variable	Source and why actual	Methodology	Assumptions
Purchase Volume	Purchase Orders – Purchase Orders provide actual information regarding the volume of meters purchased by Jemena	Type 4- JEN AMI Mass Rollout (**MRO**) team was responsible for the purchase of AMI meters. The AMI Finance team collect the relevant PO's for 2014.	None
Special Meter Read Volume	N/A All special reads are performed as fee based services and are covered in section 4.3	N/A Volume = 0	Recovery of data from failed meters is covered in Sub-category Meter Maintenance.

Variable	Source and why actual	Methodology	Assumptions
New Meter Installation Volume	Type 4 AMI MRO Program and New Connection Activities are accurately tracked. Faulty meter replacement is considered to be meter maintenance and is covered in Meter Maintenance section of the table.	Data was retrieved from annual RIN submission for 2014.	Year of Install is determined based on the date when it became active in the market.
Meter Replacement Volume	N/A As a result of the AMI MRO program, all Type 5 & 6 meters are being replaced by Type 4 meters and as a consequence end of life family replacement of these meters was stopped.	N/A Volume = 0	None
Meter Purchase Costs	Purchase Costs: The majority of the meters are sourced from a supplier called Secure Australasia Pty Ltd where purchase orders / invoices are approved by various levels of authority then processed through SAP financial systems and recognised as CAPEX expenditure under the AMI program.	The meter purchase costs are classified into remote read interval meters and transformers (Type 4), manually read interval meters (Type 5) and accumulation meters (Type 6). All of which are included under the CAPEX section in the RIN and AMI Revised Charges Application reporting. JEN AMI MRO team is responsible for the purchase of Type 4 meters. Expenditure information is obtained from the SAP system.	None
Special Meter Reading Costs	N/A All Special Meter Reading costs are captured under Fee-based Services in section 4.3.	N/A	N/A

Variable	Source and why actual	Methodology	Assumptions
New Meter Installation Costs	The New Meter Installation costs are included as part of the CAPEX program based on the AER reporting category from a financial model which is supported by the monthly historical actual and future forecasting information maintained by JEN's Finance AMI team.	The actual costs for New Meter installation costs are captured under Jemena's financial systems and reported under our monthly CMS CAPEX reports under the following categories: • Installation (Mass Rollout) – Type 4 • No Type 5 or 6 installations occurred in 2014.	None
Meter Replacement Costs	N/A As a result of the AMI MRO program all Type 5 & 6 meters are being replaced by Type 4 meters and as such no Meter Replacement cost has been incurred under this metering category.	N/A	N/A
IT Infrastructure CAPEX Costs	The IT Infrastructure CAPEX costs are included under CAPEX - IT section based on the AER reporting category from a financial model which is supported by the monthly historical actual and future forecasting information maintained by JEN's Finance AMI team.	These actual costs are captured and reported under the CAPEX - IT section of a financial model based on the AER reporting category.	None
IT Infrastructure OPEX Costs	The IT Infrastructure OPEX costs are included under OPEX - IT section based on the AER reporting category from a financial model which is supported by the monthly historical actual and future forecasting information maintained by JEN's Finance AMI team.	These actual costs are captured and reported under the OPEX - IT section.	None
Communications Infrastructure CAPEX Costs	The Communications Infrastructure CAPEX costs are included under CAPEX – Communications based on the AER reporting category from a financial model which is supported by the monthly historical actual and future forecasting information maintained by JEN's Finance AMI team.	These actual costs are captured and reported under the CAPEX - Communications section of a financial model based on the AER reporting category.	None

Variable	Source and why actual	Methodology	Assumptions
Communications Infrastructure OPEX Costs	The Communications Infrastructure OPEX costs are included under OPEX – AMI Network Operations and AMI Backhaul Communications sections based on the AER reporting category from a financial model which is supported by the monthly historical actual and future forecasting information maintained by Jemena's Finance AMI team.	These actual costs are captured and reported under the OPEX – AMI Network Operations and AMI Backhaul Communications sections of a financial model based on the AER reporting category.	None

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Meter Investigation Volume	This task is estimated because tracking is spread over 3 cost centres: response to customer calls, AMI NOC investigation and Back office investigation Invoice from Formway – The invoice was used to identify the volume of Meter Investigation carried out by Formway in order for JEN to meet its regulatory compliance obligations. SAP Report- Customer raised investigation which wasn't charged to the customer. SAP report available for 2014. Service Notification- Meter Investigation raised by MRO, AMI field tech and back office. Service Notifications are available in SAP for 2014.	Type 4- Meter investigation volumes obtained from Formway Invoice, SAP report and Service Notification are summed to get the count for Type 4 meter investigation. Type 5 and 6- Meter investigation volumes obtained from Formway Invoice is used to get the count for Type 5 and 6 meter investigation.	The Formway invoice does not clearly classify the investigation Job performed based on the meter type. Hence Meter investigation Volume was proportionally divided among the three meter types based on the Volume of each type of meter installed in the network. i.e. for year 2014 Formway carried out 189 meter investigations. The Average meters for the year were 93% AMI meters, 1% Interval meters and 6% Accumulation meters on the network. Hence Formway Meter investigation for 2014 is: Type 4= 0.93*189 Type 5=0.01*189 Type 6= 0.06*189	Proportional estimate was considered the most accurate method of determining this breakdown in the absence of actual data. JEN is unaware of a better estimation methodology.
Scheduled Meter Reading volume	Actual cumulative meter read data is available from 2009 to 2014. However the data does not show us the split between type 5 and type 6 meter read. Hence we had to estimate the split between the two categories.	Scheduled meter reading is only required for type 5 and 6 meters. Actual cumulative meter (Type 5+Type 6) read is available for 2014. To get the meter read volume for each meter type the total cumulative data was multiplied by the percentage of meter type in the network. For e.g. if 1,000,000 reads were completed in 2014 and 3% of meters are type 5. Then,	Monthly and Quarterly reads are spread evenly between type 5 and type 6 meters. All Type 4 AMI meters are read remotely	Proportional estimate was considered the most accurate method of determining the split between type 5 and type 6 meter reads. JEN is unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		Scheduled meter read for Type 5 meter = 0.03*1,000,000 = 30,000 Scheduled meter read for Type 6 meter = 0.97 * 1,000,000 = 970,000 Meter reading is out sourced to Skilltech. Meter reads are processed by Aegis and a summary of read performance is provided to Jemena on a daily basis. Jemena uses the Aegis data and CISPlus data to track read performance on a daily and monthly basis. Meter read volumes are actuals however as the data is aggregated for type 5 & 6 meters Jemena have apportioned meter read volumes proportionally to type 5 & 6 meter volumes.		
Remote Meter Reading volume	Applies to Type 4 meters only. Daily numbers of Active meters (in the market) are not tracked. Remote reading is not a distinguishable part of the AMI system	Type 4 AMI meters readings are delivered to the market daily. The AMI meters are read every 4 hours. Remote read volume is calculated based on retailer billing cycle. Hence for this table the remote read count is obtained by multiplying the AMI meter volume by 12.	Number of meters read is equivalent to the average number of meters installed over the year.	The Average for the year is assumed to be a linear relationship between the opening and closing balance for the year. JEN is unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Meter Testing volume	Meter Testing volumes were obtained by reviewing the Purchase Orders submitted by Formway and also by looking at the AMI sample testing plan submitted by Jemena to the contractor. Testing is planned and contracts are issued for each year.	Meter test volumes were identified by reviewing invoices submitted by our sub-contractor (Formway) for the period.	The purchase order submitted by Formway classifies the test activity based on the type of meter tested (basic or interval meters). However, the invoice does not sub-classify the test carried out into Type4 AMI meters and Type 5 Non-AMI Interval meters. Hence this sub-classification was estimated based on the volume of each meter type in the network.	The volume of sub type classification is assumed to be proportional to volume per meter type. JEN is unaware of a better estimation methodology.
Meter Maintenance volume	This task is estimated because tracking is spread over different cost centres. Formway Invoice- The invoice was used to identify the volume of Meter maintenance carried out by Formway in order for JEN to meet its regulatory compliance obligations. SAP Report- Provides information about the faulty AMI meter replacements for 2014.	Type 4- Meter maintenance volumes obtained are from Formway Invoice and SAP report are summed to get the count for Type 4 meter maintenance for 2014. Type 5 and 6- Meter maintenance volumes obtained from Formway Invoice is used to get the count for Type 5 and 6 meter investigation.	The Formway invoice does not clearly classify certain meter maintenance job performed based on the meter type. For e.g. Meter Control - Meters & Time switches Scrapped does not tell you whether they are Type 5 or Type 6 meters. Hence meter maintenance job that fall into these category (where we are not clearly able to identify the type) was proportionally divided among the two meter types based on the volume of each type of meter installed in the network.	Proportional estimate was considered the most accurate method of determining this breakdown in the absence of actual data. JEN is unaware of a better estimation methodology.
Remote Meter Reconfiguration volume	Applies to Type 4 meters only. The remote configuration includes the software and meter configuration update. The AMI Network Operations Centre (**NOC**) team keeps record of the software and tariff	The AMI NOC team keeps track of the entire meter configuration performed in an excel spreadsheet. For this analysis we have included the software and tariff updates. An average monthly configuration volume was determined for meter software and tariff update based on the 2014 data (Excluding	The amount of remote configuration completed by the NOC team is proportional to the meter volume.	Proportional estimate was considered the most accurate method of determining this breakdown in the absence of actual data. JEN is unaware of a better

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	configuration completed for each year. Fee based reconfigurations such as solar are covered in section 4.3	Outlier months). Outliers are when we do a complete population upgrade to the next tariff/Software version.		estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Meter Testing Costs	The Meter Testing costs are included as part of the OPEX - Asset Operations costs based on the AER reporting category from a financial model which is supported by the monthly historical actual and future forecasting information maintained by JEN's Finance AMI team.	The methodology of applying the costs to Meter Testing is based on the number of activity volume by meter types 4, 5 & 6 times the average unit cost which is derived from total costs of Asset Operations divided by the total number of activity from the three work activity streams i.e. Meter Testing, Meter Investigation & Meter Maintenance in 2014.	An assumption has been made to allocate the Asset Operations costs based on each calendar year's costs evenly across the three meter types 4, 5 & 6 and three work activity streams under Meter Testing, Meter Investigation & Meter Maintenance as these activity costs are captured together within the same set of cost codes in the Jemena's financial systems.	Proportional pro-rata estimate was considered the most accurate method of determining the costs in the absence of actual data. JEN is unaware of a better estimation methodology.
Meter Investigation Costs	The Meter Investigation costs are included as part of the OPEX - Asset Operations costs based on the AER reporting category from a financial model which is supported by the monthly historical actual and future forecasting information maintained by JEN's Finance AMI team.	The methodology of applying the costs to Meter Investigation is as above.	As above	Proportional pro-rata estimate was considered the most accurate method of determining the costs in the absence of actual data. JEN is unaware of a better estimation methodology.
Scheduled Meter Reading Costs	The Scheduled Meter Reading costs are included under the OPEX – Meter Data Collection based on the AER reporting category from a financial model which is supported by the monthly historical actual and future forecasting information maintained by JEN's Finance AMI team.	The methodology of applying the Scheduled Meter Reading costs is based on the number of activity volume by meter types 5 & 6 times the 2014 unit cost which is taken from the Skilltec Pricing table for 2014.	Assumptions have been made that an average unit rate per Scheduled Meter Read on meter types 5 & 6 based on CY 2009 actual costs would be applicable across 2010 – 2013, four of the five reportable calendar years and all AMI meters are read remotely and therefore not reported under this meter reporting category.	This is the best estimate as we believe the average activity unit price in CY 2009 will be in line with those in future Calendar years. JEN is unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Meter Maintenance Costs	The Meter Maintenance costs are included as part of the OPEX - Asset Operations costs based on the AER reporting category from a financial model which is supported by the monthly historical actual and future forecasting information maintained by JEN's Finance AMI team	The methodology of applying the costs to Meter Maintenance is based on the number of activity volume by meter types 4, 5 & 6 times the average unit cost which is derived from total costs of Asset Operations divided by the total number of activity from the three work activity streams i.e. Meter Testing, Meter Investigation & Meter Maintenance in each of the reporting calendar years.	An assumption has been made to allocate the Asset Operations costs based on each calendar year's costs evenly across the three meter types 4, 5 & 6 and three work activity streams under Meter Testing, Meter Investigation & Meter Maintenance as these activity costs are captured together within the same set of WBS in Jemena's financial systems.	Proportional pro-rata estimate was considered the most accurate method of determining the costs in the absence of actual data. JEN is unaware of a better estimation methodology.
Remote Meter Reading Costs	The Remote Meter Reading costs are included under the OPEX – Meter Data Collection based on the AER reporting category from a financial model which is supported by the monthly historical actual and future forecasting information maintained by JEN's Finance AMI team.	The methodology of applying the Remote Meter Reading costs is based on the average costs over the year in order to form a reasonable unit activity cost in line with the reporting year.	This applies to type 4 meters only.	Remote meter reading uses an automated collection system, only a portion of back office meter data collection costs can be attributed to remote meter reading opex. The primary remote meter reading functions are embedded in IT systems. JEN is unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Remote Meter Re-configuration Costs	The Remote Meter Re-configuration costs are included as part of the OPEX – Communications Infrastructure costs as there are no specific actual of forecast codes capture costs in order to align to this AER reporting category in the financial model nor SAP.	Remote meter reconfiguration for AMI is a high volume batch driven process for firmware and configuration management. These costs are captured within the total Communications Infrastructure OPEX costs which comprise AMI Network Operations and Backhaul Communications.	It is assumed that the Remote Meter Re-configuration costs are accurately captured under the AMI Network Operations and Backhaul Communications sections within the financial model.	This is the best estimate because JEN uses the costs collected under AMI Network Operations and Backhaul Communications as the basis for the estimate. A portion of these costs relate to the Remote Meter re-configuration services. JEN is unaware of a better estimation methodology.
Other Metering Costs	These include the costs of OPEX AMI Transitional Business activities & Asset Strategy & Planning costs. These costs are considered as estimated as they are classified as Type 4 meter costs with no cost allocation into Type 5 and 6 meters.	These costs are considered as estimated as they are classified as Type 4 meter costs with no cost allocation into Type 5 and 6 meters.	An assumption was made that the costs incurred are for Type 4 meters as the objective of the AMI program is to roll out Type 4 meter installations. There are no separate cost codes to capture costs incurred under Type 5 and 6 meters in this category.	Other meter reading costs principally relate to type 4 activities and the residual type 5 and 6 are insignificant at less than 2% of the population JEN is unaware of a better estimation methodology.

4.3 ANCILLARY SERVICES – FEE BASED SERVICES

4.3.1 COST METRICS FOR FEE-BASED SERVICES

Actual information

Variable	Source and why actual	Methodology	Assumptions
Volume data	Volume data for jobs completed in the month was sourced directly JEN's two SAP systems (CIS+ and SAP ISU) and so this information is reported as 'actual information'. These services are:- De-energisation Re-energisation Special meter reading Re-test of type 5 and 6 metering installations for first tier customers with annual consumption greater than 160 MWh Fault response - not DNSP fault Temporary disconnect/reconnect services Wasted attendance - not DNSP fault Service truck visits Temporary supply services Remote meter re-configuration Remote de-energisation Remote re-energisation Routine Connections -customers <100 amps	Actual Billing information from JEN's internal business records has been used.	Billing lags by a month and so does cost data on completed jobs; therefore resultant unit cost is reflective of actual cost

Variable	Source and why actual	Methodology	Assumptions
	Exception - Reserve Feeder data was based on actual KW billed		

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Expenditure data	Dollar data for CY14 reported in JEN's annual RIN A included network overhead amounts, Starting with the figure reported in JEN's annual RIN ensured consistency and provided audit trail. The network overheads were then removed to provide estimated data for the category analysis RIN. The services are the same as the ones described above.	Compilation by reported service in RIN A - Annual RIN, adjusted by excluding the component of those reported costs that are a direct overhead amount. JEN's system did not capture expenditure information for Remote meter reconfiguration, remote de-energisation and remote re energisation The cost to investigate or estimate the expenditure exceeds the benefit in doing so, given the expected spend for these years would be immaterial .	The difference in the capture of lag cost is immaterial on a yearly basis.	The basis used enables audit trail and consistency with the reporting done under the RIN A. JEN is unaware of a better way for estimating these amounts.

4.4 QUOTED SERVICES

4.4.1 COST METRICS FOR QUOTED SERVICES

Actual information

Variable	Source and why actual	Methodology	Assumptions
Volume - Supply abolishment	Actual numbers as per New Connections Monthly Reports	Compilation of data from monthly reports	New connections report is accurate
Volume - Emergency Recoverable works	Actual invoices raised	Sum of invoices raised	Volume of invoices raised reflects volume of work completed
Volume – After hours truck by appointment	Based on invoices raised by specified product code	Sum of invoices	Volume of invoices raised reflects volume of work completed

Variable	Source and why actual	Methodology	Assumptions
Volume – Customer recoverable works	Number of active jobs in a particular year which is not reflective of the actual number of jobs completed.	The number of jobs performed during the year has been estimated based on the jobs created in SAP	Each job created in SAP represents one item of recoverable work
Volume – Routine connections for customers > 100 amps	Volume data for routine connections jobs completed in the month was compiled from CIS+ and SAP ISU. Includes the Volume for Elective undergrounding count component.	Actual billing information has been used for routine connections and for elective undergrounding based on CY 2014 job count data	Billing lags by a month

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Expenditure data	Dollar data for CY14 reported in JEN's annual RIN A included network overhead amounts, Starting with the figure reported in JEN's annual RIN ensured consistency and provided audit trail. The network overheads were then removed to provide estimated data for the category analysis RIN. The services are the same as the ones described above	Compilation by reported service in the Annual RIN, adjusted by excluding the component of those reported costs that are a direct overhead amount.	The difference in the capture of lag cost is immaterial on a yearly basis.	JEN is unaware of a better way to estimate these amounts

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5. NETWORK INFORMATION

5.2 ASSET AGE PROFILE

5.2.1 ASSET AGE PROFILE

Actual information

Variable	Source and why actual	Methodology	Assumptions
Underground Cables - >1kV & <=11kV, >11kV & <=22kV,	JEN's internal GIS system is the single source of the network asset data. This data was able to be provided without estimation due to the completeness of the HV cable installation dates within GIS and is therefore considered actual information.	The cable data is extracted from the GIS using a data interrogation tool. Once extracted the data is filtered to provide only in-service cables that belong to JEN.	No assumptions were made.
Transformers – Ground outdoor / Indoor chamber mounted : >33kV & <=66kV; <=15 MVA; and <=40 MVA (Zone Substation Equipment – Cap Banks, CT/VT, Buildings, DC Battery, DC Battery Chargers).	JEN's internal SAP system is the single source of the zone substation asset data. This data was able to be provided without estimation due to the completeness of the zone substation equipment installation dates in SAP and is therefore considered actual information.	The zone substation equipment is extracted from SAP using a data interrogation tool. Once extracted the data is filtered to provide only in-service equipment that belongs to JEN.	No assumptions were made.

Variable	Source and why actual	Methodology	Assumptions
Public Lighting – Lamps	JEN's internal GIS system is the single source of the network asset data. This data was able to be provided without estimation due to the completeness of the public lighting lamps installation dates within GIS and is therefore considered actual information.	The public lighting lamps data is extracted from the GIS using a data interrogation tool. Once extracted the data is filtered to provide only in-service public lighting lamps that belong to JEN.	No assumptions were made.
SCADA Network Control & protection systems - Field Devices (Relay)	JEN's internal SAP system is the single source of the zone substation asset data. This data was able to be provided without estimation due to the completeness of the relay installation dates and is therefore considered actual information.	The zone substation equipment is extracted from SAP using a data interrogation tool. Once extracted the data is filtered to provide only in-service equipment that belong to JEN.	No assumptions were made.
SCADA Network Control & protection systems - Communication Network Assets	JEN's internal SAP system is the single source of the zone substation asset data. This data was able to be provided without estimation due to the completeness of the Supervisory Cable installation dates and is therefore considered actual information. The increase of the volume in 2014 in comparison with 2013 is due to fiber optic cable being added into communication network assets.	The zone substation equipment is extracted from SAP using a data interrogation tool. Once extracted the data is filtered to provide only in-service equipment that belong to JEN.	No assumptions were made.

Variable	Source and why actual	Methodology	Assumptions
Assets with voltage levels of 33 kV and 132 kV	Not applicable. JEN does not have any assets operating at 33kV or 132kV, therefore all line items with these respective voltage levels have been set to zero.		
Mean and Standard Deviation	SAP is the source of data to calculate mean and standard deviation for the assets below: – Underground Cables > 1kV & <= 11 kV – Underground Cables > 11kV & <= 22 kV – Underground Cables > 33kV & <= 66 kV – Transformer Ground Outdoor / Indoor Chamber Mounted <=15 MVA – Transformer Ground Outdoor / Indoor Chamber Mounted >15 & <= 40 MVA – Field Devices – CT/VT This data was able to be provided without estimation due to the completeness of the installed date and retirement date. This allowed the age of the asset to be determined and the mean and standard deviation to be calculated.	In order to obtain a mean replacement life and associated standard deviation the following data for each asset type was used; - Date of installation - Date of retirement - A sample size large enough to make the calculation of Standard Deviation meaningful.	No assumptions were made.

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Mean and Standard Deviation	For a percentage of the assets, installation dates are estimated and are used to calculate the mean and standard deviation.	In order to obtain a mean replacement life and associated standard deviation to inform an aged based replacement model used the following data for each asset type; - Date of installation	The assets below are assumed to have the same mean and standard deviation (due to insufficient data sample). – <=11kV fuses and >11kV and <=22kV	This is the best estimation method because it uses date of installation and date of retirement which is readily available.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		- Date of retirement - A sample size large enough to make the calculation of Standard Deviation meaningful. Insufficient installation and replacement data is available for a number of asset groups. JEN has therefore intentionally left the related input cells (as listed below) '0'. – Poles: > 22 kV & < = 66 kV; WOOD – Poles: > 11 kV & < = 22 kV; STEEL – OH Conductor > 1kV & <= 11kV – OH Conductor > 11kV & <= 22kV, Single Phase – OH Conductor > 11kV & <= 22kV, Multiple Phase – Transformers KIOSK MOUNTED: < = 22kV ; > 600 kVA ; MULTIPLE PHASE – SWITCH: < = 11 kV; – SWITCH: > 11 kV & <= 22kV; – Field Devices – Relay – Communication Network Assets – Lamps	fuses – <=11kV switch and >11kV and <=22kV	However the required data is unavailable for all asset classes at the required level of detail. JEN has data for removed assets from 1999 to the present day only. Consequently in all but a few cases the results of the calculation are not realistic and are of a questionable level of accuracy. JEN is unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Poles: >22kV & <=66kV; Wood, Concrete, Steel	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age profiles.	Poles: >22kV & <=66kV; Wood, Concrete, Steel with an unknown date of installation were estimated using the dates from the nearby poles in the same pole line.	There is an assumption that Poles: >22kV & <=66kV; Wood, Concrete, Steel are installed in an entire pole line at one time in order to complete the sub-transmission loop.	This is the best estimate because it uses other known data to make a high confidence estimation based on the assumptions outlined. The volume of unknown assets in the class was low enough to make manual assessment and assignments feasible. JEN is unaware of a better estimation methodology.
Poles – >1kV & <=11kV, >11kV & <=22kV, Wood, Concrete, Steel	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age profiles.	Poles – >1kV & <=11kV, >11kV & <=22kV, Wood, Concrete, Steel with an unknown date of installation were estimated using the average date of installation for poles within a 1km square area around the pole.	There is an assumption that Poles – >1kV & <=11kV, >11kV & <=22kV, Wood, Concrete, Steel were installed at a similar time to the poles surrounding them.	This is the best estimate because it uses other known data to make a medium confidence estimation based on the assumptions outlined. The volume of unknown assets in the class was too high to feasibly assess each site manually and as such a programmatic approach was required. JEN is unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Poles – <=1kV, Wood, Concrete, Steel	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age profiles.	Step 1: Poles – <=1kV, Wood, Concrete, Steel were dated from the distribution substation feeding the conductors on them. Step 2: Poles – <=1kV, Wood, Concrete, Steel with unknown dates were estimated off the average age of poles within a 1km square around them.	Step 1: There is an assumption that the Poles – <=1kV, Wood, Concrete, Steel were installed at the same time the Distribution Substation was installed. Step 2: There is an assumption that the Poles – <=1kV, Wood, Concrete, Steel were installed at a similar time to the poles surrounding them.	Step 1: This is the best estimate because it uses other known data to make a medium-high confidence estimation based on the assumptions outlined. Step 2: This is the best estimate because it uses other known data to make a medium confidence estimation based on the assumptions outlined. The volume of unknown assets in the class was too high to feasibly assess each site manually and as such a programmatic approach was required. JEN is unaware of a better estimation methodology.
Public Lighting – Poles, Major Road, Minor Road	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age profiles.	Public Lighting poles with an unknown or date of installation that was considered too old were manually assessed to identify patterns in the installation date of poles surrounding them. This included assessing poles with similar	There is an assumption that the Public Lighting poles are likely to be installed in a localised area at the same time in order to meet the lighting code. There is an assumption that Public Lighting Lanterns were introduced and retired from standards in eras.	This is the best estimate because it uses knowledge of the design of public lighting systems and lighting code to determine dates where very little associated asset data exists.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		lantern types to estimate an era of installation and the dates of installation on surrounding assets.	There is an assumption that public lighting poles that are not classified to be major nor minor roads are included in the minor roads.	The volume of unknown assets in the class was low enough to make manual assessment and assignments feasible. JEN is unaware of a better estimation methodology.
Public Lighting – Luminaires, Major Road, Minor Road	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age profiles.	Public Lighting lanterns with an unknown or date of installation that was considered too old were manually assessed to look for patterns in the installation date of poles surrounding them. This included looking at poles with similar lantern types to estimate an era of installation and the dates of installation on surrounding assets.	There is an assumption that the Public Lighting poles are likely to be installed in a localised area at the same time in order to meet the lighting code. There is an assumption that Public Lighting Lanterns were introduced and retired from standards in eras.	This is the best estimate because it uses knowledge of the design of public lighting systems and lighting code to determine dates where very little associated asset data exists. The volume of unknown assets in the class was low enough to make manual assessment and assignments feasible. JEN is unaware of a better estimation methodology.
Public Lighting – Brackets, Major Road, Minor Road	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age profiles.	Public Lighting brackets with an unknown date installation were assigned a date based on the installation date of attached assets such as the public lighting pole and luminaire.	There is an assumption that the public lighting bracket was installed at the same time as the public lighting pole and where no better information is available there is an assumption that the public lighting bracket is installed at the same time as the luminaire.	This is the best estimate because it uses other known data about the pole the bracket is mounted to, in order to make a medium-high confidence estimation based on the assumptions outlined. This is the best estimate

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
				because it uses other known data about the luminaire installed on the bracket where no other asset data is available in order to make an estimation based on the assumptions outlined. The volume of unknown assets in the class was too high to feasibly asses each site manually and as such a programmatic approach was required. JEN is unaware of a better estimation methodology.
Overhead Conductor - > 22 kV & < = 66 kV	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age profiles.	Overhead Conductor - > 22 kV & < = 66 kV with an unknown date of installation were manually estimated from the dates of the conductors in the same pole line and dates on construction drawings and route plans.	There is an assumption that Overhead Conductor - > 22 kV & < = 66 kV are installed in an entire line at one time in order to complete the sub-transmission loop. There is an assumption that the replacement of the Overhead Conductor - > 22 kV & < = 66 kV has been minimal.	This is the best estimate because it uses other known data to make a medium-high confidence estimation based on the assumptions outlined. The volume of unknown assets in the class was low enough to make manual assessment and assignments feasible. JEN is unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Overhead Conductor - > 1 kV & < = 11 kV, > 11 kV & < = 22 kV ; Single-Phase, > 11 kV & < = 22 kV ; Multiple-Phase	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age profiles.	The date of the substation downstream from the conductor was used to populate the HV conductor dates.	There is an assumption that the Overhead Conductor - > 1 kV & < = 11 kV, > 11 kV & < = 22 kV ; Single-Phase, > 11 kV & < = 22 kV ; Multiple-Phase were required to be installed before the downstream substation could be commissioned. There is also an assumption that the network configuration has not changed significantly since the installation of the HV conductors.	This is the best estimate because it uses other known data to make a medium confidence estimation based on the assumptions outlined. The volume of unknown assets in the class was too high to feasibly asses each site manually and as such a programmatic approach was required. JEN is unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Overhead Conductor - < = 1 kV	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age profiles.	Overhead Conductor - < = 1 kV were dated using the date of the distribution substation feeding the conductors on them.	There is an assumption that the Overhead Conductor - < = 1 kV were installed at the same time as the distribution substation feeding them. There is also an assumption that the LV network configuration has not changed significantly since the installation of the Overhead Conductor - < = 1 kV.	This is the best estimate because it uses other known data to make a moderately high confidence estimated based on the assumption outlined. The volume of unknown assets in the class was too high to feasibly asses each site manually and as such a programmatic approach was required. JEN is unaware of a better estimation methodology.
Underground Cables -> 33 kV & < = 66 kV	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age profiles.	Underground Cables -> 33 kV & < = 66 kV were estimated based on known cable head dates.	There is an assumption that the cables were installed at the same time that the cable head.	As Underground Cables -> 33 kV & < = 66 kV failures are rare, the estimate that the cable installation date is the same as the installation date of the cable head will give a high level of confidence. The volume of unknown assets in the class was low enough to make manual assessment and assignments feasible. JEN is unaware of a better estimation methodology

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Underground Cables – < = 1 kV	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age profiles.	Step 1: Underground Cables – < = 1 kV were estimated based on construction drawings provided at the time of installation. Step 2: Underground Cables – < = 1 kV were estimated based on known associated assets such as cable heads, joints, pillars and pits.	Step 1: There is an assumption that the cable was installed at the time the construction drawing was created. Step 2: There is an assumption that the associated LV assets were installed at the same time as the Underground Cables – < = 1 kV.	Step 1: This is the best estimate because it uses other known data to make a high confidence estimated based on the assumption outlined. Manual assessment and assignment was used here as the number of construction drawings was low enough to be feasible. Step 2: This is the best estimate because it uses other known data to make a moderate-high confidence estimated based on the assumption outlined. The volume of unknown assets in the class was too high for any form of manual assessment and assignments to be feasible and as such a programmatic solution provided the most consistent and accurate result. JEN is unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Service Lines – Residential and Commercial and Industrial (Simple Type)	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age profiles.	Dates from the pole supporting the service were assigned to the service as long as the service was of the correct type for that era. The connectivity in the GIS between the service line and the supply point was used. The attributes of the connected supply point were used to determine whether the service line was connected to a residential, commercial or industrial property.	There is an assumption that the overhead service was installed at the same time as the pole was installed and that neither the service nor pole has been replaced since then. For service type that is not classified as residential or commercial/industrial such as farm, public light, N/A, other are assumed to be classified as part of residential.	This is the best estimate because it uses other known data to make a medium confidence estimation based on the assumptions outlined. The volume of unknown assets in the class was too high for any form of manual assessment and assignments to be feasible and as such a programmatic solution provided the most consistent and accurate result. JEN is unaware of a better estimation methodology.
Service Lines < 11 kV (Complex Type) and Service Lines >11 kV	JEN does not have service lines that operate at voltages >11kV. Therefore the value of zero has been entered for these line items. JEN has assumed that all service lines are simple type. Therefore a value of zero has been entered for line items labelled as complex type.			
Underground Cables <=1 kV	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age profiles.	Underground services with an unknown installation date were estimated using the known dates of attached equipment such as service tee joints, pillars and pits.	There is an assumption that the underground service cable and the pits, pillars and service tee joint were all installed at the same time.	This is the best estimate because it uses other known data to make a high confidence estimation based on the assumptions outlined. The volume of unknown assets in the class was too high for

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
				any form of manual assessment and assignments to be feasible and as such a programmatic solution provided the most consistent and accurate result. JEN is unaware of a better estimation methodology.
Transformers – Pole Mounted, Kiosk Mounted, Ground Outdoor / Indoor Chamber Mounted (excluding zone substation transformers)	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age profiles.	Distribution transformers with an unknown installation date were manually assigned an estimated date based off associated assets such as ring main units, switches, fuses and attached cables.	There is an assumption that the transformer was installed at the same time as the associated ring main unit, switches, fuses and underground cables.	This is the best estimate because it uses other known data to make a high confidence estimation based on the assumptions outlined. The volume of unknown assets in the class was too high for any form of manual assessment and assignments to be feasible and as such a programmatic solution provided the most consistent and accurate result. JEN is unaware of a better estimation methodology.
Switchgear – HV Fuses	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age	HV Line Fuses with an unknown installation date were estimated using the installation date from the poles they are mounted on.	There is an assumption that the HV Line Fuse was installed at the same time as the pole on which it is mounted.	This is the best estimate because it uses other known data to make a moderately-high confidence estimation based on the assumptions

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	profiles.	HV Substation Fuses with an unknown installation date were estimated using the installation date from the substation they are protecting.	There is an assumption that the HV Substation Fuse was installed at the same time as the substation that it is protecting.	outlined. The volume of unknown assets in the class was too high for any form of manual assessment and assignments to be feasible and as such a programmatic solution provided the most consistent and accurate result. JEN is unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Switchgear – Switch (<=11kV Air Break Switch including LV switches)	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age profiles.	LV Isolators with an unknown installation date were estimated using dates from the cables or conductors connected to the isolator.	There is an assumption that the LV Isolators were installed at the same time as the conductors or cables that the isolators are switching.	This is the best estimate because it uses other known data to make a moderately-high confidence estimation based on the assumptions outlined. The volume of unknown assets in the class was too high for any form of manual assessment and assignments to be feasible and as such a programmatic solution provided the most consistent and accurate result. JEN is unaware of a better estimation methodology.
Switchgear – Switch (Isolators, Air Break Switches)	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age profiles.	HV Isolators with an unknown installation date were estimated using dates from the cables or conductors connected to the isolator.	There is an assumption that the HV Isolators were installed at the same time as the conductors or cables that the isolators are switching.	This is the best estimate because it uses other known data to make a moderately-high confidence estimation based on the assumptions outlined. The volume of unknown assets in the class was too high for any form of manual assessment and assignments to be feasible and as such a programmatic solution provided the most consistent and

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		Air break switches with unknown dates of installation were manually estimated based on associated assets with the following priority: 1) Surge Diverters 2) Insulators 3) Pole Date 4) HV Conductors 5) HV Cables 6) Crossarms	There is an assumption that the air break switch was installed at the same time as the associated assets.	accurate result. The volume of unknown assets in the class was low enough to make manual assessment and assignments feasible. JEN is unaware of a better estimation methodology.
Switchgear – Switch (Gas)	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age profiles.	Gas switches with unknown dates of installation were manually estimated based on associated assets with the following priority: 1) Surge Diverters 2) Insulators 3) Pole Date 4) HV Conductors 5) HV Cables 6) Crossarms	There is an assumption that the Gas switch was installed at the same time as the associated assets.	This is the best estimate because it uses other known data to make a high confidence estimation based on the assumptions outlined. The volume of unknown assets in the class was low enough to make manual assessment and assignments feasible. JEN is unaware of a better estimation methodology.
Switchgear –	Dates for asset installation were not known for all assets. Actual	Ring Main Units with unknown installation dates were estimated using the associated	There is an assumption that the RMU was installed at the same time as the	This is the best estimate because it uses other known

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Switch (RMU)	installed dates were combined with estimates to produce age profiles.	transformer, substation object and cables.	transformer, substation object and cables.	data to make a high confidence estimation based on the assumptions outlined. The volume of unknown assets in the class was too high for any form of manual assessment and assignments to be feasible and as such a programmatic solution provided the most consistent and accurate result.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Switchgear – Switch (Circuit Breaker)	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age profiles.	Circuit Breakers with unknown installation dates were estimated using the associated transformer, substation object and cables.	There is an assumption that the circuit breaker was installed at the same time as the transformer, substation object and cables.	This is the best estimate because it uses other known data to make a high confidence estimation based on the assumptions outlined. The volume of unknown assets in the class was too high for any form of manual assessment and assignments to be feasible and as such a programmatic solution provided the most consistent and accurate result. JEN is unaware of a better estimation methodology.
Switchgear – Switch (ACR)	Dates for asset installation were not known for all assets. Actual installed dates were combined with estimates to produce age profiles.	ACRs with unknown dates of installation were manually estimated based on associated assets with the following priority: 1) Surge Diverters 2) Insulators 3) Pole Date 4) HV Conductors 5) Crossarms	There is an assumption that the ACR was installed at the same time as the associated assets.	This is the best estimate because it uses other known data to make a high confidence estimation based on the assumptions outlined. The volume of unknown assets in the class was low enough to make manual assessment and assignments feasible. JEN is unaware of a better estimation methodology.

5.3 MAXIMUM DEMAND AT NETWORK LEVEL

5.3.1 RAW AND WEATHER CORRECTED COINCIDENT MD AT NETWORK LEVEL (SUMMED AT TRANSMISSION CONNECTION POINT)

Actual information

Variable	Source and why actual	Methodology	Assumptions
Raw network coincident MD Date MD occurred Half hour time period MD occurred Winter/Summer peaking	The data is the 15 minute MW transmission connection point wholesale meter readings that have been sourced from the Interval Meter Store (IMS). Therefore the data provided is actual data.	The raw adjusted total maximum demand (MW) and corresponding date and time for summer and winter is recorded in the data source file. The raw adjusted total maximum demand (MW) value and corresponding date, time and season are copied directly to the RIN template. The date/time provided is the end time of the 15 minute interval. Times provided are AEST, not AEDT (i.e. not adjusted for daylight savings time).	Category analysis RIN column headings are interpreted as follows to align with readily available data recorded in the normal course of business: 2013-14 = 1/10/2013 to 31/3/2014 As winter 2014 data is not yet available, 2014 raw coincident MD is assumed to occur in summer as JEN is a summer peaking network. Network coincident MD is assumed to occur at the time when the sum of terminal station connection point MW demand is greatest.

Variable	Source and why actual	Methodology	Assumptions
Embedded generation	Source: – \\vtalpwfile07\netmgt\network planning\terminal station forecasts\2014 AEMO Forecasts\Cogen\JEN TOTAL GENERATION MW (2014).xls The data contained within the above files is 15 minute MW embedded generation meter readings sourced from the Interval Meter Store (IMS). Therefore the data provided is actual data.	Only embedded generators above 1MW capacity are included, as follows: – EDL – Bolinda Landfill – EDL – Brooklyn Landfill – Preston Mini Hydro – Visy The total MW value corresponding to the date and time of maximum MW demand (as above) is copied directly to the category analysis RIN template.	Bioscience Research Centre not included as it does not export power. LaTrobe University cogen is not included at subtransmission level as it is connected via the AusNet Services network. Somerton Power Station not included since it is connected at terminal station level and is not included in the raw network coincident MD.

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Weather corrected (10% PoE) network coincident MD Weather corrected (50% PoE) network coincident MD	Source: – 2014 Maximum Demand Forecast Analysis \\vtalpwfile07\netmgt\network planning\AER\3 - Category Analysis (RIN C)\2014 RIN C\Template 5.3 & 5.4\2014 Maximum Demand Forecast analysis.xls This data is estimated as it is calculated based on assumptions rather than extracted directly from	The 10% POE and 50% POE average daily temperatures and MD temperature sensitivity relationship is based upon observed historical data. Adjusted MW MD is calculated as follows: $MD_b = MD_a \times \frac{-1.524{t_b}^2 + 108.5t_b - 925.2}{-1.524{t_a}^2 + 108.5t_a - 925.2}$ Where: MD_b = MW MD after temperature adjustment MD_a = actual unadjusted MW MD t_b = average daily temperature to adjust to (32.9°C for 10% POE or 29.4°C for 50%	It is assumed that the 10% POE and 50% POE average daily temperatures and MD temperature sensitivity relationship is consistent over the period 2009-2014.	This is the established method for MD temperature adjustment.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	metered data.	POE) t_a = average daily temperature on day of actual unadjusted MW MD Average daily temperature is calculated as follows: $t = \frac{(t_{max} - t_{min})}{2}$ Where: t = average daily temperature t_{max} = maximum temperature of the day (24 hour period) (data sourced from PI) t_{min} = minimum temperature of the day (24 hour period) (data sourced from PI)		

5.4 MAXIMUM DEMAND AND UTILISATION AT SPATIAL LEVEL

5.4.1 NON-COINCIDENT & COINCIDENT MAXIMUM DEMAND

Actual information

Variable	Source and why actual	Methodology	Assumptions
Subtransmission Substation – Substation Rating	Data not provided (cells shaded black). JEN does not own any subtransmission substations or terminal stations	Not applicable	Not applicable
Subtransmission Substation – Raw	Source:	Non-coincident data: The maximum total MW demand and corresponding MVAr, date and time for summer and winter is recorded in the JEN Load	JEN does not keep record of transmission connection point MD data in the normal course of business, therefore total data for JEN load on each

Variable	Source and why actual	Methodology	Assumptions
Adjusted MD Subtransmission Substation – Date MD Occurred Subtransmission Substation – Time MD Occurred Subtransmission Substation – Winter/Summer Peaking	Summer: – Non-coincident data: \\vtalpwfile07\netmgt\network planning\feeder forecasts & MDs\2014 Forecasts\Model - FINAL as at 30Sep14\1forecast inputs & constants.xlsm – Coincident data: \\vtalpwfile07\netmgt\network planning\feeder forecasts & MDs\2014 Forecasts\Model - FINAL as at 30Sep14\9Historical System Coincident Demand.xlsm Winter: – Coincident and non-coincident: \\vtalpwfile07\netmgt\network planning\AER\3 - Category Analysis (RIN C)\2014 RIN C\Template 5.3 & 5.4\2014 winter MDs The data contained within the above files is 15 minute MW and MVAr transmission connection point wholesale meter readings sourced from the Interval Meter Store (IMS). Therefore the data provided is actual data.	Demand Forecast (1forecast inputs & constants.xlsm). Since winter MDs have not yet been extracted in the normal course of business, winter MDs are extracted separately for stations where the MD has occurred during winter within the last 5 years. For the season where MW MD is greatest, the MW MD value, MVA (calculated from MW MD and corresponding MVAr value), date, time and season are copied directly to the category analysis RIN template. Coincident data: Date, time and season of MD are as per RIN C template 5.3. The MW demand values and MVA (calculated from MW and MVAr) corresponding to these times are copied directly from the JEN load demand forecast (9Historical System Coincident Demand.xlsm) into the category analysis RIN template. The date/time provided is the end time of the 15 minute interval (AEST). Note: MD data contained within the data source file has been adjusted to system normal conditions by accounting for temporary switching and for temporary load changes from major customers. The methodology for identifying abnormals is to visually inspect the graphed demand data. The methodology to adjust for abnormals is as follows: • Non-coincident data: Demand during abnormal conditions is ignored and the highest demand	terminal station bus group is provided as this data is readily available. MVA MD is assumed to occur at the time of MW MD. Category analysis RIN column headings are interpreted as follows to align with readily available data recorded in the normal course of business: 2013-14 = 1/10/13 to 30/6/14 (end date is due to restricted entry cells in RIN template). It is assumed that if a station did not have a winter MD in the past 5 years then it will not have a winter MD in 2014. “Coincident” is assumed to be at the time of JEN network coincident MD, as per template 5.3.

Variable	Source and why actual	Methodology	Assumptions
		under system normal conditions is recorded as the MD. For long-term abnormals, MD is estimated. Please refer to 'Estimated Information' section below. • Coincident data: If the station is under abnormal conditions at the time of coincident MD, the MD is estimated. Please refer to 'Estimated Information' section below.	
Subtransmission Substation – Adjustments – Embedded Generation	Source: – \\vtalpwfile07\netmgt\network planning\terminal station forecasts\2014 AEMO Forecasts\Cogen\JEN TOTAL GENERATION MW (2014).xls The data contained within the above files is 15 minute MW embedded generation meter readings sourced from the Interval Meter Store (IMS). Therefore the data provided is actual data.	Only embedded generators above 1MW capacity are included, as follows: – EDL – Bolinda Landfill – EDL – Brooklyn Landfill – Preston Mini Hydro – Somerton Power Station* – Visy The MW value corresponding to the date and time of maximum MW demand (as above) is copied directly to the category analysis RIN template for each terminal station / bus group. *SMTS MD does not include Somerton Power Station.	Bioscience Research Centre not included as it does not export power. LaTrobe University cogen is not included at subtransmission level as it is connected via the SPIE network.

Variable	Source and why actual	Methodology	Assumptions
Zone Substation – Substation Rating	Sources: – 2014: Distribution Annual Planning Report (DAPR) \\vtalpwfile07\netmgt\network planning\Distribution Annual Planning Report\2014 DAPR\05 Report\Report (Final)- as published 29Dec2014\2014 Distribution Annual Planning Report Rev1.0.pdf The ratings are actual data as they are the normal cyclic ratings as per the transformer nameplates, except where transformers have been de-rated based on asset condition or where other network components limit the rating of the transformers (e.g. transformer cables).	Zone substation normal cyclic ratings (MVA) are copied directly from the Distribution Annual Planning Report (DAPR). The rating provided in the RIN C template is the rating at the time of MD. The normal cyclic ratings given in the DAPR are as per the transformer nameplate except where transformers have been de-rated based on asset condition or where other network components limit the rating of the transformers (e.g. transformer cables, where normal cyclic ratings are determined from manufacturer data sheets and modelling of the installation). Zone substation ratings are provided only where the substation is owned by JEN. Ratings are not provided (cells shaded black) for the following zone substations owned by customers or other distribution network service providers: – MAT – MB – SA – TT – VCO – WT	For each year the rating provided is for the season in which the MD occurs.

Variable	Source and why actual	Methodology	Assumptions
Zone Substation – Zone Substation – Raw Adjusted MD Zone Substation – Date MD Occurred Zone Substation – Time MD Occurred Zone Substation – Winter/Summer Peaking	Sources: Source: Summer: – Non-coincident data: \\vtalpwfile07\netmgt\network planning\feeder forecasts & MDs\2014 Forecasts\Model - FINAL as at 30Sep14\1forecast inputs & constants.xlsm – Coincident data: \\vtalpwfile07\netmgt\network planning\feeder forecasts & MDs\2014 Forecasts\Model - FINAL as at 30Sep14\9Historical System Coincident Demand.xlsm Winter: – Coincident and non-coincident: \\vtalpwfile07\netmgt\network planning\AER\3 - Category Analysis (RIN C)\2014 RIN C\Template 5.3 & 5.4\2014 winter MDs The data contained within the above source files is extracted from PI and Gabi. This is actual metered MD data.	Non-coincident data: The maximum total MW demand and corresponding MVAr, date and time for summer and winter is recorded in the JEN Load Demand Forecast (1forecast inputs & constants.xlsm). Since winter MDs have not yet been extracted in the normal course of business, winter MDs are extracted separately for stations where the MD has occurred during winter within the last 5 years. For the season where MW MD is greatest, the MW MD value, MVA (calculated from MW MD and corresponding MVAr value), date, time and season are copied directly to the category analysis RIN template. Coincident data: Date, time and season of MD are as per RIN C template 5.3. The MW demand values and MVA (calculated from MW and MVAr) corresponding to these times are copied directly from the JEN load demand forecast (9Historical System Coincident Demand.xlsm) into the category analysis RIN template. For zone substations MAT, MB, TT, VCO and WT, data has been extracted from the interval meter store (IMS) and the date/time provided is the end time of the 15 minute interval (AEST). For all other zone substations, data has been extracted from OSI PI and date time provided is exact time of MD (adjusted for daylight savings time, i.e. AEDT). Zone substation demand is at the transformer and therefore includes the impact of any capacitor banks	MVA MD is assumed to occur at the time of MW MD. As JEN load at SA is supplied from shared feeders, there is no metered actual data available for JEN load. Therefore, SA MD is estimated. Please refer to 'Estimated Information' section below. Category analysis RIN column headings are interpreted as follows to align with readily available data recorded in the normal course of business: 2013-14 = 1/10/13 to 30/6/14 (end date is due to restricted entry cells in RIN template). It is assumed that if a station did not have a winter MD in the past 5 years then it will not have a winter MD in 2014. "Coincident" is assumed to be at the time of JEN network coincident MD, as per template 5.3.

Variable	Source and why actual	Methodology	Assumptions
		at the terminal station. Note: MD data contained within the data source file has been adjusted to system normal conditions by accounting for temporary switching and for temporary load changes from major customers. The methodology for identifying abnormals is to visually inspect the graphed demand data. The methodology to adjust for abnormals is as follows: • Non-coincident data: Demand during abnormal conditions is ignored and the highest demand under system normal conditions is recorded as the MD. For long-term abnormals, MD is estimated. Please refer to 'Estimated Information' section below. • Coincident data: If the station is under abnormal conditions at the time of coincident MD, the MD is estimated. Please refer to 'Estimated Information' section below.	

Variable	Source and why actual	Methodology	Assumptions
Zone Substation – Adjustments – Embedded Generation	Sources: – Cogen folder \\vtalpwfile07\netmgt\network planning\terminal station forecasts\2014 AEMO Forecasts\Cogen (use generator files relevant to each zone substation) The data contained within the above files is 15 minute MW embedded generation meter readings sourced from the Interval Meter Store (IMS). Therefore the data provided is actual data.	Only embedded generators above 1MW capacity are included, as follows: – EDL – Bolinda Landfill (ZSS: BD) – EDL – Brooklyn Landfill (ZSS: TH) – LaTrobe University (ZSS: TT) – Preston Mini Hydro (ZSS: CN) – Visy (ZSS: VCO) The cogen MW value corresponding to the date and time of maximum MW demand (as above) is copied directly to the category analysis RIN template.	Bioscience Research Centre (ZSS: NH) not included as it does not export power. Somerton Power Station is not included at zone substation level as it is connected at subtransmission level.

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Subtransmission Substation – Weather Corrected MD Zone Substation – Weather Corrected MD	This data is estimated as it is calculated based on assumptions rather than extracted directly from metered data. Source: \\vtalpwfile07\netmgt\network planning\AER\3 - Category Analysis (RIN C)\2014 RIN C\Template 5.3 & 5.4\Temperature adjustment for actual data.xlsm	Adjusted MW MD is calculated as follows: $MD_b = MD_a \times \frac{A.t_b{}^2 + B.t_b + C}{A.t_a{}^2 + B.t_a + C}$ Where: A, B, C = coefficients determined based on historical data for each station. These values are as recorded in the load demand forecast. MD_b = MW MD after temperature adjustment MD_a = actual unadjusted MW MD t_b = average daily temperature to adjust to (32.9°C for 10% POE or 29.4°C for 50% POE)	It is assumed that the 10% POE and 50% POE average daily temperatures and MD temperature sensitivity relationship is consistent over the period 2009-2014. Weather corrected MD is assumed to have the same MW/MVA ratio as raw adjusted MD.	This is the established method for MD temperature adjustment. JEN is unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	Source of coefficients A, B and C used for calculations in above file: \\vtalpwfile07\netmgt\network planning\feeder forecasts & MDs\2014 Forecasts\Model - FINAL as at 30Sep14\1forecast inputs & constants.xlsm	t_a = average daily temperature on day of actual unadjusted MW MD Average daily temperature is calculated as follows: $$t = \frac{(t_{max} - t_{min})}{2}$$ Where: t = average daily temperature t_{max} = maximum temperature of the day (24 hour period) (data sourced from PI) t_{min} = minimum temperature of the day (24 hour period) (data sourced from PI) Weather corrected values are assumed to have the same MW/MVA ratio as raw adjusted data. Therefore MVA is calculated as: $$MVA_{adjusted} = \frac{MVA_{raw}}{MW_{raw}} \times MW_{adjusted}$$		
SA zone substation: Zone Substation – Raw Adjusted MD – Coincident & Non-coincident Zone Substation –	JEN load at zone substation SA consists of sections of feeders. Metering of the JEN load supplied by SA is unavailable, therefore the MD must be estimated.	Metered data for the full load on SA feeders is available. The at SA is estimated by a combination of 1. multiplying the full feeder load by an assumed proportion of JEN load for each feeder, 2. applying knowledge of customer growth/new customer loads obtained from customer applications, and	It is assumed that both coincident and non-coincident MD occur at the time of network peak, therefore MW, MVA, date and time values are equal for coincident and non-coincident MD. It is assumed that JEN load at SA is the following proportion of the SA feeders supplying JEN load:	Combines all available knowledge of JEN load supplied by SA zone substation. JEN is unaware of a better estimation methodology.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Date MD Occurred – Non-coincident Zone Substation – Time MD Occurred – Non-coincident Zone Substation – Winter/Summer Peaking – Non-coincident		3. trending from previous year's MDs.	– SA02: 10% – SA06: 25% – SA12: 30%	
Subtransmission Substation – Raw Adjusted MD – abnormal conditions Zone Substation – Raw Adjusted MD – abnormal conditions	If the station is under abnormal conditions at the time of coincident MD, the metered demand value stored in PI will reflect the abnormal condition. As the MD value is required to be adjusted to system normal conditions, the MD must be estimated.	The value is estimated with consideration of known load transfers/supply outages, the demand trend at the station/similar stations, the non-coincident MD in that year and diversity factor trends at the station/similar stations.	If the station is under abnormal conditions at the time of coincident MD, it is generally assumed that the coincident MD is equal to the non-coincident MD. If other available information does not support the above assumption, it is assumed that known transfers/supply outages and trending are an accurate basis for estimation of the raw adjusted coincident MD. The assumption used for SBY/SHM transfer in summer 2014 was that 3.1MW / 3.1MVA was transferred, therefore the observed actual MD was adjusted accordingly.	Estimate is based on available actual data. JEN is unaware of a better estimation methodology.

6. SERVICE & QUALITY

6.3 SUSTAINED INTERRUPTIONS TO SUPPLY

6.3.1 SUSTAINED INTERRUPTIONS TO SUPPLY

Actual information

Variable	Source and why actual	Methodology	Assumptions
Sustained interruptions to supply (2014)	Jemena's Outage Management System (OMS) is the repository for all outage information since 18 June 2010. The system contains outage dates and times, the number of customer affected, restoration dates, times, restoration stages and cause descriptions. As the sustained interruptions can be directly sourced from the OMS, we consider it to be 'actual information'.	The data used to calculate the reliability variables (KPI's) is extracted from OMS at the end of each month and is validated and cleansed to correct data errors. The cleansed data is loaded into the Customer Minutes Off Supply (CMOS) database. The reliability KPI's are then calculated. The cause descriptions in OMS are JEN cause descriptions. Each event cause has been verified against the event description and corrected in the CMOS database. They are then mapped to the "Reason for interruption" and the "Detail reason for interruption" where applicable. For vegetation related outages, the "Detailed reason for interruption" for each event has been verified against JEN's Electric Line Clearance Performance Report 2014 produced for the ESV and Councils. Unplanned SAIFI is reported as per 0.01 interruptions as per the definition in the 2014 report i.e. Unplanned interruptions divided by the relevant feeder category customers and divided by 0.01.	For single premise outages where the service fuse has blown and no clear identification of which element caused the fuse to operate and was not specified as cause not found, JEN has allocated the Reason for interruption to Asset failure and Detailed reason for interruption to LV.

Variable	Source and why actual	Methodology	Assumptions
		Please note that the back cast unplanned SAIFI data in Table 6.3.1 in JEN's response to the 2013 category analysis RIN is reported as per interruption i.e. Unplanned interruptions divided by the relevant feeder category customers.	