Basis of Preparation

Response to Category Analysis RIN dated 7 March 2014

30 October 2015

Contents

List of attachments

Requirement	Description	Reference
Clause 1.12 Appendix E	Reconciliation requirement.	**RIN attachment Appendix E clause 1.12**

Purpose

On 7 March 2014, the Australian Energy Regulator (AER) issued a Regulatory Information Notice (Category Analysis RIN) to Ausgrid under Division 4 of Part 3 of the *National Electricity (New South Wales) Law* (NEL). The Category Analysis RIN requires Ausgrid to provide and to prepare and maintain the information in the manner and form specified in the Category Analysis RIN. The AER has said that it requires the information for the performance or exercise of its functions or powers conferred on it under the NEL or the National Electricity Rules (NER).

Under paragraph 1.2 of Schedule 1 to the Category Analysis RIN, Ausgrid is required to provide a Basis of Preparation. The Basis of Preparation is to be provided in accordance with the Category Analysis RIN and the Principles and Requirements in Appendix E.

AER's instructions

In accordance with the Basis of Preparation requirements in Appendix E of the Category Analysis RIN, Ausgrid must explain, for all information in the regulatory templates the basis upon which Ausgrid prepared information to populate the input cells (basis of preparation).

The basis of preparation must be a separate document (or documents) that Ausgrid submits with its completed regulatory templates. The basis of preparation must follow a logical structure that enables auditors, assurance practitioners and the AER to clearly understand how Ausgrid has complied with the requirements of the Category Analysis RIN.

The AER has set out the minimum requirements of the Basis of Preparation. This is set out in Table 1 below.

	Minimum requirements of the Basis of Preparation
1	Demonstrate how the information provided is consistent with the requirements of the Notice.
2	Explain the source from which Ausgrid obtained the information provided.
3	Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made
4	Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information: (i) why an estimate was required, including why it was not possible for Ausgrid to provide actual information; (ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

As part of its response, Ausgrid may provide additional detail beyond the minimum requirements if Ausgrid considers it may assist a user to gain an understanding of the information presented in the regulatory templates.

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

Ausgrid has prepared this document (Ausgrid Basis of Preparation) in accordance with the requirements in the Category Analysis RIN.

Other matters in the RIN

Clause 1.2(b) to Schedule 1 of the RIN

In relation to clause 1.2 (b) to Schedule 1 of the RIN, we have provided in accordance with this Notice and the Principles and Requirements in Appendix E, a Basis of Preparation demonstrating Ausgrid has complied with this Notice, in respect of:

(a) the information in each Regulatory template in the Microsoft Excel Workbooks attached at Appendix A; and

(b) any other information prepared in accordance with the requirements of this Notice.

Clause 1.12 of Appendix E of the RIN

In accordance with clause 1.12 of Appendix E of the RIN Ausgrid has provided a reconciliation between total capital and operating expenditure provided in the regulatory templates to the capital and operating expenditure recorded in Ausgrid's Regulatory Accounting Statements and Audited Statutory Accounts.

This is presented in attachment 'RIN attachment clause 1.12'.

Template 2.1 – Expenditure summary and reconciliation

The information provided in template 2.1 has been completed in accordance with the AER RIN requirements and instructions applying to template 2.1 including Appendix E and F, and the instructions in the worksheet. All tables have been completed.

Table 2.1.1 – Standard control services capex

Demonstrate how the information provided is consistent with the requirements of the Notice

The information reported in the tables is derived from other worksheets. The total gross capex in the table is in accordance with the annual audited Statutory Statements and Ausgrid's Cost Allocation Methodology (CAM). Ausgrid prepares information in the Category Analysis RIN for the AER which comply with Australian Accounting Standards and the Regulatory Information Requirements Guidelines for the NSW Electricity Distributors. These are independently audited and reviewed each year before reporting separately to the AER.

Explain the source from which Ausgrid obtained the information provided.

Sources of information for this template are:

a) Replacement Expenditure is obtained from table 2.2.1 'Replacement Expenditure, Volumes and Asset Failures by Asset Category' by the addition of all asset groups stated FY2015.

b) Connections capex is obtained from table 2.5.2 'Cost metrics by Connection Classification' by the addition of all the connection subcategories.

c) Augmentation Expenditures is obtained from table 2.3.4 'Augex data – Total Expenditure' by the addition of all the augmentation capex categories.

d) Non-network expenditure is obtained from table 2.6.1 'Non-Network Expenditure' by the addition of all service subcategory relating to capex.

e) Capitalised network overheads is obtained from table 2.10.1 'Network Overheads Expenditure' by the addition of capitalised network overheads in row 70 to 97.

f) Capitalised corporate overheads is obtained from table 2.10.2 'Network Overheads Expenditure' by the addition of capitalised network overheads in row 153 to 174. This represents Ausgrid's total capitalised overheads as explained in the basis of preparation for table 2.10.

g) Capital contributions are sourced from the Ausgrid accounting system - SAP and allocated as per CAM to obtain the Standard Control Services portion.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

The Total Gross Capex for the Standard Control business reported in template 2.1.1 has been prepared in accordance with Ausgrid's CAM. The capital contribution is obtained using SAP system and allocated using Ausgrid's CAM to calculate the Standard Control Services portion.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

Not applicable.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

All data reported is obtained from relevant worksheets. Please refer to the basis of preparation for these worksheets.

Table 2.1.2 – Standard control services opex by category

Demonstrate how the information provided is consistent with the requirements of the Notice

The information reported in table 2.1.2 is derived from other worksheets. The total opex in the table is in accordance with the annual audited Statutory Financial Statements and Ausgrid's Cost Allocation Methodology (CAM).

Explain the source from which Ausgrid obtained the information provided.

Sources of information:

- Vegetation management opex is obtained from table 2.7.2 'Expenditure Metrics by Zone' by the addition of all data reported against zone 1 from row 11 to 19.
- Maintenance opex is obtained from table 2.8.2 'Cost Metrics for Routine and Non-Routine Maintenance' by the addition of all maintenance for both routine and non-routine maintenance costs. Note this excludes maintenance opex relating to Public Lighting maintenance in cells M30 to N31 and the double counting of reporting for Network Underground Cable maintenance by location in cells M17 to N18.
- Emergency Response opex is obtained from table 2.9.1 'Emergency Response expenditure', cell D11.
- Non-network expenditure is obtained from table 2.6.1 'Non-Network Expenditure' by the addition of all service subcategory relating to opex only.
- Network overheads are obtained from table 2.10 'Overheads' by addition of rows 12 to 39 and deducting the network capitalised overheads portion from row 70 to 97.
- Corporate overheads are obtained from table 2.10 'Overheads' by addition of row 109 to 129 and deducting the corporate capitalised overheads portion from row 153 to 173.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Total Opex for Standard Control reported in worksheet 2.1.2 has been prepared for FY1415 in accordance with Ausgrid's CAM.

Total Opex reported in table 2.1.2 aligns to total opex reported in the Economic Benchmarking RIN.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

Not applicable.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

All data reported is obtained from relevant worksheets. Please refer to the basis of preparation for these worksheets.

Table 2.1.3 – Alternative control services capex

Demonstrate how the information provided is consistent with the requirements of the Notice

The information reported in the tables is derived from other worksheets. The total reported in the table is in accordance with the Annual Audited Statutory Financial Statements and Ausgrid's CAM.

Explain the source from which Ausgrid obtained the information provided.

Public lighting capex is from table 4.1.2 'Descriptor Matrix Annually' cells D133 and D137. Metering capex is from table 4.2.2 Cost Metrics, rows H12 to H14 and H27 to H32. Capitalised network & corporate overheads for ACS has been extracted from the SAP Business Intelligence system.

In 2014/15, Ausgrid was preparing the financial accounting and reporting systems for the new Alternative Control Services. As systems were not in place during the year, some alternative control services could not be reported under Alternate Control Services, hence numbers for Connections is reported in table 2.1.3. Financial accounting and reporting systems are in place for 2015/16 reporting.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Alternative Control Services capex provided is as per Ausgrid's CAM.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

Not applicable.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

All information provided in table 2.1.3 is actual information.

Table 2.1.4 – Alternative control services opex

Demonstrate how the information provided is consistent with the requirements of the Notice

The information reported in the table is derived from other worksheets. The total in the table is in accordance with the annual audited Statutory Financial Statements and Ausgrid's CAM.

Explain the source from which Ausgrid obtained the information provided.

Public Lighting opex is from table 4.1.2 'Descriptor Matrix Annually' cell D141. The opex number aligns with the opex number reported for Public Lighting in the Economic benchmarking RIN.

Metering opex is from table 4.2.2 Cost Metrics by addition of rows H15 to H26 and H33 to H41.

In 2014/15, Ausgrid was preparing the financial accounting and reporting systems for the new Alternative Control Services. As systems were not in place during the year, some alternative control services could not be reported under Alternate Control Services, hence numbers for Connections is reported in table 2.1.4. Financial accounting and reporting systems are in place for 2015/16 reporting.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Alternative Control Services opex provided is as per Ausgrid's CAM.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

Not applicable.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.
All information provided in table 2.1.4 is actual.

Table 2.1.5 – Dual function assets capex

Demonstrate how the information provided is consistent with the requirements of the Notice

The total in table 2.1.5 is in accordance with the annual audited Statutory Financial Statements and Ausgrid's CAM.

Explain the source from which Ausgrid obtained the information provided.

Dual function asset capex reported in table 2.1.5 is derived from the SAP Business Intelligence system.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

The Dual Function Assets Capex for reported in template 2.1.5 has been prepared in accordance with Ausgrid's CAM. The information is from the SAP Business Intelligence system and allocated using Ausgrid's CAM to calculate the Dual Functions Assets portion.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

Not applicable.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

All information provided in table 2.1.5 aligns with our CAM.

Table 2.1.6 – Dual function assets opex by category

Demonstrate how the information provided is consistent with the requirements of the Notice

The information reported in the tables is derived from other worksheets. The totals in the tables are in accordance with the annual audited Statutory and Ausgrid's CAM.

Explain the source from which Ausgrid obtained the information provided.

Dual function asset opex categories reported in table 2.1.6 is Standard Control Services opex reported in table 2.1.2 multiplied by the Transmission opex percentage (described in the methodology section below).

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Dual function asset opex reported in table 2.1.6 is calculated based on numbers reported in table 2.1.2 for Standard Control Services, multiplied by the Transmission opex percentage for FY1415.

For the Category Analysis RIN purposes, the Transmission opex percentage for FY1415 is a portion of Transmission opex over total Transmission and Distribution opex for FY1415.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

All information provided in table 2.1.6 aligns with our CAM. The total opex aligns with the Economic Benchmarking RIN for FY1415.

Template 2.2 – Repex

The information provided in template 2.2 has been completed in accordance with the AER RIN requirements and instructions applying to template 2.2. including Appendix E and F, and the instructions in the worksheet.

The data for REPEX is split into two major groups: sub-transmission strategic projects and replacement programs.

Similarly the cost data for replacement programs has compatibility issues which affect reconciliation to the SAP Finance cost due to driver allocation differences. The replacement program costs have also been scaled uniformly across each financial year to reconcile with the SAP Finance aggregates.

Table 2.2.1 – Cost metrics by asset category

Demonstrate how the information provided is consistent with the requirements of the Notice

The information in this table is compliant in that actual values are used where possible, and best estimates are provided where actual data is not available.

Reconciliation of the RIN Response with prior Regulatory Accounts is not possible. The reason for this is that Ausgrid's reporting system is a live system where the driver allocation of projects can and do change over time. This is particularly the case for major projects which may have been initiated as primarily augmentation projects, albeit with an asset renewal component, but as a result of recent declines in demand forecasts and revised planning have been re-scoped as primarily replacement projects. The dynamic nature of the planning process makes reconciling annual regulatory reporting difficult, particularly as major projects generally span multiple years (3-7 years). Modifications to reporting systems and processes have been initiated to enable this in future.

Explain the source from which Ausgrid obtained the information provided.

The source for the majority of data for this section has been SAP PM (Plant Maintenance). This includes data in categories poles, transformers, switchgear, public lighting and other (excluding meters). Data for overhead conductors, underground cables and service lines has been sourced from Ausgrid's Geographical Information System (GIS).

The source of the street lighting data for this section has been SAP PM (Plant Maintenance). Asset information is updated daily with information on maintenance work performed, added assets, removed assets and changes to assets including lamp replacements, luminaire replacements, bracket changes, new supports and connections. The Business Intelligence information is derived from SAP on a nightly basis. The information supplied within this RIN is from specifically written Business Objects reports.

Further information for public lighting:

Luminaires – major roads	Expenditure: is based on the total materials and labour costs associated with major road light replacement from table 4.1.2 for each individual year. Table 4.1.2 is explained further in this document. Asset replacements: Are actual figures based on table 4.1.2 Light replacement - volume of works and expenditure for Major Roads for the particular year Asset failures: Ausgrid's data does not discriminate between an asset failure and asset replacement. All public lighting assets that fail are replaced however not all replacements are due to failure. Failure information provided is a copy of the replacement information.
Luminaires – minor roads	Expenditure is based on the total materials and labour costs associated with minor road light replacement from table 4.1.2 for each individual year. Table 4.1.2 is explained further in the basis of preparation for template 4.1. Asset replacements: Are actual figures based on table 4.1.2 Light replacement - volume of works and expenditure for minor roads for the particular year
Brackets – major	**Expenditure:**

road and minor road	Actual material usage only from SAP transaction YR19 for all bracket stock codes. Ausgrid does not keep specific expenditure data for the bracket installations in isolation to the rest of the installation therefore materials price are given here. Labour is captured in the Luminaire. **Asset Replacements:** Actual figures from SAP PM
Lamps – major roads	Expenditure: is based on the operating expenditure (opex) cost associated with all major road light maintenance from table 4.1.2. Table 4.1.2 is discussed in the section for template 4.1 public lighting further on in this document. Asset Replacements: Are actual figures based on table 4.1.2 Light maintenance - volume of works and expenditure for major roads for the particular year Asset Failures: Replacement data duplicated.
Lamps – minor roads	Expenditure: is based on the opex cost associated with all minor road light maintenance from table 4.1.2. Table 4.1.2. Table 4.1.2 is discussed in the section for template 4.1 public lighting further on in this document. Asset Replacements: Are actual figures based on table 4.1.2 Light Maintenance - volume of works and expenditure for Minor Roads for the particular year. Asset Failures: Replacement data duplicated.
Poles/columns – major and minor roads	Expenditure for pole replacements was found directly through pole replacement expenditure. As this was a total an assumption was made that 32% of these were on major roads and 68% on minor roads.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Expenditure and Asset Replacements

To provide the expenditure and quantum of assets replaced during the current and previous financial years, an extract was obtained from SAP detailing these aspects for all replacement driven projects associated with capital expenditure (capex) programs for both the replacement and Duty of Care Portfolios (Duty of Care Expenditure) as well as integrated Area Plans limited to those programs that are safety driven, other than compliance standard changes as per discussion with the AER. This extract was obtained via a specialised reporting interface, the CAPEX Dashboard, utilising Business Objects.

This extract was then mapped from the relevant planning identifiers to the associated Replacement Expenditure (Repex) Asset Group and Asset Category based on primary assignment. In cases where there was either no direct relationship or a many to one relationship, methodologies were applied to apportion both the expenditure and replacements across these categories. Further detail on such apportionment is provided below for those cases.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

Estimated information is set out in the following table.

Pole replacement	Data is not held at the granular level required to populate the asset

	categories/asset metrics directly.
Overhead conductors	Data is not held at the granular level required to populate the asset categories/asset metrics directly.
Underground cables	Data is not held at the granular level required to populate the asset categories/asset metrics directly.
Service lines	Data is not held at the granular level required to populate the asset categories directly.
Transformers	Data is not held at the granular level required to populate the asset categories directly.
Switchgear	Data is not held at the granular level required to populate the asset categories directly.

Public lighting

For public lighting data where material and labour costs are required actual values have been averaged to find a common unit rate for major and minor roads (Major roads are defined as luminaires >100W). Labour rates incorporate both contractor bulk lamp replacement and Ausgrid staff unplanned maintenance rates. These costs have been broken down further into replacement and maintenance, where replacement is the installation of a new luminaire and maintenance is a lamp change or other minor work to rectify a fault. The table below summarises the FY2014 average material and labour costs that have been used. The justification of the build-up of these costs is based on a report that presents the methodology and results of calculating maintenance costs for public lights in Ausgrid's network. This work includes a comprehensive a Time and Motion Study initiated by the Ausgrid Public Lighting Group. The study commenced in August 2012 and completed in October 2012.

FY14 Material and Labour costs	Average Labour Cost	Average Material Cost	Average Total Cost
Minor Maintenance	$186.00	$15.03	$201.03
Minor Replacement	$331.50	$147.74	$479.24
Major Maintenance	$186.00	$28.24	$214.24
Major Replacement	$331.50	$431.49	$762.99

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

The estimates and apportionment methods are set out below:

Poles

Staking of wood poles, expenditure and staking completion rates incurred under contract(s) were used to populate this series of data.

Pole replacement:

To provide information in the asset group and asset categories, the extract obtained from SAP as detailed above was filtered to display only data associated with pole replacement activities.

For installed assets:

- Pole asset failure information is provided based on historical records.
- Total poles by feeder type were obtained from our GIS. Asset replacements were apportioned on the basis of pole population per feeder type as the historical assignment of feeder and hence feeder category is not held against the retired pole.

Conductors

The SAP extracts were apportioned to provide the required secondary data splits by feeder classification and conductor material. The feeder classifications were apportioned on the basis of length of feeder in each class. Similarly the apportionment to material type was also done on the basis of length of conductor in each material class.

Cables

The SAP extracts were apportioned to provide the required secondary data splits by feeder classification. The feeder classifications were apportioned on the basis of length of feeder in each class.

Service Lines:

The SAP extract and failure data were apportioned on the basis of customer information retrieved from the Metering Business System (MBS) via the National Metering Identifier (NMI) of the supply point connected to the service line. The customer type attributed to the NMI in MBS was used to classify the service line allowing distinction of those that are for residential or commercial/industrial connections. All service lines have been classified as simple type as the classification of complex type is related to the actions undertaken during the original connection and thus have no relevance to its classification in situ.

Transformers

In general all direct costs were mapped to the relevant asset category, however, in cases where the cost categories extracted covered more than one asset category or asset group, the costs and assets replaced were allocated on the basis of ratios of purchased assets during the period.

Switchgear

In general all direct costs were mapped to the relevant asset category, however in cases where the cost categories extracted covered more than one asset category or asset group, the costs and assets replaced were allocated on the basis of ratios of purchased assets during the period.

Public lighting

For public lighting, Ausgrid does not keep specific expenditure data for the bracket installations in isolation to the rest of the installation therefore average materials prices are given.

Ausgrid does not differentiate between replacements and failures for public lighting assets. As a result the failure information provided is identical to the replacement data.

The estimates provided are the best estimates as they are deemed to be the most logical approach based on the judgement of the subject matter expert.

Table 2.2.2 – Descriptor metrics

Demonstrate how the information provided is consistent with the requirements of the Notice

The information in this section is compliant in that actual values are used where possible, and best estimates are provided where actual data is not available.

Explain the source from which Ausgrid obtained the information provided.

The cost data for sub-transmission strategic projects is sourced from Ausgrid's Corporate Reporting System Business Intelligence (BI). This system reports information out of Ausgrid's Coroprate Systesm at a summary level. It is necessary to map asset data to RIN Asset categories. Where there is no direct link to RIN asset categories it is necessary to allocate assets on the basis of available information.

The source for the majority of data for this section has been SAP PM (Plant Maintenance). This includes data in categories poles, transformers, switchgear, public lighting and other (excluding meters). Data for overhead conductors, underground cables and service lines has been sourced from Ausgrid's GIS.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Expenditure and Asset Replacements

To provide the expenditure and quantum of assets replaced during the current financial year, an extract was obtained from SAP detailing these aspects for all planning identifiers associated with capex programs for both the replacement and Duty of Care Portfolios -Duty of Care expenditure limited to those programs that are safety driven, other than compliance standard changes (as per discussion with the AER). This extract was obtained via a specialised reporting interface, the CAPEX Dashboard, utilising Business Objects.

This extract was then mapped from the relevant regulatory identifier to the associated Repex Asset Group and Asset Category based on primary assignment. In cases where there was either no direct relationship or a many-to-one relationship, methodologies were applied to apportion both the expenditure and replacements across these categories. Further detail on such apportionment is provided below for those cases.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

(i) why an estimate was required, including why it was not possible for Ausgrid to provide actual information.

Pole replacement	Data is not held at the granular level required to populate the asset categories/asset metrics directly.
Overhead conductors	Data is not held at the granular level required to populate the asset categories/asset metrics directly.
Underground cables	Data is not held at the granular level required to populate the asset categories/asset metrics directly.
Service lines	Data is not held at the granular level required to populate the asset categories directly.
Transformers	Data is not held at the granular level required to populate the asset categories directly.
Switchgear	Data is not held at the granular level required to populate the asset categories directly.

Public lighting	As set out in above section for table 2.2.1.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

The estimates and apportionment methods are set out below:

Poles

Staking of wood poles, expenditure and staking completion rates incurred under contract(s) were used to populate this series of data.

Pole replacement:

To provide information in the asset group and asset categories, the extract obtained from SAP as detailed above was filtered to display only data associated with pole replacement activities.

For installed assets:

- Pole asset failure information is provided based on historical records.
- Total poles by feeder type were obtained from Ausgrid's GIS. Asset replacements were apportioned on the basis of pole population per feeder type as the historical assignment of feeder and hence feeder category is not held against the retired pole.

Conductors

The SAP extracts were apportioned to provide the required secondary data splits by feeder classification and conductor material. The feeder classifications were apportioned on the basis of length of feeder in each class. Similarly the apportionment to material type was also done on the basis of length of conductor in each material class.

Cables

The SAP extracts were apportioned to provide the required secondary data splits by feeder classification. The feeder classifications were apportioned on the basis of length of feeder in each class.

Service Lines

The SAP extract and failure data were apportioned on the basis of customer information retrieved from the Metering Business System (MBS) via the National Metering Identifier (NMI) of the supply point connected to the service line. The customer type attributed to the NMI in MBS was used to classify the service line allowing distinction of those that are for residential or commercial/industrial connections. All service lines have been classified as simple type as the classification of complex type is related to the actions undertaken during the original connection and thus have no relevance to its classification in situ.

Transformers

In general all direct costs were mapped to the relevant asset category, however, in cases where the cost categories extracted covered more than one asset category or asset group, the costs and assets replaced were apportioned on the basis of ratios of purchased assets during the period.

Switchgear

In general all direct costs were mapped to the relevant asset category, however in cases where the cost categories extracted covered more than one asset category or asset group, the costs and assets replaced were apportioned on the basis of ratios of purchased assets during the period.

Public lighting

For public lighting, Ausgrid does not keep specific expenditure data for the bracket installations in isolation to the rest of the installation therefore average materials prices are given.

Ausgrid does not differentiate between replacements and failures for public lighting assets. As a result the failure information provided is identical to the replacement data.

The estimates provided are the best estimates as they are deemed to be the most logical approach based on the judgement of the subject matter expert.

Template 2.3 – Augex project data

The information provided in template 2.3 has been completed in accordance with the AER RIN requirements and instructions applying to template 2.3 including Appendix E and F, and the instructions in the worksheet. All tables have been completed.

Table 2.3.1 – Augex Asset Data – Subtransmission Substations, Switching Stations and Zone Substations

Demonstrate how the information provided is consistent with the requirements of the Notice

This response is based on the worksheets and supporting documentation as provided by the AER up until 7th March 2014 and as interpreted by the relevant completing Ausgrid business unit. The information primarily comes from Ausgrid's SAP system or is based on advice from the relevant business unit experts. Subject matter experts were engaged in preparing this information as necessary.

Explain the source from which Ausgrid obtained the information provided.

Sub-transmission projects

- SAP Business Intelligence (BI) reports from the transaction systems as the primary source of historical costs for materials, contract services, other costs, labour and associated man hours (updated for the full FY2015 actual expenditure data);
- SAP BI reports from the forecasting system as the primary source of forecast costs, asset quantum and allocations requirements when historical information isn't readily available;
- A combination of SAP IAMs, GIS, RIC and System Diagrams are used for actual asset quantum and certain technical data.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

The method and assumptions are as follows:

Step 0. FY2014 RIN information has been provided last year and is deemed to be complaint by the AER. Thus, it is not unreasonable to assume that the FY2015 RIN should only be an update using the full FY2015 actual expenditure data unless more accurate data is available that supersede any previous data provided (i.e. this provides a mechanism to improve on data quality).

Step 1. For network projects with expenditure within FY2015, isolated the associated substation projects with an augmentation component greater than or equal to $5 million over the life of the project in Real $2013/14 (note: Ausgrid uses an incremental capacity methodology to determine its augmentation component as required by the National Electricity Rules (NER)). However, once the applicable projects are determined, the full expenditure for each project is presented (including costs associated with other drivers for expenditure, e.g. replacement) rather than its theoretical fraction.

Step 2. For projects with both substation and sub-transmission lines components, the project is further interrogated into its work breakdown structure (WBS). For projects of this nature, only the expenditure of the substation component will be included. However, for a project with no sub-transmission line components, any associated distribution work to enable the commissioning of the substation will be included (i.e. 11kV connection expenditures).

Step 3. Provide the actual and expected years where expenditures have and will be incurred.

Step 4. For projects with actual incurred expenditure, information is provided in the following order:

- Transformers expenditure (exclude distribution, auxiliary and earthing transformers);
- Switchgear expenditure (include primary switchgears on both the high and low side of the substation);
- Capacitors expenditure (for capacitors within the substations that offer capacitive and voltage support);

- Other plant item expenditure (based on the total 'Material' booked to the project minus item 1, 2 & 3 above);
- Installation labour expenditure (uses the 'Labour-Direct' cost element of the project);
- Installation labour volume (uses associated labour component in project system and payroll);
- Easements expenditure (usually booked against the project itself);
- Civil works expenditure (based on the total 'Contract Services' booked to the project minus item 7 above);
- Other direct expenditure (uses the 'Other-Direct' cost element of the project);
- Land Purchase expenditure (from a separate report as land is booked separately from the project).

Note:

- *Item 1, 2 & 3 above are based on either separate reports that itemises the materials booked to the project more accurately or financial asset class breakdown in SAP BI.*
- *All monetary figures provided in Step 4 are as incurred (ie. Nominal $).*
- *The monetary figures represent the full cost for the project irrespective of the proportion of augmentation components (see note in Step 1 above).*

Step 5. For projects with expected forecast expenditure, information is provided in the following order;

- For projects already midway through its investment cycle, it is reasonable to assumed that all major equipment is already procured and that the expected forecast expenditure for 'material' is part of 'Other Plant Item' only;
- For projects not yet authorised, the expected 'material' expenditure at the asset category level is used;
- Installation Labour expenditure is determined by peeling out the direct costs component of the expected expenditure using historical cost allocation;
- Installation Labour volume is determined using the result of item 3 above and dividing it by the average unit rate of direct labour ($/man hour);
- Civil Works expenditure (based on 'Contract Services' cost element);
- Other Direct expenditure (assumed to be included as part of item 5 above).
- Any cancelled projects with expenditure in FY2015 is not included (i.e. total project will be less than $5m)

Note:

- *The monetary figures used in Step 5 are in nominal $.*
- *The monetary figures represent the full cost for the project irrespective of the proportion of augmentation components (see note in Step 1 above).*

Step 6. Ausgrid has no 'Related Party Margins' and/or 'Non-Related Party Contracts'.

Step 7. Provide associated technical information for each project;

- Transformers units added (based on material booked to the project and checked against various corporate systems mentioned above);
- Transformers MVA added (based on information from various corporate systems mentioned above);
- Switchgear units added (based on material booked to the project and checked against various corporate systems mentioned above);
- Capacitors MVAR added (based on information from various corporate systems mentioned above);
- Substation ratings (pre and post), voltages, types and triggers are determined by subject matter experts with reference to project briefs, engineering systems (e.g Ratings and Impedance Calculator (RIC)).

  Ratings used are 'Normal Cyclic' Substation ratings. This is the throughput rating as defined in the notes for

RIN Section 2.4. 'Normal condition' for the purposes of the Augex model is defined the planned network configuration, with no assets unavailable due to planned or unplanned outages.

For Project Type, 'New substation establishment' includes projects where a substation is established on a new site, even if it is in part driven by the replacement of an older substation.). Where an upgrade (including changes to primary voltage) occurs on the same location, 'Substation upgrade – capacity' is used.

Explanation of 'Other-please specify' records

For one project – ARA_01.1.0006 – Project Type is listed as 'Other-please specify'. This is a capacitor installation project related to transmission network constraints, not substation capacity constraints. The Project Trigger is listed as 'Reactive Power Issue'.

A number of substations have the 'Project Trigger' identified as 'Other – please specify'. Summary of Substation Projects with 'Project 'Trigger' identified as 'Other': Information is provided as follows:

Substation ID	Project ID	Primary Trigger	Secondary Trigger
New Rose Bay 132/11kV Zone with 132kV Feeders (SJ-05278)	ARA_03.1C.0002	Replacement	Augmentation
Engadine 132kV Conversion (SJ-04726)	ARA_04.2.0015	Replacement	Augmentation
New Lake Munmorah 132/11kV Zone (SJ-04658 & SJ-05904)	ARA_06.2.0002	Replacement	Augmentation
New Adamstown 132/11kV Zone (SJ-04865)	ARA_07.1.0002C	Replacement	Augmentation
New Jesmond 132/11kV Zone (SJ-05120 & SJ-00037)	ARA_07.2.0001	Replacement	Augmentation
Charlestown 132/11kV Zone (SJ-05319)	ARA_07.5.0005	Replacement	Augmentation
New Belmore Park 132/11kV Zone (SJ-03191)	ARA_02.1.0106	CBD N-2 Licence Compliance	
Crows Nest 132kV Conversion (SJ-05651 & SM-05951)	ARA_05.1.0006	Replacement	Augmentation
New Broadmeadow 132/11kV Zone (SJ-04866 & SJ-00008)	ARA_07.1.0006	Replacement	Augmentation
New Aberdeen 66/11kV Zone (SJ-05634)	ARA_08.2.0014	Replacement	Augmentation

Step 8. Assign primary and secondary trigger for each project identified above. For projects where the primary trigger is augmentation, 100% of the project cost is considered to be augmentation. For projects where the primary driver is not augmentation, it is excluded from table 2.3.1 since having it there will contradict with the requirement to meet Schedule 2, Appendix E, 7.1 (a) of the RIN requirement as highlighted to us by NSW Audit. Please note that as outlined in the table above (step 7), the projects with a secondary trigger in augmentation exceeding $5m is identified and their relevant information is readily available to review upon request.

***Step 9**. As requested in Appendix E, 1.9 and 1.10 then later specified in 7.2 (c) the actual and forecast expenditures derived from the steps above are converted into real dollars ($2012-13) using the following % CPI and indexations (which is then applied as an average escalation factor based on the years incurred):*

	Nominal $												
	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019
Assumed CPI	3.538%	2.332%	4.353%	1.820%	2.845%	3.389%	1.763%	2.500%	2.500%	2.500%	2.500%	2.500%	2.500%
Indexation for Real 12/13	1.197	1.156	1.130	1.083	1.063	1.034	1.000	0.976	0.952	0.929	0.906	0.884	0.862

Note that as required by Appendix E, 1.15, all the expenditures figures derived above are 'Direct Costs' only.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

(i) why an estimate was required, including why it was not possible for Ausgrid to provide actual information;
The reasons why estimates were used:

Sub-transmission projects

- The process to filter out the applicable projects above (Step 1) is by nature a theoretical estimation of the associated augmentation component. Naturally, it is not considered an estimate if the project is deem to be 100% augmentation.
- As a result of how the template is setup, there is no mean to provide sensible inputs without resorting to a primary/secondary trigger to select meaningful projects applicable for this table and meet the RIN requirements at the same time.
- Any expected forecast expenditure is by nature an estimate.
- The conversion from actual dollars (nominal) to real dollars ($2012-13) is by nature an estimate.

There are no other estimates outside of what has already been stated for table 2.3.1 above.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

Sub-Transmission projects

- The calculation for the augmentation component is based on a comparison between the preferred project that meet all identified network requirements versus a theoretical alternate project where no capacity constraints exists (i.e. incremental capacity methodology). It is the best estimate because it is deemed that this is the most correct method to satisfy the regulatory investment test under chapter 5 of the NER.
- The method used to determine primary/secondary trigger is based on the severity of need. This can be measure using a combination of financial difference, time criticalness and other measurable impacts. This is in line with how some DNSP evaluation their drivers.
- Please refer to Ausgrid's Area Plans documentations which outline the approach and assumption for the major project estimates provided.

The following are calculations requested by this table that are carried out outside of the processes in the steps above:

- Since indirect costs (i.e. Indirect Labour and Indirect Other) are embedded into the total labour cost within the forecast system, an allocation approach is used to separate the associated direct labour component. It is deemed that historical cost elements provide the most suitable basis for this allocation.
- The forecast installation labour volume is determined using the indirect labour derived above and dividing it by the average unit rate of direct labour ($/man hour). It is deemed that this is a reasonable approach given the timeframe and practicality of carrying out detail resource requirement against each project.

The procedure to populate Table 2.3.1 involved extensive manual analysis of information, as Ausgrid does not have any automated systems to generate this type of information. As this is the only method for Ausgrid to populate Table 2.3.1 the information used is the best available.

Table 2.3.2 – Augex Asset Data – Subtransmission Lines

Demonstrate how the information provided is consistent with the requirements of the Notice

This response is based on the worksheets and supporting documentation as provided by the AER up until 7th March 2014 and as interpreted by the relevant completing Ausgrid business unit. The information primarily comes from Ausgrid's SAP system or is based on advice from the relevant business unit experts. Subject matter experts were engaged in preparing this information as necessary.

Explain the source from which Ausgrid obtained the information provided.

- SAP Business Intelligence (BI) reports of the transaction systems as the primary source of historical costs for materials, contract services, other costs, labour and associated man hours *(updated for the full FY2015 actual expenditure data)*;
- SAP BI reports of the forecasting system as the primary source of forecast costs, forecast asset quantum and allocations requirements when historical information isn't readily available;
- GIS Transmission Feeder Reports for actual asset quantum;
- Project Offers on any authorised projects for expected asset quantum.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

The method and assumptions are as follows:

Step 0. FY2014 RIN information has been provided last year and is deemed to be complaint by the AER. Thus, it is not unreasonable to assume that the FY2015 RIN should only be an update using the full FY2015 actual expenditure data unless more accurate data is available that supersede any previous data provided (i.e. this provides a mechanism to improve on data quality).

Step 1. For network projects with expenditure within FY2010-19, isolate the associated substation projects with an augmentation component greater than or equal to $5 million over the life of the project in Real $2013/14 (note: Ausgrid uses an incremental capacity methodology to determine its augmentation component as required by the National Electricity Rules (NER)). However, once the applicable projects are determined, the full expenditure for each project is presented (including costs associated with other drivers for expenditure, eg replacement) rather than its theoretical fraction.

Step 2. For projects with both substation and subtransmision lines components, the project is further interrogated into its work breakdown structure (WBS). For projects of this nature, the substation component is excluded from the overall project costs. Thus, any associated distribution works will be included. This ensures that table 2.3.1 and 2.3.2 sums to the full cost of each project.

Step 3. Provide the actual and expected years where expenditures have and will incurred (note: project expenditures pre-FY2008 are not readily available due to the switching of financial systems at the time). In addition, data pre-FY2010 might not be as robust/accurate as recent data due to changes in booking practices.

Step 4. For projects with actual incurred expenditure, information is provided in the following order:

- Other plant item expenditure (uses the full 'material' cost element as expenditure cannot be readily separated sensibly and consistently for either overhead or underground construction);
- For FY2015, some overhead or underground construction split is possible using financial asset class breakdown;
- Installation labour expenditure (uses the 'Labour-Direct' cost element of the project);
- Installation labour volume (uses associated labour component in project system and payroll);
- Easements expenditure (usually booked against the project itself);
- Civil works expenditure (based on the total 'Contract Services' booked to the project minus item 4 above);
- Other direct expenditure (uses the 'Other-Direct' cost element of the project);
- Land purchase expenditure (assume no land purchases associated with lines and cables).

Note:

- *All monetary figures provided in Step 4 are as incurred (ie. Nominal dollars).*
- *The monetary figures represent the full cost for the project irrespective of the proportion of augmentation components (see note in Step 1 above).*

Step 5. For projects with expected forecast expenditure, information is provided in the following order:

- For projects already midway through its investment cycle, it is reasonable to assume that all major equipment is already procured and that the expected forecast expenditure for 'material' is part of 'Other Plant Item' only;
- For projects not yet authorised, the expected 'material' expenditure at the asset category level is used;
- Installation Labour expenditure is determined by peeling out the direct costs component of the expected expenditure using historical cost allocation;
- Installation labour volume is determined using the result of item 3 above and dividing it by the average unit rate of direct labour ($/man hour);
- Civil works expenditure (based on 'Contract Services' cost element);
- Other direct expenditure (assumed to be included as part of item 5 above).

Note:

- *All monetary figures used in Step 5 are in nominal $.*
- *The monetary figures represent the full cost for the project irrespective of the proportion of augmentation components (see note in Step 1 above).*

Step 6. It is reasonable to assume that Ausgrid have no 'Related Party Margins' and/or 'Non-Related Party Contracts'.

Step 7. Provide associated technical information for each project;

- Underground Circuit KM Added (for actual use GIS data and for expected use Project Offer or Forecast System data);
- Overhead Lines Circuit KM Added (for actual use GIS data and for expected use Project Offer or Forecast System data);
- Poles/Towers Added (is based item 2 above divided by an average span length of 75m);
- Route Line Length Added (based on subject matter expert investigations and advice);
- Project type, trigger and voltage determined by subject matter experts with reference to project briefs and engineering systems.

Explanation of 'Other-please specify' records:

- For one project – ARA_02.1.0002 – Project Type is listed as 'Other-please specify'. This project covers installation of 11kV load transfers (exceeding $5M) related to the CBD N-2 licence compliance requirements. It does not include sub-transmission or transmission lines.
- A number of project triggers are listed as 'Other – please specify'. These projects are primarily driven by condition issues, where some incremental additional capacity is installed due a forecast need for greater capacity in future, where economical to do so. The summary of these projects is below:

Substation ID	Project ID	Primary Trigger	Secondary Trigger
New 132kV Feeders from BFW to Green Square (SJ-05949)	ARA_01.1.0023	Replacement	Augmentation
New Rose Bay 132/11kV Zone with 132kV Feeders (SJ-05278)	ARA_03.1C.0002	Replacement	Augmentation
Gwawley Bay Hybrid 132kV Conversion (SJ-4786 & SJ-6131)	ARA_04.2.0006	Replacement	Augmentation
Concord 33kV Feeder Replacement (SJ-03310 & SM-08308)	ARA_04.4.B.0001	Replacement	Augmentation
Crows Nest 132kV Feeders (SJ-05663)	ARA_05.1.0005	Replacement	Augmentation
Camperdown 33kV Feeder Replacement (SJ-02875)	ARA_04.5.0003	Replacement	Augmentation
Willoughby 132kV Feeders 9E3 & 9E4/2 Replacement (SJ-06046)	ARA_05.1.0008	Replacement	Augmentation

Five projects (ARA_02.1.0002, ARA_05.6.0005C, ARA_02.1.0105, ARA_06.1.0023, ARA_07.6.0033A) have 'Other – please specify' listed in the Voltage field. These are all 11kV distribution network projects.

Step 8. Assign primary and secondary trigger for each project identified above. For projects where the primary trigger is augmentation, 100% of the project cost is considered to be augmentation. For projects where the primary driver is not augmentation, it is excluded from table 2.3.2 since having it there will contradict with the requirement to meet Schedule 2, Appendix E, 7.1 (a) of the RIN requirement as highlighted to us by NSW Audit. Please note that as outlined in the table above (step 7), the projects with a secondary trigger in augmentation exceeding $5m is identified and their relevant information is readily available to review upon request.

Step 9. Derive the Poles/Towers expenditures using Step 7 – item 3 above and an average unit rate of $1,200 per supporting structure). This derived expenditure is subtracted from the Other Plant Item expenditure in Step 4 – item 1 above to ensure that the overall project expenditure remains the same.

Step 10. As requested in Appendix E, 1.9 and 1.10 then later specified in 7.3 (c) the actual and forecast expenditures derived from the steps above are converted into real dollars ($2012-13) using the following % CPI and indexations (which is then applied as an average escalation factor based on the years incurred):

	Nominal $												
	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019
Assumed CPI	3.538%	2.332%	4.353%	1.820%	2.845%	3.389%	1.763%	2.500%	2.500%	2.500%	2.500%	2.500%	2.500%
Indexation for Real 12/13	1.197	1.156	1.130	1.083	1.063	1.034	1.000	0.976	0.952	0.929	0.906	0.884	0.862

Note that as required by Appendix E, 1.15, all the expenditures figures derived above are 'Direct Costs' only.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

Estimates were provided for the following reasons:

- The process to filter out the applicable projects above (Step 1) is by nature a theoretical estimation of the associated augmentation component. Naturally, this is not an issue for projects deem to be 100% augmentation.

- As a result of how the template is setup, there is no mean to provide sensible inputs without resorting to a primary/secondary trigger to select meaningful projects applicable for this table and meet the RIN requirements at the same time.

- Any expected forecast expenditure is by nature an estimate.

- Specific expenditure regarding underground cables are not available in the corporate transaction systems as subtransmission underground works are competitive tendered and the cable costs are typically imbedded as part of the invoice deemed as contract services. As such no sensible estimate can be made as the procurement cost for material varies between service providers and is not typically privilege information.

- Circuit KM Upgraded is simply not captured in any known system and cannot be readily determine as there are no sensible information that to use as point of reference.

- Although some Poles/Towers Added can be found within each project, it is proven that the asset counts in the system are inaccurate and not sensible compare to the actual Circuit KM Added. As such, it is more appropriate to provide an estimate using the actual Circuit KM Added and the average span distances between two common types of constructions.

- As a result of item 5 above, an effort is made to provide Poles/Towers expenditure using an average unit rate of $1,200 per supporting structure.

- The conversion from actual dollars (nominal) to real dollars ($2012-13) is by nature an estimate.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

The basis for the estimates and the reason why they are the best estimates:

- The calculation for the augmentation component is based on a comparison between the preferred project that meet all identified network requirements versus a theoretical alternate project where no capacity constraints exists (i.e. incremental capacity methodology). It is deemed that this is the only method that satisfies the regulatory investment test under chapter 5 of the NER.

- The method used to determine primary/secondary trigger is based on the severity of need. This can be measure using a combination of financial difference, time criticalness and other measurable impacts. This is in line with how some DNSP evaluation their drivers.

- Ausgrid's Area Plans documentation outlines the approach and assumption made for the project estimates provided. The Area Plans are provided as part of the regulatory proposal.

The following are calculations requested by RIN 2.3.2 that is carried outside of the processes in the steps above:

- Since indirect costs (ie. 'Indirect Labour' and 'Indirect Other') are embedded into the total labour cost of the forecast system, an allocation approach is used to separate the associated direct labour costs. It is deem that historical cost elements provide the most suitable basis for this allocation.

- Installation labour volume is determined using the indirect labour derived above and dividing it by the average unit rate of direct labour ($/man hour). It is deemed that this is a reasonable approach given the timeframe and practicality of carrying out detail resource requirement against each project.

- In principle, when an estimate cannot be provided, it is because any known attempt to create this data is baseless and potentially leads to further misunderstanding of the information sought in the notice.

The procedure to populate table 2.3.2 involved extensive manual analysis of information, as Ausgrid does not have any automated systems to generate this type of information. As this is the only method for Ausgrid to populate table 2.3.2, the information used is the best available.

Table 2.3.3 – Augex Data – HV/LV Feeders and Distribution Substations

Demonstrate how the information provided is consistent with the requirements of the Notice

This response is based on the worksheets and supporting documentation as provided by the AER and as interpreted by the relevant completing Ausgrid business unit. The information primarily comes from Ausgrid's SAP system or is based on advice from the relevant business unit experts. Subject matter experts were engaged in preparing this information as necessary.

Explain the source from which Ausgrid obtained the information provided.

The information sources are from:

- **HV Feeder Augmentation** – Overhead (OH) Lines (Circuit km added) Actual + Authorised: Actual lengths sourced from GIS report of OH Lines proposed under 11kV capacity projects. List of projects is from SAP and Projtrak. Actual line commissioning dates sourced from GIS reports. Actual project commissioning dates and project status sourced from SAP BI. Note: Projects that involve the augmentation at the HV feeder level for the purpose of increasing capacity at the sub-transmission level have not been included.
- **HV Feeder Augmentation** – UG Cables (Circuit km added) – Actual + Authorised: Actual lengths sourced from GIS report of UG Cables proposed under 11kV capacity projects. List of projects is from SAP and Projtrak. Actual cable commissioning date sourced from GIS reports. Actual project commissioning date and project status sourced from SAP BI. Note: Projects that involve the augmentation at the HV feeder level for the purpose of increasing capacity at the sub-transmission level have not been included.
- **HV Feeder Augmentations (Expenditure)** – Overhead Lines and Underground Cables: Actual spend per fiscal year was obtained from SAP and BI.

Distribution Substations

The information for the number of added and upgraded substations came from Ausgrid's ERP SAP for the population of RIN table 2.3.3.1. A Business Objects (SAP) report identified the substations with a commissioned date between 1/7/2014 & 30/06/2015 including any asset information required to apportion this data across the nominated asset categories. This was interrogated with asset accounting information to give the substations commissioned and decommissioned to calculate the respective *added* values. Apportionment was required to categorise the substations which are commissioned but associated with projects not financially closed. Five years of details was used to apportion these details, consistent with previous RIN returns.

GIS queries were used to determine the length of cables installed under the augex projects completed in fiscal year 2013/14. The asset quantities for the as yet to be completed projects will be included in future Ausgrid RIN returns. Ausgrid utilised the substation location type to categorise into the type of substations based upon actual values.

The data required for RIN table 2.3.3.2 was generated using the costs booked to the Distribution Substation Capacity program and the forecasted unit costs for the respective categories. This information is consistent with Ausgrid's transitional and substantive proposals cost of delivery model.

LV Feeder Augmentations

The information required by RIN table 2.3.3.1 of HV and LV feeder lengths added and upgraded in km was derived from Ausgrid's GIS records of commissioned conductors, split by conductor types to show HV and LV feeder conductors and linked to the year the conductor was installed against the respective SAP project. Cable installed is derived from GIS details as the SAP system current doesn't record installed cable by project..

The asset quantities for the yet to be completed projects will be included in future Ausgrid RIN returns.

Overhead lines and underground Cables **a**ctual spend per fiscal year was obtained from SAP and BI..

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

HV Projects

The method used to provide the required information involved:

Step 1. A report of all 11kV capacity projects undertaken in the 2014-15 period was extracted from SAP BI. The Proj trak numbers for these projects was sourced from the Distribution Planning DPS Register and the Proj Trak database.

Step 2. A report was obtained from the GIS listing all OH Lines and UG Cables that were installed which included the associated 11kV capacity project Proj trak number. Each cable/line also has a proposed/completed status with a commissioning date. The status for each cable/line in the GIS extract represents the status of the associated project. The commissioning date for each cable/line represents the date the cable/line was commissioned. There are some instances where the cable/line was commissioned but the associated project was not yet completed. These lengths of these cables/lines have been included in the table. Only a material project (total cumulative expenditure over the life of the project is greater than or equal to $0.5 million) has been considered and inputted into Table 2.3.3.1 of the RIN.

Step 3. For Cost Metrics (table 2.3.3.2): The total spend for the 2014-15 financial year was obtained from SAP BI through the financial asset class breakdown.

Step 4. Upgrade data in table 2.3.3 is not available as Ausgrid does not capture asset data at that level of granularity. However, it is estimated that the amount of upgrade should be immaterial and is thus assumed to be zero.

Note: All monetary figures in table 2.3.3.2 used above are as incurred (ie. Nominal $).

Distribution Substations

The split between new and upgraded distribution substations in RIN table 2.3.3.1 was achieved by:

- Assuming all PTs are new (i.e. a pole substation is not “upgraded” as the replacement of the transformer is fundamentally a change of the entire substations and generally no other equipment is required to be augmented for capacity related reasons).
- The split between added and upgraded for ground and indoor substations was achieved based on completed projects during the years 2009 to 13 which was taken to be representative of the split for the regulatory period. This split is shown in the table below. For the purposes of the split, given the substantial cost difference, ground-mounted substations were assumed to be pad-mounted or kiosk substations; and indoor substations were assumed to be any other built structure including those with a combination of indoor and outdoor equipment and outdoor enclosures (i.e. equipment is all outdoor).

	Upgraded		Added	
Ground-mounted	121	51%	117	49%
Indoor	7	64%	4	36%

The data in RIN table 2.3.3.2 splits the Distribution Substation Capacity (SY.01.03) programme cost across the three categories based on the relative cost of delivery of projects and the quantities added and upgraded in each category.

LV Feeder Augmentations

The LV feeder information derived from reported GIS figures was based upon a provided list of projects with a capacity related augmentation driver. All cable installed under these projects in the GIS was then split into underground and overhead conductors based on conductor codes.

For LV feeders the split between added and upgraded was not able to be accurately determined based on the available information as the GIS does not link the new conductor with any instance of a replaced conductor in a

way which would enable reporting of this metric. It was assumed that all underground conductor was “new” and all overhead conductor was “upgraded” based on the following reasoning:

- In general, extensions of the LV network are undertaken with entirely underground LV conductors particularly within urban areas.
- The majority of properties within Ausgrid’s network have existing conductors adjacent. Where the augmentation is not driven by a customer connection it is assumed that these conductors are available. Therefore the main reason for installing overhead conductors in Ausgrid’s franchise area is to rectify a capacity constraint in the existing conductor and hence falls into the “upgraded” category.
- While some underground conductors are installed as part of a capacity related augmentation to replace existing under-sized underground conductors, the proportion of underground conductors installed for this reason under an augmentation driver is minor compared to the instance of additional conductor installed underground to connect a new distributor from a ground-mounted or indoor substation to the overhead LV network via an adjacent UGOH.

The total spend for the 2014-15 financial year was obtained from SAP BI through the financial asset class breakdown.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

HV Projects

- Ausgrid doesn’t capture data associated with upgrade at the asset level and thus an estimate is made.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid’s best estimate, given the information sought in the Notice.

HV Projects

- For distribution mains, it is seldom for cables or lines to be removed from an augmentation project. Even in upgrade situations where a small capacity cable is replaced by a larger capacity cable for augmentation reasons, the network is typically rearranged so that the smaller capacity cable provides additional capacity support to the network.

  Note that re-conductoring is not considered to be line removal since the majority of the supporting structure remains in place (i.e. it is considered an upgrade)

Distribution Substations

The quantities of substations added and upgraded in the 2015 financial year was not able to be accurately determined due the timing of substations being installed, but not financially completed. These works form part of the actual costs for the fiscal year and is classified as work in construction. The known quantity for this period is the cost booked to the Distribution Substation Capacity (SY.01.03) programme. Therefore, the quantities added or upgraded for this period are assumed to be equal to the average of the following five (5) financial years weighted to match the known programme cost in the 2015 financial year.

This estimate is the best available estimate as it uses the known reliable data for the period in conjunction with the data for the following financial years average to reduce the impact on year-on-year variation.

The available ERP SAP data does not differentiate between a commissioned date for an upgraded substation, and that of a newly commissioned substation. As such the actual data for the number of substations added and upgraded is not available. The estimated split of added/upgraded is based upon an analysis of substation projects from the current regulatory period and the quantities added or upgraded. This is the best available estimate that represents a reasonable investment of time and resources given the prohibitive cost of manually calculating the full data for the other five (5) financial years.

The Distribution Substation data in RIN table 2.3.3.2 is split based on the relative cost of projects in the defined categories of pole-mounted, ground-mounted, and indoor. This split is based upon an analysis of substation

projects from the current regulatory period and the costs incurred by projects completed. This is the best available estimate that represents a reasonable investment of time and resources given the prohibitive cost of manually calculating the full data for the other five (5) financial years.

LV Feeder Augmentations

The quantities of underground and overhead conductor classified as "added" and "upgraded" in RIN table 2.3.3.1 are not available due to the limitations of the data recorded in GIS. There is no way of determining at a high level what quantities of underground and overhead cable belong in each category without detailed analysis of individual projects which is cost prohibitive. The assumptions made represent the best available approximation of the actual data based upon the known approaches to augmentation within Ausgrid's network.

The LV feeder data in RIN table 2.3.3.2 is split based on the relative cost of projects in the defined categories of underground and overhead conductors. This split is based upon an analysis of LV Feeder projects from the current transitional and substantive regulatory proposal based upon a representative sample of projects completed included in Ausgrid's Cost to Deliver model

This is the best available estimate that represents a reasonable investment of time and resources given the prohibitive cost of manually calculating the full data for the other five (5) financial years.

Both the Distribution Substation and LV Feeder Augmentation expenditures are as incurred (ie. Nominal $).

Table 2.3.4 – Augex Data – Total Expenditure

Demonstrate how the information provided is consistent with the requirements of the Notice

This response is based on the worksheets and supporting documentation as provided by the AER up until 7th March 2014 and as interpreted by the relevant completing Ausgrid business unit. The information primarily comes from Ausgrid's SAP system or is based on advice from the relevant business unit experts. Subject matter experts were engaged in preparing this information as necessary.

Explain the source from which Ausgrid obtained the information provided.

- SAP Business Intelligence (BI) reports from the transaction systems as the primary source of historical expenditure and allocations;

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Step 1. Produce a BI report in both a driver and financial asset category dimension format for FY2014 with cost element breakdown.

Step 2. Identify direct cost elements and map each financial asset category into the asset category for table 2.3.4.

Step 3. Pro-rata -$2.1m long service leave provision across each asset category.

Note that as required by Appendix E, 1.15, all the expenditures figures derived above are 'Direct Costs' only.

Note: All monetary figures in table 2.4 used above are as incurred (ie. Nominal $).

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

Table 2.3.4 should reconcile with the sum of the augmentation expenditure from Table 2.3.1 to Table 2.3.3.2 given that the following variations are taken into consideration:

- Table 2.3.1 and 2.3.2 exclude dedicated distribution asset projects for sub-transmission purposes (i.e. Strategic 11kV load transfers to relieve zone capacity).

- As previously stated above, the expenditure in Table 2.3.1 and Table 2.3.2 represent full project expenditures rather than its theoretical fraction. On the other hand, projects with augmentation component where the primary driver is not augmentation are not included.
- Table 2.3.1 and 2.3.2 exclude projects with a life time cost of less than $5m or any cancelled projects with expenditures in FY2015.
- Direct support costs like switching and GIS are excluded from the tables Table 2.3.1 to Table 2.3.2Due to their non-Augex nature, switching and GIS above are considered as 'Other Assets' in table 2.3.4 (i.e. not considered to be demand driven).
- While Table 2.3.1 to Table 2.3.2 is presented in real dollars ($2012-13) as required in the RIN requirements, Table 2.3.4 is presented in nominal $ (due to its hardcode link to Table 2.1).

Template 2.5 – Connections

The information provided in template 2.5 has been completed in accordance with the AER RIN requirements and instructions applying to template 2.5 including Appendix E and F, and the instructions in the worksheet.

Table 2.5.1 – Descriptor Metrics

Demonstrate how the information provided is consistent with the requirements of the Notice

This response is based on the same preparation of worksheets and supporting documentation used in the Reset RIN. The information at an aggregated level primarily comes from Ausgrid's SAP or GIS systems or is based on advice from the relevant business unit experts. Subject matter experts were engaged in preparing this information as necessary.

Explain the source from which Ausgrid obtained the information provided.

Residential and Commercial Connections

The information was obtained from SAP and GIS. The SAP Business Intelligence and Business Object reports were used as a basis for determining costs associated with new residential & commercial connections. Customer project numbers have been sourced from SAP and Business Intelligence reporting.

Since Ausgrid operates in a contestable environment, it is not involved in simple residential connections. The definition used for the various connection types implies that the volumes required relates to connection projects as opposed to 'individual customer connections'. A single connection project may involve the connection of a large number of individual connections. The information request has been interpreted this way.

Since Ausgrid does not categorise connection projects in the way the RIN has requested them it was necessary to rely on an analysis of projects completed in FY2015 to split volumes and expenditure. Projects were categorised on the basis of existing categorisation at the individual project level.

Expenditure in this area has been impacted by a change in Ausgrid's Customer Connection Policy to comply with AER Connection Charge Guidelines. This is outlined in Ausgrid's Connection Policy which has been provided as part of the regulatory proposal.

Subdivision

A connection is defined by the National Electricity Rules "as a physical link between a distribution system and a retail customer's premises to allow the flow of electricity." The subdivision connection as defined in the RIN was interpreted to capture expenditure incurred in connecting un-reticulated lots or areas to the distribution network for residential subdivisions.

No information was obtained for subdivisions based on the interpretation of definition provided. Ausgrid does not permit un-reticulated subdivisions to be connected to our network. In the rare occasion that this situation would arise, most likely to be within a rural area the following criteria would be met.

For a subdivision to be "un-reticulated', Ausgrid requires that the lot size must be greater than 40Ha with no building envelope. In these cases Ausgrid would ensure future access to supply is available via extension along an easement established in Ausgrid's favour at the cost of the developer or via a road reserve. Management of such requests would be through an Ancillary Network Service.

Embedded Generation

The majority of embedded generation (solar) work is performed by external ASP's authorised to work on Ausgrid's network, generally of a small KW rating

The volume information was obtained from reports provided by Network Connection Policy unit.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Residential & Commercial Connections

The Metering Business System (MBS) was interrogated to obtain total connection numbers, connection dates and connection type (commercial, residential etc). This was then queried directly with the GIS database, to determine the connection configuration types (Underground or Overhead) which produced an aggregated result.

The method described above was also utilised to obtain the percentage splits between Underground (UG) and Overhead (OH) connection configuration types. The costs specific to Residential & Commercial Connection Projects were extracted from SAP.

The method relies on the accuracy of the connection description entered in the text field by the relevant user. The UG and OH information was obtained from GIS and extracted from the applicable databases for new residential connections. The % allocation of OH and UG connections was applied to the values obtained from SAP projects data.

The SAP Business Intelligence report was used as a basis for determining expenditure associated with residential and commercial Distribution Centres (DC's) installed as a part of a customer's installation. A Business Objects report was utilised to determine the total MVA added to the network and asset reports used to indicate the respective regulatory funding driver. The number of DC's installed was obtained from SAP via a Business Objects (Technical Asset) report which provided the rated kVA, which was in turn converted to MVA. The total number of DC's installed was further broken down to provide the residential customer substations installed to separate customer and network DC's.

Total connections volume splits are based on the Business Intelligence reports generated for connections information and are derived from the MBS database. Ausgrid's systems do not hold this information in the respective categories required by this RIN. As a result an allocation method was developed based on cross referencing data held in SAP with data from GIS to break the total volumes into residential versus commercial and overhead versus underground.

To obtain the spend on DC's estimates for typical DC installation jobs were prepared (for free issue material only) and applied to each of the project categories totals, for residential and commercial installations. Assumptions were to correlate the MVA added and project categories required in the category analysis RIN template.

High Voltage (HV) and Low Voltage (LV) network augmentation information for the spend and net circuit km added was provided by a mix of project details out of a Business Intelligence report utilising the applicable IM Nodes and milestone dates. The projects returned from this report were utilised to determine the HV and LV added to the network through the interrogation of GIS information database related to the appropriate projects identified and to then ascertain the associated augmentation component in the respective financial years. Any cable installed in association with a project which is still 'in construction' will be allocated to a future RIN response when complete.

With the interrogation of GIS information for cable installation data, Ausgrid found it showed cable that had been installed, however the project is still under construction. On this basis, the GIS information was used in association with order logic. This is the basis subject matter experts used for determining the cable installed counts. The order applied is explained below;

- Practical Completion (PC) milestone exists.
- No Practical Completion (PC) milestone but Financial Complete (FC) milestone exists

Depending on the resultant of (1) or (2), the date returned was used as the basis for fiscal year allocation.

If the cable installed did not contain one of the two dates used, however GIS has recorded cable installed (works in progress - WIP), Ausgrid will include these in future RIN reporting once the project is completed. This approach ensures the expenditure associated with augmentation is consistently aligned to the lengths of cable installed.

The mean number of days to connect a single phase LV residential customer utilised information obtained from SAP (according to 'sales documents' generated for customer invoicing) and subject matter experts and only relates to connection work completed by Ausgrid as a L2 Accredited Service Provider as this work is contestable in NSW with the majority being completed by others. The volume of GSL breaches, customer complaints and payments relating to connection services for residential customers were also obtained from SAP and subject matter experts.

Subdivision

Ausgrid has no expenditure to report in relation to Subdivisions other than Alternative Control Services in worksheet 4.3 Ancillary Services - Fee Based services and 4.4 Ancillary Services - Quoted Services. On this basis Ausgrid has apportioned no volumes or expenditure to this connection category.

Embedded Generation

Ausgrid has no expenditure to report in relation to Embedded Generation other than Alternative Control Services in worksheet 4.3 Ancillary Services - Fee Based services and 4.4 Ancillary Services - Quoted Services.

We assumed that units greater than 5MVA capacity would require a new connection and any work required to connect would be totally at the proponent's costs. Ausgrid has no records of augmentation as a result of connecting an embedded generator.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

In several cases the required information is not recorded at the level of detail required by this RIN. Ausgrid reported in the Reset RIN that we are investigating the costs to modify our systems to record the required detail for preparation of data input into future RINs. This work is progressing.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

Wherever possible any corporate system data has been utilised to estimate missing information. Where there is no system data available the relevant business unit provided valuable input to estimate volume and costs.

The relevant business units were actively engaged to provide this RIN information as they are best placed to estimate any gaps in our system information. All outputs in the RIN were analysed with subject matter experts to ensure robust information is reported. Any assumptions made are consistent with the methodology in forecasting the transitional and substantive proposals.

Table 2.5.2 – Cost Metrics by Connection Classification

Demonstrate how the information provided is consistent with the requirements of the Notice

This response is based on the same preparation of worksheets and supporting documentation used in the Reset RIN. The information at an aggregated level primarily comes from Ausgrid's SAP system or is based on advice from the relevant business unit experts. Subject matter experts were engaged in preparing this information as necessary.

Explain the source from which Ausgrid obtained the information provided

Residential & Commercial Connections

The information was obtained from SAP and GIS. The SAP Business Intelligence and Business Object reports were used as a basis for determining expenditure associated with new residential & commercial connections.

Connection figures for Table 2.5.2 were obtained from a detailed analysis of projects initiated by the Customer Connection driver. This was required because projects were not categorised in Ausgrid's systems in the same way as the AER's RIN categories.

The majority of new connection projects relate to residential connections which are typically installed by Accredited Service Providers - Level 2 (ASP) under the contestable connections framework. ASPs are directly engaged by the customer. Ausgrid's expenditure in relation to these projects is typically limited to co-ordination costs (Ancillary Services).

The majority of investment required by Ausgrid for connections is associated with new commercial and industrial sites and multi-unit residential developments. Much of this cost is recovered directly from the customers

The total volume and the expenditure of FY2015 is obtained from SAP Business Intelligence and then split by connection type using the same apportionment methodology of FY2014.

Subdivision

A connection is defined by the National Electricity Rules "as a physical link between a distribution system and a retail customer's premises to allow the flow of electricity." The subdivision connection as defined in the RIN was interpreted to capture expenditure incurred in connecting un-reticulated lots or areas to the distribution network for residential subdivisions.

No information was obtained for subdivisions based on the definition provided. Ausgrid does not permit un-reticulated subdivisions to be connected to our network. In the rare occasion that this situation would arise, most likely to be within a rural area the following criteria would be met.

For a subdivision to be "un-reticulated', Ausgrid requires that the lot size must be greater than 40Ha with no building envelope. In these cases Ausgrid would ensure future access to supply is available via extension along an easement established in Ausgrid's favour at the cost of the developer or via a road reserve. Management of such requests would be through an Ancillary Service.

Embedded Generation

The majority of embedded generation (solar) work is performed by external ASP's authorised to work on Ausgrid's network, generally of a small KW rating.

The volume information was obtained from reports provided by Network Connection Policy unit.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Residential & Commercial Connections

The information was obtained from SAP and GIS. The SAP Business Intelligence and Business Object reports were used as a basis for determining expenditure associated with new residential & commercial connections.

Connection figures for Table 2.5.2 were obtained from a detailed analysis of projects within the Customer Connection program. This was required because projects were not categorised in Ausgrid's systems in the same way as the AER's RIN categories.

The majority of new connection projects relate to residential connections which are typically installed by Accredited Service Providers - Level 2 (ASP) under the contestable connections framework. ASPs are directly engaged by the customer. Ausgrid's expenditure in relation to these projects is typically limited to co-ordination costs (Ancillary Services).

The majority of investment required by Ausgrid for connections is associated with new commercial and industrial sites and multi-unit residential developments. Much of this cost is recovered directly from the customers.

Subdivision

Ausgrid has no expenditure to report in relation to Subdivisions other than Alternative Control Services in worksheet 4.3 Ancillary Services - Fee Based services and 4.4 Ancillary Services - Quoted Services. On this basis Ausgrid has apportioned no volumes or expenditure to this connection category.

Embedded Generation

Ausgrid has no expenditure to report in relation to Embedded Generation other than Alternative Control Services in worksheet 4.3 Ancillary Services - Fee Based services and 4.4 Ancillary Services - Quoted Services.

Assumed that units greater than 5MVA capacity would require a new connection. Any work required to connect would be totally at the proponent's costs. Ausgrid has no records of augmentation as a result of a connecting embedded generator.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

In several cases the required information is not recorded at the level of detail required by this RIN. Ausgrid reported in the Reset RIN that we are investigating the costs to modify our systems to record the required detail for preparation of data input into future RINs. This work is progressing.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

Wherever possible any corporate system data has been utilised to estimate missing information. Where there is no system data available the relevant business unit provided valuable input to estimate volume and costs.

The relevant business units were actively engaged to provide this RIN information as they are best placed to estimate any gaps in our system information. All outputs in the RIN were analysed with subject matter experts to ensure robust information is reported. Any assumptions made are consistent with the methodology in forecasting the transitional and substantive proposals.

Template 2.6 - Non-network expenditure

The information provided in template 2.6 has been completed in accordance with the AER RIN requirements and instructions applying to template 2.6 including Appendix E and F, and the instructions in the worksheet

Table 2.6.1 – Non-Network Expenditure

Demonstrate how the information provided is consistent with the requirements of the Notice
Actual data for the period FY2015 has been based on an extraction of actual financial data directly or via TM1 from our SAP financial system. As such, the prevailing entries represent a subset of figures that have been reported in our annual audited financial statements and have been made in accordance with our CAM at the time of entry.

It should be noted that all costs shown exclude overhead and/or other costs that are not directly attributable to the non-network assets as defined by the AER's RIN instructions. Furthermore, all financial data as it relates to IT, Communications, Property & Vehicle expenditure has been extracted via either TM1 or directly from SAP and represents a subset of the financial figures as reported in our annual audited financial statements, with any assumptions in respect of the basis for estimating the respective allocation between cost categories noted within the Basis of Preparation.

All the required categories of expenditure for Operational and Capital expenditure contained in tables 2.6.1, 2.6.2 and 2.6.3 have been completed. No further categories were considered material enough to be reported individually.

Where there has been a variation to the above approach it has been disclosed in the relevant sections below.

Explain the source from which Ausgrid obtained the information provided.

Actual data for the period FY1415 has been based on an extraction of actual financial data directly or via TM1 from our SAP financial system. Specific details of exact sources of information are shown in the below table:

Summary for Table 2.6.1 – Non-Network Expenditure

Expense Category	Source
IT & Communications Opex	SAP via TM1 data extraction and non-financial information noted below.
IT & Communications Capex	SAP via BI data extraction and ICT project information.
Motor Vehicles Opex	SAP via TM1 data extraction, FigFleet System and non-financial information noted below.
Motor Vehicles Capex	SAP via BI data extraction, FigFleet System and non-financial information noted below.
Building and Property Opex	SAP via TM1 data extraction.
Building and Property Capex	SAP via BI extraction.
Other Opex	No other costs have been reported.
Other Capex	SAP, TM1 & Business Intelligence.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Actual Costs

Actual data for the period FY1415 has been based on an extraction of actual financial data directly or via TM1 from our SAP financial system. There is also a component of non-financial information involved in the preparation of the information.

All costs are shown exclusive of overhead and indirect cost allocations to provide a direct cost view.

Expense Category	Methodology	Assumptions
Client Devices Opex	725040 - Desktop Support + 725090 - IT Hardware Leasing Expense	Client Devices Opex assumed to be the operating cost attached to the leasing and desktop support of PCs and other hand held devices. All other costs including software were included in Recurrent/Non-Recurrent expenditure.
Client Devices Capex	All ICT Project Capex – include only cost elements - 725160 - Hardware Purchases & 722100 – External Material – costs then analysed for Client Device expenditure only.	**Client Devices Capex** assumed to include hardware devices that access services made available by a server including desktop computers, laptops, thin client interfaces and handheld end user computing devices including smart phones, tablets and iPads.
Recurrent Opex	All other Opex net of Client Devices and Non-Recurrent expenditure.	**Recurrent Opex** assumed to include expenditure that is recurrent in nature to support the ongoing ICT operations of the business (eg. hardware / software maintenance, facilities management, application support, etc).
Recurrent Capex	All ICT Capex project expenditure analysed to determine recurrent and non recurrent expenditures.	**Recurrent Capex** assumed to include expenditure that is recurrent in nature to continually run the business and organically grow business operations (eg. refresh / replacement of infrastructure, true-up of licences, application upgrades, enhancements, remediation, etc). Assumed all capex not performed by ICT to be recurring.
Non Recurrent Opex	ICT Opex analysed to determine non recurrent expenditures.	**Non Recurrent Opex** assumed to be work performed on projects that cannot be capitalised (eg. preparation of business cases, minor enhancements to applications, work performed for various internal divisions that were not in direct support of an application, etc).
Non Recurrent Capex	All ICT Capex project expenditure analysed to determine recurrent and non recurrent expenditures.	**Non-Recurrent Capex** assumed to be projects of a one-off and non-recurring nature. (eg. new applications, new models, new developments, pilot projects, compliance requirements, migrations, etc).
Car Opex	Total Number of Cars in Fleet (as per 2.6.3) divided by Total Fleet multiplied by NLOB Opex for Fleet.	Assumed that weighted average basis is an effective mechanism for splitting costs

		across vehicles. Ignores intricacies between vehicle types.
Car Capex	Estimate of proportion required multiplied by total Capex. See estimate section for further details. Capex data extracted directly from SAP BI from project FL-00001.	
Light Commercial Vehicle (LCV) Opex	Total Number of LCV's in Fleet (as per 2.6.3) divided by Total Fleet multiplied by NLOB Opex for Fleet.	Assumed that weighted average basis is an effective mechanism for splitting costs across vehicles. Ignores intricacies between vehicle types.
Light Commercial Vehicle Capex	Estimate of proportion required multiplied by total Capex. See estimate section for further details. Capex data extracted directly from SAP BI from project FL-00001.	
Elevated Work Platform (EWP) LCV Opex	Total Number of EWP's LCV in Fleet (as per 2.6.3) divided by Total Fleet multiplied by NLOB Opex for Fleet.	Assumed that weighted average basis is an effective mechanism for splitting costs across vehicles. Ignores intricacies between vehicle types. Additionally, assumed all EWP's were in the HCV class.
Elevated Work Platform (EWP) LCV Capex	Estimate of proportion required multiplied by total Capex. See estimate section for further details. Capex data extracted directly from SAP BI from project FL-00001.	Assumed all EWP's were in the HCV class.
Elevated Work Platform (EWP) HCV Opex	Total Number of EWP's HCV in Fleet (as per 2.6.3) divided by Total Fleet multiplied by NLOB Opex for Fleet.	Assumed that weighted average basis is an effective mechanism for splitting costs across vehicles. Ignores intricacies between vehicle types.
Elevated Work Platform (EWP) HCV Capex	Estimate of proportion required multiplied by total Capex. See estimate section for further details. Capex data extracted directly from SAP BI from project FL-00001.	
Heavy Commercial Vehicle (HCV) Opex	Total Number of HCV's in Fleet (as per 2.6.3) divided by Total Fleet multiplied by NLOB Opex for Fleet.	Assumed that weighted average basis is an effective mechanism for splitting costs across vehicles. Ignores intricacies between vehicle types.
Heavy Commercial Vehicle (HCV) Capex	Estimate of proportion required multiplied by total Capex. See estimate section for further details. Capex data extracted directly from SAP BI from project FL-00001.	
Buildings and Property Opex	Actual data for the period FY2015 has been based on an extraction of actual financial data directly or via TM1 from our SAP financial system. Costs associated with the cost centre 8527, set up for 'Network Property' have not been included.	
Buildings and Property Capex	The numbers are obtained directly from the SAP system via BI.	
Other Opex	No other Opex has been reported.	Based on the definition contained in Appendix F: Definitions, and a review of the Network Overhead and Corporate Overhead RIN categories, no Other Non-Network costs

		were identified per the table included in the Other Opex rationale table below.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

Actuals

Circumstance	Estimation Used	Reason for Estimate
Car Capex	Estimated that 0% of total Fleet Capex spend in the 14/15 Financial Year was on cars.	The required information is not readily available from our Financial and Fleet systems.
Light Commercial Vehicle Capex	Estimated that 63% of total Fleet Capex spend in the 14/15 Financial Year was on Light Commercial Vehicles. This was multiplied by the annual Capex spend for vehicles.	The required information is not readily available from our Financial and Fleet systems.
Elevated Work Platform (EWP) HCV Capex	Estimated that 17% of total Fleet Capex spend in the 14/15 Financial Year was on EWP's. This was multiplied by the annual Capex spend for vehicles.	The required information is not readily available from our Financial and Fleet systems.
Heavy Commercial Vehicle (HCV) Capex	Estimated that 20% of total Fleet Capex spend in the 14/15 Financial Year was on HCV's. This was multiplied by the annual Capex spend for vehicles.	The required information is not readily available from our Financial and Fleet systems.

Table 2.6.2 – Annual Descriptor Metrics – IT & Communications Expenditure

Demonstrate how the information provided is consistent with the requirements of the Notice

The information provided is consistent with the requirements of the RIN. The definition of IT & Communication "devices" and "user numbers" is consistent with the definitions in the RIN.

Explain the source from which Ausgrid obtained the information provided.

For employee numbers, actual data for FY1415 has been used from SAP.

For user numbers and number of devices, actual data for FY2015 has been used. These are based on an extraction of actual data from subsidiary systems (eg. Active Directory) and spreadsheets used to track and record current ICT statistics and balances. (eg. number of PC desktops & laptops).

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

The average number of employees engaged in standard control services is calculated based on work over the year scaled for time spent on standard control services work. This metric does not include labour engaged under labour hire agreements.

The average Ausgrid Full Time Equivalent (FTE) figure for FY2015 was 5,060 employees. Allocation to the Standard Control Services is based on FTE split of 91.97% for FY2015. This aligns with Ausgrid's CAM. Based on the allocation, the average FTE working for SCS in FY1415 equates to 4,654 employees.

Employee (FTE) Total	
Month	**Total FTE**
Jul-14	5368.0
Aug-14	5316.8
Sep-14	5299.9
Oct-14	5273.4
Nov-14	5228.8
Dec-14	5081.7
Jan-15	5041.7
Feb-15	4959.5
Mar-15	4928.9
Apr-15	4893.9
May-15	4758.3
Jun-15	4567.9
Average FTE FY14/15	**5059.9**
Standard Control Services – 91.97% of total employees	**4653.59**

This data is generated from SAP ECC Production System ZHR0001 Report.

Inclusions in the calculation are:

- All Permanent Employees (Part time and Full Time)
- All Fixed term Employees ((Part time and Full Time)

Exclusions in the calculation are:

- External Contracts not paid by Ausgrid
- Labour / Agency Hire
- Directors

Instructions extracting data from SAP ECC Production System ZHR0001 Report

1. Log in to SAP ECC PRD (enter user name and password)
2. Go to Transaction ZHR0001 and input selection criteria in Employee Groups to exclude Directors, Unpaid Work Experience Students, Indirect Labour Hire
3. Choose Report Date as 30.06.2014
4. Choose Employee Status to 'Active'
5. Choose All Divisions in Division Filed
6. Execute Report and download report result into Excel spreadsheet when report run finished

Number of Devices assumed to include hardware devices that access services made available by a server including desktop computers, laptops, thin client interfaces and handheld end user computing devices including smart phones, tablets and iPads. Number of users assumed to include active directory IT system log-in accounts. The total number of devices and users has been allocated to Standard Control Services on the basis of the FTE split as per the CAM.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

(i) why an estimate was required, including why it was not possible for Ausgrid to provide actual information;
User numbers are difficult to define in an overall perspective given the services that are delivered from the devices affect all staff in some direct capacity.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.
User numbers assumed to be total staff numbers as all staff are exposed to and have carriage of the devices services.

Table 2.6.3 – Annual Descriptor Metrics – Motor Vehicles

Demonstrate how the information provided is consistent with the requirements of the Notice

Actual data for the period FY2015 has been based on an extraction of actual financial data directly or via TM1 from our SAP financial system. As such, the prevailing entries represent figures that have been reported in our annual audited financial statements, annual RIN and have been made in accordance with our Cost Allocation Methodology at the time of entry.

All costs are shown exclusive of overhead and indirect cost allocations to provide a direct cost view.

All the required categories of expenditure for Operational and Capital expenditure contained in tables 2.6.1, 2.6.2 and 2.6.3 have been completed. No further categories were considered material enough to be reported individually.

Explain the source from which Ausgrid obtained the information provided.

Non-financial information has been sourced from Ausgrid's fleet management system, FigFleet.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Ausgrid has used data extracted from its FigFleet system to align with the information requirements. The summary table is as follows:

Row Labels	Sum of Number
ELEVATING PLATFORM VEHICLES	242
LIGHT COMMERCIAL CAB/CHASSIS	368
MG SET VEHICLES	9
PANEL VANS & UTILITIES	958
PHB/PE VEHICLES	44
SEDANS	214
STATION WAGONS	357
TRUCKS	380
Grand Total	**2572**

Descriptor Category	Methodology	Assumptions
Number of Leased and	Sedans + Wagons from FigFleet	Assumed all wagons and Sedans to be

Owned Cars		considered 'Cars'.
Car Allocation to Regulatory Expenditure	NLOB cube used for Opex and SAP BI NLOB for Capex.	NLOB is 100% Regulated and Capex split based on Corporate percentages for LOB splits.
Number of Leased and Owned LCVs	Vans/Utilities + Special Units + Light Cab Chassis from FigFleet.	Assumed all Vans, Utilities, Special Units and Light Cab Chassis are LCVs.
LCV Allocation to Regulatory Expenditure	NLOB cube used for Opex and SAP BI NLOB for Capex.	NLOB is 100% Regulated and Capex split based on Corporate percentages for LOB splits.
Number of Leased and Owned EWP LCVs		Assumed all EWP's were considered HCVs.
Number of Leased and Owned EWP HCVs	EWP figures from FigFleet + MG Set Vehicles	All EWP categorised vehicles are considered EWP HCVs.
EWP HCV Allocation to Regulatory Expenditure	NLOB cube used for Opex and SAP BI NLOB for Capex.	NLOB is 100% Regulated and Capex split based on Corporate percentages for LOB splits.
Number of Leased and Owned HCVs	PHB/PE + Trucks in Fig Fleet.	Assumed all PHB/PE and Trucks are categorized as HCVs.
HCV Allocation to Regulatory Expenditure	NLOB cube used for Opex and SAP BI NLOB for Capex.	NLOB is 100% Regulated and Capex split based on Corporate percentages for LOB splits.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

Circumstance	Estimation Used	Reason for Estimate
Average Kilometres Travelled	Kilormeters were assumed to be linked to the vehicle category of similar vehicle types in the system, due to a number of vehicles no longer being in our system.. Were specific vehicle details were available these have been used.	Not all vehicle information is available in the system, hence the need for estimation.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

Specific information per vehicle was not available for all kilometres, therefore where specific information was not available, an appropriate estimate of vehicle category based on similar vehicle types was used.

2015	**33,532,851**

Template 2.7 – Vegetation management

The information provided in template 2.7 has been completed in accordance with the AER RIN requirements and instructions applying to template 2.2. including Appendix E and F, Schedule 1 to the RIN, and the requirements in the worksheet.

Table 2.7.1 – Descriptor Metrics by Zone

Demonstrate how the information provided is consistent with the requirements of the Notice

In reference to Worksheet 2.7 Vegetation Management, the information has been provided in line with the requirements provided by the AER in the RIN.

The information provided in Table 2.7.1 is consistent with the requirements in the RIN. In providing information on vegetation management metrics, Ausgrid has completed the table in accordance with section 13.8 – 13.10 of Appendix E of the RIN, and also relevant definitions.

In addition, Ausgrid has also provided the following, as required by section 10.15 of Schedule 1 and section 13.7 of Appendix E of the RIN:

- Provide compliance audits of vegetation management work conducted by Ausgrid during the current regulatory control period;
- A list of regulations that impose a material cost on performing *vegetation management* works (including, but is not limited to, bushfire mitigation regulations);
- A list of any of the self-imposed standards from Ausgrid's *vegetation management* program which apply to that zone; and
- An explanation of the cost impact of regulations and self-imposed standards on performing *vegetation management* work.

Explain the source from which Ausgrid obtained the information provided.

Because of the way Ausgrid has established it's vegetation management contracts, the whole of Ausgrid's distribution network (supply area) has been considered as one (1) vegetation management zone for this submission.

Route length within zone and Number of maintenance spans

Route line length and number of spans was calculated using Ausgrid's Geographical Information System (GIS) data. Ausgrid's GIS data is not represented as spans or singular routes, but represents the network as individual circuits; therefore significant manipulation of the existing data model was required and is documented in the Methodology and Assumptions part (c) below.

To classify route lengths into feeder categories the above data was combined with the 2014/15 reliability feeder classifications. Ausgrid performs an annual feeder re-categorisation which is based on the loading and length of the feeder as per STPIS definitions. The feeder categories are updated and stored in TOAD which flows to the Business Objects reporting environment.

The route line length used does not correspond to the AER's amended version to the definition emailed on Ausgrid on 7 April 2014. The amended definition in this email states that underground cables should be included to the "route line length". The definition as outlined in this email was not adhered to for the calculations for Template 2.7 as underground cables are not relevant to vegetation management. Route line length has been calculated as per "Economic benchmarking RIN Instructions and Definitions.pdf".

"*The aggregate length in kilometres of lines, measured as the length of each span between poles and/or towers, and where the length of each span is considered only once irrespective of how many circuits it contains. This is the distance between line segments and does not include vertical components such as line sag.*"

"Economic benchmarking RIN Instructions and Definitions.pdf" (page 50)

Total length of maintenance spans

Information for 'total length of maintenance span' was sourced using GIS data on the same basis as "Route length within zone". All of Ausgrid's overhead network is subject to vegetation management practises to ensure adequate clearances.

Length of vegetation corridors

Information on 'length of vegetation corridors' has been provided by the vegetation management contractors through their contractor data capture. Only current data could be obtained and was used for FY2013. Earlier years have been estimated.

Average number of trees per maintenance span

GIS data. Route line maintenance spans combined with;

- 2014 reliability feeder classifications
- Ausgrid acquired 2014 Light Detection And Ranging (LiDAR)

Average frequency of cutting cycle

Information for 'average frequency of cutting cycles' has been estimated. This is discussed further below.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Route length within zone and Number of maintenance spans

To calculate the "Route line length" and "Number of maintenance spans, Ausgrid has spatially manipulated the data using the following methodology:

- The circuit data was split into individual line segments at every pole
- Where these line segments ran parallel they were snapped together, and
- For spans which contained multiple conductors with different feeder classifications (Rural portion, Urban, and CBD), the highest voltage's classification was attributed to the span, with all others removed. If the span represented conductors with different feeder classifications and of the same voltage the following priority was applied to the span, only retaining the highest priority;
    - .1 CBD
    - .2 Urban
    - .3 Rural

Ausgrid does not give Transmission feeders (feeders >22kV) a feeder classification of CBD, Urban or Rural. A transmission feeder typically supplies multiple HV feeder classifications. As a consequence, spans made up of transmission only feeders are not assigned a CBD, Urban or Rural category. If a span only consists of transmission, it received a classification of Transmission however, if there was also a feeder of lesser voltage on the span, the transmission voltage was ignored and the classification of the lower voltage was applied.

The RIN templates only shows spans associated with low voltage and high voltage mains. Transmission only spans were not included in the RIN template.

The RIN templates were unable to be edited therefore the transmission results have been provided below;

- Transmission vegetation maintenance spans (number of spans)
    - .1 2009/10 17970
    - .2 2010/11 18419
    - .3 2011/12 18386
    - .4 2012/13 18468

.5 2013/14 17165

.6 2014/15 17564

The decrease in 2013/14 transmission vegetation maintenance spans can be explained by the transferral of ownership of feeders to Transgrid from Ausgrid.

Services Mains lengths are an arbitrary length of 10m towards the centre of the supplied land parcel; therefore they have been excluded as a calculated length. In parts of Ausgrid's network the Service Mains (*Service Mains - The low voltage overhead mains belonging to the company between the company's Distribution Mains and the Point of Supply. Point of Supply – The point of delineation i.e. junction between the company owned overhead mains and the Consumer's Mains)* span is subject to vegetation management practises and it has been counted as a span. The decrease in the total number of spans between 2013/14 and 2014/15 is due to a data quality improvement project to accurately identify Service Mains and Consumer Mains in Ausgird's GIS. Due to the source data structure used to calculate the feeder classifications, street lighting data was not able to be assigned a classification and therefore omitted from the feeder category split results. For this reason and the omission of the Transmission only spans, the sum of the "Urban and CBD" and "Rural" number of maintenance spans will not equal the total number of maintenance spans.

Total length of maintenance spans

Information for 'total length of maintenance spans' was provided on the same basis as "Route length within zone". All of Ausgrid's overhead network is subject to vegetation management practises to ensure adequate clearances are maintained.

Length of vegetation corridors

Current data was estimated for FY2013.14 based on FY2013 data. Because Ausgrid does not formally capture this data, based on the knowledge of the locations of these corridors it has been assumed that all of the vegetation corridors are associated with 'rural" feeders.

Average number of trees per maintenance span
2012/13 to 2014/15

Ausgrid utilised LiDAR acquired data from 2012/13 to 2014/15 in order to calculate vegetation within the vicinity of its network covered by vegetation management activities. The spread or coverage of the LiDAR data and tree identification was up to 8 meters from the network. Trees and vegetation outside of this corridor were ignored and deemed not to be within the vicinity of the network for vegetation management activities.

The source data extent did not fully cover the Ausgrid's network, nor was it an equal sample of construction types, environmental, and demographic variations within its supply area. The coverage area for LiDAR acquisition has been modified each year to obtain a greater coverage over the network area. This results in a difference in sample data used between 2012 and 2014 shown in table below.

Sample Data Representation of Total Network

Feeder Classification	2012	2013	2014
Transmission	66%	63%	65%
Rural	34%	94%	53%
Urban/CBD	1%	10%	18%

To increase the sample data representation for 2014 and therefore accuracy, areas where LiDAR data was not available from the 2014 data acquisition but were covered in 2013 have been included. The result in the sample data of the total network is shown below.

Sample Data Representation of Total Network

Feeder Classification	2012	2013	2014	2014 LiDAR + 2013 LiDAR not covered by 2014 LiDAR
Transmission	66%	63%	65%	77%

Rural	34%	94%	53%	72%
Urban/CBD	1%	10%	18%	21%

Ausgrid does not give Transmission feeders (feeders >22kV) a feeder classification of CBD, Urban or Rural. A transmission feeder typically supplies multiple HV feeder classifications. As a consequence, spans made up of transmission only feeders are not assigned a CBD, Urban or Rural category. If a span only consists of transmission, it received a classification of Transmission however, if there was also a feeder of lesser voltage on the span, the transmission voltage was ignored and the classification of the lower voltage was applied.

The RIN templates were unable to be edited therefore the transmission only spans results for average number of trees are as follows;

Average Number of Trees Near Transmission Only Spans

Year	Trees
2011/12	0.34
2012/13	0.30
2013/14	0.30
2014/15	2.07

The LiDAR data provided to Ausgrid does not identify individual trees, however the data extracted from the point cloud data acquired in 2013/14 identifies segments of vegetation. The segments are more representative of tree branches than trees therefore, these individual segments have been amalgamated together based on a 3 metre radius and counted as one tree. This data was only available for the 2013/14 data and therefore this methodology has only been done for the 2013/14 results and is a more accurate measure than previous years.

Average frequency of cutting cycle

The information provided for 'average frequency of cutting cycles' was estimated.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

Route length within zone & Number of maintenance spans

The data provided for 2008/09 has been estimated. This data has been used because backup GIS data is not available prior to 2009/10.

Total length of maintenance spans

The data provided for 2008/09 has been assumed. This data has been used because backup GIS data is not available prior to 2009/10.

All of the overhead network is subject to vegetation management practises to ensure adequate clearances are maintained.

Length of vegetation corridors

Systems are not in place to collect this information in the categories requested. Best endeavours were made to collect 2012/13 data.

Average number of trees per maintenance span

Data prior to 2010/11 is unavailable relating to the average number of trees.

Average frequency of cutting cycle

Ausgrid ensures vegetation management activities are executed under a contract arrangement whereby the contractor is required to maintain clearances throughout the term of the contract.

The frequency in which the contractor carries out these activities to fulfil their responsibilities is not known by Ausgrid and would vary depending on the vegetation type, area, and contractor involved.

There is no clause or requirement in the contract to carry out vegetation maintenance activities in a cyclic manner.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

Route length within zone and Number of maintenance spans

As backup GIS data is not available for 2008/09, the 2009/10 figure has been used. The trend in the calculated years demonstrates steady growth in all areas. The 2008/09 data was not obtainable but it was recognised that it would not exceed the 2009/10 results. Therefore the 2009/10 figures were used for the 2008/09 estimated figures.

Total length of maintenance spans

As backup GIS data is not available for 2008/09, the 2009/10 figure has been used

All of the overhead network is subject to vegetation management practises to ensure adequate clearances are maintained.

Length of vegetation corridors

Based on the new overheard line construction work that has occurred over the past years, a 5% increase from 2008/09 up to the 2012/13 figure has been assumed.

Average number of trees per maintenance span

2008/09 to 2010/11 an average of 2011/12 to 2012/13 data was used.

Average frequency of cutting cycle

There is no clause or requirement in Ausgrid vegetation management contracts to carry out vegetation maintenance activities in a cyclic manner. Because of this we have assumed a review cycle of 1 year.

Table 2.7.2 – Cost Metrics by Zone

Demonstrate how the information provided is consistent with the requirements of the Notice

The information provided in Table 2.7.2 is consistent with the requirements in the RIN. In providing information on vegetation management metrics, Ausgrid has completed the table in accordance with the relevant requirements of section 13 of Appendix E of the RIN, and also relevant definitions.

In particular, Ausgrid has provided an explanation of the expenditures that have been included in Table 2.7.2, as per section 13.15 of Appendix E of the RIN.

Explain the source from which Ausgrid obtained the information provided.

Vegetation management costs

The figures shown have been extracted from Ausgrid's corporate asset management system (SAP) and financial system (TM1), using established work orders for capturing the costs associated with vegetation management.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Tree trimming costs

Tree trimming costs are the total direct contracted services costs associated with the current vegetation management contracts excluding ground clearance, veg corridor clearance & Inspection Costs.

Assumptions have been made to determine the percentage of expenditure allocated to each sub-category. This is further explained below. The methodology used in providing this data is explained below.

Other vegetation management costs

As stated in Section 2.4 (c) above, this figure is a combination of direct material costs, direct other costs and the direct internal labour costs associated with "gaining access" ("outage costs") to the network (Operators – switching and Lineworkers – erecting earths). These figures comprise:

- **Materials and Other costs:** All direct material and other costs were included in this sub-category.
- **Outage costs:** Are all direct internal labour costs associated with "gaining access" ("outage costs") to the network (Operators – switching and Lineworkers – erecting earths). Of the total direct internal labour costs, 43% of these costs have been apportioned to "Outage Costs". The other remaining 57% has been allocated to "Contract Management" costs and has been discussed further below.

Therefore, the total "Other vegetation management" costs consist of 1 and 2 above.

All other sub-category costs

Due to the "Maintenance" contract structure of Ausgrid's vegetation management contracts, Ausgrid approached each of its incumbent contractors to request an apportionment of their total contract costs to assign to each sub-category. An average of these was taken to achieve the final splits shown.

Analysis was undertaken of Ausgrid's Contract Inspector/Officer direct internal labour booked to the contract work orders. The outcome was that approximately 57% of their time was committed to "Contract Management" and 43% of their time associated with "Outage costs".

The following assumptions were made:

- **Ground clearance:** 1% of Ausgrid's total tree trimming costs.
- **Vegetation corridor clearance:** 1% of Ausgrid's total tree trimming costs.
- **Inspection:** 4% of Ausgrid's total tree trimming costs.
- **Audit:** Of the total direct internal labour costs, 57% of these costs have been apportioned to "Contract Management". Of the total "Contract Management" costs, 60% of these costs have then been allocated to the "Audit" sub-category.

Contractor liaison Expenditure: Of the total direct internal labour costs, 57% of these costs have been apportioned to "Contract Management". Of the total "Contract Management" costs, 40% of these costs have then been allocated to the "Contractor liaison expenditure" sub-category.

"Other vegetation management costs" are a combination of direct material costs, direct other costs and the direct internal labour costs associated with "gaining access" ("outage costs") to the network (Operators – switching and Lineworkers – erecting earths).

Hazard tree cutting and Tree replacement program costs

Ausgrid does not have established "Hazard tree cutting" or "Tree replacement" programs (see below).

Ground clearance, Vegetation corridor clearance, Inspection, Audit, and Contract Liaison expenditure

Because Ausgrid's corporate asset management and finance system (SAP, TM1) has not been set up to capture the cost information in these sub-categories, this information has been apportioned across the different sub-categories based on information from our current contractors. The methodology used in providing this data is explained below.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

N/A

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

N/A

Table 2.7.3 – Descriptor Metrics across all Zones – Unplanned Vegetation Events

Demonstrate how the information provided is consistent with the requirements of the Notice
Ausgrid's Outage Management System tracks fire start events caused by Network Assets as well as event trigger information, including Vegetation Blow/Fall in and Vegetation Grown In Categories. This system is used to provide the data for this Table. As Ausgrid has a legal responsibility within NSW to manage all tree-trimming activities in the proximity of power lines, all events are assumed to be Ausgrid responsibility.

Explain the source from which Ausgrid obtained the information provided.

The data is sourced from the Outage Management System (OMS) using a custom Business Objects report. The results are saved in the file 'Fire Starts by Veg.xls'. A periodic reconciliation between OMS and the detailed Fire Event Database is made to ensure the OMS system is updated with fire event investigation results. Note this database was only in place from the end of October 2014 so full year data is not able to be reconciled. Also as the databased was only in place from end of October 2014, this is the first year that Ausgrid has been able to complete this table.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made
The number of events in the Outage Management System are returned based on filtering by 'Fire Start Flag' = "Y" and 'Event Trigger' = [Vegetation Grow In; Vegetation Blow/Fall In].

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

N/A

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

N/A

Template 2.8 – Maintenance

The information provided in template 2.8 has been completed in accordance with the AER RIN requirements and instructions applying to template 2.2. including Appendix E and F, and the requirements in the worksheet.

Table 2.8.1 – Descriptor Metrics for Routine and Non-Routine Maintenance

Demonstrate how the information provided is consistent with the requirements of the Notice

The information in this section is compliant in that actual values are used where possible, and best estimates are provided where actual data is not available.

Explain the source from which Ausgrid obtained the information provided.

For asset quantity and average age data has been obtained from SAP PM where the quantity is in units, and from GIS where the quantity is a length. Data has been extracted from SAP PM via the reporting environment using a multitude of Business Objects reports, and sometimes directly from Business Intelligence (SAP BI).

Information for quantities inspected in each financial year have been obtained from SAP PM, extracted via Business Objects and also via SAP BI.

Inspection cycles have been obtained from the Network Technical Maintenance Plan database.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Global assumptions:

- Quantities inspected/maintained are those tasks identified for pro-active maintenance. That is, those tasks with regular maintenance cycles identified.
- Tasks for pro-active 'PROTECTION SYSTEMS MAINTENANCE' are not identified individually, and are performed in conjunction with the corresponding switchgear maintenance.
- Dual function assets are all included in the 'SUBTRANSMISSION ASSET MAINTENANCE' category. This includes assets within locations that have been designated as dual function (eg switchgear within a dual function substation). For assets categorised using information from SAP PM, anything with a 'Business Type' value (held in the first 3 characters of the 'Room' field) of "TSP" indicates it is for a dual function asset.
- The 'ZONE SUBSTATION…' categories also include assets in what Ausgrid refers to as subtransmission substations where these assets are for DNSP functions only. This is assumed due to the specification of the 'SUBTRANSMISSION ASSET MAINTENANCE' category as being for dual function assets only.
- Some costs for SCADA and network control maintenance are contained within the corresponding individual categories with 'ZONE SUBSTATION MAINTENANCE' and 'SUBTRANSMISSION ASSET MAINTENANCE'. This is due to the data in the reports not having the required attributes to be able splits costs incurred by the field group that works on both SCADA and CLC assets.

Asset quantity at year end

Pole overhead line & service line maintenance

For 'SERVICE LINES' this data has been obtained from GIS, and stored in file "Age Profile - Services.xlsx" worksheet "OH Services".

For 'POLE TOPS AND OVERHEAD LINES' this data has been obtained from SAP PM via SAP BI and processed in MS Access (file "Pole Profile.mdb"). A combination of current status, commissioned date and retired date is used to determine if an asset was commissioned at the end of the year. Assets that have been identified as dual function assets (ie 'Business Type' = "TSP") have been included in the 'SUBTRANSMISSION ASSET MAINTENANCE' category, and not in these categories.

Pole inspection and treatment

This data has been obtained from SAP PM via SAP BI and processed in MS Access (file "Pole Profile FY1415.mdb"). A combination of current status, commissioned date and retired date is used to determine if an asset was commissioned at the end of the year. Assets include poles and pillar standards.

Overhead asset inspection

This data has been obtained from the yearly GIS extract giving length of commissioned mains by age. This extract has been stored in file "ODRC_FINYEAR_2015_NETWORK_AGE_01_07_2015.xlsx".

The following table shows the filters applied and field summated in the files to produce the result:

Data extract file filters		Data used
Asset Category	**Primary Operation Voltage**	**Length field used**
LV line	LV	Length Total ODRC (kms)
HV line	11kV	
	12.7kV	
	22kV	
	33kV	
	66kV	
	132kV	

Network underground cable maintenance by voltage

This data has been obtained from the yearly GIS extract giving length of commissioned mains by age. This extract has been stored in file "ODRC_FINYEAR_2014_NETWORK_AGE_01_07_2015.xlsx".

For category 'LV – 11 to 22kV' the following table shows the filters applied and field summated in the files to produce the result:

Data extract file filters		Data used
Asset Category	**Primary Operation Voltage**	**Length field used**
LV cable	LV	Length Total ODRC (kms)
HV cable	5kV	
	11kV	
	22kV	

For category '33kV and above', this data has been obtained from the yearly GIS extract giving length of commissioned mains by network age. This extract has been stored in file "ODRC_FINYEAR_2015_NETWORK_AGE_01_07_2015.xlsx".

The following table shows the filters applied and field summated in the files to provide a total cable length commissioned at these voltages. A percentage has then been calculated to split this length into assets that are identified as dual function assets and those considered wholly DNSP function. This percentage has been obtained from SAP PM, via a Business Objects report, and stored in file "Split of Feeder Portions by TSP_DSP.xlsx". This percentage is then applied to the corresponding length for voltages 33kV and above.

Data extract file filters		Data used
Asset Category	**Primary Operation Voltage**	**Length field used**
HV cable	33kV	Length Total ODRC (kms)
	66kV	
	132kV	

Network underground cable maintenance: by location

For 'NETWORK UNDERGROUND CABLE MAINTENANCE: BY LOCATION' the required data is not retained in a way that installed lengths can be reported in these categories. As such an apportionment of the total lengths for 'NETWORK UNDERGROUND CABLE MAINTENANCE: BY VOLTAGE' has been applied using the proportionate length of underground high voltage cable in the CBD feeder category. This proportion is contained in file "HV Conductor lengths by Category.xlsx".

Distribution substation equipment & property maintenance

The data for Distribution Substation Transformers has been obtained from data extracted from SAP PM. This data is stored in file "Dist Txs.xlsx", and summarised in worksheet "Count and Age for 2.8". All assets with a 'Room' field value of "DSP_DC" (representing distribution substations) and in commission at the end of the financial year (use field 'Include in Age Profile' = "Y") are included in the calculation.

The data for Distribution Substation Switchgear has been obtained from data extracted from SAP PM. This data is stored in file "Switchgear list for age profile Data Template GG July 2015.xlsx", and summarised in worksheet "Age and count for 2.8". All assets with a 'Room' field value of "DSP_DC" (representing distribution substations) OR DSP_DMOH (representing distribution mains – as per instructions from the AER during Reset RIN submission), and in commission at the end of the financial year, and are of an 'enclosed' switch type that is proactively maintained has been included in the calculation. These are identified by using the field 'Include in Age Profile' = "Y".

The data for Distribution Substation – Other Equipment is a count of all distribution substations (as the AER specified "Earth Mat" appears to be a typographical error) and has been obtained from data extracted from SAP PM. Data is stored in file "Substation Profile Data Template GG July 2015.xlsx" and summarised on worksheet "Counts and Ages for 2.8". Data has been selected by including Object types SUB_BASEMT, SUB_BUILD, SUB_KIOSK, SUB_OE, SUB_POLE, SUB_UNDERG and SUB_UPPERL, and identifying assets commissioned at the end of the financial year by selecting the field 'Include in age profile' = "Y".

The data for Distribution Substation Property has been obtained from data extracted from SAP PM. Data is stored in file "Substation Profile.xlsx" and summarised on worksheet "Counts and Ages for 2.8". Data has been selected by including Object types SUB_BASEMT, SUB_BUILD, SUB_OE, SUB_UNDERG and SUB_UPPERL, and identifying assets commissioned at the end of the financial year by selecting the field 'Include in age profile' = "Y".

Zone substation equipment maintenance

The data for Transformers – Zone Substation has been obtained from data extracted from SAP PM. This data is stored in file "Major Txs.xlsx", and summarised in worksheet "Count and Age for 2.8". All assets with a 'Room' field value of "DSP_ZN" or "DSP_TS" (representing wholly DNSP assets) and in commission at the end of the financial year (use field 'Include in Age Profile' = "Y") are included in the calculation.

The data for Transformers - Distribution has been obtained from data extracted from SAP PM. This data is stored in file "Dist Txs.xlsx", and summarised in worksheet "Count and Age for 2.8". All assets with a 'Room' field value of "DSP_ZN" or "DSP_TS" (representing wholly DNSP assets inside zone/subtransmission substations) and in commission at the end of the financial year (use field 'Include in Age Profile' = "Y") are included in the calculation.

Based on the information available, all power transformers at Ausgrid have been categorised as either Transformers – Zone Substation or Transformers – Distribution, thus no assets have been categorised as Transformer – HV.

The data for Zone Substation – Other Equipment is a count of DNSP categorised substations and has been obtained from data extracted from SAP PM. Data is stored in file "Substation Profile.xlsx" and summarised on worksheet "Counts and Ages for 2.8". Data has been selected by including Object types SUB_ZONE, SUB_STS and SUB_STSS, selecting only wholly DNSP assets by using the 'Room' field = "DSP_ZN" or "DSP_TS", and identifying assets commissioned at the end of the financial year by selecting the field 'Include in age profile' = "Y".

Zone substation property maintenance

The data for Zone Substation Property has been obtained from data extracted from SAP PM. Data is stored in file "Substation Profile.xlsx" and summarised on worksheet "Counts and Ages for 2.8". Data has been selected by including Object types SUB_ZONE, SUB_STS and SUB_STSS, selecting only wholly DNSP assets by using the 'Room' field = "DSP_ZN" or "DSP_TS", and identifying assets commissioned at the end of the financial year by selecting the field 'Include in age profile' = "Y".

Public lighting maintenance

Extracted data for streetlights from SAP PM via Business Objects has been merged with information provided from GIS to identify lights on major roads. A combination of current status, commissioned date, decommissioned date and retired date is used to determine if a light was commissioned at the end of the financial year. This is contained in MS excel file "Streetlight Asset Data.xlsx".

SCADA & network control maintenance

The unit of measure is specified as number of systems. As such the data has been sourced from SAP PM using the functional location object type = "CTL_SYSTEM". This data is stored in file "SCADA and Control Systems.xlsx" and summarised in worksheet "Count and Age for 2.8".. Data has been selected by identifying assets commissioned at the end of the financial year by selecting the field 'Include in Count' = "Y".

Protection systems maintenance

The unit of measure is specified as number of systems. As such the data has been sourced from SAP PM using the functional location object type = "PROT_GRP". This data is stored in file "Protection Systems.xlsx" and summarised in worksheet "Count and Age for 2.8". Data has been selected by identifying assets commissioned at the end of the financial year by selecting the field 'Include in Count' = "Y".

Subtransmission asset maintenance

The volume and age of dual function assets were taken from the document D13 571169 Transmission Assets Classification.xls. This document contains a summary of all dual-function assets. Average age and length were derived from columns AF and AG in the spreadsheet.

Asset quantity inspected/maintained

All data related to the quantities inspected have been extracted from SAP PM using Business Objects. This information is stored in file "Routine Maintenance Task Completions RIN FINAL FY15".

Pole overhead line & service line maintenance

For 'POLES AND OVERHEAD LINES', 'POLE TOPS AND OVERHEAD LINES' the quantities inspected have been extracted from SAP PM using Business Objects and selecting all "Line Inspection" (LINS) notifications.

For 'POLES AND OVERHEAD LINES', 'SERVICE LINES' the quantity of inspections is entered as 0 as these assets are inspected as part of an overall routine line inspection.

Pole inspection & treatment

For 'POLE INSPECTION AND TREATMENT', 'ALL POLES' the quantities inspected have been extracted from SAP PM using Business Objects and selecting all "Pole Inspection" (PINS) notifications.

Overhead asset inspection

For 'OVERHEAD ASSET INSPECTION' the length inspection has been calculated using the count of "Line Inspection" (LINS) notifications, the total number of Ausgrid poles and the total route length of overhead conductor. The formula used to calculate this value is shown below:

$$Length\ (km) = \frac{Total\ Overhead\ Conductor\ Route\ Length}{Total\ Number\ of\ Poles} \times Number\ of\ Poles\ Inspected\ Annually$$

Network underground cable maintenance by voltage

For 'NETWORK UNDERGROUND CABLE MAINTENANCE BY VOLTAGE', 'LV – 11 to 22kV', the quantities inspected have been extracted from SAP PM using Business Objects and by selecting the following notifications within the asset group Distribution Mains Underground (DMUG):

- Pit Lid (PITL) tasks
- Pillar (PILR) tasks
- Thermovision (THRM) tasks

For ‘NETWORK UNDERGROUND CABLE MAINTENANCE BY VOLTAGE’, ‘33KV AND ABOVE’, the quantities inspected have been extracted from SAP PM using Business Objects and by selecting the following notifications within the asset group Transmission Mains Underground (TMUG):

- Pit Lid (PITL) tasks
- Performance (PERF) tasks

Network underground cable maintenance by voltage

For ‘NETWORK UNDERGROUND CABLE MAINTENANCE: BY LOCATION’ the required data is not retained in a way that the number of assets inspected/maintained can be reported in these categories. As such an apportionment of the total number of assets inspected/maintained for ‘NETWORK UNDERGROUND CABLE MAINTENANCE: BY VOLTAGE’ has been applied using the proportionate length of underground high voltage cable in the CBD feeder category. This proportion is contained in file “Routine Maintenance Task Completions RIN FINAL FY15”.

Distribution substation equipment & property maintenance

For ‘DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE’, ‘DISTRIBUTION SUBSTATION TRANSFORMERS’ the quantity of inspections is entered as 0 as these assets are inspected as part of an overall substation inspection with all others assets in the substation (with the exception of the HV switchgear).

For ‘DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE’, ‘DISTRIBUTION SUBSTATION SWITCHGEAR (WITHIN SUBSTATIONS AND STAND ALONE SWITCHGEAR’, the quantities inspected have been extracted from SAP PM using Business Objects and selecting all switchgear tasks within the asset groups Distribution Mains Underground (DMUG) and Distribution Substations (DC).

For ‘DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE’, ‘DISTRIBUTION SUBSTATION OTHER EQUIPMENT’, the quantities inspected have been extracted from SAP PM using Business Objects and selecting the following notifications within the asset group Distribution Substations (DC):

- All SU tasks (excluding SU0106, SU0151, SU0115, SU0116, SU0401, SU0402 tasks)
- All TX tasks
- All DC tasks

All PETS tasks have been excluded from the total count for this category.

For ‘DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE’, ‘DISTRIBUTION SUBSTATION PROPERTY’, the quantities inspected have been extracted from SAP PM using Business Objects and selecting the following notifications within the asset group Distribution Substations (DC):

- All AU tasks
- SU0106, SU0401 and SU0402 tasks

Zone substation equipment maintenance

For ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘TRANSFORMERS ZONE SUBSTATION’ the quantities inspected have been extracted from SAP PM using Business Objects and selecting all “Transformer Inspection” (TX) notifications for the following ‘DNSP’ asset groups:

- Zone Substations (ZN)
- Transmission Substations (TS)

For ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘TRANSFORMERS DISTRIBUTION’ the quantity of inspections is entered as 0 as these assets are inspected as part of an overall substation inspection with all others assets in the Zone substation.

For ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘TRANSFORMERS HV’ the quantity of inspections is entered as 0 as Ausgrid does not capture information in this format. Based on the information available, all asset inspections related to Zone power transformers at Ausgrid have been categorised as Transformers – Zone Substation, thus no assets have been categorised as ‘TRANSFORMERS HV’.

For ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘OTHER EQUIPMENT’, the quantities inspected have been extracted from SAP PM using Business Objects and selecting the following tasks within the ‘DNSP’ asset groups Zone Substations (ZN) and Transmission Substations (TS):

- All DC tasks
- ER0102 and ER0103 tasks
- PR0101 and PR0201 tasks
- SU0101, SU0115 and SU0116 tasks
- All Switchgear tasks

All OH4004, SU0121, ER0104, ER0105, VR0101 tasks have been excluded from the total count for this category.

Zone substation property maintenance

For ‘ZONE SUBSTATION PROPERTY MAINTENANCE’, ‘ALL ZONE SUBSTATION PROPERTIES’ the quantities inspected have been extracted from SAP PM using Business Objects and selecting all the following notifications within the ‘DNSP’ asset groups Zone Substations (ZN) and Transmission Substations (TS):

- All AU tasks (Excluding STCK tasks)
- SU0106, SU0140 and SU0141 tasks

Public lighting maintenance

For ‘PUBLIC LIGHTING MAINTENANCE’, ‘MINOR ROADS’ and ‘PUBLIC LIGHTING MAINTENANCE’, ‘MAJOR ROADS’ categories combined, the quantities inspected have been extracted from SAP PM using Business Objects and selecting “Bulk Lamp Replacement” notifications. However, the required data is not retained in a way that the number of assets inspected/maintained can be reported in these two categories. As such an apportionment of the total number of assets inspected/maintained for ‘PUBLIC LIGHTING MAINTENANCE’, ‘MINOR ROADS’ and ‘PUBLIC LIGHTING MAINTENANCE’, ‘MAJOR ROADS’ has been applied using the proportionate number of street lights in the major roads category. This proportion is contained in file “Routine Maintenance Task Completions RIN FINAL FY15”.

SCADA & network control maintenance

For ‘SCADA & NETWORK CONTROL MAINTENANCE’ there are no routine maintenance tasks undertaken for these assets, thus the inspection/maintenance quantities reported are 0.

Protection Systems maintenance

For ‘PROTECTION SYSTEMS MAINTENANCE’, tasks for inspection/maintenance are not identified individually and are performed in conjunction with the corresponding switchgear maintenance, and as the expenditure for these tasks is also contained within the corresponding switchgear category the quantities reported in this category (and sub-categories) is 0.

Sub-Transmission asset maintenance (For DNSP’s with dual function assets)

For ‘SUB-TRANSMISSION ASSET MAINTENANCE’, the quantities inspected have been extracted from SAP PM using Business Objects and selecting all the notifications within the following ‘TNSP’ asset groups:

- Zone Substations (ZN)
- Transmission Substations (TS)
- Transmission Overhead (TMOH)
- Transmission Underground (TMUG)

Various assets

For ‘VARIOUS ASSETS’ there are no routine maintenance tasks undertaken for these assets, thus the inspection/maintenance quantities reported are 0.

Ground clearance access tracks

For ‘GROUND CLEARANCE ACCESS TRACKS’ there are no routine maintenance tasks undertaken for these assets, thus the inspection/maintenance quantities reported are 0.

Average age of asset group

Pole overhead line & service line maintenance

For service line maintenance this data has been obtained from GIS, and stored in the file ‘Average Age Line commission dates-ALEX.xlsx’. The majority of ages are derived from line commission dates, where this is unknown either the customer NMI information or nearest neighbour commissioning date were used as proxies.”

For ‘POLE TOPS AND OVERHEAD LINES’ this data has been obtained from SAP PM via SAP BI and processed in MS Access (file “Pole Profile FY1415.mdb”). A combination of current status, commissioned date and retired date is used to determine the age of an asset at the end of the financial year. The average age of the assets for each year is then calculated using a standard MS Access query. Assets that have been identified as dual function assets (ie ‘Business Type’ = “TSP”) have been included in the ‘SUBTRANSMISSION ASSET MAINTENANCE’ category, and not in these categories.

Pole inspection and treatment

This data has been obtained from SAP PM via SAP BI and processed in MS Access (file “Pole Profile.mdb”). A combination of current status, commissioned date and retired date is used to determine the age of an asset at the end of the financial year. Assets include poles and pillar standards.

Overhead asset inspection

This data has been obtained from the yearly GIS extract giving length of commissioned mains by age. This extract has been stored in file “ODRC_FINYEAR_2014_NETWORK_AGE_01_07_2014.xlsx”.

The following table shows the filters applied and field summated in the files to produce the result:

A weighted average age is then calculated by using the sum of product of each age with the length associated and dividing through by the total length.

Network underground cable maintenance by voltage

This data has been obtained from the yearly GIS extract giving length of commissioned mains by age. This extract has been stored in file “ODRC_FINYEAR_2014_NETWORK_AGE_01_07_2014.xlsx”.

For category ‘LV – 11 to 22kV’ the following table shows the filters applied and field summated in the files to produce the result:

Data extract file filters		Data used
Asset Category	**Primary Operation Voltage**	**Length field used**
LV cable	LV	Length Total ODRC (kms)
HV cable	5kV	
	11kV	
	22kV	

A weighted average age is then calculated by using the sum of product of each age with the length associated and dividing through by the total length.

For category ‘33kV and above’ and ‘Subtransmission Underground Maintenance’, this data has been obtained from the yearly GIS extract giving length of commissioned mains by network age. This extract has been stored in file “ODRC_FINYEAR_2014_NETWORK_AGE_01_07_2015.xlsx”.

The following table shows the filters applied and field summated in the files to provide a total cable length commissioned at these voltages. A weighted average age is then calculated by using the sum of product of each age with the length associated and dividing through by the total length.

Data extract file filters		Data used
Asset Category	Primary Operation Voltage	Length field used
HV cable	33kV	Length Total ODRC (kms)
	66kV	
	132kV	

Network underground cable maintenance: by location

For 'NETWORK UNDERGROUND CABLE MAINTENANCE: BY LOCATION' the required data is not retained in a way that average age can be separately calculated for these categories. As such the average age across all voltages has been used for both categories. This has been calculated by getting the weighted average of the two values in category 'NETWORK UNDERGROUND CABLE MAINTENANCE: BY VOLTAGE'.

Distribution substation equipment

The data for Distribution Substation Transformers has been obtained from data extracted from SAP PM. This data is stored in file "Dist Txs for Age Profile – Date Template GG July 2015.xlsx", and summarised in worksheet "Count and Age for 2.8". All assets with a 'Room' field value of "DSP_DC" (representing distribution substations) and in commission at the end of the financial year (use field 'Include in Age Profile' = "Y") are included in the calculation.

The data for Distribution Substation Switchgear has been obtained from data extracted from SAP PM. This data is stored in file "Switchgear list for age profile - Data Template GG 2015.xlsx", and summarised in worksheet "Age and count for 2.8". All assets with a 'Room' field value of "DSP_DC" (representing distribution substations) OR DSP_DMOH (representing distribution mains – as per instructions from the AER during Reset RIN submission), and in commission at the end of the financial year, and are of an 'enclosed' switch type that is proactively maintained has been included in the calculation. These are identified by using the field 'Include in Age Profile' = "Y".

The data for Distribution Substation – Other Equipment is the average age of all distribution substations and has been obtained from data extracted from SAP PM. Data is stored in file "Substation Profile – Date Template GG July 2015.xlsx" and summarised on worksheet "Counts and Ages for 2.8". Data has been selected by including Object types SUB_BASEMT, SUB_BUILD, SUB_KIOSK, SUB_OE, SUB_POLE, SUB_UNDERG and SUB_UPPERL, and identifying assets commissioned at the end of the financial year by selecting the field 'Include in age profile' = "Y".

The data for Distribution Substation Property has been obtained from data extracted from SAP PM. Data is stored in file "Substation Profile.xlsx" and summarised on worksheet "Counts and Ages for 2.8". Data has been selected by including Object types SUB_BASEMT, SUB_BUILD, SUB_OE, SUB_UNDERG and SUB_UPPERL, and identifying assets commissioned at the end of the financial year by selecting the field 'Include in age profile' = "Y".

Zone substation equipment maintenance

The data for Transformers – Zone Substation has been obtained from data extracted from SAP PM Business Objects Reports. This data is stored in file "Major Txs for age profile-processed.xlsx", and summarised in worksheet "Count and Age for 2.8". All assets with a 'Room' field value of "DSP_ZN" or "DSP_TS" (representing wholly DNSP assets) and in commission at the end of the financial year (use field 'Include in Age Profile' = "Y") are included in the calculation.

The data for Transformers - Distribution has been obtained from data extracted from SAP PM PM Business Objects Reports. This data is stored in file "Dist Txs.xlsx", and summarised in worksheet "Count and Age for 2.8". All assets with a 'Room' field value of "DSP_ZN" or "DSP_TS" (representing wholly DNSP assets inside zone/subtransmission substations) and in commission at the end of the financial year (use field 'Include in Age Profile' = "Y") are included in the calculation.

Based on the information available, all power transformers at Ausgrid have been categorised as either Transformers – Zone Substation or Transformers – Distribution, thus no assets have been categorised as Transformer – HV.

The data for Zone Substation – Other Equipment is the average age of DNSP categorised substations and has been obtained from data extracted from SAP PM PM Business Objects Reports. Data is stored in file "Substation

Profile.xlsx" and summarised on worksheet "Counts and Ages for 2.8". Data has been selected by including Object types SUB_ZONE, SUB_STS and SUB_STSS, selecting only wholly DNSP assets by using the 'Room' field = "DSP_ZN" or "DSP_TS", and identifying assets commissioned at the end of the financial year by selecting the field 'Include in age profile' = "Y".

Zone substation property maintenance

The data for Zone Substation Property has been obtained from data extracted from SAP PM. Data is stored in file "Substation Profile.xlsx" and summarised on worksheet "Counts and Ages for 2.8". Data has been selected by including Object types SUB_ZONE, SUB_STS and SUB_STSS, selecting only wholly DNSP assets by using the 'Room' field = "DSP_ZN" or "DSP_TS", and identifying assets commissioned at the end of the financial year by selecting the field 'Include in age profile' = "Y".

Public lighting maintenance

Extracted data for streetlights from SAP PM via Business Objects has been merged with information provided from GIS to identify lights on major roads. This is contained in MS excel file "Streetlight Asset Data.xlsx". A combination of current status, commissioned date, decommissioned date and retired date is used to determine if a light was commissioned at the end of the financial year. The average age of the assets is then calculated using the standard MS excel average function in a pivot table (worksheet "Age for 2.8").

SCADA & network control maintenance

The unit of measure is specified as number of systems. As such the data has been sourced from SAP PM using the functional location object type = "CTL_SYSTEM". This data is stored in file "SCADA and Control Systems.xlsx" and summarised in worksheet "Count and Age for 2.8".. Data has been selected by identifying assets commissioned at the end of the financial year by selecting the field 'Include in Count' = "Y".

Protection systems maintenance

The unit of measure is specified as number of systems. As such the data has been sourced from SAP PM using the functional location object type = "PROT_GRP". This data is stored in file "Protection Systems.xlsx" and summarised in worksheet "Count and Age for 2.8". Data has been selected by identifying assets commissioned at the end of the financial year by selecting the field 'Include in Count' = "Y".

Subtransmission asset maintenance

The volume and age of dual function assets were taken from the document D13 571169 Transmission Assets Classification.xls. This document contains a summary of all dual-function assets. Average age and length were derived from columns AF and AG in the spreadsheet.

Inspection and maintenance cycles

A detailed list of cycles has been included in each category showing the various maintenance tasks required and the cycles of those tasks. Where a pro-active task is primarily of an inspection nature, the task cycle has been populated in the Inspection Cycle column. Where a pro-active task primarily contains manual maintenance activities, the task cycle has been populated in the Maintenance Cycle column. Where a task contains both Inspection and Maintenance activities, both columns have been populated. If either type is not applicable for a maintenance activity the cycle has been entered as 0. At the applicable category/sub-category level, the cycles have been entered as 0 with the subsequent rows containing the maintenance types disaggregated holding the applicable cycles within that category.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

N/A.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

N/A

Table 2.8.2 – Cost Metrics for Routine and Non-Routine Maintenance

Demonstrate how the information provided is consistent with the requirements of the Notice

The information in this section is compliant in that actual values are used where possible, and best estimates are provided where actual data is not available.

Explain the source from which Ausgrid obtained the information provided.

Financial spend for routine and non-routine maintenance has been obtained from SAP PM (work order costs) using Business Objects.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Global assumptions

Dual function assets are all included in the 'SUBTRANSMISSION ASSET MAINTENANCE' category. This includes assets within locations that have been designated as dual function (eg switchgear within a dual function substation). For assets categorised using information from SAP PM, anything with a 'Business Type' value (held in the first 3 characters of the 'Room' field) of "TSP" indicates it is for a dual function asset.

The 'ZONE SUBSTATION…' categories also include assets in what Ausgrid refers to as subtransmission substations where these assets are for DNSP functions only. This is assumed due to the specification of the 'SUBTRANSMISSION ASSET MAINTENANCE' category as being for dual function assets only.

Some costs for SCADA and network control maintenance are contained within the corresponding individual categories with 'ZONE SUBSTATION MAINTENANCE' and 'SUBTRANSMISSION ASSET MAINTENANCE'. This is due to the data in the reports not having the required attributes to be able splits costs incurred by the field group that works on both SCADA and CLC assets.

Routine and non-routine maintenance costs

Financial data has been obtained using a modified version of the "Maintenance Cost & Productivity" Business Objects report. The report has been modified to restrict costs to direct costs only (as specified for this section of the RIN) by filtering on specific cost element groups. To restrict "Labour" costs to direct costs only the cost element groups LOB-NTA and LOB-OTA have been used. To restrict "Materials" costs to direct costs only the cost element group LOB-MAT has been used. To restrict "Contracted Services" to direct costs only, the cost element group LOB-CONT has been used. To restrict "Other" costs to direct costs only the cost element group LOB-OTHDIR has been used. The report has also been modified to allow costs to be split between DNSP dual function assets and single function assets. These reports have been extracted into an MS Excel file "FY15_Maintenance Task Cost and Productivity Report - All Direct Only - No Veg 150724.xlsx" and manually mapped to the applicable asset categories. "Routine maintenance" costs are those settled against PM01 "inspection" work orders, "Non-routine maintenance" costs are those settled against PM02 "corrective" work orders. Costs have then been summated for the categories for each year, excluding costs on maintenance orders that have been identified as for Vegetation Maintenance (and reported separately in this RIN). Expenditure that is located within the 'POLES AND OVERHEAD LINES', 'POLE TOPS AND OVERHEAD LINES' RIN category has also been reduced as 50% of the LiDAR expenditure has been removed and allocated to Vegetation Maintenance (and reported separately in this RIN within 2.7)

The extracted information in the MS Excel file "FY15_Maintenance Task Cost and Productivity Report - All Direct Only - No Veg 150724.xlsx" mapped expenditure to Ausgrid allocated "asset groups" and "asset categories" based on the maintenance activity type / maintenance task and the functional location type of the asset maintained or the "asset category. These asset groups were then aligned to the RIN asset categories and sub-categories. The SAP "Room" field was also used to determine whether the expenditure was allocated to "DNSP" or "TNSP" categories ("Room" field of "DSP" was allocated as distribution asset expenditure, "Room" field of "TSP" was allocated as subtransmission asset expenditure). Any expenditure against the maintenance activity type of "Vegetation management" has been excluded in accordance with the RIN preparation rules.

Where the SAP extracts did not contain information in regard to the Ausgrid allocated asset group or the maintenance activity type/maintenance task, or where the RIN definitions required mapping away from an Ausgrid asset group, the expenditure was allocated to a RIN asset category and sub-category based on the workgroup for

which the expenditure was incurred for routine maintenance expenditure and/or the SAP "asset category" for non-routine expenditure. The assumptions used are detailed below:

For the "Communication" asset group:

- This asset group is assumed to be for network control / data assets outside of substations; and
- Expenditure identified against this asset group was assigned to "SCADA and network control maintenance".

For the "Distribution mains overhead" asset group:

- For Field Services OH sections, expenditure was assigned to 'POLES AND OVERHEAD LINES', 'POLE TOPS AND OVERHEAD LINES' unless the asset category was defined as "LV Service Mains Conductor & Accessories" (expenditure allocated to 'POLES AND OVERHEAD LINES', 'SERVICE LINES') or the asset category was defined as OH control points (expenditure was assigned to 'DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE', 'DISTRIBUTION SUBSTATION SWITCHGEAR (WITHIN SUBSTATIONS AND STAND ALONE SWITCHGEAR'). Note: The service line sub-category is not used for routine maintenance as Ausgrid undertake the inspection of service wires as part of routine line inspection.
- For Field Services or Transmission Sydney Line inspection workgroups or where maintenance activity "Line inspection" or "Bushfire patrol" is defined, expenditure was assigned to 'OVERHEAD ASSET INSPECTION'.
- For Asset Access workgroups, expenditure was assigned to 'NETWORK UNDERGROUND CABLE MAINTENANCE BY VOLTAGE', 'LV – 11 to 22kV' as it is assumed that the majority of their work would be in relation to the access of HV pits in the Sydney CBD.
- For Voltage Regulation workgroups or transformer related inspection tasks, expenditure was assigned to 'DISTRIBUTION SUBSTATIONS OTHER' category as voltage regulators or capacitors are the only assets maintained by these groups on distribution overhead assets.
- For workgroups with "Pole Insp" in their title, expenditure was assigned to 'POLE INSPECTION AND TREATMENT', 'ALL POLES' as this is the assumed majority of their work.
- For building maintenance workgroups, expenditure was assigned to 'POLES AND OVERHEAD LINES', 'POLE TOPS AND OVERHEAD LINES' as their work in this asset category, primarily graffiti removal, was considered not appropriate to be assigned to 'POLE INSPECTION AND TREATMENT', 'ALL POLES' as it is not planned inspection / testing.
- For protection workgroups, battery maintenance tasks are assumed to be for 'DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE', 'DISTRIBUTION SUBSTATION OTHER EQUIPMENT' as the tasks for reclosers /ELBS's include battery replacement within the "SW180*" tasks. Non-routine expenditure is assumed to be for 'DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE', 'DISTRIBUTION SUBSTATION SWITCHGEAR (WITHIN SUBSTATIONS AND STAND ALONE SWITCHGEAR', primarily reclosers or ELBS's.
- For telecontrol workgroups, expenditure was assigned to 'DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE', 'DISTRIBUTION SUBSTATION SWITCHGEAR (WITHIN SUBSTATIONS AND STAND ALONE SWITCHGEAR' based on the assumption that SCADA related work is mostly undertaken on reclosers / ELBS's and the asset category was identified as OH control points.
- For substations workgroups, expenditure was assigned to 'POLES AND OVERHEAD LINES', 'POLE TOPS AND OVERHEAD LINES' if the asset category was related to OH conductors, or assigned to 'DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE', 'DISTRIBUTION SUBSTATION SWITCHGEAR (WITHIN SUBSTATIONS AND STAND ALONE SWITCHGEAR' if the asset category was related to OH control points.
- For customer connections workgroups, expenditure was assigned to 'POLES AND OVERHEAD LINES', 'SERVICE LINES' unless the asset category was related to LV mains or conductor (this expenditure assigned to 'POLES AND OVERHEAD LINES', 'POLE TOPS AND OVERHEAD LINES').

For the "Distribution mains underground" asset group:

- Expenditure for all workgroups was assigned to "Network underground cable maintenance / LV – 11 to 22 kV" except for expenditure where the asset category was identified as either "UG Services – LV" or "Sub-transmission Mains UG General (including spares)".

- Expenditure identified against the asset category “UG Services – LV” was assigned to “Pole, overhead line and service line maintenance /Service lines” as per RIN definitions.
- Expenditure identified against the asset category “Sub-transmission Mains UG General (including spares)” was assigned to “Network underground cable maintenance / 33kv and above”.
- Expenditure identified against task “UG2101” task (pillar thermovision inspections) was assigned to “Network underground cable maintenance / LV – 11 to 22 kV”.

For the “Distribution substations” asset group:

- Expenditure identified against an “SW” task, against an asset category for HV switchgear or against an asset category for 11kV OH control point was assigned to ‘DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE’, ‘DISTRIBUTION SUBSTATION SWITCHGEAR (WITHIN SUBSTATIONS AND STAND ALONE SWITCHGEAR’.
- Expenditure identified against either a “TX” task or a voltage regulation workgroup was assigned to ‘DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE’, ‘DISTRIBUTION SUBSTATION OTHER EQUIPMENT’.
- Expenditure identified against a “DC” task was assigned to ‘DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE’, ‘DISTRIBUTION SUBSTATION OTHER EQUIPMENT’.
- Expenditure identified against an “SU” task (except for task SU0106) was assigned to ‘DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE’, ‘DISTRIBUTION SUBSTATION OTHER EQUIPMENT’ as these tasks include inspection of housings, transformers, LV boards, HV switchgear and testing of earthing systems and expenditure would be very difficult to disaggregate to a lower level
- Expenditure identified against task “SU0106, against asset categories which include “Land”/“Building”, against building maintenance workgroups or against maintenance activity types related to asbestos removal were assigned to ‘DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE’, ‘DISTRIBUTION SUBSTATION PROPERTY’. This expenditure could not be disaggregated between the building components and electrical components.
- Where a task was not identified in the extract, expenditure was assigned to ‘DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE’, ‘DISTRIBUTION SUBSTATION OTHER EQUIPMENT’ as it could have been for switchgear, protection or communication systems. LV boards, building issues etc.
- Expenditure identified against an asset category which included “Distribution transformer” or a Transformer Services workgroup were assigned to ‘DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE’, ‘DISTRIBUTION SUBSTATION TRANSFORMERS’ for non-routine maintenance expenditure only as routine tasks to inspect distribution transformers are covered in the general substation inspection tasks.
- Expenditure identified against an asset category which included “Zone transformer” was assigned to ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘TRANSFORMERS ZONE SUBSTATION’.
- Any expenditure associated with the ER tasks was assigned to ‘DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE’, ‘DISTRIBUTION SUBSTATION OTHER EQUIPMENT’.

For the “Sub-transmission substations” asset group:

- Expenditure against this asset group includes both “DSP” and “TSP” room field values. “DSP” expenditure has mostly been assigned to Zone substation RIN categories and “TSP” expenditure has mostly been assigned to Subtransmission asset RIN categories as detailed below.
- Expenditure identified against an “SW” task or against an asset category for “switchgear” was assigned to the ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘OTHER EQUIPMENT’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).
- Expenditure identified against either a “TX” task, a “VR” tasks or a voltage regulation workgroup was assigned to the ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘TRANSFORMERS ZONE SUBSTATION’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).

- Expenditure identified against a “DC” task or a “DC systems” asset category was assigned to the ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘OTHER EQUIPMENT’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).
- Expenditure identified against a “PR” task or against an asset category for “CT’s and VT’s” was assigned to the ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘OTHER EQUIPMENT’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).
- Expenditure identified against an “ER” task was assigned to the ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘OTHER EQUIPMENT’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).
- Expenditure identified which does not have a task or asset category, or which has a “general” asset category, was assigned to the ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘OTHER EQUIPMENT’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).
- Expenditure identified against a “Reactor and capacitor” asset category, was assigned to the ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘OTHER EQUIPMENT’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).
- Expenditure identified against an “SU” task (except for tasks SU0106, SU0115 or SU0116) was assigned to the ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘OTHER EQUIPMENT’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).
- Expenditure identified against an “SU0115” or “SU0116” task or an “Oil Cont” workgroup was assigned to the ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘OTHER EQUIPMENT’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).
- Expenditure identified against task “SU0106, against asset categories which include “Land” / “Building” or against building maintenance workgroups was assigned to the ‘ZONE SUBSTATION PROPERTY MAINTENANCE’, ‘ALL ZONE SUBSTATION PROPERTIES’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).
- Expenditure identified which does not have a task and is against a Telecontrol workgroup, or which has a “Communications” asset category, was assigned to the ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘OTHER EQUIPMENT’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).
- Expenditure identified against a “Protection and control” asset category and a Protection workgroup was assigned to the ‘PROTECTION SYSTEMS MAINTENANCE’ RIN category.

For the “Transmission Overhead” asset group:

- Expenditure against this asset group includes both “DSP” and “TSP” room field values. “DSP” expenditure has mostly been assigned to “Pole, Overhead Line and Service line maintenance” RIN sub-categories and “TSP” expenditure has mostly been assigned to “Subtransmission asset maintenance” RIN sub-categories as detailed below.
- Expenditure identified against maintenance activity “Line inspection”, Thermovision” or “Bushfire patrol” was assigned to ‘OVERHEAD ASSET INSPECTION’.
- Expenditure identified against maintenance activity “Pole inspection” was assigned to the ‘POLE INSPECTION AND TREATMENT’, ‘ALL POLES’ RIN category.
- Expenditure identified against an “SW” task and a Protection workgroup was assigned to ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘OTHER EQUIPMENT’ due to the very small expenditure.
- Expenditure identified against a “Control point” asset category and an OH workgroup was assigned to ‘POLES AND OVERHEAD LINES’, ‘POLE TOPS AND OVERHEAD LINES’.
- Expenditure identified against maintenance activity “Tower inspection”, against a “Tower line” asset category or a “Tower” workgroup was assigned to the ‘POLES AND OVERHEAD LINES’, ‘POLE TOPS AND OVERHEAD LINES’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN category and “Tower lines” RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).

- Expenditure identified against a “Sub-transmission Mains UG” asset category was assigned to the assigned to ‘NETWORK UNDERGROUND CABLE MAINTENANCE BY VOLTAGE’, ‘33KV AND ABOVE’ RIN sub-category.
- All other expenditure was assigned to the ‘POLES AND OVERHEAD LINES’, ‘POLE TOPS AND OVERHEAD LINES’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN category and “Tower lines” RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).

For the “Transmission Underground” asset group:

- Expenditure against this asset group includes both “DSP” and “TSP” room field values. “DSP” expenditure has been assigned to the ‘NETWORK UNDERGROUND CABLE MAINTENANCE BY VOLTAGE’, ‘33KV AND ABOVE’ RIN sub-category and “TSP” expenditure has been assigned to the ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category.

For the “Zone substations” asset group:

- Expenditure against this asset group includes both “DSP” and “TSP” room field values. “DSP” expenditure has mostly been assigned to Zone substation RIN categories and “TSP” expenditure has mostly been assigned to Subtransmission asset RIN categories as detailed below.
- Expenditure identified against an “SW” task or against an asset category for “switchgear” was assigned to the ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘OTHER EQUIPMENT’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).
- Expenditure identified against either a “TX” task, a “VR” tasks or a voltage regulation workgroup was assigned to the ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘TRANSFORMERS ZONE SUBSTATION’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).
- Expenditure identified against a “DC” task or a “DC systems” asset category was assigned to the ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘OTHER EQUIPMENT’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).
- Expenditure identified against a “PR” task or against an asset category for “CT’s and VT’s” was assigned to the ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘OTHER EQUIPMENT’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).
- Expenditure identified against an “ER” task was assigned to the ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘OTHER EQUIPMENT’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).
- Expenditure identified which does not have a task or asset category, or which has a “general” asset category, was assigned to the ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘OTHER EQUIPMENT’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).
- Expenditure identified against a “Reactor and capacitor” asset category, was assigned to the ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘OTHER EQUIPMENT’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).
- Expenditure identified against an “SU” task (except for tasks SU0106, SU0115 or SU0116) was assigned to the ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘OTHER EQUIPMENT’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).
- Expenditure identified against an “SU0115” or “SU0116” task or an “Oil Cont” workgroup was assigned to the ‘ZONE SUBSTATION EQUIPMENT MAINTENANCE’, ‘OTHER EQUIPMENT’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).
- Expenditure identified against task “SU0106, against asset categories which include “Land” / “Building” or against building maintenance workgroups was assigned to the ‘ZONE SUBSTATION PROPERTY MAINTENANCE’ or ‘SUB-TRANSMISSION ASSET MAINTENANCE’ RIN sub-category (based on the “Room” field value, i.e. TNSP or DNSP).

- Expenditure identified which does not have a task and is against a Telecontrol workgroup, or which has a "Communications" or "CLC" asset category, was assigned to the 'ZONE SUBSTATION EQUIPMENT MAINTENANCE', 'OTHER EQUIPMENT' or 'SUB-TRANSMISSION ASSET MAINTENANCE' RIN sub-category (based on the "Room" field value, i.e. TNSP or DNSP).
- Expenditure identified against a "Protection and control" asset category and a Protection workgroup was assigned to the 'PROTECTION SYSTEMS MAINTENANCE' RIN category.
- Expenditure identified against a "Transmission UG" or "Tunnels" workgroup was assigned to the 'NETWORK UNDERGROUND CABLE MAINTENANCE BY VOLTAGE', '33KV AND ABOVE' or 'SUB-TRANSMISSION ASSET MAINTENANCE' RIN sub-category (based on the "Room" field value, i.e. TNSP or DNSP).

For the "NA" and "Not assigned" asset groups:

Expenditure was assigned to a RIN category and sub-category based on either the task, the workgroup and where that workgroup is most likely to work, or the asset category and could also be a mixture of either of these as to where the expenditure was assigned.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

For 'NETWORK UNDERGROUND CABLE MAINTENANCE: BY LOCATION' the required data is not retained in a way that costs can be reported in these categories. As such an apportionment of the total costs for 'NETWORK UNDERGROUND CABLE MAINTENANCE: BY VOLTAGE' has been applied using the proportionate length of underground high voltage cable in the CBD feeder category. This is considered the best estimate as it uses actual total figures for Network Underground Cable Maintenance, but apportioned according to asset quantities.

For 'PUBLIC LIGHTING MAINTENANCE' the required data is not retained in a way that costs can be reported in these categories. As such the total costs reported for public lighting maintenance has been apportioned to the two categories proportionately according to the total number of assets installed at the end of each year. This is considered the best estimate as it uses actual total figures for Public Lighting Maintenance, but apportioned according to asset quantities.

Template 2.9 – Emergency response

The information provided in template 2.9 has been completed in accordance with the AER RIN requirements and instructions applying to template 2.9 including Appendix E and F, and the requirements in the worksheet.

Table 2.9.1 – Emergency Response Expenditure

Demonstrate how the information provided is consistent with the requirements of the Notice

The information provided on table 2.9.1 is consistent with the requirements in the RIN. The information is consistent with the definition of emergency response, major storm and major events provided in Appendix F of the RIN.

The information is consistent with the requirements in paragraph 14.1 of Appendix E of the RIN. The information includes the following expenditure for each regulatory year:

1. Total emergency response expenditure
2. Emergency response expenditure attributable to major events by identifying direct costs through a specific cost code for each major event or major storm. Major events most often refer to, but are not limited to, a major storm.
3. Emergency response expenditure attributable to major event days by identifying daily operating expenditure incurred on each date of those major event days and summing up the expenditure for each event.

As required by paragraph 1.15 of the Appendix E, of the RIN, Template 2.9 information is the Direct Costs only, and excludes expenditures on Overheads.

Explain the source from which Ausgrid obtained the information provided.

Financial data included in template 2.9 is sourced from SAP and TM1 (Ausgrid's financial accounting and reporting systems).

The major event days are defined using the TMED metric. Definition is defined as "TMED - The threshold of daily SAIDI performance which identifies a "major event day". The TMED threshold is calculated according to the IEEE Std-1366 guidelines (section 4.5), and also described in Schedule 6 of the Licence Conditions".

TMED days are included in other RIN templates and are a subset of that worksheet including direct costs.

It is important to note that costs associated with major event days vary depending on the extent of damage to the network sustained and the labour, material and contracted services required to fix following the event.

PM03 (Breakdown) & PM04 (Nature Induced Breakdown) was used as the basis for determining 'emergency expenditure'. A given list of days in which TMED was exceeded was used to define the total expenditure in more detail as required by isolation of costs by major event day (using Business Objects). The overall amount excludes any capitalised costs, such as PM07 (Minor Capital) associated with rectification works.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Ausgrid has prepared FY2015 information based on these categories. FY2015 has used the same methodology as was applied in the regulatory accounting statements for FY2010-FY2014.

The steps in the methodology are:

1. Extract detailed list of PM03 & PM04 orders using SAPTM1
2. Extract Costs Associated with the cost objects
3. Source list of TMED days for separation of major event days.
4. With TMED days list, isolate orders associated with work on those days or after which work was carried out, PM04 orders were selected on Major Event Days where a storm was identified, however PM03 orders were used on days where a failure was listed

5. Emergency Service Officers (EMSO) costs (sourced via TM1) haves been included on the basis of 68% allocation of a network costs for 'emergency work' (the balance is other work - reconnections etc). This has been increased from 30% of FY13/14 as this year we have included all emergency service job priority levels, while last year supply work was not included.
6. EMSO costs have been divided over the 365 days per year (24/7/ shifts) and for each TMED day the average cost per day has been included in the major event days cost.

- For the major storm happened in April, the emergency response cost is the total direct cost of orders specifically created for the event excluding any capitalised amounts. The daily rate of EMSO was not applied as the costs were directly allocated to the specific storm order.

7. It does not include capitalised amounts and as the storm order used by EMSO costs were included in the total cost, the daily rate of EMSO was not applied.

Assumptions made are:

- The five day period from 20 April through to 24 April has been reported as the only major storm event in the reporting period, sustained gale force winds and torrential rain caused in excess of 600 minutes SAIDI.
- PM03 & PM04 defines emergency response
- PM04 orders were selected on Major Event Days where a storm was identified, however PM03 orders were used on days where a failure was listed
- TMED days exceeding 14/15 threshold of 2.46 define major event days
- Call Centre staff costs are under indirect cost
- All staff accurately book and record time and attendance.
- All staff appropriately classify emergency works via the correct PM order type.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

The costs associated with the work can be carried out after the actual day exceeding TMED threshold. Best endeavour has been made to attribute costs (material and time) booked following event days.

Additionally Emergency Service Officers (EMSO) costs have been included from TM1. Where identified that those EMSO cost centres have booked to 'standing orders' these costs have been excluded, so there is no overlap or inflated costs due to double counting. These staff due not book time to the standard cost capture associated with this type of work.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

As above, all data is sourced from Ausgrid's corporate systems. The only estimate applied to the return is the costs associated with a major event as it may or may not be confined to a single day and not all work is uniquely captured.

The 2014/15 TMED target (2.46) has been applied to FY2015 which is consistent with other RIN templates.

Template 2.10 – Overheads

The information provided in template 2.10 has been completed in accordance with the AER RIN requirements and instructions applying to template 2.10 including Appendix E and F, and the requirements in the worksheet.

Table 2.10.1 – Network Overheads Expenditure

Demonstrate how the information provided is consistent with the requirements of the Notice

Actual data for FY1415 has been based on an extraction of actual financial data directly or via TM1 from our SAP financial system. As such, the prevailing entries represent figures that have been reported in our audited statutory financial statements and in accordance with our Cost Allocation Methodology (CAM).

Explain the source from which Ausgrid obtained the information provided.

Actual data for FY1415 is based on an extraction of actual financial data directly or via TM1 from Ausgrid's SAP financial system.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made.

The split of overhead costs between Network and Corporate Overheads has been based on mapping of RIN categories used in Ausgrid's 2014-19 Determination. Opex categories are shown below:

RESET RIN CATEGORY	2014/19 DETERMINATION CATEGORY
Network Overhead	Contact Centre
Network Overhead	Customer Operations
Network Overhead	Data Operations
Network Overhead	Engineering, Planning & Project Management
Corporate Overhead	Finance Function
Corporate Overhead	Information Communication & Technology
Corporate Overhead	Insurance
Corporate Overhead	Management - Corporate
Network Overhead	Management - Network
Network Overhead	Metering
Network Overhead	System Control
Network Overhead	Demand Management
Network Overhead	Operational Technology
Corporate Overhead	Other
Corporate Overhead	Property Management
Corporate Overhead	Training & Development

Costs were then extracted from SAP via the TM1 cube for FY1415 according to the profit centre mapping for each opex RIN category listed above for Standard Control Services.

Capitalised Overheads is from the SAP financial system (via the BI reporting tool).

Network Overheads have been disaggregated in to six subcategories as per the requirements of the Category Analysis RIN, Appendix E section 15.2. For FY1415, Ausgrid has provided a breakdown of the "Other" category based on opex categories reported in the Distribution Determination for 2014-19.

For each opex category the capitalised component has been determined in the following manner:

- Network Management - as these overheads represent divisional management centres, the overheads have been allocated to capital based on the percentage of working hours booked to capital within the division

during the year (in accordance with the manner in which our cost allocation methodology actually distributes these costs).

- Network Planning - all costs not booked to opex are capitalised overheads.
- Network Control & Operational Switching - for Network Control the actual figures assessed to capital have been extracted from the system. For Operational Switching, the ratio of hours booked to capital works has been applied to the overhead figure to provide the capitalised overhead (in accordance with the manner in which our cost allocation methodology actually distributes these costs).
- Quality & Standards - all costs not booked to opex are capitalised overheads.
- Other Network Overhead - this is all other capitalised overhead.

As stipulated in Section 15.4(a) an explanation is required as to why overheads have been capitalised, and as per 15.4(b) any material change in the value capitalised due to a change in capitalisation policy must be explained also.

Network Management costs have been capitalised as a direct result of Ausgrid's CAM. Management costs are assessed to the cost centres reporting to them, and therefore form part of the overhead rates applied to capital work as a result of labour being booked to capital projects.

Network Planning expenditure have been capitalised as the predominant purpose of the Network Planning group is to work on future capital programs.

Network Control & Operational Switching costs have been capitalised on the basis of the level of capital work being supported by these groups. The Network Control area capitalises a part of its expenditure to reflect the time & effort involved in planning and performing outages for capital activities. Operational Switching allocate overheads to capital activities as a direct result of Ausgrid's CAM.

The vast majority of expenditure relating to Quality & Standards is direct costs attributed to capital activities. The overheads associated with this group are attributed to capital as a result of Ausgrid's CAM.

Project Governance is engaged in the management of Ausgrid's capital program.

Other Network Overhead – these costs have been capitalised as a direct result of the Ausgrid Cost Allocation Methodology. They consist of the overhead costs incurred in cost centres throughout the Network Business that have been attributed to capital works by virtue of being part of the overhead rates applied to capital work as a result of labour being booked to capital projects. There has been no change in Ausgrid's capitalisation policy.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

Not applicable to table 2.10.

Table 2.10.2 – Corporate Overheads Expenditure

Demonstrate how the information provided is consistent with the requirements of the Notice.

Actual data for the FY1415 has been based on an extraction of actual financial data directly or via TM1 from our SAP financial system. As such, the prevailing entries represent figures that have been reported in Ausgrid's audited financial statements and in accordance with the CAM.

Explain the source from which Ausgrid obtained the information provided.

Actual data for FY1415 has been based on an extraction of actual financial data directly or via TM1 from our SAP financial system.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made.

The split of overhead costs between Network and Corporate Overheads has been based on mapping of RIN categories used in Ausgrid's 2014-19 Determination. Opex categories are shown below:

RESET RIN CATEGORY	2014/19 DETERMINATION CATEGORY
Network Overhead	Contact Centre
Network Overhead	Customer Operations
Network Overhead	Data Operations
Network Overhead	Engineering, Planning & Project Management
Corporate Overhead	Finance Function
Corporate Overhead	Information Communication & Technology
Corporate Overhead	Insurance
Corporate Overhead	Management - Corporate
Network Overhead	Management - Network
Network Overhead	Metering
Network Overhead	System Control
Network Overhead	Demand Management
Network Overhead	Operational Technology
Corporate Overhead	Other
Corporate Overhead	Property Management
Corporate Overhead	Training & Development

Costs were then extracted from SAP via the TM1 cube for FY1415 according to the profit centre mapping for each opex category above for Standard Control Services.

Capitalised Overheads is from the SAP financial system (via the BI reporting tool).

Corporate Overheads have been disaggregated in to mandatory ten subcategories as per the requirements of the Category Analysis RIN, Appendix E Section 15.3(c). For FY1415, Ausgrid has also added "Other" category.

The Other category includes year end adjustments. The Standard Control Services for this category for FY1415 reflects the decrease in the actuarial assessed provisions. This has resulted in a negative impact to this category and the Office of CEO opex category has increased in FY1415 reflecting the payment of redundancies.

The capitalisation of overheads for corporate areas is a result of the application of the Ausgrid Cost Allocation Methodology. For each opex category reported, the capitalised component has been determined in the following manner:

- Other category – mainly represents capitalised overhead costs relating to GIS, Switching and Control and Property functions.
- IT category - represents non network IT support and overheads allocated to capital projects within this group.

Ausgrid has reported "Self Insurance" costs in the "Insurance" cost category due to confidential nature of Self Insurance costs.

The Other category for ACS includes overhead costs for Metering ($3.2m).

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

Not applicable to table 2.10.

Template 2.11 – Labour

The information provided in template 2.11 has been completed in accordance with the AER RIN requirements and instructions applying to template 2.11 including Appendix E and F, and the requirements in the worksheet.

Table 2.11.1 – Cost Metrics Per Annum

Demonstrate how the information provided is consistent with the requirements of the Notice

All financial costs for the FY1415 financial year have been allocated in accordance with Ausgrid's CAM at the time of entry.

The actual labour expenditure provided has been based on an extraction of actual financial and labour data from the Chris 21 payroll and SAP financial system. As such, the prevailing entries represent figures that have been reported in our annual audited financial statements, and have been made in accordance with our Cost Allocation Methodology (CAM) at the time of entry.

The information provided in table 2.11.1 and 2.11.2 is in line with the requirements in RIN Schedule 1, APPENDIX E: PRINCIPLES AND REQUIREMENTS;

Labour costs do not reflect termination and redundancy payments, purchase of protective clothing nor training and study assistance as these are classified separately and outside the labour classification.

The segregation of Ausgrid employees in to direct labour, network overheads and corporate overheads has been determined according to the job category and the cost centre recorded against the employee in the Chris 21 payroll system.

Explain the source from which Ausgrid obtained the information provided.

Type of information per AER	Source
Average Staffing Level	Actual hours against Salary codes from Chris 21 divided by 1877.1 hrs per year based on 52.1 weeks per year and 36 hours standard week. Data is sourced from SAP HR
Total labour expenditure	Total labour cost + on costs booked against Normal Time, Overtime and other type codes for FY1415 from CHRIS 21 and SAP HR and SAP FIFO
Average productive hours	Total hrs booked against Normal & Overtime Codes codes for FY1415 divided by ASL from Chris 21 and SAP HR and SAP FIFO
Stand down occurrences	total Stand - Down instances per ASL from SAP HR and SAP FIFO
Average productive work hour overtime	Total hrs booked against OT codes for FY1415 divided by ASL from Chris 21 and SAP HR and SAP FIFO

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

ASL by Labour Classification

Total staffing level is based on actual hours against Salary codes from Chris 21 divided by 1877.1 hrs per year based on 52.1 weeks per year and 36 hours standard week. This data is sourced from SAP HR. The employee data is held in Ausgrid's SAP HR System by 'Job Family' and these have been mapped to the relevant AER classifications. The mapping is shown below. The number of FTEs working on standard control services has been calculated by using the FTE allocation rate (or FTE split) for FY1415 as per the Ausgrid CAM.

AER Classification	Ausgrid Job Family / Job Category
Executive Manager	Executive (level 2 & 3 managers)
Senior Manager	Level 4 managers
Manager	Field Managers Field Supervisors Managers
Professional	Engineering Management / Professional Job Family (less Managers – Job Category)
Semi professional	Engineering Officers Field Support Officers Business Services Environment Metering Technology Work Scheduler Trainers Community Engagement Estimators Security
Support Staff	Administration
Intern, junior staff, apprentice	Trainees Work Experience Cadets Graduates
Skilled electrical worker	Base Field – Electrical Workers Advanced Field – Electrical Workers
Skilled non-electrical worker	Workshop Techinician
Apprentice	Apprentices – Electricians Apprentices - Overhead Apprentices - Underground
Unskilled worker	Base Field - Asset Access Base Field – Electricity Supply Officer (ESO)

Based on the AER classifications, a number of employees are being allocated as Network Overheads, instead of Direct Network Labour, who directly work on the Network. This includes categories under Manager, Professional and Semi Professional.

Please add any other information where necessary

Total Labour Costs

Total Labour expenditure has been extracted from Ausgrid's Chris 21 payroll system, SAP & TM1.

The total labour expenditure attributable to standard control services has been calculated by using the FTE allocation rate for FY1415 as per the Ausgrid CAM.

Average Productive Hours per ASL

Actual Available Hours has been used to underpin the quantum of productive hours. Per the AER definition of productive hours, we have deemed that using actual available hours was appropriate after excluding assumptions such as sick leave, annual leave, rostered days off and public holidays.

Stand Down Occurrences

Data has been extracted directly from SAP with each 'stand down' instance obtained year by year from CATS, and employees crossed referenced to allocate to labour classifications.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

All information provided is based on actual data.

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

All information provided is based on actual data.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

All information provided is based on actual data.

Table 2.11.2 – Extra Descriptor Metrics for Current Year

Demonstrate how the information provided is consistent with the requirements of the Notice

The information provided in table 2.11.2 is in line with the requirements and definitions in the RIN.

Explain the source from which Ausgrid obtained the information provided.

Type of information per AER	Source
Average productive work hours - ordinary time – per ASL	Total hrs booked against Salary code for FY1415 divided by ASL. Source data from Chris 21 and SAP HR and SAP FIFO
Average productive work hours - ordinary time – Hourly Rate per ASL	Total labour cost (excluding overtime cost) + on costs booked against Salary for each category for FY1415 divided by ASL multiplied by average productive work hours per ASL. Source data from Chris 21 and SAP HR and SAP FIFO
Average productive work hours - overtime time – per ASL	Total hrs booked against OT codes for FY1415 divided by ASL. Source data from Chris 21 and SAP HR and SAP FIFO
Average productive work hours -	Total Overtime costs for FY1415 each category divided by ASL multiplied by

overtime time – Hourly Rate per ASL	average productive work hours overtime per ASL. Source data from Chris 21 and SAP HR and SAP FIFO

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Average productive hours per ASL is calculated using total labour costs plus on costs booked against salary codes for each category for FY1415 divided by ASL multiplied by the FTE allocation rate for FY1415 as per the Ausgrid CAM. The source data is from Chris 21 and SAP HR.

Total Overtime hours incurred for FY1415 were sourced directly from CHRIS 21 payroll, and using cross reference to job family mapped to labour classification. This figure was then divided by ASL for that classification.

Total Overtime dollars were extracted from Chris 21 system, and using cross reference to job family mapped to labour classification. The dollars were divided by the hours to give the hourly rate.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

All information provided is based on actual data.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

All information provided is based on actual data.

Template 2.12 - Input tables

The information provided in template 2.12 has been completed in accordance with the AER RIN requirements and instructions applying to template 2.12 including Appendix E and F, and the requirements in the worksheet.

Table 2.12 – Input tables

Demonstrate how the information provided is consistent with the requirements of the Notice

Actual Data

Actual data for the FY1415 has been based on an extraction of actual financial data directly or via TM1 from our SAP financial system. As such, the prevailing entries represent figures that have been reported in our annual audited financial statements and in accordance with our CAM.

All costs are shown exclusive of overhead and indirect cost allocations to provide a direct cost view.

Actual data for FY1415 has been based on an extraction of actual financial data directly or via TM1 from our SAP financial system. Specific details of exact sources of information are shown in the below table:

Expense Category	Source
Vegetation Management	SAP via TM1 data extraction
Routine Maintenance	See basis of preparation for 2.8 Maintenance
Non-Routine Maintenance	See basis of preparation for 2.8 Maintenance
Overheads	SAP via TM1 data extraction less non network expenditure items
Augmentation	See basis of preparation for 2.3 Augex
Connections	See basis of preparation for 2.5 Connections
Emergency response	See basis of preparation for 2.9 Emergency Response
Public lighting	SAP via TM1 data extraction
Metering	SAP via TM1 data extraction
Fee-based services	See basis of preparation for 4.3 Fee-based services
Quoted Services	See basis of preparation for 4.4 Quoted services
Replacement	See basis of preparation for 2.2 Repex
Non-network expenditure	See basis of preparation for 2.6 Non-network

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Actual Data

Actual data for FY1415 has been based on an extraction of actual financial data directly or via TM1 from our SAP financial system. Specific details of exact sources of information are shown in the below table:

Expense Category	Source
Overheads	See details below
Augmentation	See separate basis of preparation for 2.3 Augex
Connections	See separate basis of preparation for 2.5 Connections
Emergency response	See basis of preparation for 2.9 Emergency Response
Public lighting	See details below
Metering	See details below
Fee-based services	See basis of preparation for 4.3 Fee-based services
Quoted Services	See basis of preparation for 4.4 Quoted services
Replacement	See separate basis of preparation for 2.2 Repex
Non-network expenditure	See basis of preparation for 2.6 Non-network

Overheads and Metering

The split of overhead costs between Network and Corporate Overheads has been based on mapping of RIN categories used in Ausgrid's 2014-19 Determination. Opex categories are shown below:

RESET RIN CATEGORY	2014/19 DETERMINATION CATEGORY
Network Overhead	Contact Centre
Network Overhead	Customer Operations
Network Overhead	Data Operations
Network Overhead	Engineering, Planning & Project Management
Corporate Overhead	Finance Function
Corporate Overhead	Information Communication & Technology
Corporate Overhead	Insurance
Corporate Overhead	Management - Corporate
Network Overhead	Management - Network
Network Overhead	Metering
Network Overhead	System Control
Network Overhead	Demand Management
Network Overhead	Operational Technology
Corporate Overhead	Other
Corporate Overhead	Property Management
Corporate Overhead	Training & Development

Costs were then extracted from SAP via the TM1 cube for the FY1415 financial year according to the profit centre mapping for each annual RIN category above by the following cost groupings:

- LOB-OPEX: Total Opex
- LOB-LABOUR: Total Labour costs
- LOB-LABOHS/LOB-LABOH: Overhead Labour Allocations
- LOB- MAT: Materials
- LOB-CONT: Contractors

Based on the above cost groupings, the costs were calculated as follows:

- Direct Labour Costs = LOB-LABOUR less LOB-LABOHS/LOB-LABOH
- Direct Materials Costs = LOB-MAT
- Contract Costs = LOB-CONT
- Other Costs = All other expenditure other than labour, material and contactor services (i.e. vehicle expenditure, IT expenditure, rent expenditure, postage & printing costs)

The other costs relating to Network Overheads include total network capital overheads and other costs relating to Corporate Overheads include total corporate capital overheads.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

Not applicable to table 2.12.

Template 4.1 - Public lighting

The information provided in template 4.1 has been completed in accordance with the AER RIN requirements and instructions applying to template 4.1 including Appendix E and F, and the requirements in the worksheet.

Table 4.1.1 – Descriptor Metrics over Current Year

Demonstrate how the information provided is consistent with the requirements of the Notice

Report provides a listing of current active streetlights based on Luminaire type (as at 1/07/2015).

Responses provided in table 4.1.1 for Public Lighting have been completed in accordance with the requirements of the Notice. This includes:

- Schedule 1: 15 – Public Lighting Alternative Control Services
- Appendix E: 21 – Public Lighting Alternative Control Services
- Appendix E: 1 – General principles and requirements

Explain the source from which Ausgrid obtained the information provided.

This data is taken from the SAP PM asset database with the following criteria:

- Object Type = LIGHT (only 'light' assets included)
- Lifecycle Status = COMM (only 'commissioned' lights included)
- Rate inList 01;02 (the Streetlight rate is either 01 (Ausgrid owned and maintained) or 02 (Ausgrid maintained) – rate 03 (Private) is excluded).

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Assumed that all maintained public lighting is to be included - both rate 1 (Ausgrid owned and maintained) and rate 2 (customer funded, Ausgrid maintained).

Data provided as at 08/08/15 as this was captured on the actual date. Because of the limitations of our asset system, figures extracted from an earlier date will have an issue with the accuracy of the data at a component level. For this reason an accurate count on 08/08/15 was provided rather than an inaccurate count on 30/6/15.

Commentary on year end results

Overall there has been a substantial retirement of the less reliable and less energy efficient public lights to a more modern lighting type. Correspondingly there has been a consolidation of Ausgrid's population of public lighting types to a more standardised inventory. The introduction of this policy will lead to greater savings to customers in the future.

Table 4.1.2 – Descriptor Metrics Annually

Demonstrate how the information provided is consistent with the requirements of the Notice

Responses provided in table 4.1.2 for Public Lighting have been compliant with the requirements of the Notice. This includes:

- Schedule 1: 15 – Public Lighting Alternative Control Services
- Appendix E: 21 – Public Lighting Alternative Control Services
- Appendix E: 1 – General principles and requirements

Number of Lights Installed - volume of works and expenditure

This is the total volume of new light and pole installations where no pole or light existed before. Number of poles installed is the total of major road installation and minor road installation.

Light replacement - volume of works and expenditure

This is the total volume of light and pole replacements. There are two types of replacements in this category.

1. Poles (including luminaire) replaced entirely and;
2. Luminaires only replaced due to failure.

Light maintenance - volume of works and expenditure

This includes the total volume of lights serviced (but not replaced) as part of planned (bulk lamp replacement) and unplanned (spot replacements). Bulk lamp replacement work is completed on a 30 month (2.5 year) cycle and the number of replacements for each year is calculated by dividing the number of poles installed (total streetlight population) by 2.5.

Spot replacement is done on an ad hoc basis and is recorded in the SAP asset base as M2, M3, M4 or ML notifications.

Mean days to rectify/replace public lighting assets (days)

This figure is the average number of days taken for Ausgrid to repair customer reported overhead street light outages.

Volume of GSL breaches (0s)

This figure is the number of times Ausgrid were in breach of the NSW Public Lighting Code for time taken to repair streetlights for both customer and local council reported outages.

GSL payments ($s)

Payments made for GSL breaches $15 each.

Volume of customer complaints (0s)

Data held in Ausgrid's SAP CNR system which records details of customer reported street light issues. The call centre will flag a report as a complaint based on the customers report and whether the light has been previously reported. Online reporting gives the customer the option to report outages as complaints.

Explain the source from which Ausgrid obtained the information provided.

Lights Installation - volume of works and expenditure

The source of the data for this section is the SAP PM (Plant Maintenance) database. Asset information is updated daily with information on maintenance work performed, added assets, removed assets and changes to assets including lamp replacements, luminaire replacements, bracket changes, new supports and connections. The Business Intelligence information is derived from SAP on a nightly basis. The information supplied within this RIN is from specifically written Business Objects reports.

Data held in Ausgrid's asset base (SAP-PM) includes information on the date each asset was originally installed. The criteria for the report is:

- Object Type = LIGHT (only 'light' assets included)
- Lifecycle Statue = COMM (only 'commissioned' lights included)
- Rate equals 01 (the Streetlight rate is 01 - Ausgrid owned and maintained).
- Start Up Date Between Date1 and Date2 (where Date 1 are Date 2 are the range of dates for each financial year over the regulatory period. Start-up date is the initial commissioned date of the Street Light).
- The total cost associated with Lights Installation - volume of works and expenditure, is the total public lighting capex expenditure for new installations including all overheads.

Light replacement - volume of works and expenditure

Pole replacements:

Data held in Ausgrid's asset base (SAP-PM) includes information on the date each asset was originally installed as well as data on when an asset was replaced. This replacement information is based on pole data (rather than streetlight data) and once the information is obtained the non-streetlight poles are excluded. The criteria for the report is:

Decommissioned Poles:

Date First Commissioned between Date 1 and Date 2 (where Date 1 are Date 2 are the range of dates for each financial year over the regulatory period. Date First Commissioned is the initial commissioned date of the Pole).

Owner Name = 'ENERGYAUSTRALIA'. This is to distinguish between Ausgrid and privately owned poles (note that ENERGYAUSTRALIA is still used in the system rather than Ausgrid)

Object Type inList POLE; PILLAR_STD. Pillar standards are treated as a separate asset type so need to be included.

ERR (Creation Error) Not= 'Y'. Exclude poles that were created by error then removed.

Pole Replacements:

Pole Generation Number = '02'. Only count poles that have a previous version (i.e. have been replaced)

Code (coding) InList OH010500PRPL; OH007000PRPL; OH090000PRPL; OH010500FAIL; OH070000FAIL; OH090000FAIL. All Coding Codes related to pole replacements.

COMP/CLNR (Completion Status) Not Equal to 'CLNR'. Exclude CLNR (closed not required jobs).

Major and Minor roads are separated based on the wattage of the light. Lights over 100 watts are considered Major (V Category) lights while lights 100W and under are considered Minor (P category) lights.

Luminaire replacements:

Data held in Ausgrid's asset base (SAP-PM) includes information on each time maintenance is performed on a street light. SAP Notification type M7 is used for recording Capital repair work ie when head or brackets are replaced.

The criteria for the report is:

- Notification Type Equal To: M7. These codes represent the type of work performed. M2 = maintenance; M3 = breakdown, M4 = nature induced breakdown and M7 = capital.
- Code Group = SL010000 which is the street light notifications work from other notifications
- Completion Flag = Y OR COMP/CLNR Completion Status = 'COMP'. This signifies that the work has been completed.
- Completion date Between Date1 and Date2 (where Date1 are Date2 are the range of dates for each financial year over the regulatory period). Completion date is the date the notification was completed.
- The total cost associated with Light replacement - volume of works and expenditure, is the public lighting capex expenditure for all replacement installations including all overheads.

Light maintenance - volume of works and expenditure

The criteria for the report is:

- Notification Type inList M2; M3; M4;. These codes represent the type of work performed. M2 = maintenance; M3 = breakdown, M4 = nature induced breakdown and M7 = capital.
- Code Group = SL010000 which is the street light notifications work from other notifications
- Completion Flag = Y OR COMP/CLNR Completion Status = 'COMP'. This signifies that the work has been completed.
- Completion date Between Date1 and Date2 (where Date1 are Date2 are the range of dates for each financial year over the regulatory period). Completion date is the date the notification was completed.

Mean days to rectify/replace public lighting assets (days)

Data held in Ausgrid's SAP CNR system which records details of customer reported street light issues. Figures based on the average number of days required to complete an overhead street lighting fault from the day it was reported to the day it was repaired.

Volume of GSL breaches (0s)

Data extracted from SAP transactions for Councils: ZCCSC0240, based on N1 notifications and date ranges shown in RIN report. Residential customer numbers were provided by Manager Network Customer Investigations.

GSL payments ($s)

Based on the Volume of GSL breaches.

Volume of customer complaints (0s)

Extract from SAP CNR database based on number of customer street light reports where the report was flagged by the call centre as a complaint. The call centre will flag a report as a complaint based on the customers report and whether the light has been previously reported. This is generally where customers have called for a second time to express their dissatisfaction about the outcome of previously reported issues. Where a customer reports the outage via the Ausgrid website the customer has the option to flag a reported outage as a complaint.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Number of Lights Installed - volume of works and expenditure

Major and Minor roads are separated based on the wattage of the light. Lights over 100 watts are considered Major (V Category) lights while lights 100W and under are considered Minor (P category) lights.

Light replacement - volume of works and expenditure

Major and Minor roads are separated based on the wattage of the light. Lights over 100 watts are considered Major (V Category) lights while lights 100W and under are considered Minor (P category) lights.

Light maintenance - volume of works and expenditure

Major and Minor roads are separated based on the wattage of the light. Lights over 100 watts are considered Major (V Category) lights while lights 100W and under are considered Minor (P category) lights.

Mean days to rectify/replace public lighting assets (days)

Overhead customer reported streetlight only included in these figures. Outages where underground repairs are required not included.

Volume of GSL breaches (0s)

Data extracted from SAP transactions for Councils: ZCCSC0240, based on N1 notifications and date ranges shown in RIN report. Residential customer numbers were provided by Manager Network Customer Investigations.

GSL payments ($s)

Based on the Volume of GSL breaches.

Volume of customer complaints (0s)

Extract from SAP CNR database based on number of customer street light reports where the report was flagged by the call centre as a complaint. The call centre will flag a report as a complaint based on the customers report and whether the light has been previously reported. This is generally where customers have called for a second time to express their dissatisfaction about the outcome of previously reported issues. Where a customer reports the outage via the Ausgrid website the customer has the option to flag a reported outage as a complaint.

Commentary on year end results

Ausgrid's total public lighting operational costs have increased over the period in 2013-14 to 2014-15. Over the same period total light maintenance jobs has decreased resulting in an increase in unit maintenance costs. The increases in total is a result of the operational maintenance changes (ie. consolidation of lighting types etc.) the business is implementing to derive future customer benefits; the impact of 'one-off' costs (ie. redundancy costs) associated with the organisations ongoing structural reform; and the impact of the AER approved CAM for 2014/15 & beyond in comparison to the 2013/14 CAM.

Also customer notifications of public lighting faults in particular rose as a result of storms across much of Ausgrid's franchise area. Ausgrid crews worked to get power back to at least 125,000 homes and businesses including outages to public lighting.

Ongoing monitoring, mitigation and operational improvement policies are being implemented in 2015-16 in order to contain costs attributed to public lighting.

Table 4.1.3 – Cost Metrics

Demonstrate how the information provided is consistent with the requirements of the Notice

Responses provided in Table 4.1.2 for Public Lighting have been compliant with the requirements of the Notice. This includes:

- Schedule 1: 15 – Public Lighting Alternative Control Services
- Appendix E: 21 – Public Lighting Alternative Control Services
- Appendix E: 1 – General principles and requirements

Explain the source from which Ausgrid obtained the information provided.

Major/Minor road light installation

Average Unit Cost is the cost to install an individual street lighting component. The costs are made up of the total material cost, the cost of labour to install the component and any overheads on capital (materials).

Luminaires on minor roads are defined as luminaires <100W and major roads >= 100 watts.

Major/Minor road light replacement

Average Unit Cost is the cost to install an individual street lighting component. The costs are made up of the total material cost, the cost of labour to install the component and any overheads on capital (materials).

Luminaires on minor roads are defined as luminaires <100W and major roads >= 100 watts.

Major/Minor road light Maintenance

Average Unit Cost for maintenance based on the yearly maintenance charges for each lamp and connection. These figures are published by Ausgrid in the yearly Public Lighting price list based on figures supplied by the AER.

Luminaires on minor roads are defined as luminaires <100W and major roads >= 100 watts.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Major/Minor road light Installation/Replacement

Average Unit Cost

Average Unit Cost is the cost to install an individual street lighting component. The costs are made up of the total material cost, the cost of labour to install the component and any overheads on capital (materials).

The figures in this section have been calculated by Ausgrid's annuity pricing model, which forms part of Ausgrid's Public Lighting substantive proposal. This model does not differentiate between asset replacement and installation and Ausgrid does recover different amounts for these categories. This is why the figures are the same for installation and replacement. All underlying assumptions for these calculations can be found in this model.

Major/Minor road light Maintenance

Average Unit Cost

These costs are the output of Ausgrid operational expenditure pricing model. These costs take into consideration all scheduled and unscheduled maintenance associated with each asset and pricing of all associated materials required for the maintenance of these assets. This model forms part of Ausgrid's public lighting substantive proposal. All underlying assumptions for these calculations can be found in this model.

Ausgrid in consultation with customers is rationalising the inventory types in order to produce economies of scale and energy efficiencies. The majority of new and reactive replacement installations consist of installing more cost effective and energy efficient lighting. In particular Ausgrid has adopted standardised Light Emitting Diode (LED)

technology which replaces a number of different lighting styles. In addition Mercury Vapour lamps are now being replaced with more energy efficient High Pressure Sodium (HPS) lamps

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

- Major/Minor road light Installation/Replacement - none
- Major/Minor road light Maintenance -none

Commentary on year end results

Ausgrid are implementing less light types this year than in previous years. Ausgrid is rationalising the inventory types in order to produce economies of scale available to customers. The majority of new and reactive replacement installations consist of installing more cost effective and energy efficient lighting. Mercury Vapour lamps are now being replaced with more energy efficient High Pressure Sodium (HPS) lamps on major roads and Ausgrid has recently begun to roll out Light Emitting Diode (LED) luminaires in residential areas. These new technologies each provide significant reductions in energy consumption and minimise the life cycle costs ultimately borne by public lighting customers. Ausgrid in consultation with it customers decided that LED technology would be a cost effective default luminaire for residential roads.

Ausgrid has undertaken considerable analysis of other pricing options to attempt to reduce the price list. Ausgrid has continued to upgrade its street lighting network by providing more energy efficient technology where it was proven to be cost effective.

Glossary

- SAP – PM: Ausgrid's asset management system for poles and streetlights. Contains information on the asset like location, type of assets and the main attributes of assets. Also contains maintenance and inspection data of each asset.
- SAP – CNR: Ausgrid's Customer Reporting system for street light outages. Outages are managed in this system and maintenance recorded in SAP-PM.

Template 4.2 – Metering

The information provided in template 4.2 has been completed in accordance with the AER RIN requirements and instructions applying to template 4.2 including Appendix E and F, and the requirements in the worksheet.

Table 4.2.1 – Metering descriptor metric

Demonstrate how the information provided is consistent with the requirements of the Notice

The response to table '4.2.1 Metering descriptor metric' utilised the provided AER response worksheets including any amended versions that have since been supplied. This submission complies with the relevant sections of the RIN and costs have been derived in accordance with Ausgrid's reporting methodology and operational quantities are drawn from the appropriate Ausgrid database.

Explain the source from which Ausgrid obtained the information provided.

FY2015 volumes were obtained from Ausgrid's Metering Business System (MBS).

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

The process of populating this RIN utilised a centrally managed approach. The business process owner coordinated the inputs that were supplied by subject matter experts and management teams. A feedback loop was also incorporated to allow the Manager to verify the accuracy of the supplied information (including source data) and this notice was prepared in accordance with the methodology utilised in AER FY2014/19 Regulatory Submission.

The response to table **4.2.1 Metering Descriptor Metric** is based upon a number of assumptions. These are detailed below:

- **Tables 4.2.1 (Meter Type 4)** – Relates to Contestable Meter Sites (Type 1-4). These sites have communications metering installed and are for >160mwh industrial and large customers. These sites are already open to competition and deemed not to be part of this regulatory submission, therefore all entries have been set to zero in this template.
- **Table 4.2.1 (Meter Type 5 & Meter Type 6)** - Type 5 & 6 meters for this table are defined as installed populations only (based upon how a site is registered/classified in the national market). This is then provided as a count of meters at such sites. This includes some NEM registered type 5 sites that have aspects of AMI or Type 4 style communications implemented for operational reasons. i.e. chronic access

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

(i) Why an estimate was required, including why it was not possible for Ausgrid to provide actual information;

Not applicable as no estimates were required

(ii) The basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

Not applicable as no estimates were required

Table 4.2.2 – Cost metrics

Demonstrate how the information provided is consistent with the requirements of the Notice

The response to table '4.2.2 Cost metrics' utilised the provided AER response worksheets. This submission complies with the relevant sections of the RIN and costs have been derived in accordance with Ausgrid's financial methodology and operational quantities are drawn from the appropriate Ausgrid databases.

Explain the source from which Ausgrid obtained the information provided.

FY2015 costs were identified from Financial Internal Order (I/O) reports and analysis derived by Ausgrid's Finance and Compliance - Commercial and Decision Support Team.

Direct costs are considered to be the costs captured against IO's directly attributable to the activities contained within this template. These costs have been extracted from our financial system (SAP) from the TM1 reporting system.

All costs in section 4.2 are actual and do not include corporate overheads per the CAM (corporate allocation methodology) and non-direct ICT overheads. These components are detailed in the appropriate section in Ausgrid's RIN.

For FY2015, actual volumes were extracted from Ausgrid's Metering Business System database, SAP system and from the Shared Services Data Mart reporting database.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

The process of populating this RIN utilised a centrally managed approach. The business process owner coordinated the inputs that were supplied by subject matter experts and management teams. A feedback loop was also incorporated to allow the Manager to verify the accuracy of the supplied information (including source data) and this notice was prepared in accordance with the methodology utilised in AER FY2014/19 Regulatory Submission.

The response to table **4.2.2 Cost Metrics** (Cost & Volume) is based upon a number of assumptions. These are detailed below:

- **Table 4.2.2 (General Comment)** - For this table, volumes and expenditure include metering related standard control services (SCS) and metering as an alternate control service (ACS) but does not include Fee-Based (Ancillary Network Services - ANS) services as documented in worksheet 4.3.
- **Tables 4.2.2 (Meter Type 4)** – Relates to Contestable Meter Sites (Type 1-4). These sites have communications metering installed and are for >160mwh industrial and large customers. These sites are already open to competition and deemed not to be part of this regulatory submission, therefore all entries have been set to zero in this template.
- **Table 4.2.2 (Meter Purchase, New Meter Installation, Meter Replacement)** – The costs associated with these three components when combined add up to the amount added to Ausgrid's regulated asset base (RAB) for Type 5 and Type 6 metering. The apportionment of the overall costs includes a small quantity of logistics labour attributed to new meter purchase.
- **Table 4.2.2 (Meter Purchase) –** A Type 5 meter is defined as the volume of purchased interval capable meters irrespective of whether installed in the NEM as a Type 5 or Type 6 site. The values in the cell for Type 5 costs and volumes represent the sum of both Type 5 & Type 6 'Meter purchase' activities as we are unable to split costs/volumes by the separate meter categories. Meter purchase costs were calculated based on financial internal order reporting for meter and material costs, when added to the regulated asset base (RAB) and not at the time of purchase. Meter purchase volumes have been determined based on the actual volume of new meter installations added to the volume of meter replacements.
- **Table 4.2.2 (Meter Testing – Meter Type 5 & Meter Type 6)** - Meter Testing is defined as Sample Meter Testing. Financial and volume based data for Type 5 and Type 6 sites has been combined as there has been significant merging of work associated with Type 5 and Type 6 sites making accurate apportionment difficult between testing Interval Meters and Accumulation meters. For example; a site tested as Type 6 and then upgraded to Type 5 could have been captured as a Type 5 cost and quantity. Therefore for the indicated periods, Type 5 meter tests also include Type 6 meter tests at a NMI level. Sample Meter testing volumes are calculated on a per NMI basis and volumes were extracted via the Shared Services Data Mart (SSDM) reporting database.

  Retailer requested meter tests - identified as ZMET Service Orders are detailed as an Ancillary Network Service and documented in worksheet 4.3 Fee-based services.

- **Table 4.2.2 (Meter Investigation – Meter Type 5 & Meter Type 6)** – The value in the cell for Type 5 meter investigation also includes Type 6 meter investigations as we are unable to separate meter tests into separate categories. Meter Investigation volumes are calculated on a per NMI basis and volumes were obtained via the SSDM reporting database.
- **Table 4.2.2 (Scheduled Meter Reading)** - Scheduled means routine meter reads (including either monthly or quarterly read cycles). Scheduled Meter reading volumes for Type 5 & Type 6 metering are recorded on a per NMI basis. For FY2015 costs, a proportionate estimate based on volume has been applied for relevant IOs to reflect the component relating to Type 6 and Type 5 scheduled meter read costs, this estimated split is 73% Type 6 and 27% Type 5 respectively. This cost also includes a small percentage of network-initiated special reads for the purpose of quality assurance and other scheduled meter reading related activities. The cost is calculated per read, and excludes Ancillary Network Services i.e. special meter reads and move in /out meter reads which are detailed separately in worksheet 4.3.1 Fee-based services. For FY2015, volumes of Scheduled Meter Reads were obtained from Ausgrid's MBS and SSDM reporting databases.
- **Table 4.2.2 (Special Meter Reading – Meter Type 5 & Meter Type 6)** – Means Off-Cycle Meter Reads, this is an ancillary network service (ANS) therefore costs and volumes have been detailed in worksheet 4.3.1 Fee-Based Services
- **Table 4.2.2 (New Meter Installation – Meter Type 5 & Meter Type 6) -** means Type 5 or Type 6 meter installations as defined by the NEM. This activity is ASP driven and includes new & upgrade metering installations only. Meter test and release labour costs were assigned proportionately across all meter installations. The physical cost of the meter has been excluded from the meter installation costs as it has been previously included in the meter purchase cost. New Meter installation volumes are calculated on a per meter basis and were obtained via SAP Network Activity reporting**.**

  Retailer requested CT meter Installs have been identified as ZCON Service Orders and have been excluded from New Meter installation costs in table 4.2.2. These costs are defined as an Ancillary Network Service and are documented in worksheet 4.3.1 Fee-based services.
- **Table 4.2.2 (Meter Replacements – Meter Type 5) –** This represents combined proactive and reactive replacements (Ausgrid Only). For FY2015, this means all meter replacement activities. Meter test and release labour costs were assigned proportionately across all meter replacement activities. The physical cost of the meter has been excluded from the meter replacement costs as it has been previously included in meter purchase cost. Meter replacement volumes are calculated on a per meter basis and were obtained via SAP Network Activity reporting.
- **Table 4.2.2 (Meter Maintenance – Meter Type 5 & Type 6)** - Indicates field meter maintenance tasks excluding Meter Investigation and Meter Test, detailed elsewhere in sections 4.2.2 and 4.3.1 of this document.

  The values in the cell for Type 5 volume and costs represent the sum of both Type 5 & Type 6 meter maintenance activity on a per NMI basis (unable to separate meter maintenance into separate categories). Volumes for Meter Maintenance are calculated on a per NMI basis and were obtained via SSDM reporting database.
- **Table 4.2.2 (Other Metering – Meter Type 5 & Type 6)** - The main components of this expenditure are Meter Data Processing and Distribution, Metering Technology and Engineering Support.

  The value in the cell for Type 5 costs represents the sum of both Type 5 & Type 6 'Other metering' activity (unable to split costs into separate categories). Ausgrid does not record volumes for this activity therefore all entries in this template have been set to zero.
- **Table 4.2.2 (Other Metering – Meter Type 7)**

  It is noted that there are no Type 7 physical meters in Ausgrid's network; therefore no volume has been recorded. Costs are for Type 7 database recording and maintenance along with data processing and distribution.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

Not applicable as no estimates were required

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

Not applicable as no estimates were required

Template 4.3 Ancillary services – fee based services

The information provided in template 4.3 has been completed in accordance with the AER RIN requirements and instructions applying to template 4.3 including Appendix E and F, and the requirements in the worksheet.

Note, Section 19, Appendix E of the RIN contains instructions on what must be included in this section of the Basis of Preparation:

In the basis of preparation, Ausgrid must provide a description of each fee-based and quoted service listed in regulatory templates 4.3 and 4.4. In each services' description, Ausgrid must explain the purpose of each service and detail the activities which comprise each service. This has been provided below.

Detailed Service Descriptions

Service Group	Standard Detailed Description
Design related services (Provision of design information, design certification and design rechecking services in relation to connection and relocation works provided contestably)	Design Information: The electronic provision of necessary technical information to enable an ASP to prepare a design drawing and submit it for certification. This may include without limitation: • Deriving the estimated loading on the system, technically known as the ADMD (After Diversity Maximum Demand). This estimate depends on such factors as the number of customers served and specific features of the customer's demand; • Provide drawings electronically that show existing low and high voltage circuits (geographically & schematically) and adjacent projects; • Provision and maintenance of systems necessary to facilitate ASP electronic access to data and information allowing electronic drawing transfer and retrieval of standards. • Specify the preferred sizes for overhead conductors or underground cable; • Specify switchgear configuration type, number of pillars, lights etc; • Determine Ausgrid's Network Planning requirements necessary to make electrical supply available to a development and cater for future works; • Nominating network connection points; Provision of any of the above information (GIS, Standards, ADMD etc.) electronically as determined by the NSP.
	Design Certification: Ausgrid is required to certify the design will not compromise the safety or operation of Ausgrid's distribution network. This may include without limitation: • Certify that the design information / project definition have been incorporated in the design; • Certify that easement requirements and earthing details are shown and are in order; • Considering design issues, including checking for over -design and mechanisms to permit work on high voltage systems without disruption to customer's supply; • Certify that funding details for components in the scope of works are correct; • Certify that there are no obvious errors that depart from Ausgrid's design standards and specifications; • Certify that shared assets are not over -utilised to minimise developer's connection costs and that all appropriate assets have been included in the design; • Audit design calculations such as voltage drop calculations, conductor clearance (stringing) calculations etc;

	• Certify that a bill of materials has been submitted; • Check and certify that an environmental assessment has been submitted by an accredited person.
	Design Re-certification: Ausgrid is required to recheck a design initially found to be not certifiable, except where the modifications to a design are of a trivial or minor nature.
ASP inspection services (Inspection and re-inspection of contestable connection and relocation works performed by Accredited Service Providers (ASPs))	Inspection Level 1 ASP: The inspection by Ausgrid, in accordance with the DTIRIS Accredited of Service Provider Scheme of work undertaken by a Level 1 ASP, for the purpose of ensuring the quality of assets to be handed over to Ausgrid.
	Inspection Level 2 ASP: The inspection by Ausgrid, in accordance with the DTIRIS Accredited of Service Provider Scheme of work undertaken by a Level 2 ASP, for the purpose of ensuring the quality of assets to be handed over to Ausgrid. The minimum number of inspection required must correspond to the grade of the DNSP as shown: Inspection rate Grade of ASP Number of inspections A - 1 inspection per 25 jobs B - 1 inspection per 5 jobs C - Each job to be inspected
	Re-inspection Level 1 & 2 ASP: The re-inspection by a Ausgrid of work (other than Customer Installation work) undertaken by an ASP accredited to perform Level 1 or Level 2 work, for the reason that on first inspection the work was found to be not satisfactory.
Reinspection of installation work in relation to customer assets (Reinspection by a distributor of private electrical wiring work undertaken by an electrical contractor, required where the first inspection revealed defective work.)	Note: no charge applies where DNSP carries out an initial inspection of private electrical installation work, during normal working hours, which has been notified by a Certificate of Compliance Electrical Work (CCEW) form. The service is applied when the inspector identifies a defect within an installation and issues a defect notice. Where more than one dwelling is found to be defective within a multi unit complex the service should be applied to each of these individual units.

Contestable substation commissioning (Includes complex Contestable substation commissioning). Involves the process of connecting the substation to the network. Complex involves kiosk and chamber substations that may involve protection settings.	The commissioning by Ausgrid of a new substation, and includes all necessary commissioning checks and tests prior to, during and after energising the substation via the high voltage switchgear and closing the low voltage circuit breaker, links or fuses and the setting or resetting of protection equipment and updating of engineering systems including the labelling of the network to comply with the asset numbering standards and safety requirements. [complex = kiosks ≥1MVA, multiple kiosks or chamber/s] An Access Permit fee in addition may be required to gain access to the network in order to undertake the commissioning.
Access permits (The provision of an access permit by a distributor to a person authorised to work on or near distribution systems including high voltage.)	This service fee includes High Voltage access and may include without limitation: • Access to the low voltage network (e.g direct distributors) • Researching and documenting the request for access including a site visit as required; • Documenting the actual switching process; • Programming the work; • Control room activities; • Fitting and removing of access permit earths; • The actual switching of the High Voltage network including travel costs; • Identification of any customers who will be interrupted for carding by the ASP; • Low voltage switching and paralleling of substations that permits high voltage work without disrupting supply to other customers; • Excludes provision of MG and Live Line to maintain supply. These are services in addition and covered by another quoted service; • Cable ID, stab, cut and phase; • Reinstate network and testing; • Travel costs
Clearance to work (The provision of a clearance to work by a distributor to a person authorised to work on or near the system generally at a low voltage.)	This may include without limitation: • Researching and documenting the request for the Clearance to Work (may require a site visit) • Operate the Low Voltage network including travel costs; • Identification of all customers who will be interrupted for ASP to notify ; • Excludes provision of MG to maintain supply. These are services in addition and covered by a quoted service; • Reinstate network and testing; Note: An Access Permit is required when the LV is controlled by operation of a switch located within an electrical station or distribution centre therefore a clearance to work to access a LV direct distributor is covered by the basic fee of the Access Permit service.

Access (standby person)	The provision of access to switchrooms, substations and the like to an ASP who is accompanied by an Ausgrid staff member, but does not include the circumstance where an ASP is provided with keys for the purpose of securing access and is not accompanied by distributor's staff member. Preparation of CLW is included and charged in the hourly rate.
Notices of arrangement (Work of an administrative nature performed by a distributor where a local council requires evidence in writing from the distributor that all necessary arrangements have been made to supply electricity to a development. This may include receiving and checking linen plans and 88 B instruments, copying linen plans, checking and recording easement details, preparing files for conveyance officers, liaising with developers if errors or charges are required, checking and receiving duct declarations and any amended linen plans and 88B instruments approved by a conveyancing officer and preparing notifications of arrangement.)	Work of an administrative nature performed by Ausgrid where a local council requires evidence in writing that all necessary arrangements have been made to supply electricity to a development. This may include without limitation a NoA or a Compliance Certificate involving: • Receiving and checking linen plans and 88B Instruments; • Checking and recording easement details; • Prepare records for conveyance officers; • Liaise with developers if errors occur or changes are required; • Check and receive duct declarations and any amended linen plans and 88B instruments approved by a conveyance officer; • Confirm the works are completed in accordance with Ausgrid's requirements including substations and ducts, service mains to the customer's 'point of supply' and peg all easements and lot frontages and complete the works, However DNSP, may issue a NoA or Compliance Certificate prior to completion of the contestable works provided: • the contestable design has been certified, and • an additional bond has been deposited either in cash or as a Banker's Guarantee, consisting of an amount equal to the value of the contestable works remaining to be completed which is returned if all of the above requirements have been satisfied. • Prepare notification of arrangement or compliance certificate;
Authorisation of ASPs (Annual authorisation of individual employees and sub-contractors of ASPs and additional authorisations at request of ASP. Authorisation excludes training costs.)	The annual authorisation by Ausgrid of individual employees or sub -contractors of an ASP to carry out work on or near Ausgrid's distribution and subtransmission system. This may include without limitation: • Familiarisation and assessment in Ausgrid's safety rules; • Access Permit Recipient training and assessment include by Ausgrid; • Induction in the unique aspects of the network; • Verification that the applicant has undertaken the necessary Regulatory safety training (resuscitation etc) within the last 12 months; • Conducting interviews and examinations and in-field safety audit; • Issuing authorisation cards; • Administration support directly related to Authorisation;

Administration services relating to work performed by ASPs, including processing work	Work of an administration nature (not including work of an administrative nature described in service - Notice of Arrangement or Authorisation of ASPs), including the processing of Level 1 and/or Level 3 work where the customer is lawfully required to pay for the Level 1 and / or Level 3 work. This may include without limitation: • Checking supply availability; • Processing applications; • Correspondence from application to completion; • Record – keeping; • Requesting and receiving fees (initially, then prior to design and after certification); • Receiving design drawings (registering and copying); • Raising order for high voltage (HV) work; • Calculating HV reimbursements; • Calculating the cost of a project and warranty / maintenance bond; • Organising refunds to developers for HV work; • Liaising with developers via phone and facsimile; • Updating Geographic Information Systems (GIS) and mapping; • Supporting the process of design information, design certification and design rechecking.
Conveyancing information (Supply of conveyancing information – desk inquiry; or field visit)	The provision of information regarding the availability of supply, presence of Ausgrid's equipment, power lines and related information for property conveyance purposes undertaken with or without any physical inspection of a site, other than the provision of information or the answering of inquiries relating to any matter under Freedom of Information legislation.
Customer interface coordination for contestable works	This service is proposed where customer developments may require a high level of Ausgrid's involvement in order to coordinate a range of inputs from Ausgrid to help establish the development. This usually occurs on projects with the following characteristics: • Multiple components. For example, relocation and connection works associated with the one development, or works ≤ 11 kV and works at higher voltages. • Projects with scheduling challenges such as rapid deployment requirements or constrained timeframes for particular tasks. • Multiple and/or conflicting works to be undertaken in tandem or cooperation with other services or utilities. • Projects where there are significant inter-relationships between capital and contestable works which would benefit from coordination. The form of this service includes, but is not limited to, attendance at internal and external project meetings in accordance with the needs of particular customers. It requires strong communication skills and technical understanding. The nature of the project would determine the skill level of the assigned officer and the number of hours required. Customer interface coordination for contestable works. Coordinating internal resources and managing DNSP involvement in the overall connection program consumes a significant amount of the time spent in facilitating major connections. Activities include arranging internal review meetings, reviewing and issuing internal project documentation and coordination of the wide range of internal stakeholders involved.

Preliminary enquiry service (For services provided to connection applicants making a preliminary enquiry requiring site specific or written response.)	Providing prospective connection applicants with specific information and advice in relation to the connection process and requirements associated with establishing a new or altered connection or a relocation of existing network assets. This service is for initial advice and excludes more detailed investigations/advice which may subsequently be required from Strategic Planning Studies and Analysis and Process Facilitation. This service includes an initial site inspection and preparation of a written response addressing the issue(s) queried by the applicant. It may also include an initial customer meeting where requested. It would not be charged for all initial enquiries only those where the cost to serve is more appropriately born by the applicant.
Connection offer service (basic or standard) (For services provided by distributors in assessing the applicant's application and making a basic or standard connection offer)	Services provided by Ausgrid in assessing connection applications and making basic or standard connection offers. This may include without limitation: • Assessment of application by Team Leader. If the application is deemed to require a basic connection offer service the application is forwarded to Customer Operations who will process the offer. If the application is deemed to require a standard connection offer service the application is allocated to Contestability. • Contestability is responsible for deriving the estimated loading on the electrical distribution network, technically known as the ADMD (After Diversity Maximum Demand). This estimate depends on such factors as the number of customers served and specific features of the customer's demand. • Once the ADMD is derived the customer is advised what is required to connect to the electrical distribution network. This could be one of the following methods of supply; A direct distributor from an existing substation, A direct distributor from a new kiosk substation, A direct distributor from a new pole mounted transformer substation, A direct distributor from a new chamber substation. • Once the assessment has been completed by Contestability, Administration staff forward the assessment of the standard connection offer to the customer.
Rectification works (Includes rectification of illegal connections, provision of service crew/additional crew, fitting of tiger tails, high load escorts)	Rectification of Illegal Connection: Work undertaken by Ausgrid to the property of Ausgrid or to the property of another person in order to: • Rectify damage; or • Prevent injury to persons or property; resulting from conduct that constitutes an offence under Part 6, division 1 of the Electricity Supply Act. For example, to rectify an unauthorised connection to Ausgrid's distribution system. Note, the supply would be left disconnected until the customer employed there own electrical contractor/ASP to rectify any faulty wiring or equipment which had been interfered with e.g. full replacement of consumer's mains.
	Additional Crew: Provision of a crew when others are working on or near the Ausgrid's network or when Ausgrid undertake work at the request of a customer.
	Fitting of Tiger Tails: Installation of temporary covering (known as 'torapoli pipes' or 'tiger tails') on overhead

	mains and service lines. NB This does not include the installation of temporary covers by certain ASPs in association with their contestable work, in accordance with their Service Provider Authorisation, which is contestable work. Note: Pricing for the installation of temporary torapoli pipes or tiger tails will also include a rental charge for the use of this equipment.
	High Load Escort: Temporary relocation of overhead mains for high vehicular loads and high load escorts. The pricing methodology for the provision of these Customer Specific Services is based on actual direct costs as outlined in Ausgrid's published rates.
Connection/relocation process facilitation	Providing connection applicants with ongoing information and advice in relation to the connection process and requirements associated with establishing a new or altered connection or a relocation of existing network assets. This service is additional to the published instructions available to all applicants and is not a mandatory requirement of the connection process for standard connections to the distribution network (≤ 11kV). It would be recommended for first time contestable customers or customers with complex or challenging projects. The intent would be to help minimise project delays caused by customers not taking the required action at the optimum time in the process. This would be achieved by staff taking a proactive approach to communication and engagement with connection applicants. It is an essential requirement for major connection projects (greater than 10MW load or connected at >11 kV) because the process varies to meet particular project requirements (the electrical component potentially being a smaller but often critical part of a much larger project). The form of this service includes, but is not limited to, • Project coordination activities; • One-on-one engagement to review project or process particulars; • Consultation of connection particulars; • Facilitation
Services to supply and connect temporary supply to one or more customers (Including equipment and related costs in relation to planned access permits)	The provision of an MG (Motor Generator) connected to the network or a direct distributor and/or use of HV Live Line Techniques when required to maintain a continued but temporary supply to otherwise impacted customers during contestable connection works. Service is in conjunction with but in addition to access permits and clearance to work. Cost of MG hire not included in calculations as these are commercially available.
Carrying out planning studies and analysis relating to distribution (including subtransmission and dual function assets) connection applications	This service undertakes necessary planning studies and associated technical analysis to help determine suitable/feasible connection options for further consideration by proponents. The service applies mainly to large loads and generators where suitable connection options are not necessarily obvious and may result in potentially significant impacts on Ausgrid's existing network development strategies and augmentation requirements. For some projects a technical assessment of a nominated option may need to be explored to ensure sufficient cost and timing certainty for an applicant and to help underpin subsequent connection offers. A detailed report or reports are provided as agreed and form a basis for the customer's final proposal.

Services involved in obtaining deeds of agreement in relation to property rights associated with contestable connection works	Services related to the acquisition of tenure over and access to Ausgrid assets associated with contestable connection works. New assets being connected to the network may be positioned on land not legally accessible to Ausgrid. To ensure Ausgrid has appropriate tenure and access to these new assets into the future, a Deed of Agreement is established in advance of connecting the new assets to facilitate the necessary execution of formal arrangements that create appropriate easement or lease arrangements to be registered on the land title deed. Services provided in relation to obtaining deeds of agreement for property rights associated with contestable connection works, including processes associated with obtaining registered leases and easements for land on which Ausgrid assets are located (i.e. those assets assigned or "gifted" to Ausgrid's on electrification). These property rights are necessary in order to ensure that Ausgrid is able to carry out ongoing maintenance in relation to its assets. As Ausgrid often connect assets before registered leases or easements have been obtained, it is necessary to obtain deeds of agreement from landowners in the interim.
Investigation, review and implementation of remedial actions associated with ASPs' connection work	The investigation, review and implementation of remedial actions associated with contestable connection works leading to corrective and disciplinary action of an ASP due to unsafe practices, substandard workmanship or other serious circumstances that impact upon ongoing Authorisation as an Accredited Service Provider to Ausgrid.

Table 4.3.1 – Cost metrics for fee-based services

Demonstrate how the information provided is consistent with the requirements of the Notice

The information provided on table 4.3.1 is consistent with the requirements in the RIN. The information is consistent with the definition of Alternative Control Services Fixed Fee provided in Appendix F of the RIN.

The information is consistent with the requirements in Sections 12, 13 and 14 of Schedule 1 of the RIN. The information includes the volume and expenditure for each regulatory year. Refer also to Ausgrid's Substantive Proposal for items 12.4, 12.7 and 12.8 as necessary.

This response is based on the same preparation of worksheets and supporting documentation used in the Reset RIN. The information primarily comes from SAP or is based on advice from the relevant business unit experts. Where practical, information is provided at sufficiently low level to encapsulate each proposed service. See Ausgrid's Substantive Proposal, our supplementary information 8.22_Ancillary network services proposal_140529.pdf and Attachment 8.24_ID00219_Connection related ANS models_140515.zip for further details from each service model.

Note that not all listed services were available in FY2015 but are listed to complete the RIN in comparison with the reset RIN provided with Ausgrid's Substantive Proposal. The proposed new services may be available in the period beginning FY2016 pending the AER approving their introduction.

Explain the source from which Ausgrid obtained the information provided.

In general, the data primarily comes from Ausgrid's SAP System. Where data was found to be inadequate, unreliable or non-existent the relevant business unit provided information required to assess system data across the relevant service breakdown.

In some services, assumptions have been made to split the high level data into the relevant sub group services such as numbers for the Rural Overhead Subdivision versus Rural extensions. The splits were based on the experience of the relevant business unit. Assumptions were also made on the lot numbers for the UG Commercial & industrial or rural subdivision.

- **Metering Services**

Past costs were identified from Financial Internal Order (I/O) reports and analysis derived by Shared Services Finance. Future costs were taken from the most recent version of the AER Regulatory Submission papers for the FY2015-FY19 period.

Past and current year costs do not include any corporate overheads. For the data provided for the next regulatory period (FY15-FY19) costs are inclusive of corporate overheads in accordance with the AER approved cost allocation method.

Historic volumes were identified from Ausgrid's Metering Business System databases and Shared Service Data Systems (SSDM). For FY14, data has been extrapolated to give a whole of year projection.

- **Re-energisation**

The Emergency Services Officers provide this service in both normal time and out of hours. Data was extracted from SAP and CASS, however dedicated orders are not utilised requiring the business to provide assumptions to allow an allocation of the costs involved.

CASS reports extracted via Business Objects. Estimates based on linear trend forecasting.

- **Design Related Services, Inspection of Works (Level 1 ASPs), Contestable Substation Commissioning, Access Permits**

The data was taken from SAP. The SAP Business Intelligence report was used as a basis for determining direct costs associated with these services.

The costs specific to each service were determined extracted from the overall projects by filtering on project category and subcategory.

As the data is not available at the discrete service level, the costs specific to each service were determined using an allocation method developed with input from the relevant business unit. The source data file from SAP was cross referenced with project category and subcategory data from SAP CN43n.

Volumes were based on actual services charged during the period sourced from SAP CCS via a single order associated with the high level service. The allocation method described above was utilised to derive volumes at the discreet service level.

- **Inspection of Service Work by Level 2 ASPs – NOSW**

Actual volumes and costs were extracted from SAP based on order numbers provided by the responsible business unit and audit inspection data from SAP MAI.

- **Clearance to Work**

This is a proposed new service to commence in FY2016.

- **Notices of Arrangement**

Volumes were based on actual services charged during the period sourced from SAP CCS via a single order associated with the service. Costs were extracted from SAP based on order numbers provided by the business unit.

- **Authorisation of ASP**

The data was taken from SAP from dedicated order numbers used in FY2015 and the cost centre of the group performing the service. Volume is based on corporate records indicating the number of service fees generated. The split between levels was determined by the number of registered ASP as provided by the relevant business unit.

- **Administration**

This function has been booked directly to the general cost centre with no activity or project data to reconcile costs so the calculation has been based on average administration time associated with the generic project type.

As the data is not available at the discrete service level, an allocation method was developed with input from the relevant business unit breaking the services into required discrete service subcategories.

Volumes were based on actual services charged during the period sourced from SAP CCS via a single order associated with the high level service. The allocation method described above was utilised to derive volumes at the discreet service level

- **Conveyancing Information**

No volume or cost was recorded in FY15.

- **Connection Offers**

This was a new service in FY2015. Volumes provided were obtained from SAP based on task completion data. Costs were not separately tracked by the business in FY2015. The costs provided were based on modelling from the FY2014-FY2019 regulatory submission and associated determination. Costs will be tracked commencing FY2016 via SAP orders associated with each offer type.

- **Supply & connect temporary supply**

As these are new services, a bottom up model was developed based on input from the relevant business experts delivering the services.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

The methodology of populating this RIN utilised a centrally managed approach. Inputs were supplied via management and various Subject Matter Experts (SME) to the central point. A feedback loop was also incorporated to ensure the Executive Manager could verify supplied information aligned to the various SME submissions and in accordance with the Draft AER FY14/19 Regulatory Submission.

The definition of identified Fee-Based Tasks are as follows: These definitions are Ausgrid's current detailed description of Ancillary Network Services.

- **Site Establishment Fee Services – Site Establishment**

Site Establishment Fee

Site establishment services, including issuing of meters (where applicable) and liaising with Australian Energy Market Operator (AEMO) or market participants for the purpose of establishing NMIs in market systems, for new premises or for any existing premises for which AEMO requires a new NMI and for validation of and updating network load data.

Ausgrid may be notified to conduct this service via the use of the 'Allocate NMI' B2B service order.

This fee will be levied against the ASP for the NMI once 'Allocate NMI' service order has been processed by Ausgrid.

Costs have been sourced directly from internal orders, and a proportionate estimate has been made on one of these orders (NEMS B2B services).

- **Ancillary Metering Services - Special Meter Reading for types 5 and 6 meters**

Special Meter Reading

This service has the same meaning as the meaning given to the expression 'special meter reading' in the AEMO Metrology Procedure: Part A National Electricity Market.

Ausgrid may be notified to conduct this service via the use of the 'Special Read' B2B service order. It excludes any special meter reading of metering installation types 1 to 4, which is an unregulated distribution service, but subject to a 'light-handed' form of control under Independent Pricing and Regulatory Tribunal of NSW (IPART) Rule 2004/1 Regulation of Excluded Distribution Services; and applies in each of the following circumstances:

- where a customer or a retail supplier requests Ausgrid to undertake a special meter read, (but does not apply where the special meter read was requested solely to verify the accuracy of a scheduled meter read and the special meter read reveals that the scheduled meter read was inaccurate or in error); or
- where Ausgrid attends at a customer's premises for the sole purpose of discharging Ausgrid's obligation to read the customer's meter within the period specified by law (but not where Ausgrid merely chooses to read the customer's meter without being under a legal obligation to do so) and on attending the customer's premises Ausgrid is unable (through no act or omission of Ausgrid), to gain access to the meter; or

- where Ausgrid and the customer agree on an appointed time at which Ausgrid may attend the customer's premises to enable Ausgrid to discharge Ausgrid's legal obligation referred to in the above paragraph and when Ausgrid attended at the customer's premises at the appointed time Ausgrid (through no act or omission of Ausgrid), was unable to gain access to the customer's meter.
- A charge will not be levied for this service ('special meter reading') in either of the following circumstances:
- where the customer is or is about to move premises; or
- where the service reveals that a scheduled meter reading was inaccurate, (as outlined above).

Costs have been sourced directly from internal orders, and a proportionate estimate has been made on these orders to reflect the component relating to Special Meter Reading.

- **Ancillary Metering Services - Testing for type 5 and 6 meters**

Meter Testing of Type 5 and 6 metering

The testing of an Ausgrid meter in accordance with AEMO Metrology Procedure: Part A National Electricity Market. Ausgrid may be notified to conduct this service via the use of the 'Meter Investigation' sub type ' Meter Test' B2B service order. It excludes metering installation types 1 to 4, the testing of which is an unregulated distribution service, but subject to a 'light-handed form of control under IPART Rule 2004/1 Regulation of Excluded Distribution Services.

If the meter test is undertaken on premises serviced by more than one meter associated with the NMI the following applies:

- if the meter test reveals that all of the meters associated with the NMI are operating satisfactorily, Ausgrid will only levy one charge for the provision of the service; and
- if the meter test reveals that one or more of the meters associated with the NMI are not operating satisfactorily, Ausgrid will not levy any charge for the provision of the service.

Test results will be provided to the party requesting the meter tests in a standard Ausgrid format.

Costs have been sourced directly from internal orders, and a proportionate estimate has been made on one of these orders (NEMS B2B Services) to reflect the component relating to Type5/6 meter testing.

- **Ancillary Metering Services - Franchise (CT) Meter Install**

Franchise CT Meter Install

Ausgrid is responsible for Type 5 and 6 metering installations connected to Ausgrid's network and must provide and install rule compliant metering for any new current transformer or current and voltage transformer installations.

Costs have been sourced directly from internal orders, and a proportionate estimate has been made on one of these orders (NEMS B2B Services) to reflect the component relating to CT Meter Install.

- **Possible Ancillary Metering Services - Remove / Replace T5/6 meter**

Remove / Replace T5 / 6 meter.

Where customers or Retailers have instigated a meter change from Type 4 to Type 5 or Type 6 Ausgrid has undertaken this work on an adhoc quote basis. Ausgrid considered including this task as an ancillary metering service but has assessed the service as being able to be undertaken on an unregulated basis in NSW. Ausgrid has provided estimates of past costs that provide the overall quantum involved but has not estimated volumes. All future costs and volumes have been set to zero.

- **Ancillary Metering Services – Request for Customer Energy Consumption Data, Tariff or Distribution Information**

Customer Requested Data

The provision of information of the customer's energy consumption or distributor charges following the request from a Retailer or a Retailer's customer. The energy data will be provided to the Retailer's customer or Retailer in standard market formats.

This fee may only be levied where information is requested more than once in a 12 month period.

Costs for this service have been estimated utilising a bottom up approach.

- **Ancillary Metering Services - Emergency maintenance of failed metering equipment not owned by the Network**

Emergency Maintenance

This fee will be levied against the retailer where Ausgrid has been called out by the customer due to a power outage where an external metering providers metering equipment has failed and Ausgrid has had to restore power to the customers premises. This may result in an unmetered supply arrangement at the site.

The retailer and metering provider will be notified by Ausgrid within 2 business days to arrange a repair by the metering provider.

Costs for this service have been estimated utilising a bottom up approach.

- **Off Peak conversion – Controlled Load Conversion**

Controlled Load Conversion

The alteration of the off-peak metering equipment at a customer's premises for the purpose of changing the hours of the metering equipment's operation. A charge for this service may be levied for each occasion that the service is provided.

Ausgrid may be notified to conduct this service via the use of the 'Meter reconfiguration' sub type ' Change Controlled Load' B2B service order.

Costs have been sourced directly from internal orders, and a proportionate estimate has been made on one of these orders (NEMS B2B Services) to reflect the component relating to Off Peak Conversion.

- **Reconnections / Disconnections – Disconnection Visit**

Disconnection Visit (site visit only)

A site visit to a customer's premises for the purpose of disconnecting the customer's supply at the request of a Retailer based on the customer's breach of a Customer Supply Contract or for breach of Ausgrid's Customer Connection Contract. Disconnection does not occur on that occasion, as customer payment is made or a wasted visit.

Disconnection may not occur due to a number of reasons such as but not limited to the following:

- Customer has paid retail bill;
- Breach of customer connection contract has been rectified;
- Unable to access main switch board or metering;
- Safety of Installation or Ausgrid's employee;
- Late cancellation by Retailer;
- Change of customer or Retailer for the NMI.

Ausgrid is usually notified to conduct this service via the use of the 'De-energisation' B2B service order with sub type 'Remove Fuse (Non Payment).

Costs have been sourced directly from internal orders, and a proportionate estimate has been made on these orders to reflect the component relating to disconnection visits.

- **Reconnections / Disconnections - Disconnections or reconnections at the meter box (non-technical/soft disconnect)**

Disconnection Visit (disconnection completed)

At the request of the Retailer, a site visit to a customer's premises to disconnect the supply of electricity to a customer for breach by the customer of their customer supply contract or for a breach of Ausgrid's customer connection contract, or where a Retail supplier has requested that the supply to the customer be disconnected.

The disconnection method will be at Ausgrid's discretion and will involve one of the following methods:

- rotate plug in meter; or
- removal of the service fuses; or
- removal of barge board fuses; or
- turn off and sticker covering main switch.

This charge includes the reconnection at the request of the retailer.

If, following a request from a retailer, the reconnection component of this service is provided outside the hours of 7.30am and 4.00pm on a working day, the additional 'Reconnection outside normal business hours' charge, will apply.

Ausgrid is usually notified to conduct this service via the use of the 'De-energisation' B2B service order with sub type 'Remove Fuse (Non Payment).

Costs have been sourced directly from internal orders for the disconnection component of this service, and a proportionate estimate has been made on these orders to reflect the component relating to disconnections.

Costs for the reconnection component of this service have been estimated utilising a bottom up approach.

- **Reconnections / Disconnections - Disconnections or reconnections at the meter box (technical/hard disconnect)**

Disconnection Visit (disconnection completed - Technical)

At the request of the Retailer, a site visit to a customer's premises to disconnect the supply of electricity to a customer for breach by the customer of their customer supply contract or for a breach of Ausgrid's customer connection contract, or where a Retail supplier has requested that the supply to the customer be disconnected.

The disconnection method will be at Ausgrid's discretion and will involve a method not identified above (e.g. pull load tail out of meter).

This charge includes the reconnection at the request of the retailer.

If, following a request from a retailer the reconnection component of this service is provided outside the hours of 7.30am and 4.00pm on a working day, the additional 'Reconnection outside normal business hours' charge, will apply.

Ausgrid is usually notified to conduct this service via the use of the 'De-energisation' B2B service order with sub type 'Remove Fuse (Non Payment)', 'Remove Fuse', 'Sticker' or subtype not specified.

Costs have been sourced directly from internal orders for the disconnection component of this service, and a proportionate estimate has been made on these orders to reflect the component relating to technical disconnections.

Costs for the reconnection component of this service have been estimated utilising a bottom up approach.

- **Reconnections / Disconnections - Disconnections or reconnections at the pole top/pillar box**

Disconnection Visit (disconnection completed – pillar or pole top)

A site visit to a customer's premises to disconnect the supply of electricity to a customer at the pole top or pillar box for breach by the customer of their customer supply contract or for a breach of Ausgrid's customer connection contract, or where a Retailer supplier has requested that the supply to a customer be disconnected, where the

customer has denied access to the meter or had prior to the visit, reconnected supply without authorisation by Ausgrid following a previous disconnection.

This charge includes the reconnection at the request of the retailer.

If following a request from a retailer the reconnection component of this service is provided outside the hours of 7.30am and 4.00pm on a working day, the additional 'Reconnection outside normal business hours' charge, will apply.

Ausgrid is may be notified to conduct this service via the use of the 'De-energisation' B2B service order with sub type 'Pillar-Box, Pit or Pole-Top' or 'Pillar-Box, Pit or Pole-Top (Non Payment)'.

Costs for this service have been estimated utilising a bottom up approach.

- **Reconnections / Disconnections - Disconnections or reconnections at the pole top/pillar box**

Disconnection Visit (site visit only - pillar or pole top)

A site visit to a customer's premises to disconnect the supply of electricity to a customer at the pole top or pillar box for breach by the customer of their customer supply contract or for a breach of Ausgrid's customer connection contract, or where a Retailer supplier has requested that the supply to a customer be disconnected, where the customer has denied access to the meter or had prior to the visit, reconnected supply without authorisation by Ausgrid following a previous disconnection. Disconnection does not occur on that occasion, as customer payment is made or a wasted visit.

Disconnection may not occur due to a number of reasons such as but not limited to the following:

- Customer has paid retail bill;
- Breach of customer connection contract has been rectified;
- Safety of Installation or Ausgrid's employee;
- Late cancellation by Retailer;
- Change of customer or Retailer for the NMI.

Ausgrid may be notified to conduct this service via the use of the 'De-energisation' B2B service order with sub type 'Pillar-Box, Pit or Pole-Top' or 'Pillar-Box, Pit or Pole-Top (Non Payment)'.

Costs for this service have been estimated utilising a bottom up approach.

- **Reconnection / Disconnection - Disconnections or reconnections outside of business hours**

Reconnection Outside Normal Business Hours

At the request of the Retailer:

- The provision of the re-connection component of either a 'De-energisation' sub type 'Remove Fuse (Non-Payment) or Pillar-Box Pit or Pole-Top (Non-Payment)' B2B service order', carried out, outside the hours of 7.30am and 4.00pm on a working day, or
- The connection of electricity to a new customer outside the hours of 7:30am and 4:00pm on a working day.

Ausgrid may be notified to conduct this service via the use of the 'Re-energisation' B2B service order.

Costs for this service have been estimated utilising a bottom up approach.

- **Network Tariff Change Request**

Network Tariff Change (no field visit)

When a Retailer's customer or Retailer requests an alteration to an existing network tariff (for example, a change from an Inclining Block Tariff or Time of Use tariff to a capacity tariff), Ausgrid conducts tariff and load analysis to determine whether the customer meets the relevant tariff criteria. Ausgrid also processes changes in Ausgrid's IT systems to reflect the tariff change.

This fee will only be levied if after analysis Ausgrid determines that the customer is not eligible for the requested change in network tariff.

Ausgrid is usually notified to conduct this service via the use of the 'Meter Reconfiguration' sub type 'Change Tariff' B2B service order or via the application form in Ausgrid's document ES7 - Application of Network Use of System Charges.

Costs have been sourced directly from internal orders for the disconnection component of this service, and a proportionate estimate has been made on these orders to reflect the component relating to Network Tariff Changes.

- **Move in, Move out meter reads**

Move in, Move Out Meter Reads

B2B service orders from retailers to obtain a final read for customer move-outs or to obtain a start read where a customer is moving in to a site that has been vacant.

These services are additional to the special meter reading, disconnection/reconnection and testing services currently included as miscellaneous services.

For move in's, Ausgrid may be notified to conduct this service via the use of the 'Re-energisation' sub type 'New Reading Required, or Retrospective Move -in, or Subtype not specified' B2B service order.

For move out's, Ausgrid may be notified to conduct this service via the use of the 'Special Read' sub type 'Final Read' B2B service order or a 'De-energisation' sub type 'not specified' or 'sticker' or 'remove fuse' B2B service order.

B2B service orders from retailers to obtain a final read for customer move-outs or to obtain a start read where a customer is moving in to a site that has been vacant.

These services are additional to the special meter reading, disconnection/reconnection and testing services currently included as miscellaneous services.

For move in's, Ausgrid may be notified to conduct this service via the use of the 'Re-energisation' sub type 'New Reading Required, or Retrospective Move -in, or Subtype not specified' B2B service order.

For move out's, Ausgrid may be notified to conduct this service via the use of the 'Special Read' sub type 'Final Read' B2B service order or a 'De-energisation' sub type 'not specified' or 'sticker' or 'remove fuse' B2B service order.

Costs have been sourced directly from internal orders, and a proportionate estimate has been made on these orders to reflect the component relating to Move in Move out reads.

- **Recovery of debt collection costs - dishonoured transactions**

Recovery of debt collection costs – dishonoured transactions

Ausgrid currently incurs costs, including bank fees when a network customer’s or ASP’s cheque for the payment of network-related services is dishonoured.

Costs for this service have been estimated utilising a bottom up approach.

- **Services provided in relation to a Retailer of Last Resort (RoLR) event**

ROLR Event

Services provided in relation to a Retailer of Last Resort (RoLR) event per NMI. Ausgrid is required to perform a number of services as a DNSP when a RoLR event occurs.

These include:

• preparing lists of affected sites, and reconciling data with AEMO listings;

• handling in-flight transfers;

• identifying open service orders raised by the failed Retailer and determining actions to be taken in relation to those service orders;

• arranging estimate reads for the date of the RoLR event and providing data for final NUoS bills in relation to affected customers;

• preparing final invoices for NUoS and miscellaneous charges for affected customers;

• preparing final debt statements;

• extracting customer data, providing it to the RoLR and handling subsequent enquiries;

• handling adjustments that arise from the use of estimate reads;

• assist the Retailer with the provision of network tariffs to be applied and the customer move in process.

- **Attendance at customers' premises to perform a statutory right where access is prevented**

Additional Site Visit Where Access declined by Customer

A follow up attendance at customers' premises to perform a statutory right where access was prevented or declined by the customer on the initial visit.

This task normally involves a meter technician returning to a customer's premises to undertake a service for a second time due to customer dissent during previous visits.

Costs for this service have been estimated utilising a bottom up approach.

- **Vacant property reconnect / disconnect**

Vacant property reconnect/disconnect

At the request of the Retailer, a site visit to a customer's premises to disconnect or reconnect the supply of electricity due to:

- a vacant premises; or

- a site where the power is on.

At the request of the customer a site visit to the customers premises to disconnect or reconnect the supply of electricity.

This charge includes the reconnection at the request of the retailer.

If, following a request from a retailer, the reconnection component of this service is provided outside the hours of 7.30am and 4.00pm on a working day, the additional 'Reconnection outside normal business hours' charge, will apply.

The disconnection/reconnection method will be at Ausgrid's discretion and will involve one of the following methods:

• rotate plug in meter; or

• removal of the service fuses; or

• removal of barge board fuses; or

• turn off and sticker covering main switch.

Ausgrid may be notified to conduct this service from the retailer via the use of the 'De-energisation' B2B service order with sub type 'Sticker', 'Remove fuse' or subtype not specified.

Costs have been sourced directly from internal orders, and a proportionate estimate has been made on these orders to reflect the component relating to Vacant Property Disconnections.

Costs for the reconnection component of this service performed outside of Metering have been estimated utilising a bottom up approach.

- **Vacant property reconnect / disconnect – Disconnection Visit (Site Visit Only)**

Disconnection Visit (site visit only)

At the request of the Retailer, a site visit to a customer's premises to disconnect or reconnect the supply of electricity due to:

- a vacant premises; or
- a site where the power is on.

At the request of the customer a site visit to the customers premises to disconnect or reconnect the supply of electricity.

Disconnection does not occur on that occasion, as customer payment is made or a wasted visit.

Disconnection may not occur due to a number of reasons such as but not limited to the following:

- Unable to access main switch board or metering;
- Safety of Installation or Ausgrid's employee;
- Late cancellation by Retailer;
- Change of customer or Retailer for the NMI.

Ausgrid may be notified to conduct this service from the retailer via the use of the 'De-energisation' B2B service order with sub type 'Sticker', 'Remove fuse' or subtype not specified.

Costs have been sourced directly from internal orders, and a proportionate estimate has been made on these orders to reflect the component relating to Vacant Property Disconnections involving a site visit only.

- **Re-energisation**

Reported volumes are the total number of reconnections issued to EmSOs through CASS annually.

Total Costs are the sum of:

- EmSO cost of attending and completing a reconnection.
- Administration cost of Contact Centre or NEMS staff issuing a reconnection job to EmSOs (see below)

EMSO Costs:

Assumption: reconnections comprise approximately 50% of EmSO daily work.

Based on the assumption above, 50% of annual EmSO direct labour costs have been used in 'total reconnection cost'. Estimates based on linear trend forecasting.

Administration Costs:

Administration costs calculated by multiplying volumes by an Average Handle Time of 30 minutes per job and deriving the associated labour cost. Administration labour costs based on assumption that staff performing work are classed Administration Officer Grade. AOG7 pay rates reflect historical rates, current rates and estimates of future rises.

- **Design Related Services, Inspection of Works (Level 1 ASPs), Contestable Substation Commissioning, Access Permits**

Costs for FY2015 were generated from SAP Business Intelligence reports. The costs specific to the services were then extracted from the overall projects by filtering project category and subcategory. As the data is not available at the discrete service level, the costs specific to each service were determined using an allocation method developed with input from the relevant business unit. The source data file from SAP was cross referenced with project category and subcategory data from SAP CN43n. Enhancements to SAP project data system were introduced that enabled greater definition of project category and subcategory that greatly improved the ability to interrogate data for the business.

Volumes were based on actual services charged during the period sourced from SAP CCS via a single order associated with the high level service. The allocation method described above was utilised to derive volumes at the discreet service level.

- **Inspection of Service Work by Level 2 ASPs – NOSW**

Services are charged based on classification of L2 ASP, ‘A’ ‘B’ or ‘C’ grade. Fees are set accordingly. Costs for FY2015 are recorded in SAP via specific orders and it was split into ASP grades by ratios taken from the volumes data. The grade of ASPs is obtained from SAP MAI system.

- **Clearance to Work**

This is a proposed new service to commence in FY2016.

- **Notices of Arrangement**

Volumes were based on actual services charged during the period sourced from SAP CCS via a single order associated with the service as provided by the Ausgrid Revenue group. Costs were extracted from SAP based on order numbers provided by the business unit.

- **Authorisation of Accredited Service Provider (ASP)**

Costs were provided from SAP from dedicated orders and the cost centre used by the relevant business unit. As the cost booked to the cost centre doesn't not split into levels of ASP, the cost of ASP level 1 and level 2 was estimated by applying the average cost centre rate to the total number of hours doing the task. The average cost centre rate was obtained by dividing the total costs of the cost centre with the number of total normal time hours.

- **Administration**

Through consultation with key stakeholders, it was determined that administration costs were booked directly to cost centres. Consultation with the business also produced an average amount of time per project type spent on the administration process. Costs have been extracted by taking the average amount of time per project type, multiplied by the charge for admin staff and the volume of each project type. SAP data (BI and also CN43n) from projects active during FY2015 was interrogated to determine the split of projects, based on project category / subcategory requiring administration services. This split was applied to volumes of actual administration services charged during the period sourced from SAP CCS via a single order associated with the high level service to obtain volumes at the discreet service level required.

- **Conveyancing Information**

No volume or cost was recorded in FY15.

- **Connection Offers**

This is a proposed new service to commence in FY2016.

- **Supply & connect temporary supply**

Volumes were estimated by the relevant group based on past experience working with ASPs.
Unit prices are based on a bottom up estimate from average task durations as provided by the responsible business unit.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

(i) why an estimate was required, including why it was not possible for Ausgrid to provide actual information

In several cases as noted above the required data is not recorded at the level of detail required by this RIN. During FY2015 Ausgrid has taken steps to have record the required detail for future RINs.

Depending on the level of detail requested, it was not possible in every instance to break the data down to the lowest required level without an allocation method based on subject matter experts input. In these cases, data was grouped as low as practically available without introducing overall loss of integrity.

For fee-based services related to metering in particular:

- Estimates are provided for future events;
- Where tasks were undertaken for multiple purposes, apportioned estimates were utilised eg special meter reads could occur for move in/move out or check read purposes but held in Ausgrid database as a single task. In above case a cost and volume were spilt by a ratio of 90.21%(move in/move out) to 9.79% (special read) was applied. Another example is vacant disconnections and vacant disconnection site visits which have been apportioned 50/50 from the total service orders.
- Where the task is undertaken by groups outside of metering and detailed costs at an order level were not available (e.g. reconnections).

- All ancillary metering services include the involvement of NEMS B2B processes as Ausgrid DNSP and as such where applicable costs have been estimated.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice

Wherever possible any corporate system data has been utilised to estimate missing data. Where there is no system data available or the data is considered unreliable, the relevant business unit provided valuable input to estimate volume and costs using a bottom up approach.

The relevant business unit provided the required information to ensure Ausgrid's best estimate is [provided in this RIN]:

- FY2015 data based upon information supplied by Subject Matter Experts (SMEs). Data derived from Ausgrid Financial and Metering Business Systems
- Estimates were made via subject matter experts to apportion the actual data; where systems were unable to separate the tasks/data accurately.
- Where tasks were undertaken for multiple purposes, apportioned estimates were utilised eg special meter reads could occur for move in/move out or check read purposes but held in Ausgrid database as a single task. In above case a cost and volume were spilt by a ratio of 90.20%(move in/move out) to 9.80% (special read) was applied.

Template 4.4 – Ancillary services– quoted services

The information provided in template 4.4 has been completed in accordance with the AER RIN requirements and instructions applying to template 4.3 including Appendix E and F, and the requirements in the worksheet.

Detailed Service Descriptions

In accordance with Section 19 of Appendix E of the RIN a description of quoted services has been provided in the Basis of Preparation for template 4.3.

Table 4.4.1 – Cost metrics for Quoted services

Demonstrate how the information provided is consistent with the requirements of the Notice

The information provided on table 4.4.1 is consistent with the requirements in the RIN. The information is consistent with the definition of Alternative Control Quoted Services provided in Appendix F of the RIN.

The information is consistent with the requirements in Sections 12, 13 and 14 of Schedule 1 of the RIN. The information includes the volume and expenditure for each regulatory year. Refer also to Ausgrid's Substantive Proposal for items 12.4, 12.7 and 12.8 as necessary.

This response is based on the same preparation of worksheets and supporting documentation used in the Reset RIN. The information primarily comes from SAP or is based on advice from the relevant business unit experts. Where practical, information is provided at sufficiently low level to encapsulate each proposed service. See Ausgrid's Substantive Proposal, our supplementary information 8.22_Ancillary network services proposal_140529.pdf and Attachment 8.24_ID00219_Connection related ANS models_140515.zip for further details from each service model.

Explain the source from which Ausgrid obtained the information provided.

In general, the data primarily comes from Ausgrid's SAP System. Where data was found to be inadequate, unreliable or non-existent the relevant business unit provided information required to assess system data across the relevant service breakdown.

In some services, assumptions have been made to split the high level data into the relevant sub group services such as numbers for the Rural Overhead Subdivision versus Rural extensions. The splits were based on the experience of the relevant business unit. Assumptions were also made on the lot numbers for the UG Commercial & industrial or rural subdivision.

- **Design Related Services, Inspection of Works (Level 1 ASPs), Contestable Substation Commissioning, Access Permits**

The data was taken from SAP. The SAP Business Intelligence report was used as a basis for determining direct costs associated with these services.

The costs specific to each service were determined extracted from the overall projects by filtering on project category and subcategory.

As the data is not available at the discrete service level, the costs specific to each service were determined using an allocation method developed with input from the relevant business unit. The source data file from SAP was cross referenced with project category and subcategory data from SAP CN43n.

Volumes were based on actual services charged during the period sourced from SAP CCS via a single order associated with the high level service. The allocation method described above was utilised to derive volumes at the discreet service level.

- **Re-inspection of Installation Work - CoCEW**

The data was retained in SAP with costs extracted from the applicable cost centres using dedicated orders for the work involved and volumes derived from the number of defect raised.

- **Access Standby**

There is no history of this service being charged in the current period. The volume was estimated by the relevant service provider.

- **Administration**

This function has been booked directly to the general cost centre with no activity or project data to reconcile costs so the calculation has been based on average administration time associated with the generic project type.

As the data is not available at the discrete service level, an allocation method was developed with input from the relevant business unit breaking the services into required discrete service subcategories.

Volumes were based on actual services charged during the period sourced from SAP CCS via a single order associated with the high level service. The allocation method described above was utilised to derive volumes at the discreet service level

- **Customer Interface, Preliminary Enquiry, Connection Facilitation, Planning Studies, , ASP Investigations**

Costs and volumes were obtained by interrogation SAP data and project records

- **Deeds of Agreement**

Volumes were obtained by interrogation SAP data and project records. Per unit costs were taken from cost modelling from the FY2014-FY2019 submission

- **Connection Offers**

This was a new service in FY2015. Volumes provided were obtained from SAP based on task completion data. Costs were not separately tracked by the business in FY2015. The costs provided were based on modelling from the FY2014-FY2019 regulatory submission and associated determination. Costs will be tracked commencing FY2016 via SAP orders associated with each offer type.

- **Rectification Works – Provision of services/additional crew, high load escorts**

There is no history of this service being charged in the current period. The volume was estimated by the relevant service provider.

- **Rectification Works – fitting of tiger tails**

The financial data was extracted from SAP and volumes are based on the number of services provided based on each discrete service charged in the regions that keep the record. With the regions not keeping the record, estimates were provided by the business units who provide the service.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

- **Design Related Services, Inspection of Works (Level 1 ASPs), Contestable Substation Commissioning, Access Permits**

Costs for FY2015 were generated from SAP Business Intelligence reports. Costs for FY2015 were generated from SAP Business Intelligence reports. The costs specific to the services were then extracted from the overall projects by filtering project category and subcategory. As the data is not available at the discrete service level, the costs specific to each service were determined using an allocation method developed with input from the relevant business unit. The source data file from SAP was cross referenced with project category and subcategory data from SAP CN43n. Enhancements to SAP project data system were introduced that enabled greater definition of project category and subcategory that greatly improved the ability to interrogate data for the business.

Volumes were based on actual services charged during the period sourced from SAP CCS via a single order associated with the high level service. The allocation method described above was utilised to derive volumes at the discreet service level.

- **Re-inspection of Installation Work - CoCEW**

The data was retained in SAP with costs extracted from the applicable cost centres using dedicated orders for the work involved and volumes derived from the number of defect raised.

- **Access Standby**

There is no history of this service being charged in the current period. The volume was estimated by the relevant service provider.

- **Administration**

Through consultation with key stakeholders, it was determined that administration costs were booked directly to cost centres. Consultation with the business also produced an average amount of time per project type spent on the administration process. Costs have been extracted by taking the average amount of time per project type, multiplied by the charge for admin staff and the volume of each project type. SAP data (BI and also CN43n) from projects active during FY2015 was interrogated to determine the split of projects, based on project category / subcategory requiring administration services. This split was applied to volumes of actual administration services charged during the period sourced from SAP CCS via a single order associated with the high level service to obtain volumes at the discreet service level required.

- **Customer Interface, Preliminary Enquiry**

Costs and volumes were obtained by interrogation SAP data and project records.

- **Connection Offers**

Volumes were obtained from SAP connection application records and the associated connection offer task and associated task completion date.

Costs were not separately tracked by the business in FY2015. The costs provided were based on modelling from the FY2014-FY2019 regulatory submission and associated determination. Costs will be tracked commencing FY2016 via SAP orders associated with each offer type.

- **Rectification Works – Provision of services/additional crew, high load escorts**

There is no history of this service being charged in the current period. The volume was estimated by the relevant service provider.

- **Rectification Works – fitting of tiger tails**

The financial data was extracted from SAP and volumes are based on the number of services provided based on each discrete service charged in the regions that keep the record. With the regions not keeping the record, estimates were provided by the business units who provide the service.

- **Connection Facilitation**

New service being implemented from FY2016 with no data available for FY2015

- **Planning Studies**

Costs and volumes were obtained by interrogation SAP data

- **Deeds of Agreement**

Volumes were obtained by interrogation SAP data and project records. Per unit costs were taken from cost modelling from the FY2014-FY2019 submission

- **ASP Investigations**

Costs were obtained from dedicated order number in SAP data and volumes were obtained from business unit records.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

(i) why an estimate was required, including why it was not possible for Ausgrid to provide actual information

In several cases as noted above the required data is not recorded at the level of detail required by this RIN. During FY2015 Ausgrid has taken steps to have record the required detail for future RINs

Depending on the level of detail requested, it was not possible in every instance to break the data down to the lowest required level without an allocation method based on subject matter experts input. In these cases, data was grouped as low as practically available without introducing overall loss of integrity.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

Wherever possible any corporate system data has been utilised to estimate missing data. Where there is no system data available or the data is considered unreliable, the relevant business unit provided valuable input to estimate volume and costs using a bottom up approach.

The relevant business unit provided the required information to ensure Ausgrid's best estimate is [provided in this RIN.

Template 5.2 – Asset age profiles

The information provided in template 5.2 has been completed in accordance with the AER RIN requirements and instructions applying to template 5.2 including Appendix E and F, and the requirements in the worksheet.

Table 5.2.1 – Asset age profile

Demonstrate how the information provided is consistent with the requirements of the Notice

The information in this section is compliant in that actual values are used where possible, and best estimates are provided where actual data is not available.

Explain the source from which Ausgrid obtained the information provided.

The source for the majority of data for this section has been SAP PM (Plant Maintenance). This includes data in categories Poles, Transformers, Switchgear, Public Lighting, SCADA – Field Devices and AFLC, and Other (excluding Meters). Data for Overhead Conductors, Underground Cables, Service Lines, and SCADA – Copper Comms Cable (Communications Linear Assets) lengths has been sourced from Ausgrid's GIS (Geographical Information System) IPART report. Meter quantities have been obtained from the MBS (Metering Business System), as was information to aid the categorisation of service lines as residential or commercial. SCADA – Optical Fibre (Communications Linear Assets) lengths have been sourced from PNI, a Smallworld system containing spatial data for communications assets. SCADA – Master Station Assets information has been sourced from records held containing equipment acquisition data. SCADA – Communications Site Infrastructure information has been retrieved in part from Ausgrid's Technical Drawing Management System (TDMS).

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Poles

To provide the age profile information, an extract was obtained from SAP Business Objects of all commissioned poles, not including those dedicated to public lighting. Whilst data is stored directly against the assets to capture material type, the voltage level at which the pole is commissioned is not retained directly. The data was then processed in MS Access, using other attributes on the poles, to update records to enable them to be placed into the required voltage categories. A query on this database was developed to provide the age profiles as per the required RIN categories.

For the mean and standard deviation of economic life, the population of poles retired/decommissioned during the 3 year period from July 2012 to June 2015 was analysed. As direct attributes for voltage level are not retained, when poles are retired they lose the attributes in the asset system that allow them to be allocated to a voltage. Thus mean and standard deviation for economic life are grouped by material type only.

The primary assumption for data in this category is that approximately half of the pole population has an assumed age based on a suburb age methodology. This is due to the absence of pole discs on most poles pre-1980, and that records of installation were not retained prior to the late 1990's. Whilst this is assumed to provide a relatively good estimate of the global population profile, individual and local population ages can be inaccurate. Additionally, a number of pole records do not have details to be able to categorise them directly into a voltage category. These have been assigned to the <1kV category for the material type applicable.

For 'STAKING OF A WOODEN POLE', this is assumed to refer to the data for poles that have been reinforced with what Ausgrid refers to as a 'nail'. The master data for these assets does not currently contain the date of installation of the nail. However for most assets this can be obtained from the 'notification' data in SAP (ie. the record of work for the 'nailing' activity). The remaining assets for which an installation date cannot be determined has been evenly assigned an installation year between 1997 and 2002, as this is the period for which pole nailing (staking) was in effect in Ausgrid but prior to the installation data being stored within the assets system. For the calculation of economic life, the staked poles retired in the 2014 financial year have been analysed. Assets without an installation date have been assigned the installation date of 1/1/2000, as this is the median date of the assumed installation years, and provides the most accurate average age for each asset .

The raw data has been extracted into MS Access file "Pole profile.mdb", and the summary extracted into file "Staked pole age profile data – data template GG July 2015.xlsx".

Overhead conductors

Data for the age profile is extracted from the GIS system. The “Network Age” 6 monthly extract file is used, specifically the file “ODRC_FINYEAR_2015_NETWORK_AGE_01_07_2015.xlsx” for the data in this RIN response. Using filters on Primary Operating Voltage and Asset Category, the data is allocated to the required RIN categories, with the exception of the Single-phase vs Multiple-phase split required for >11kV & <=22kV.

As the standard “Network Age” data extraction does not currently segregate records by number of phases, for these two categories a separate extraction was obtained from the GIS section to provide this information (contained in file “Length of OH lines By FY.xlsx”). The percentage split between single-phase and multiple-phase for each financial year was then applied to the corresponding data in the “Network Age” file to ensure data usage consistency.

Conductors that has ‘Date Unknown’ in the financial year column in the GIS report has been proportioned between amongst the rest of the years as there are missing conductor information within the Ausgrid network.

Data is not retained for removed conductors to allow for the provision of economic life information based on actual data. And as the renewal of overhead conductors have synergies with the renewal of the supporting structures, the mean and standard deviation for all overhead conductor categories is estimated to be the same as for wood poles.

Underground cables

Data for the age profile is extracted from the GIS system, contained in the file “ODRC_FINYEAR_2015_NETWORK_AGE_01_07_2015.xlsx” for the data in this RIN response. Using filters on Primary Operating Voltage and Asset Category, the data is allocated to the required RIN categories. Data for the ‘Other’ category has been sourced from SAP:BO contained in the file “UG_Cable_–_Others_Category.xlsx”.

Data for economic life mean and standard deviation has been calculated by acquiring a similar report from \ GIS called “Abandoned cables for Std Life calcs.xlsx” by selecting lengths of underground cable that have a status of ‘abandoned’. Further restrictions on the data used are on decommissioning dates between 1/1/2011 and 30/6/2015 and a non-blank commissioning date and decommissioning date. Cable lengths have then been assigned to the relevant category using the ‘voltage’ column. This working sheet data is stored in the file “Abandoned cables for Std Life calcs.xlsx”. A weighted average age and corresponding standard deviation has been calculated in the MS Excel file using derived mathematical equations.UG Cables categorised as ‘Other’ has miscellaneous ancillary assets (ie. Pillars, pits, link boxes etc.) that has an asset group category of DMUG and TMUG which are distribution and transmission underground assets and owned by Ausgrid only.

Service lines

The age profile for service lines was obtained by extracting services from GIS that are not identified as private installations. Where multiple segments of service line supply the one customer, these are still only counted as one service. This information is merged with customer information retrieved from the Metering Business System (MBS) via the National Metering Identifier (NMI) of the supply point connected to the service line. The customer type attributed to the NMI in MBS was then used to classify the service line allowing distinction of those that are for residential or commercial/industrial connections. Commissioning dates attached to the service line in GIS have been used to determine the installation year, however in the absence of data for this the installation data of the corresponding meter in MBS has been used. Where the installation year has been provided as prior to 1911, the count of services has been redistributed proportionately to the years from 1911 to 2000. All service lines have been classified as simple type as the classification of complex type is related to the actions undertaken during the original connection and thus have no relevance to its classification in situ. However the data has been broken down into sub-categories to distinguish overhead and underground services. The data used for the Services is contained in file “–AllServices-August15.xlsx”.

Transformers

To obtain the age profile information, extracts of all commissioned transformers were obtained from SAP PM, including attributes on primary voltage, secondary voltage, type of transformer, phases, installation location and year of first commissioning. Using these attributes each commissioned transformer was then allocated to one of the required categories. This data is stored in files “Dist Txs.xlsx” and “Major Txs.xlsx”.

Similarly for the calculation of economic life mean and standard deviation, an extract was obtained for all retired (disposed) transformers from 1/7/2009 to 30/06/2015, and the same attributes used to assign records to the

categories required in the RIN template. These years have been selected as detailed dates for the retirement of transformers has only been stored against individual asset records since January 2009, and as the categories specified are quite detailed the biggest possible data set is required to maximise the numbers of assets in each category. However for a few Kiosk mounted categories there is still insufficient data to use for these figures. As such the figures for the nearest similar category have been used. For the ground mounted >22kV transformers, due to the low number of retirement in the categories all data has been pooled and a single figure each calculated for mean and standard deviation. The files used for these calculations are "Dist Txs.xlsx" and "Major Txs.xlsx"

The RIN category mapping is obtained by considering data in key SAP substation fields include object type, operating voltage and rated name-plate ratings.

Switchgear

Data has been extracted from SAP for all equipment that would map to the specified categories, or other switchgear categories that have been defined by Ausgrid. This includes attributes such as object type, operating voltage, location, status, commissioning dates and decommissioning dates. Valid records have then been manually mapped to the defined categories using these attributes. Age profiles for each category are then generated by filtering on Commissioned equipment only. For a couple of categories there are a relatively significant number of records without commissioning dates. These numbered have been smoothed proportionately overall years prior to 2012, with the proportion based on the number of assets installed in each year over total assets installed prior to 2012. This is due to the inclusion of data which does not have installation dates populated for assets commissioned prior to 2012.

Data for economic life mean and standard deviation has been obtained using the same data set but filtering on the retired and decommissioned assets only, and where the decommissioned date was between 1/7/2009 and 30/6/2015. Records without commissioning date or decommissioning date, or where decommissioning date <= commissioning date have been removed from the calculations. Standard MS Excel functions for mean and population standard deviation have been used to obtain the required figures. For a couple of categories there is insufficient data to generate a reliable output, so data from another asset category has been used if it is considered that it is representative (eg. only differs by voltage level).

This data is stored in file "Switchgear list for age profile 2015.xlsx"

Public lighting

For age profile information or Luminaires, Lamps and Brackets categories, corresponding data for all commissioned lights (excluding Rate 3 lights) has been extracted from SAP PM (in file "Streetlight Asset Data.xlsx"). This has then been merged with data provided from GIS on major roads to allow the provision of data in the 6 categories required.

For age profile information on Poles, data has been extracted from SAP PM for all commissioned poles that are classified as being solely for public lighting purposes (file "SL Poles for Age Profile.xlsx"). Again this data has been merged with the data provided from GIS on major roads to allow the split between major and minor roads to been supplied.

For the economic life information for the streetlight components (lamps, luminaires, brackets), data from the 2014 Reset RIN has been used, as it is not expected to have changed materially. This data is based on change records in the SAP PM system, however. as the data for the previous installed component is overwritten during the component replacement, database change records were required to be extracted to provide the necessary information. Change record extracts were obtained, for each of the component categories, for those lights identified as having the component changed within the 2015 financial year. The assumptions within this data were that data was not included if the new effective date was the same as the old effective date, and for lamps the data was excluded if the old effective date was prior to 1/7/2009 (as these are considered to be data anomalies as the effective date for lamps during replacement has only been updated after that date). Again this data has been merged with the data provided from GIS on major roads to allow the split between major and minor roads to been supplied. Data with 'Unknown' categories were proportioned between the two categories (Major & Minor).

For economic life information for poles, data has been extracted from SAP BO for all poles that are classified as being solely for public lighting purposes that were retired in the 2015 financial year (file "SL Poles for Standard life info.xlsx"). Again this data has been merged with the data provided from GIS on major roads to allow the split between major and minor roads to been supplied, and standard MS Excel calculations used to generate the required measures. Data with 'Unknown' categories were proportioned between the two categories (Major & Minor).

SCADA, network control and protection systems

Field Devices

Data was obtained from SAP PM for all Relay object types. An age profile was obtained by using all currently commissioned assets. Economic life mean and standard deviation was obtained using the data of assets retired during the 2015 financial year. Data is contained in file “Relay Age Profile – Data Template GG July 2015.xlsx”.

Local Network Wiring Assets

This data was estimated with further explanation in the next section.

Communications Network Assets

This data was estimated with further explanation in the next section.

Master Station Assets

This data was estimated with further explanation in the next section.

Communications Site Infrastructure

This data was estimated with further explanation in the next section.

Communications Linear Assets

The current total length of Optical fibre has been obtained from the PNI database. The profile used in the Reset RIN submission for optical fibre was retained for years up to 2014, but with the total quantity differential being accounted for in the 2015 year. Life and standard deviations are estimated and averaged across a population of approximately 50% ADSS, 25% UGFO and 25% OPGW.

This data is then combined with the copper pilots and communications cable data referred to in the ‘estimates’ section to produce an overall profile and economic life information. Due to the lack of source data and minimal changes for optical fibre component, the standard deviation and mean has been estimated to be similar to the previous financial data.

AFLC

Data was obtained from SAP PM for all MG_SET and SFU object types. An age profile was obtained by using all currently commissioned assets. Economic life mean and standard deviation was obtained using the data of assets retired during the 2015 financial year. Data in contained in file “AFLC Profile – Data Template GG July 2015.xlsx”.

Other

Meters

Data for age profiles of meters has been obtained from MBS, particularly report E50564 - Report 1 - Count of current Meters based on the year of installation. This data extract has been stored in file “2015-07-15 E50564 - Report 1 - Count of current Meters based on the year of installation.xlsx”. Data with phase provided as ‘unknown’ are assumed to be 1-phase. Data for 1-phase meters given with installation year 1920 and prior have been smoothed proportionately across all other years based on the relatively quantity in each year up until (and including) 1979 (as data from 1980 appears to be more consistent).

Economic life data has been obtained from the 2014 reset RIN. As above, this data was sourced from the MBS and contains installation dates and removal dates for removed meters.

Distribution Substations and Zone & Subtransmission Substations

Data for age profiles of this category has been obtained through extracting all commissioned and decommissioned substations from SAP PM (Object types SUB_BASEMT, SUB_BUILD, SUB_KIOSK, SUB_OE, SUB_POLE, SUB_UNDERG or SUB_UPPERL for Distribution. Object types SUB_STS, SUB_ZONE or SUB_STSS for Zone & Subtransmission). Data for economic life mean and standard deviation utilised the data from SAP PM where a decommissioned or retired status had been set, a valid commissioned date and decommissioned date were available, and where the decommissioned date was between 1/7/2009 and 30/6/2015. Data is stored in file “Substation Profile.xlsx”.

Distribution Voltage Regulation

Data for age profiles of this category has been obtained through extracting all commissioned and decommissioned voltage regulators (object type = TX_REGULTR) from SAP PM.

Data for economic life mean and standard deviation utilised the data from SAP PM where the retired status had been set, and a valid commissioned data and decommissioned data were available. Data is stored in file "Regulator Profile.xlsx".

Towers

Data for the age profile has been extracted from SAP PM via Business Object and stored in file "Tower age profile.xlsx".

Data for the economic life mean and standard deviation has been obtained from the "Asset Investment Outcomes" Business Objects Dashboard which calculates the figures using assets retired within the 2009-14 regulatory period.

Global assumptions

- No privately owned assets are included in the data sets.
- Data quantities are correct as of the time of extract. As SAP PM is a live system, subject to continuous update, data cleansing and correction, asset counts are subject to change
- Asset ages are as recorded in the SAP PM system, or other records as appropriate. For many older assets, these ages are derived from associated assets as records for that asset type were not kept (e.g poles). As such there are inherent inaccuracies in this data.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

Poles

Data is not retained on voltage of removed poles to allow for the provision of actual economic life information by voltage. Actual data is used to prepare economic life by material type only.

Overhead conductors

Data is not retained for removed conductors to allow for the provision of economic life information based on actual data.

Service lines

Data is not retained for removed overhead service lines to allow for the provision of economic life information based on actual data.

Transformers

For a few categories, there is insufficient data to use to calculate economic life based on actual figures for the corresponding category.

Switchgear

For 2 categories there is insufficient actual data for removed assets to use the calculated mean and standard deviations for economic life

SCADA, network control and protection systems

Some data in this category is not currently retained in any asset system.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

Poles

Data on economic life is not available by voltage level, only by material type. Actual data is used to develop an economic mean life and standard deviation for each material type, which is then applied to all categories of this material type.

Overhead conductors

As the renewal of overhead conductors have synergies with the renewal of the supporting structures, the mean economic life and standard deviation for all overhead conductor categories is estimated to be the same as the total pole population.

Underground cables

No data exists for abandoned 66kV cables. As such it is considered a best estimate to use the corresponding economic life values calculated for 33kV cables. This is considered satisfactory as these are the most similar types of cables.

Service lines

The mean and standard deviation for economic life of Overhead Services have been estimated using industry knowledge. These estimates are considered reasonable in the absence of actual values and have been used elsewhere in consideration of asset replacement programmes. The Reset RIN 2014 estimate has been used. This estimate was derived as per the description below.

Data for economic life mean and standard deviation of Underground service cables has been obtained for the GIS by selecting lengths of underground cable that have a status of 'abandoned'. Further restrictions on the data used are on decommissioning dates between 1/1/2011 and 31/12/2013 and a non-blank commissioning date. Underground Service cable lengths have then been assigned to the relevant category using the 'voltage' column. This data is stored in the file "Abandoned cables for Std Life calcs.xlsx". A weighted average age and corresponding standard deviation has been calculated in the MS Excel file using derived mathematical equations.

The data for these two different assets has then been combined and using the individual asset counts combined into an overall weighted average age and standard deviation (see file "Calculation of All Services Life Mean and StdDev.xlsx").

Transformers

For the transformer categories that require estimation due to small sample sizes, the most similar category with sufficient data has been used for economic life figures. This is considered a best estimate in that it uses real data for assets that have similar attributes. For ground mounted >22kV transformers the low volumes retired mean when broken down into the individual categories the data can deviate further from average. As such a global average is used across all categories. This is considered a best estimate as it uses real data for similar assets.

Switchgear

For category '> 11 kV & < = 22 kV ; SWITCH' there is insufficient data for calculation of mean and standard deviation of economic life, so the calculated values for '> 22 kV & < = 33 kV ; SWITCH' have been used.

SCADA, network control and protection systems

Local Network Wiring Assets

Local network wiring assets include all secondary wiring in a major substation including power supplies to secondary equipment. Lifetime and standard deviation reflects change-out of major equipment rather than lifetime of the wiring itself. Estimation was done by breaking assets into multicore and single core wire, estimating lengths for each substation based on the 'scaling factor' for each substation, and then applying the substation age to achieve a profile. Then the results for each multi-core and single-core were then summated to achieve a combined profile.

Source data is obtained from DARTS, with substation list and panel information extracted to match against SAP data (start up date) for age profile distribution.

Multicores

Length of multicore cable has been derived from the cable estimate used to construct Leichhardt.
Leichhardt was built with:

- 2x 132 kV feeders
- 3x 132 kV busses
- 6x 11 kV busses
- 2x Transformers

and is estimated to contain 28150 m of multicore cable.
Scaling factors as follows have been applied to take into consideration other sizes of substation:

Sydney typical zone	Leichhardt	
Sydney large zone	2x	Sydney typical zone
Sydney subtransmission station	2x	Sydney typical zone
Newcastle typical zone	2/3x	Sydney typical zone
Newcastle subtransmission station	2x	Sydney typical zone
Newcastle large zone	1x	Sydney typical zone

Single core panel wire
Workshops advise verbally that it takes roughly 200 m of wire to construct a typical freestanding panel.

The number of freestanding panels has been assumed to equal the number of subtransmission protection panels as recorded in DARTS. The preceding assumption means that some panel types are ignored - including VR panels and freestanding 11 kV busbar protection panels.

It has been assumed that each medium voltage (11 kV and 5 kV) breaker contains a similar length of wire to a subtransmission protection panel.

It has been assumed that a distribution substation with protection contains a similar length of wire to three subtransmission protection panels.

This data is held in file “secondary_wiring_AgeProfiles.xls”

After a survey of available information and industry knowledge it is estimated that the economic life mean is 40 years with a standard deviation of 10.

Communications Network Assets

Telecommunications apparatus is estimated on a roll-out of the MPLS network commenced in 2007 which carries SCADA and other traffic, followed by a rollout of teleprotection multiplexer equipment which carries protection signals. A diverse range of devices are used with different lifetimes.

A copy the updated “shelf_quantity_report” can be requested from Ausgrid’s Communications Engineering section to analyse any new assets added during the new financial year.

Master Station Assets

To provide a relevant metric for the master Station, all of the components were identified and the more significant items such as Servers, workstations, Wallboard displays and Networking devices were nominated as assets to be included in the age profile. Asset age was assigned using resident knowledge. The number of significant items will represent the scale of the master station solution as components are replaced or the system size changes.

Economic life mean and standard deviation for the assets in this category have been estimated from typical asset life observed, and considering varied asset with differing life expectancy.

Communications Site Infrastructure

This information has been obtained from a list of Ausgrid radio sites. Year of commissioning is a combination of known refurbishment dates, known original installation dates and estimated installation dates.

Economic life mean and standard deviation for the assets in this category have been estimated utilising typical asset life observed and industry knowledge.

Communications Linear Assets

Copper pilot cable age profiles are based on a conglomerate age profile for UG MV and HV cabling. The profile previously determined in 2012 for the annual RIN has been utilised in conjunction with current information from GIS to determine an appropriate profile. Information from GIS was obtained using the “Network Age” 6 monthly extract file saved as “ODRC_FINYEAR_2015_NETWORK_AGE_01_07_2015.xlsx and using filters on Asset Category (=”Auxiliary Cable”) and Asset Type (contains “CU”). Lengths with a commissioning date prior to 2006 and with an unknown commissioning date have been apportioned over the profile from 2012. Assets with a commissioning date since 2006 utilise actual lengths stored in GIS. The mean and standard deviations have been estimated using industry experience.

A conglomerated age profile is then achieved by combining this set of data with the optical fibre cable length data. A weighted average is used in the calculation of both mean and standard deviation for economic life.

Template 5.3 – Maximum demand and network levels

The information provided in template 5.3 has been completed in accordance with the AER RIN requirements and instructions applying to template 5.3 including Appendix E and F, and the requirements in the worksheet.

Table 5.3.1 – Raw and weather corrected coincident MD and network level

Demonstrate how the information provided is consistent with the requirements of the Notice

All data in table 5.3.1 is provided as actual data from Ausgrid's Base Forecast.

Explain the source from which Ausgrid obtained the information provided.

Data provided in table 5.3.1 is obtained from an aggregation of data from Ausgrid's spatial demand forecast system, which is derived from measurements collated from Ausgrid's SCADA system..

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Ausgrid performs weather normalisation at 10% and 50% POE using simulation technique at the zone substation level on a yearly basis. A base spatial demand forecast is produced each year from the 7 year trend of 10% and 50% POE weather corrected substation loads (adjusted for spots and transfers) for each zone and sub transmission substation.

Raw coincident network maximum demand MW and MVA 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.

Weather corrected 10% and 50% POE network coincident demand is the aggregation of each location's respective weather corrected load with its system diversity factor for that season.

The actual 2014-15 "Embedded generation" value is the generation amount due to rooftop solar power systems at the time of network coincident MD. For solar power systems, the embedded generation adjustments to the network peak demand are calculated based on a combination of the installed rated capacity by zone substation, the date and time of system peak for each zone substation, and the average solar power production profile as a function of rated capacity over a range of summer peak days. STS values are the summation of the adjustments at each respective zone substation.

Embedded generators connected at 33kV, 66kV and 132kV are not included in the "Embedded Generation" total for the following reasons:

- Redbank 132kV generator is embedded in Ausgrid's transmission network, but behaves as a transmission supply to the Singleton 132/66kV transmission connection point. The values for transmission connection point (TCP) data are derived from a summation of the individual TCP nodes as measured at the secondary voltage. These measured values include both the supply from TransGrid and from 132kV connected embedded generators. To avoid double counting, the contribution from the 132kV connected embedded generator is not included in the embedded generation value in Table 5.3.1. Note that Redbank generator was shut down in October 2014.
- Similarly, the generators connected at 33kV and 66kV are embedded in Ausgrid's sub-transmission network and behave as a sub-transmission supply to zone substations. The measured values for zone substation data include both the supply from the upstream source and any embedded generators connected at the primary voltage. To avoid double counting, the contribution from 33kV and 66kV connected embedded generators are not included in the embedded generation value in Table 5.3.1.

Key assumptions include:

- For forecasting purposes, Ausgrid's winter season covers period 1 May – 31 August and in Ausgrid's view it is impractical to divide the winter season across two financial years. Therefore data provided for 2008, for example, covers the calendar period 1 May 2007 – 30 April 2008.

- All load data is obtained from Ausgrid's SCADA system or metering points. All weather data is obtained from Bureau of Meteorology weather stations.
- Ausgrid interprets "transmission connection point" as any "subtransmission substation" and "High Voltage Customer" connected at 132kV within Ausgrid's network.
- A 5 year historical system diversity factor is calculated for all locations based on the location previous five seasons' diversity factors.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.
All information provided in template 5.3 is provided as Actual.

Template 5.4 Maximum demand and utilisation at spatial level

The information provided in template 5.4 has been completed in accordance with the AER RIN requirements and instructions applying to template 5.4 including Appendix E and F, and the requirements in the worksheet.

Table 5.4.1 – Non-coincident & Coincident Maximum Demand

Demonstrate how the information provided is consistent with the requirements of the Notice

All data in Tables 5.4.1 and 5.4.2 is provided as actual data from Ausgrid's Base Forecast.

Explain the source from which Ausgrid obtained the information provided.

Data provided in Tables 5.4.1 and 5.4.2 is obtained from Ausgrid's spatial demand forecast system.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Ausgrid performs weather normalisation at 10% and 50% POE using simulation technique at the zone substation level on a yearly basis. A base spatial demand forecast is produced each year from the 7 year trend of 10% and 50% POE weather corrected substation loads (adjusted for spots and transfers) for each zone and sub transmission substation.

Substation rating (MVA), Raw MW and Raw MVA taken from Ausgrid's spatial demand forecast for each respective historical year. The higher of the summer and winter Raw MW for each year determines the dominant season with the corresponding substation rating, date and time of peak being displayed for that year.

Historical Non-coincident 10% and 50% POE Maximum Demand is the weather normalised load based on the simulation output of the forecast system.

Historical Coincident 10% and 50% POE Maximum Demand is the weather normalised load based on the simulation output of the forecast system multiplied by the corresponding coincidence factor for each respective year.

The "Adjustments – Embedded generation" values are calculated based on a combination of the installed capacity, time of substation and system peak, and generation profile of solar PV generation at each substation. STS values are the summation of the adjustments at each respective zone substation.

Key assumptions include:

- For forecasting purposes, Ausgrid's winter season covers period 1 May – 31 August and in Ausgrid's view it is impractical to divide the winter season across two financial years. Therefore data provided for 2008, for example, covers the calendar period 1 May 2007 – 30 April 2008.
- All load data is obtained from Ausgrid's SCADA system or metering points. All weather data is obtained from Bureau of Meteorology weather stations.
- For any substation that is not commissioned in a particular year, the cell is left blank as instructed.
- Any substation that does not have any historical demand values entered are new substations under construction, and the magnitude of future transfers have not yet been determined and no transfers works have been financially committed.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

All information provided in template 5.4 is provided as Actual.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

All information provided in template 5.4 is provided as Actual.

Template 6.3 Sustained interruptions to supply

The information provided in template 6.3 has been completed in accordance with the AER RIN requirements and instructions applying to template 6.3 including Appendix E and F, and the requirements in the worksheet.

Table 6.3.1 – Sustained interruptions to supply

Demonstrate how the information provided is consistent with the requirements of the Notice

Where possible, Ausgrid has provided information consistent with the requirements of the notice due to technical constraints. The table below summarises the requirements of the notice applicable to table 6.3.1 and demonstrates how the information provided is consistent with the requirements of the notice or where compliance with the requirements is not possible.

Requirement	Comments
Schedule 1, 23.2	Ausgrid calculates reliability metrics differently from Appendix A of the STPIS. Reliability metrics are calculated as follows: STPIS Appendix A, Note 1: All reliability metrics are calculated using daily customer counts. Ausgrid has consistently adopted this approach because average customer counts do not result in stable metrics suitable for trend analysis due to the constant adding, removing and reconfiguring of feeders. (Different) STPIS Appendix A, Note 2: All unmetered supplies are excluded from the calculation of reliability metrics. (Compliant) STPIS Appendix A, Note 3: All active customers are included in the calculation of reliability metrics. All inactive customers are excluded in the calculation of reliability metrics. The following assumptions regarding customer counting have been made: Active = Energised + De-energised Inactive = Extinct = Deactivated De-energised $_{(AER)}$ = Temporary disconnection $_{(AUSGRID)}$ Inactive $_{(AER)}$ = Permanent disconnection $_{(AUSGRID)}$ (Compliant)
Appendix E, 22.1	Table 6.3.1 contains all unplanned sustained interruptions to supply and planned interruptions to supply.
Appendix E, 22.2	Table 6.3.1 contains information consistent with Appendix 22, 22.2.
Appendix E, 22.3	Table 6.3.1 contains information consistent with Appendix 22, 22.3.
Appendix E, 22.4	Table 6.3.1 contains information consistent with Appendix 22, 22.4. Interruptions that are excluded under Clause 3.3 (a) of the STPIS are indicated in the "Reason for interruption" column of table 6.3.1. The Major Event Day Thresholds (T_{MED}) are calculated in accordance with Appendix D of the STPIS for the 2015 regulatory year. Any interruption that occurs on a day where the total unplanned SAIDI (Excluding interruptions specified in Clause 3.3 (a) STPIS) exceeds the specific annual T_{MED}, is marked with a "Y" in the MED column of table 6.3.1. All other interruptions are marked with an "N".
Appendix E, 22.5	Ausgrid has selected reasons from the "Detailed reason for interruption" from the outage event records. The cell where applicable is shaded black, consistent with the requirements of the notice for the detailed reason for interruption.

Explain the source from which Ausgrid obtained the information provided.

Data used to populate table 6.3.1 has been taken from outage event records located in Ausgrid's Outage Management System (OMS) and its related reporting environment.

Final outage event records are manually entered into OMS after outage events. Fields within each record are entered both automatically and manually and are subject to quality assurance checks.

Information for interruptions affecting single premises is sourced from Ausgrid's Customer Aided Service System (CASS). For other network events, supply restoration and other information is recorded by System Operators in the Sydney control room on Interruption Report Forms (blue forms), or by System Operators in the Newcastle control room on Line Impedance Data (LID) system reports, and on switching sheets. This information is reconciled into OMS post event. Following an outage, an Ausgrid officer validates the existing OMS record against the blue form or LID system report and customer call data. If the existing outage event record can be made to accurately reflect interruption details it is completed. Otherwise, the event is recreated in OMS based on switching details such that the record accurately reflects the restoration switching.

OMS outage event records include the following fields:

- Date of event
- Time of interruption
- Time of restoration[1]
- Event trigger
- Number of Customers Interrupted (CI)
- Number of Customer Minutes Interrupted (CMI)
- Feeder ID
- Event Hierarchy
- Exclusion Flag
- Exclusion Reason

OMS automatically calculates CI and CMI by combining the following information:

- Electrical connectivity details from Ausgrid's Graphical Information System (GIS)
- Interruption and restoration steps as recorded by System Operators
- National Metering Identifier (NMI) information from SAP, Customer Care Solution (CCS) and Business to Business (B2B)

The automatic calculation of CI and CMI is based on NMIs and therefore excludes all unmetered supplies. CI and CMI calculations are automatic on the basis of manually entered interruption and switching steps. SAP, CCS and B2B are used to exclude inactive customers (permanently disconnected) from the calculation of CI and CMI.

The reporting environment contains data extracted from OMS that has been cleansed to remove redundant data. Relevant calculations such as SAIDI and SAIFI are also added to records within the reporting environment. The reporting environment facilitates the extraction of information into to a range of Business Objects reports. The reporting environment also contains reference tables developed within the Tool for Oracle Application Developers (TOAD). One reference table contains feeder categorisation on an annual basis.

A report (*AER RIN 2013 – 14 Sustained Interruption to Supply V1.0*) for the 2015 regulatory is generated from the reporting environment on 9/7/2015. Each report contains a list of outage events with the following key attributes:

- Event ID
- Reporting date
- Feeder ID
- Feeder Category
- Event Trigger
- Event Hierarchy

[1] There may be multiple restoration times for customer groups within a single outage event due to staged restoration works.

- CI
- CMI
- Global SAIDI[2]
- Global SAIFI[2]
- Feeder Category SAIDI[2]
- Feeder Category SAIFI[2]

Separate entries appear in the list if a single event affected multiple feeders. The report contains separate sections for unplanned, planned and excluded outage events. The report does not contain momentary interruptions of duration one minute or less.

The source data for planned interruptions is from two databases; LID for the Newcastle control room and Disconnect Reconnect Order System (DAROS) for the Sydney Control Room. For the 2015 regulatory year planned outages from both LID and DAROS were manually entered into OMS.

Explain the methodology Ausgrid used to provide the required information, including any assumptions Ausgrid made

Key elements of the methodology:

The AER RIN 2013 – 14 Sustained Interruption to Supply V1.0 business objects reports are used to populate the cells of table 6.3.1.

The methodology comprises of the following steps:

1. Copy outage event attributes directly from AER RIN 2013 – 14 Sustained Interruption to Supply V1.0 into table 6.3.1 as per the table below:

Outage event attribute	Table 6.3.1 Column
Reporting date	Date of event
Event begin time	Time of interruption
Feeder	Asset ID
Feeder category	Feeder classification
CI	Number of customers affected by interruption
Feeder Category SAIDI	Effect on unplanned SAIDI (by feeder classification)
Feeder Category SAIFI	Effect on unplanned SAIFI[3] (by feeder classification)

2. Determine the reason for interruption and the detailed reason for interruption by looking up the Event trigger from AER RIN 2013 – 14 Sustained Interruption to Supply V1.0 in the mapping table below:

[2] Verified to be calculated in accordance with the assumptions below.
[3] SAIFI is expressed per 0.01 interruptions as per AER requirements.

Event trigger	Event Hierarchy	Reason for	Detailed reason for
Animal Bird		Animal	Animal impact Animal nesting / burrowing, etc and other
Animal Flying Fox		Animal	Animal impact Animal nesting / burrowing, etc and other
Animal Frog		Animal	Animal impact
Animal Goanna		Animal	Animal impact
Animal Insect		Animal	Animal impact
Animal Other		Animal	Animal impact
Animal Possum		Animal	Animal impact
Arcing		Other	Other - Arcing
Burnt Contacts		Asset failure	LV; Distribution substation; HV; Zone substation; Subtransmission
Customer Installation Fault		Third Party	Other
Equipment Failed in Service	LV, Single Customer	Asset failure	LV
Equipment Failed in Service	Single DC	Asset failure	Distribution substation
Equipment Failed in Service	HV	Asset failure	HV
Equipment Failed in Service	Zone Sub	Asset failure	Zone substation
Equipment Failed in Service	Subtransmission	Asset failure	Subtransmission
Excavation Ausgrid Contractor		Network business	Network error
Excavation 3rd Party		Third Party	Dig-in
Excavation Ausgrid Staff		Network business	Network error
Fire (Non Ausgrid)		Third Party	Fire
Fire (non-electrical)		Third Party	Fire
Lightning Strike		Weather	
Load Shed - Ausgrid		Other	
O/H Conductor Wind Related		Weather	
OTHER - REFER COMMENTS		Other	
Overload		Overloads	
Overload LV Parallel		Network business	Network error
Overload Operational		Network business	Switching and protection error
Planned Outage		Planned	
Self Clear (No Cause Found)		Other	Other - Self Clearing Trigger
Staff Operation		Network business	Switching and protection error
Staff Other		Network business	Network error
Telco Fault		Third Party	Other
Vandalism		Third Party	Unauthorised access
Vegetation Blow/Fall in		Vegetation	Blow-in/Fall-in - NSP responsibility
Vegetation Cut Down 3rd Party		Third Party	Other
Vegetation Cut Down		Network business	Network error
Vegetation Grow in		Vegetation	Grow-in - NSP responsibility
Wind Blown Debris		Weather	
3rd Party Action		Third Party	Other
3rd Party Vehicle		Third Party	Vehicle impact

3. Calculate the "Average duration of sustained interruption" by dividing CMI by CI for each line in *AER RIN 2013 – 14 Sustained Interruption to Supply V1.0*. Copy into table 6.3.1.

4. Calculate the daily total SAIDI (excluding interruptions as per STPIS Clause 3.3 (a)) for the period spanning 1/7/2014 to 30/6/2015 by summing the "Effect on unplanned SAIDI (global SAIDI)" column in table 6.3.1.

5. Using the data from in the April 2014 Reset RIN for 2009/10 to 2012/13 and 2013/14 data from Business Objects report 02_01 Monthly and Daily Reporting - Global Ver 15.3 (report run on 22 July 2014), see Step 4 above and additional data from table 6.4.1 (Major event Day data); calculate the 2015 Major Event Day Threshold (T_{MED}) in accordance with STPIS Appendix D.
6. For all entries where the "Date of event" in table 6.3.1 corresponds to a day where the daily SAIDI from Step 4 exceeds the T_{MED} for the appropriate financial year calculated in Step 5; fill the "MED" column with "Y". For all other entries fill the "MED" column with "N".
7. Complete the "Reason for interruption" column for excluded events separately by referring to the exclusion reason in the outage event record.

Key assumptions used in methodology:

1. All outage event attributes are correctly entered in OMS
2. Feeder category reference tables are accurate.
3. The NMI connectivity details in GIS are correct at the time of outages, or that any errors are managed through manual processes to determine the actual customers affected by an event, or by holding out outage event records in the OUTAGES_NOT_IN_OMS table until GIS updates are received.
4. All unmetered customers are excluded from calculations.
5. All SAIDI and SAIFI calculations are performed using daily customer counts. Ausgrid has consistently adopted this approach for the calculation of all reliability metrics because average customer counts do not result in stable metrics suitable for trend analysis due to the constant adding, removing and reconfiguring of feeders.
6. All active customers are included in the calculation of reliability metrics. All inactive customers are excluded in the calculation of reliability metrics. The following assumptions regarding customer counting have been made:

   Active = Energised + De-energised

   Inactive = Extinct = Deactivated

   De-energised (AER) = Temporary disconnection (AUSGRID)

   Inactive (AER) = Permanent disconnection (AUSGRID)
7. All customers connected to a three phase low voltage supply are interrupted for the entire duration of an event. This approach is adopted because the accurate determination of customers connected to each phase of a low voltage supply is currently not possible.

Explain circumstances where Ausgrid cannot provide input for a variable using actual information, and therefore must provide estimated information:

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

Nil.

(ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid's best estimate, given the information sought in the Notice.

Nil.