Jemena Electricity Networks (Vic) Ltd

Response to the Category Analysis Regulatory Information Notice

Basis of Preparation

Information for the 2019 regulatory year

Public

30 April 2020

Jemena Electricity Networks (Vic) Ltd

ABN 82 064 651 083
Level 16, 567 Collins Street
Melbourne VIC 3000

Postal Address

PO Box 16182
Melbourne VIC 3000
Ph: (03) 9713 7000
Fax: (03) 9173 7516

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 2019. RIN data templates and accompanying audit report and review report are due to the Australian Energy Regulator (**AER**) by 30 April 2020. 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

        c) actions JEN is taking to enable it to report actual information in the future.

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. Each section of this basis of preparation corresponds to align a worksheet 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.

DEFINITIONS OF ACTUAL AND ESTIMATED INFORMATION

6. Interpretation of the definition of actual and estimated information from the RIN, including the additional guidance provided by the AER in Attachment 7 of JEN's preliminary determination in October 2015, requires judgements to be made as to the appropriate classification of information including:

    - the extent to which the information is materially dependent on information recorded in JEN's business records; and
    - the degree of estimation involved and whether the information is contingent upon judgements and assumptions for which there are valid alternatives, which could lead to a materially different presentation.

7. Based on this, and consistent with the definition contained in the RIN, JEN has applied the following definition of actual information in its response to the RIN:

> *Information whose presentation is materially dependent on JEN's business records, and whose presentation is not contingent on judgements and assumptions for which there are valid alternatives, which could lead to a materially different presentation in response to the RIN.*

8. Where the presentation of information involves calculation and this information is presented as actual information, JEN considers that this information's presentation:

- is materially dependent on JEN's business records; and
- is not contingent on judgements and assumptions for which there are valid alternatives, which could lead to a materially different presentation.

9. Information is classified as estimated where it is not classified as actual.

10. The methodologies, assumptions and judgements made in respect of variables are described in the relevant sections throughout this basis of preparation document.

PROVISION OF ESTIMATED INFORMATION IN RESPONSE TO THE RIN

11. The RIN requires JEN to report actual data effective from 2016 onwards (barring a number of exclusions specified in section 1.6 of Appendix E of the RIN). This requirement to report actual data varies from the reporting obligations under the same RIN in 2014 and 2015, which permitted the reporting of estimated information.

12. On 17 September 2019, JEN advised that AER that while it continued to assess system and process changes to enable it to report actual data in the future, it will be unable to provide actual data in all required cases for the 2019 regulatory year.

13. On 18 September 2019, the AER advised JEN that it accepted JEN's need to provide some estimated data in its response to the RIN for 2019.

BEST ESTIMATES

14. Where JEN cannot populate an input cell in the information templates with actual information, it has provided its best estimate.

15. For each instance where JEN has provided estimated information in response to the RIN, this basis of preparation document provides the relevant explanations required by section 1.2 of Schedule 2 of the RIN, in addition to stating what actions JEN is taking to report actual data in the future.

ACTIONS TO REPORT ACTUAL DATA

16. JEN will continue to assess potential opportunities to move from information currently reported as estimated to reporting actual data in the future.

GLOSSARY

AER	Australian Energy Regulator
BO	Business Objects
CAM	Cost Allocation Methodology
CATS	Cross Application Time Sheet
CMOS	Customer Minutes Off Supply
CPI	Consumer Price Index
DAPR	Distribution Annual Planning Report
ELCMP	Electric Line Clearance Management Plan
ERP	Enterprise Resource Planning
ESV	Energy Safe Victoria
GIS	Geographic Information System
HBRA	Hazardous Bushfire Risk Area
HV	High Voltage
IMS	Investment Management System
JEM	Jemena Limited
JEN	Jemena Electricity Networks (Vic) Ltd
LBRA	Low Bushfire Risk Area
LV	Low Voltage
NEL	National Electricity Law
OMS	Outage Management System
PM	Plant Maintenance
PMO	Project Management Office
RIN	Regulatory Information Notice
UG	Underground
VMS	Vegetation Management System

2.1 EXPENDITURE SUMMARY

General Approach

JEN considers all information reported in 2.1 Expenditure Summary as actual information, as the totals are sourced from JEN's SAP system.

2.1.1 STANDARD CONTROL SERVICES CAPEX

Actual information

Variable	Source and why actual	Methodology	Assumptions
All variables in table	Standard Control Services Capex expenditure is actual information that is extracted from the SAP ERP system and which forms part of JEN's audited response to the Annual RIN.	JEN enhanced its Regulatory Reporting capability by developing a suite of reports that were designed to provide data that facilitates the population of the annual RIN templates. Project Cost information is extracted from SAP's business warehouse **(BW)** using a data extraction tool, Business Objects **(BO)** and exported into Excel. BO reports were developed based on a requirement to provide data that will populate the tables within these templates. The reports use underlying data models and queries to report the data. JEN executes the BO Reports that are associated with the templates, based on the report selection criteria. The report output provides the data required by the table in this template.	n/a
Replacement Expenditure (Repex)	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.2 Repex.	Refer to JEN's methodology for the tables within the templates as described above.	n/a

Variable	Source and why actual	Methodology	Assumptions
Connections	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.5 Connections.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Augmentation Expenditure (Augex)	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.3 Augex.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Non-network	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.6 Non-network Expenditure.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Capitalised Network Overheads	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.10(A) Overheads.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Capitalised Corporate Overheads	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.10(A) Overheads.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Balancing item	The balancing item is the outcome from the reconciliation made to SCS Capex reported in the Category Analysis RIN submissions. As the items making up the balance consist of actual items the data is considered actual.	The balancing item shown reflects the amounts of capex reported more than once within the Regulatory templates (which relate to Non-network; and Corporate and Network Overheads).	n/a
Capcons (Capital Contributions)	This information is sourced directly from JEN's Annual RIN.	This data is derived from Annual RIN template '8.2.1 Capex by purpose – Standard Control Services'.	n/a

2.1.2 STANDARD CONTROL SERVICES OPEX

Actual Information

Variable	Source and why actual	Methodology	Assumptions
All variables in table	Standard Control Services Opex expenditure is actual information that is extracted from the SAP ERP system and which forms part of JEN's audited response to the Annual RIN.	JEN enhanced its Regulatory Reporting capability by developing a suite of reports that were designed to provide data that facilitates the population of the annual RIN templates. Project Cost information is extracted from SAP's BW using a data extraction tool, BO and exported into Excel. BO reports were developed based on a requirement to provide data that will populate the tables within these templates. The reports use underlying data models and queries to report the data. JEN executes the BO Reports that are associated with the templates, based on the report selection criteria. The report output provides the data required by the table in this template.	n/a
Vegetation Management	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.7 Vegetation Management.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Maintenance	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.8 Maintenance.	Refer to JEN's methodology for the tables within the templates as described above.	n/a

Variable	Source and why actual	Methodology	Assumptions
Emergency Response	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.9 Emergency Response.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Non-network	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.6 Non-network expenditure.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Network Overheads	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.10(A) Overheads.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Corporate Overheads	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.10(A) Overheads.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Balancing item	The balancing item is the outcome from the reconciliation made to SCS Opex reported in the Category Analysis RIN submissions. As the items making up the balance consist of actual items the data is considered actual.	The balancing item shown reflects the amounts of opex reported more than once within the Regulatory templates (which relate to Non-network; Corporate and Network Overheads; and Maintenance).	n/a

2.1.3 ALTERNATIVE CONTROL SERVICES CAPEX

Actual information

Variable	Source and why actual	Methodology	Assumptions
All variables in table	Alternate Control Services Capex expenditure is actual information that is extracted from the	JEN enhanced its Regulatory Reporting capability by developing a suite of reports that were designed to	n/a

Variable	Source and why actual	Methodology	Assumptions
	SAP ERP system and which forms part of JEN's audited response to the Annual RIN.	provide data that facilitates the population of the annual RIN templates. Project Cost information is extracted from SAP's BW using a data extraction tool, BO and exported into Excel. BO reports were developed based on a requirement to provide data that will populate the tables within these templates. The reports use underlying data models and queries to report the data. JEN executes the BO Reports that are associated with the templates, based on the report selection criteria. The report output provides the data required by the table in this template.	
Connections	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.5 Connections.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Capitalised Network Overheads	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.10(A) Overheads.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Capitalised Corporate Overheads	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.10(A) Overheads.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Metering	Refer to JEN's source of information for the templates as described above. The data reconciles with template 4.2 Metering.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Public lighting	Refer to JEN's source of information for the templates as described above. The data reconciles with template 4.1 Public lighting.	Refer to JEN's methodology for the tables within the templates as described above.	n/a

Variable	Source and why actual	Methodology	Assumptions
Fee and quoted	Refer to JEN's source of information for the templates as described above. The data reconciles with templates 4.3 Ancillary services – Fee based services and 4.4 Ancillary services – Quoted services.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Replacement Expenditure (Repex)	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.2 Repex.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Non-network	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.6 Non-network Expenditure.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Balancing item	The balancing item is the outcome from the reconciliation made to ACS Capex reported in the Category Analysis RIN submissions. As the items making up the balance consist of actual items the data is considered actual.	The balancing item shown reflects the amounts of capex reported more than once within the Regulatory templates (which relate to Connections; Fee based & Quoted; Metering; and Non-network).	n/a

2.1.4 ALTERNATIVE CONTROL SERVICE OPEX

Actual information

Variable	Source and why actual	Methodology	Assumptions
All variables in table	Alternate Control Services Opex expenditure is actual information that is extracted from the SAP ERP system and which forms part of JEN's audited response to the Annual RIN.	JEN enhanced its Regulatory Reporting capability by developing a suite of reports that were designed to provide data that facilitates the population of the annual RIN templates.	n/a

Variable	Source and why actual	Methodology	Assumptions
		Project Cost information is extracted from SAP's BW using a data extraction tool, BO and exported into Excel. BO reports were developed based on a requirement to provide data that will populate the tables within these templates. The reports use underlying data models and queries to report the data. JEN executes the BO Reports that are associated with the templates, based on the report selection criteria. The report output provides the data required by the table in this template.	
Network Overheads	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.10(A) Overheads.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Corporate Overheads	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.10(A) Overheads.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Metering	Refer to JEN's source of information for the templates as described above. The data reconciles with template 4.2 Metering.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Public lighting	Refer to JEN's source of information for the templates as described above. The data reconciles with template 4.1 Public lighting.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Fee and quoted	Refer to JEN's source of information for the templates as described above. The data reconciles with templates 4.3 Ancillary services – Fee based services and 4.4 Ancillary services – Quoted services.	Refer to JEN's methodology for the tables within the templates as described above.	n/a

Variable	Source and why actual	Methodology	Assumptions
Non-network	Refer to JEN's source of information for the templates as described above. The data reconciles with template 2.6 Non-network expenditure.	Refer to JEN's methodology for the tables within the templates as described above.	n/a
Balancing item	The balancing item is the outcome from the reconciliation made to ACS Opex reported in the Category Analysis RIN submissions. As the items making up the balance consist of actual items the data is considered actual.	The balancing item shown reflects the amounts of opex reported more than once within the Regulatory templates (which relate to Non-network; and Network and Corporate Overheads).	n/a

2.1.5 DUAL FUNCTION ASSETS CAPEX

Not applicable to JEN.

2.1.6 DUAL FUNCTION ASSETS OPEX BY CATEGORY

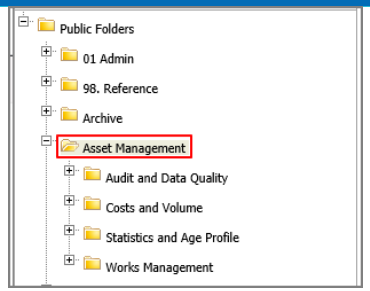
Not applicable to JEN.

2.2 REPEX

2.2.1 REPLACEMENT EXPENDITURE, VOLUMES AND ASSET FAILURES BY ASSET CATEGORY

Actual information

Variable	Source and why actual	Methodology	Assumptions
GENERAL COMMENTS (Applicable to Replacement Expenditure, volume and Asset failures – 2.2.1 & 2.2.2)	JEN SAP ERP and AMI System	SAP Business Objects (BO) reports have been developed to cater to the required details in this template. These reports extract data from the JEN Business Warehouse (BW) which source the data from the SAP ERP and AMI environments. Data models (joins, associations and merging of data) and queries (filtering of data) have been developed to associate the data from different sources to present in the format required in the template. The logic for the queries for each category has been detailed in the sections below. There are different buttons in the report for each category with different filter criteria. Each button is used to get the final numbers for each category to be reported in the template. Data load from SAP ERP and AMI into the business warehouse (BW) occurs every night as a batch job. The reports reside in BO Portal at the below location:	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
		 Each asset category within template 2.2.1 has two reports : 1. Base reports – ASM464 – costs and volumes by project 2. Exception reports – ASM474 – costs by project where corresponding equipment records are yet to be entered into JEN's ERP system (SAP) because the project has not been finalised. JEN has used the following methodology where corresponding equipment were not yet entered into SAP: 1. expert judgement based on engineering knowledge of the scope and nature of the work involved 2. assigned in proportion to the known costs based on the scope and nature of the work is similar OR 3. assigned in proportion to the known volumes based on the scope and nature of the work is similar (for Service Lines).	
Asset Replacements, Failures and Expenditure (all)	To determine the volume and expenditure of asset replacements & failures by Asset Group, the volume of asset replacement by Asset Category and expenditure recorded on the PM Orders / (Project cost for other –	The STPIS definitions of a Rural Short and Urban Feeder has been used, consistent with the definitions provided in the RIN.	The assumption for determining the asset replacements is documented in the relevant section of this basis of preparation.

Variable	Source and why actual	Methodology	Assumptions
	Recoverable Works, Damaged Assets) have 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 data is sourced from project cost line item reports from JEN's internal SAP ERP systems. JEN has completed upgrading its SAP ERP system in 2018 to improve the reporting capabilities in a number of areas.	The methodology for determining the asset replacements is documented in the relevant section of this basis of preparation.	
2.2.1 – ASSET FAILURE - VOLUMES **(For all of table except for Service Lines and Low Voltage Cables: <=1kV)** • Poles By: Highest Operating Voltage; Material Type; Staking (If Wood) • Pole Top Structures By: Highest Operating Voltage • Overhead Conductors By: Highest Operating Voltage; Number Of Phases (at HV) • Underground Cables By: Highest Operating Voltage • Transformers By: Mounting Type; Highest Operating Voltage ; Ampere Rating; Number Of Phases (at LV) • Switchgear By: Highest Operating Voltage; Switch Function	**Source of data**: The data is sourced from SAP ERP Notifications. For every failure that occurs, a related notification is raised in SAP ERP. The notifications for these assets are created against the specific equipment that requires replacement. This allows the attributes of each asset class to be analysed and reported on.	The following BO Report is run to extract the required details for all the categories. • **ASM462 JEN RIN Asset Failures (REPEX 2.2.1)** The notifications are filtered by: ➢ **"Notification date"** in the date range 01.01.2019 to 31.12.2019 [**Calendar year 2019**] ➢ Notification type = Z1, Z2 ➢ Notification Priority = 1 ➢ Associated Order Type = ZM10 ➢ Cause Code Group ➢ Object Part Code Group ➢ Equipment Type ➢ Equipment Characteristics ➢ Functional Location Characteristics	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
• Public Lighting By: Asset Type; Lighting Obligation • SCADA, Network Control And Protection Systems By: Function • Other By: DNSP Defined			
2.2.1 – ASSET FAILURE – SERVICE LINES & LOW VOLTAGE UNDERGROUND CABLES • Service Lines By: Connection Voltage; Customer Type; Connection Complexity • Underground Cables: <=1kV	**Source of data** Outage Management System (**OMS**) Service Lines and LV cable faults are not all captured in SAP as notifications, therefore OMS is used to obtain complete set of failures.	Data was extracted from OMS using the Cognos reporting tool monthly. Verification and correction of data is as per the procedures outlined in Section 3.1.1 to 3.1.4 of procedure JEN PR 0502 and stored in the CMOS (Customer Minutes off Supply) database. Service Lines – outage reports for the date range 01.01.2019 – 31.12.2019 (Calendar Year 2019) extracted from Cognos are filtered by the following Fault Cause categories (“Service – Electrical Failure” and “Service – Mechanical Failure”). Underground Cables (LV) – outage reports for the date range 01.01.2019 – 31.12.2019 (Calendar Year 2019) extracted from Cognos are filtered by the following Fault Cause categories (“Asset – Underground” and “Service – Other Cable System”).	No assumptions have been made.
2.2.1 - ASSET REPLACEMENTS • Poles By: Staking (If Wood)	**Source of data**: The data is sourced from SAP ERP PM Orders & Object Lists. For every replacement that occurs, a related PM Order is raised in SAP ERP. Once the work is complete the asset register is provided to GIS team with the details.	The following BO Report is run to extract the required details • **ASM463 - JEN RIN Assets Installed by Asset Category - Staked Poles (REPEX 2.2.1)**	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
	The asset details are updated in GIS which is automatically pushed to SAP.	The logic for determination of replacement volume is to extract PM Orders associated with projects linked to appropriate replacement activities (MAT Codes) and the attached object lists of those orders. The object list of the order provides the linked equipment which have been replaced. The characteristics of the equipment are extracted from SAP ERP to identify the category required by the template. The orders are filtered by: ➢ "**Date installed**" of the asset is in the date range 01.01.2019 to 31.12.2019 [**Calendar year 2019**] ➢ MAT Codes ➢ PM Order System Status = REL, TECO, CLSD ➢ Equipment Type ➢ Equipment Characteristics ➢ Functional Location Characteristics	
2.2.1 - ASSET REPLACEMENTS • Poles By: Highest Operating Voltage; Material Type • Pole Top Structures By: Highest Operating Voltage • Overhead Conductors By: Highest Operating Voltage; Number Of Phases (at HV) • Underground Cables By: Highest Operating Voltage • Service Lines By: Connection Voltage; Customer Type; Connection Complexity	**Source of data**: The data is sourced from SAP ERP PM Orders & Object Lists. For every replacement that occurs, a related PM Order is raised in SAP ERP. Once the work is complete the asset register is provided to GIS team with the details. The asset details are updated in GIS which is automatically pushed to SAP.	The following BO Report is run to extract the required details • **ASM435 - JEN RIN Assets Replaced by Asset Category (REPEX 2.2.1)** The logic for determination of replacement volume is to extract PM Orders associated with projects linked to appropriate replacement activities (MAT Codes) and the attached object lists of those orders. The object list of the order provides the linked equipment (associated equipment type) which have been replaced. The	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
• Transformers By: Mounting Type; Highest Operating Voltage; Ampere Rating; Number Of Phases (at LV) • Switchgear By: Highest Operating Voltage; Switch Function • Public Lighting By: Asset Type ; Lighting Obligation • SCADA, Network Control And Protection Systems By: Function		characteristics of the equipment are extracted from SAP ERP to identify the category required by the template. The orders are filtered by: ➢ "**Date Removed**" of the asset is in the date range 01.01.2019 to 31.12.2019 [**Calendar year 2019**] ➢ MAT Codes ➢ PM Order System Status = REL, TECO, CLSD ➢ Equipment Type ➢ Equipment Characteristics ➢ Functional Location Characteristics	
2.2.1 - ASSET REPLACEMENTS • Other By: DNSP Defined ➢ Capital/ Recoverable Works – Subtransmission Asset	**Source of data**: The data is sourced from SAP ERP PM Project & WBS. For capital/recoverable work a related WBS is available in SAP ERP. There is no related PM order raised for this and all the work progress is tracked using the WBS. Count of WBS will provide the final number to be reported in the template	The following BO Report is run to extract the required details • **ASM443 - JEN RIN Assets Replaced by Asset Category - Capital/Recoverable Works (REPEX 2.2.1)** There is a button in the report for Capital/Recoverable works with required filter criteria. This report is used to get the final number to be reported in the template. The count of WBS associated to projects based on the below filter will provide the final number to be reported in the template: ➢ "**WBS Creation Date**" is in the date range 01.01.2019 to 31.12.2019 [**Calendar year 2019**] ➢ MAT Codes = CRE,CRP,CRR,CRS,CRU,CRV ➢ WBS System status = REL, TECO, CLSD	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
2.2.1 - ASSET REPLACEMENTS • Other By: DNSP Defined ➢ Rectification of Damaged Assets – Recoverable	**Source of data**: The data is sourced from SAP ERP PM Orders. For every recoverable work to identify rectification of damaged assets, a related PM Order is raised in SAP ERP. Count of the orders will provide the final number to be reported in the template	The following BO Report is run to extract the required details • **ASM438 - JEN RIN Assets Replaced By Asset Category - Damaged Assets (REPEX 2.2.1)** There is a button in the report for Damaged Assets with required filter criteria. This report is used to get the final number to be reported in the template. The count of orders associated to relevant recoverable activity (MAT Code) based on the below filter will provide the final number to be reported in the template: ➢ "**Order Creation Date**" is in the date range 01.01.2019 to 31.12.2019 [**Calendar year 2019**] ➢ MAT Codes = CRB ➢ PM Order System Status = REL, TECO, CLSD	No assumptions have been made.

2.2.2 SELECTED ASSET CHARACTERISTICS

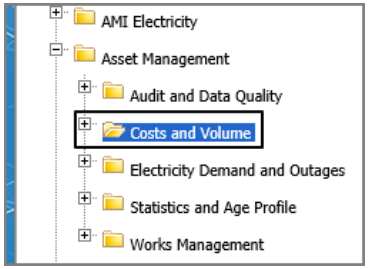
Actual information

Variable	Source and why actual	Methodology	Assumptions
2.2.2 – ASSETS VOLUME IN COMMISSION • Total Poles By: Feeder Type • Overhead Conductors By: Conductor Length By Feeder Type	**Source of data**: The data is sourced from SAP ERP in service equipment as of the report run date and their characteristics.	The following BO Report is run to extract the required details where: • **ASM428 JEN RIN Equipment In Service (REPEX 2.2.2)**	**For Poles**: There are no poles classified in CBD, Rural long categories.

Variable	Source and why actual	Methodology	Assumptions
• Overhead Conductors By: Conductor Length Material Type • Underground Cables By: Cable Length By Feeder Type • Transformers By: Total MVA		The logic for determination of volume in commission is to extract all in service equipment in SAP ERP based on the filter criteria described below. The characteristics of equipment are extracted from SAP ERP to identify the category required by the template. The equipment are primarily filtered by: ➢ "**Date Installed**" of the asset is in the date range 01.01.1900 to 31.12.2019 ➢ Equipment Type ➢ Equipment Status = INSV ➢ Equipment Characteristics ➢ Functional Location Characteristics	**Unassigned poles are distributed based on the Bushfire Area location**. **Values in the cells are summed in this order: Unassigned, HBRA, LBRA.** **For Transformers**: The MVA rating of the transformers booked to these jobs equals the MVA rating of the transformers removed.
2.2.2 - ASSET REPLACEMENTS • Total Poles By: Feeder Type • Overhead Conductors By: Conductor Length By Feeder Type • Overhead Conductors By: Conductor Length Material Type • Underground Cables By: Cable Length By Feeder Type • Transformers By: Total MVA	**Source of data**: The data is sourced from SAP ERP PM Orders & Object Lists. For every replacement that occurs, a related PM Order is raised in SAP ERP. Once the work is complete the asset register is provided to GIS team with the details. The asset details are updated in GIS which is automatically pushed to SAP.	The following BO Report is run to extract the required details where: • **ASM436 - JEN RIN Assets Replaced by Asset Characteristics (REPEX 2.2.2)** The logic for determination of replacement volume is to extract PM Orders associated with projects linked to appropriate replacement activities (MAT Codes) and the attached object lists of those orders. The object list of the order provides the linked equipment (associated equipment type) which have been replaced. The characteristics of equipment are extracted from SAP ERP to identify the category required by the template. The orders are filtered by:	**For Poles**: There are no poles classified in CBD, Rural long categories. **For Transformers**: The MVA rating of the transformers booked to these jobs equals the MVA rating of the transformers removed.

Variable	Source and why actual	Methodology	Assumptions
		➢ "**Date Removed**" of the asset is in the date range 01.01.2019 to 31.12.2019 [**Calendar year 2019**] ➢ MAT Codes ➢ PM Order System Status = REL, TECO, CLSD ➢ Equipment Type ➢ Equipment Characteristics ➢ Functional Location Characteristics	

2.2.1 - EXPENDITURE

Variable	Source and why actual	Methodology	Assumptions
GENERAL COMMENTS (Applicable to Replacement Expenditure)	JEN SAP ERP	The reports reside in BO Portal at the below location: 	
2.2.1 - EXPENDITURE • Poles By: Staking (If Wood)	**Source of data**:	The following BO Report is run to extract the required details	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
	The data is sourced from SAP ERP PM Orders, Order Costs & Object Lists. For every replacement that occurs, a related PM Order is raised in SAP ERP. Once the work is complete the asset register is provided to GIS team with the details. The asset details are updated in GIS which is automatically pushed to SAP. The cost incurred for completing the work is recorded on the order which eventually settles to WBS of the related project.	• **ASM465 - JEN RIN Staked Pole Replacement Cost (REPEX 2.2.1)** The logic for determination of expenditure is to extract PM Orders associated with projects linked to appropriate replacement activities (MAT Codes) and the attached object lists of those orders. The cost posted on the orders using the controlling documents are also extracted to be split by equipment type and characteristics. The object list of the order provides the linked equipment (associated equipment type) which have been replaced. The characteristics of equipment are extracted from SAP ERP to identify the category required by the template. The cost documents are filtered by: ➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**] ➢ "**Date Installed**" of the asset is in the date range 01.01.2019 to 31.12.2019 [**Calendar year 2019**] ➢ MAT Codes ➢ PM Order System Status = REL, TECO, CLSD ➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ Controlling Area = 3000 ➢ Equipment Type ➢ Equipment Characteristics ➢ Functional Location Characteristics	
2.2.1 - EXPENDITURE	**Source of data**:	The following BO Report is run to extract the required details.	No assumptions have been made.

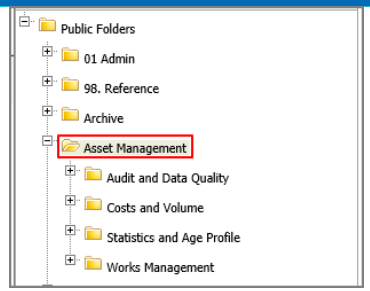
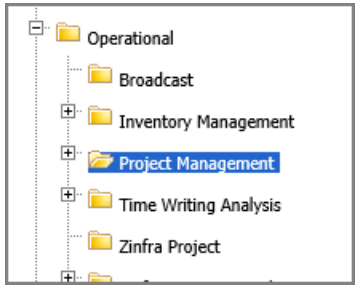
Variable	Source and why actual	Methodology	Assumptions
• Poles By: Highest Operating Voltage; Material Type • Pole Top Structures By: Highest Operating Voltage • Overhead Conductors By: Highest Operating Voltage; Number Of Phases (at HV) • Underground Cables By: Highest Operating Voltage • Service Lines By: Connection Voltage; Customer Type; Connection Complexity • Transformers By: Mounting Type; Highest Operating Voltage ; Ampere Rating; Number Of Phases (at LV) • Switchgear By: Highest Operating Voltage; Switch Function • Public Lighting By: Asset Type; Lighting Obligation • SCADA, Network Control And Protection Systems By: Function	The data is sourced from SAP ERP PM Orders, Order Costs & Object Lists. For every replacement that occurs, a related PM Order is raised in SAP ERP. Once the work is complete the asset register is provided to GIS team with the details. The asset details are updated in GIS which is automatically pushed to SAP. The cost incurred for completing the work is recorded on the order which eventually settles to WBS of the related project.	• **ASM464 - JEN RIN Assets Replacement Cost by Asset Category (REPEX 2.2.1)** The logic for determination of expenditure is to extract PM Orders associated with projects linked to appropriate replacement activities (MAT Codes) and the attached object lists of those orders. The cost posted on the orders using the controlling documents are also extracted to be split by equipment type and characteristics. The object list of the order provides the linked equipment which have been replaced. The characteristics of equipment are extracted from SAP ERP to identify the category required by the template. The cost documents are filtered by: ➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**] ➢ "**Date Removed**" of the asset is in the date range 01.01.1900 to 31.12.2019 ➢ MAT Codes ➢ PM Order System Status = REL, TECO, CLSD ➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ Controlling Area = 3000 ➢ Equipment Type ➢ Equipment Characteristics ➢ Functional Location Characteristics	

Variable	Source and why actual	Methodology	Assumptions
2.2.1 - ASSET REPLACEMENTS • Other By: DNSP Defined ➢ Capital/ Recoverable Works – Subtransmission Asset	**Source of data**: The data is sourced from SAP ERP PM Project & WBS cost. For capital/recoverable work a related WBS is available in SAP ERP. There is no related PM order raised for this and all the work progress is tracked using the WBS. Cost posted to the project needs to be reported in the template	The following BO Report is run to extract the required details: • **OPR464 - JENRIN - Asset Replacement Other Cost by Asset Category (REPEX 2.2.1)** There is a button in the report for Capital/Recoverable works with required filter criteria. This report is used to get the final number to be reported in the template. The cost posted to the project based on the below filter will provide the final number to be reported in the template: ➢ "**Posting Period**" of the Controlling document is in the date range 01.2019 to 12.2019 [**All periods of 2019**] ➢ MAT Codes = CRE,CRP,CRR,CRS,CRU,CRV ➢ WBS Service Offering = CPX, OPX	No assumptions have been made.
2.2.1 - ASSET REPLACEMENTS • Other By: DNSP Defined ➢ Rectification of Damaged Assets – Recoverable	**Source of data**: The data is sourced from SAP ERP PM Project & WBS cost. For capital/recoverable work a related WBS is available in SAP ERP. There is no related PM order raised for this and all the work progress is tracked using the WBS. Cost posted to the project needs to be reported in the template.	The following BO Report is run to extract the required details: • **OPR464 - JENRIN - Asset Replacement Other Cost by Asset Category (REPEX 2.2.1)** There is a button in the report for Damaged Assets with required filter criteria. This report is used to get the final number to be reported in the template. The cost posted to the project based on the below filter will provide the final number to be reported in the template:	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
		➢ "**Posting Period**" of the Controlling document is in the date range 01.2019 to 12.2019 [**All periods of 2019**] ➢ MAT Codes = CRB ➢ WBS Service Offering = CPX, OPX	

2.3 AUGEX

Variable	Source and why actual	Methodology	Assumptions
GENERAL COMMENTS (Applicable to all sections)	JEN SAP ERP System	SAP Business Objects (BO) reports have been developed to cater to the required details in this template. These reports extract data from the JEN Business Warehouse (BW) which source the data from the SAP ERP and AMI environments. Data models (joins, associations and merging of data) and queries (filtering of data) have been developed to associate the data from different sources to present in the format required in the template. The logic for the queries for each category has been detailed in the sections below. There are different buttons in the report for each category with different filter criteria. Each button is used to get the final numbers for each category to be reported in the template. Data load from SAP ERP and AMI into the business warehouse (BW) occurs every night as a batch job. The reports reside in BO Portal at the below location:	

Variable	Source and why actual	Methodology	Assumptions
		 	
Classification of Projects		JEN "Augex" projects are those classified by JEN's SAP project codes beginning with D** (i.e. DOA, DSA, DSH, DSI, DSJ, DSS, DZA, DZC), PRA, PQA and PSA. Augex project costs incurred in 2019 are extracted from SAP. The costs are then classified into the appropriate Augex categories (Table 2.3.4) based on project codes, except DSJ and PQA. Further breakdown and classification of DSJ and PQA projects is undertaken to separate the LV Feeders and Distribution Substation components.	Other asset 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). JEN considers these assumptions are reasonable to give information for capacity related projects in the categories requested.
Material Projects (over Threshold)		Projects are grouped into the appropriate categories (as described above) before the relevant materiality thresholds are applied, i.e. $5M for zone substation and sub-	Projects thresholds were applied on total nominal actual expenditure including overheads.

Variable	Source and why actual	Methodology	Assumptions
		transmission lines, $500k for HV feeders and $50k for LV feeders.	For projects that have not been completed (Table 2.3.3.2), total project cost estimated in business case or preliminary cost estimates are used.
Project Close		Project close is determined by project status in SAP, based on a system generated report listing all the projects closed in 2019.	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 as material projects that are not complete will have cost in table 2.3.3.2 but no volume in 2.3.3.1.

2.3(A) - 2.3.1 AUGEX ASSET DATA - SUBTRANSMISSION SUBSTATIONS, SWITCHING STATIONS AND ZONE SUBSTATIONS

JEN only had one material sub-transmission substations, switching stations and zone substation projects which were closed in 2019.

JEN had no non-material sub-transmission substations, switching stations and zone substation projects which were closed in 2019.

Variable	Source and why actual	Methodology	Assumptions
All information in table	**Source of data**: The data is sourced from SAP ERP PM Orders & Object Lists. For every augmentation that occurs, a related PM Order is raised in SAP ERP. Once the work is complete the asset register is provided to GIS team with the details. The asset details are updated in GIS which is automatically pushed to SAP.	The following BO Report is run to extract the required details for all the categories: • **ASM442 JEN RIN Assets Added/Upgraded (AUGEX 2.3.1, 2.3.2)** The projects and orders are filtered by: ➢ **"Project Closure Date"** in the date range 01.01.2019 to 31.12.2019 [**Calendar year 2019**] ➢ MAT Codes ➢ Equipment Type ➢ Equipment Characteristics	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
		➢ Equipment Status ➢ Project Status Where a BO Report wasn't able to extract the required details due to legacy project structures within SAP, manual direct extract from SAP ERP was undertaken to obtain the required details.	

2.3(A) - 2.3.2 - AUGEX ASSET DATA - SUBTRANSMISSION LINES

JEN only had one material subtransmission line, subtransmission line land purchase or easement projects which were closed in 2019

JEN had no non-material subtransmission line, subtransmission line land purchase or easement projects which were closed in 2019.

Variable	Source and why actual	Methodology	Assumptions
All information in table	**Source of data**: The data is sourced from SAP ERP PM Orders & Object Lists. For every augmentation that occurs, a related PM Order is raised in SAP ERP. Once the work is complete the asset register is provided to GIS team with the details. The asset details are updated in GIS which is automatically pushed to SAP. *Characteristic on the equipment "Equipment_Replaced" marks the old equipment number which was replaced*	The following BO Report is run to extract the required details for all the categories • **ASM442 JEN RIN Assets Added/Upgraded (AUGEX 2.3.1,2.3.2)** The projects and orders are filtered by ➢ **"Project Closure Date"** in the date range 01.01.2019 to 31.12.2019 [**Calendar year 2019**] ➢ MAT Codes ➢ Equipment Type ➢ Equipment Characteristics ➢ Equipment Status ➢ Project Status	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
	for the augmentation work and is used to check how many units were upgraded	Where a BO Report wasn't able to extract the required details due to legacy project structures within SAP, manual direct extract from SAP ERP was undertaken to obtain the required details.	

2.3(B) - 2.3.3 - AUGEX DATA - HV/LV FEEDERS AND DISTRIBUTION SUBSTATIONS

Variable	Source and why actual	Methodology	Assumptions
2.3.3 – Descriptor Metrics **Volume** • HV Feeder Augmentations - Overhead Lines • HV Feeder Augmentations - Underground Cables • LV Feeder Augmentations - Overhead Lines • LV Feeder Augmentations - Underground Cables • Distribution Substation Augmentations - Pole Mounted • Distribution Substation Augmentations - Ground Mounted • Distribution Substation Augmentations – Indoor	**Source of data**: The data is sourced from SAP ERP PM Orders & Object Lists. For every augmentation that occurs, a related PM Order is raised in SAP ERP. Once the work is complete the asset register is provided to GIS team with the details. The asset details are updated in GIS which is automatically pushed to SAP. *Characteristic on the equipment "Equipment Replaced" marks the old equipment number which was replaced for the augmentation work and is used to check how many units were upgraded*	The following BO Report is run to extract the required details for all the categories • **ASM424 - JEN RIN Assets Added/Upgraded (AUGEX 2.3.3)** The PM orders are filtered by: ➢ **"Installation Date"** in the date range 01.01.2019 to 31.12.2019 [**Calendar year 2019**] ➢ MAT Codes ➢ Equipment Type ➢ Equipment Characteristics ➢ Order status = REL, TECO, CLSD	No assumptions have been made.
2.3.3 – Descriptor Metrics **Expenditure** • HV Feeder Augmentations - Overhead Lines	**Source of data**: The data is sourced from SAP ERP PM Orders Costs and Project Costs. For every augmentation that occurs, a related	The following BO Reports are run to extract the required details for all the categories: • **ASM467 – JEN RIN - In-Flight Augmentation Cost Report**	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
• HV Feeder Augmentations - Underground Cables • HV Feeder Augmentations (non-material projects) • Distribution Substation Augmentations - Pole Mounted • Distribution Substation Augmentations - Ground Mounted • Distribution Substation Augmentations - Indoor	PM Order is raised in SAP ERP. Once the work is complete the asset register is provided to GIS team with the details. The asset details are updated in GIS which is automatically pushed to SAP. Costs are from both in-flight as well as closed projects/Orders. The cost incurred for completing the work is recorded on the order which eventually settles to WBS of the related project.	• **ASM468 - JEN RIN - Closed Project Augmentation Cost Report** The Project costs are filtered by: ➢ **"Reporting Period"** in the date range 01.2019 to 12.2019 [**Calendar year 2019**] ➢ MAT Codes ➢ Project Definition ➢ Project Validity Date ➢ Project Status = NOT DELE ➢ Cost Element Group = RIN C ➢ Cost Elements = [Exclude Overheads] ➢ Threshold Value = 500,000 (Material for HV Feeder) ➢ Threshold Value = 50,000 (Material for LV Feeder) ➢ Threshold Value = 9,999,999 (Non-Material) Total cost from In-flight projects and closed projects is added to get the final number.	
2.3.3 – Descriptor Metrics **Expenditure** • LV Feeder Augmentations - Overhead Lines • LV Feeder Augmentations - Underground Cables LV Feeder Augmentations (non-material projects)	**Source of data**: The data is sourced from SAP ERP PM Orders Costs and Project Costs. For every augmentation that occurs, a related PM Order is raised in SAP ERP. Once the work is complete the asset register is provided to GIS team with the details. The asset details are updated in GIS which is automatically pushed to SAP.	As above, with the additional steps to identify material LV feeder augmentation projects (greater than or equal to $50,000) described below: ➢ Most of JEN's LV feeder augmentation works are undertaken as part of the distribution substation augmentation works. Therefore, most DSJ and PQA projects contain both LV feeder and distribution substation augmentation. These are not separately classified in SAP.	In order to identify if the LV feeder augmentation works under DSJ and PQA projects are material, it is assumed that the business case data, cost estimate or scope of works for these projects accurately reflect the actual proportions of

Variable	Source and why actual	Methodology	Assumptions
	Costs are from both in-flight as well as closed projects/Orders. The cost incurred for completing the work is recorded on the order which eventually settles to WBS of the related project.	To separate the components, a split has been undertaken based on individual project business case data, cost estimate or scope of works where the project business case have not been completed.	distribution substation and LV feeder works.

2.3(B) - 2.3.4 - AUGEX DATA - TOTAL EXPENDITURE

Variable	Source and why actual	Methodology	Assumptions
2.3.4 – Descriptor Metrics **Expenditure** • Sub transmission Substations, Switching Stations, Zone Substations • Sub transmission Lines • HV Feeders - Land Purchases and Easements • Distribution Substations - Land Purchases And Easements • LV Feeders - Land Purchases And Easements • Other Assets	**Source of data**: The data is sourced from SAP ERP PM Orders Costs and Project Costs. The cost incurred for completing the work is recorded on the order which eventually settles to WBS of the related project	The following BO Reports are run to extract the required details for all the categories: • **OPR456 – JEN RIN - AUGEX Summary by MAT Code** The Project costs are filtered by: ➢ **"Reporting Period"** in the date range 01.01.2019 to 31.12.2019 [**Calendar year 2019**] ➢ MAT Codes ➢ Cost element group = RIN C ➢ Cost elements = [Exclude Overheads] ➢ Service offering = CPX, OPX ➢ WBS Elements = BAA*	No assumptions have been made.
2.3.4 – Descriptor Metrics **Expenditure**	**Source of data**: Refer to notes on Table 2.3.3.	The sum of relevant subcategories in Template 2.3.3.	No assumptions have been made.

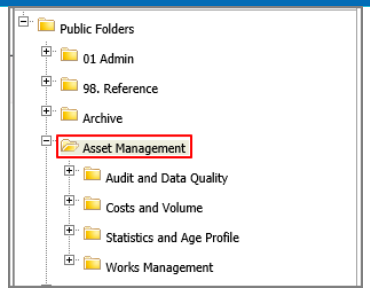
Variable	Source and why actual	Methodology	Assumptions
• HV Feeders • Distribution Substations • LV Feeders		For example, HV feeders in Template 2.3.4 would be the sum of HV (overhead), HV (underground) and HV (non-material) expenditure as reported in Table 2.3.3.	

2.5 CONNECTIONS

2.5.1 DESCRIPTOR METRICS

Actual information

Variable	Source and why actual	Methodology	Assumptions
GENERAL COMMENTS (Applicable to Connections – Residential, Commercial & Subdivision)	JEN SAP ERP system	SAP Business Objects (BO) reports have been developed to cater to the required details in this template. These reports extract data from the JEN Business Warehouse (BW) which source the data from the SAP ERP and AMI environments. Data models (joins, associations and merging of data) and queries (filtering of data) have been developed to associate the data from different sources to present in the format required in the template. The logic for the queries for each category has been detailed in the sections below. There are different buttons in the report for each category with different filter criteria. Each button is used to get the final numbers for each category to be reported in the template. Data load from SAP ERP and AMI into the business warehouse (BW) occurs every night as a batch job. The reports reside in BO Portal at the below locations:	

Variable	Source and why actual	Methodology	Assumptions
		 	
2.5.1 – RESIDENTIAL • Underground and Overhead connections • Mean days to connect residential customer with LV single phase connection • Volume of GSL breaches for residential customers • GSL Payments	**Source of data**: The data is sourced from SAP ERP & AMI Service Orders. Count of every service order with the appropriate filters gives the required result. Difference between Order start date and Order completion date gives the time to complete the order and average of completion time for all orders gives the mean days.	The following BO Report is run to extract the required details for all the categories: • **CSM406 - JEN RIN Connections UG/OH Metrics (CONN 2.5.1, 6.9.1, 3.6.7.1)** The service orders are filtered by: ➢ **"Order TECO date"** in the date range 01.01.2019 to 31.12.2019 [Calendar Year 2019] ➢ Order Type = ZRSW, ZRNC ➢ Order User Status = Only TECO & CLSD { Excluding [*CANC* (Cancelled), *CARQ* (Cancelled Request),	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
	GSL Breaches are calculated using the GSL Flag on the service order which is set programmatically by looking at the Order completion date and Order scheduled date. All GSL breach (GSL = "Y" and "N") for connection are validated by the Connection Point Compliance Team for next level details of the circumstances of the GSL breach to determine if it is a legitimate GSL breach.	*-NC (Not Completed), *-IR (Initial Request), *NEW (new Orders)] } ➢ Maintenance Activity Type = SW5, SW6, and SW7	
2.5.1 – RESIDENTIAL • Volume of customer complaints relating to connection services	Sourced from JEN's 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.
2.5.1 – RESIDENTIAL • Distribution substation installed total spend $0s • Augmentation HV total spend $0s	These two categories of residential connection (distribution substation installed and augmentation HV) are not applicable within JEN's Works Program definition. Therefore, no work of this nature has been carried out and no expenditure has been incurred.	N/A	N/A
2.5.1 – RESIDENTIAL • Augmentation LV total spend $0s	**Source of data**: The data is sourced from SAP PS Project cost. Appropriate MAT codes are used to extract the cost data.	The following BO Report is run to extract the required details for all the categories. The total amount is the sum of the spend by connections type and connection classification across the four reports : • **ASM467 - JENRIN - In-Flight Project Cost Analysis**	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
		The Projects are filtered by: ➢ "**Posting Date**" of the controlling document ➢ Cost Element Group ➢ Cost Elements ➢ Regulatory Categories = C45, C58, C59 ➢ Project Status = NOT CLSD ➢ Project Definition = Given set of projects • **ASM468 - JEN RIN Closed Project Costs Report** The Projects are filtered by: ➢ "**Posting Date**" of the controlling document ➢ Cost Element Group ➢ Cost Elements ➢ Regulatory Categories = C45 ➢ Project Status = CLSD ➢ Project Category = 2A, 2C ➢ Project Definition = Given set of projects • **ASM473 - JEN RIN - Connection Costs - 2.5.1 (1A - Routine Projects)** The Projects are filtered by: □ "Posting Date" of the controlling document □ Cost Element Group □ Cost Elements □ Regulatory Categories = C45	

Variable	Source and why actual	Methodology	Assumptions
		▯ Project Status = CLSD ▯ Project Category = 1A ▯ Project Definition = Given set of projects • **ASM478 - JEN RIN Cancelled Project Cost Report** The Projects are filtered by: ▯ "Posting Date" of the controlling document ▯ Cost Element Group ▯ Cost Elements ▯ Regulatory Categories = C45 ▯ Project Status = CLSD ▯ User Status = CANC ▯ Project Category = 2A, 2C ▯ Project Definition = Given set of projects	
2.5.1 – COMMERCIAL & SUBDIVISION • Underground and Overhead Connections	**Source of data**: The data is sourced from SAP ERP PM Orders. For underground: Count of potential services on the CONN BOX added to the order, the count of DIST TRANS (where there is no corresponding CONN BOX), RMU (where there is no corresponding	The following BO Report is run to extract the required details for all the categories: • **ASM447 - JEN RIN Connections UG/OH Metrics (CONN 2.5, 6.9,3.6.7.1)** The Orders are filtered by:	Once the connection has been done to CONN BOX it is considered to be completed connection even if the end customer has not been switched on/actively connected. Thus number of potential services is counted as

Variable	Source and why actual	Methodology	Assumptions
	DIST TRANS), the count of LV SWITCHES (where there is no CONN BOX, DIST TRANS or RMU) For overhead: Count of LV overhead conductors	➢ **"Date Installed"** in the date range 01.01.2019 to 31.12.2019 [Calendar Year 2019] ➢ MAT Codes ➢ Order User Status = REL, TECO and CLSD { Excluding [*CANC* (Cancelled), *CARQ* (Cancelled Request), *-NC (Not Completed), *-IR (Initial Request), *NEW (new Orders)] } ➢ Maintenance Activity Type ➢ Equipment Type ➢ Equipment Characteristics	the number of connections for commercial and subdivision.
2.5.1 – EMBEDDED GENERATION • Underground and Overhead Connections	The source of the embedded generation volumes is the SAP ISU EG BI Report. This data is based on actual embedded generation connections by date. The overhead/underground allocation is from JEN's GIS system.	Embedded generation connections are recorded in SAP ISU with the date installed. The Customer and System Planning team extracted all embedded generators, and their associated NMI and installed date, from SAP ISU (reported using EG BI Report). This report was then filtered on the '**First ReadDate AllTime'** for the desired year. Details on whether the embedded generator was connected **underground** or **overhead** were extracted from GIS Applications team by matching the NMI of EG connections with the LV service class in GIS. For connections with a blank LV service class the LV service class was identified by searching the connection point address and NMI on GIS application/Google Street View manually. HV connections are reported to the Customer and System Planning team. No HV connections were made during the desired reporting period.	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
2.5.1 – RESIDENTIAL, COMMERCIAL, SUBDIVISION • Distribution substation installed ➢ Number ➢ MVA Added	**Source of data**: The data is sourced from SAP ERP PM Orders. Count of Distribution transformer on the order and MVA Rating on those transformers give the required result for the template.	The following BO Report is run to extract the required details for all the categories:**ASM427 JEN RIN Connections Dist Sub & Augmentation Metrics (CONN 2.5.1)** The orders are filtered by: ➢ **"Date Installed"** in the date range 01.01.2019 to 31.12.2019 [Calendar Year 2019] ➢ MAT Codes ➢ Order User Status = REL, TECO and CLSD { Excluding [*CANC* (Cancelled), *CARQ* (Cancelled Request)} ➢ Equipment Type ➢ Equipment Characteristics	No assumptions have been made.
2.5.1 – COMMERCIAL, SUBDIVISION • Distribution substation installed total spend $0s • Augmentation HV total spend $0s • Augmentation LV total spend $0s • Cost per lot ($)	**Source of data**: The data is sourced from SAP PS Project cost. Appropriate MAT codes are used to extract the cost data.	The following BO Report is run to extract the required details for all the categories. The total amount is the sum of the spend by connections type and connection classification across the four reports : • **ASM467 - JENRIN - In-Flight Project Cost Analysis** The Projects are filtered by: "Posting Date" of the controlling document Cost Element Group Cost Elements Regulatory Categories = C45, C58, C59 Project Status = NOT CLSD	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
		Project Definition = Given set of projects • **ASM468 - JEN RIN Closed Project Costs Report** The Projects are filtered by: "Posting Date" of the controlling document Cost Element Group Cost Elements Regulatory Categories = C45 Project Status = CLSD Project Category = 2A, 2C Project Definition = Given set of projects • **ASM473 - JEN RIN - Connection Costs - 2.5.1 (1A - Routine Projects)** The Projects are filtered by: □ "Posting Date" of the controlling document □ Cost Element Group □ Cost Elements □ Regulatory Categories = C45 □ Project Status = CLSD □ Project Category = 1A □ Project Definition = Given set of projects	

Variable	Source and why actual	Methodology	Assumptions
		• **ASM478 - JEN RIN Cancelled Project Cost Report** The Projects are filtered by: □ "Posting Date" of the controlling document □ Cost Element Group □ Cost Elements □ Regulatory Categories = C45 □ Project Status = CLSD □ User Status = CANC □ Project Category = 2A, 2C □ Project Definition = Given set of projects Cost per lot is calculated by dividing total subdivision expenditure with total number of subdivision connections	
2.5.1 – RESIDENTIAL, COMMERCIAL, SUBDIVISION • Augmentation LV • Augmentation HV	**Source of data**: The data is sourced from SAP ERP PM Orders. Count of LV, HV, ST Cables & LV, HV, ST Conductors on the order and computed length of those give the required result for the template.	The following BO Report is run to extract the required details for all the categories: • **ASM427 JEN RIN Connections Dist Sub & Augmentation Metrics (CONN 2.5.1)** The orders are filtered by: ➢ **"Date Installed"** in the date range 01.01.2019 to 31.12.2019 [Calendar Year 2019] ➢ MAT Codes	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
		➢ Order User Status = REL, TECO and CLSD { Excluding [*CANC* (Cancelled), *CARQ* (Cancelled Request) } ➢ Equipment Type ➢ Equipment Characteristics	
2.5.1 – EMBEDDED GENERATION • Number • MVA Added • Augmentation LV • Augmentation HV	There were no augmentation works in this period.	N/A	N/A

2.5.2 - COST METRICS BY CONNECTION CLASSIFICATION

Variable	Source and why actual	Methodology	Assumptions
2.5.2 – VOLUME **RESIDENTIAL** • Simple connection LV • Complex connection LV • Complex connection HV	**Source of data**: The data is sourced from SAP ERP & AMI Service Orders. Count of every service order with the appropriate filters gives the required result. All Residential connections are Simple LV. There are no Complex residential connections as per JEN's Work Programs definition.	The following BO Report is run to extract the required details for all the categories. • **CSM406 - JEN RIN Connections UG/OH Metrics (CONN 2.5.1, 6.9.1, 3.6.7.1)** The service orders are filtered by: ➢ **"Order TECO date"** in the date range 01.01.2019 to 31.12.2019 [Calendar Year 2019] ➢ Order Type = ZRSW, ZRNC ➢ Order User Status = Only TECO & CLSD { Excluding [*CANC* (Cancelled), *CARQ* (Cancelled Request),	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
		*-NC (Not Completed), *-IR (Initial Request), *NEW (new Orders)] } ➢ Maintenance Activity Type	
2.5.2 – VOLUME **COMMERCIAL** • Simple connection LV • Complex connection HV (customer connected at LV, minor HV works) • Complex connection HV (customer connected at LV, upstream asset works) • Complex connection HV (customer connected at HV) • Complex connection sub-transmission **SUBDIVISION** • Complex connection LV • Complex connection HV (no upstream asset works) • Complex connection HV (with upstream asset works)	**Source of data**: The data is sourced from SAP ERP PM Orders and PS Project associated with it. For underground: Count of potential services on the CONN BOX added to the order, the count of DIST TRANS (where there is no corresponding CONN BOX), RMU (where there is no corresponding DIST TRANS), the count of LV SWITCHES (where there is no CONN BOX, DIST TRANS or RMU) For overhead: Count of LV overhead conductors Field "Connection Type" on the project will identify the type of the connection.	The following BO Report is run to extract the required details for all the categories • **ASM447 - JEN RIN Connections UG/OH Metrics (Commercial and Subdivision) (CONN 2.5**) The orders are filtered by: ➢ **"Date Installed"** in the date range 01.01.2019 to 31.12.201 [Calendar Year 2019] ➢ MAT Codes ➢ Order User Status = REL, TECO and CLSD { Excluding [*CANC* (Cancelled), *CARQ* (Cancelled Request) } ➢ Equipment Type ➢ Equipment Characteristics	No assumptions have been made.
2.5.2 - EXPENDITURE **RESIDENTIAL** • Simple connection LV • Complex connection LV • Complex connection HV **COMMERCIAL**	**Source of data**: The data is sourced from SAP PS Project cost. Appropriate MAT codes are used to extract the cost data.	The following BO Report is run to extract the required details for all the categories. • **OPR412 - JENRIN - Cost Metrics by Connection** The Projects are filtered by: ➢ "**Posting Date**" of the controlling document	No assumptions have been made.

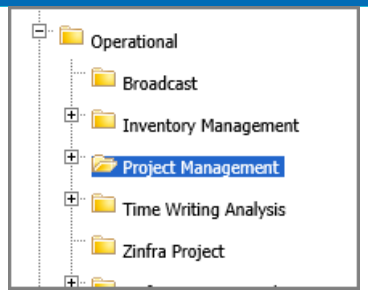
Variable	Source and why actual	Methodology	Assumptions
• Simple connection LV • Complex connection HV (customer connected at LV, minor HV works) • Complex connection HV (customer connected at LV, upstream asset works) • Complex connection HV (customer connected at HV) • Complex connection sub-transmission **SUBDIVISION** • Complex connection LV • Complex connection HV (no upstream asset works) • Complex connection HV (with upstream asset works)		➢ Cost Element Group ➢ Cost Elements ➢ Regulatory Categories = C45, C58, C59 ➢ Service Offering = CPX, OPX ➢ WBS Element = BAA*	
EMBEDDED GENERATION • Simple connection LV • Complex connection HV (small capacity) • Complex connection HV (large capacity)	There is no cost recorded in this template for JEN for embedded generation connections. Expenditure for 'Embedded Generation – Simple connection LV' is captured in Template 4.3 under 'Routine connections <100 amps'. Those costs relate to meter reconfigurations and are pooled with other routine connection costs.	N/A	No assumptions have been made.

2.6 NON-NETWORK EXPENDITURE

2.6.1 NON-NETWORK EXPENDITURE

Actual information

Variable	Source and why actual	Methodology	Assumptions
GENERAL COMMENTS	JEN SAP ERP system	SAP Business Objects (BO) reports have been developed to cater to the required details in this template. These reports extract data from the JEN Business Warehouse (BW) which source the data from the SAP ERP and AMI environments. Data models (joins, associations and merging of data) and queries (filtering of data) have been developed to associate the data from different sources to present in the format required in the template. The logic for the queries for each category has been detailed in the sections below. There are different buttons in the report for each category with different filter criteria. Each button is used to get the final numbers for each category to be reported in the template. Data load from SAP ERP and AMI into the business warehouse (BW) occurs every night as a batch job. The reports reside in BO Portal at the below location:	

Variable	Source and why actual	Methodology	Assumptions
			
2.6.1 - OPEX • IT & Communications ➢ Non-recurrent expenditure • Buildings and property ➢ Total buildings and property expenditure	**Source of data**: The data is sourced from SAP ERP Projects costs.	The following BO Report is run to extract the required details: • **OPR401 - JEN RIN - Base Analytical Report** The logic for determination of expenditure is to extract projects linked to appropriate maintenance (MAT Codes). The MAT codes define and categorize the activity into the required rows of the template. The Cost documents are filtered by: ➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**] ➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ MAT Codes = APP (buildings), AOC (IT & Comms) ➢ Controlling Area = 3000 ➢ Cost Element Group = RIN C ➢ Cost Elements = [Exclude Settlement-Fleet] ➢ Service Offering = OPX	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
2.6.1 - OPEX • Motor vehicles ➢ Car ➢ Light commercial vehicle ➢ Elevated work platform (LCV) ➢ Elevated work platform (HCV) ➢ Heavy commercial vehicles	**Source of data**: The data is sourced from SAP ERP Projects costs.	The following BO Report is run to extract the required details: • **OPR401 - JEN RIN – Base Analytical Report** The logic for determination of expenditure is to extract projects linked to appropriate maintenance (MAT Codes). MAT codes related to Unregulated Services are excluded. The MAT codes define and categorize the activity into the required rows of the template. The Cost documents are filtered by: ➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**] ➢ Company 415 ➢ Controlling Area = 3000 ➢ Cost Element = 9150500011 ➢ Service Offering = OPX Partner activity type is used to map the cost to the vehicle type for cost allocation.	No assumptions have been made.
2.6.1 - CAPEX • IT & Communications ➢ Client device expenditure ➢ Recurrent expenditure ➢ Non-recurrent expenditure • Buildings and property	**Source of data**: The data is sourced from SAP ERP Projects costs. WBS has a custom field to identify the cost as recurrent or non-recurrent.	The following BO Report is run to extract the required details: • **OPR401 - JEN RIN - Base Analytical Report** The logic for determination of expenditure is to extract projects linked to appropriate maintenance (MAT Codes). The MAT codes define and categorize the activity into the required rows of the template.	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
➢ Total buildings and property expenditure • Other		The Cost documents are primarily filtered by: ➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**] ➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ MAT Codes = GPA (buildings), GID, GII, GIN (IT & Comms), GEA (Other) ➢ Controlling Area = 3000 ➢ Cost Element Group = RIN C ➢ Service Offering = CPX JEN implemented a mandatory field in IT DAX projects in SAP to capture the nature of the project as Client device, non-recurrent or recurrent. Using OPR401, the list of JEN IT projects was obtained and the corresponding partner DAX project was populated. From the DAX projects using the custom field, JEN was able to identify the Capex costs incurred by required AER category.	
2.6.1 - CAPEX • Motor vehicles ➢ Car ➢ Light commercial vehicle ➢ Elevated work platform (LCV) ➢ Elevated work platform (HCV) ➢ Heavy commercial vehicles	**Source of data**: The data is sourced from SAP ERP Projects costs.	The following BO Report is run to extract the required details: • **ASM401 - Motor Vehicle (CAPEX)** The logic for determination of expenditure is to extract projects linked to appropriate maintenance (MAT Codes). The MAT codes define and categorize the activity into the required rows of the template. The Cost documents are filtered by:	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
		➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**] ➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ MAT Codes = GVA, Controlling Area = 3000 The acquisitions report is run in SAP to get the details of the type of vehicle which is then classified as Car, LCV, HCV or EWP.	

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate	Actions to report actual information in future
2.6.1 IT and Communications **Opex** ***Client Devices***	This information is sourced from SAP ERP Projects costs. SAP does not capture data in the detailed categories required by the RIN. A management estimate for this category has been provided.	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 based on various cost drivers. The level of detail necessary to distinguish between Recurrent and Client Device expenditure has not been recorded. Therefore, JEN's experienced IT personnel make the assumption that all recurrent IT opex that is estimated as Client Device	JEN assumes that client device expenditure is consistent year on year as a percentage of overall recurrent IT expenditure. JEN also assumes that the cost incurred from the period Jul 2012 to Jun 2013 is representative of the split.	JEN is not aware of a superior estimation technique.	JEN is exploring system enhancements to allow the recording of IT opex types as per the prescribed categories (i.e. recurrent, non-recurrent, client device expenditure). This work also entails process changes to empower its relevant staff with the knowledge to understand and record expenditure against these activity classifications, thereby removing the need to use judgement. JEN will continue to improve the process of capturing the costs in the relevant regulatory category.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate	Actions to report actual information in future
		related are to be classified under this category.			
2.6.1 IT and Communications **Opex** ***Recurrent Expenditure***	This information is sourced from SAP ERP Projects costs. SAP does not capture data in the detailed categories required by the RIN. A management estimate for this category has been provided.	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 based on various cost drivers. The level of detail necessary to distinguish between Recurrent and Client Device expenditure has not been recorded. Therefore, JEN's experienced IT personnel make the assumption that all recurrent IT opex, excluding Client Devices and Non-Recurrent, are to be classified under this category.	JEN assumes that recurrent expenditure (excluding client device expenditure) is consistent year on year as a percentage of overall recurrent IT expenditure. JEN also assumes that the cost incurred from the period Jul 2012 to Jun 2013 is representative of the split.	JEN is not aware of a superior estimation technique.	JEN is exploring system enhancements to allow the recording of IT opex types as per the prescribed categories (i.e. recurrent, non-recurrent, client device expenditure). This work also entails process changes to empower its relevant staff with the knowledge to understand and record expenditure against these activity classifications, thereby removing the need to use judgement. JEN will continue to improve the process of capturing the costs in the relevant regulatory category.

2.6.2. ANNUAL DESCRIPTOR METRICS – IT & COMMUNICATIONS EXPENDITURE

Actual information

Variable	Source and why actual	Methodology	Assumptions
Employee Numbers	This information is considered actual information as it is sourced directly from the employee numbers reported under Template 2.11 Labour.	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.	No assumptions have been made.

User Numbers	This information is considered actual information as the user numbers reported under this template are those employees who use a device (devices as described below).	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. An active list of employees that have access to any device described below is maintained. The number of employees listed as having access is considered users under this category.	No assumptions have been made.
Number of Devices	Number of devices reported in this template is the actual figures for the reporting period. The figure reported is a composite of all of the following maintained in the list of devices and users: • Personal computers (laptop and desktop) • Tablets • Smartphones	The number of devices reported in this template for desktops, laptops, tablet machines and smartphones are derived from the active list of devices and users maintained.	No assumptions have been made.

2.6.3 - ANNUAL DESCRIPTOR METRICS - MOTOR VEHICLES

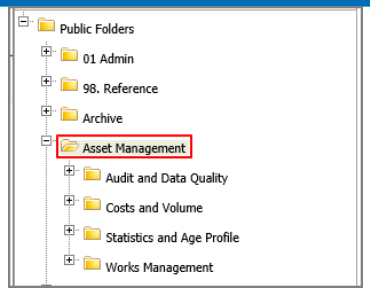
Variable	Source and why actual	Methodology	Assumptions
Car Light Commercial Vehicle Elevated Work Platform (LCV) Elevated Work Platform (HCV) Heavy Commercial Vehicle • Average kilometres travelled	**Source of Data**: The data is sourced from SAP ERP Measurement Documents. Measurement documents record the kilometres travelled by each vehicle which is used for the calculation	The following BO Report is run to extract the required details: • **ASM460 JEN RIN Non-Network (Motor Vehicles Average kms)** The Measurement documents are filtered by: ➢ "**Measurement Date**" of the document is in between 01.01.2019 to 31.12.2019	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
		➢ Equipment types = F_PV; F_EWP; F_HCV; F_LCV ➢ Equipment Characteristic = Owner = JEN ➢ Equipment Category = F ➢ Measurement Point Characteristic = F_KILOMETERS ➢ Measurement Point – Position = DISTANCE	
Car Light Commercial Vehicle Elevated Work Platform (LCV) Elevated Work Platform (HCV) Heavy Commercial Vehicle • Proportion of total fleet expenditure allocated as regulatory expenditure	All fleet expenditure is allocated as regulatory expenditure, and therefore the proportion of total fleet expenditure is 100%.	N/A	No assumptions have been made.
Car Light Commercial Vehicle Elevated Work Platform (LCV) Elevated Work Platform (HCV) Heavy Commercial Vehicle • Number purchased • Number in fleet	**Source of Data**: The data is sourced from SAP ERP equipment. Start-up date of the equipment denotes the acquisition of the vehicle.	The following BO Report is run to extract the required details: • **ASM440 JEN RIN Non-Network (Motor Vehicle 2.6.3)** The equipment are filtered by: ➢ "**Start-up date**" of the equipment is in the period of 01.01.2019 to 31.12.2019 [**Calendar year 2019**] (*For purchased*) ➢ "**Start-up date**" of the equipment is in the period of 01.1900 to 31.12.2019 [**Calendar year 2019**] (*For number in fleet*) ➢ Equipment Types = F_PV; F_EWP; F_HCV; F_LCV ➢ Equipment Characteristic = Owner = JEN ➢ Equipment Category = F	No assumptions have been made.
Car Light Commercial Vehicle	**Source of Data**:	The following BO Report is run to extract the required details:	No assumptions have been made.

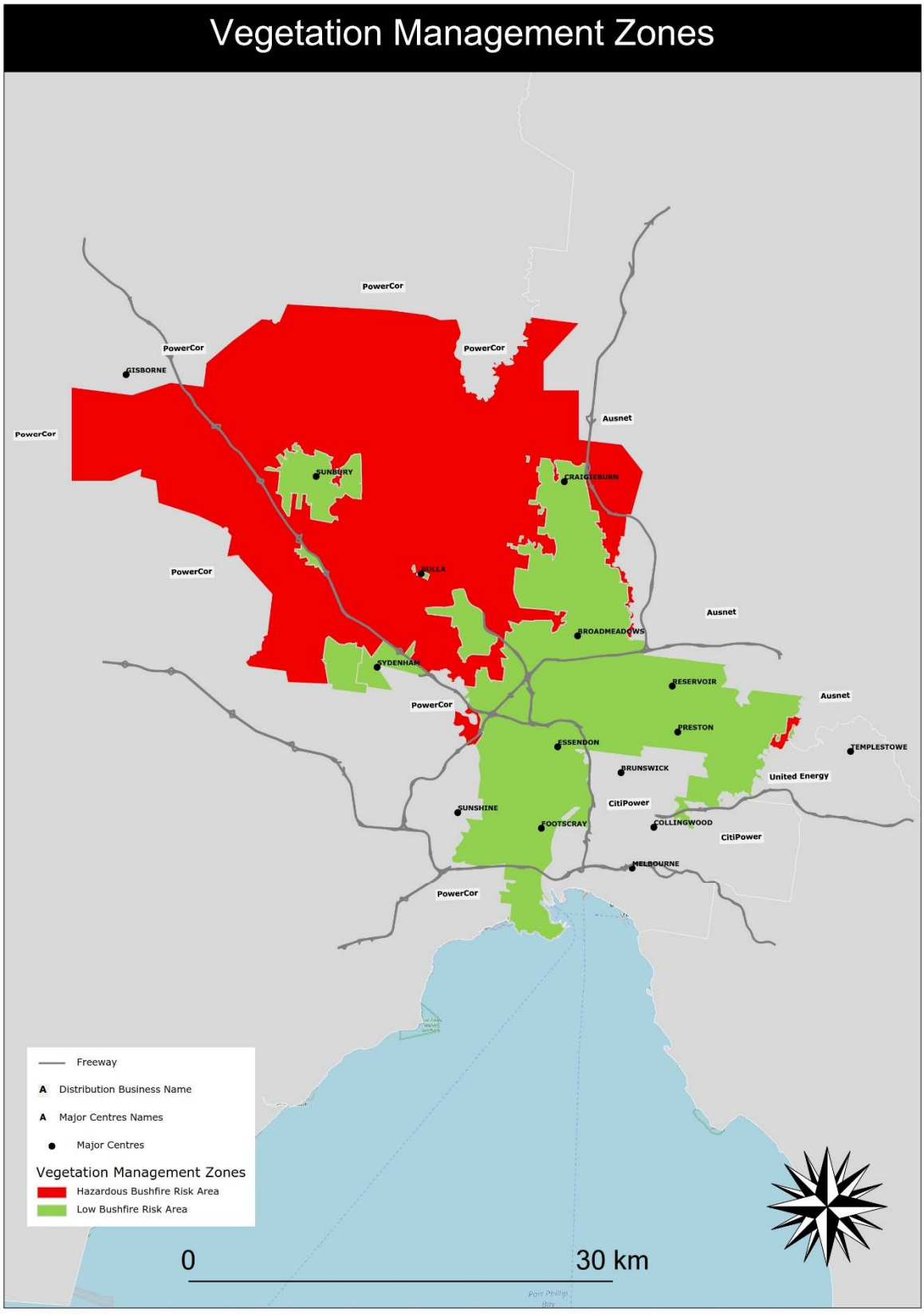
Variable	Source and why actual	Methodology	Assumptions
Elevated Work Platform (LCV) Elevated Work Platform (HCV) Heavy Commercial Vehicle • Number leased	The data is sourced from SAP ERP Equipment. Lease start date of the equipment denotes the date when the lease of the vehicle started.	• **ASM455 JEN RIN Non-Network (Leased Motor Vehicle 2.6.3)** The equipment are filtered by: ➢ "**Lease start date**" of the equipment is in the period of 01.01.2019 to 31.12.2019 ➢ Equipment Types = F_PV; F_EWP; F_HCV; F_LCV ➢ Equipment Characteristic "Owner" = JEN ➢ Equipment Category = F ➢ Equipment Characteristic "Ownership Type" = FINANCED	

2.7 VEGETATION MANAGEMENT

Variable	Source and why actual	Methodology	Assumptions
GENERAL COMMENTS (Applicable to all sections)	JEN GIS system	SAP Business Objects (BO) reports have been developed to cater to the required details in this template. These reports extract data from the JEN Business Warehouse (BW) which source the data from the SAP ERP and AMI environments. Data models (joins, associations and merging of data) and queries (filtering of data) have been developed to associate the data from different sources to present in the format required in the template. The logic for the queries for each category has been detailed in the sections below. There are different buttons in the report for each category with different filter criteria. Each button is used to get the final numbers for each category to be reported in the template Data load from SAP ERP and AMI into the business warehouse (BW) occurs every night as a batch job. The reports reside in BO Portal at the below locations:	

Variable	Source and why actual	Methodology	Assumptions
			

A map of JEN's network and its bushfire risk zones is shown below. Vegetation management prescribed in regulation is governed by these zones.


Vegetation Management Zones
PowerCor
PowerCor
PowerCor
GISBORNE
PowerCor
Ausnet
SUNBURY
CRAIGIEBURN
PowerCor
BULLA
Ausnet
BROADMEADOWS
SYDENHAM
RESERVOIR
Ausnet
PowerCor
PRESTON
ESSENDON
TEMPLESTOWE
BRUNSWICK
United Energy
CitiPower
SUNSHINE
FOOTSCRAY
COLLINGWOOD
CitiPower
MELBOURNE
PowerCor
Freeway
A Distribution Business Name
A Major Centres Names
Major Centres
Vegetation Management Zones
Hazardous Bushfire Risk Area
Low Bushfire Risk Area
0
30 km

2.7.2 EXPENDITURE METRICS BY ZONE

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

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 2015 Electricity Safety Management Scheme Electricity Safety (Installations) Regulations 2009 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

Requirement	Response
	HSP 05-13 Working at Heights 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 2015 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 danger period (Typically 31 March the following year). This has resulted in a significant increase in resources to both assess and cut vegetation until a full transition from the 2010 regulations was achieved. In 2019 the program plateaued in the transition cycle; indicating a completion of the transition cycle. **Habitat Trees** The 2015 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 containing threatened fauna is identified, 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 2015 Regulations this was changed and a 60 day window for trees to be actioned in was introduced. 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 councils maintain their trees in accordance with the Electricity Safety Act and subordinate Regulations. The regulations now require that vegetation management responsibility formerly ascribed to entities such as VicRoads, Metro Rail, Melbourne Water, etc. is now the responsibility of JEN. JEN also manages Other Responsible Person, private electric lines and service lines management in this program and follows up ORPs with non-compliances to ensure they clear their trees from overhead electric lines. JEN 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. **Additional requirements introduced under the Electricity Safety (Electric Line Clearance) Regulations 2015 (2015 ELC regulations)** There were three (3) material changes in the 2015 ELC regulations for JEN. These are the a), compliance with the Amenity Tree Standard AS4373, b) additional notification and consultation requirements, and c) compliance with the requirement to provide assistance to councils. The changes in the obligations relating to amenity tree cutting practices will require JEN to incur additional costs to engage or train more qualified labour and changes in cutting equipment to comply with AS4373.

Requirement	Response
	Additional notification and consultation obligations introduce an increase in costs which are driven both by the increase in the number of notices JEN must send out and additional information JEN must put in each notice. Each notice requires additional work to comply with the 2015 ELC regulations such as including a diagram of specific tree details, including a dispute resolution procedure and researching whether a tree is of cultural, environmental, historical, ecological or aesthetic significance. It is now a mandatory requirement for JEN to provide assistance to local councils in relation to technical information about the overhead line (i.e. sag and sway dimensions) and information on safe cutting methods. All three new requirements are expected to increase in cost over the next few years as councils and JEN develop processes to comply with these step changes in the 2015 ELC regulations. **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 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.*

Requirement	Response
	Energy Safe Victoria (**ESV**) requires 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 recommendations made directly targeting the major electricity companies in Victoria. Of these three were vegetation related, listed below as Recommendations 30, 31 and 34. ESV used the mandate of Recommendation 34 to strengthen Acts and Regulations in their jurisdiction, resulting in additional cost to JEN.

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

2.7.1 DESCRIPTOR METRICS BY ZONE

Actual information

Variable	Source and why actual	Methodology	Assumptions
2.7.1 Zone 1 & Zone 2 (LBRA/HBRA) • Route line length within zone • Number of maintenance spans • Total length of maintenance spans • Average number of trees per maintenance span	**Source of data**: The data is sourced from GIS which gets its data from VMS for certain metrics like route length, trees cut, dates of cutting etc. The data from GIS is then loaded via a batch file into the business warehouse for reporting	The following BO Report is run to extract the required details for all the categories: • **ASM451 JEN RIN Vegetation Management (Descriptor Metrics by zone 2.7.1)** This report extracts data from the business warehouse where it is loaded from the GIS. GIS has following rules to determine the various metrics: ➢ 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	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
		determined whether the feeder is rural or urban), and whether the span is in a HBRA or LBRA. This data is loaded into GIS from VMA and transferred to the data warehouse. ➢ GIS has logic built in to calculate the route line length and total length of the maintenance spans which is transferred to the business warehouse through batch file. It also provides information of all zones for the spans which allows user to identify inspected spans.	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.
2.7.1 Length of vegetation corridors	JEN has no recorded vegetation corridors.	N/A.	N/A.
2.7.1 Average frequency of cutting cycle	This variable is reported as actual information for 2019 because the data can be directly sourced from the 2019 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 2019.	No assumptions have been made.

2.7.2 – EXPENDITURE METRICS BY ZONE

Variable	Source and why actual	Methodology	Assumptions
2.7.2 LBRA/HBRA • Tree trimming (excluding hazard trees) • Hazard tree cutting • Ground clearance	**Source of the data:** The source of the data is SAP ERP PM Order cost. Order and operation details are provided in	The following BO Report is run to extract the required details for all the categories: • **OPR452 JEN RIN Order Costs - Veg Management Report**	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
• Vegetation corridor clearance • Inspection • Audit • Contractor liaison expenditure • Tree replacement program costs • Other vegetation management costs not specified in sheet	the report for the user to analyse and categorize the cost	The report extracts all orders, operations and related costs based on the below filter criteria: • "**Reporting period date**" in the interval 01.2019 to 12.2019 [Calendar year 2019] • MAT Code = NGA • Service Offering = CPX, OPX • Cost Element Group = RIN C • Cost Elements = Exclude Overheads • Business Transaction = NOT KOAO [Exclude settlements] User reviews the orders and operations details (with text) to pick the allocated cost to the required RIN category. Expenditure is allocated by bushfire area based on the number of spans assessed in each area.	

2.7.3 – DESCRIPTOR METRICS ACROSS ALL ZONES - UNPLANNED VEGETATION EVENTS

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 the AER in accordance with the F-factor scheme requirements. This data is considered actual because it is materially dependent on JEN's business records.	In the RIN table prepared for 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 two 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.

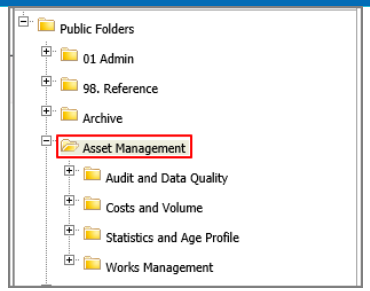
Variable	Source and why actual	Methodology	Assumptions
Number of fire starts caused by vegetation blow-ins and fall-ins (NSP responsibility) (0's)	This data was sourced from reports prepared for the AER in accordance with the F-factor scheme requirements. This data is considered actual because it is materially dependent on JEN's business records.	In the RIN table prepared for 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 two 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 the AER in accordance with the F-factor scheme requirements. This data is considered actual because it is materially dependent on JEN's business records.	In the RIN table prepared for 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 two 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 Party Responsibility) (0's)	This data was sourced from reports prepared for the AER in accordance with the F-factor scheme requirements. This data is considered actual because it is materially dependent on JEN's business records.	In the RIN table prepared for 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 two 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.

2.8 MAINTENANCE

2.8.1 DESCRIPTOR METRICS FOR ROUTINE AND NON-ROUTINE MAINTENANCE

Actual information

Variable	Source and why actual	Methodology	Assumptions
GENERAL COMMENTS (Applicable to maintenance – Asset Quantity at year end, Assets inspected/maintained, Average Age of the assets)	JEN SAP ERP system.	SAP Business Objects (BO) reports have been developed to cater to the required details in this template. These reports extract data from the JEN Business Warehouse (BW) which source the data from the SAP ERP and AMI environments. Data models (joins, associations and merging of data) and queries (filtering of data) have been developed to associate the data from different sources to present in the format required in the template. The logic for the queries for each category has been detailed in the sections below. There are different buttons in the report for each category with different filter criteria. Each button is used to get the final numbers for each category to be reported in the template Data load from SAP ERP and AMI into the business warehouse (BW) occurs every night as a batch job. The reports reside in BO Portal at the below location:	

Variable	Source and why actual	Methodology	Assumptions
			
MAINTENANCE CYCLE (For all categories)	Information is sourced from SAP ERP.	All planned maintenance and inspection tasks are documented and managed using the SAP Plant Maintenance (PM) module functionality. The functionality has enabled JEN to establish maintenance plans in SAP. A maintenance cycle or inspection cycle is associated with each maintenance plan. By directly querying 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.	No assumptions have been made.
2.8.1 - ASSET QUANTITY - AT YEAR END • Pole top, overhead line & service line maintenance • Pole inspection and treatment • Network underground cable maintenance: by voltage • Network underground cable maintenance: by location	**Source of data**: The data is sourced from SAP ERP Equipment. Count of every in service equipment for each category gives the final number for this category	The following BO Report is run to extract the required details for all the categories: • **ASM429 JEN RIN Equipment in Service (MAIN 2.8.1)** The equipment are filtered by: ➢ **"Date Installed"** in the date range 01.01.1900 to 31.12.2019 ➢ Equipment Type	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
• Distribution substation equipment & property maintenance • Zone substation equipment maintenance • Zone substation property maintenance • Public lighting maintenance • SCADA & network control maintenance • Protection systems maintenance		➢ Equipment User status = *INSV* (in Service) ➢ Equipment Type ➢ Equipment Characteristics ➢ Functional Location Characteristics Zone substation – other equipment is made up of the following asset types: • Zone Substation Circuit Breaker • Zone Substation Capacitor bank • Zone Substation Current Transformer • Zone Substation Voltage Transformer • Zone Substation CT Chamber • Zone Substation NER • Zone Substation Battery Charger • Zone Substation Battery • Zone Substation Bus • Zone Substation Switch • Zone Substation Reactor • Zone Substation Capacity Voltage Transformer	
2.8.1 - ASSET QUANTITY - AT YEAR END • Overhead asset inspection	**Source of data**: The data is sourced from GIS system.	The following BO Report is run to extract the required details for all the categories: • **ASM451 JEN RIN Vegetation Management (Descriptor Metrics by Zone 2.7.1)** The report provides the route line length, i.e. the aggregate length in kilometres of distribution overhead lines, measured as the length of each span between poles and/or towers, and where the length of each span is	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
		considered only once irrespective of how many circuits it contains.	
2.8.1 - AVERAGE AGE OF ASSET GROUP • Pole top, overhead line & service line maintenance • Pole inspection and treatment • Network underground cable maintenance: by voltage • Network underground cable maintenance: by location • Overhead asset inspection • Distribution substation equipment & property maintenance • Zone substation equipment maintenance • Zone substation property maintenance • Public lighting maintenance • SCADA & network control maintenance • Protection systems maintenance	**Source of data**: The data is sourced from SAP ERP Equipment details. Age of only "in service" equipment is calculated and average of that is calculated to get the final number.	The following BO Report is run to extract the required details for all the categories: • **ASM437 JEN RIN Average Age of Asset Group (MAINT 2.8.1)** The equipment are filtered by: ➢ **"Date Installed"** in the date range 01.01.1900 to 31.12.2019 ➢ Equipment Type ➢ Equipment User Status = *INSV* (in Service) ➢ Equipment Characteristics ➢ Functional Location Characteristics	No assumptions have been made.
2.8.1 – ASSETS INSPECTED/MAINTAINED • Pole top, overhead line & service line maintenance • Distribution substation equipment & property maintenance	**Source of data**: The data is sourced from SAP ERP Orders, notifications (associated to those Orders) and Inspection details. The metric to be reported in the template has 3 different components which are summed up to give the final result:	The following BO reports are run to extract the required details for all the categories and values are summed up to get the final number to be reported in the template. • **ASM421 - JEN RIN Assets Maintained (MAINT 2.8.1)** The data is filtered based on following filters:	No assumptions have been made.

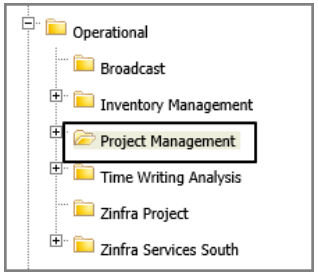
Variable	Source and why actual	Methodology	Assumptions
	• Assets maintained through associated notification [Count of notifications in object list of order]– ZM10, ZM20 Orders • Assets maintained through scheduled maintenance – ZM60 Orders [Count of orders] • Assets Inspected as part of regular inspection – Condition analysis in ZMEASUREMT [Count of measurements]	➢ **"Notification completion Date"** in the date range 01.01.2019 to 31.12.2019 [Calendar Year 2019] ➢ Notification Status = "NOCO" ➢ MAT Codes ➢ Equipment Type ➢ Equipment Attributes ➢ Equipment Characteristics ➢ Functional Location Attributes ➢ Functional Location Characteristics • **ASM459 - JEN RIN Assets Inspected (MAINT 2.8.1)** The data is filtered based on following filters: ➢ **"Measurement Date"** in the date range 01.01.2019 to 31.12.2019 [Calendar year 2019] ➢ Measurement Type ➢ Equipment Type ➢ Equipment User status = *INSV* (in Service) ➢ Equipment Characteristics • **ASM406 JEN PM Work Order Reporting Period Analysis** The data is filtered based on following filters: ➢ **"Order creation Date"** in the date range 01.01.2019 to 31.12.2019 [Calendar year 2019] ➢ Order Type = ZM60 ➢ Equipment Type	

Variable	Source and why actual	Methodology	Assumptions
2.8.1 – ASSETS INSPECTED/MAINTAINED • Pole inspection and treatment	**Source of data**: The data is sourced from SAP ERP Inspection details. The metric to be reported in the template is as described below. • Assets Inspected as part of regular inspection – Condition analysis in ZMEASUREMT [Count of measurements]	The following BO reports are run to extract the required details for this category to get the final number to be reported in the template. • **ASM459 - JEN RIN Assets Inspected (MAINT 2.8.1)** The data is filtered based on following filters: ➢ **"Measurement Date"** in the date range 01.01.2019 to 31.12.2019 [Calendar year 2019] ➢ Measurement Type ➢ Equipment Type ➢ Equipment User Status = *INSV* (in Service) ➢ Equipment Characteristics	No assumptions have been made.
2.8.1 – ASSETS INSPECTED/MAINTAINED • Overhead asset inspection	**Source of data**: The data is sourced from GIS system.	The following BO Report is run to extract the required details for all the categories: • **ASM451 JEN RIN Vegetation Management (Descriptor Metrics by Zone 2.7.1)** The overhead assets are filtered by: ➢ The report provides the route length of all spans with their zones that have been inspected in the year.	Entire span length in that zone is assumed to have been inspected.
2.8.1 – ASSETS INSPECTED/MAINTAINED • Network underground cable maintenance: by voltage	**Source of data**: The data is sourced from SAP ERP Orders, notifications (associated to those Orders) and Inspection details. The metric to be reported in the template has	The following BO reports are run to extract the required details for all the categories and values are summed up to get the final number to be reported in the template.	These assets do not have inspections recorded in measurement table and all inspections are done

Variable	Source and why actual	Methodology	Assumptions
• Network underground cable maintenance: by location • Zone substation equipment maintenance • Zone substation property maintenance • Public lighting maintenance • SCADA & network control maintenance • Protection systems maintenance	2 different components which are summed up to give the final result: • Assets maintained through associated notification [Count of notifications in object list of order]– ZM10, ZM20 Orders. • Assets maintained through scheduled maintenance – ZM60 Orders [Count of orders]	• **ASM421 - JEN RIN Assets Maintained (MAINT 2.8.1)** The data is filtered based on following filters: ➢ "**Notification completion Date**" in the date range 01.01.2019 to 31.12.2019 [Calendar Year 2019] ➢ Notification Status = "NOCO" ➢ MAT Codes ➢ Equipment Type ➢ Equipment Attributes ➢ Equipment Characteristics ➢ Functional Location Attributes ➢ Functional Location Characteristics • **ASM406 JEN PM Work Order Reporting Period Analysis** The data is filtered based on following filters: ➢ **"Order creation Date"** in the date range 01.01.2019 to 31.12.2019 [Calendar year 2019] ➢ Order Type = ZM60 ➢ Equipment Type	as part of the maintenance activities.
2.8.1 – ASSETS INSPECTED/MAINTAINED • Public lighting maintenance	**Source of data**: The data is sourced from SAP ERP Orders, notifications (associated to those Orders) and Inspection details. The metric to be reported in the template has	The following BO reports are run to extract the required details for all the categories and values are summed up to get the final number to be reported in the template. • **ASM421 - JEN RIN Assets Maintained (MAINT 2.8.1)**	These assets do not have inspections recorded in measurement table and all inspections are done

Variable	Source and why actual	Methodology	Assumptions
	2 different components which are summed up to give the final result: • Assets maintained through associated notification [Count of notifications in object list of order]– ZM10, ZM20 Orders • Assets maintained through bulk re-lamping process – All PUB Lights with bulk re-lamping date	The data is filtered based on following filters: ➢ "**Notification completion Date**" in the date range 01.01.2019 to 31.12.2019 [Calendar Year 2019] ➢ Notification status = "NOCO" ➢ MAT Codes ➢ Equipment Type ➢ Equipment Attributes ➢ Equipment Characteristics ➢ Functional Location Attributes ➢ Functional Location Characteristics • **ASM420 JEN Network Asset Statistics (For Minor Road)** The data is filtered based on following filters: ➢ **"Bulk Re-lamping Date"** in the date range 01.01.2019 to 31.12.2019 [Calendar year 2019] ➢ Equipment Type = PUB LIGHT • **ASM420 JEN Network Asset Statistics (For Major Road)** The data is filtered based on following filters: ➢ **"Date installed"** in the date range 01.01.1900 to 31.12.2019 ➢ Equipment Type = PUB LIGHT	as part of the maintenance activities. All public lights on Major Road are inspected 3 times a year hence the final number to be reported in the template is total number of public lights in service on Major roads multiplied by 3.

2.8.2 - EXPENDITURE

Variable	Source and why actual	Methodology	Assumptions
GENERAL COMMENTS (Applicable to Replacement Expenditure)	JEN SAP ERP.	The reports reside in BO Portal at the below location: 	
2.8.2 - EXPENDITURE • Pole top, overhead line & service line maintenance • Pole inspection and treatment • Overhead Asset inspection • Network underground cable maintenance: by voltage • Network underground cable maintenance: by location • Distribution substation equipment & property maintenance • Zone substation equipment maintenance • Zone substation property maintenance • Public lighting maintenance • SCADA & network control maintenance • Protection systems maintenance	**Source of data**: The data is sourced from SAP ERP Projects. All the Non-Routine maintenance cost incurred for completing the work is recorded on the order (ZM60) which eventually settles to WBS of the related project. All routine maintenance costs are posted directly to the Project hence the total expenditure for routine is extracted from the project	The following BO Report is run to extract the required details: • **OPR409 - JENRIN - Project Costs - Maintenance** The logic for determination of expenditure is to extract projects linked to appropriate maintenance (MAT Codes). The MAT codes define and categorize the activity into the required rows of the template. The Cost documents are filtered by: ➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**] ➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ Controlling Area = 3000 ➢ Cost Elements ➢ Service Offering = OPX ➢ WBS Reg Category C (MAT)=C48	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
		➢ Set filter to Cost Element to exclude GL = Recoveries F&M Equipment The Routine & Non-Routine cost breakup is by Order Type. All costs related to ZM60 Orders are routine costs and all costs related to other order types are non-routine costs.	

2.9 EMERGENCY RESPONSE

2.9.1 EMERGENCY RESPONSE EXPENDITURE (OPEX)

Actual information

Variable	Source and why actual	Methodology	Assumptions
(A) TOTAL EMERGENCY RESPONSE EXPENDITURE ($0'S)	Information is sourced from SAP, the ERP system that JEN uses to capture its financial information. As expenditure is incurred, it is captured in PM Orders (cost collectors). PM Order codes can be used to identify various maintenance activities. From the total Emergency cost from SAP, an estimated component for emergency cost associated with reserve feeders has been subtracted. It is impractical to collect emergency cost associated with reserve feeders separately because the total emergency cost is collected across all network assets and it is not feasible to allocate costs to the individual feeders (there are more than 200 individual feeders) on the network. Since this subtracted estimated component is only a very small proportion of the total emergency response expenditure, the total emergency response expenditure is reported as actual given the degree of estimation involved, and that this information is not contingent upon assumptions for which there are valid alternatives and which could lead to a materially different presentation.	Emergency response costs disclosed in the RIN are sourced from the SAP system. JEN's cost collection process uses a combination of projects (WBS elements) and cost centres to collect costs at the macro level. PM orders and activities are set up to collect costs at a micro level. These PM orders/activities are designed to collect costs based on the activity on which an employee works and to accept any external costs associated with that activity e.g. Faults, Emergencies, and Standards and Procedures. JEN uses time writing to capture internal labour costs. Where practical and appropriate all employees time write to a PM order/ activity 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 Methodology (**CAM**). Direct Labour, Materials, Contracts & Other are derived from General Ledger account groupings. Network Overheads and motor vehicle operating expenses have been excluded as these costs are reported under 2.10 Overheads and 2.6 Non-network respectively as the requirement is to disclose direct costs only.	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.

Variable	Source and why actual	Methodology	Assumptions
		Reserve feeder costs are calculated based on related activities and are validated by experienced engineers. The proportion of total operating and maintenance costs that are attributable to the HV distribution system are determined by applying a percentage based on engineering calculations. The other component of the calculation is billed demand for reserve feeder customers which is the kilo watt volumes agreed between Jemena and its customers. Taking the percentage of 'billed demand for reserve feeder customer' from 'Actual Raw Peak System Demand' determines the percentage of the remaining cost pool from the above that is reserve feeder. A weighted average calculation of the total reserve feeder cost is then performed to determine the reserve feeder cost that is removed from the Emergency Response activity/service codes. The following BO Report is run to extract the required details: • **OPR406 - JENRIN - Project Costs - Expenditure Summary**	
(B) MAJOR EVENTS O&M EXPENDITURE ($0's)	There were no major storms (Tropical cyclone of Category 1 or above as classified by the Australian Bureau of Meteorology) in the current regulatory year and therefore these variables are not applicable to Jemena for the current regulatory year.	N/A	N/A
(C) MAJOR EVENT DAYS O&M EXPENDITURE ($0's)	Information is sourced from SAP. As expenditure is incurred, it is captured in PM Orders (cost collectors). PM Order codes can be used to identify various maintenance activities.	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 works are carried out on the actual day and

Variable	Source and why actual	Methodology	Assumptions
	Network overheads and motor vehicle operating expenses have been removed for this template, as the requirement is to disclose direct costs only. JEN used the same system to report Emergency Response direct costs for the following event days without the Reserve feeder allocation and is the basis for the actual information. There were two major event days in the current regulatory year.	The MED threshold has been calculated for the current regulatory year in accordance with the requirements in the STPIS Appendix D using the 2.5 beta method. The following BO Report is run to extract the required details: • **OPR411 - JENRIN - Time Writing - Emergency Response Major Days**	don't overflow in the next day (after 12:00am), which is not always the case. However, JEN has reported cost only on the MED days in accordance with the RIN template guideline.

Estimated information

No estimated information is provided.

2.10(A) OVERHEADS

In line with the instructions contained in the Excel template, JEN has chosen to complete template 2.10(A) and has therefore not completed template 2.10.

2.10.1 NETWORK OVERHEADS EXPENDITURE

Actual information

Variable	Source and why actual	Methodology	Assumptions
All variables in table	Network overhead expenditure is actual information that is extracted from the SAP ERP system and which forms part of the audited Annual RIN.	JEN's cost collection process uses SAP functionality to collect costs into WBS elements at the macro level. PM Orders are set up to collect costs at a micro level. These PM orders/activities are designed to collect costs based on the activity on which an employee works and to accept any external costs associated with that activity. WBS element codes are also designed to identify the regulatory category, e.g. standard control services, public lighting, metering, ancillary services, negotiated and unregulated services. JEN uses time writing to capture internal labour costs. Where practical and appropriate, all employees time write to a PM order or to 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 CAM. External supplier costs are captured by receipting costs against Jemena-issued purchase orders that identify the appropriate cost collector. JEN also enhanced its Regulatory Reporting capability by developing a suite of reports that were designed to provide data that facilitates the population of the annual RIN templates. Project Cost information is extracted from SAP's business warehouse **(BW)** using a data extraction tool, Business Objects **(BO)** and exported into Excel. BO reports were developed based on a requirement to provide data that will populate the tables within these templates. The reports use underlying data models and queries to report the data. JEN executes the BO Reports that are associated with the templates, based on the report selection criteria. The report output provides the data required by the table in this template. *Network Overheads Opex (SCS & ACS):*	N/A

		Refer to JEN's methodology for the tables within the templates as described above. *Capitalised Network Overheads (SCS & ACS):* JEN capitalises a portion of its overheads, sourced from the network type activities (generally Operational and Asset Management in nature). JEN's ERP system is designed to apply a level of overheads by various overhead functions to the direct costs of capex activities (PM order/activity). JEN calculates a percentage of overhead to be applied to 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 that are capital (e.g. [Capex Program – Management and Planning] in nature. It is not practical for Program Managers and Senior Management to record time against a multitude of specific cost collectors. They time write to a "bucket" cost collector, which is then distributed over the specific cost collectors usually based on the underlying direct costs of the respective cost collectors. *Other Distribution Services - Negotiated and Unregulated Services:* Consistent with Capitalised Overheads SCS & ACS above. Negotiated and Unregulated regulatory classifications are based on WBS element codes.	

2.10.2 CORPORATE OVERHEADS EXPENDITURE

Variable	Source and why actual	Methodology	Assumptions
All variables in table	Corporate overhead expenditure is actual information extracted from the SAP ERP system, which reconcile with the Enterprise Support Function allocation	JEN's cost collection process uses SAP functionality to collect costs into WBS elements at the macro level. PM Orders are set up to collect costs at a micro level. These PM orders/activities are designed to collect costs based on the activity on which an employee works and to accept any external costs associated with that activity WBS element codes are also designed to identify the regulatory category.	N/A

	which forms part of the audited annual RIN.	JEN uses time writing to capture internal labour costs. Where practical and appropriate, all employees time write to a PM order or to 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 CAM. External supplier costs are captured by receipting costs against Jemena issued purchase orders that identify the appropriate cost collector. *Corporate Overheads Opex SCS & ACS:* Corporate overheads are recorded at a cost centre level or in a specific project at the source of origination, JAM. Corporate overheads charged to JEN from JAM are recorded in designated projects within JEN. Each corporate overhead accounting record in SAP for relevant JEN projects contains the details of the related JAM cost centre or specific project. Refer to JEN's methodology for the tables within the templates as described above. *Capitalised Corporate Overheads SCS & ACS:* Refer to Capitalised Network Overheads SCS & ACS above. *Other Distribution Services - Negotiated and Unregulated Services:* Consistent with Capitalised Corporate Overheads SCS & ACS above. Negotiated and Unregulated regulatory classifications are based on WBS element codes.	

2.11 LABOUR

2.11.1 COST METRICS PER ANNUM

Variable	Source and why actual	Methodology	Assumptions
All information within 2.11.1 - COST METRICS PER ANNUM	The data is sourced from: • Payroll information from SAP (Spinifex) • Employee classifications from SAP master data & HR review • Employee time writing information from SAP • Assessment cycles from SAP. JEN has excluded information on labour used in the provision of contracts for services from this template, but information on labour relating to labour hire contracts is included. 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 JEN, payroll data is allocated directly to JEN. For employees who work across the Jemena portfolio of assets (i.e. finance, human resources, regulation, legal etc.), it attributes the time reported	JEN used a Spinifex extract with parameters to identify all Jemena employees for the current reporting period. This captures all employees who have received payments during the current reporting year. This report shows the total actual payments and hours for the current reporting period, including leave, ordinary time and overtime. To determine the employees associated with JEN, Cross Application Time Sheet (**CATS**) client analysis reports are executed using SAP BI. The report for all employees by quarter, includes compliance, line item, utilisation and analysis information about time writing to each asset owner. Time writing information was captured by individual project codes or by Work Breakdown Structure (**WBS**) element. Employees can have assigned client as non JEN but time written to JEN specific projects. Employee's data who direct time write to JEN as per JEN defined projects or WBS elements were extracted from this report. For employees who partially time write to an asset during the quarter, the difference (difference between total working hours available for time writing and actual time writing hours) was allocated to JEN by using assessment cycle allocation to JEN as per employee's distribution cost centre.	The allocation to JEN is based on time writing/assessment cycles allocation. If the CATS client analysis report shows that an employee has not time written 100% to a project, the difference is allocated using the assessment cycle percentage applicable to employee's distribution cost centre. Stand down hours are shown instead of occurrence (as per the definition contained in Appendix F of the RIN) as information is not available in the system. Employee allocation percentage is calculated on quarterly basis; assume employee has no cost centre change during the quarter.

Variable	Source and why actual	Methodology	Assumptions
	against the JEN asset and only that allocation of time is incurred in JEN's accounts.	The RIN requires labour expenditure be categorised into AER defined categories. JEN further categorised its labour expenditure by providing the employee prior year data to the HR reporting analysts who review and amend the data to reflect the current reporting periods employee categories as required by the template. In table 2.11.1 calculations are applied to determine: • TCR = base salary • ASL = Average Staffing Level. One ASL is one full-time equivalent employees undertaking Standard Control services (**SCS**) work receiving salary or wages (Paid FTE) over the entire year. The ASL is the time charged against JEN during the year converted to full time equivalent then multiplied by the time writing percentage. • Total labour expenditure is labour expenses allocated to JEN • Average productive work hours per ASL: *(TCR hours + base hours-leave hours + overtime hours)/ASL*	

2.11.2 COST METRICS PER ANNUM

Variable	Source and why actual	Methodology	Assumptions
All information in 2.11.2 - DESCRIPTOR METRICS	This table requires JEN to provide various metrics for the current reporting period labour costs. The source of the information is as described above.	The methodology is as described above. JEN provides below the formula to calculate the metrics as required by this template. The following are for JEN costs and JEN ASL only. • Average productive work hours per ASL - ordinary time: *(TCR hour + base hour-leave hour)/ASL* • Average productive work hours hourly rate per ASL - ordinary time: *(TCR rate + base rate-leave rate)/(TCR hour + base hour-leave hour)/ASL* • Average productive work hours per ASL - overtime: *Overtime hours/ASL* • Average productive work hours hourly rate per ASL - overtime: *(Overtime rate/Overtime hours)/ASL*	As the information/allocation is not 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.

2.12 INPUT TABLES

Actual information

Variable	Source and why actual	Methodology	Assumptions
Template 2.12 – Input Tables **EXPENDITURE** (OPEX & CAPEX) Global description for Actual 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 accounts and activity (cost collectors). Both general ledger and activity codes can be used to identify various cost activities. Overheads that are applied to the direct costs are excluded, as the requirement is to disclose direct costs only.	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 costs from the general ledger accounts and the activity codes, costs can be categorised as: • Direct material expenditure • Direct labour expenditure • Contract expenditure • Other expenditure • Related party contract expenditure Related party transactions are captured mainly within the contract expenditure category and were isolated for the purposes of reporting in the template. JEN obtained related party margin information from its related entities Zinfra Pty Ltd and ZNX(2) Pty Ltd. However, JEN was unable to obtain related party margin information from its related entity Mondo Power Pty Ltd. JEN (and JEN's parent entity) do not have sufficient influence to require the relevant entity to supply the requested information. Embedded overheads have been removed from costs and reported as overheads. JEN enhanced its Regulatory Reporting capability by developing a suite of reports that were designed to provide data that facilitates the population of the annual RIN templates. Project Cost information is extracted from SAP's business warehouse (**BW**) using a data extraction tool, Business Objects (**BO**) and exported into Excel. BO reports were developed based on a requirement to provide data that will populate the tables within these templates. The reports use underlying data models and queries to report the data.	n/a

Variable	Source and why actual	Methodology	Assumptions
		JEN executes the BO Reports that are associated with the templates, based on the report selection criteria. The report output provides the data required by the table in this template.	
VEGETATION MANAGEMENT	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 methodology adopted for classifying the costs has been detailed above in the Global description section above. The cost in total agrees to 2.7 Vegetation Management under following zones: • Zone 1 (LBRA) • Zone 2 (HBRA).	n/a
ROUTINE MAINTENANCE	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 methodology adopted for classifying the costs has been detailed above in the Global description section above. The cost in total agrees to 2.8 Routine Maintenance under following maintenance categories: • Pole top, overhead line & service line maintenance • Pole inspection and treatment • Overhead asset inspection • Network underground cable maintenance • Distribution substation equipment & property maintenance • Zone substation equipment maintenance • Zone substation property maintenance • Public lighting maintenance • Scada & network control maintenance • Protection systems maintenance.	n/a
NON-ROUTINE MAINTENANCE	JEN's cost collection process is noted above under the variable Template 2.12 – Input Tables **EXPENDITURE** (Opex & Capex).	The methodology adopted for classifying the costs has been detailed above in the Global description section above. The cost in total agrees to 2.8 Non-Routine Maintenance under following maintenance categories:	n/a

Variable	Source and why actual	Methodology	Assumptions
	Information is sourced from SAP, the ERP system that JEN uses to capture its financial information.	• Pole top, overhead line & service line maintenance • Pole inspection and treatment • Overhead asset inspection • Network underground cable maintenance • Distribution substation equipment & property maintenance • Zone substation equipment maintenance • Zone substation property maintenance • Public lighting maintenance • Scada & network control maintenance • Protection systems maintenance.	
OVERHEADS	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 methodology adopted for classifying the costs has been detailed above in the Global description section above. The cost in total agrees to 2.10(A) Overheads under following overhead categories: • Network overheads • Corporate overheads.	n/a
AUGMENTATION	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 methodology adopted for classifying the costs has been detailed above in the Global description section above. The cost in total agrees to 2.3 Augex under following asset categories: • Subtransmission substations, switching stations, zone substations • Subtransmission lines • HV feeders • Distribution substations • LV feeders • Other assets.	n/a

Variable	Source and why actual	Methodology	Assumptions
CONNECTIONS	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 methodology adopted for classifying the costs has been detailed above in the Global description section above. The cost in total agrees to 2.5 Connections.	n/a
EMERGENCY RESPONSE	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 methodology adopted for classifying the costs has been detailed above in the Global description section above. The cost in total agrees to 2.9 Emergency Response under major event days.	n/a
PUBLIC LIGHTING	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 methodology adopted for classifying the costs has been detailed above in the Global description section above. The cost in total agrees to 4.1 Public Lighting.	n/a
METERING	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 methodology adopted for classifying the costs has been detailed above in the Global description section above. The cost in total agrees to 4.2 Metering.	n/a

Variable	Source and why actual	Methodology	Assumptions
FEE-BASED SERVICES QUOTED BASED SERVICES	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 methodology adopted for classifying the costs has been detailed above in the Global description section above. The costs in total agree to 4.3 Ancillary Services – Fee Based Services and 4.4 Ancillary Services – Quoted Services.	n/a
REPLACEMENT	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 methodology adopted for classifying the costs has been detailed above in the Global description section above. The cost in total agrees to 2.2 Repex under following asset categories: • Poles • Pole top structures • Overhead conductors • Underground cables • Service lines • Transformers • Switchgear • Public lighting • SCADA network control and protection systems • Other.	n/a
NON-NETWORK 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 methodology adopted for classifying the costs has been detailed above in the Global description section above. The cost in total agrees to 2.6 Non-Network Expenditure under following expenditure categories: • IT and communications	n/a

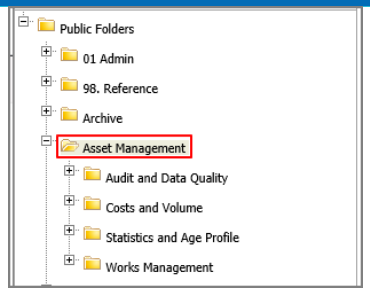
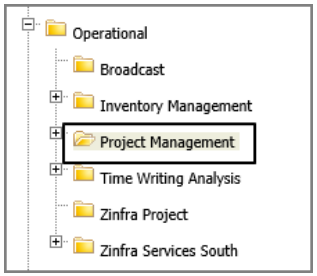
Variable	Source and why actual	Methodology	Assumptions
		• Motor vehicles • Buildings and property • Other.	

4.1 PUBLIC LIGHTING

4.1.1 DESCRIPTOR METRICS ANNUALLY

Actual information

Variable	Source and why actual	Methodology	Assumptions
GENERAL COMMENTS (Applicable to volume section)	JEN SAP ERP system.	SAP Business Objects (BO) reports have been developed to cater to the required details in this template. These reports extract data from the JEN Business Warehouse (BW) which source the data from the SAP ERP and AMI environments. Data models (joins, associations and merging of data) and queries (filtering of data) have been developed to associate the data from different sources to present in the format required in the template. The logic for the queries for each category has been detailed in the sections below. There are different buttons in the report for each category with different filter criteria. Each button is used to get the final numbers for each category to be reported in the template Data load from SAP ERP and AMI into the business warehouse (BW) occurs every night as a batch job. The reports reside in BO Portal at the below locations:	

Variable	Source and why actual	Methodology	Assumptions
			
GENERAL COMMENTS (Applicable to Expenditure)	JEN SAP ERP system.	The reports reside in BO Portal at the below location: 	
Population of lights	JEN SAP ERP system. All lights are defined as equipment in the system with equipment type “PUB LIGHT” (Public Light)	The following BO Report is run to extract the required details for all the categories: • **ASM431 JEN RIN Equipment In Service (PUB LIGHT 4.1.1)** The equipment are filtered by: ➢ **“Date installed”** in the date range 01.01.2019 to 31.12.2019 [Calendar Year 2019] ➢ Equipment Status = *INSV* ➢ Equipment Type = PUB LIGHT ➢ Equipment Characteristics C33_LAMP and C33_TARIFF_TYPE = “Standard”	N/A

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 Number of poles installed Total $0s	N/A	N/A	In line with Table 6.3 of the AER's Detailed Issues and Responses – Public Lighting Services (distribution) Explanatory Statement on Final Category Analysis, 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 Replacement Volume of Works and Expenditure – Major Road Light Replacement Minor Road Light Replacement	JEN SAP ERP system.	The following BO report is run to determine volumes by road class: • **ASM488 JESA MAQ Quantities Analysis** The applicable MAT codes for public lighting replacements are as follows: ➢ Major road – RLJ and RLN ➢ Minor road – RLG, RLM, RLO	Sustainable lights are only installed on minor roads hence all lights replaced under MAT code RLG are considered to be minor road lights.
Light Replacement Volume of Works and Expenditure – Number of Poles Installed	**Source of data**: The data is sourced from SAP ERP PM Orders & Object Lists. For every replacement that occurs, a related PM Order is raised in SAP	The following BO Report is run to extract the required details: • **ASM435 - JEN RIN Assets Replaced by Asset Category (REPEX 2.2.1)**	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
	ERP. Once the work is complete the asset register is provided to GIS team with the details. The asset details are updated in GIS which is automatically pushed to SAP.	The logic for determination of replacement volume is to extract PM Orders associated with projects linked to appropriate replacement activities (MAT Codes) and the attached object lists of those orders. The object list of the order provides the linked equipment (associated equipment type) which have been replaced. The characteristics of the equipment is extracted from SAP ECC to identify the category required by the template. The Orders are filtered by: ➢ "**Date Removed**" of the asset is in the date range 01.01.2019 to 31.12.2019 [**Calendar year 2019**] ➢ MAT Codes = RPL, RPH, RPS ➢ PM Order System Status = REL, TECO, CLSD ➢ Equipment Type ➢ Equipment Characteristics ➢ Functional Location Characteristics Filter details for all buttons for each category are in the attached sheet below for reference.	
Light Replacement Volume of Works and Expenditure Total Cost	The data is sourced from SAP ERP Projects. 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.	The following BO Report is run to extract the required details: • **OPR406 – JEN Project Costs Expenditure Summary Report** The logic for determination of expenditure is to extract projects linked to appropriate maintenance (MAT Codes).	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
	SAP collects costs based on the activity on which an employee works and the activity to which external costs are associated. These aggregate into WBS Elements (higher level cost collector) which in turn aggregates the costs at a project level. Opex expenditure categorisation is based upon activity/service category codes included in the WBS Elements coding. SAP Master data contains regulatory classification data which is cross-checked against a separate Investment Management System (**IMS**) Mapping table.	The MAT codes define and categorize the activity into the required rows of the template. The Cost documents are filtered by: ➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**] ➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ Controlling Area = 3000 ➢ Cost Elements ➢ Service Offering = OPX ➢ MAT Codes = RLG, RLJ, RLM, RLN, RLO, RPA, RPB, RPG, RPT	
Light Maintenance Volume of Works and Expenditure – Major Road Light Maintenance Minor Road Light Maintenance Number of Poles Installed Bulk Re lamping	**Source of the data**: SAP ERP Notifications Light maintenance works are recorded using SAP Notifications against a particular light. 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	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. We can also identify poles maintained using the MAT Codes. The following BO Report is run to extract the required details for all the categories • **ASM461 - JEN RIN Public Lighting (PUB LIGHT 4.1, 3.6.7.2, 6.9.1)** The notifications are filtered by: ➢ **"Notification Date"** in the date range 01.01.2019 to 31.12.2019 [Calendar Year 2019] ➢ MAT Codes = MLF, MRF (Lights replaced)	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
	routine patrols and through the bulk re-lamping 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.	➢ MAT Codes = MLR, MRR (Poles maintained) ➢ Notification Status = NOT Deleted (DLFL) ➢ Notification Activity Code Group = AGL-ACT3 **With the addition of:** • **ASM431 JEN RIN Equipment In Service (PUB LIGHT 4.1.1)** (BULK RE-LAMPING) The equipment are filtered by: ➢ **"Date installed"** in the date range 01.01.2019 to 31.12.2019 [Calendar Year 2019] ➢ Equipment Status = *INSV* ➢ Equipment Type = PUB LIGHT ➢ Equipment Characteristics C33_LAMP and C33_TARIFF_TYPE = "Standard" and 002_LAST_BULK_CHANGE_DATE = "Filter for Year" (Manual Addition)	
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.	The following BO Report is run to extract the required details: • **OPR406 – JEN Project Costs Expenditure Summary Report** The logic for determination of expenditure is to extract projects linked to appropriate maintenance (MAT Codes). The MAT codes define and categorize the activity into the required rows of the template. The Cost documents are filtered by:	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
		➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**] ➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ Controlling Area = 3000 ➢ Cost Elements = [*Ignore all direct and corporate overheads*] ➢ Service Offering = OPX ➢ MAT Codes = MLF,MLP,MLR, MRA, MRB, MRF, MRR, ASP	
Quality of Supply – Mean Days to Rectify or Replace Public Lighting Assets (days) Volume of GSL Breaches GSL Payments	**Source of the data**: 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.	By extracting the SAP notifications related to specific SAP Public Lighting Codes we can determine the quantity of light replacement and maintenance activities. The following BO Report is run to extract the required details for all the categories: • **ASM461 - JEN RIN Public Lighting (PUB LIGHT 4.1, 3.6.7.2, 6.9.1)** The notifications are filtered by: ➢ **"Notification Date"** in the date range 01.01.2019 to 31.12.2019 [Calendar Year 2019] ➢ Planner Group = NSP ➢ Priority = GSL < 2 bus. Days **or** P/L < 7 bus. days ➢ Notification status = NOT Deleted (DLFL), NOT CUSN	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
		Mean days to rectify = Average of breakdown duration for each month recorded on the notifications divided by 24 [total number of hours in a day] **GSL Breaches** = Count of overdue Notifications [*Malfunction Date greater than Required End Date and where Light was fixed in 2 days by checking if Breakdown duration is greater than 48hrs*]	
Quality of Supply – Volume of Customer Complaints	Customer complaints are managed by Customer Relations. Customer 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 Customer Relations stores and maintains all customer complaints in the "Claims Database" – SAP Hybris Cloud for customer.	Customer complaints can be classified into two categories: • 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. • 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.

4.1.3 COST & VOLUME METRICS

Variable	Source and why actual	Methodology	Assumptions
Light Installation	N/A	N/A	In line with Table 6.3 of the AER's Detailed Issues and Responses – Public Lighting Services (distribution) Explanatory Statement on Final Category Analysis, 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 Light Maintenance	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.	The following BO Report is run to extract the required details: • **ASM458 - JENRIN - Public Light Avg Unit Cost** The average unit cost for different types of lamps in public lights are stored in SAP ERP in a custom table ZPSVI004 with their validity date and funding source along with other relevant details. The data from the table is filtered by: ➢ "**Valid from date**" of the is in the period of 01.01.2019 to 31.12.2019 [**Calendar Year 2019**] ➢ Equipment Type = PUB LIGHT ➢ Funding Source = 2 (CAPEX) [Light Replacement] ➢ Funding Source = 1 (OPEX) [Light Maintenance]	

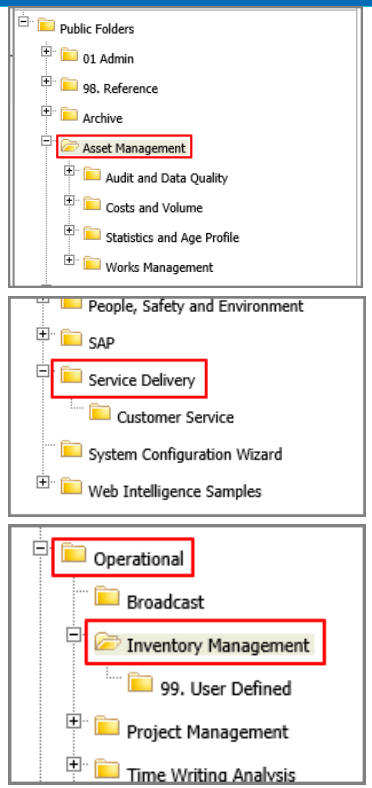
Variable	Source and why actual	Methodology	Assumptions
		Light Maintenance The following BO Reports are run to extract the details of the maintained lights: • **ASM461 - JEN RIN Public Lighting (PUB LIGHT 4.1, 3.6.7.2, 6.9.1)** The following BO Report is run to extract the details of the bulk re-lamped (maintained) lights: • **ASM420 - JEN Network Asset Statistics** The following BO Report is run to extract the cost of the maintained lights: • **OPR406 – JEN Project Costs Expenditure Summary Report** The unit cost for a light maintenance by light type has been calculated using the total cost to maintain the lights (total cost less the pole maintenance cost) divided by the number lights that were maintained by light type and then scaled in proportion to the unit cost for different types of lights. Light Replacement The following BO Report is run to extract the details of the replaced lights: • **ASM435 - JEN RIN Assets Replaced by Asset Category (REPEX 2.2.1)**	

Variable	Source and why actual	Methodology	Assumptions
		The following BO Report is run to extract the cost of the replaced lights: • **OPR406 – JEN Project Costs Expenditure Summary** The unit cost for a light replacement by light type has been calculated using the total cost to replace the lights (total cost less the pole replacement cost) divided by the number of lights that were replaced by light type and then scaled in proportion to the unit cost for different types of lights.	

4.2 METERING

NOTE – all information reported in template 4.2 and in the section below under the category “Meter Type 4” relates to AMI Meter Type 5 assets (interval meters (<160MWh) with remote communication functionality).

Variable	Source and why actual	Methodology	Assumptions
GENERAL COMMENTS (Applicable to all sections)	JEN SAP ERP system.	SAP Business Objects (BO) reports have been developed to cater to the required details in this template. These reports extract data from the JEN Business Warehouse (BW) which source the data from the SAP ERP and AMI environments. Data models (joins, associations and merging of data) and queries (filtering of data) have been developed to associate the data from different sources to present in the format required in the template. The logic for the queries for each category has been detailed in the sections below. There are different buttons in the report for each category with different filter criteria. Each button is used to get the final numbers for each category to be reported in the template Data load from SAP ERP and AMI into the business warehouse (BW) occurs every night as a batch job. The reports reside in BO Portal at the below locations:	

Variable	Source and why actual	Methodology	Assumptions
			

4.2.1 METERING DESCRIPTOR METRIC

Actual information

Variable	Source and why actual	Methodology	Assumptions
Meter Type 4, 5, 6: • Single phase meter population • Multi-phase meter population • Current transformer connected meter population • Direct connect meter population	**Source of data**: The data is sourced from SAP ERP & AMI Materials. Type 4 and 5 meters are created as assets in SAP AMI system and Type 6 meters are created as assets in SAP ERP system.	The following BO Report is run to extract the required details for Type 5 and 6 meters • **ASM439 JEN RIN Equipment In Service (Metering 4.2.1)** The materials are filtered by following parameters: ➢ **"Device installation date"** in the date range 01.01.1900 to 31.12.2019 ➢ Material Type = FERT (Type 4,5) ➢ Material Type = ZEMT (Type 6) ➢ Material Group = M01 (Type 4,5) ➢ Material Group = M033 (Type 6) ➢ Material Serial Numbers (Type 4,5) ➢ Material numbers = 22316, 22317 (Type 6) ➢ Equipment user status = *INST* The breakdown into categories of single phase, direct connect and CT connect is done by looking at the material description used for extracting the numbers. Type 4 meters were extracted from AMI SAP using SAP transaction IQ09.	No assumptions have been made.

4.2.2 – COST METRICS BY CONNECTION CLASSIFICATION

Variable	Source and why actual	Methodology	Assumptions
Meter Purchase Volumes • Meter Type 4 • Meter Type 5 • Meter Type 6	**Source of Data:** The source of the data is SAP ERP Material Documents Type 5 & Type 6 meters are not relevant for this category as no new type 5 or 6 meters are being purchased.	• **SAP ERP is the source for the data.** MB51 report from SAP ➢ 01.01.2019 to 31.12.2019 [Calendar Year 2019] ➢ Material Numbers 1012777; 11012776; 11002146; 11002145 ➢ Plant E009 Filtered by meters transferred to Campbellfield store location	No assumptions have been made.
Meter Purchase Expenditure ($0's)	The Meter purchase costs are accurately tracked within SAP ERP in specific projects and PM Orders and through invoices. JEN's cost collection process uses a combination of projects (WBS elements) and cost centres to collect costs at the macro level. PM orders and activities are set up to collect costs at a micro level.	Total costs for meter purchase is accurately tracked in SAP ERP (projects VMM – 7, 12, 13 and 14). The following BO Report is run to extract the required details for all the categories. • **OPR406 - JEN RIN - Project Costs** The logic for determination of expenditure is to extract projects linked to appropriate maintenance (MAT Codes). The MAT codes define and categorize the activity into the required rows of the template. Specific WBS elements are grouped to get the categories in this section. . The Controlling documents are filtered by: ➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**] ➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ Controlling Area = 3000 ➢ Cost Elements – {Exclude Overheads} ➢ Service Offering = CPX	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
Meter Testing Volumes **Meter Replacement Volumes** • Meter Type 4 • Meter Type 5 • Meter Type 6	**Source of Data:** The source of the data is SAP ERP and AMI PM Order and Service order operation confirmations. Type 5 & Type 6 meters are not relevant for Meter Testing. Type 5 meters are not relevant for Meter Replacement.	The following BO Reports are run to extract the required details for all the categories. • **ASM488 – JESA MAQ Quantities Report** Used to report volumes for the activities 6Y9C, 6Y9D & 6Y9E. • **ASM445 - JEN RIN PM Order Confirmation Volume Metrics (Metering 4.2.2)** The Service Order confirmations are filtered by following parameters: ➢ **"Confirmation Posting date"** in the date range 01.01.2019 to 31.12.2019 [Calendar Year 2019] ➢ Order Type = ZAEC ➢ Order system status = TECO (Technically complete), CLSD (Closed) ➢ Order user status = {Exclude CANC (Cancelled), CARQ (Cancelled request), NC (Not completed), NEW}	No assumptions have been made.
Meter Testing **Meter Replacement Expenditure ($0's)**	The Meter Testing and replacement costs are accurately tracked within SAP ERP in specific projects and PM Orders and through invoices. JEN's cost collection process uses a combination of projects (WBS elements) and cost centres to collect costs at the macro level. PM orders and activities are set up to collect costs at a micro level.	Total costs for meter testing is accurately tracked in SAP ERP The following BO Report is run to extract the required details for all the categories. • **OPR401 - JEN RIN - Base Analytical Report for Meter Testing** • **OPR406 - JEN RIN - Projects costs for Meter Replacement** The logic for determination of expenditure is to extract projects linked to appropriate MAT Codes. The MAT codes define and	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
	Replacement is tracked as a CAPEX activity and testing is tracked as OPEX activity.	categorize the activity into the required rows of the template. Specific WBS elements are grouped to get the categories in this section. PM Orders and operations details can be analysed further to get the details and categorize. The Controlling documents are filtered by: ➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**] ➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ Controlling Area = 3000 ➢ Cost Elements – {Exclude Overheads} ➢ ***Service Offering = OPX (Meter Testing)*** ➢ ***Service Offering = CPX (Meter Replacement)***	
Meter Investigation Volumes **New Meter Installation** • Meter Type 4 • Meter Type 5 • Meter Type 6	**Source of Data:** The source of the data is SAP ERP PM Order and Service orders operation confirmations. Type 5 meters are not relevant for this Meter investigation. Type 5 & Type 6 meters are not relevant for New meter installation as no new type 5 or 6 meters are being purchased.	The following BO Report is run to extract the required details for all the categories • **CSM407 JEN RIN Service Order Confirmation Volume Metrics (Metering 4.2.2) for New Meter Installation** Meter investigation volumes are derived from CSM407 and records from ASM488 report with activity code 6Y9X. The Order confirmations are filtered by following parameters: ➢ **"Confirmation Posting date"** in the date range 01.01.2019 to 31.12.2019 [Calendar Year 2019] ➢ Order Type ➢ Confirmation activity type ➢ Maintenance Activity type ➢ Order system status = TECO (Technically complete), CLSD (Closed)	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
		➢ Order user status = {Exclude CANC (Cancelled), CARQ (Cancelled request), -NC (Not completed), NEW}	
Meter Investigation Expenditure ($0's)	The Meter Investigation costs are accurately tracked within SAP ERP in specific projects and PM Orders and through invoices. JEN's cost collection process uses a combination of projects (WBS elements) and cost centres to collect costs at the macro level. PM orders and activities are set up to collect costs at a micro level.	Total costs for meter Investigation is accurately tracked in SAP ERP (MAT Code Y99). The following BO Report is run to extract the required details for all the categories. • **OPR401 - JEN RIN - Base Analytical Report** The logic for determination of expenditure is to extract projects linked to appropriate maintenance (MAT Codes). The MAT codes define and categorize the activity into the required rows of the template. Specific WBS elements are grouped to get the categories in this section. PM Orders and operations details can be analysed further to get the details and categorize. The Controlling documents are filtered by: ➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**] ➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ Controlling Area = 3000 ➢ Cost Elements – {Exclude Overheads} ➢ Service Offering = OPX	No assumptions have been made.
New Meter Installation Expenditure ($0's)	New meter installation costs are captured under Fee-based Services and Quoted Services in section 4.3 and 4.4 respectively.	N/A	N/A

Variable	Source and why actual	Methodology	Assumptions
Meter Maintenance Volumes • Meter Type 4 • Meter Type 5 • Meter Type 6	**Source of data**: The data is sourced from SAP ERP & AMI Materials. Type 4 and 5 meters are created as assets in SAP AMI system and Type 6 meters are created as assets in SAP ERP system. *Type 5 & Type 6 meters are not relevant for this category.*	The following BO Report is run to extract the required details for all the categories. • **ASM452 JEN RIN Meter Maintenance (Metering 4.2.2)** The materials are filtered by following parameters: ➢ **"Asset Manifestation date"** in the date range 01.01.2019 to 31.12.2019 ➢ Material Type = FERT ➢ Material Group = M01 ➢ Batch Type = NON_VALUATED ➢ Equipment user status = *INST*	No assumptions have been made.
Meter Maintenance Expenditure ($0s)	The Meter maintenance costs are accurately tracked within SAP ERP in specific projects and PM Orders and through invoices. JEN's cost collection process uses a combination of projects (WBS elements) and cost centres to collect costs at the macro level. PM orders and activities are set up to collect costs at a micro level.	Total costs for meter maintenance is accurately tracked in SAP ERP (MAT Code Y99). The following BO Report is run to extract the required details for all the categories. • **OPR401 - JEN RIN - Base Analytical Report** The logic for determination of expenditure is to extract projects linked to appropriate maintenance (MAT Codes). The MAT codes define and categorize the activity into the required rows of the template. Specific WBS elements are grouped to get the categories in this section. PM Orders and operations details can be analysed further to get the details and categorize. The Controlling documents are filtered by: ➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**]	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
		➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ Controlling Area = 3000 ➢ Cost Elements – {Exclude Overheads} ➢ Service Offering = OPX	
Scheduled Meter Reading Volume	Scheduled meter read is accurately tracked in monthly reports managed by JEN Customer Operations team.	Scheduled meter reading is only required for type 5 and 6 meters. Contractor reports were used to confirm the volumes. Scheduled meter reading volume for type 5 meters is not captured separately due to very low population (40 sites) and it is deemed to be immaterial.	All Type 4 meters are read remotely and are not included here.
Scheduled Meter Reading Costs	The Scheduled Meter Reading costs accurately tracked within SAP ERP in specific projects and PM Orders and through invoices. JEN's cost collection process uses a combination of projects (WBS elements) and cost centres to collect costs at the macro level. PM orders and activities are set up to collect costs at a micro level.	Total costs for meter reading is accurately tracked in SAP ERP (MAT code Y99). Scheduled meter reading cost for type 5 meters is not captured separately due to very low population (40 sites) and it is deemed to be immaterial. The following BO Report is run to extract the required details for all the categories. • **OPR401 - JEN RIN - Base Analytical Report** The logic for determination of expenditure is to extract projects linked to appropriate maintenance (MAT Codes). The MAT codes define and categorize the activity into the required rows of the template. Specific WBS elements are grouped to get the categories in this section. PM Orders and operations details can be analysed further to get the details and categorize. The Controlling documents are filtered by:	All AMI meters are read remotely and therefore not reported under this meter reporting category.

Variable	Source and why actual	Methodology	Assumptions
		➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**] ➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ Controlling Area = 3000 ➢ Cost Elements – {Exclude Overheads} ➢ Service Offering = OPX	
Special Meter Reading Volume	N/A All special reads are performed as Fee -based Services and are covered in section 4.3.	Data extracted from SAP Transaction IW39 Order Type ZRSR	Recovery of data from failed meters is covered in Sub-category Meter Maintenance.
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
Remote Meter Reading Volume	The meter read volume is calculated based on retailer billing cycle and the volume of Type 4 meters on Jemena network at the end of the year, which is accurately tracked by Jemena systems.	Type 4 meter readings are delivered to the market daily. The AMI meters are read every 4 hours. However, remote read volume in this category is based on retailer billing cycle (monthly). Hence for this category, remote read volume is calculated by multiplying the volume of JEN AMI meter volume by 12.	The meter read volumes are based on the reported volume of Type 4 meters on Jemena network at the end of the year, not on daily variation of the numbers of active meters in the market.
Remote Meter Reading Costs	The cost is captured as part of the IT Infrastructure OPEX, which is captured in SAP ERP.	The costs in this category comprises of the efforts of JEN AMI NOC team that support meter read function.	This applies to Type 4 meters only.

Variable	Source and why actual	Methodology	Assumptions
		Remote meter reading process uses an automated collection system, supported by AMI Network Operation Centre (**NOC**) team. *Note:* the cost of AMI NOC team for 2019 is captured via time writing as part of IT Infrastructure OPEX costs variable of this schedule. The following BO Report is run to extract the required details for all the categories. • **OPR401 - JEN RIN - Base Analytical Report** The logic for determination of expenditure is to extract projects linked to appropriate maintenance (MAT Codes). The MAT codes define and categorize the activity into the required rows of the template. Specific WBS elements are grouped to get the categories in this section. PM Orders and operations details can be analysed further to get the details and categorize. The Controlling documents are filtered by: ➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**] ➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ Controlling Area = 3000 ➢ Cost Elements – {Exclude Overheads} ➢ Service Offering = OPX	
Remote Meter Reconfiguration Volume	The AMI Network Operations Centre team keeps accurate record of the number of re-configuration completed for each year.	Meter reconfiguration volume includes remote meter software & firmware updates.	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
		It excludes: • complete population upgrade to the next software version • customer initiated remote meter reconfiguration (e.g. solar upgrades) Applies to Type 4 meters only.	
Remote Meter Reconfiguration Costs	The Remote Meter Reconfiguration costs are tracked within SAP ERP in specific projects and PM Orders and through invoices. JEN's cost collection process uses a combination of projects (WBS elements) and cost centres to collect costs at the macro level. PM orders and activities are set up to collect costs at a micro level.	Total cost for Remote Meter reconfiguration is tracked in SAP ERP (MAT code Y99). The following BO Report is run to extract the required details for all the categories. • **OPR401 - JEN RIN - Base Analytical Report** The logic for determination of expenditure is to extract projects linked to appropriate maintenance (MAT Codes). The MAT codes define and categorize the activity into the required rows of the template. Specific WBS elements are grouped to get the categories in this section. PM Orders and operations details can be analysed further to get the details and categorize. The Controlling documents are filtered by: ➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**] ➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ Controlling Area = 3000 ➢ Cost Elements – {Exclude Overheads} ➢ Service Offering = OPX	N/A

Variable	Source and why actual	Methodology	Assumptions
IT Infrastructure Opex Costs	IT Infrastructure OPEX Costs are accurately captured in SAP ERP and checked against management records. An agreed methodology is then used to apportion costs of shared resources that could not have been directly assigned to ACS metering work. The methodology used to define percentage split of shared resources across different regulatory categories is not contingent upon judgements and assumptions for which there are valid alternatives, which could have led to a materially different results.	IT Infrastructure OPEX Costs consist of the cost of IT labour and system maintenance renewals (e.g. licences, support contracts) to support running of metering systems' software, middleware and hardware. Includes Remote meter reading and Remote meter reconfiguration costs. The costs are tracked in SAP ERP and reconciled back with management records. All resources and support agreements that can be clearly assigned to ACS metering are captured. Then, all the resources that are used across multiple regulatory categories and assets are individually assessed, to establish the percentage of their work that can be applied to JEN ACS. The assessment follows consistent methodology, in line with recommendations from AER's Consultant report. The following BO Report is run to extract the required details for all the categories. • **OPR401 - JEN RIN - Base Analytical Report** The logic for determination of expenditure is to extract projects linked to appropriate maintenance (MAT Codes). The MAT codes define and categorize the activity into the required rows of the template. Specific WBS elements are grouped to get the categories in this section. PM Orders and operations details can be analysed further to get the details and categorize. The Controlling documents are filtered by: ➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**]	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
		➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ Regulatory category = C53 ➢ Controlling Area = 3000 ➢ Cost Elements – {Exclude Overheads} ➢ Service Offering = OPX	
IT Infrastructure Capex Costs	IT Infrastructure CAPEX Costs are accurately tracked in SAP ERP. JEN's cost collection process uses a combination of projects (WBS elements) and cost centres to collect costs at the macro level. PM orders and activities are set up to collect costs at a micro level.	IT infrastructure Capex costs include any costs associated with procurement of new meter management, meter data management or back-office support systems for support of metering operations. The following BO Report is run to extract the required details for all the categories • **OPR406 - JEN RIN - Project costs** The logic for determination of expenditure is to extract projects linked to appropriate maintenance (MAT Codes). The MAT codes define and categorize the activity into the required rows of the template. Specific WBS elements are grouped to get the categories in this section. PM Orders and operations details can be analysed further to get the details and categorize. The Controlling documents are filtered by: ➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**] ➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ Regulatory category = C53, C63 ➢ Controlling Area = 3000 ➢ Cost Elements – {Exclude Overheads} ➢ Service Offering = CPX	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
Communications Infrastructure Capex Costs	Communications Infrastructure CAPEX Costs are accurately tracked in SAP ERP. JEN's cost collection process uses a combination of projects (WBS elements) and cost centres to collect costs at the macro level. PM orders and activities are set up to collect costs at a micro level.	Communications Infrastructure CAPEX is derived from SAP ERP and is administered by JEN SCADA team. The cost include material costs and costs of installation of new Communication Relays, batteries and antennas required for communication of Type 4 meters (e.g. SAP ERP projects A10-009 for labour, VMM-009 for materials). The following BO Report is run to extract the required details for all the categories • **OPR406 - JEN RIN - Project costs** The logic for determination of expenditure is to extract projects linked to appropriate maintenance (MAT Codes). The MAT codes define and categorize the activity into the required rows of the template. Specific WBS elements are grouped to get the categories in this section. PM Orders and operations details can be analysed further to get the details and categorize. The Controlling documents are filtered by: ➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**] ➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ Regulatory category = C53, C63 ➢ Controlling Area = 3000 ➢ Cost Elements – {Exclude Overheads} ➢ Service Offering = CPX	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
Communications Infrastructure Opex Costs	Communications Infrastructure OPEX costs are accurately tracked in SAP ERP, but captured across other sub-categories of this schedule.	Captured across other sub-categories of this schedule (e.g. remote meter reads, meter investigations).	No assumptions have been made.
Other Metering Costs • Meter Type 4 • Meter Type 5 • Meter Type 6 • Meter Type 7	All materially significant costs in this category are accurately tracked within the SAP ERP system, via JEN's Y99 Projects and PMOs. Type 5 meters are not relevant for this category	Other Metering costs are obtained directly from SAP ERP and include the following components: • Meter compliance (only Type 4 Meter – new connections) • Meter Operations costs (captured under Type 4 Meter, as most of the work is only done on Type 4 meters) • Meter Data Management costs (Types 4, 5, 6 & 7) • Metering strategy & Planning (Type 4 meters) The following BO Report is run to extract the required details for all the categories. • **OPR401 - JEN RIN - Base Analytical Report** The logic for determination of expenditure is to extract projects linked to appropriate maintenance (MAT Codes). The MAT codes define and categorize the activity into the required rows of the template. Specific WBS elements are grouped to get the categories in this section. PM Orders and operations details can be analysed further to get the details and categorize. The Controlling documents are filtered by: ➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**] ➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ Regulatory category = C53 ➢ Controlling Area = 3000	No assumptions have been made.

Variable	Source and why actual	Methodology	Assumptions
		➢ Cost Elements – {Exclude Overheads} ➢ Service Offering = OPX	

4.3 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 from JEN's two SAP systems (SAP ERP and SAP ISU) and so this information is reported as 'actual information'. These services are: • Energisation • De-energisation • Re-energisation • Special meter reading • Re-test of type 4, 5 and 6 metering installations for first tier customers with annual consumption greater than 160MWh • Fault response - not DNSP fault • Temporary disconnect/reconnect services • Wasted attendance - not DNSP fault • Service truck visits after excluding After Hours Truck Appointments which are reported in Template 4.4 • Temporary supply services	Actual Billing information from JEN's internal business records has been used. Manual Energisation and Re-energisation have the same fee and are reported under Re-energisation heading. AMI Metering Exit Fees were not reported due to low materiality.	None.

Variable	Source and why actual	Methodology	Assumptions
	• Remote meter re-configuration • Remote De and re-energisation • Routine Connections -customers <100 amps • AMI Metering Exit Fees		
GENERAL COMMENTS (Applicable to all sections)	JEN SAP ERP system.	SAP Business Objects (**BO**) reports have been developed to cater to the required details in this template. These reports extract data from the JEN Business Warehouse (**BW**) which source the data from the SAP ERP and AMI environments. Data models (joins, associations and merging of data) and queries (filtering of data) have been developed to associate the data from different sources to present in the format required in the template. The logic for the queries for each category has been detailed in the sections below. There are different buttons in the report for each category with different filter criteria. Each button is used to get the final numbers for each category to be reported in the template Data load from SAP ERP and AMI into the BW occurs every night as a batch job.	
Description of each service type	Listing of service type and descriptions is provided below.		
Expenditure ($0's)	The cost data for services are accurately tracked within SAP ERP in specific projects and PM Orders and through invoices.	Manual Energisation and Re-energisation have the same fee and are reported under Re-energisation heading.	None.

Variable	Source and why actual	Methodology	Assumptions
	JEN's cost collection process uses a combination of projects (WBS elements) and cost centres to collect costs at the macro level. PM orders and activities are set up to collect costs at a micro level. These services are: • Energisation • De-energisation • Re-energisation • Wasted attendance - not DNSP fault • Service truck visits • Temporary supply services • Remote meter re-configuration • Remote De and re-energisation • Routine Connections -customers <100 amps	The following BO Report is run to extract the required details for all the categories. • **OPR401 - JENRIN - Base Analytical Report** The logic for determination of expenditure is to extract projects linked to appropriate activity codes (MAT Codes). The MAT codes define and categorize the activity into the required rows of the template. Specific WBS elements are grouped to get the categories in this section. PM Orders and operations details can be analysed further to get the details and categorize. The Controlling documents are filtered by: ➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2018 [**All Periods of 2019**] ➢ Controlling documents business transaction = NOT KOAO (Exclude settlements) ➢ Controlling Area = 3000 ➢ Cost Elements – {Exclude Overheads} ➢ Service Offering = OPX and CPX	

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate	Actions to report actual data in future
Other Expenditure data	The services covered are: • Special meter reading • Fault response - not DNSP fault	JEN's system did not capture expenditure information in a way which was readily identifiable for these services. The cost to investigate or estimate the expenditure exceeds the benefit in	None.	The basis used enables audit trail and consistency with the reporting done under the Annual RIN. JEN is unaware of a better way	Whilst JEN already captures the expenditure in SAP ERP using the SAP activity mapping methodology, JEN will need to further educate relevant staff with the knowledge to understand the activities classified as Fee based and

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate	Actions to report actual data in future
	• Temporary disconnect/reconnect services • Re-test of type 5 and 6 metering installations for first tier customers • Remote de-energisation • Remote re-energisation • AMI Metering Exit Fee There are no separable or identifiable projects which capture the cost of the above services, and therefore have been reported at $0.	doing so; given the expected spend for would be immaterial.		for estimating these amounts.	capture the information in the right activity code thereby removing the need to use judgement. JEN will continue to improve the process of capturing the costs in the relevant regulatory category.

Descriptions of services

Service type	Description
Energisation	Manual energisation of supply involving fuse insert.
De-energisation	Manual de-energisation of supply involving a fuse removal.
Re-energisation	Manual energisation of supply involving fuse insert.
Special Meter Reading	Manual special meter read at the request of customer

Re-test of type 5 and 6 metering installations for first tier customers	Testing of type 5 and 6 metering installations at the request of customer or retailers.
Fault response - not DNSP fault	Customer requested call out to attend 'no supply' at their premises, which is not caused by a fault the DNSP's network.
Temporary disconnect/reconnect services	Temporary disconnection and subsequent reconnection services are generally provided to customers who request a physical disconnection and reconnection of premises at the distribution network—for example, disconnection at the top of a pole, above a shop veranda or in a service pit.
Wasted attendance - not DNSP fault	A wasted site attendance to a service at the customer's request where on arrival at the site, it is found the customer's premises are not ready for the scheduled work, or if the site is not safe to undertake the work or access to the site is limited.
Service truck visits	A truck visit at the customer's request to perform a service generally related to a connection or meter.
Temporary supply services	A temporary basic connection service (single or three-phase) is provided where supply is requested for a known, but limited period of up to 12 months and removed at a later date.
Remote meter re-configuration	Remote meter re-configuration of a meter
Remote de-energisation	Remote de-energisation of supply
Remote re-energisation	Remote re-energisation of supply
Routine Connections -customers <100 amps	Basic connection services are provided routinely to residential and small business customers, and for which the AER has approved a model standing offer. Services include standard overhead and underground connections.

4.4 QUOTED SERVICES

4.4.1 COST METRICS FOR QUOTED SERVICES

Actual information

Variable	Source and why actual	Methodology	Assumptions
Volume data	Volume data for jobs completed in the month was sourced directly from two of JEN's systems (SAP ERP and SAP ISU) and this information is reported as 'actual information'. These services are: • Supply abolishment > 100 amps • After hours truck by appointment after transferring the volume billed from "Service Truck Visits' (Template 4.3) • Routine Connections – customers >100 amps • Temporary covering of low voltage mains and service lines • Rearrangement of network assets at customer request • Elective Undergrounding • Reserve	Actual billing information from JEN's internal business records has been used.	. None.
GENERAL COMMENTS (Applicable to all sections)	JEN SAP ERP system.	SAP Business Objects (BO) reports have been developed to cater to the required details in this template. These reports extract data from the JEN Business Warehouse (BW) which source the data from the SAP ERP and AMI environments. Data models (joins, associations and merging of data) and queries (filtering of data) have been developed to associate the data from different sources to present in the format required in the template. The logic for the queries for each category has been detailed in the sections below.	None.

Variable	Source and why actual	Methodology	Assumptions
		There are different buttons in the report for each category with different filter criteria. Each button is used to get the final numbers for each category to be reported in the template Data load from SAP ERP and AMI into the BW occurs every night as a batch job.	
Description of each service type	Listing of service type and descriptions is provided below.		
Expenditure ($0's)	The cost data for services are accurately tracked within SAP ERP in specific projects and PM Orders and through invoices. JEN's cost collection process uses a combination of projects (WBS elements) and cost centres to collect costs at the macro level. PM orders and activities are set up to collect costs at a micro level. These services are:- • Supply abolishment > 100 amps • After hours truck by appointment • Routine Connections – customers >100 amps • Temporary covering of low voltage mains and service lines • Rearrangement of network assets at customer request • Elective Undergrounding • Exception - Reserve Feeder data was based on underlying dollar data used to assess, as per AER approved methodology, reserve feeder cost captured in SAP ERP projects.	The following BO Report is run to extract the required details for all the categories. • **OPR401 - JEN RIN - Base Analytical Report** The logic for determination of expenditure is to extract projects linked to appropriate maintenance (MAT Codes). The MAT codes define and categorize the activity into the required rows of the template. Specific WBS elements are grouped to get the categories in this section. PM Orders and operations details can be analysed further to get the details and categorize. The Controlling documents are filtered by: ➢ "**Posting Period**" of the controlling document is in the period of 01.2019 to 12.2019 [**All Periods of 2019**] ➢ Controlling documents business transaction = NOT KOAO (Exclude settlements)	None.

Variable	Source and why actual	Methodology	Assumptions
		➢ Controlling Area = 3000 ➢ Cost Elements – {Exclude Overheads} ➢ Service Offering = OPX and CPX	

Estimated information

No estimated information is provided.

Descriptions of services

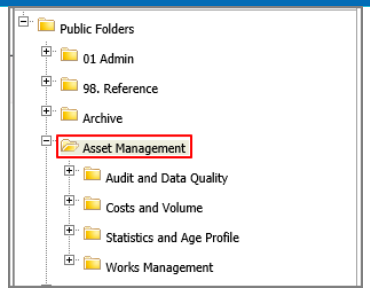
Service type	Description
Supply abolishment	Abolishment of supplies > 100 amps.
After hours truck by appointment	Customer requested after hours truck appointment
Routine Connections -customers >100 amps	A connection service that is not a basic connection that does not require network augmentation.
Reserve feeder (KW)	Operation and maintenance service of the reserve feeder supply a customer.
Temporary covering of low voltage mains and service lines	Temporary covering of low voltage mains and service lines
Rearrangement of network assets at customer request, excluding alteration and relocation of public lighting assets	Rearrangement of network assets at customer request, excluding alteration and relocation of public lighting assets
Elective Undergrounding	Undergrounding of an existing overhead supply connection at the customer's request.

5.2 ASSET AGE PROFILE

5.2.1 ASSET AGE PROFILE

Actual information

Variable	Source and why actual	Methodology	Assumptions
GENERAL COMMENTS (Applicable to economic life (years) & installed assets -> quantity currently in commission by year)	JEN SAP ERP and AMI System.	SAP Business Objects (BO) reports have been developed to cater to the required details in this template. These reports extract data from the JEN Business Warehouse (BW) which source the data from the SAP ERP and AMI environments. Data models (joins, associations and merging of data) and queries (filtering of data) have been developed to associate the data from different sources to present in the format required in the template. The logic for the queries for each category has been detailed in the sections below. There are different buttons in the report for each category with different filter criteria. Each button is used to get the final numbers for each category to be reported in the template Data load from SAP ERP and AMI into the business warehouse (BW) occurs every night as a batch job. The reports reside in BO Portal at the below location:	

Variable	Source and why actual	Methodology	Assumptions
			
5.2.1 – Installed Assets – Quantity currently in Commission (by year) • Poles By: Highest Operating Voltage ; Material Type; Staking (If Wood) • Pole Top Structures By: Highest Operating Voltage • Overhead Conductors By: Highest Operating Voltage; Number Of Phases (at HV) • Underground Cables By: Highest Operating Voltage • Service Lines By: Connection Voltage; Customer Type; Connection Complexity • Transformers By: Mounting Type; Highest Operating Voltage; Ampere Rating; Number Of Phases (at LV) • Switchgear By: Highest Operating Voltage; Switch Function • Public Lighting By: Asset Type; Lighting Obligation • SCADA, Network Control And Protection Systems By: Function	**Source of data**: The data is sourced from SAP ERP equipment. All equipment have user statuses defined and "in commission" corresponds to the equipment having system status "INSV" (in service) which is used to extract data. For staking of a wooden pole, the age profile reflects the years that a pole was staked, rather than the age of the underlying pole. For communications linear assets, prior to CY18 JEN's reported volume was the number of communications circuits. From CY18 onwards, JEN has reported the length of circuits. Distribution substation types:	The following BO Report is run to extract the required details for all the categories. • **ASM432 JEN RIN Asset Age Profile (ASSET AGE 5.2)** • **ASM456 JEN RIN Service Line Age Profile (ASSET AGE 5.2)** • **ASM475 JEN RIN Pole Bracket Age Profile (ASSET AGE 5.2)** The equipment are filtered by: ➢ **"Date Installed"** in the date range 01.01.1900 to 31.12.2019 [**Calendar year 2019**] ➢ Equipment Type ➢ Equipment Status = *INSV* ➢ Equipment Characteristics ➢ Functional Location Characteristics	Distribution poles that have no relationship to a power circuit are reported in the Other category. For service lines: • Public lighting services are classified as Commercial/Industrial • Otherwise, where a customer class is not Commercial/Industrial, the service line is classified as residential.

Variable	Source and why actual	Methodology	Assumptions
	Cubicle = Kiosk. Underground = Ground / Indoor. HV metering = Ground.		
5.2.1 – Economic Life – Mean & Standard deviation • Poles By: Highest Operating Voltage; Material Type; Staking (If Wood) • Pole Top Structures By: Highest Operating Voltage • Overhead Conductors By: Highest Operating Voltage; Number Of Phases (at HV) • Underground Cables By: Highest Operating Voltage • Service Lines By: Connection Voltage; Customer Type; Connection Complexity • Transformers By: Mounting Type; Highest Operating Voltage; Ampere Rating; Number Of Phases (at LV) • Switchgear By: Highest Operating Voltage; Switch Function • Public Lighting By: Asset Type; Lighting Obligation • SCADA, Network Control And Protection Systems By: Function	**Source of data**: The data is sourced from SAP ERP equipment. All equipment have user statuses defined and "removed" corresponds to the equipment having system status "RMVD" (in service) which is used to extract data. The economic life (mean and standard deviation) is calculated using the age of the assets which have been removed	The following BO Report is run to extract the required details for all the categories. • **ASM433 JEN RIN Asset Economic Life Statistics (ASST AGE 5.2)** • **ASM457 JEN RIN Service Line Economic Life Statistics (ASST AGE 5.2)** The equipment are filtered by: ➢ **"Date Removed"** in the date range 01.01.1900 to 31.12.2019 [**Calendar year 2019**] ➢ Equipment Type ➢ Equipment Characteristics ➢ Functional Location Characteristics	No assumptions have been made.

5.3 MD – 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	Source: - \\vtalpwfile07\netmgt\network planning\terminal station forecasts\2019 AEMO Forecasts\Itron\JEN TOTAL MW and MVAr (2019).xls 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: Summer 2018/19 = 01/10/2018 to 31/03/2019 Winter 2019 = 01/04/2019 to 30/09/2019 As winter 2019 data is not yet available, 2019 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.
Embedded generation	Source: - \\vtalpwfile07\netmgt\network planning\terminal station forecasts\2019 AEMO Forecasts\COGEN\JEN TOTAL GENERATION MW (2019)_simplied for Acil.xls	Only embedded generators above 1MW capacity are included, as follows: – Bioscience Research Centre – EDL – Bolinda Landfill – EDL – Brooklyn Landfill – Preston Mini Hydro – Visy	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.

Variable	Source and why actual	Methodology	Assumptions
	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.	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.	
Weather corrected (10% PoE) network coincident MD Weather corrected (50% PoE) network coincident MD	Source: - \\vtalpwfile07\netmgt\network planning\AER\3 - Category Analysis (RIN C)\2020 RIN C (2019 data)\Template 5.3 & 5.4\5.4 working files\5.4 temp adjustments.xls This data is a calculated actual, based on the actual metered maximum demand and temperature, using Jemena's established method for temperature adjustment.	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% 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)	It is assumed that the 10% POE and 50% POE average daily temperatures and MD temperature sensitivity relationship is consistent over the period 2009-2019.

Variable	Source and why actual	Methodology	Assumptions
		t_{min} = minimum overnight temperature for the day (i.e. from 00:00:00 to 06:00:00) (data sourced from PI)	

Estimated information

No estimated information is provided.

5.4 MD & UTILISATION – SPATIAL

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 left blank). JEN does not own any subtransmission substations or terminal stations.	Not applicable.	Not applicable.
Subtransmission Substation – Raw Adjusted MD Subtransmission Substation – Date MD Occurred Subtransmission Substation – Time MD Occurred	Source: Summer - Non-coincident data: Jemena Demand Forecast Model – Forecast Input and Constants Spreadsheet - Coincident data: Jemena Demand Forecast Model – Historical System Coincident Demand Spreadsheet Winter - Non-coincident data: Jemena Interval Meter System (IMS)	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.	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 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: Summer 2018/19 = 01/10/2018 to 31/03/2019 Winter 2019 = 01/04/2019 to 30/09/2019 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

Variable	Source and why actual	Methodology	Assumptions
Subtransmission Substation – Winter/Summer Peaking	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**) and Itron. Therefore the data provided is actual data.	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 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.	2019. All new stations and stations with significant permanent transfers were checked for winter MDs. "Coincident" is assumed to be at the time of JEN network coincident MD, as per template 5.3.
Subtransmission Substation – Adjustments – Embedded Generation	Source: - Jemena Demand Forecast – Total Generation 2019 Spreadsheet The data contained within the above files is 15 minute MW embedded generation meter readings sourced from the Interval Meter Store and Itron. Therefore the data provided is actual data.	Only embedded generators above 1MW capacity are included, as follows: – Bioscience Research Centre – 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.	LaTrobe University cogen is not included at subtransmission level as it is connected via the AusNet Services network.

Variable	Source and why actual	Methodology	Assumptions
		*SMTS MD does not include Somerton Power Station.	
Zone Substation – Substation Rating	Source: - Distribution Annual Planning Report 2019 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 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 left blank) for the following zone substations owned by customers or other distribution network service providers: – KLO – MAT – MB – SA – TT – VCO – WT	For each year the rating provided is for the season in which the MD occurs.
Zone Substation – Zone Substation – Raw Adjusted MD	Source: <u>Summer</u> - Non-coincident data:	<u>Non-coincident data:</u> 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	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.

Variable	Source and why actual	Methodology	Assumptions
Zone Substation – Date MD Occurred Zone Substation – Time MD Occurred Zone Substation – Winter/Summer Peaking	Jemena Demand Forecast Model – Forecast Input and Constants Spreadsheet - Coincident data: Jemena Demand Forecast Model – Historical System Coincident Demand Spreadsheet <u>Winter</u> - Non-coincident data: Jemena SCADA system The data contained within the above source files is extracted from PI and IMS/ Itron. This is actual metered MD data.	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. <u>Coincident data:</u> 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 KLO, MAT, MB, TT, VCO and WT, data has been extracted from the interval meter store (IMS) and Itron, 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 (AEST). Zone substation demand is at the transformer and therefore includes the impact of any capacitor banks 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.	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: Summer 2018/19 = 01/10/2018 to 31/03/2019 Winter 2019 = 01/04/2019 to 30/09/2019 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 the current regulatory year. All new stations and stations with significant permanent transfers were checked for winter MDs. “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
		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.	
Zone Substation – Adjustments – Embedded Generation	Sources: - Jemena Demand Forecast – Total Generation 2019 Spreadsheet The data contained within the above files is 15 minute MW embedded generation meter readings sourced from the Interval Meter Store and Itron. Therefore the data provided is actual data.	Only embedded generators above 1MW capacity are included, as follows: – Bioscience Research Centre (ZSS: NH) – 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.	Somerton Power Station is not included at zone substation level as it is connected at subtransmission level.
Subtransmission Substation – Weather Corrected MD Zone Substation – Weather Corrected MD	This data is a calculated actual, based on the actual metered maximum demand and temperature, using Jemena's established method for temperature adjustment. Source: - Jemena SCADA system	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	It is assumed that the 10% POE and 50% POE average daily temperatures and MD temperature sensitivity relationship is consistent over the period 2009-2019. Weather corrected MD is assumed to have the same MW/MVA ratio as raw adjusted MD.

Variable	Source and why actual	Methodology	Assumptions
	Source of coefficients A, B and C used for calculations in above file: - Jemena Demand Forecast Model – Forecast Input and Constants Spreadsheet	t_b = average daily temperature to adjust to (32.9°C for 10% POE or 29.4°C for 50% 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 overnight temperature for the day i.e. from 00:00:00 to 06:00:00) (data sourced from PI)	

Estimated information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate	Actions to report actual data in future
SA zone substation: Zone Substation – Raw Adjusted MD – Coincident & Non-coincident	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 not available. The MD at SA is estimated by aggregating the AMI and interval metered data from the individual customers supplied from SA feeders. The data is considered to be an estimate as AMI and interval meters record half an hour energy data, which will not be the true	It is assumed that the majority of customers supplied from the feeders have an active AMI meter. It is assumed that the 30min average energy consumption is a close representation of the instantaneous MD.	AMI meter data is the closest actual data that JEN currently has available to estimate loading on the SA zone substation. JEN is unaware of a better estimation methodology.	JEN has yet to identify a methodology which is economically feasible to provide actual data, as currently this would require the installation of new metering infrastructure at all locations where the SA feeders cross the JEN/Powercor supply boundary. JEN will consider

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate	Actions to report actual data in future
Zone Substation – Date MD Occurred – Non-coincident Zone Substation – Time MD Occurred – Non-coincident Zone Substation – Winter/Summer Peaking – Non-coincident Zone Substation – Weather Corrected MD		reflection of the actual MD. Additionally, customers without an active AMI or interval meter will not be included in the recorded MD. Jemena's established method for temperature adjustment (as set out the Subtransmission/Zone Substation – Weather Corrected MD section above) was applied to the MD at SA to calculate the weather corrected MD.			implementing any economically feasible options which may be identified in the future to address this.

6.3 SUSTAINED INTERRUPTIONS

6.3.1 SUSTAINED INTERRUPTIONS TO SUPPLY

Actual information

Variable	Source and why actual	Methodology	Assumptions
Sustained interruptions to supply	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 customers affected, restoration dates, times, restoration stages and cause descriptions. As the sustained interruptions information can be directly sourced from the OMS, we consider it to be 'actual information'.	The data used to calculate the reliability variables (KPIs) 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 KPIs 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 produced for internal vegetation management. Effect on unplanned SAIDI (Column J) and Effect on unplanned SAIFI (Column K) are calculated by dividing unplanned customer minutes-off-supply and unplanned customer affected respectively with urban or rural-short customer numbers as per feeder classifications reported in the Annual RIN. Effect on unplanned SAIFI is presented as per interruption instead of per 0.01 interruption for two reasons: 1) for consistency with historical reported RINs; 2) the AER has previously questioned why Jemena's unplanned SAIFI was reported 100 times	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
		larger compared to previous years when Jemena reported unplanned SAIFI as per 0.01 interruptions. An unplanned outage is defined as outages where the duration is longer than 1 minute and customers were not given 4 business days' notice. Where the Reason for interruption is "Planned", the Effect on unplanned SAIDI and Effect on Unplanned SAIFI is zero. JEN has included momentary interruptions (interruptions of less than or equal to 1 minute) in template 6.3 'sustained interruptions to supply' based on the definition of 'sustained interruption' in the category analysis RIN (18.2) which is an interruption greater than 0.5 seconds. JEN's circuit breakers protection auto-reclose dead time function is set to 5 seconds in general and so even if an event is defined as momentary, it will be considered a sustained interruption in the category analysis RIN based on the definition. Where the outage is momentary indicated by average duration being zero in Column I, the Effect on unplanned SAIDI and Effect on Unplanned SAIFI is zero. Urban or rural-short customer numbers are calculated as average of at the start and at the end of the reporting period and are equal to the numbers reported in the Annual RIN Table 6.2.4.	

EXPENDITURE SUMMARY – BALANCING ITEM RECONCILIATION

TABLE 2.1.1 - STANDARD CONTROL SERVICES CAPEX	Amount ($)
Duplication of Capitalised Network & Corporate Overheads that appear in Non-Network Capex and Network & Corporate Overheads	(816)
TOTAL	(816)

TABLE 2.1.2 - STANDARD CONTROL SERVICES OPEX	Amount ($)
Duplication of Non-Network IT costs that appear in Non-Network Opex and Corporate Overheads Opex	(7,889,644)
Duplication of Network Overheads Opex that appears in Non-Network Opex and Network Overheads Opex	1,852,218
Duplication of Fleet costs in Non-Network Opex and other categories of Opex	(615,383)
Duplication of Network underground cable maintenance by Voltage and by Location	(110,676)
TOTAL	(6,763,485)

TABLE 2.1.3 - ALTERNATIVE CONTROL SERVICES CAPEX	Amount ($)
Duplication of Connections costs that appear in Connections and Fee Based & Quoted	(4,780,589)
Duplication of Replacement Expenditure that appears in Replacement Expenditure and Public Lighting	(1,221,707)
Duplication of Non Network Expenditure that appear in Non-Network Capex and Metering	(1,828,057)
TOTAL	(7,830,353)

TABLE 2.1.4 - ALTERNATIVE CONTROL SERVICES OPEX	Amount ($)
Duplication of Non-Network IT costs that appear in Non-Network Opex and Corporate Overheads	(1,446,237)
Duplication of Non-Network Property costs that appear in Non-Network Opex and Network Overheads	(402,909)
Duplication of Non-Network Property costs that appear in Non-Network Opex and Corporate Overheads	(1,300,594)
Duplication of Fleet costs in Non-Network Opex and other categories of Opex	(333,525)
TOTAL	(3,483,265)