Ausgrid 2008-09 to 2012-13 Non-Financial Reset RIN Audit

AUSGRID

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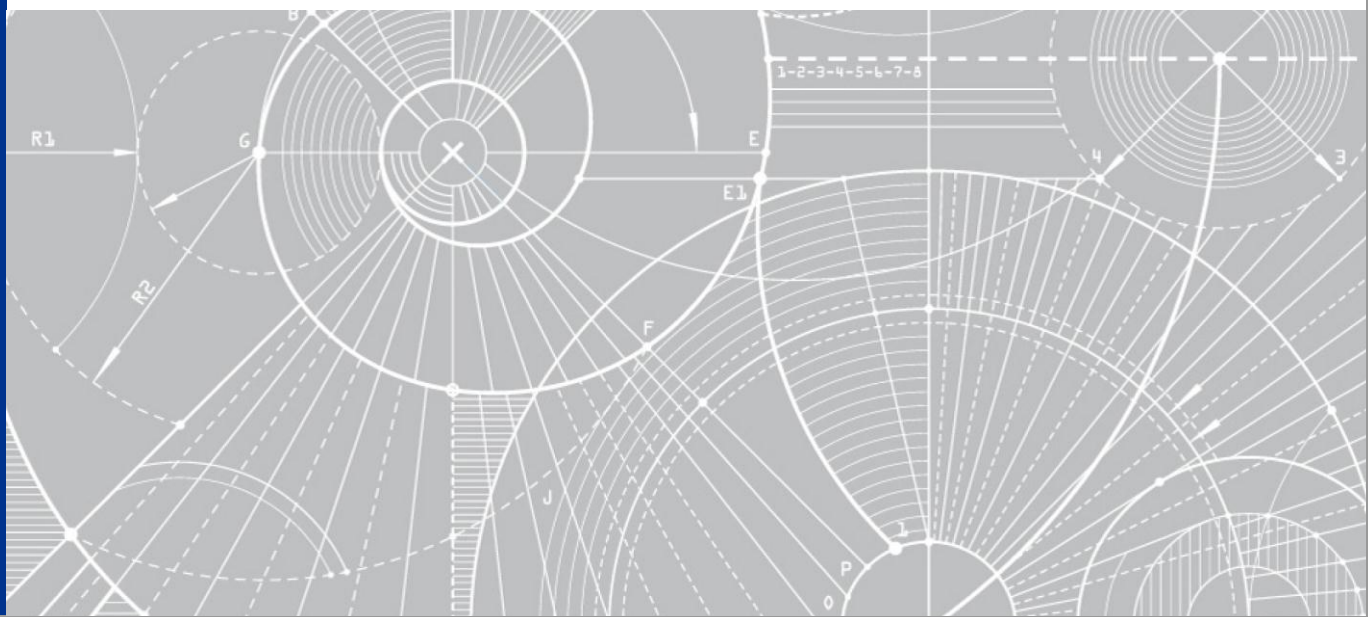

JACOBS SKM

Ausgrid 2008-09 to 2012-13 Non-Financial Reset RIN Audit

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Project manager:	Phil Grieshaber
Author:	Anuraag Malla, Sutharsini Yoganathan, Benjamin Ng, Mario Lemut
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Jacobs SKM
ABN 37 001 024 095
100 Christie Street
St Leonards NSW 2065 Australia
PO Box 164 St Leonards NSW 2065 Australia
T +61 2 9928 2100
F +61 2 9928 2500
www.jacobsskm.com

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Revision	Date	Description	By	Review	Approved
Draft	23-May-2014	Draft for client comment	A. Malla	P. Grieshaber	R.Dudley
Final	30-May-2014	Final issue	A. Malla	P. Grieshaber	R.Dudley

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Executive summary

The Australian Energy Regulator (AER) is developing a nationally consistent reporting framework that will allow them to benchmark expenditure at the disaggregated category level referred to as category or reset analysis, as well as benchmark on a higher economic level to allow them to analyse the efficiency of Network Service Providers (NSPs) over time and compared to their peers.

As part of this framework, the NSP's are required to provide information and data to allow this benchmarking to be undertaken. For Reset, the AER requires higher level aggregated data for top down analysis. The requirement for the Category or Reset Analysis data is disaggregated because the AER will use it for lower level comparisons.

For Reset Analysis, the NSP's are required to complete the Regulatory Information Notice (RIN) templates that the AER has provided (latest version is 07 march 2014). The current version of the Reset RIN templates requires the NSPs to provide data for several operational inputs, outputs, asset profiles, and service characteristics.

The AER either requires 5 years of historic data from 2008/09 to 2012/13 in some templates of the Reset RIN, or 11 years of historic, estimated and forecast data from 2008/09 to 2018/19 on other templates of the Reset RIN. The AER require 5 years of this data to be audited, namely 2008/09 to 2012/13, i.e. the historic data.

Given the above requirement, Ausgrid engaged Jacobs SKM to audit the Non-Financial aspects of the Reset RIN response to the AER. Jacobs SKM has prepared this audit report to provide assurance, as per the RIN requirements, for these 5 years.

In many instances, Ausgrid has prepared the data to meet this Reset RIN requirement for the first time and hence values were generated using the best available information from various systems and records, all of which has accuracy and completeness limitations, and involved extensive manual data manipulation, calculation, assumptions, estimation and/or omission of unavailable data.

Inconsistencies in data against the historically reported information were also observed in a number of instances. Historical information is readily available in the public domain or the AER website and published by Ausgrid.

Apart from few exceptions and in the remaining cases, nothing has come to the Auditor's attention that causes it to believe that the historical Non-Financial information is not, in all material respects, presented fairly in accordance with the requirements of the Reset RIN and Ausgrid's Basis of Preparation report. These few exceptions involve inconsistencies with the underlying information source, data processing, quality and completeness issues. The context or reason and magnitude or impact of these inconsistencies and inaccuracies are explained in detail in the audit report.

The Jacobs SKM audit team includes Phillip Grieshaber, Anuraag Malla, Sutharsini Yoganathan, Benjamin Ng and Mario Lemut. Phillip Grieshaber is taking responsibility as lead auditor and for signing the audit statement.

1. Introduction

1.1 Background

The Australian Energy Regulator (AER) has issued a Reset RIN (or 'Notice') under Division 4 of Part 3 of the National Electricity Law (New South Wales) (NEL) to Ausgrid on 07 March 2014. This notice requires Ausgrid to provide and to prepare and maintain information in a manner and form specified in the Notice and its Schedules and Appendices. The AER requires the information for the performance or exercise of a function or power conferred on it under the NEL or the National Electricity Rules (NER), namely:

- to publish Network Service Provider performance reports (annual benchmarking reports) the purpose of which are to describe, in reasonably plain language, the relative efficiency of each Distribution Network Service Provider (DNSP) in providing direct control services over a 12 month period; and

- to assess benchmark operating expenditure and benchmark capital expenditure that would be incurred by an efficient DNSP relevant to building block determinations,

In respect of the distribution services provided by way of the electricity distribution network Ausgrid operates in NSW.

Accordingly, Ausgrid has prepared its 2008-09 to 2018-19 Reset RIN submission to the AER. The AER requires the reported historic data and the corresponding Basis of Preparation report prepared by Ausgrid to be independently audited prior to the final submission. Ausgrid has engaged Jacobs SKM to audit the historic Non-Financial data in the Reset RIN templates and the corresponding Basis of Preparation report.

1.2 Scope

The scope of this audit corresponds to the both Actual and Estimate historic Non-Financial information in the RIN and is presented in in Table 1. It involves auditing reported data for 2008-09 to 2012-13 periods only. All non-monetary data that is not described or measured in dollar values are classified as Non-Financial information in the RIN.

Table 1: Audit scope for historic Non-Financial Reset RIN Templates

Template Heading	Table Heading
2.2 – Repex	2.2.1 – Replacement Expenditure, Volumes and Asset Failures by Asset Category
	2.2.2 – Selected Asset Characteristics
2.3 – Augex Project Data	2.3.1 – Augex Asset Data – Subtransmission Substation, Switching Stations and Zone Substations
	2.3.2 – Augex Asset Data – Subtransmission Lines
	2.3.3 – Augex Data – HV/LV Feeders and Distribution Substations 2.3.3.1 – Descriptor Metrics
2.4 – Augex Model	2.4.1 – Augex model inputs – asset status – sub transmission lines
	2.4.2 – Augex model inputs – asset status – high voltage feeders
	2.4.3 – Augex model inputs – asset status – subtransmission substations, subtransmission switching stations, and zone substations
	2.4.4 – Augex model inputs – asset status – distribution substations
	2.4.5 – Augex model inputs – network segment data
	2.4.6 – Capex and net capacity added by segment group
2.5 – Connections	2.5.1 – Descriptor Metrics

Template Heading	Table Heading
	2.5.2 – Cost Metrics by Connection Classification
2.6 – Non Network Expenditure	2.6.2 – Annual Descriptor metrics – IT & Communications Expenditure
	2.6.3 – Annual Descriptor Metrics – Motor Vehicles
2.7 – Vegetation Management	2.7.1 – Descriptor Metrics by Zone
	2.7.3 – Descriptor Metrics Across All Zones – Unplanned Vegetation Events
2.8 – Maintenance	2.8.1 – Descriptor Metrics for Routine and Non-Routine Maintenance
2.11 – Labour	2.11.1 – Cost Metrics per Annum
	2.11.2 – Extra Descriptor Metrics for Current Year
4.1 – Public Lighting	4.1.1 – Descriptor Metrics Over Current Year
	4.1.2 – Descriptor Metrics Annually
4.2 – Metering	4.2.1 – Metering Descriptor Metric
	4.2.2 – Cost Metrics
4.3 – Ancillary Services – Fee Based Services	4.3.1 – Cost Metrics for Free Fee-based Services
4.4 – Ancillary Services – Quoted Services	4.4.1 – Cost Metrics for Quoted Services
5.2 – Asset Age Profile	5.2.1 – Asset Age Profile
5.3 – Maximum Demand at Network Level	5.3.1 – Raw and Weather Corrected Coincident MD at Network Level (Summed at Transmission Connection Point)
5.4 – Maximum Demand and Utilisation at Spatial Level	5.4.1 Non-Coincident & Coincident maximum Demand
6.1 – Telephone Answering	6.1.1 – Telephone Answering Data
6.2 – Reliability and Customer Service Performance	6.2.1 – Unplanned Minutes Off Supply (SAIDI) – Actual, Target and Proposed Reliability
	6.2.2 – Unplanned Interruptions to Supply (SAIFI) – Actual, Target and Proposed Reliability
	6.2.3 – Unplanned Momentary Interruptions to Supply (MAIFI) – Actual, Target and Proposed Reliability
	6.2.4 – Customer Numbers
	6.2.5 – Customer Service
	6.2.6 – Estimated Data Percentage Accuracy – SAIDI
	6.2.7 – Estimated Data Percentage Accuracy – SAIFI
6.3 – Sustained Interruptions and Supply	6.3.1 – Sustained Interruptions to Supply (from 1 July 2008)
6.4 – Historical major Event Days	6.4.1 – Major Event Day Data

Jacobs SKM has undertaken this audit of Ausgrid's reporting as per Clause 32.1(b) of Schedule 1 and Clause 1.4 of Schedule 2 of the Reset RIN and in accordance with the review requirements set out in Clauses 1.1(c), 1.1(d), 2.2 and 3.4 of Appendix C of the Reset RIN.

1.3 Methodology

Provision of information: Jacobs SKM received the reported Reset RIN data in eight progressive instalments with the final version on 06 May 2014. Additional supporting or underlying information was further provided after meeting relevant Ausgrid's staff during the on-site assessment including telephone conferences. In most instances, Jacobs SKM obtained sufficient appropriate evidence on which to base the audit opinion. While sufficiency is the measure of the quantity of evidence, appropriateness is the measure of the quality of the evidence i.e. its relevance and its reliability. Jacobs SKM also considered the relationship between the cost of obtaining evidence and the usefulness of the information obtained. Jacobs SKM used its professional judgement in evaluating the sufficiency and appropriateness of evidence to support its audit opinion.

On-site assessment: Jacobs SKM spent 3 days conducting telephone interviews and 4 days on site at Ausgrid's Head Office Building (HOB) to meet Ausgrid staff associated with each of the systems or processes pertaining to the recording, processing and reporting of the historical Non-Financial information in the Reset RIN Templates. Jacobs SKM then attempted to verify the validity and accuracy of the information by tracing data flow through the various systems. This included an assessment of the validity of the data entering the system, followed by scrutiny of the data manipulation throughout the individual processes. Jacobs SKM conducted reasonable sampling to satisfy itself that the processes are robust, focussing on any instances of manual data manipulation or where anomalies are evident. This allowed Jacobs SKM to appraise Ausgrid's operational processes, business systems, reporting environments, and data handling to appreciate the logical flow of information from event occurrence to data presentation.

Off-site assessment: Jacobs SKM conducted desk-top analysis on data and records collected during the audit, and cross-check calculations and processing performed on data by Ausgrid reporting systems. In order to express an opinion, Jacobs SKM reviewed possible sources of error that could reasonably have errors material to an overall system error. Based on the audit scope as described earlier Jacobs SKM has performed a number of audit procedures to form its audit opinions, including:

- Reviewing Ausgrid's internal business procedures, and based on these procedures and Jacobs SKM's knowledge of utility operations and reporting, identifying areas assessed with higher risk of weakness in controls or data accuracy.
- Interview Ausgrid management and staff to query aspects of their systems and processes, test the application of those systems and processes, and to explain any unusual data.
- Reviewing Ausgrid's underlying data used to calculate the figures presented in the Reset RIN, and checks on this data for internal consistency. Data items were identified which appeared to have inconsistencies or were otherwise assessed as higher risk or materiality for inclusion within sampling, alongside random sampling.
- Checking the calculations used to present the final figures in the Reset RIN template from the underlying data.
- Identifying, comparing and corroborating secondary data points against the Reset RIN data, to provide increased assurance of the accuracy and completeness, and to highlight potential weaknesses in controls.
- Testing the Reset RIN data, and assessing the accuracy of the reported data based on a combination of risk based and random sampling.
- Testing the application and the use of the processes, procedures and systems used to produce the data. This involved assessing the reliability of the processes and systems applied to generate and prepare the reported data, and whether these were correctly used by the relevant Ausgrid's staff; and are capable of reliably reporting the Reset RIN data.

In Jacobs SKM's view the audit evidence obtained is sufficient and appropriate to provide a basis for our audit opinions against each of the items in the Reset RIN.

Due to the inherent limitations of any internal control structure it is possible that fraud, error, or non-compliance with laws and regulations may occur and not be detected. Further, the audit was not designed to detect all weakness or error in internal controls so far as they relate to the requirements set out above as the audit has not been performed continuously throughout the period and the procedures performed on the relevant internal controls were on test basis. Any projection of the evaluation of control procedures to future periods is subject to risk that the procedures may become inadequate because of change in conditions, or that the degree of compliance with them may deteriorate.

Reporting: Throughout this report Jacobs SKM has expressed opinions on the information contained in the Reset RIN templates, Basis of Preparation report, and the underlying systems used to derive that information. In forming a view Jacobs SKM has undertaken audit procedures to obtain sufficient and appropriate evidence to warrant the stated opinions. The procedures selected depend on the judgement of the auditors who have primarily considered the risks of material misstatement of the Reset RIN data. In making judgements and risk assessments, Jacobs SKM's auditors have considered Ausgrid's relevant internal controls for collecting and presenting the Reset RIN data.

Jacobs SKM's audit findings are given in the form of a written opinion on the accuracy and reliability of the reported data submitted by Ausgrid. Jacobs SKM has undertaken the audit in line with the AER assurance expectation. The AER specifies that the ASAE 3000 is applicable for auditing historical Non-Financial information, but does not differentiate between historical Actual Non-Financial information and historical Estimate Non-Financial information. The reporting nature of the ASAE 3000 encompasses both Reasonable Assurance and Limited Assurance auditing engagement as per the Australian Government Auditing and Assurance Standards Board (AUASB). Therefore, Jacobs SKM has assumed Limited Assurance auditing engagement with assessment opinion requiring negative expression to be applicable to both historical Actual Non-Financial information and historical Estimate Non-Financial information for all audited years and for all variables. This is also consistent with the AER's instruction of "Review" as per Clause 32.1(b) of Schedule 1, Clause 1.4 of Schedule 2, Clauses 1.1(c), 1.1(d), 2.2 and 3.4 of Appendix C, and the definition for the "Review Report1" stated in Appendix F of the Reset RIN.

Jacobs SKM's assessment and opinion currently presented in this report represents the final iteration or version of the RIN response by Ausgrid. Assessment and opinion in the draft reporting stage that subsequently caused revision of the reported data in the RIN templates were therefore excluded from this final version of the audit report.

[1] Review Report (defined in page 118): An Auditor's limited assurance engagement report as required by this Notice and prepared in accordance with the requirements set out in Appendix C of this Notice.

2. Audit Findings

Jacobs SKM's findings and opinions on the audited portion of Ausgrid's historical Non-Financial Reset RIN data submission to the AER are detailed in this section of the report. The audit findings provide the basis for Jacobs SKM's audit opinion. Ausgrid's reported information is derived from underlying data that is extracted from, and dependent on, various Ausgrid systems, procedures, and/or estimation methodologies. Thus, Jacobs SKM's opinion on the accuracy and validity of reported information is largely based upon a review of relevant Ausgrid systems, processes, and estimations. Jacobs SKM's assessments have been made in consideration of the AER requirements and definitions issued in the Reset RIN on 07 March 2014 to Ausgrid.

2.1 Template 2.2 – Repex

2.1.1 Reported Data

The Reset RIN Template 2.2 – Table 2.2.1 reports Ausgrid's replacement and failure volumes for ten distinctive asset groups. Each of these ten asset groups are further subdivided into multiple asset categories. Two sets of Non-Financial data – annual asset replacement quantities and annual asset failure quantities are reported and the unit of measurement are unit counts and kilometre length.

The Reset RIN Template 2.2 – Table 2.2.2 reports Ausgrid's selected asset characteristics for five distinctive asset groups. These five asset group is a subset from Table 2.2.1 and presents the same annual replacement quantity data in a different breakdown structure or format. Two sets of Non-Financial data – asset quantities currently in commission and annual asset replacement quantities are reported and the unit of measurement are unit counts, kilometre length, and MVA.

The explanation, instruction and definition of the terms used in these Tables are provided in Appendices E and F of the Reset RIN issued by the AER.

2.1.2 System, Procedures and Estimation Assessment

Jacobs SKM's assessment is based on a review of the systems, procedures, and estimation methodology (if applicable) that Ausgrid followed to record, store, extract and process the reported information. As part of the review, Jacobs SKM analysed the reported and underlying data, and interviewed staff responsible for preparing this information. Jacobs SKM notes the following:

- It is noted that a significant level of resource was required to populate Table 2.2.1 in the required format. Significant amount of data extraction, manipulation and apportioning by many individuals took place concurrently.
- The values reported in Table 2.2.1 was compared with the independent derivation from the underlying raw data provided by Ausgrid. A number of randomly selected cells were cross-checked with the raw underlying calculations of which all the numbers matched and the only discrepancy identified is minor formatting error when copying and pasting the data in the Table 2.2.1.

2.1.3 Auditors Opinion

The summary of Jacobs SKM's opinion on the accuracy and reliability of the information reported in these Reset RIN Tables is:

- Tables 2.2.1 and 2.2.2 were generated using the best available information from various systems, business reports, and historical databases, all of which has some accuracy and completeness limitations, and involved extensive manual data manipulation, assumptions and estimation, to generate the RIN data in the requested format.
- While nothing has come to the Auditor's attention that causes it to believe that the data reported in these Tables are not, in all material respects, presented fairly in accordance with the requirements of the Reset

RIN and Ausgrid's Basis of Preparation report, the quality of data is inaccurate. This inaccuracy is considered immaterial to the values in the RIN Table.

2.2 Template 2.3 – Augex Project Data

2.2.1 Reported Data

The Reset RIN Template 2.3 – Table 2.3.1 reports Ausgrid's augmentation asset data for subtransmission substation, switching stations and zone substations. This Table lists projects, describes it, and summarises the newly built asset and capacity details. The Non-Financial data for each listed project includes new asset quantities, capacities, project drivers, and augex timeframe, and the unit of measurement are unit counts, MVA, kV and years. All the data in all the variables in this Table are a mix of estimates and actuals.

The Reset RIN Template 2.3 – Table 2.3.2 reports Ausgrid's augmentation asset data for subtransmission lines. This Table lists projects, describes it, and summarises the newly built asset and capacity details. The Non-Financial data for each listed project includes new asset quantities, capacities, project drivers, and augex timeframe, and the unit of measurement are unit counts, kilometre length, MVA, kV and years. All the data in all the variables in this Table are a mix of estimates and actuals.

The Reset RIN Template 2.3 – Table 2.3.3.1 reports Ausgrid's augmentation asset data for HV/LV feeders and distribution substations. This Table lists asset types and provided the augmentation quantities summary for each. Two sets of Non-Financial data – new quantities added each year and quantities upgraded each year are reported and the unit of measurement are unit counts and kilometre length. All the data in all the variables in this Table are actuals.

The explanation, instruction and definition of the terms used in these Tables are provided in Appendices E and F of the Reset RIN issued by the AER.

2.2.2 System, Procedures and Estimation Assessment

Jacobs SKM's assessment is based on a review of the systems, procedures, and estimation methodology (if applicable) that Ausgrid followed to record, store, extract and process the reported information. As part of the review, Jacobs SKM analysed the reported and underlying data, and interviewed staff responsible for preparing this information. Jacobs SKM notes the following:

- Table 2.3.1 and Table 2.3.2 have been populated from numerous Ausgrid systems and sources including development briefs, network project approval documents, practical completion documents, system diagrams, Ratings and Impedance Calculator (RIC) and SAP. Some of these sources including development briefs and system diagrams require manual interpretation of the information in order to extract and populate values for Table 2.3.1. For example, development briefs for Ausgrid's projects outline the requirements of each project prior to approval including:
  - Background and identification of need for project
  - Options considered
  - Selected option
  - Required project outcomes and timing
  - Development requirements

  Based on the interpretation of this information, Ausgrid was able to populate the fields including substation ID, substation type, project ID, project type, project trigger and voltage. Ausgrid was required to analyse each individual development brief for all their project in order to populate Table 2.3.1 and Table 2.3.2. The procedure to populate Table 2.3.1 and table 2.3.2 involved extensive manual analysis of information, as Ausgrid does not have any automated systems to generate this type of information. Given the amount of manual handling of data, there may be at times instances where small inaccuracies are entered into the

RIN Table, due to misinterpretation or oversight of information. As this is the only method for Ausgrid to populate Table 2.3.1 and Table 2.3.2, the information used is the best available, and where errors are present, they are considered small and immaterial.

- Pre and post substation ratings for both normal cyclic and N-1 emergency have been determined from both project briefs and RIC. Ausgrid have an internal procedure to calculate the substation rating based on the configuration of the transformers, hence substation rating is not a simple summation of the transformer's nameplate capacity. There are approximately 20 different configurations, all based on the location, voltage, transformer configuration and transformer ratings.
- Information pertaining to the transformers, switchgear and capacitors added along are derived from Ausgrid's system diagrams and material booked against the project within Ausgrid's internal systems. This procedure again requires Ausgrid staff to manually analyse each individual project, calculate the value based on their judgement of the data.
- For Table 2.3.2, there are currently no values in the column "Circuit KM Upgraded", even though there are project types listed as "Line upgrade - voltage upgrade".
- The number of distribution transformers added and replaced for each financial year has been obtained from Ausgrid's SAP system. Using financial estimates, Ausgrid have only included all distribution transformers either replaced or upgraded which aligned with augex related expenditure in order to avoid overlap with other worksheets.
- HV and LV feeder augmentation lengths have been sourced from the GIS system. The GIS is capable of providing conductor information including the voltage, whether overhead or underground, length of conductor and year of commissioning.
- From Ausgrid's SAP system, it was not possible to determine whether all indoor and chamber substations were upgraded or replaced. Only a small sample of transformers had records on whether they were replaced or upgraded. Ausgrid have used the percentage split of replaced and upgraded transformers from their small sample for each category and have apportioned the total distribution transformers from this percentage split. Ausgrid have advised that pole substations do not get upgraded, and are instead considered replaced.

2.2.3 Auditors Opinion

The summary of Jacobs SKM's opinion on the accuracy and reliability of the information reported in these Reset RIN Tables is:

- Nothing has come to the Auditor's attention that causes it to believe that the data reported in Table 2.3.1 and Table 2.3.2 are not, in all material respects, presented fairly in accordance with the requirements of the Reset RIN and Ausgrid's Basis of Preparation report. Given the manual data entry and inspection of data, there may be immaterial data inaccuracies presented. As Ausgrid does not have any automated systems to generate this type of data, the methods used by Ausgrid are considered the best available.
- Nothing has come to the Auditor's attention that causes it to believe that the data reported in Table 2.3.3.1 is not, in all material respects, presented fairly in accordance with the requirements of the Reset RIN and Ausgrid's Basis of Preparation report. Where estimates were required, the appropriate assumptions have been made in order to comply with the Reset RIN definitions.

2.3 Template 2.4 – Augex Model

2.3.1 Reported Data

The Reset RIN Template 2.4 – Table 2.4.1 reports Ausgrid's subtransmission lines by line or feeder ID and its asset, network, geographical, rating and loading profile as of 30 June 2009 and 30 June 2013. The Non-Financial data for each listed Line ID includes geographical classification, network connection status, kilometre route length, maximum demand, asset ratings and growth rate between 2008 and 2013.capacities, and the unit

of measurement are kV, associated substation names, kilometre length, MVA and % rate. All the data in all the variables in this Table are a mix of estimates and actuals.

The Reset RIN Template 2.4 – Table 2.4.2 reports Ausgrid's high voltage feeders by feeder ID and its asset, network, geographical, rating and loading profile as of 30 June 2009 and 30 June 2013. The Non-Financial data for each listed feeder ID includes geographical classification, network connection status, kilometre route length, maximum demand, asset ratings and growth rate between 2008 and 2013.capacities, and the unit of measurement are kV, associated substation names, kilometre length, MVA and % rate. All the data in all the variables in this Table are a mix of estimates and actuals.

The Reset RIN Template 2.4 – Table 2.4.3 reports Ausgrid's subtransmission substations, subtransmission switching stations and zone substations by substation ID and its network, geographical, transformation rating and loading profile as of 30 June 2009 and 30 June 2013. The Non-Financial data for each listed substation ID includes geographical classification, substation voltage, transformer count, maximum demand, asset ratings and growth rate between 2009 and 2013.capacities, and the unit of measurement are kV, asset quantities, MVA and % rate. All the data in all the variables in this Table are a mix of estimates and actuals.

The Reset RIN Template 2.4 – Table 2.4.4 reports Ausgrid's distribution substations by supply locations and its respective histogram of utilisation bands and the total capacity in 2008-09 and 2012-13. The Non-Financial data for each geographical supply area includes MVA in each utilisation band, total MVA and growth rate between 2008-09 and 2012-13, and the unit of measurement are MVA and % rate. All the data in all the variables in this Table are estimates.

The Reset RIN Template 2.4 – Table 2.4.5 reports Ausgrid's network segment data by AER segment group as prescribed in the Reset RIN and the respective historical capacity factor, mean value of utilisation threshold, and standard deviation of the utilisation threshold. These Non-Financial data for each listed network segment are measured in ratio (or factor) and percentage. All the data in some the variables in this Table are actuals.

The Reset RIN Template 2.4 – Table 2.4.6 reports Ausgrid's estimate of net capacity added by the AER prescribed network segment group. It list the estimate of net capacity added at present, i.e. over period 2012-13 to 2013-14 and splits that into customer initiated augex, DNSP initiated augex, and residual. These Non-Financial data for each listed network segment are measured in MVA. All the data in all the variables in this Table are estimates.

The explanation, instruction and definition of the terms used in these Tables are provided in Appendices E and F of the Reset RIN issued by the AER.

2.3.2 System, Procedures and Estimation Assessment

Jacobs SKM's assessment is based on a review of the systems, procedures, and estimation methodology (if applicable) that Ausgrid followed to record, store, extract and process the reported information. As part of the review, Jacobs SKM analysed the reported and underlying data, and interviewed staff responsible for preparing this information. Jacobs SKM notes the following:

- Information used to populate Table 2.4.1 has been sourced from numerous Ausgrid's systems of which some assumptions were required in order to present it to the Reset RIN requirements. The "primary type of area supplied by line" is derived from the 11kV feeder classification listed in Table 2.4.3. For example, if the outgoing 11kV feeders at the zone substation are predominantly Urban feeders, the sub-transmission line for this zone substation will therefore be classified as Urban. Where the zone substation has an equal number of 11kV feeder classifications, Ausgrid used their internal expert opinion to classify the sub-transmission line. There were seven substations which required an opinion to categorise the sub-transmission line from having an equal number of 11kV feeder classifications.
- Route line length reported in Table 2.4.1 is sourced from Ausgrid's GIS system, with missing information estimated from system diagrams, project briefs and line route maps. Approximately 6% of route line length information was required to be estimated due to feeder information not mapped to the GIS. Where route

line length is presented as zero for 2008-09, Ausgrid have confirmed the feeder did not exist for that regulatory year.

- Ausgrid have included normally open feeders which are on standby and can be switched in/out during contingencies while reported in Table 2.4.1. These feeders have a maximum demand of 0 as under normal conditions, they do not carry any load.
- Maximum demand readings in Table 2.4.1 were obtained from Ausgrid's SCADA system where available. There are some 33kV feeders specifically older "tail-ended" feeders which do not have SCADA measurement points. In these cases, the maximum demand has been estimated based on SCADA recorded demand readings on the transformer LV side at the time of the peak. Where SCADA was not available on other feeders, load-flow analysis was performed to estimate the maximum demand. In total, approximately 30% of feeders in this Table required estimation.
- Both thermal and N-1 emergency line rating in Table 2.4.1 has been calculated from the formula provided in the Basis of Preparation. For the N-1 emergency rating, input assumptions including mutual heating for cables and operating temperature for overhead lines were different to the thermal rating calculation.
- In comparing the maximum demand values reported in Table 2.4.2 Jacobs SKM analysed data, in particular, the maximum peak loads, 50% PoE and power factor data extracted from SCADA system and the Demand Management Group and calculated the Maximum Demand (in MVA and MW), Some discrepancies were found when comparing to Ausgrid's reported values however, these were minor amount and is not comparable to the overall quantity of values reported.
- An analysis was also conducted on the raw data of each feeder's peak rating (sourced from SCADA systems). When comparing the calculated values of the thermal rating (MVA) to those reported in Table 2.4.2 a significant amount of discrepancies were found. The assumptions provided in the Basis of Preparation did not provide significant information to disregard the quantity of discrepancies.
- It was also noted that the underlying data contained feeders which were not reported in Table 2.4.2 and similarly there were feeders reported in 2.4.2 that were not found in the raw data. However these discrepancies were minor and the assumptions that were made in the Basis of Preparation was adequate to explain this inconsistency.
- It should be noted the route line length as at 30 June 2009 for a large number of HV CBD feeders in Table 2.4.2 are exactly 11km long. These HV CBD feeders originate from City East, Dalley Street, City South and City Central zone substations. Jacobs SKM is of the view that this reported information is most likely incorrect and possibly a result of typographical error or data processing error.
- Discrepancies were noted when comparing the total count of subtransmission substation, subtransmission switching stations and zone substations as at 30/06/2009 reported in Table 2.4.3 from the historically published 2008-09 Annual Network Performance Report. The data in this Table reports less substations.
- Discrepancies were noted when comparing the total count of subtransmission substation, subtransmission switching stations and zone substations as at 30/06/2013 reported in Table 2.4.3 from the historically published 2013 Distribution Annual Planning Report. The data in this Table reports less substations.
- It was found that the total population of distribution substations reported in Table 2.4.4 and its underlying raw data provided by Ausgrid is different to the numbers extracted from historically published reports. Ausgrid has excluded substations that were not "Ausgrid Owned" (e.g. HV customers) in Table 2.4.4. Upon comparison of the total population of substations for the years 2008-09 and 2012-13 including all non-Ausgrid owned substations as well, a minor discrepancy still existed between the underlying raw data and the historically published reports.
- Not all distribution substation raw data was available for each area (i.e. CBD, Urban, Short Rural and Long Rural) for reporting in Table 2.4.4. Ausgrid has adopted the approach of proportionally scaling up the available distribution substation data in order to represent the entire population of substations. This approach was however not followed for the CBD distribution substation even though the data for a portion of this asset is missing.

- The underlying data provided by Ausgrid for the derivation of the capacity factors for the distribution substations does not match the reported values in Table 2.4.5. This discrepancy is noted for the CBD and Urban distribution substation capacity factors.
- Due to the nature of the network, Ausgrid have geographically separated their subtransmission network into two areas: Sydney and Central Coast/Hunter in Table 2.4.5. Typically, Sydney area will have predominantly shorter underground subtransmission feeders while Central Coast/Hunter have longer subtransmission overhead lines. Sydney subtransmission and zone substations are on average larger capacity with more transformers hence will have a higher utilisation threshold than Central Coast/Hunter substations. Growth rates are also typically different between these two growth areas. Ausgrid have confirmed no overlap occurs from separating their subtransmission network into two main portions. Only one subtransmission feeder exists between Sydney and Central Coast which has been assigned to Central Coast due to the feeder supplying load there.
- Capacity factor for subtransmission network in Table 2.4.5 has been calculated from Ausgrid's list of augmentation projects which have listed the existing and added capacity in MVA where available. Projects within this list have been classified as either "Feeder", "Substation", "Load Transfer" or "Excluded". The sample size for subtransmission lines and substation augmentations is quite small (7 sub-transmission feeders and 24 zone/sub-transmission projects), due to the very small set of growth-driven subtransmission projects. In light of the sample size, the estimated capacity factor could vary significantly. Projects were "Excluded" where data was questionable, unclear or the project was incomplete.
- Utilisation threshold in Table 2.4.5 is calculated for most of the Hunter and Sydney population for subtransmission network. However, the population is not "normal" in distribution and have very large spreads resulting in high standard deviations. This is a limitation of the augex model for sub-transmission projects.
- The High Voltage portion of Table 2.4.5 has been populated using information sourced from development briefs, system diagrams, network approval and practical completion documents. The information extracted from these sources required manual interpretation, for example the Ausgrid development briefs contained material prior to approval, i.e. it did not specifically state which feeder required modifications, the exact capacity added to a specific feeder etc. Therefore Ausgrid portioned and assigned values using their knowledge of the network. Based on the interpretation Ausgrid were able to apportion values of each project to specific Zone substations for the following areas:
  - Existing Trunk Capacity
  - Proposed Trunk Capacity
  - Average Utilisation Trigger
  - Cost Estimate

  Upon dividing the source information into individual substations Ausgrid have then assigned each substation to one of the below Network Segment Titles.
  - CBD
  - Urban (Sydney)
  - Urban (Hunter or Central Coast)
  - Short Rural
  - Long Rural

  Upon fragmenting the raw data Ausgrid were able to calculate the weighted capacity factor, weighted utilisation threshold and the standard deviation using the appropriate formulas for each substation and subsequently the average weighted capacity factor, weighted utilisation threshold and the standard deviation values for each of the network segment titles.

  Given the amount of manual and individual interpretation of data, it is expected that there may be small inaccuracies that were entered into the RIN Table, due to misinterpretation, oversight of information or

subjective judgement. However, as this is the only method for Ausgrid to establish and populate the High Voltage section of Table 2.4.5, the information used is the best available, and where errors are present, they are considered small and immaterial.

- Net capacity added in Table 2.4.6 for subtransmission network has been sourced from Ausgrid's list of projects which outline the existing and added capacity in MVA, hence resulting in the net capacity. Historical net capacity data for 2012-13 is predominantly sourced from Ausgrid's Ratings and Impedance Calculator and assigned to the specific project. Where information was required to be estimated, Ausgrid's Planning Data Management System, Development Briefs and Development Forecasts were used. Projects have been segregated according to geography namely the Sydney, Inner Metro and Hunter regions.
- Net capacity added values reported for the High Voltage portion of Table 2.4.6 indicated that capacity of the feeders within the CBD and the short rural areas decreased. This is highly unlikely and as underlying data was not received in time to analyse Jacobs SKM are unable to verify these values.

2.3.3 Auditors Opinion

The summary of Jacobs SKM's opinion on the accuracy and reliability of the information reported in these Reset RIN Tables is:

- With regard to the subtransmission network asset data in Tables 2.4.1, 2.4.5 and 2.4.6 where estimates were required, Ausgrid has sourced the information from their best available systems in order to align with the RIN requirements as closely as possible. The total count of substations is different for both 2008-09 and 2012-13 when compared to the same data in historically published information.
- With respect to High Voltage data in Tables 2.4.2 and 2.4.5 given the manual data entry and inspection of data, there may be immaterial data inaccuracies presented due to this factor. As Ausgrid do not have any automated systems to generate this data, the methods used by Ausgrid are considered reasonable available alternate. Additionally, large amount of HV CBD feeder route line length is incorrectly reported in Table 2.4.2. The values reported in Table 2.4.6 for the HV feeders do not correlate to the actual capacity added to the network and thus additional assumptions and exclusions are required to interpret the values reported.
- Table 2.4.4 has discrepancies with the underlying information which forms the basis for the reported data. The population basis of the CBD distribution substation data is inconsistent with the explanation provided in the Basis of Preparation report and was also not scaled like the other disruption substations.

2.4 Template 2.5 – Connections

2.4.1 Reported Data

The Reset RIN Template 2.5 – Table 2.5.1 reports various types and associated metrics of Ausgrid's connections to its customers. The Non-Financial data for all metrics includes connection quantities, upstream asset capacity addition, guaranteed service level performance measures pertaining to customer connection and the amount of GSL breaches. The unit of measurement are counts, MVA, kilometre length and days. All data in most of the variables in this Table are estimates.

The Reset RIN Template 2.5 – Table 2.5.2 reports the connection counts reported in Table 2.5.1 in a different presentation format or into various connection classifications. The Non-Financial data is connection quantities and the unit of measurement is count. All data in most of the variables in this Table are estimates.

The explanation, instruction and definition of the terms used in these Tables are provided in Appendices E and F of the Reset RIN issued by the AER.

2.4.2 System, Procedures and Estimation Assessment

Jacobs SKM's assessment is based on a review of the systems, procedures, and estimation methodology (if applicable) that Ausgrid followed to record, store, extract and process the reported information. As part of the review, Jacobs SKM analysed the reported and underlying data, and interviewed staff responsible for preparing this information. Jacobs SKM notes the following:

- Analysis of the provided underlying raw data that is the basis of the information and the values reported in Table 5.2.1 suggest following discrepancies:
  - The value for the Residential Distribution Installed count for the year 2008-09 should be 154 and not 150. Additionally, all values reported for the Residential Distribution Substation Installed should be interchanged with Commercial/Industrial Distribution Substation Installed.
  - The Commercial/Industrial Distribution Substation Installed count should be 279, 288 and 277 for the years 2009-10, 2010-11 and 2011-12 respectively and not what is presently reported in the Table.
  - The Residential Augmentation LV (net circuit km added) should be 57.2km and not 57.1km in the year 2010-11 as reported in the Table.
  - The Commercial/Industrial Augmentation LV (net circuit km added) should be 49.0km and 37.5km for the years 2009-10 and 2011-12 respectively and what is presently reported in the Table.
- The requested underlying raw data for crosschecking the data processing and the derivation of the reported values for the Residential Underground Connections count, Residential Overhead Connections count, Commercial/Industrial Underground Connections count, Commercial/Industrial Overhead Connections count in Table 2.5.1 could not be obtained from Ausgrid.
- The number of new connections and the count of GSL breaches were reported previously in the old 2009-10 Annual RIN report. That data does not reconcile with the information provided in this Reset RIN Table 2.5.1. Significant differences were observed, for example 26 GSL breaches as per the DNSP STPIS was reported in 2009-10, whereas none is reported in Table 2.5.1 for that year. Even though the information in the old 2009-10 Annual RIN had significant accuracy and reliability issues as described in the then Auditor's report, it is not necessarily an indication of that the data reported in this Table 2.5.1 is accurate or reliable. At best, those issued identified in 2009-10 may have been addressed and the reporting has now relatively improved.
- The GSL or the Guaranteed Service Level component of the STPIS or Service Target Performance Incentive Scheme for DNSP (Nov 2009) prescribe the GSL payment amount of $50 per day to a maximum of $300 for the new connection parameter breach. Therefore the reported count of GSL breaches for the year 2010-11 is inconsistent with the reported GSL payment amount for that year.
- The sum of Residential Connections count reported in Table 2.5.1 (broken down into Underground and Overhead connections) could not be reconciled for all historic years with the sum of Residential Connections count reported in Table 2.5.2 (broken down into Simple and Complex connections).
- The requested underlying raw data forming the basis for the reported data in Table 2.5.2 could not be obtained for interrogation from Ausgrid.

2.4.3 Auditors Opinion

The summary of Jacobs SKM's opinion on the accuracy and reliability of the information reported in these Reset RIN Tables is:

- The existence of minor discrepancies but in multiple instances with the underlying raw data in the reported values in Table 2.5.1 suggests inaccurate information. The reported Connection data is considered inconsistent with the Reset RIN requirement. The majority of values provided in this table are estimates. Discrepancies exists between the new connection count and GSL breaches data reported in this Table with the same information reported previously to the AER in the 2009-10 Annual RIN.

- The audit of the information provided in the Table 2.5.2 could not be completed due to the unavailability of the requested underlying raw data forming the basis of the reported values. Only limited checks and observations as described in Section 2.4.2 could be made.

2.5 Template 2.6 – Non Network Expenditure

2.5.1 Reported Data

The Reset RIN Template 2.6 – Table 2.6.2 reports Ausgrid's total full time employee count, user numbers and number of devices for IT and communications. The unit of measurement is number or count. The presented in this Table is a mix of actuals and estimates.

The Reset RIN Template 2.6 – Table 2.6.3 reports annual status of various types of Ausgrid's motor vehicles. The unit of measurements are kilometre and vehicle quantities. The proportioning of the kilometre data across the vehicle types are estimates and the remaining count are actuals.

The explanation, instruction and definition of the terms used in these Tables are provided in Appendices E and F of the Reset RIN issued by the AER.

2.5.2 System, Procedures and Estimation Assessment

Jacobs SKM's assessment is based on a review of the systems, procedures, and estimation methodology (if applicable) that Ausgrid followed to record, store, extract and process the reported information. As part of the review, Jacobs SKM analysed the reported and underlying data, and interviewed staff responsible for preparing this information. Jacobs SKM notes the following:

- Employee Numbers reported in Table 2.6.1 have been directly referenced to the total ASL for each regulatory year in Table 2.11.1. The assessment of the system, procedures and estimation involved in producing the data reported in Table 2.11.1 should be considered.
- Laptops and desktops are leased from Commonwealth Bank of Australia (CBA) with the current number of leased devices provided from a monthly extracted from CBA's Leasing Asset Management System – Client Express. This extract provides information including the asset's barcode, sub-category, manufacturer, model and lease start date. This list provides all assets which Ausgrid currently leases at the time of report extraction. Reports are generally obtained at the end of each month and updates or adds further assets which are leased or not. These monthly reports provide a very accurate number of Ausgrid's leased devices for the end of each financial year.
- Ausgrid have estimated 300 Lenovo laptops were not accounted for during the population of Table 2.6.2. Reason for this estimation is not known.
- Handheld devices are bought outright by Ausgrid and include devices such as tablets, smart phones, iPads and Blackberrys. Number of handheld devices is able to be captured by the number connected to Ausgrid's servers. Different servers exist for the variety of reason. Ausgrid have advised that there is no system which is able to capture the retrospective handheld devices for each financial year. Therefore, Ausgrid have used a benchmarking approach to estimate the number of handheld devices for the historical years.
- Ausgrid's thin client interfaces include devices such as network printers, servers and terminal servers. Number of printers owned by Ausgrid is determined by checking the number connected to the network while servers are manually counted. In light of the available systems, Ausgrid's method is suitable for determining the number of thin client interfaces.
- User numbers for Ausgrid are taken from their Active Directory system. There are several categories of accounts for which Ausgrid sourced their user number information from:
  - Active T Account – accounts for end users desktops and ingress authentication
  - Active A Account – server administrative accounts for windows servers

  - Active G Account – generic accounts used as a secondary account for the equivalent T account
  - Service Account – accounts attributed to application use, and required for the operation of the application when interacting with other environment, whether as a service or interactive operation.
  - Inactive Account – accounts not logged into for the previous 52 weeks and are not included in the user number calculation.
- The Active Directory system provides accurate user numbers for all of Ausgrid's different accounts at each financial year. For user numbers prior to 2010-11, data was unavailable hence Ausgrid have assumed user numbers for financial years 2008-09 and 2009-10 are equal to the 2010-11. From the systems used by Ausgrid, the information provided on user numbers is accurate, and where estimates have been made, an appropriate assumption has been used.
- A number of discrepancies were noticed when the data reported in Table 2.6.3 was compared with the underlying raw data from Ausgrid's FigFleet management system forming the basis of the reported information. Jacobs SKM notes that the number of leased vehicle is the sum of the 'General Fleet Vehicles' and 'Salary Sacrifice Vehicles' for which the FigFleet management system raw data was categorised into.
  - In year 2009-10, independent calculation from the raw data extract from the FigFleet management system of the total number of leased car equated to 1,310 compared to the reported 1,311 cars in Table 2.6.3. This discrepancy was due to incorrect processing of leased station wagon counts.
  - In year 2012-13, independent calculation from the raw data extract from the FigFleet management system of the total number of leased car equated to 1,231 compared to the reported 1,220 cars in Table 2.6.3. This discrepancy was due to incorrect processing of both leased sedans counts and leased station wagon counts.

2.5.3 Auditors Opinion

The summary of Jacobs SKM's opinion on the accuracy and reliability of the information reported in these Reset RIN Tables is:

- Nothing has come to the Auditor's attention that causes it to believe that the data reported in Table 2.6.2 is not, in all material respects, presented fairly in accordance with the requirements of the Reset RIN and Ausgrid's Basis of Preparation report.
- While nothing has come to the Auditor's attention that causes it to believe that the data reported in Table 2.6.3 is not, in all material respects, presented fairly in accordance with the requirements of the Reset RIN and Ausgrid's Basis of Preparation report, it has minor inconsistency with the underlying system data.

2.6 Template 2.7 – Vegetation Management

2.6.1 Reported Data

The Reset RIN Template 2.7 – Table 2.7.1 reports Ausgrid's vegetation management characteristics with measureable attributes. The Non-Financial data for all metrics includes quantities and time frequency. The unit of measurements are counts, kilometre length, and year. All the data in most of the metric are the mix of estimates and actuals.

The explanation, instruction and definition of the terms used in this Table are provided in Appendices E and F of the Reset RIN issued by the AER.

2.6.2 System, Procedures and Estimation Assessment

Jacobs SKM's assessment is based on a review of the systems, procedures, and estimation methodology (if applicable) that Ausgrid followed to record, store, extract and process the reported information. As part of the

review, Jacobs SKM analysed the reported and underlying data, and interviewed staff responsible for preparing this information. Jacobs SKM notes the following:

- The historical data reported for most of the metrics in this Table are consistent with the recently provided information in the Economic Benchmarking RIN in March 2014.
- The kilometre distances has been appropriately interpreted and determined for double circuit line and for line with underbuilt circuit from vegetation management perspective. However, in the case of two separate circuits (on separate structures) running in parallel in the same easement is calculated as two separate kilometre lines.
- Similarly, the span count has been appropriately interpreted and determined for double circuit line and for line with underbuilt circuit from vegetation management perspective. However, in the case of two separate circuits (on separate structures) running in parallel in the same easement, the span counts are separately calculated for the two separate lines.
- Service lines are treated in a number of ways to report the data in this Table. It is included to report the maintenance span count, but excluded to report the kilometre route length. Also LV to a private property or to the first private pole is included and anything beyond the first private pole is excluded.
- Streetlight mains are excluded from the reported route line kilometre length data in this Table because it could not be split into Urban & CBD and Rural asset subcategories. The streetlight mains are included in the Economic Benchmarking RIN reported to the AER in March 2014 as the total was not required to be broken into further subcategories.
- It is noted that the AER's definition or scope for the Route Line Length is different between the Economic Benchmarking RIN which included the underground cable length and the Reset RIN which excludes the underground cable length. Therefore it can be noted that the total of the Route Line Length reported in this Table is less than the total values provided in the Economic Benchmarking RIN. It is also noted that the underground cables are not relevant from vegetation management perspective.

2.6.3 Auditors Opinion

The summary of Jacobs SKM's opinion on the accuracy and reliability of the information reported in this Reset RIN Table is:

- Nothing has come to the Auditor's attention that causes it to believe that the data reported in this Table is not, in all material respects, presented fairly in accordance with the requirements of the Reset RIN and Ausgrid's Basis of Preparation report.

2.7 Template 2.8 – Maintenance

2.7.1 Reported Data

The Reset RIN Template 2.8 – Table 2.8.1 reports the counts of the Ausgrid's assets, the number of those assets that were inspected and also the average age for asset categories within the last regulatory period. The table contains a mix of actual and estimated data.

The explanation, instruction and definition of the terms used in this Table are provided in Appendices E and F of the Reset RIN issued by the AER.

2.7.2 System, Procedures and Estimation Assessment

Jacobs SKM's assessment is based on a review of the systems, procedures, and estimation methodology (if applicable) that Ausgrid followed to record, store, extract and process the reported information. As part of the review, Jacobs SKM analysed the reported and underlying data, and interviewed staff responsible for preparing this information. Jacobs SKM notes the following:

- Comparison of the reported data for total number of public lights or streetlights in this Table to the historically published Annual Network Performance Reports identifies discrepancies in the quantities for all historic years. The discrepancy is possibly due to the inclusion of 'Rate 3' streetlight counts in the Annual Network Performance Report and the exclusion of it in this Table.
- An anomaly was observed with the reported total public light count in this Table for 2009-10 (254,414). Comparing against the past 2009-10 Annual RIN reported population count (250,143) which had exactly the same population count scope (i.e. both excluded the 'Rate 3' light counts). This difference indicates data quality issues, or/and reporting accuracy issue, or/and data migration issue from iAMS to SAP.
- Discrepancies in the reported data in this Table for the total underground cable length, number of poles, public lighting (or streetlights), and distribution substation count noted in historic years when compared to same data in historically published information in the 2013 Distribution Annual Planning Report.
- The total length of underground cables reported in this Table is different to the same information reported in the Economic Benchmarking RIN (Table 6.1.2).
- Ausgrid have used raw data obtained from SAP systems which allows a calculation to be performed to obtain the asset quantity for asset categories as outlined in Table 2.8.1. Using this raw data Jacobs SKM excluded assets that did not contain effective dates and an algorithm was set to establish if the asset existed for each of the years that are included in this RIN Table (i.e. 2008-09, 2009-10 etc.). These algorithms allowed a count of assets to be performed for each financial year. The values calculated by Jacobs SKM matched those reported by Ausgrid.
- The same raw data also allowed Ausgrid to document values for the asset average age for the asset categories as outlined in Table 2.8.1. Jacobs SKM applied exclusions based on the assumptions provide in the Basis of Preparation report, removed assets from effective dates and also those which had a zero life age, and again applied algorithm to calculate the life of each asset at the end of the financial years (i.e. 2008-09, 2009-10 etc.). An average of the years was taken, these values aligned with those reported by Ausgrid.
- The values for the asset quantity inspected could not be calculated from the underlying data that was provided by Ausgrid. The Basis of Preparation report is also unclear in its methodology of calculating these values.

2.7.3 Auditors Opinion

The summary of Jacobs SKM's opinion on the accuracy and reliability of the information reported in this Reset RIN Table is:

- The data reported in this Table have differences with historically published information for the same variables.
- Even though there are values reported for the asset quantity and average age life in this Table that have required manual interpretation and as such minor inaccuracies may be present, the methods used by Ausgrid are considered a reasonable alternative available and it is believed that all assumptions are represented fairly in Ausgrid's Basis of Preparation. There is also insufficient reasoning behind the evaluation for asset inspected values reported in this Table.

2.8 Template 2.11 – Labour

2.8.1 Reported Data

The Reset RIN Template 2.7 – Table 2.11.1 reports Ausgrid's average staff level (ASL) and stand down occurrence per ASL for various categories and classification of labour types. The unit of measurement is count. All the data in all the variables in this Table are estimates.

The Reset RIN Template 2.7 – Table 2.11.2 reports Ausgrid's average productive ordinary time work hours per ASL and average productive overtime work hours per ASL for the current year and for various categories and

classification of labour types. The unit of measurement is hours. All the data in all the variables in this Table are estimates.

The explanation, instruction and definition of the terms used in these Tables are provided in Appendices E and F of the Reset RIN issued by the AER.

2.8.2 System, Procedures and Estimation Assessment

Jacobs SKM's assessment is based on a review of the systems, procedures, and estimation methodology (if applicable) that Ausgrid followed to record, store, extract and process the reported information. As part of the review, Jacobs SKM analysed the reported and underlying data, and interviewed staff responsible for preparing this information. Jacobs SKM notes the following:

- Ausgrid do not categorise staff to the labour classification level required by the Reset RIN. Instead, Ausgrid have mapped their internal job categories to match the Reset RIN requirement (for example, Ausgrid's "Electrical Engineer" job family would fall under "Professional" within the Reset RIN Table). Furthermore, "Network Overheads Internal Labour Costs" was not populated within the RIN Table as all staff could not be separated by Ausgrid's systems in this manner. Instead, all Ausgrid staff are classed as either "Corporate Overhead Internal Labour Costs" or "Total Direct Network Labour Internal Labour Costs". Labour hire numbers were included in the compulsory labour classification instead of optional.
- Apprentices are not readily identified as a job family within Ausgrid systems but are instead captured within either the electrical technician, power-line or non-electrical technician groups. As these Ausgrid job families are mapped to either "skilled electrical worker" or "skilled non-electrical worker" as per the Reset RIN, a percentage breakdown of apprentices was estimated from these labour classifications and populated into the RIN Table.
- Average staff levels (ASL) have been estimated by Ausgrid, as their systems do not have the capability to identify those who are undertaking Standard Control Services. Ausgrid have calculated the percentage of Standard Control Services expenditure divided by total expenditure for each regulatory year, and have then applied this percentage to the total number of FTE in each year. Given the absence of processes and systems to accurately determine the ASL undertaking Standard Control Services, this estimation procedure is considered reasonable.
- Due to the formation of Networks NSW, some staff numbers have been removed for the 2012-13 regulatory year only, due to the sharing of costs. The removal of these staff numbers have been estimated.
- Average productive work hours per ASL have been sourced from Ausgrid's budget process with the assumption that Ausgrid's internal definition of "Available Hours" is the most appropriate to fulfil the productive work hours requirement. Ausgrid's definition of "Available Hours" considers the following:
  - 5 day working week consisting of 36 hours per week, 52 weeks per year;
  - Minus 4 working weeks of annual leave per year;
  - Minus the number of public holidays per year. The number of public holidays per staff member is dependent on whether employees are on Award, Senior Contract or Labour Hire. Approximately there are 2 working weeks of public holidays per year; and
  - Minus the number of unplanned leave days employees take which again varies according to whether employees are on Award, Senior Contract or Labour Hire.

  In light of the "Available Hours" definition, overtime hours are not captured within the average productive work hours per ASL.
- As per the Reset RIN definition, Ausgrid identify stand-down occurrences where employees are not permitted to start a scheduled shift due to not having at least 10 hours between work shifts. Ausgrid have recorded all stand-down occurrences for each regulatory year, of which all are aligned with an Ausgrid job family. Consequently, these job families have been used to map to the correct Reset RIN labour

classification per ASL. Due to employees no longer working for Ausgrid, there are instances where stand-down occurrences do not have an assigned job family and are instead labelled "N/A". These unassigned stand-down occurrences have been estimated to be included within the Electrical Workers labour classification, as this group would most likely have been working over-time and consequently require stand-down time.

- Average productive work hours per ASL – ordinary time is considered to be aligned with Ausgrid's "Available Time" definition, hence these values are identical to the average productive work hours per ASL for the 2012-13 regulatory year.

2.8.3 Auditors Opinion

The summary of Jacobs SKM's opinion on the accuracy and reliability of the information reported in these Reset RIN Tables is:

- Ausgrid has well documented systems and procedures to capture their internal labour information. Given the requirements of the Reset RIN Table, these systems required a degree of manipulation and estimation to prepare the information into the Reset RIN format. All assumptions and estimation methodologies have been well explained within the Basis of Preparation and are considered reasonable with the RIN requirements. Due to the small degree of data manipulation, there are small inaccuracies which are considered negligible.
- Nothing has come to the Auditor's attention that causes it to believe that the information reported in Table 2.11.1 and Table 2.11.2, in all material respects, is not presented fairly in accordance with the requirements of the Reset RIN and Ausgrid's Basis of Preparation report. Where data has been estimated, the best available information and appropriate assumptions were used in the course of the estimation.

2.9 Template 4.1 – Public Lighting

2.9.1 Reported Data

The Reset RIN Template 4.1 – Table 4.1.1 reports Ausgrid's public lighting or streetlight quantities by various types of luminaries as at the end of the 2013 calendar year. The unit of measurement is unit quantity or count. The data in this Table are actuals.

The Reset RIN Template 4.1 – Table 4.1.2 reports Ausgrid's annual streetlight installation, replacement and maintenance quantities by their location in major or minor roads and the annual performance metrics for quality of streetlight supply. The unit of measurements are unit quantities or count and days. All the data in most of the variables in this Table are mix of estimate and actual.

The explanation, instruction and definition of the terms used in these Tables are provided in Appendices E and F of the Reset RIN issued by the AER.

2.9.2 System, Procedures and Estimation Assessment

Jacobs SKM's assessment is based upon a review of the systems, procedures, and estimation methodology (if applicable) that Ausgrid followed to record, store, extract and process the reported information. As part of the review Jacobs SKM analysed the reported and underlying data, and interviewed staff responsible for preparing this information. Jacobs SKM notes the following:

- The reported streetlight population data in Table 4.1.1 is the count as at 31/12/2013 from Ausgrid's SAP. Ausgrid have interpreted the heading in this Table which has 'current year' (which is 2013-14) and another heading '2012-13', and have chosen to report against the calendar year 2013. This interpretation is described in the Basis of Preparation report. The count reported as at 31/12/2013 is claimed to be more accurate as it was captured on the actual date as SAP only reports the current status and does not have functionality to retrieve and report the historical status retrospectively. Therefore, a direct comparison with the previously reported end of the financial year streetlight population count is not possible.

- An anomaly was observed with the reported streetlight population total count in Table 4.1.1 (248,772). Comparing against the past 2009-10 Annual RIN reported population count (250,143) which had exactly the same population count scope shows that Ausgrid's streetlight population has decreased since then. This decrease indicates data quality issues, or/and reporting accuracy issue, or/and data migration issue from iAMS to SAP.
- The split of streetlight counts between major roads and minor road in Table 4.1.2 is based on an arbitrary assumption of luminaire less than and equal to 100W classified as being in minor road and luminaire more than 100W classified as being in major road. Investigation of the underlying raw data of the luminaires included in the reported data in the Light Replacement in Major Road metric revealed that in one instance a 80W luminaire was incorrectly classified into major road.
- Ausgrid maintains the record of the streetlight steel column replacement total quantities in the SAP, but does not have the details to differentiate by major road and minor road. So rather than perform a laborious process of manually determining the figures which would not necessarily be accurate, an arbitrary ratio of 70:30 was used to split the quantities into minor and major roads. This proportioning is Ausgrid's best estimate in absence of any objective records or evidence. The streetlight steel column replacement forms a major component of the reported data for the streetlight replacement quantities.
- Ausgrid does not have a good quality record of its Bulk Lamp Replacement program which is a component in reporting the data for the streetlight maintenance quantities. Hence they estimate an approximate total quantities by dividing their total streetlight population by 2.5 (30 months replacement cycle) and rounding the number. This is then further split into an arbitrary ratio of 70:30 to account for minor road and major road respectively. This proportioning is Ausgrid's best estimate in absence of any objective records or evidence.
- The reported data in the Table 4.1.2 against the quantity of streetlight maintained in minor road in the year 2009-10 is a decimal number (86,083.3 streetlights) and incorrectly suggest a fraction of a streetlight maintained.
- The reported historic volume of customer complaints in Table 4.1.2 when compared to the reported "*Total number of streetlight faults reported by person who is the occupier of an immediately neighbouring residence or is the proprietor of an immediately neighbouring business*" in Table 6 in the previous Annual RINs will not match. Ausgrid provided the total number of people reporting streetlight faults in the previous 2009-10 Annual RINs, whereas in this Reset RIN it is providing the subset of those people that reported streetlight fault and also registered it as a complaint.

2.9.3 Auditors Opinion

The summary of Jacobs SKM's opinion on the accuracy and reliability of the information reported in these Reset RIN Tables is:

- While nothing has come to the Auditor's attention that causes it to believe that the data reported in Table 4.1.1 is not, in all material respects, presented fairly in accordance with the requirements of the Reset RIN and Ausgrid's Basis of Preparation report, it is inconsistent with exactly the same data reported to the AER in recent past. It shows that the streetlight quantities have decreased recently indicating underlying data quality or processing issues.
- While nothing has come to the Auditor's attention that causes it to believe that the data reported in Table 4.1.2 is not, in all material respects, presented fairly in accordance with the requirements of the Reset RIN and Ausgrid's Basis of Preparation report, the majority of the data reported in this Table are estimates with arbitrary approximation.

2.10 Template 4.2 – Metering

2.10.1 Reported Data

The Reset RIN Template 4.2 – Table 4.2.1 reports Ausgrid's population count for various types of meter and its associated current transformer count. The unit of measurement is unit quantity or count. All the data in all the variables in this Table are actuals.

The Reset RIN Template 4.2 – Table 4.2.2 reports the volume of activities or services performed by Ausgrid pertaining to various type of meters each year. The unit of measurement is a count. All the data in all the variables in this Table are actuals.

The explanation, instruction and definition of the terms used in these Tables are provided in Appendices E and F of the Reset RIN issued by the AER.

2.10.2 System, Procedures and Estimation Assessment

Jacobs SKM's assessment is based on a review of the systems, procedures, and estimation methodology (if applicable) that Ausgrid followed to record, store, extract and process the reported information. As part of the review, Jacobs SKM analysed the reported and underlying data, and interviewed staff responsible for preparing this information. Jacobs SKM notes the following:

- Ausgrid has noted minor differences between the NEM definition and the AER definition of meters and have chosen the NEM definition to report the meter quantities in Table 4.2.1. Type 4 meters is contestable meters and is therefore excluded from this reporting. Type 5 meters are non-contestable interval (30 minutes) meters and Type 6 meters are non-contestable accumulation meters and are therefore included in this reporting.
- Metering volumes for Table 4.2.1 and Table 4.2.2 were extracted from Ausgrid's Metering Business System (MBS) database. This system provides reliable metering data and clearly identifies the historical volumes, date and description of the metering service carried out. No obvious errors or anomalies were observed when reconciling the underlying raw data.
- Estimation of the volumes during the 2008/09 financial year for Table 4.2.2 was required due to data being unavailable for this period. Ausgrid have used the values from the 2009/10 financial year as the basis of the estimation, with the assumption that metering volumes would be similar. In the absence of material data, this estimation procedure is considered reasonable.

2.10.3 Auditors Opinion

The summary of Jacobs SKM's opinion on the accuracy and reliability of the information reported in these Reset RIN Tables is:

- Nothing has come to the Auditor's attention that causes it to believe that the non-financial information in Table 4.2.1 and Table 4.2.2, in all material respects, is not presented fairly in accordance with the requirements of the Reset RIN and Ausgrid's Basis of Preparation.
- Ausgrid have well documented systems in place to populate Table 4.2.1 and Table 4.2.2. In the absence of material data, Ausgrid have made appropriate assumptions based on the available information.

2.11 Template 4.3 – Ancillary Services – Fee Based Services and Template 4.4 – Ancillary Services – Quoted Services

2.11.1 Reported Data

The Reset RIN Template 4.3 – Table 4.3.1 reports the count of various fee based ancillary services provided by Ausgrid's. The unit of measurement is quantity or count of service provided. All the data in all the variables in this Table are mix of estimates and actuals.

The Reset RIN Template 4.4 – Table 4.4.1 reports the count of various quoted ancillary services provided by Ausgrid's. The unit of measurement is quantity or count of service provided. All the data in all the variables in this Table are mix of estimates and actuals.

The explanation, instruction and definition of the terms used in these Tables are provided in Appendices E and F of the Reset RIN issued by the AER.

2.11.2 System, Procedures and Estimation Assessment

Jacobs SKM's assessment is based on a review of the systems, procedures, and estimation methodology (if applicable) that Ausgrid followed to record, store, extract and process the reported information. As part of the review, Jacobs SKM analysed the reported and underlying data, and interviewed staff responsible for preparing this information. Jacobs SKM notes the following:

- Data used to populate the first 21 service sub-categories in Table 4.3.1 has been sourced from Ausgrid's MBS via the Shared Service Data Mart (SSDM). These data extracts from MBS provides reliable data for the volumes of Ausgrid's fee based services.
- Volumes for special meter readings and move in/move out were required to be estimated using a percentage split. Move in/Move out meter read volumes have been lumped together with special meter readings, with no process to disaggregate the two categories. Using the ratio of the cost spent on the two categories, a percentage split for both meter types of readings was calculated. This percentage was applied to the total volumes of meter readings. In the absence of material data, this estimation procedure is considered reasonable.
- The underlying raw data and its processing that forms the basis for the reported volumes of 'Notification of Arrangement' in Table 4.3.1 was randomly selected for interrogation. The SAP record extract for the month of January 2013 showing different type of jobs performed during that month and filtered to list only the 'Notification of Arrangement' job could not be reconciled with the summary volume for this month which is ultimately included in the reported volume for the year 2012-13. This is due to Ausgrid incurring an 'Administration Fee' and incorrectly assigning this cost or transaction as a 'Notification of Arrangement' job in their records in January 2013. A similar check for randomly selected 'Contestable Substation Commissioning' in Table 4.4.1 was also performed. No such errors were noted in this case.
- A present day raw SAP data dump that forms the basis for reported volume in both Tables 4.3.1 and 4.4.1 was requested from Ausgrid to check if the underlying historical data continues to change even after it being collected and reported at the end of each year. This may happen due to considerable time taken for few records to trickle through Ausgrid system or/and correction being made to old historical data based on internal checks or discovery of error/inaccuracies at later dates. The raw data for a randomly selected month of May 2013 extracted as of 14:15 hours on 05 May 2014 indicates that there is one difference in the values that were reported back in May 2013. The volume of an Internal Order No 129020145 was incorrectly reported as 134 back in May 2013, but should have been 135 as shown the present day SAP data extract. This was a data processing error in sub totalling the figures back in May 2013 as the detailed information in the report did not change. Ausgrid has communicated that a check has been put in place to ensure this does not occur again in the future.
- No calculation anomaly was found in the underlying model based on a bottom-up estimation approach which formed the basis for the reported volume of 'Carrying out Planning Studies' in Table 4.3.1. It is

understood that the reported volume of 16 studies per year is based on a historical average workload for a particular group of planning staff in Ausgrid and is an estimate.

2.11.3 Auditors Opinion

The summary of Jacobs SKM's opinion on the accuracy and reliability of the information reported in these Reset RIN Tables is:

- While nothing has come to the Auditor's attention that causes it to believe that the data reported for the remaining service sub-categories in Table 4.3.1 is not, in all material respects, presented fairly in accordance with the requirements of the Reset RIN and Ausgrid's Basis of Preparation report, it has minor inaccuracies.
- While nothing has come to the Auditor's attention that causes it to believe that the data reported in Table 4.4.1 is not, in all material respects, presented fairly in accordance with the requirements of the Reset RIN and Ausgrid's Basis of Preparation report, it may have minor inaccuracies.

2.12 Template 5.2 – Asset Age Profile

2.12.1 Reported Data

The Reset RIN Template 5.2 – Table 5.2.1 reports the mean age and standard deviation of retired assets for asset categories as defined by Ausgrid these values are shown in years. The table also contains a count of installed quantities at for each of the asset categories. The data reported is derived from a mix of actual data and interpretation of actual data, from Ausgrid systems.

The explanation, instruction and definition of the terms used in this Table are provided in Appendices E and F of the Reset RIN issued by the AER.

2.12.2 System, Procedures and Estimation Assessment

Jacobs SKM's assessment is based on a review of the systems, procedures, and estimation methodology (if applicable) that Ausgrid followed to record, store, extract and process the reported information. As part of the review, Jacobs SKM analysed the reported and underlying data, and interviewed staff responsible for preparing this information. Jacobs SKM notes the following:

- It should be noted that due to the sheer amount of underlying data used to generate values for Table 5.2.1 Jacobs SKM only analysed in depth the data associated with the following asset groups:
  - Poles
  - Transformers
  - Switchgear
  - Public Lighting

  From this analysis Jacobs SKM notes the following:
- When calculating the mean life and standard deviation for the asset categories contained in the poles asset group a filter was set such that some of the raw data was excluded as per the assumptions in the Basis of Preparation report. By making these exclusions, values calculated for the mean life and standard deviation matched those reported by Ausgrid.
- The mean life and standard deviation values were calculated by Ausgrid using values taken from the SAP PM systems. However when Jacobs SKM performed the same calculations the values did not align with those reported in Table 5.2.1. Ausgrid related that this was due to the differences in how they categories particular equipment and how it is documented by the AER (in particular for the transformer classifications). It was explained that due to the low amount of data available similar categories were placed together and mean life and standard deviations were calculated with the larger pool of values.

- The source data used to derive values for all the Public Lighting Asset Categories were obtained from the Ausgrid SAP systems these are actual data values. Based on assumptions stated by Ausgrid in the Basis of Preparation report data that had the same new and old effective dates were excluded and in addition lamps which had effective dates prior to 01/07/2009 were also excluded. By applying these assumptions the mean life and standard deviation were calculated, these matched Ausgrid reported values.
- Underlying data used for the counts of staking of a wooden pole and lighting poles/columns (both the major and minor roads) were obtained from SAP PM system was analysed. The values calculated for installed assets of the lighting poles correlated to those reported by Ausgrid however those calculated for the staking of the wooden poles did not match. Ausgrid explained in the audit interview as there was a quantity of poles which did not have recorded 'effective nailing dates' and a 'data smoothing process' was applied to fill in data gaps. It was assumed that these poles were nailed during 1997 and 2002 as a majority of the nailing was conducted during this period. It was also stated that this 'data smoothing process' was applied to other asset categories with missing attributes as stated in the Basis of Preparation report.

2.12.3 Auditors Opinion

The summary of Jacobs SKM's opinion on the accuracy and reliability of the information reported in this Reset RIN Table is:

- Whilst the majority of the values reported in Table 5.2.1 is using actual data there are aspects where manual interpretation is required therefore data inaccuracies may be present. However as the interpretations have being applied to a small portion of the overall raw data it is seen as immaterial. In addition the methods used by Ausgrid are considered reasonable alternate available and it is believed that all assumptions are represented fairly in Ausgrid's Basis of Preparation report.

2.13 Template 5.3 – Maximum Demand at Network Level

2.13.1 Reported Data

The Reset RIN Template 5.3 – Table 5.3.1 reports Ausgrid's raw and weather corrected annual coincident maximum demand summed at transmission connection point, the occurrence date, time, season and the volume of embedded generation. The unit of measurement is MW, calendar dates and half hour time brackets. The data in all the variables in this Table are actuals with some element of estimation.

The explanation, instruction and definition of the terms used in this Table are provided in Appendices E and F of the Reset RIN issued by the AER.

2.13.2 System, Procedures and Estimation Assessment

Jacobs SKM's assessment is based on a review of the systems, procedures, and estimation methodology (if applicable) that Ausgrid followed to record, store, extract and process the reported information. As part of the review, Jacobs SKM analysed the reported and underlying data, and interviewed staff responsible for preparing this information. Jacobs SKM notes the following:

- The working in the underlying spreadsheet to report the data in this RIN Table was reviewed by Jacobs SKM. The calculations to determine the values for this RIN Table were performed correctly. Ausgrid has considered the demand profile observed at every sub-transmission substations, zone substations connected at 132kV, and HV customers connected at 132kV to report against the maximum demand at transmission connection point in this RIN Table.
- The data simulation involving 2,000 iterations to choose the 10% PoE and 50% PoE from the resulting range of answers is considered reasonable.
- The methodology for determining the raw substation maximum demand is to take 15 minute interval metering data at each substation. Ausgrid then applies a data cleansing process to filter out erroneous readings by manually checking unusual pattern in the daily load profiles due to irregular network switching

or operational events. The maximum demands for individual substation are not adjusted for embedded generation. Raw coincident network maximum MW demand is an aggregation of the coincident loads of all transmission connection points within the Ausgrid network at the recorded date and time of system peak.

- The maximum demand at transmission connection point as reported in this RIN Table is not the same as maximum demand at the overall network level. In order to interpret the AER's definition of 'transmission connection point', Ausgrid referred to the definition for 'subtransmission'[2] presented in Appendix F in page 98 of the Reset RIN issued by the AER. Ausgrid has considered the most reasonable interpretation of 'transmission connection point' is the outgoing terminals of transmission terminal stations on which the primary side consists of transmission assets and the secondary side are subtransmission (or lower voltage) assets. Ausgrid has therefore included all sub-transmission substations, zone substations connected at 132kV, and HV customers connected at 132kV for 'transmission connection point' data. The Ausgrid 132kV assets that supply these connection points form a meshed transmission network which operates in parallel with TransGrid's transmission network. Ausgrid considers that its Bulk Supply Points (BSPs) from TransGrid represent the boundary of ownership of assets between the two organisations, but they do not meet the AER's definition of a 'transmission connection point', and accordingly have not reported the demand data at BSP level in this RIN Table. This approach is consistent with the data reported in the Economic Benchmarking RIN in March 2014 and therefore compared to it no discrepancy was noted for all reported data in historic years.
- It is noted that this RIN Table does not use the same set of locations as the previous 2012-13 annual RIN and thus the two should not be directly compared. The locations used for the previous 2012-13 annual RIN comprises of other locations such as Belrose and Lucas Heights 33kV generators and the non-132kV zone substations supplied from other DNSPs (Epping, Hunters Hill and Leightonfield which are all supplied from Endeavour Energy) which Ausgrid counts as part of its system total demand. Also, the previous 2012-13 annual RIN excludes 132kV locations such as Redbank Generator, Kurri Smelter and BHP OneSteel which is not traditionally included in determining Ausgrid's system total demand. If it is intended that this Reset RIN Table is to be directly compare against the previous 2012-13 annual RIN, then the values in this Reset RIN Table will need to be revised to reflect the inclusions/exclusions mentioned above, and perhaps a different definition that refers to Ausgrid's overall network system total demand rather than transmission connection point should be used, in order to avoid confusion.

2.13.3 Auditors Opinion

The summary of Jacobs SKM's opinion on the accuracy and reliability of the information reported in this Reset RIN Table is:

- Nothing has come to the Auditor's attention that causes it to believe that the data reported in these Tables is not, in all material respects, presented fairly in accordance with the requirements of the Reset RIN and Ausgrid's Basis of Preparation report.

2.14 Template 5.4 – Maximum Demand and Utilisation at Spatial Level

The Reset RIN Template 5.4 – Table 5.4.1 reports Ausgrid's annual coincident and non-coincident substation rating, raw and weather corrected maximum demand summed at subtransmission substation and zone substation levels, the occurrence date, time, season and the volume of embedded generation. The unit of measurement is MVA, MW, calendar dates and half hour time brackets. The data in all the variables in this Table are actuals with some element of estimation.

The explanation, instruction and definition of the terms used in this Table are provided in Appendices E and F of the Reset RIN issued by the AER.

[2] Subtransmission – Assets that distribute electricity at voltage levels between the transmission system and the HV section of the network. The *connection* boundaries are the outgoing terminals at the transmission terminal station to the incoming terminals of the HV circuit breakers at the zone substations.

2.14.1 System, Procedures and Estimation Assessment

Jacobs SKM's assessment is based on a review of the systems, procedures, and estimation methodology (if applicable) that Ausgrid followed to record, store, extract and process the reported information. As part of the review, Jacobs SKM analysed the reported and underlying data, and interviewed staff responsible for preparing this information. Jacobs SKM notes the following:

- The working in the underlying spreadsheet to report the data in this RIN Table was reviewed by Jacobs SKM. The calculations to determine the values for this RIN Table were performed correctly. Ausgrid has considered the demand profile observed at every subtransmission substations and zone substations to report against the maximum demand characteristics in this RIN Table.
- The data simulation involving 2,000 iterations to choose the 10% PoE and 50% PoE from the resulting range of answers is considered reasonable.
- The timeframe in a 24 hour calendar date is made up of 'night' time from 00:00:00 to 06:59:59, 'day' time from 07:00:00 to 16:59:59 and 'night' time from 17:00:00 to 23:59:59. The methodology for determining the raw substation maximum demand is to take 15 minute interval metering data at each substation. Ausgrid reporting system is capable of generating daily load profiles of individual substation, organising them in descending order for the duration of query period (for e.g. a month), and selecting the maximum readings segregated into 'day' and 'night' time. Ausgrid then applies a data cleansing process to filter out erroneous readings by manually checking unusual pattern in the daily load profiles due to irregular network switching or operational events. The process of identifying and filtering out any abnormalities recorded in the daily substation load profile is manual and therefore is not immune to human error. However, such occurrences due to human error are unlikely because load switching and load spikes are easy to identify since they are essentially discontinuities in the observed daily load shape. This manual filtering step is undertaken by the forecasting team, which is a small team comprising of three Ausgrid staff. Any questionable daily load profiles where the abnormality in the load profile are difficult to identify, due to an erratic underlying load profile for example, is analysed by multiple persons in the forecasting team. Jacobs SKM is of the view that this manual function is performed diligently by Ausgrid. The maximum demands for individual substation are not adjusted for embedded generation.
- A minor discrepancy was noted when comparing the sum of reported non-coincident maximum demand of all zone substations in MW and MVA against the same set of data in the Economic Benchmarking RIN Tables 5.3.1 and 5.3.3 for the years 2011-12 and 2012-13. The earlier historical years matches. It is understood this is due to the correction of few erroneous data, of minor magnitude, which forms the basis of the summated values reported in those Economic Benchmarking Tables. This correction involved revising the non-coincident maximum demand values for Balgowlah, Mayfield and Tomaree zone substation for years 2011-12 and 2012-13.
- Post 2012-13 annual RIN reporting in 2013, Ausgrid migrated from using Microsoft Excel spreadsheet medium to SAS program to record/report maximum demand data for the Sydney CBD zone substation. A minor data processing issue that resulted in different historical Sydney zone substation maximum demand values were discovered during the course of auditing the Economic Benchmarking RIN reported data in March 2014. It is understood that Ausgrid has corrected this issue for reporting in the Reset RIN. However, a very minor (negligible) discrepancy is still noted when comparing the sum of reported non-coincident maximum demand of all zone substations in MW and MVA against the same set of data in the 2012-13 annual RIN[3]. It appears that there are still some very minor data processing issues following this migration and correction. This discrepancy represents an error less than 0.5% [4].
- Some discrepancies are noted when comparing the historic maximum demand records for few randomly chosen zone substations against the same set of data in the Ausgrid's 2013 Distribution Annual Planning Report (DAPR). This was noted for Tomaree, Mayfield, Balgowlah, Balgowlah North and Bass Hill zone substations.

[3] This information is in the 2012-13 annual RIN, Template 2 Demand, Table 2 Summer and winter non-coincident maximum demand by zone substation.
[4] Difference of 2.5MW and 1MVA in the sum of reported non-coincident maximum demand of all zone substations, i.e. 5,562MW and 5,918MVA.

2.14.2 Auditors Opinion

The summary of Jacobs SKM's opinion on the accuracy and reliability of the information reported in this Reset RIN Table is:

- Nothing has come to the Auditor's attention that causes it to believe that the data reported in this Table is not, in all material respects, presented fairly in accordance with the requirements of the Reset RIN and Ausgrid's Basis of Preparation report. However, some reported data in this Table are slightly different than the previously reported data for the same year.

2.15 Template 6.1 – Telephone Answering and Template 6.2 – Customer Service Performance

The Reset RIN Template 6.1 – Table 6.1.1 reports the daily count of telephone call received by Ausgrid and related volume metrics from 2008-09 to 2011-12. The unit of measurement is count. Some data for a variable in this Table is an estimate with all remaining data being actuals.

The Reset RIN Template 6.2 – Table 6.2.5 reports the summary of Table 6.1.1 in annual period from 2008-09 to 2012-13. The unit of measurements are count and percentage. All the data in all the variables in this Table are actuals.

The explanation, instruction and definition of the terms used in these Tables are provided in Appendices E and F of the Reset RIN issued by the AER.

2.15.1 System, Procedures and Estimation Assessment

Jacobs SKM's assessment is based on a review of the systems, procedures, and estimation methodology (if applicable) that Ausgrid followed to record, store, extract and process the reported information. As part of the review, Jacobs SKM analysed the reported and underlying data, and interviewed staff responsible for preparing this information. Jacobs SKM notes the following:

- Decimal values indicating fraction of telephone calls are reported in 'Calls to the fault line answered in 30 seconds' in Table 6.1.1 prior to 21 June 2010 as the telephone calls abandoned within 30 seconds information was not available in Ausgrid's system, and estimate had to be made. This is explained in the Basis of Preparation report.
- The total numbers of calls received in year 2009-10 reported in Table 6.2.5 (224,960) is different to the same information provided in the old 2009-10 Annual RIN (200,780).

2.15.2 Auditors Opinion

The summary of Jacobs SKM's opinion on the accuracy and reliability of the information reported in these Reset RIN Tables is:

- Nothing has come to the Auditor's attention that causes it to believe that the data reported in Table 6.2.5 is not, in all material respects, presented fairly in accordance with the requirements of the Reset RIN and Ausgrid's Basis of Preparation report.

2.16 Template 6.2 – Reliability

2.16.1 Reported Data

The Reset RIN Template 6.2 – Table 6.2.4 reports Ausgrid's average annual distribution customer number by their location on the network. The unit of measurement is count or number. All the historical data in all the variables in this Table are actuals.

The explanation, instruction and definition of the terms used in this Table are provided in Appendices E and F of the Reset RIN issued by the AER.

2.16.2 System, Procedures and Estimation Assessment

Jacobs SKM's assessment is based on a review of the systems, procedures, and estimation methodology (if applicable) that Ausgrid followed to record, store, extract and process the reported information. As part of the review, Jacobs SKM analysed the reported and underlying data, and interviewed staff responsible for preparing this information. Jacobs SKM notes the following:

- The AER has described the scope of the distribution customer numbers using few different terminologies in the following regulatory documents:
  - 'Metered' and 'Unmetered' customers (except for public lighting connections) are included in the customer number. Metered customer includes 'Active' and 'Not energised' status codes and excludes 'Deactivated' accounts with status codes 'Extinct' and 'Greenfield site'. This is defined in the Reset RIN Appendix F, page 90;
  - 'Energised' and 'De-energised' are included, and 'Extinct' is excluded from the customer count (as used in the Economic Benchmarking RIN Instruction and Definition Nov 2013, page 30);
  - 'Active' is included, and 'Deactivated' is excluded from the customer count (as used in the Economic Benchmarking RIN Instruction and Definition Nov 2013, page 48);
  - 'Active' and 'De-energised' are included, and 'Deactivated' is excluded from the customer count (as used in the Economic Benchmarking RIN Explanatory Statement Nov 2013); and
  - 'Inactive account' is excluded from the customer count (as used in the STPIS Nov 2009, page 22).

  Furthermore, Ausgrid uses own terminologies to define the scope for its reported customer numbers, which is as follows, along with the definition:
  - 'Vacant Power On' is defined as a site that has power but Ausgrid has no customer details – e.g. where Ausgrid have received advice a customer has vacated the premise (from retailer). These sites may or may not be occupied, however the meter and the NMI is still in place and the meters are still being read. This terminology is also interchangeably used with 'Temporary disconnection' by various staff within Ausgrid. This is included in the customer count; and
  - 'Permanent disconnection' is defined as a site where the NMI has been deactivated in the market and the meter is physically removed. This is excluded in the customer count.

  Given this, Jacobs SKM has inferred the scope using the available terminologies. The customer number includes:

  Metered + Unmetered (except for public lighting) customers

  = Active (or Energised) + De-energised (or Not energised)

  = Active (or Energised) + Vacant Power On (or Temporary Disconnection)

  Likewise, Jacobs SKM has inferred that the customer number excludes:

  Deactivated customers (Extinct + Greenfield site) or Inactive account or Permanent disconnection

  Ausgrid has advised that currently its Outage Management System (OMS) has approximately 68,000 Vacant Power On sites. These connections are included in the reported customer number. Ausgrid use these customer numbers to generate its reported reliability. The Permanent disconnection sites are excluded in the reported customer number, and therefore are also excluded in its reliability indices reporting. This scope for counting customer number is considered in accordance to the AER's expectation.
- Customers that do not have NMIs and whose energy usage for the billing purpose is calculated using assumed load profile (such as bus shelters and traffic signals where not metered) are included in the

reported customer number in Table 6.2.4. This customer number excludes public lighting supplies. This is in accordance to the Reset RIN.

- The feeder are categorised (into CBD, Urban, Short Rural, and Long Rural) at the start of each year in the OMS/GIS environment based on their respective characteristics observed from the immediate past year. This categorisation does not change throughout the year even if the feeder characteristics changes (due to changes in loading profile, network switching, load shifting and capex). Therefore, feeder categorisation is the reflection of past year and not the current year. Given the dynamic nature of the Ausgrid network, Jacobs SKM considers that while the CBD feeder category may remain constant, other feeders may change categories over the course of the year. This may particularly occur between urban and short rural and between short rural and long rural.
- Ausgrid also maintains the customer count for 'HV customers', 'Aux' and "Unknown' which are separate and not included within CBD, Urban, Short Rural and Long Rural categories when reporting in this Table. The amount of customers in these unreported categories varies at time and presently there are 65 HV customers, 5 auxiliary customers and 0 unknown customers. Ausgrid's approach in excluding these few customers is consistent with previous customer number reporting and has negligible impact to the calculated reliability metrics.
- No changes were found in the present day OMS extract of the raw data from last five years that forms the basis of the historical numbers reported in this Table suggesting consistency of the underlying information and reporting process for this Table.
- In a given regulatory year, some customers can be fed from differently classified feeders at different times depending on the network connectivity situation which is dynamic (interchanging). It is envisaged that such situation may exist predominantly in interchanging supply between Urban and Short Rural feeder types. Due to the time lag issue between the Customer Database (MBS), GIS and OMS, interrupted customers may be inaccurately assigned to being supplied from different feeder class.
- Compared to the exactly same information, with same scope and definition, provided recently to the AER in Table 5.2.2 of the Economic Benchmarking RIN, the reported data are different in the Reset RIN Table 6.2.4. The maximum difference is 2.2% for the 2008-09 total count. Similarly, differences were noted when compared against the customer numbers published[5] in past Annual Network Performance Reports and the 2013 Distribution Annual Planning Report. The maximum difference is 2.2% for the 2008-09 total count in the Annual Network Performance Report. The differences are due to the fact that the customer number reporting for Economic Benchmarking RIN, past Annual Network Performance Reports and past DAPR were sourced differently (tariff usage query in SAP) due to organisational decision made at those times. Whereas, the customer number for this Reset RIN Table was sourced from the OMS as described in Ausgrid's Basis of Preparation report. This indicates that the customer number records at a given point in time are inconsistent between Ausgrid's SAP and OMS.
- The reported total customer numbers for all historic years in Table 6.2.4 are inconsistent with the same data for corresponding years previously reported in Ausgrid's Distribution and Transmission Annual Planning Report (also known as Annual ESDR previously) in Section 2 and the Ausgrid's Annual Network Performance Reports in Table 1.1. It is noted that the total customer numbers previously reported in these Ausgrid annual reports are the end of the year counts, i.e. as at 30 June, but averaging them for each consecutive historical year to determine the annual average customer count does not reconcile. It is unclear if the scope or the definition of the customer numbers were the same in these previous Ausgrid reports. The maximum difference is 2.2% for the 2008-09 total count.

2.16.3 Auditors Opinion

The summary of Jacobs SKM's opinion on the accuracy and reliability of the information reported in this Reset RIN Table is:

[5] The total customer numbers reported in these past reports is the end of the year counts, i.e. as at 30 June. Jacobs SKM therefore averaged the as at 30 June counts from consecutive years to derive the average count of the financial year for comparison.

- Nothing has come to the Auditor's attention that causes it to believe that the data reported in this Table is not, in all material respects, presented fairly in accordance with the requirements of the Reset RIN and Ausgrid's Basis of Preparation report. However, the data is slightly different than the previously reported data for the same years.

2.17 Template 6.2 – Reliability, Template 6.3 – Sustained Interruptions, and Template 6.4 – Historical Major Event Days

2.17.1 Reported Data

The Reset RIN Template 6.2 – Table 6.2.1 reports Ausgrid's unplanned minutes off supply or unplanned system average interruption duration index (SAIDI) for various supply locations and network total, with and without STPIS Exclusions. The unit of measurement is minutes/customer (time). All the historical data in all the variables in this Table are actuals.

The Reset RIN Template 6.2 – Table 6.2.2 reports Ausgrid's unplanned interruptions to supply or unplanned system average interruption frequency index (SAIFI) for various supply locations and network total, with and without STPIS Exclusions. The unit of measurement is interruption/customer (count). All the historical data in all the variables in this Table are actuals.

The Reset RIN Template 6.2 – Table 6.2.3 reports Ausgrid's unplanned momentary interruptions to supply or unplanned momentary average interruption frequency index (MAIFI) for various supply locations and network total, with and without STPIS Exclusions. This is the very first time that Ausgrid is reporting this reliability metric and the unit of measurement is interruption/customer (count). All the historical data in all the variables in this Table are actuals.

The Reset RIN Template 6.2 – Table 6.2.6 reports Ausgrid's estimate of accuracy of reported SAIDI data in Table 6.2.1. The unit of measurement is percentage. All the historical data in all the variables in this Table are estimates.

The Reset RIN Template 6.2 – Table 6.2.7 reports Ausgrid's estimate of accuracy of reported SAIFI data in Table 6.2.2. The unit of measurement is percentage. All the historical data in all the variables in this Table are estimates.

The Reset RIN Template 6.3 – Table 6.3.1 reports Ausgrid's historical list of unplanned event details causing sustained interruption to supply. The details ranges from interruption start time to, average interruption duration, affected asset (feeder) identity, feeder classification, reasons for interruptions, interrupted customer count, event SAIDI, event SAIFI and each event flag for superseding the Major Event Day threshold (T_{MED}). The unit of measurements varies depending on the details which are self-explanatory. All the historical data in all the variables in this Table are actuals.

The Reset RIN Template 6.4 – Table 6.4.1 reports Ausgrid's daily unplanned SAIDI without the STPIS Exclusions for the historical years that forms the Major Event Day threshold (T_{MED}) for the year 2008-09 only (i.e. 5 years data prior to 2008-09). The unplanned daily performance data collected in past annual RINs allows for the calculation of the subsequent annual T_{MED} and therefore not reported in this Table. The unit of measurement is minutes/customer (time). All the historical data in all the variables in this Table are actuals.

The explanation, instruction and definition of the terms used in these Tables are provided in Appendices E and F of the Reset RIN issued by the AER.

2.17.2 System, Procedures and Estimation Assessment

Jacobs SKM's assessment is based on a review of the systems, procedures, and estimation methodology (if applicable) that Ausgrid followed to record, store, extract and process the reported information. As part of the

review, Jacobs SKM analysed the reported and underlying data, and interviewed staff responsible for preparing this information. Jacobs SKM notes the following:

- The OMS reporting excludes HV customers, while under the Reset RIN definitions all active (i.e. energised and de-energised or temporarily disconnected) distribution customers that have a National Metering Identifier (NMI) are to be included. Ausgrid has consistently adopted this approach for the calculation of all reliability metrics. In Jacobs SKM's view the exclusion of HV NMIs has a negligible impact on the reported figures, as their inclusion would increase the total customer count by a very small amount. In recent years, it is noted that Ausgrid has had approximately 65 HV customers (out of more than 1.6 million total customers).
- Review of the provided underlying outage Events List data for the years 2008-09 and 2012-13 did not have any anomalies. However, it is noted that the outage events in OMS are manually entered and edited to accurately capture the actual details of the outage. Jacobs SKM has reviewed Ausgrid's procedures for this activity and finds them to be reasonably robust. The reported data in this table for all historical years is based on the resulting OMS details that were manually corrected or edited. Ausgrid has extracted a total of 189 million Customer Minute Interrupted (CMI) in 2008-09 and 130 million CMI in 2012-13 from OMS for all the reported unplanned outages including Exclusions. Given that the OMS can capture the timing information up to second resolution, a total of 153 million CMI in 2008-09 and 109 million CMI in 2012-13 records have timing information up to integer minute only (i.e. with missing second information). This suggests that approximately up to 81% and 84% of all unplanned CMI including Exclusions recorded in OMS were manually edited or re-entered in 2008-09 and 2012-13 respectively to accurately capture the actual details of the outage[6]. Jacobs SKM notes that corrected records would tend to be the network outages with restoration switching so they have a disproportionately high CMI.
- Following this, Jacobs SKM reviewed five Ausgrid's internal monthly and year-to-date OMS Data Quality Reports for various randomly selected times during the 2008-09 to 2012-13 period to form an opinion on the scale of the error that are discovered on regular basis in the recorded details in the OMS. The reports show that as part of routine data quality assurance Ausgrid generally reviews:
  - Data entry status, i.e. all outages that have not been closed;
  - All outage with >24 hours duration;
  - Overlapping interruption, i.e. when NMIs are recorded as having more than one outage at any given time. This is possible due to Ausgrid's practice of post event data re-entry;
  - Checks of >100,000 CMI;
  - Duration error check, i.e. when the outage times do not match individual switching times; and
  - 'Not in OMS Table' check, i.e. it is possible that sometime there are few outages that are known but not recorded in the OMS due to model currency issues. The details of such outages are obtained from the respective Control Rooms and stored in 'Not in OMS Table' and are entered into the OMS after resolving the model issues.

  Errors are regularly discovered and corrected for generally all above listed type of reviews. The high incidence of manual interventions, while necessary, creates difficulty in auditing the underlying outage records. Jacobs SKM has relied on a review of documented processes, interviews with staff, and checking a sample of records from the provided Event List data to form an opinion on the accuracy of outage capture. While Jacobs SKM's review of the provided Event List data did not find instances of errors, it is clear from the Outage Management Data Quality reports that errors do make it into the system. However, in Jacobs SKM's view the quality checks performed are sufficient to identify and correct errors which may significantly affect the output figures. In the absence of a fully automated system Jacobs SKM is satisfied that while it is a manual process it is performed rigorously and as accurately as is possible and practical.

[6] Due to limitation in the capture of real time switching information in OMS, manual intervention is required to replicate the actual outage in OMS after the event based on control room outage records. This requires manual editing or re-entry of the record to replicate situations like staged outage restorations or to correct errors discovered during monthly QA checks. Jacobs SKM found these edits mostly involve correcting affected customer counts and the timings of the outage events, and were reasonable and according to Ausgrid's processes. Ausgrid also conducts internal QA checks and reviews of outage event samples, which will occasionally identify errors which are also manually corrected.

- When entering outages in OMS, the resolution of the outages are up to a minute. Momentary outages will be recorded as having a duration of one minute, in other words, the restore time will be recorded as one minute after the start time, with the start time coming from control room records. However, there are instances within the OMS where events will have both a momentary and a sustained customer impact. The "event duration" details within the underlying outage data provides the longest customer duration within the outage event hence momentary events may have the "sustained customer impact" even though it is classed as momentary. The OMS is capable of capturing both momentary and sustained customer impacts as separate customer impacts which allows Ausgrid to identify which customers were only affected by a momentary outage.
- While all customers affected by an outage are calculated through the OMS connectivity model (with an operator simulating the outage on a network diagram), the only time capture that is automated is when the event is initiated via the call centre. Even in this case only the start-time of the outage will be time-stamped. All other times are manually entered and are rounded to integer values.
- At present Ausgrid do not have the capacity to automatically and accurately record a single phase outage event in a three phase LV supply. Ausgrid relies on customers to call to inform them about such outages[7]. For the Reset RIN reporting purpose, Ausgrid has assumed all the active customers connected to the affected three phase LV supply to be out of supply for the entire duration of the event, whereas the majority of domestic customers will have a single phase supply only. This approach is adopted because the accurate determination of the actual active customer count is not possible[8]. It should be noted that this overstates the reported figures.
- Any changes to HV network topology and customer connection is recorded in the GIS within 5 working days for 95% of the cases based on Ausgrid's recent GIS Data Operation Report. The remaining 5% can take anywhere up to 20 working days. Further, data correction in the GIS can take up to 5 working days for 100% of the cases. Although the delay in incorporating network changes or/and corrections into the OMS connectivity model may result in errors for individual outages, Jacobs SKM does not expect this to have a material impact on the overall reported figures. Additionally, Jacobs SKM notes that where an outage cannot be replicated in OMS based on the OMS model not being current, the appropriate teams (GIS or OMS) are advised and the outage entry is "held" until the model issue is resolved in the 'Not in the OMS Table'.
- The GIS Data Operation Report also indicate that presently Ausgrid has programs in place to improve the quality of the data stored in the GIS mostly related to NMI connection to the underground LV, details of underground cables in conduits, and streetlight data cleansing.
- The OMS is updated weekly with the most recent GIS model feed and this process take few days. By the end of this process the connectivity model built into the OMS is the reflection of the GIS model at the start of this process and thereby the connectivity model built in the OMS is not the most recent model available in the GIS. The customer connection detail is provided by the SAP (EnergyAustralia customers) and B2B (for other retailer's customers), and is located in the customer database (MBS) in the OMS.
- This is the second[9] opportunity Ausgrid has had to retrospectively provide the reliability metric data for historic years. It was noticed that the reported historic data for unplanned SAIDI and unplanned SAIFI in both Tables 6.2.1 and 6.2.2 are different than the reported data in Ausgrid's previous annual RIN submissions for all the years. The following is noted:
  - All changes to reliability metrics between previous annual RINs and the Reset RIN are less than 1%, except the 2011-12 SAIFI, which is 3%.
  - For the Reset RIN, the reported data have been recalculated with the latest available information.

[7] The start time of such outage events are recorded at the time of customer call and not when the supply was off. Jacobs SKM notes that this is reasonable approach and in accordance with the RIN and the STPIS.

[8] The simple method of dividing the total count of active customer supplied by the three phase LV feeder by three to calculate the count of active customer connected to the affected single phase in that distributor is at best an approximation, but would result in lower errors than the current treatment of all outages as 3 phase.

[9] The first opportunity being reporting for the Economic Benchmarking RIN in March 2014.

- For the Reset RIN, a consistent methodology has been applied to all regulatory years.

Any discrepancy between historical data generated in the past, and a contemporary extract or report for the same period is essentially due to evolution of the systems, reports, or extracts over time to address specific data and accuracy issues that occurred. The data reported in Tables 6.2.1 and 6.2.2 do not match the historical information provided in the previous annual RINs for the following reasons:

- **Review of outage event records**: Historic annual data continues to be manually intervened (periodic internal QA checks and corrections) to remove inaccuracies in the OMS or in the reporting environment even long after it's reporting to various jurisdictions. In other words, it is not 'locked' down.
- **Improvement to calculation method**: An improvement was made to the OMS reporting environment to facilitate the separation of outage events that resulted in a portion of customer receiving a momentary outage and the remainder of customers receiving a sustained outage. This improvement allowed the momentary component of these events to be excluded from the calculation of unplanned SAIDI and unplanned SAIFI. The improvement has been implemented for the previous 2012-13 annual RIN and the Reset RIN. This reason explains the 3% unplanned SAIFI difference between the previous 2011-12 annual RIN and the Reset RIN.
- **Customer counts**: For the previous 2009-10 annual RIN, the unplanned SAIDI and unplanned SAIFI were calculated using the average of the number of customers between the beginning and end of the reporting period. Ausgrid has since identified that this approach does not result in stable metrics suitable for trend analysis of feeder category performance due to the constant adding, removing and reconfiguring of feeders. The unplanned SAIDI and unplanned SAIFI figures reported in the previous 2010-11, 2011-12, 2012-13 annual RINs, and the Reset RIN are all calculated with daily customer counts. For the Reset RIN, all historical years were recalculated according to this newer daily customer count methodology.
- **Exclusion of 'Vacant Power On' customers:** The previous 2009-10 annual RIN used a different customer number basis i.e. 'Vacant Power On' accounts were excluded from the customer count.
- **Customer installation faults:** For the previous 2009-10 and 2010-11 annual RINs, Ausgrid excluded customer installation faults that affected more than a single premise. This was consistent with Schedule 4 of the NSW DNSP Design Reliability and Performance Licence Conditions. For the previous 2011-12 and 2012-13 annual RINs and the Reset RIN, Ausgrid included customer installation faults that affected more than a single premise. This change was in response to recommendations from auditors and is now consistent with Clause 3.3 of STPIS. For the Reset RIN, all historical years were recalculated according to this change, and customer installation faults that affected more than a single premise are included.

Given these reasons, direct comparisons of historically reported reliability metrics against the data reported in this Reset RIN is therefore not expected to align.

- As mentioned in the Basis of Preparation, Ausgrid does not have an established process or methodology to measure data accuracy. The source of estimation was determined by what information was available at the time of reporting to the Reset RIN. As such, Ausgrid have used multiple sources of information and methodologies to provide their best estimates for Table 6.2.6 and 6.2.7, some sources of which may only be available for specific regulatory years. Where historical accuracy data from audit reports was not available, the accuracy for those missing years were assumed to be similar to the 2012-13 data accuracies. The main source of inaccuracy resulting in the overstatement of unplanned SAIDI and unplanned SAIFI values is caused by the inability of the OMS to recognise single phase LV faults from a three phase LV system. Given the context of Ausgrid's systems, the methodologies, explanations and assumptions used to populate these two Tables are considered the best available in the absence of an established process to gather this information.
- Ausgrid's OMS system stores a description of what caused the outage for each event. Based on this description, Ausgrid have correctly mapped or classified the reason for interruption against each outage into the AER prescribed standard reasons or detailed reason for interruptions in the Table 6.3.1. From the

evidence checked, there were no obvious errors or anomalies with the reasons for interruption for each outage. Unplanned SAIDI and unplanned SAIFI are calculated by using customer numbers for that day of each outage. The details from this Table consistently aggregates to the summary data reported in Tables 6.2.1 and 6.2.2.

- The data used to populate Table 6.4.1 has been sourced from two systems – OMS for 2007-08 and Ausgrid's legacy system Network Reliability Data (NRD) for 2002-03 to 2006-07. Customer numbers used for the SAIDI and SAIFI calculations in NRD were based on postcode averaging. In order to maintain consistency, Ausgrid have calculated "OMS equivalent data" for the data produced by NRD. Jacobs SKM have used data populated in Table 6.4.1 in order to independently calculate the annual T_{MED} values, and have found no inconsistencies with the values Ausgrid have determined and used to filter out Exclusion events in Tables 6.2.1, 6.2.2 and 6.2.3.

2.17.3 Auditors Opinion

The summary of Jacobs SKM's opinion on the accuracy and reliability of the information reported in these Reset RIN Tables is:

- While nothing has come to the Auditor's attention that causes it to believe that the data reported in these Tables is not, in all material respects, presented fairly in accordance with the requirements of the Reset RIN and Ausgrid's Basis of Preparation report, it has immaterial inaccuracies. Also, the unplanned SAIDI and unplanned SAIFI data are different than the previously reported data for the same years indicating evolving nature of the underlying systems, extracts, reporting process, and the scope or definition of input parameters. The difference is of minor nature.
- The data in all these Reset RIN tables are generated using information from the GIS and OMS which have accuracy and data quality limitations thereby involving extensive manual data handling processes, to generate the Reset RIN data in the requested format, and with least inaccuracies.

3. Compliance with the AER Audit Requirements

Jacobs SKM audited Ausgrid's Reset RIN response to the AER in line with the 07 March 2014 notice covering the period 2008-09 to 2012-13. Jacobs SKM audited the information reported in the following regulatory templates as per Clause 32.1(b) of Schedule 1 and Clause 1.4 of Schedule 2 of the Reset RIN and in accordance with the review requirements set out in Clauses 1.1(c), 1.1(d), 2.2 and 3.4 of Appendix C of the Reset RIN:

- The historical Actual Non-Financial information and historical Estimate Non-Financial information in worksheets titled:
  - Expenditure: Template 2.1 to Template 2.12
  - Alternative Control Services: Template 4.1 to Template 4.4
  - Network Information: Template 5.2 to Template 5.4; and
  - Service & Quality: Template 6.1 to Template 6.4
- The Basis of Preparation report prepared by Ausgrid.

Jacobs SKM has conducted this audit using resources who:

- are not a registered company auditor or a member of the Institute of Chartered Accountants Australia (CA or FCA) or of CPA Australia (CPA or FCPA) and who does not hold a Certificate of Public Practice, or the Auditor General of NSW;
- are an assurance practitioner as defined in ASAE 3000 *Assurance Engagements other than Audits or Reviews of Historical Financial Information*;
- are independent from Ausgrid and all of its Related Bodies Corporate – that is, not a principal, member, shareholder, officer, or employee of Ausgrid or its related entities;
- are appointed for the purposes of expressing an opinion or conclusion on the audit requirements outlined in detail in paragraph 3 'Audit and Review Requirements' included in Appendix C of the notice;
- has experience in conducting financial, performance, operation or quality assurance audits and conducting data sampling in the electricity industry;
- possesses relevant knowledge and experience in the electricity industry, engineering, IT systems, asset management or customer service as relevant to the audit or review;
- understands the procedures and methodologies underlying the data and the AER's relevant definitions for all information; and
- if necessary, are available to discuss issues relating to the audits with Ausgrid and the AER, including where a Review Report is critical of, or highlights deficiencies in, the audited Non-Financial information.

Jacobs SKM has undertaken the review of Ausgrid's historical Actual Non-Financial information and historical Estimate Non-Financial information reported in the Reset RIN:

- to comply with the ASAE 3000 *Assurance Engagements other than Audits or Reviews of Historical Financial Information*; and
- include a opinion in the Audit Report (this report) as to whether or not anything has come to the Auditor's attention that causes it to believe that the historical Non-Financial information is not, in all material respects, presented fairly in accordance with the requirements of the Reset RIN and Ausgrid's Basis of Preparation report.

Jacobs SKM performed the following activities in accordance with the ASAE 3000 and in particular can attest:

- Have experience in conducting performance and operational audits and data sampling in the electricity industry.
- Have relevant knowledge and experience of the electricity distribution network business, and experience with utility operations, regulatory reporting, revenue reset, and the AER role in the National Electricity Market (NEM).
- Understands the procedures and methodologies underlying the data and the AER's relevant instructions and definitions for the information.
- Have relevant academic and professional qualifications, and significant audit experience.
- Have complied with the fundamental ethical principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.
- The audit is expressed as a negative expression of opinion and provides a limited level of assurance. The engagement is a "direct reporting engagement" and Jacobs SKM provides an opinion about the effectiveness of control procedures and provides relevant and reliable information about the procedures where appropriate.
- Planned the audit such that the work would be completed in an efficient manner with appropriate consideration given to the nature of the area of activity to be examined, the extent to which information technology is used and the documentation available. An engagement plan describing the expected scope of the audit setting out the requirements for interviews and data availability was developed and implemented. In the development of this plan, Jacobs SKM assessed areas considered to potentially contain significant risk, the extent of available evidence, the nature of the control procedures, and the effectiveness of control procedures.
- In planning and implementing the audit procedures Jacobs SKM gave due consideration to the materiality of the control procedures and devoted appropriate attention to important areas of the engagement.
- Reviewed procedures and conducted interviews with relevant Ausgrid staff to develop a sufficient understanding of the activities and circumstances involved in the engagement.
- Performed tests to obtain sufficient evidence to evaluate the effectiveness of control procedures. Professional judgement has been exercised in assessing what constitutes sufficient evidence. Jacobs SKM has also sought corroborating data from other sources such as information available in public domain. Where Jacobs SKM has become aware of a matter which leads to doubts that the evidence obtained is insufficient, Jacobs SKM has pursued the matter and sought further evidence.
- Where appropriate, Jacobs SKM has conducted targeted sampling to provide a reasonable basis to draw conclusions about the population from which the sample is selected. The audit sample has been designed to reduce sampling risk to an acceptable level and with consideration to the purpose of the audit and characteristics of the population from which the sample is drawn. Professional judgement has been exercised to sample items such that a representative sample is targeted. Due consideration has been given to the materiality to overall results and the nature of the processes used to gather the underlying data. In the case of deviations and misstatements identified, Jacobs SKM has sought to investigate and evaluate the cause and possible effect. The sample cases used in undertaking the audit and findings are discussed in the schedule of audit findings.
- Have formed the opinions presented in this report based on the audit evidence obtained during the audit.

Phillip Grieshaber

Lead Auditor

30 May 2014

Appendix A. Audit On-Site and Teleconference Schedule

The following interviews were carried out by Jacobs SKM at Ausgrid HOB and remotely via teleconference as indicated below

No	Date	Participant	Role	Topic(s)	Location
	17/04/2014	Matt Cooper	Manager – Investment Strategy	Table 2.2.2	Ausgrid HOB
		Vivian Ohis	Senior Engineer		
	xx/04/2014	David Thebridge		Tables	Ausgrid HOB & Teleconference
	xx/04/2014	Chris Kamarinos		Tables 6.1.1, 6.2.5	Ausgrid HOB
		David I Williams			
	28/04/2014 05/05/2014	Abbas Reslan		Table 2.4.2 Table 2.4.5 Table 2.4.6	Ausgrid HOB
		Elias Achcer			
		Jeff Ma			
	23/04/2014	Matt Cooper	Manager – Investment Strategy	Table 2.3.1	Ausgrid HOB
		Mai Attuell			
	xx/04/2014	Paul Colebourn	Manager - Outage & Incident Management	Tables 6.2.1, 6.2.2, 6.2.3, 6.2.6, 6.2.7	Ausgrid HOB
		Martin Hemphill	Manager – Network Performance (Acting)		
		Kylie Moses	Reliability Systems & Reporting Officer	Table 6.2.4	
	xx/04/2014	Ed King	Manager –	Tables 4.3.1, 4.4.1	Teleconference
	30/04/2014	Alex Watters	Senior Engineer – Transmission Planning	Table 2.4.1, 2.4.3, 2.4.6	Teleconference
	xx/04/2014	James Von Stieglitz	Executive Manager – Data and Technology Services	Tables 4.2.1, 4.2.2, 4.3.1	Teleconference
	xx/04/2014	Paul Myors	Manager - Demand Management & Forecasting	Tables 5.3.1, 5.4.1	Ausgrid HOB

No	Date	Participant	Role	Topic(s)	Location
		Daniel Sims			
		Edward White			
	xx/04/2014	John Bedding	Manager –	Tables 4.1.1, 4.1.2	Ausgrid HOB
		Peter Powers	Senior Analyst		
	02/05/2014	Paul Kril	Manager –	Table 2.2.1	Teleconference
	02/05/2014	Ed King	Manager –	Table 2.5.1 Table 2.5.2	Teleconference
		Les Beacher			

Appendix B. Reset Audit Document List

The following documents were provided on request from Ausgrid staff during the interview process.

#	Document	From	RIN Ref
1	Count Poles by Feeder	Paul Kril	2.2.1 2.2.2
2	REP and DoC - 10 Year Reg ID View PK GR DT CH v2	Paul Kril	2.2.1 2.2.2
3	RIN RESET - REPEX (Consolidated Actual Estimated) 2014-04-28 - VO	Matt Cooper	2.2.1 2.2.2
4	RIN RESET - REPEX Analysis and Calcs - VO - 2014-04-28	Matt Cooper	2.2.1 2.2.2
5	2.2 part 1	David Thebridge	2.2
6	2.2 part 2	David Thebridge	2.2
7	Substation Utilisation Thresholds	Alex Watters	2.4.1, 2.4.5, 2.4.6
8	Feeder Utilisation Thresholds	Alex Watters	2.4.1, 2.4.5, 2.4.6
9	capacity factor review	Alex Watters	2.4.1, 2.4.5, 2.4.6
10	Augex_Data_Feeder Peak_sample	Alex Watters	2.4.1, 2.4.5, 2.4.6
11	RIN Template 2.4 - HV Feeders (AER template) - FINAL 28042014	Abbas Reslan	2.4
12	RIN Template 2.4 - HV Feeders - Planning Parameters (Ausgrid Calculations) - FINAL	Abbas Reslan	2.4
13	Raw SAP Pipeline Report	Abbas Reslan	2.4
14	Explanatory Notes - with 11kV only	Abbas Reslan	2.4
15	Table 2.4.4	Tim Harwood	2.4.4, 2.4.5, 2.4.6
16	Table 2.4.5	Tim Harwood	2.4.4, 2.4.5, 2.4.6

#	Document	From	RIN Ref
17	RIN preparation - table 2.5.1	Les Beacher	2.5.1, 2.5.2
18	RIN Data - 18022014 LB (3)(4)	Les Beacher	2.5.1, 2.5.2
19	LB DC's commissioned (2)	Les Beacher	2.5.1, 2.5.2
20	DC's Commissioned 2008 - 2013 BO (1)	Les Beacher	2.5.1, 2.5.2
21	Copy of NSW ACT DNSPs consolidated RIN Templates - 24 Feb 14 LB v2	Les Beacher	2.5.1, 2.5.2
22	Connection GSL breach (5)	Les Beacher	2.5.1, 2.5.2
23	NumbersForResetTeamMay14	David Cash	2.6.2
24	Vehicles Charges_V1	Brent Lyster	2.6.3
25	Streetlighting 2013FY	David Thebridge	2.8.1
26	Streetlights for Asset Age	David Thebridge	2.8.1
27	Underground Cables 2011FY	David Thebridge	2.8.1
28	Ausgrid 2009 - 2013 Headcount FTE by Job Family	Doug Pickering	2.11.1, 2.11.2
29	Ausgrid 2009 - 2013 Headcount FTE by Job Family_Labour Hire	Doug Pickering	2.11.1, 2.11.2
30	Mapping of Job Family to AER Labour Category	Doug Pickering	2.11.1, 2.11.2
31	Overtime Hours Data	Doug Pickering	2.11.1, 2.11.2
32	Regulatory Reset RIN Template 2.11 Labour (11 April 2014)	Doug Pickering	2.11.1, 2.11.2
33	RIN Template Stand Down Instances	Doug Pickering	2.11.1, 2.11.2
34	Light Replacement and Maintenance Worksheet	John Bedding	4.1.1, 4.1.2
35	Council Payments for FY08/09-FY13/14	John Bedding	4.1.1, 4.1.2
36	Business Objects Reports	John Bedding	4.1.1, 4.1.2
37	AER Maintenance M7 1213	John Bedding	4.1.1, 4.1.2

#	Document	From	RIN Ref
38	AER Maintenance M7 0809	John Bedding	4.1.1, 4.1.2
39	AER Light Installation 1213	John Bedding	4.1.1, 4.1.2
40	AER Light Installation 0809	John Bedding	4.1.1, 4.1.2
41	AER Current Population of lights in use 301213	John Bedding	4.1.1, 4.1.2
42	AER - New Poles Stood with Related Pole Replace1213	John Bedding	4.1.1, 4.1.2
43	AER - New Poles Stood with Related Pole Replace0809	John Bedding	4.1.1, 4.1.2
44	Table 4.2.1 Meter Populations	James Von Stieglitz	4.2.1, 4.2.2, 4.3.1
45	4.2.2 Data request 09 - 10 FY @ 13.05.2014	James Von Stieglitz	4.2.1, 4.2.2, 4.3.1
46	4.2.2 Data request 10 - 11 FY @13.05.2014	James Von Stieglitz	4.2.1, 4.2.2, 4.3.1
47	AER-RIN workings v5 13 May 14 decimal	James Von Stieglitz	4.2.1, 4.2.2, 4.3.1
48	Table 4.3.1 2011 - 12 FY	James Von Stieglitz	4.2.1, 4.2.2, 4.3.1
49	Metering RIN May 21 (Color Coded)	James Von Stieglitz	4.2.1, 4.2.2, 4.3.1
50	MM Fees Summary FY 1213 June 2013	Ed King	4.3.1, 4.4.1
51	I. MM Fees Units and Dollars FY 1314 March 14	Ed King	4.3.1, 4.4.1
52	CC 6710 May YTD Hours1	Ed King	4.3.1, 4.4.1
53	22_Planning_Studies 29 April 2014	Ed King	4.3.1, 4.4.1
54	08_Notification_Of_Arrangement 23 April 2014	Ed King	4.3.1, 4.4.1
55	06_Clearance_to_Work 28 April 2014	Ed King	4.3.1, 4.4.1
56	04_Substation_Commissioning 23 April 20145	Ed King	4.3.1, 4.4.1

#	Document	From	RIN Ref
57	Economic life calcs part 1	David Thebridge	5.2.1
58	Economic life calcs part 2	David Thebridge	5.2.1
59	SL component change records for Standard Life calcs	David Thebridge	5.2.1
60	Template 5.2	David Thebridge	5.2.1
61	AERDaily1213 RIN(updated)	David Williams	6.1.1, 6.2.5
62	AERDaily20102011	David Williams	6.1.1, 6.2.5
63	NSW ACT electricity DNSPs reset RIN templates	David Williams	6.1.1, 6.2.5
64	Calculations - Reset RIN 2014 (6.2)	Martin Hemphill	6.2.1, 6.2.2, 6.2.3, 6.3.1, 6.4.1
65	Explanation of differences from historic RINs	Martin Hemphill	6.2.1, 6.2.2, 6.2.3, 6.3.1, 6.4.1
66	01_03 - OMS Customers Fed, Daily Ver 2.2 9May14	Kylie Moses	6.2.4
67	LV Faults Analysis	Paul Colebourn	6.2.6, 6.2.7
68	SAIFI-SAIDI accuracy assessment - final	Paul Colebourn	6.2.6, 6.2.7

Appendix C. Glossary

Acronym	Meaning
AER	Australian Energy Regulator
BOM	Bureau of Meteorology
CBD	Central Business District
DAROS	Disconnect and Reconnect Order System
DNSP	Distribution Network Service Provider
FAR	Fixed Asset Register
GIS	Geographical Information System
GWh	Giga Watt Hours
HV	High voltage
LID	Line Impedance Dispatch
LV	Low voltage
MED	Major Event Day
T_{MED}	Major Event Day Threshold
kVA	Kilo Volt Ampere
MVA	Mega Volt Ampere
PoE	Probability of Exceedance
NEL	National Electricity Law
NMI	National Metering Identifier
RAB	Regulated Asset Base
RFM	Roll Forward Model
RIN	Regulatory Information Notice
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SAP	Systeme, Anwendungen, Produkte in der Datenverarbeitung *(German: Systems, Applications & Products in Data Processing; SAP AG)*
SCADA	Supervisory Control and Data Acquisition
STPIS	Service Target Performance Incentive Scheme