Basis of Preparation

Response to Reset Regulatory Information Notice

Submission date 30 May 2014

Contents

List of attachments

Requirement	Description	Reference
Clause 1.12 Appendix E	Reconciliation requirement.	**RIN attachment Appendix E clause 1.12**
Template 2.7 Vegetation management	Compliance audits of vegetation management work conducted by Ausgrid during the current regulatory control period;	**RIN attachment 2.7 audits**
Template 2.7 Vegetation management	List of regulations that impose a material cost on performing *vegetation management* works (including, but is not limited to, bushfire mitigation regulations);	**RIN attachment 2.7 regulations; standards; costs 27 March**
Template 2.7 Vegetation management	List any of self-imposed standards from Ausgrid's *vegetation management* program which apply to that zone; and	**RIN attachment 2.7 regulations; standards; costs 27 March**
Template 2.7 Vegetation management	An explanation of the cost impact of regulations and self-imposed standards on performing *vegetation management* work.	**RIN attachment 2.7 regulations; standards; costs 27 March**

Purpose

On 7 March 2014, the Australian Energy Regulator (AER) issued a Regulatory Information Notice (Reset RIN) to Ausgrid under Division 4 of Part 3 of the *National Electricity (New South Wales) Law* (NEL). The Reset RIN requires Ausgrid to provide and to prepare and maintain the information in the manner and form specified in the Reset 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 Reset RIN, Ausgrid is required to provide a Basis of Preparation (for information other than Forecast Information. The Basis of Preparation is to be provided in accordance with the Reset 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 Reset RIN, Ausgrid must explain, for all information in the category data (historic) 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 Reset RIN.

The AER has set out the minimum requirements in the Basis is 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 Reset 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 , for information other than Forecast Information (except for Template 2.14) 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'.

1 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.

1.1 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 excluding capital contributions (capcons) in the table is in accordance with the annual audited Statutory and Regulatory Financial Statements as well as Ausgrid's Cost Allocation Methodology (CAM). Ausgrid prepares Standard Control Services Annual Regulatory Statements 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. The Regulatory Financial Statements include Standard Control Services (Distribution) and Standard Control Services (Transmission).

Explain the source from which Ausgrid obtained the information provided.

Source of information for this template are:

- Replacement Expenditure is obtained from table 2.2.1 'Replacement Expenditure, Volumes and Asset Failures by Asset Category' by the addition of all asset group stated for FY2008/09 to FY2012/13. Note this excludes Replacement capex expenditure relating to Public Lighting reported in rows 133 to 140.
- Connections capex is obtained from table 2.5.2 'Cost metrics by connection classification' by the addition of all the connection subcategories for the relevant financial year from 2008/09 to 2012/13.
- Augmentation Expenditures is obtained from table 2.3.4 'Augex data – total expenditure' by the addition of all the augmentation capex categories for the relevant financial year from 2008/09 to 2012/13.
- Non-network expenditure is obtained from table 2.6.1 'Non-Network Expenditure' by the addition of all service subcategory relating to capex for the relevant financial year from 2008/09 to 2012/13.
- Capitalised network overheads is obtained from table 2.10.1 'Network Overheads Expenditure' by the addition of capitalised network overheads in row 31 to 36 for the relevant financial year from 2008/09 to 2012/13.
- Capitalised corporate overheads is obtained from table 2.10.2 'Network Overheads Expenditure' by the addition of capitalised network overheads in row 73 to 86 for the relevant financial year from 2008/09 to 2012/13. This represents Ausgrid's total capitalised overheads as explained in basis of preparation for table 2.10.
- The Balancing item includes capital contributions and capital expenditure allocated to the unregulated and alternative control services (eg. in corporate overheads) and other capital expenditure not itemised in the above classifications.
- 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 excluding capcons for the Standard Control business reported in template 2.1.1 has been prepared for all regulatory years in accordance with Ausgrid's CAM and aligns to the total capex reported in Annual Reporting Requirements for each financial year from FY2008/09 to FY2012/13.

The 'balancing item' is the total balance per submitted Regulatory accounts less the information derived from the forward worksheets in addition to the capital contributions. The balancing items represents capital contributions, capitalised network and corporate overheads which overlap with the other categories reported in table 2.1.1 itself and other capital expenditure balances.

The capital contribution obtained using SAP system is 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;

(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.

1.2 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 the tables is derived from other worksheets. The total opex in the table is in accordance with the annual audited Statutory and Regulatory financial statements as well as Ausgrid's Cost Allocation Methodology (CAM). Ausgrid prepares Standard Control Services Annual Regulatory Statements 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. The Regulatory Financial Statements include Standard Control Services (Distribution) and Standard Control Services (Transmission).

Explain the source from which Ausgrid obtained the information provided.

Source of information:

- Vegetation management opex is obtained from table 2.7.2 'Expenditure metrics by zone' by the addition of all the zone 1 from row 11 to 19 for the relevant financial year from 2008/09 to 2012/13.
- 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 for the relevant financial year from 2008/09 to 2012/13. Note this excludes maintenance opex relating to Public Lighting maintenance in row 400 and 401 and the double counting of reporting for Network Underground Cables in rows 27 to 30.
- Emergency Response opex is obtained from table 2.9.1 'Emergency Response expenditure' in row 11 for the relevant financial year from 2008/09 to 2012/13.
- Non-network expenditure is obtained from table 2.6.1 'Non-Network Expenditure' by the addition of all service subcategory relating to opex only for the relevant financial year from 2008/09 to 2012/13.
- Network and Corporate overheads are obtained from table 2.12 'Input tables' in row 32 and 33 respectively for the relevant financial year from 2008/09 to 2012/13 by the addition of the following columns:
    - Direct material costs
    - Direct labour costs
    - Contract cost
    - Other cost.

The 'balancing item' is the total balance per submitted Regulatory accounts less the information derived from the worksheets. The balancing items represent capitalised network and corporate overheads which overlap with the other categories reported in table 2.1.2 offset by indirect costs not reported in the worksheets.

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 all Regulatory years in accordance with Ausgrid's CAM and aligns to the total opex reported in Annual Reporting Requirements for each financial year from FY2008/09 to FY2012/13.

Total Opex reported in table 2.1.2 also aligns to total opex reported in the Economic Benchmarking RIN for FY 2008/09 to FY2012/13.

The 'balancing item' is the total balance per submitted Regulatory accounts less the information derived from the worksheets. The balancing items represent capitalised network and corporate overheads which overlap with the other categories reported in table 2.1.2 offset by indirect costs not reported in the worksheets.

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.

1.3 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 totals in the tables are in accordance with the Annual Audited Statutory and Regulatory Financial Statements as well as Ausgrid's Cost Allocation Methodology (CAM). Ausgrid prepares Standard Control Services Annual Regulatory Statements 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. The Regulatory Financial Statements include Standard Control Services (Distribution) and Standard Control Services (Transmission).

Explain the source from which Ausgrid obtained the information provided.

Alternative Control Services capex is from table 4.1.2 'Public Lighting Descriptor Matrix' table row 124 and 128 for the relevant financial year from 2008/09 to 2012/13. These numbers also align with annual regulatory reports submitted.

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;

(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.

1.4 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 tables is derived from other worksheets. The totals in the tables are in accordance with the annual audited Statutory and Regulatory Financial Statements as well as Ausgrid's Cost CAM. Ausgrid prepares Standard Control Services Annual Regulatory Statements 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. The Regulatory Financial Statements include Standard Control Services (Distribution) and Standard Control Services (Transmission).

Explain the source from which Ausgrid obtained the information provided.

Alternative Control Services opex is from table 4.1.2 'Public Lighting Descriptor Matrix' table row 132 for the relevant financial year from 2008/09 to 2012/13. The opex number aligns with annual regulatory reports and the Economic benchmarking RIN.

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;

(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.

1.5 Table 2.1.5 - Dual function assets 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 totals in the tables are in accordance with the annual audited Statutory and Regulatory Financial Statements as well as Ausgrid's CAM. Ausgrid prepares Standard Control Services Annual Regulatory Statements 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. The Regulatory Financial Statements include Standard Control Services (Distribution) and Standard Control Services (Transmission).

Explain the source from which Ausgrid obtained the information provided.

Dual function asset capex reported in table 2.1.5 is Standard Control Services capex reported in table 2.1.1 multiplied by the Transmission capex percentage (described in the methodology section below). The Capital Contribution number reported in table 2.1.5 is from the annual Regulatory Accounts.

The 'balancing item' is the total balance per submitted Regulatory accounts less the information derived from the above classifications and includes capital contributions (where relevant). The balancing items represent capitalised network and corporate overheads which overlap with the other categories reported.

Total Gross Capex (including capcons) in table 2.1.5 also aligns with the submitted annual Regulatory accounts for each relevant year.

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

Dual function asset capex reported in table 2.1.5 is calculated based on numbers reported in table 2.1.1 for Standard Control Services, multiplied by the Transmission capex percentage for each financial year from 2008/09 to 2012/13.

For the Reset RIN purposes, the Transmission capex percentage is a portion of Transmission capex over total Transmission and Distribution capex.

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 table 2.1.5 aligns with our Cost Allocation Methodology. The total gross capex aligns with the Regulatory Accounts.

1.6 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 Regulatory Financial Statements as well as Ausgrid's CAM. Ausgrid prepares Standard Control Services Annual Regulatory Statements 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. The Regulatory Financial Statements include Standard Control Services (Distribution) and Standard Control Services (Transmission).

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).

The 'balancing item' is the total balance per submitted Regulatory accounts less the information derived from the above classifications. The balancing items represent capitalised network and corporate overheads which overlap with the other categories reported.

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 capex percentage for each financial year from 2008/09 to 2012/13.

For the Reset RIN purposes, the Transmission opex percentage is a portion of Transmission opex over total Transmission and Distribution opex.

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 is aligns with our CAM. The total opex aligns with the Regulatory Accounts.

2 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.

2.1 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 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 road and minor road	**Expenditure:** **FY2009-14** - 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. **FY2015-19** - Estimates based on forecast replacement programs and historical usage

	Asset Replacements: **FY2009-14** – Actual figures from SAP PM **FY2015-19** - Are Estimates based on forecast replacement programs and historical usage
Lamps – major roads	Expenditure: is based on the operating expenditure (opex) cost associated with all major road light maintenance from table 4.1.2 for each individual year. 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 for each individual year. 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 regulatory identifiers associated with capital expenditure (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 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.

For historical information, actual values were provided by the extract, including negative results, direct from the system. Forecast expenditure and replacement volumes are based on the anticipated programs that are proposed for the 2015-19 regulatory period, as detailed in our regulatory proposal. Full details of the proposed expenditure and forecast level of replacement can be obtained by referencing Ausgrid's regulatory proposal.

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. Future years' material and labour costs have been increased by CPI (2.5%). The table below summarises the FY2014 average material and labour costs that have been used. The justification of the build-up of these costs are based on a report that presents the methodology and results of calculating maintenance costs for publiclights 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

All tables can be broken into past values from 2008/09 to 20013/14 and future values from 2014/15 to 2018/19. Where possible actual data has been used for past values and future values are best estimates based on forecasts.

(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. This data was then apportioned to the relevant asset category by volume of installed assets year on year, based on historical actuals. Forecast information on expenditure and asset replacements were apportioned based on 13/14 data.

For installed assets:

- Pole asset failure information is provided based on historical record.
- Total poles by feeder type were obtained from our GIS system. 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 materials price 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.

2.2 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 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 and previous financial years, an extract was obtained from SAP detailing these aspects for all regulatory 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.

For historical information, actual values were provided by the extract, including negative results, direct from the system. Forecast expenditure and replacement volumes are based on the anticipated programs that are proposed for the 2015-19 regulatory period, as detailed in our regulatory proposal due for submission later this year. Full details of the proposed expenditure and forecast level of replacement can be obtained by referencing these documents

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. This data was then apportioned to the relevant asset category by volume of installed assets year on year, based on historical actuals. Forecast information on expenditure and asset replacements were apportioned based on 13/14 data.

For installed assets:

- Pole asset failure information is provided based on historical record.
- Total poles by feeder type were obtained from our GIS system. 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 materials price 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.

3 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.

3.1 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

1. 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;
2. 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;
3. System Diagrams 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 1. For network projects with expenditure within FY2010-19, 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, 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, only the expenditure of the substation component will be included. However, for a project with no subtransmission line components, any associated distribution work to enable the commissioning of the substation will be included (ie. 11kV connection expenditures).

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).

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

1. Transformers expenditure (exclude distribution, auxiliary and earthing transformers);
2. Switchgear expenditure (include primary switchgears on both the high and low side of the substation);
3. Capacitors expenditure (for capacitors within the substations that offer capacitive and voltage support);
4. Other plant item expenditure (based on the total 'Material' booked to the project minus item 1, 2 & 3 above);
5. Installation labour expenditure (uses the 'Labour-Direct' cost element of the project);
6. Installation labour volume (uses associated labour component in project system and payroll);
7. Easements expenditure (usually booked against the project itself);
8. Civil works expenditure (based on the total 'Contract Services' booked to the project minus item 7 above);

9. Other direct expenditure (uses the 'Other-Direct' cost element of the project);

10. Land Purchase expenditure (from a separate report as land is booked separately from the project).

Note:

- *Item 1, 2 & 3 above is based on separate reports that itemises the materials booked to the project more accurately.*
- *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;

1. 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;
2. For projects not yet authorised, the expected 'material' expenditure at the asset category level is used;
3. Installation Labour expenditure is determined by peeling out the direct costs component of the expected expenditure using historical cost allocation;
4. 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) derived from similar completed projects in FY2010-14;
5. Civil Works expenditure (based on 'Contract Services' cost element);
6. Other Direct expenditure (assumed to be included as part of item 5 above).

Note:

- *Any project with an expected completion date of FY2014 is assumed to have no further expenditure.*
- *All monetary figures provided in Step 5 are in Real $2013/14.*
- *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;

1. Transformers units added (based on material booked to the project and checked against the system diagrams);
2. Transformers MVA added (based on information from system diagrams);
3. Switchgear units added (based on material booked to the project and checked against the system diagrams);
4. Capacitors MVAR added (based on information from system diagrams);
5. 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.

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

1. 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.
2. 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.
3. Any expected forecast expenditure 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

1. 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 (ie. 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.
2. 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.
3. 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 item 2 above (all associated with forecast expenditures):

- Since indirect costs (ie. Indirect Labour and Indirect Other) are imbedded 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.
- Installation labour volume is determined using the indirect labour derived above and dividing it by the average unit rate of direct labour ($/man hour) derived from similar completed projects in FY2010-14. 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.

3.2 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.

1. 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;
2. 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;
3. GIS Transmission Feeder Reports for actual asset quantum;
4. 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

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).

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

1. 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);
2. Installation labour expenditure (uses the 'Labour-Direct' cost element of the project);
3. Installation labour volume (uses associated labour component in project system and payroll);
4. Easements expenditure (usually booked against the project itself);
5. Civil works expenditure (based on the total 'Contract Services' booked to the project minus item 4 above);
6. Other direct expenditure (uses the 'Other-Direct' cost element of the project);
7. 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:

1. 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;
2. For projects not yet authorised, the expected 'material' expenditure at the asset category level is used;
3. Installation Labour expenditure is determined by peeling out the direct costs component of the expected expenditure using historical cost allocation;
4. 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) derived from similar completed projects in FY2010-14;
5. Civil works expenditure (based on 'Contract Services' cost element);
6. Other direct expenditure (assumed to be included as part of item 5 above).

Note:

- *Any project with an expected completion date of FY2014 is assumed to have no further expenditure.*
- *All monetary figures provided in Step 5 are in Real $2013/14.*
- *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;

1. Underground Circuit KM Added (for actual use GIS data and for expected use Project Offer or Forecast System data);

2. Overhead Lines Circuit KM Added (for actual use GIS data and for expected use Project Offer or Forecast System data);
3. Poles/Towers Added (is based item 2 above divided by an average span length of 75m);
4. Route Line Length Added (based on subject matter expert investigations and advice);
5. 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.

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:

1. 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.
2. 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.
3. Any expected forecast expenditure is by nature an estimate.
4. 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.
5. 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.
6. 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.
7. 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.

(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:

1. 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 (ie. incremental capacity methodology). It is deemed that this is the only method that satisfies the regulatory investment test under chapter 5 of the NER.
2. 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.
3. 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 item 2 above:

- Since indirect costs (ie. 'Indirect Labour' and 'Indirect Other') are imbedded 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) derived from similar completed projects for FY2010-14. 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.

3.3 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 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.

The information sources are from:

1. **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 date sourced from GIS reports, actual project commissioning date also sourced from SAP BI. Forecast commissioning date OH lines marked as "Proposed" to occur in 2013/14 and 2014/15.
2. **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 also sourced from SAP BI. Forecast commissioning date UG Cables marked as "Proposed" to occur in 2013/14 and 2014/15.
3. **HV Feeder Augmentations** – Overhead Lines and Underground Cables: Actual spend per fiscal year for each 11kV capacity project was obtained from SAP and BI.
4. SAP BI reports of the forecasting system is the primary source for yet to be authorised expected expenditures, asset quantum and allocations requirements when historical information isn't readily available;

HV Projects

1. List of Feeders, Feeder Type, Originating Substation, Line Lengths (Actual):

Actual information sourced from quarterly feeder reliability classification spreadsheets from 2012/13 and 2008/09. These spreadsheets are based on actual data from SCADA (Load), and GIS (List of feeders, Originating Substation, Line Lengths).

2. Voltage Level (Estimated):

Originating Substation dictates the supply voltage of the HV feeder. Every HV feeder operates at a nominal voltage of 11kV except for Camperdown and Blackwattle Bay which operate at 5kV. Typically, voltage at the zone substation fluctuates between ±6% of the nominal voltage. 11kV feeders are estimated at 11.0kV. 5kV feeders are estimated at 5.0kV.

3. Maximum Demand (WC 50% POE MVA and MW) – both 2008/9 and 2012/13 (Actual w/Correction Factor):

Sydney and Central Coast (CC): Load data sourced from SCADA (in Amps). Weather correction 50%POE factors sourced from Demand Management Group. MW calculated from power factor sourced from Demand Management Group.

Hunter: load data sourced from historic feeder forecasts. The original data was sourced from SCADA (in Amps), metering data and estimated values. Weather correction 50%POE factors sourced from demand management. MW calculated from power factor sourced from demand management.

4. Feeder Thermal and Operational Ratings (Actual + Estimated when Actual is unavailable):

Ausgrid uses cyclic rating for planning purposes. The cyclic rating has been considered as the Thermal rating.

- Sydney: Actual ratings sourced from Ratings Impedance Calculator (RIC)
- Hunter: The rating data was sourced from historic feeder forecasts. The original data was sourced from Line Impedance Data (LID).

When data was unavailable in Sydney/CC, actual rating was sourced from historical Systems Diagrams.

When data was unavailable in the Hunter, missing rating data was estimated taking into consideration the rating of previous and forecast years.

The operational ratings are applicable only to the CBD HV Feeders and have been estimated based on applying a factor of 2/3 to the thermal rating (sourced as above).

5. ***2011-12 to 18-19 Growth Rate (Forecast):***

Zone Substation growth rate sourced from Sub-transmission Planning.

6. ***Average Unit Cost $/MVA (Calculated from Actual Data):***

- Calculated from actual project data from 161 HV feeder augmentation projects (DNPs) issued between 2008/09 to 2013/14.
- Project financials sourced from SAP BI.
- Capacity increased sourced from DNP Design Briefs, historical System Diagrams (Sydney) and annual feeder records (Hunter).

7. **Capacity Factor (Calculated from Actual Data): Calculated from data from 161 HV feeder augmentation projects (DNPs) issued between 2008/09 to 2013/14.**

Historical System Diagrams used to determine capacity at the time augmentation was proposed.

"Proposed" System Diagrams in DNP Design Briefs used to determine the proposed capacity.

8. ***Mean value and Standard Deviation of Utilisation Threshold (Estimated):***

Calculated from data from 161 HV feeder augmentation projects (DNPs) issued between 2008/09 to 2013/14.

Historical System Diagrams used to determine the utilisation of the feeders targeted for augmentation. Estimation takes place when the utilisation of feeders in a project is averaged to come up with a "Project Utilisation Threshold".

9. ***Forecast Network Segment Data (Forecast):***

Sourced from historical Network Segment Data, with forecasted Utilisation Thresholds.

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 report identified the substations with a commissioned date within the 2009-2014 regulatory period including any asset information required to apportion this data across the nominated asset categories.

The asset quantities for the 2008/09 financial year that were not able to be accurately reported as this period coincided with the introductions of the ERP SAP system. 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 2008/09 financial year.

The asset quantities for the as yet incomplete 2013/14 financial year are based on the actual quantities at the time of the report generation scaled according to the actual vs. forecast programme spend.

The data required for RIN table 2.3.3.2 was generated using the costs booked to the Distribution Substation Capacity (SY.01.03) programme split by financial year for the 2008-2014 period (2014 values based on forecast spend).

LV Feeder Augmentations

The information required by RIN table 2.3.3.1 of LV feeder lengths added and upgraded in km was derived from Ausgrid's GIS records of commissioned conductors, split by conductor types to show LV feeder conductors only and linked to the year the conductor was commissioned in GIS.

The asset quantities for the as yet incomplete 2013/14 financial year are based on the actual quantities at the time of the report generation scaled according to the actual vs. forecast programme spend.

The data required for RIN table 2.3.3.2 was generated using the costs booked to the Distribution System Capacity (SY.01.04) programme split by financial year for the 2009-2014 period (2014 values based on forecast spend).

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

Forecast HV Projects

The method used to provide the required information involved:

Step 1. A report of all 11kV capacity projects undertaken in the 09-14 period and their Projtrak numbers was extracted from SAP BI.

Step 2. For Descriptor Metrics (table 2.3.3.1), a report was obtained from the GIS Group detailing all OH Lines and UG Cables that were input into GIS with an attached 11kV capacity Projtrak number. Each cable/line has proposed/completed status with commissioning date.

Step 3. Cross check with SAP BI project completion data shows GIS has data lag, i.e. numerous cables/lines marked as "Proposed" when the project was already complete. It was assumed these cables/lines were installed and they were included in the cables/lines added calculation. It is also assumed that there would be cables/lines have been installed, but since the whole project is yet to be completed they cannot be identified as "Complete". These cables were left as "Proposed".

Step 4. After accounting for GIS data lag, there was 102km of UG cables and 49km of OH lines that are "Proposed" and they have been scheduled for completion with 40% in 2013/14 and 60% in 2014/15.

Step 5. Forecast asset quantum values are sourced directly from the forecasting system.

Step 6. For Cost Metrics (table 2.3.3.2): The total actual project expenditure per fiscal year was obtained from SAP and BI. It was assumed that the fiscal year in SAP corresponds to the later year of any given financial year in this table (i.e. 2009 fiscal year in SAP corresponds to the 2008/09 financial year).

Step 7. HV feeder augmentations – underground cables total actual expenditure per FY: The total spend on UG cables per FY was obtained by using the weighted average of the total length of UG cables compared with OH lines installed per FY, and multiplying by the total combined spend in that FY. An additional factor was applied to cater for the higher unit rate for installation of a new UG HV cables compared to that of a new OH HV line. The current unit rate for installation of a new UG HV cable is approximately six times greater than that of a new OH HV line of the same length based on their average generic planning estimates.

Step 8. HV feeder augmentations – overhead lines total actual expenditure per FY: The total spend on OH lines per FY was obtained by using the weighted average of the total length of OH lines compared with UG cables installed per FY, and multiplying by the total combined spend in that FY. An additional factor was applied to cater for the higher unit rate for installation of a new UG HV cables compared to that of a new OH HV line. The current unit rate for installation of a new UG HV cable is approximately six times greater than that of a new OH HV line of the same length based on their average generic planning estimates.

Step 9. Forecast expenditure values are sourced directly from the forecasting system.

Note:

- *All monetary figures provided in Step 6, 7, and 8 are as incurred (ie. Nominal $).*
- *All monetary figures provided in Step 9 are in Real $2013/14.*

Historical HV Projects

1. ***List of Feeders, Feeder Type, Originating Substation, Line Lengths:***

Requested feeder categorisation spreadsheets from 2008/09 and 2012/13 from Reliability Group.

Assumption: Double-Banked Feeder legs are equal lengths. GIS only has data on the sum of both legs.

Assumption: Feeder lengths in 2008/09 in Sydney CBD Zones are equal to the feeder lengths in 2012/13. 2008/09 Sydney CBD feeder lengths were unavailable.

Assumption: The sum of lengths of Old City North Zone in 2008/09 is equal to the sum of lengths of New City North Zone in 2012/13. Further, the lengths of the each feeder in 2008/09 City North Zone are equal. Old City North Zone feeder lengths are unavailable, and feeder names have changed.

2. ***Voltage Level:***

11kV feeders are estimated as 11.0kV. 5kV feeders are estimated as 5.0kV.

3. ***Maximum Demand (WC 50% POE MVA and MW) – both 2008/9 and 2012/13:***

Sydney and CC: Extracted both summer and winter raw non-coincidental peaks from SCADA (in Amps).

Applied Weather correction 50%POE factors from demand management.

Converted to MVA.

Multiplied MVA by power factor from demand management to obtain MW.

Assumption: Network wide abnormal conditions accounted for by weather correction.

Assumption: The impact of localised abnormal conditions is negligible across a whole network segment in the Augex Model.

Hunter: Maximum Demand extracted from SCADA annually at the end of summer (in Amps). This data is archived and was used to populate this RIN.

Converted to MVA.

Multiplied MVA by power factor from demand management to obtain MW.

Note: In the Hunter, abnormal conditions are accounted for with loads manually amended or filtered.

Assumption: Summer is the peak season.

4. ***Feeder Ratings:***

Sydney: Actual ratings (Amps) sourced from Ratings Impedance Calculator (RIC). Manually checked for accuracy.

Converted to MVA.

When data was unavailable in Sydney/CC, actual rating was sourced from historical Systems Diagrams.

Hunter: Actual ratings sourced from Line Impedance Data (LID) each year and archived. The archived information is used to populate this RIN.

Manually checked for accuracy.

Assumption: When rating is unavailable, the feeder is given the same rating as the year before or after.

Ratings are based on Ausgrid's standard rating rules and policies.

Ratings are also based on manufacturer's data with adjustments to account of operational factors.

There a small number of manually rated with IEC Standard 60287.

Ausgrid has considered the cyclic rating to be equivalent to the thermal rating requested in table 2.4.2. Ausgrid only utilises operational ratings for the HV feeders in the Sydney CBD triplex network which are designed with an N-1 security standard. The operational rating of the Sydney CBD HV feeders has been estimated by applying a factor of two thirds to the **thermal rating of each feeder.**

5. ***2011-12 to 2018-19 Growth Rate:***

Zone Substation growth rate sourced from Sub-transmission Planning.

Note: A weighted average (by feeder capacity) should be calculated for each network segment, but there is no field in the RIN template for this information.

Assumption: Each feeder is assigned the growth rate of its originating substation.

6. ***Average Unit Cost ($/MVA):***

Analysed the DNP Development Briefs of 161 HV feeder augmentation projects and extracted the planning estimate, existing capacity, proposed capacity for each project.

Project status and actual expenditures were extracted from SAP BI reports.

Projects are segmented according to network segment.

$/MVA was calculated by the sum of the expenditure in the network segment and divided by the sum of the increase in capacity. If a project is "Closed" then actual expenditure was used, if a project remains "Released" then Planning Estimate was used.

Note: Only feeders that underwent augmentation are included in the calculations.

Assumption: The cost of non-trunk augmentations with zero capacity increase absorbed into the Average Unit Cost (AER Augex Model Handbook Section 5.1.3).

7. ***Capacity Factor***

Analysed the DNP Development Briefs of 161 HV feeder augmentation projects and extracted the existing capacity and proposed capacity for each project.

Capacity Factor was calculated for each project.

Projects are segmented according to network segment.

Weighted average of capacity factor calculated for each segment weighted by the planning estimate of the project.

Note: Only feeders that underwent augmentation are included in the calculations.

8. ***Utilisation Threshold***

Analysed the DNP Development Briefs of 161 HV feeder augmentation projects and extracted the utilisation of feeders at the time of proposal.

The utilisation of each feeder augmented in the project was averaged to obtain a project utilisation threshold.

Projects are segmented according to network segment.

Weighted average of project utilisation threshold was calculated for each segment weighted by the planning estimate of the project.

Note: Only feeders that underwent augmentation are included in the calculations.

Assumption: Each feeder augmented in a project has equal contribution to the project average utilisation threshold. Breakdown of cost by the feeder is unavailable.

9. ***Forecast Network Segment Data (Forecast):***

It is assumed that the characteristics of the network, and the way Ausgrid performs augmentation work is not going to experience dramatic changes. Therefore unit cost and capacity factor were left unchanged from historical value.

All changes are modelled by adjusting the utilisation threshold.

In urban areas, it is assumed that a higher unit cost will account for N-1 and non-trunk augmentation. (AER Augex Model Handbook 5.1.3).

- CBD: 66% (Planning Policy N-1)
- Urban: 75% (25% margin before N overload occurs)
- Short Rural: 80% (20% margin before N overload occurs)
- Long Rural: 100% (take the risk of overloading).

The method described above has the advantage of having a simple and sound logical basis.

In reality, unit cost, capacity factor and utilisation threshold are all likely to change; they all have cause and effect on each other and the forecast outcome.

Perhaps after several cycles of the Augex model, an understanding on the behaviour of planning parameters can be gained.

Distribution Substations

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

1. 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).
2. 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 data in RIN table 2.3.3.2 splits the Distribution System Capacity (SY.01.04) programme cost across the overhead and underground categories based on the relative cost of delivery of projects and the quantities added and upgraded in each category during the period 2009-2013.

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;

Forecast HV Projects

1. There is a lag or miss in the updating of GIS data for many projects. Estimation is required to include completed cables yet to be captured in GIS data.
2. Estimation is required to forecast the lengths of cables/lines to be completed in 2013/14 and beyond.
3. Estimation of the split in spend per FY for additional HV UG cables and HV OH lines is required due to the lack of actual detailed recordings and resources in order to determine the cost of each individually.
4. Any expected forecast expenditure 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.

Forecast HV Projects

1. Estimation of the amount of completed cables/lines yet to be captured by GIS was done by cross referencing the GIS data with SAP BI project data.
2. After accounting for GIS data lag, there was 102km of UG cables and 49km of OH lines that are "Proposed" and they have been scheduled for completion with 40% in 2013/14 and 60% in 2014/15. This based on a simple high level % split using the expected expenditures in 2013/14 & 2014/15.
3. Ausgrid's 11kV Capacity Plan documentations outlined the approach and assumption made for the expected expenditure and associated asset quantum.
4. The total combined expenditure on the installation of new HV UG cables and HV OH lines per FY was obtained from SAP and BI. To obtain the split in spend for each, the weighted average of the total length of UG cables vs OH lines installed per FY was calculated and the multiplied by the total combined spend in that FY. An additional factor was applied to cater for the higher unit rate for installation of a new UG HV cables compared to that of a new OH HV line. The current unit rate for installation of a new UG HV cable is approximately six times greater than that of a new OH HV line of the same length based on their average generic planning estimates. Given the lack of detailed information on the actual split in cost this approach represents the best estimate.

Distribution Substations

The quantities of substations added and upgraded in the 2008/09 financial year was not able to be accurately determined due to the implementation of Ausgrid's ERP SAP system during this financial year. 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 2008/09 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 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.

3.4 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.

1. SAP Business Intelligence (BI) reports used for the annual RIN from the transaction systems as the primary source of historical expenditure and allocations;
2. SAP BI reports from the forecasting system as the primary source of forecast expenditure for FY2015-19;
3. Use second financial quarter forecast from the Program Management Office (PMO) for the expected expenditure in FY2014.

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

Step 1. Using the asset category base data from Ausgrid's annual RIN, mapped the total expenditure of system assets into the categories in table 2.3.4 for FY2009 to FY2013 (exclude non-system assets, customer metering and load control and public lighting).

Step 2. Using the driver category base data from Ausgrid's annual RIN, derive % allocations of augmentation from the total system assets for FY2009 to FY2013.

Step 3. Apply the % allocations of augmentation derived in item 2 above to the total expenditure of system assets mapped in item 1 above.

Step 4. Mapped PMO system capital expected expenditure into the categories in table 2.3.4 for FY2014.

Step 5. Apply the FY2013 % allocations of augmentation derived in item 2 above to the total expenditure of system assets mapped in Step 4.

Step 6. Mapped forecasting system expected expenditure into the categories in table 2.3.4 for FY2015 to FY2019.

Step 7. Carry out manual adjustments to align with previous reported RIN (based on advice from the Finance Policy and Reporting section). See below table for the adjustments made to reconcile with the previous network Capex reported RIN:

ASSET MAPPING BASED ON REG ACCOUNT FIGURES	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL
	2008/09	2009/10	2010/11	2011/12	2012/13
TOTAL NETWORK CAPEX (excl. Public Lighting)					
Base Reg Account Total (Network):	**1025.3**	**1094.9**	**1361.7**	**1515.2**	**1146.6**
Minus 'Other' Driver (part of a separate line item in this RIN):	**- 8.1**	**-**	**- 112.5**	**- 112.2**	**- 69.3**
Adjust for known Reg Account Discrepancy:	**- 0.2**	**-**	**- 4.0**	**13.1**	**- 2.5**
Revised Total for the RIN:	**1,017.0**	**1,094.9**	**1,245.2**	**1,416.0**	**1,074.8**

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 process to derive the total augmentation expenditure in Step 3, 4 and 5 above is fundamentally a high level estimate. This is due to the limitation of the transaction system to report both asset and network driver categories together in a single format (ie. 2 dimensional reporting).

Any expected forecast expenditure 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.

Given to inability to provide a 2 dimensional report of asset and network driver categories, a methodology based on a % allocation using 2 x single dimensional report is deemed to be the only other credible option to provide the required figures in this notice (ie. this assumes that all asset categories have the same % augmentation each year).

Table 2.3.1 and Table 2.3.2 exclude dedicated distribution asset projects for subtransmission purposes (ie. Strategic 11kV load transfers to relieve zone capacity)

As previously stated, the expenditure in Table 2.3.1 and Table 2.3.2 represent the full project expenditure (including costs associated with other drivers for expenditure, eg replacement) rather than its theoretical fraction.

As a result of item 1, 2 and 3 above, it will not be possible for the total of table 2.3.1 to 2.3.3 to reconcile with table 2.3.4.

Ausgrid's proposal documentations outlined the capital consolidation process in which the expected figures for table 2.3.4 are provided.

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.

4 Template 2.4 – AUGEX Model

The information provided in template 2.4 has been completed in accordance with the AER RIN requirements and instructions applying to template 2.4 including Appendix E and F, and the instructions in the worksheet. All tables have been completed with the exception of some variables in 2.4.6 as explained in the Basis of Preparation below.

4.1 Table 2.4.1 – Augex model inputs – asset status – sub transmission 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 on 7th March 2014 and as interpreted by the relevant completing Ausgrid business unit. The information primarily comes from Ausgrid's engineering and investment management systems or is based on advice from the relevant subject matter experts

Explain the source from which Ausgrid obtained the information provided.

The data sources include:

Feeder Identification data	Sourced from Ausgrid's Feeder Forecast reports as prepared by Sub-transmission Planning. Feeders in service as of 2012-13 are included.
Primary type of Area Supplied	Prepared specifically for the RIN. Derived from a list of 11kV feeder categories by Zone as provided by the Reliability group in A&NP.
Route Line Length:	Sourced from GIS and FeederZ systems for each asset identified in Ausgrid's Feeder Forecasts.
Maximum Demand	Sourced from SCADA or DNMS systems using 'GENLOAD' or PI systems. If no data available, estimated from load-flow results where possible. Correction factors applied for Power Factor and Weather (50% POE factor).
Line Ratings	Sourced from the latest available (2013 review) Sub-transmission Planning Feeder Forecast reports. These are updated annually from the Ratings & Impedance Calculator (RIC), with the last update being QTR 3 2013.
Growth Rate	Based on difference between 2013 and 2019 feeder forecast results from Sub-transmission Planning. This forecast includes committed projects, spot loads and load transfers as per the established forecasting process, which is the most realistic estimate of individual asset demand at the present time. Feeders which are to be decommissioned as a result of committed projects are set to 0%.

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

Primary type of Area Supplied (Estimated):

- Estimated value based on classification of Zone Substation or STS from Table 2.4.3.

Feeder Identification data:

- The information provided for feeders assumes a present day network snapshot, that is, feeders that are currently in service in Ausgrid's sub-transmission network.
- In order to accurately capture the network feeder information for present day and 2009, the following assumptions are applied:
  - Network feeders that have the same network connectivity in 2009 and 2013 are reported as a single element, with rating, line length and network flows for each year shown.

- Feeders that are replaced are listed as their new names, with 2009 historical data linked from the old feeder. This is limited to the case of direct replacements. A lookup table has been set up to show the mappings between old and new feeder names
- New feeders with different connectivity are listed as new items, provided they were commissioned between 2009 and 2013.

Route Line Length (Actual):

- Feeder length data is sourced from GIS reports, cross checked against network models from the planning data management system (PDMS). Incomplete and/or missing information is estimated using system diagrams, project briefs and line route maps.

Maximum Demand (WC 50% POE MVA and MW) – both 2008/9 and 2012/13 (Estimated):

- This data was prepared especially for the reset RIN only, and is based on actual SCADA data from local area peak or system peak, with estimated correction factors to comply with the requirements of the RIN. In many cases Ausgrid does not record MW values, and therefore estimates of power factor and voltage are required to convert AMP recordings to MW and MVA. The general process is as follows:
  - The raw actuals are corrected for weather, power factor and abnormal switching when identified. Power factor is estimated by load-flow, as well as abnormal switching corrections. Weather correction factors are estimated from destination substations and used to adjust raw values.
  - Historical load data has been obtained via the following process:
    - Return value for coincident system peak from Genload data trace: Derived either directly (MVA), or by calculation from alternative units (MW: Divide by estimated power factor, Amps: Multiply by sqrt(3) x nominal voltage (V)/10E6). The Genload database contains metering information dating back to 2006
    - Where genload data is not available, PI data traces are selected. The PI metering database uses the same SCADA source information, but only contains records as far back as 2008/9. The methods for data conversion, depending on the units obtained, are the same.
    - In the event that no metered data is available, an estimation of feeder loading is obtained using a network model with system peak loading conditions applied. Estimation is also used in the event that metered data is incomplete or appears inaccurate/invalid (for example meter errors).
    - A data template has been used to document the data point source (metered or estimated) for every feeder. The metered data from both Genload and PI data is taken from current transformer reading on the feeders (as a first preference), or from circuit breaker current measurements (as a second preference).

Weather correction factor estimations:

- Feeder loads are corrected using 50% probability of occurrence (POE) for temperature variation. The weather correction factors are supplied by the spatial demand forecasting group. For the Inner Metro and Hunter networks, the average weather correction factor across the meshed network is calculated for each year and applied to loading values for each feeder. On average, the relation between the raw data and 50% POE is a 1.67% reduction for Summer and 3% reduction for Winter.
- Average weather correction factor is calculated based on the supplying zone substation(s) for each feeder, assuming the same connectivity as used for power factor estimates.
- For feeders that undergo reconfiguration / renaming (retaining their connectivity) in the future years beyond 2013, the loading for the newly configured feeder is referred back to the existing version. This assumption is used to accurately report the future growth rate on the feeder in the present day context. Feeders that are retired during the 2013-2019 period are assigned a growth rate of zero.

Power factor calculations:

- Individual feeder peak power factors are derived from the source zone substation supplying feeders in each area. The power factors are obtained from the individual area feeder forecast results. The area feeder forecasts are indicative of maximum load conditions in each area. Radially supplied feeders assume the power factor of their supplying zone. Meshed feeders supplied by multiple zones assume the average power factor of all supplying zones.

Line Ratings (Actual):

Ratings are based on Ausgrid's standard rating rules and policies. The following is a summary only:

- **Overhead Line Ratings** – Ausgrid uses the IEC 61597 - 1995 First Edition – Technical Report (Overhead electrical conductors – Calculation methods for stranded bare conductors) for the calculation of bare and bundled overhead conductor ratings.

Calculation:

Where:

Nusselt's Number

Reynold's Number

Temperature of conductor (°K)

Wind speed (cm/sec)

Emissivity of Conductor surface

Stefan-Boltzmann constant (5.67×10^{-12} Watts/cm^2)

Ambient temperature (ºK)

Outside diameter of conductor (cm)

Solar absorption coefficient

Intensity of solar radiation (Watts/cm²)

AC Resistance at conductor operating temperature (Ω/cm)

Current carrying capacity in amps per phase

Assumed parameters in the ratings equation are:

- Wind speed = 0.6m/s
- Emissivity of Conductor surface = 0.6
- Solar Absorption coefficient = 0.8
- Intensity of Solar Radiation = 1000 W/m2 Summer Day; 500 W/m2 Summer Night; 1000 W/m2 Winter Day; and 0 W/m2 Winter Night.
- Ambient Temperature = 35°C Summer Day; 35°C Summer Night; 25°C Winter Day; 25°C Winter Night; and 10°C Winter Night (Emergency).

Further details on overhead line ratings are covered in Ausgrid document INV-REF-100026 RIC Feeder Rating Methodology.

- **Underground Cable Ratings** – The ratings rules employed in the rating of underground cables and feeders at Ausgrid are many and complex. These are best explained in the Ausgrid Feeder Rating Methodology document (INV-REF-100026 RIC Feeder Rating Methodology).

Growth Rate (Estimated):

The growth rate is determined from annual base substation or feeder forecasts which include committed spots, transfers and projects. It is a derived value from the difference between 2018/19 forecast maximum demand and 2012/13 historical maximum demand according to the relationship:

Average Annual Maximum Demand Growth =

((Maximum Demand (2018/19) / Maximum Demand (2012/13))^(1/6)-1 * 100%

Note that Ausgrid prepares detailed for forecasts for each substation which include both short term spatial and long term econometric factors, and does not use a single linear p.a. growth rate for planning purposes. This growth rate is therefore derived to achieve the expected maximum demand at each substation in accordance with Ausgrid's base spatial forecast for the 2018/19 year.

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 forecasts and weather-correction parameters are estimates.

For some individual circuits, actual data is not available and estimates have been made using substation SCADA points, load-flow results and/or engineering judgment. This data may not be available because metering points have not been installed, there are metering errors, or at the time of local area or system peak the circuit was abnormally switched.

Ausgrid does not have an established process to assign sub-transmission feeders against HV feeder categories. This is an estimated value based on the estimated categorisation of zone substations from Table 2.4.3.

The basis of the estimates include engineering judgement about abnormal switching and metering error, with validated load-flow studies used in network analysis to derive alternative estimates. Where there is an absence of any verifiable actuals, this data is the best available estimate of individual line loadings for the snapshots required by this table.

4.2 Table 2.4.2 - Augex model inputs - asset status - high voltage feeders

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 on 7th March 2014 and as interpreted by the relevant completing Ausgrid business unit.

Explain the source from which Ausgrid obtained the information provided.

The sources of data included:

List of Feeders, Feeder Type, Originating Substation, Line Lengths (Actual)	Actual information sourced from quarterly feeder reliability classification spreadsheets from 2012/13 and 2008/09. These spreadsheets are based on actual data from SCADA (Load), and GIS (List of feeders, Originating Substation, Line Lengths).
Voltage Level (Estimated):	Originating Substation dictates the supply voltage of the HV feeder. Every HV feeder operates at a nominal voltage of 11kV except for Camperdown and Blackwattle Bay which operates at 5kV. Typically, voltage at the zone substation fluctuates between ±6% of the nominal voltage. 11kV feeders are estimated at 11.0kV. 5kV feeders are estimated at 5.0kV.
Maximum Demand (WC 50% POE MVA and MW) – both 2008/9 and 2012/13 (Actual w/Correction Factor)	Sydney and Central Coast (CC): Load data sourced from SCADA (in Amps). Weather correction 50%POE factors sourced from Demand Management Group. MW calculated from power factor sourced from Demand Management Group. Hunter: Load data sourced from historic feeder forecasts. The original data was sourced from SCADA (in Amps), metering data and estimated values. Weather correction 50%POE factors sourced from demand management. MW calculated from power factor sourced from demand management.
Feeder Thermal and Operational Ratings (Actual + Estimated when Actual is unavailable)	Ausgrid uses cyclic rating for planning purposes. The cyclic rating has been considered as the Thermal rating. • Sydney: Actual ratings sourced from Ratings Impedance Calculator (RIC) • Hunter: The rating data was sourced from historic feeder forecasts. The original data was sourced from Line Impedance Data (LID). When data was unavailable in Sydney/CC, actual rating was sourced from historical Systems Diagrams. When data was unavailable in the Hunter, missing rating data was estimated taking into consideration the rating of previous and forecast years. The operational ratings are applicable only to the CBD HV Feeders and have been estimated based on applying a factor of 2/3 to the thermal rating (sourced as above). Ausgrid has considered the cyclic rating to be equivalent to the thermal rating requested in table 2.4.2. Ausgrid only utilises operational ratings for the HV feeders in the Sydney CBD triplex network which are designed with an N-1 security standard. The operational rating of the Sydney CBD HV feeders has been estimated by applying a factor of two thirds to the thermal rating of each feeder.
2011-12 to 18-19 Growth Rate (Forecast):	Zone Substation growth rate sourced from Sub-transmission Planning.

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

The methods and assumptions used include:

1. **List of Feeders, Feeder Type, Originating Substation, Line Lengths:**
    - Requested feeder categorisation spreadsheets from 2008/09 and 2012/13 from Reliability Group.

- Assumption: Double-Banked Feeder legs are equal lengths. GIS only has data on the sum of both legs.
- Assumption: Feeder lengths in 2008/09 in Sydney CBD Zones are equal to the feeder lengths in 2012/13. 2008/09 Sydney CBD feeder lengths were unavailable.
- Assumption: The sum of lengths of Old City North Zone in 2008/09 is equal to the sum of lengths of New City North Zone in 2012/13. Further, the lengths of the each feeder in 2008/09 City North Zone are equal. Old City North Zone feeder lengths are unavailable, and feeder names have changed.

2. **Voltage Level:**
    - 11kV feeders are estimated as 11.0kV. 5kV feeders are estimated as 5.0kV.
3. **Maximum Demand (WC 50% POE MVA and MW) – both 2008/9 and 2012/13:**
    - Sydney and CC: Extracted both summer and winter raw non-coincidental peaks from SCADA (in Amps). Applied Weather correction 50%POE factors from demand management.
    - Converted to MVA. Multiplied MVA by power factor from demand management to obtain MW.
    - Assumption: Network wide abnormal conditions accounted for by weather correction. Assumption: The impact of localised abnormal conditions is negligible across a whole network segment in the Augex Model. Hunter: Maximum Demand extracted from SCADA annually at the end of summer (in Amps). This data is archived and was used to populate this RIN.
    - Converted to MVA.
    - Multiplied MVA by power factor from demand management to obtain MW.
    - Note: In the Hunter, abnormal conditions are accounted for with loads manually amended or filtered.
    - Assumption: Summer is the peak season.
4. **Feeder Ratings:**
    - Sydney: Actual ratings (Amps) sourced from Ratings Impedance Calculator (RIC). Manually checked for accuracy.
    - Converted to MVA. When data was unavailable in Sydney/CC, actual rating was sourced from historical Systems Diagrams. Hunter: Actual ratings sourced from Line Impedance Data (LID) each year and archived. The archived information is used to populate this RIN.
    - Manually checked for accuracy.
    - Assumption: When rating is unavailable, the feeder is given the same rating as the year before or after.
    - Ratings are based on Ausgrid's standard rating rules and policies.
    - Ratings are also based on manufacturer's data with adjustments to account of operational factors.
    - There a small number of manually rated with IEC Standard 60287.
    - Ausgrid has considered the cyclic rating to be equivalent to the thermal rating requested in table 2.4.2. Ausgrid only utilises operational ratings for the HV feeders in the Sydney CBD triplex network which are designed with an N-1 security standard. The operational rating of the Sydney CBD HV feeders has been estimated by applying a factor of two thirds to the thermal rating of each feeder.
5. **2011-12 to 18-19 Growth Rate:**
    - Zone Substation growth rate sourced from Sub-transmission Planning. Note: A weighted average (by feeder capacity) should be calculated for each network segment, but there is no field in the RIN template for this information.
    - Assumption: Each feeder is assigned the growth rate of its originating substation.

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.

1. **List of Feeders, Feeder Type, Originating Substation, Line Lengths:**
    - Assumed 2008/09 GIS feeder lengths in the CBD are equal to the feeder lengths in 2012/13. This is valid because there was minimal augmentation works in the CBD (majority were duct bank installation).
    - Old City North vs New City North – Assumed the sum of feeder lengths to be equal. Assumed each feeder has equal lengths. Comparison to 2012/13 feeder lengths show this is a best estimate.
2. **Voltage Level:**
    - Assumed 11kV to be at 11.0kV and 5kV to be at 5.0kV. Best estimate based on a sample of voltage ranges specified on Sydney System Diagrams and VSI settings (Hunter).
3. **Maximum Demand (WC 50% POE MVA and MW) – both 2008/9 and 2012/13:**
    - Nil.
4. **Feeder Thermal and Operational Ratings:**
    - Assumed feeder thermal ratings to be the same as the year before or after. The life cycle of a feeder occur over approximate 20 years and it is unlike to change unless augmentation has taken place.
    - The operational rating of a HV feeder in the Sydney CBD triplex network is assigned such that it runs as per the designed N-1 security standard. Therefore the estimation of two thirds is considered adequate. The actual operational rating may vary slightly due to non-uniform thermal ratings of each feeder in the triplex bank.
    - The actual operation rating may also vary due to protection limitations (overcurrent relay pick-up may be set below estimated operational rating provided).
5. **2011-12 to 18-19 Growth Rate:**
6. Nil.

4.3 Table 2.4.3 - Augex model inputs - asset status - subtransmission substations, subtransmission switching stations, and zone substations

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 engineering and investment management systems or is based on advice from the relevant subject matter experts.

Explain the source from which Ausgrid obtained the information provided.

The data sources include:

Substation Identification Data:	Sourced from The Spatial Demand Forecast System. Substations in service as of June 2012/13 are included.
Primary type of Area Supplied:	Sourced from list of feeder categories by Zone as provided by the Reliability group in A&NP.
Number of Transformers:	Provided by Forecasting group from SDF system for 2012/13, and from TF45 Reports for 2008/09.

Maximum Demand (WC 50% POE MVA and MW) – both 2008/9 and 2012/13:	Provided by Ratings Group from the SDF system.
Substation Ratings:	Provided by Ratings Group from analysis of T01 Reports from RIC and old TF45 report from preceding TIS system (now decommissioned).
Growth Rate:	Derived from the Spatial Demand Forecasts from 2012/13 Actuals (latest available *base forecast*). This is sourced from the Spatial Demand Forecasting System.

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

The methodology and assumptions used to provide the information

1. **Primary type of Area Supplied (Estimated):** Estimated value for primary category based on count of feeders supplied by that zone. Each Zone to category with the most feeders at that substation. For STS, based on predominant categorisation of Zone Substation supplied by that STS.
2. **Number of Transformers (Actual):** Count of in-service transformers at a location (excluding spares).
3. **Maximum Demand (WC 50% POE MVA and MW) – both 2008/9 and 2012/13 (Estimated)**:Weather corrected non-coincident actuals based on season of peak demand, for the set of substations in service as of June 2013. The weather correction process is an estimate and is done in accordance with Ausgrid's established forecasting processes (Refer to Table 5.1 basis of preparation).
4. **Substation Ratings (Actual)**: "Total Ratings based on summation of transformer nameplate or cyclic ratings. Does not consider any other equipment limitation. Substation and N-1 ratings based on Ausgrid's standard rating rules and policies for ratings . Does not include 11kV or sub-transmission feeder limits.

The RIC report used for the 2012/13 data is known as R01 (Present Zone and STS Firm Ratings). As this system has only been around for 3 years, reports from the predecessor system TIS which produced equivalent reports known as TF45 were used for the 2008/09 data. These reports contain transformer throughput ratings data for each zone and STS transformer in the network and also nameplate rating data (only for the highest cooling mode). The data needed to be merged with additional SAP nameplate data to obtain the lowest cooling mode nameplate rating for each transformer.

While nameplate ratings are provided by the equipment manufacturer, the normal and emergency cyclic ratings are calculated and apply Ausgrid's rating rules. These consider insulation loss of life and absolute temperature limitations for the top oil and the transformer winding.

The capacity calculation used for each substation varies due to the configuration and is a measure of the theoretical rating achieved by utilising all transformers in a substation. This measure ignores upstream and downstream feeder restrictions. Other restrictions include substations where all the transformers cannot be physically utilised at once due to fault level issues, frequency injection restrictions, etc.

The substation capacity based on transformer emergency cyclic ratings is also produced in the R01 report. This is the rating used when Ausgrid refers to the Firm rating of the substation. This is the rating that if exceeded would mean there is load at risk at the substation and a project is needed to secure supply.

The normal and emergency cyclic ratings are calculated by RIC using long established business rules that have been in place for many years at Ausgrid.

The objective of determining the thermal rating of equipment is to achieve a compromise between equipment utilisation, return on investment, deferred or reduced capital expenditure on the one hand, and equipment damage, accelerated ageing and customer supply reliability and quality on the other.

When equipment is grouped together at a particular location such as a substation, site specific information enables the appropriate individual equipment ratings to be extracted from the full range of possibilities, and subsequently incorporated into a 'throughput rating' application according to defined rules. As an example, in a zone substation this includes equipment such as a transformer, its connection cables, switchgear and operating mode.

The output capacity of oil-filled transformers is dependent on a range of factors:

- Operating temperature limitations of its components. These are specified in relevant Australian and International standards. There may be other limits specified in purchasing contracts or nominated by Ausgrid for specific assets.
- Absolute winding current limits. These are also specified in relevant standards or purchasing contracts.
- The cumulative effects of insulation ageing which are manifested as a decrease in mechanical and electrical strength of the winding insulation and/or oil due to operation at elevated temperatures. Life-insulation temperature characteristics are also provided in the relevant standards.
- Applicable ambient temperatures as seen by the transformer including their expected daily and seasonal variation.
- Measured oil and winding temperatures during 'heat run' testing. These are carried out as part of the contract type tests to confirm the nominal design capacity of transformers and may allow a degree of thermal 'over-design' to be exploited. In some cases the testing may be limited to the 'highest' and 'lowest' cooling modes or even to the 'highest' mode only.
- The anticipated demands on the transformer. These include assumptions about the daily load variation, the seasonal load variation, the number of occasions the transformer may be required to carry emergency loads, the ratio of emergency loads to normal daily loads, the pattern of load growth and relief etc. Some of these should be logically related depending on the number of transformers in the substation and its operating design. However simplified assumptions are necessary to make the calculations manageable.
- The thermal model adopted for the transformer. These are provided in relevant Australian and International standards and are dependent on the cooling mode utilised. Standard models have changed over the years as more test data on transformer temperatures has emerged and this can only be expected to continue.
- The assumed maximum ambient temperature at the time of critical loading on the transformer (used to check that permissible operating temperatures are not exceeded).
- Any limitations due to associated equipment in the 'throughput path' such as low voltage cables, current transformers, switchgear etc.
- Oil expansion limits. These are not part of the automatic calculation procedures but may be set based on operational experience.

5. **Growth Rate (Estimate)**: The growth rate is determined from annual base substation or feeder forecasts which include committed spots, transfers and substations. It is a derived value from the difference between 2018/19 forecast maximum demand and 2012/13 historical maximum demand according to the relationship:

   Average Annual Maximum Demand Growth =

   *((Maximum Demand (2018/19) / Maximum Demand (2012/13))^(1/6)-1 * 100%*

Note that Ausgrid prepares detailed for forecasts for each substation which include both short term spatial and long term econometric factors, and does not use a single linear p.a. growth rate for planning purposes. This growth rate is therefore derived to achieve the expected maximum demand at each substation in accordance with Ausgrid's base spatial forecast for the 2018/19 year.

This forecast includes committed projects, spot loads and load transfers as per the established forecasting process, which is the most realistic estimate of individual asset demand at the present time. Where a substation is being replaced, the growth rate reflects anticipated load on its replacement.

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.

Identification of Estimated vs Actual Parameters:

- All forecasts and weather-correction parameters are estimates. Actual data does not exist for these parameters. Other data is based on actuals as recorded in Ausgrid engineering systems.
- Zone substations are not assigned a feeder category (Urban, Rural etc) and therefore there is no actual data for this parameter.
- Zone substations primary category has been estimated based on the number of 11kV feeders in each category at each Zone.
- Maximum demand is based on actuals, but weather correction is an estimate. The weather correction process is as the same as used in Ausgrid's forecasting process. Refer to the explanatory notes for RIN 5.1 for further detail.
- Growth rates are derived from forecast future demand, based on Ausgrid's established forecasting methodologies. Refer to associated Maximum Demand templates for further information (e.g 5.1) on the forecasting process.

4.4 Table 2.4.4 - Augex model inputs - asset status - 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 on 7th March 2014 and as interpreted by the relevant completing Ausgrid business unit.

The information primarily comes from Ausgrid's ERP SAP, Ausgrid's GIS, or is based on advice from the relevant business unit experts.

This RIN worksheet should be read in conjunction with Ausgrid's regulatory proposal including the relevant supplementary information provided for additional detail as required by this Notice.

Ausgrid's subject matter experts were engaged in preparing this information as necessary.

Explain the source from which Ausgrid obtained the information provided.

The Distribution Substation utilisation data was taken from ERP SAP. SAP Business Objects reports were used to obtain historical utilisation data in the required financial years and the segmentation was performed based on the assigned category of the 11kV feeder supplying each distribution substation.

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

The Distribution Substations are segmented into their high level segment groups only. Further segmentation of the population is counter-productive as the Augex model parameters are not well matched the approaches taken to the load-driven augmentation of Distribution Substations and the downstream LV network.

Within their respective segment groups, the capacity of each distribution substation (in MVA and based on the recorded rating) was assigned to the corresponding utilisation bracket based on the highest reading recorded on the substation during the given period as a percentage of the substation rating.

Note that the available Business Objects report for this task takes the historical load reading but cannot obtain the historical rating at the same time, as this information is not available. Hence the rating used for the purposes of all calculations is the rating of the distribution substation at the time the report is run. In limited circumstances this will have the effect of reducing the % utilisation figure where the rating of the distribution substation has increased in the intervening period.

The raw sum of substation capacities in MVA for those substations with recorded load readings was then scaled as follows to represent the full population of distribution substations:

1. **CBD substations** – The total sum of the ratings in MVA for substations in the CBD segment is scaled based on the difference between the total number of CBD substations at the end of the financial year in question, and the total number of substations with readings recorded for that financial year.
2. **Long Rural substations** – the MVA of the total population is based on the sum of the MVA rating of the substations on each of the feeders that were classified "Long Rural" in 08/09 and in 12/13. This figure is then used to scale up the known Long Rural utilisation data.
3. **The MVA capacity** of the entire population of substations (across all feeder categories) was determined by taking the total MVA of the current population and subtracting the net additional MVA added since 2008/09 and 2012/13. The total capacities from Steps 1 and 2 above were then subtracted from this figure to give a total combined MVA capacity for the Urban and Short Rural category substations.
4. **The ratio of Urban: Short Rural substations** was calculated from the total number of substations in the population for the two financial years. This ratio was then applied to the figure calculated in Step 3 above to appropriately scale up the Urban and Short Rural MVA capacities for 08/09 and 12/13.

Additional assumptions:

1. It is assumed that the customer profile supplied via each distribution substation generally conforms to the overall characteristics of the 11kV feeder as a whole.
2. All model inputs are based on the asset utilisation information in Ausgrid's asset management system (SAP). The summated overcurrent protection settings to be applied to most multi-Tx distribution substations are not taken into account (i.e. essentially, the transformer rating is the primary determinant of the distribution substation rating).
3. Substation ratings in MVA are based on a secondary voltage of 433V as per our distribution transformer contract and nameplate details.
4. For multi-Tx substations, the summated MDI reading was used over subs that had both summated MDIs and a sum of single MDIs.
5. For multi-Tx substations with split busbars the total MDI used is the highest sum of the individual MDIs on a given date (as opposed to the sum of the highest individual MDI reads regardless of date).
6. MDI readings above or below full-scale deflection are taken to be at full-scale deflection.
7. The MDI readings in the SAP report reflect the maximum load for the period.
8. Those substations with available load data in the financial years specified are taken as representative of the utilisation profile of the whole population.

The following process was used to 'clean up' the data prior to analysis.

<u>2008-09 Data</u>

- Aux subs excluded (2 MVA, 2 subs)
- HV Customer Subs excluded (4 MVA, 8 subs)
- Substations with low utilisation
  - 122 subs with MDI of "0" deleted (predominantly Hunter subs)
  - substations with MDI of "1" to "6" manually corrected.
- Substations with high utilisation (> 160%)
  - 16 substrations manually corrected
- Substations deleted (incorrect ratings).

<u>2012-13 Data</u>

- Aux subs excluded (< 1 MVA, 1 sub)
- HV Customer Subs excluded (2 MVA, 3 subs)

- Subs with low utilisation
  - 212 subs with MDI of "0" deleted (predominantly Hunter subs)
  - 12 subs with MDI of "1" to "6" manually corrected.
  - 11 subs with MDI of "1" to "6" deleted.
- Subs with high utilisation (> 160%)
  - 2 subs deleted (incorrect ratings).

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.

The available substation utilisation data for the 08/09 and 12/13 financial years was used a representative of the full population of substations based on the method and assumptions above.

- The estimate was required as the utilisation data for the full population of distribution substations is not available. This is due to the limitations of our load survey programme and corresponds to issues including access to remote and difficult locations.
- The available utilisation data represents a significant proportion of the network (56% in each financial year) and can be reliably used to approximate the utilisation of those substations without readings in the given period. The scaling of these segments, based on the known MVA capacity, represents the best approximation of the actual data given the varying average MVA capacity across the segments.

4.5 Table 2.4.5 - Augex model inputs - network segment data

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 engineering and investment management systems or is based on advice from the relevant subject matter experts at Ausgrid.

Explain the source from which Ausgrid obtained the information provided.

We have set out data sources for each of the network segments:

Sub-transmission and Zone:

Zone, STS and Sub-transmission feeders have been broken into two segments per group on a geographical basis. This is designed to broadly reflect the different network designs and operating conditions. The two areas are Sydney area networks and Hunter/Central Coast network areas. The primary differences are:

- The Sydney area feeder networks are predominantly shorter underground feeders compared to a long overhead network in the Hunter and Central Coast.
- Sydney Substations are on average larger capacity with more transformers, resulting in a higher utilisation threshold than Hunter and Central Coast substations.
- There are differing average growth rates between the two areas.

Data Sources:

1. **Average Unit Cost ($/MVA):** Estimate based on project costs and added capacity. Source of capacity from Sub-transmission Planners / planning documents. Source of costs from BPC system.

2. **Capacity Factor:** Estimate from assessment of incremental capacity added by project (from planning documents or rating system).
3. **Mean value and Standard Deviation of Utilisation Threshold:** For substation segments, the estimate is based on analysis of substation data in Table 4.2.3 as well as additional licence capacity data from the Forecasting group. For feeder data, based on analysis of feeder forecast results from the latest 2012/13 feeder forecast from Sub-transmission Planning.

HV Feeders

1. **Average Unit Cost $/MVA (Calculated from Actual Data):** Calculated from actual project data from 161 HV feeder augmentation projects (DNPs) issued between 2008/09 to 2013/14. Project financials sourced from SAP BI. Capacity increased sourced from DNP Design Briefs, historical System Diagrams (Sydney) and annual feeder records (Hunter).
2. **Capacity Factor (Calculated from Actual Data):** Calculated from data from 161 HV feeder augmentation projects (DNPs) issued between 2008/09 to 2013/14. Historical System Diagrams used to determine capacity at the time augmentation was proposed. "Proposed" System Diagrams in DNP Design Briefs used to determine the proposed capacity.
3. **Mean value and Standard Deviation of Utilisation Threshold (Estimated):** Calculated from data from 161 HV feeder augmentation projects (DNPs) issued between 2008/09 to 2013/14. Historical System Diagrams used to determine the utilisation of the feeders targeted for augmentation. Estimation takes place when the utilisation of feeders in a project is averaged to come up with a "Project Utilisation Threshold".
4. **Forecast Network Segment Data** (Forecast): Sourced from historical Network Segment Data, with forecasted Utilisation Thresholds.

Distribution Substations & LV Feeders

The calculations undertaken to develop the planning parameters for each segment are based upon financial and asset information from SAP as reported by Business Objects and Business Intelligence reports.

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

Sub-Transmission Line, STS and Zone Substations

- ***Augmentation unit costs and capacity factors:*** The Augmentation unit costs and capacity factors have been derived from historical data of projects completed in the current regulatory submission. As has previously been raised, the derivation of project related planning parameters for asset categories with small populations of non-uniform assets *and* non-uniform solutions to growth drivers (particularly sub-transmission lines, zone substations, and STS) is difficult. It is not possible to derive statistically meaningful parameters for Augmentation Unit Cost and Capacity Factor based on the both the historical and forward-looking project sets which comprise augmentation driven works at this level of the network with any level of accuracy. As noted in the AER augmentation model handbook, sample size is very important for statistical modelling, and the lack of samples (less than 30 per segment group) in the capacity augmentation area for sub-transmission and zone segment groups mean that these variables can only be considered indicative, particularly for the forecast period going forward.

The numbers provided in Table 2.4.5 are based on historical real project costs (in real 2012/13 dollars) from last regulatory period (and the associated "capacity added"), and escalated assuming 0.3% real cost escalation over 5 years (1.5%) for the upcoming regulatory period. An estimate of indirect overheads of 10% has been made which is then removed from the resultant unit rate.

For each sample project parameters are derived from the following relationship:

Capacity Factor = [Capacity Added] / [Existing Capacity]

or alternatively expressed as ([New Capacity] – [Existing Capacity]) / [Existing Capacity]

$/MVA (forecast) = ([Project Cost]*1.015*0.9) / [Capacity Added]

$/MVA (historical) = ([Project Cost]*0.9) / [Capacity Added]

An average value is then taken for each segment group.

Only sample projects where there were clear substation and feeder cost components were used to develop these estimates, to ensure no double-counting occurred.

It was found that capacity factor is very sensitive to the sample of projects used, particularly in these segments with very small sample populations. Many augmentation solutions at this level of the network are unique, driven by existing network design and constraints. No forecast capacity factor is possible due to the lack of upcoming projects driven by augmentation requirements in the upcoming submission. To validate these results, a number of other approaches have been examined, including an assessment of typical feeder and substation configurations and using calibration techniques to simulate model output compared to past activity.

- **Mean value and Standard Deviation of Utilisation Threshold (Estimated):** For substations this is based on relationships between normal cyclic rating of assets and the licensed capacity Ausgrid uses to trigger growth related investment. For feeders this also includes the relationship between N loading and N-1 loading under worst case credible contingencies, as determined by load-flow simulation.

Zone Substations and STS

Source data for Utilisation Threshold is contained in RIN Section 2.4 and additional Licence Capacity Data is sourced from Ausgrid's Network Forecasting Team. Historical thresholds are indicative only, as past practice was to combine substation and feeder limitations into the Substation Licenced Capacity limit. Therefore some manual correction and estimation of data was required.

For Zone Substations and STS: Utilisation Threshold is derived from the relationship:

"Licence Capacity" / "Normal Cyclic"

Where Normal Cyclic is the installed usable capacity at a zone or STS, and "Licence Capacity" is the N-1 rating Ausgrid uses to determine investment triggers. Historically this has been based on the NSW Distribution Licence Conditions, which for many assets include an allowance for probabilistic risk (up to 20% over firm N-1 capacity) Sub-transmission Feeders

This is derived from two relationships:

- The relationship between the N loading and N-1 loading (in MVA) – to determine the ratio between system normal and worst-case credible contingency loading, and
- "Licensed Capacity" and "Normal Rating", where "Licensed Capacity" is the emergency rating of a feeder in MVA (at nominal volts), plus 20% if it is an overhead feeder, and "normal rating" is as per the data provided in Table 2.4.1.

Utilisation Threshold = (N loading / N-1 loading) * (Licensed Capacity / Normal Rating)

The first relationship defines the level of utilisation under system normal that would correspond to the limiting condition under contingency analysis, and the second provides a conversion to relate the normal cyclic ratings used in the Augex model to the risk-based criterion (including where applicable both the use of emergency ratings and the additional probabilistic risk allowance of 20% for overhead feeders under the NSW Licence Conditions).

This data is sampled from the Feeder Forecast results done by Area Planners.

Comments

The utilisation thresholds used in this table are based on historical planning criteria. However as discussed above planning is not done on a 'system normal' basis but under contingency scenarios. Therefore no relationship between system normal utilisation and augmentation timing has previously been derived, except for the purposes of this RIN.

It is Ausgrid's view that a statistical approach to modelling subtransmission level augmentation expenditure is not appropriate, due to the small population of a) assets and b) augmentation projects. This means that a statistical approach is very inaccurate. It is not expected that any other distributions would be more suitable, however it is noted that these segment groups do not exhibit a normal distribution.

HV Feeders

HV Feeder parameters are calculated based on a list of 161 actual historical augmentation projects. These calculated values should provide a fair representation of the projects that were undertaken in the 09/14 Regulatory period.

HV Feeder augmentation projects are defined to only include 11kV Capacity driven projects with the SAP field Regulatory ID "11kV_102.01". Since projects are allowed only 1 Regulatory ID code in SAP, the chance of double counting projects in other network segments are minimal. Projects with the Regulatory ID "Multiple Drivers" were filtered out of the derivation of planning parameters, meaning the parameters are missed, as opposed to double-counted.

More iterations of the regulatory reporting process and application of the Augex Model is required to verify if these planning parameters are a reasonable estimate in the context of Augex modelling. Since actual historical project data were used in their derivation, it can be said that these parameters are most definitely reasonable estimates for the augmentation that has taken place in the 2009/14 regulatory period.

- **Average Unit Cost ($/MVA):** Analysed the DNP Development Briefs of 161 HV feeder augmentation projects and extracted the planning estimate, existing capacity, proposed capacity for each project. Project status and actual expenditures were extracted from SAP BI reports. Projects are segmented according to network segment. $/MVA was calculated by the sum of the expenditure in the network segment and divided by the sum of the increase in capacity. If a project is "Closed" then actual expenditure was used, if a project remains "Released" then Planning Estimate was used. Note: Only feeders that underwent augmentation are included in the calculations. Assumption: The cost of non-trunk augmentations with 0 capacity increase absorbed into the Average Unit Cost (AER Augex Model Handbook Section 5.1.3).
- **Capacity Factor:** Analysed the DNP Development Briefs of 161 HV feeder augmentation projects and extracted the existing capacity and proposed capacity for each project. Capacity Factor was calculated for each project. Projects are segmented according to network segment. Weighted average of capacity factor calculated for each segment weighted by the planning estimate of the project. Note: Only feeders that underwent augmentation are included in the calculations.
- **Utilisation Threshold**: In the 09/14 Regulatory Period, augmentation was deemed required for an HV Feeder when it can be demonstrated (via load modelling) that the N and N-1 licence conditions cannot be satisfied without network augmentation. Each HV Feeder was analysed and proved compliant or non-compliant with augmentation projects issued to achieve compliance.

Utilisation Threshold is sourced from the analysis of 161 distribution network projects (DNPs) issued between 2008/09 and 2013/14. For each project, the utilisation of each feeder proposed to undergo augmentation (at the time of the proposal) is averaged to derive a 'project utilisation threshold'. Each project utilisation threshold is then used to calculate a weighted mean utilisation threshold for a network segment (weighted by the project estimate).

Where,

$\bar{x}$ is the weighted average of project utilisation thresholds (i.e. segment utilisation threshold)
s is standard deviation
x_i is the project utilisation of the i-th project in a network segment
w_i is the project estimate of the i-th project in a network segment
n is the total number of projects in a network segment

Ausgrid's urban HV feeders are interconnected; feeders are often augmented to allow its adjacent feeders to achieve N-1 compliance. This results in a lower correlation between the utilisation of a feeder and the likelihood that it requires augmentation.
It is suggested that Poisson distribution may be an appropriate probability distribution to simulate the augmentation needs of HV feeders. Fundamentally, load growth occurs in a discrete and random manner at any point along the length of the feeder. It is very similar to other applications of the Poisson distribution (e.g. cars arriving at a traffic light, photons arriving at a telescope, telephone calls arriving in a system.)

More iterations of the regulatory reporting process and application of the Augex Model is required to verify if the utilisation thresholds reported are a reasonable estimate in the context of Augex modelling. Since actual historical project data were used in their derivation, it can be said that these utilisation thresholds are most definitely reasonable estimates for the augmentation that has taken place in the 2009/14 regulatory period.

Forecast Network Segment Data (Forecast): It is assumed that the characteristics of the network, and the way Ausgrid performs augmentation work is not going to experience dramatic changes. Therefore unit cost and capacity factor were left unchanged from historical value. All changes are modelled by adjusting the utilisation threshold. In urban areas, it is assumed that a higher unit cost will account for N-1 and non-trunk augmentation. (AER Augex Model Handbook 5.1.3). CBD: 66% (Planning Policy N-1) Urban: 75% (25% margin before N overload occurs) Short Rural: 80% (20% margin before N overload occurs) Long Rural: 100% (take the risk of overloading) Note: it is unreasonable to hold Ausgrid to try and achieve these forecasted planning parameters. The method described above has the advantage of having a simple and sound logical basis.

In reality, unit cost, capacity factor and utilisation threshold are all likely to change; they all have cause and effect on each other and the forecast outcome. Perhaps after several cycles of the Augex model, an understanding on the behaviour of planning parameters can be gained.

Distribution Substations & LV Feeders

- **$/MVA***:* The $/MVA figure for each network segment is derived from a correlation between project cost and the transformer capacity installed for projects related to augmentation. A total of 625 completed augmentation projects in the 2009/14 regulatory period contained the required cost and asset data. These projects were split into their corresponding network segments using the associated 11kV feeder category of the associated distribution substation (as outlined under Table 2.4.4).

The total project cost in each network segment is then divided by the total MVA installed by these projects to determine the $/MVA for the segment.

Note that all $/MVA calculations are based on the MVA as calculated off the assigned ERP SAP rating of the substation rather than the nameplate capacity of the transformer. In particular, this results in a high substation rating for smaller capacity single phase PTs (predominantly found on Short or Long Rural feeders) whose rating is based on a domestic load cycle. This also impacts the Capacity Factor for the short and Long Rural categories.

- **Capacity Factor:** The capacity factor for the Urban, CBD, and Short Rural network segments is calculated based on an analysis of the scope of typical capacity driven augmentation projects across these segments combined with actual project numbers. This information was taken from data used for cost of delivery analysis for the current regulatory period. The project types used in the cost of delivery analysis were correlated with a typical scenario for augmentation with a corresponding capacity factor. The number of each project type for one financial year and the corresponding capacity factor were used to calculate the capacity factor for the full network segment. This value is assumed to be representative of all other financial years requested for these segments.

The exception to this approach was for the Long Rural segment for which the project information mentioned above was not sufficient. The capacity factor for this segment was calculated based on a sample of typical actual projects undertaken in this regulatory period.

- **Utilisation Threshold**: The document "Inv-STD-10034 LV Planning " in "Section 6 - Investment Planning" states that:

> *"A planning investigation is initiated:*
>
> *• For MDI or DM&C data, if the load is measured ≥ 100% of the rating*
>
> *• For load survey data, if the load is measured ≥ 95% of the rating*
>
> *For this purpose, distributor ratings are generally based on the fuse panel rating (refer to 7.1) unless available information indicates that the downstream elements of the distributor are loaded over their rating."*

Given that the majority of distribution substation load readings are taken via MDI the utilisation threshold for a distribution substation is 100% of the substation rating.

- **Standard deviation of utilisation threshold:** The load survey programme allows for an average time between reads of 6 months. Therefore the maximum time for identification of a threshold breach is 6 months for most substations. Inv-STD-10034 LV Planning states under section 3 that "remedial actions to ensure that the thermal capacity of the network is not exceeded are completed (where possible) before the next peak season". This allows for a target maximum of 12 months between the identification and rectification of a threshold breach giving a total theoretical maximum time between the breach of the threshold and the completion of rectification works of 18 months. During this 18 month period the maximum demand growth is therefore expected to be 1.5% (assumes max demand growth of 1%).

The actual time between identification of a threshold breach and the completion of works to rectify the issue will depend largely on the volume of works currently in progress and the severity of the breach. However, the magnitude of any threshold breach is expected to increase by approximately 1.5% on any given base utilisation before being rectified.

Assuming that the threshold breach is identified immediately after is occurs and that all breaches occur due to linear load growth, the standard deviation of the utilisation threshold is assumed to be 1.5% due to the demand growth escalation above.

In reality, the increase in maximum demand on a distribution substation is rarely linear and hence the magnitude of a threshold breach is highly variable and depends on the general and spot growth in a given area. As such, the exact degree to which the utilisation threshold is breached by any given overload is not able to be determined with any accuracy.

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 parameters in this table are estimates. This is because they are all average values based on sampling of projects (past and/or future) with uncertainty in input parameters (e.g ratings of future circuits or installation costs). Therefore no actual data can be provided for this table.

HV Feeders

- **List of Feeders, Feeder Type, Originating Substation, Line Lengths**: 2008/09 GIS feeder length data in the CBD was unavailable.
- **Voltage Level**: Zone substation operating voltage information was unavailable in a collated format.
- **Maximum Demand (WC 50% POE MVA and MW) – both 2008/9 and 2012/13**: Nil.
- **Feeder Ratings**: A small number of historical feeder ratings are unavailable.
- **11-12 to 18-19 Growth Rate**: Nil.
- Average Unit Cost ($/MVA): Nil.
- Capacity Factor: Nil.
- Utilisation Threshold: The breakdown of expenditure on a per feeder basis for each project is unavailable.
- Forecast Planning Parameters: Ausgrid's forecast data (used the regulatory submission) have different units and assumptions to that of the Augex model. (e.g. $/km vs $/MVA)

(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 Line, STS and Zone Substations

- **Identification of Estimated vs Actual Parameters:**
  - All $/MVA and Capacity Factor parameters are estimates based on recorded and forecast project costs and actual or estimated capacity added due to the project. These costs include estimated

overhead component removed, and where dual drivers exist (which is most sample projects) an estimate of the percentage of project which is related to capacity (e.g this project is 20% capacity driven).

- Utilisation Threshold statistical parameters are estimates derived from actual ratings (and in the case of feeders, forecast loading under N and N-1 configurations) and actual licence capacity figures.
- Growth rates are derived from forecast future demand, based on Ausgrid's established forecasting methodologies. Refer to associated Maximum Demand templates for further information on the forecasting process.

- **HV Feeders:**
- **Average Unit Cost ($/MVA)**: Nil.
- **Capacity Factor**: Nil.
- **Utilisation Threshold**: Assumed each feeder contributed equally to the utilisation threshold of the project. This is a best estimate because no other information is available to determine otherwise.
- **Forecast Planning Parameters**: Assumed work practices and network characteristics will remain consistent with 2009/14 period. Exaggerated utilisation threshold to include changes to unit cost and capacity factor. This is the best estimate because this modelling process has a sound and simple basis. More iterations of the Augex modelling is required to fully understand the interdependencies of the planning parameters.

Significant Factors Affecting Augmentation Requirements

The following factors will impact on the maximum achievable utilisation of assets for Ausgrid, and the likely augmentation project type and cost. It is not possible to estimate the impact these factors will have compared to other DNSPs, without an in-depth understanding of the challenges facing other DNSPs.

1. Jurisdictional Planning Criteria

Distributors in NSW have been bound since 2008 to the NSW Distribution Licence Conditions, which provided prescriptive deterministic criteria (inclusive of some probabilistic elements for overhead sub-transmission feeders and zone substations). Ausgrid in particular had a special obligation to comply with a Sub-transmission N-2 criterion in the Sydney CBD, which although a common criterion in other major global cities, is unique within Australia. These conditions therefore impose limitations on asset utilisation under system normal which may not be imposed on other jurisdictions in the NEM.

These factors also affect the joint transmission network planned between Ausgrid and TransGrid, which covers a heavily meshed 330kV and 132kV system. Planning criteria outlined in the NSW Industry and Investment transmission reliability standards require additional security of supply for the Inner Metropolitan Area (defined as the network supplied by TransGrid BSPs Sydney North, Sydney South, Beaconsfield and Haymarket), known as "Modified N-2". This requirement, coupled with the unique meshed arrangement with radial 330kV supplies feeding the inner city area, result in very low system normal load flows on some 132kV feeders, as they are sized to compensate for the loss of much higher capacity 330kV supplies under contingency scenarios. As these feeders are high capacity and high value, they can distort comparisons with other DNSPs which do not have a similar type of network.

In addition, due to high security standards, particularly in the Sydney CBD, these assets may appear underutilised under normal conditions.

2. Geographic & Demographic factors

Ausgrid has an extremely varied geographic area and customer distribution, ranging from Muswellbrook and Scone in central NSW to the Sydney CBD and Eastern Suburbs. This variation means vast differences in load density and construction requirements and suggests overall benchmarking of Ausgrid costs may be difficult. For example, the Sydney CBD has a load density of over 160 MVA/km2 compared to 0.009 MVA/km2 in the Upper Hunter area, resulting in completely different challenges and cost structures for these areas.

Assets in denser suburban areas generally cost more than an equivalent asset installed in a less dense environment. Space to install assets is limited, and access to install and maintain assets is complex. In addition, assets in suburban and inner city areas generally must be installed indoors and underground. Due to these complexities it is often cost effective to make allowances for future expansion when installing new assets. Examples of this include installation of spare UG cable ducts, or installation of extra circuit breakers and purchasing of extra land at zone substations to cater for longer term expansion or refurbishment requirements. Conversely construction in the Upper Hunter is almost exclusively overhead and outdoor, with challenges of distance and low density being the main issues.

A further unique geographic factor affecting the Ausgrid network is the complex ria (drowned river valley) geography in the supply area, including the Sydney Harbour, Georges River and the Hawkesbury River. This geography is unique in the Australian context for a heavily urbanised area, and these natural barriers, including the surrounding sandstone cliffs and valleys, create significant additional costs for construction. This is compounded by large areas of protected vegetation (eg National Parks) around these areas. These factors are not shared by other urban distributors within NSW and the wider NEM.

Other factors that affect the cost of projects for Ausgrid in urban areas include typically higher re-instatement costs and temporary reinstatement requirements. This is due to the prevalent use of reinforced concrete pavements in the Sydney Metro area, which are more frequently used here than elsewhere in NSW and interstate.

Many areas in the Ausgrid distribution network have seen rapid development due to various demographic factors. The Lower Hunter area (near Maitland) have experienced rapid developments with rural areas being converted into urban residential areas to cater for demands on housing driven by mining activities in the Hunter region. The injection of mining investments in the area has also driven urban renewal and gentrification in Newcastle and its suburbs. The Central Coast is also a growth area, as high housing demands in Sydney and increased work opportunities in the Hunter drive people to reside in the area.

While Ausgrid acknowledges that other DNSPs have similar demographic changes in their supply area (e.g. urban residential developments in Western Sydney), it is believed that the combination of push and pull factors in the Central Coast and Hunter areas result in scales and rates of change that are unique to Ausgrid's network area.

3. Network Factors (Historical and Design)

One of the biggest factors affecting augmentation projects, costs and the resultant network utilisation are the historical design decisions and legacy systems which exist on the network.

The Ausgrid system is a combination of 132kV, 66kV, 33kV and 11kV assets. This historical configuration can lead to non-optimum sizing of assets. For example, installation of 132kV feeders to supply a single zone substation may be the most cost effective option, but results in apparent under-utilisation of the capacity of even small 132kV cables. This may be more prevalent in predominantly underground networks where the number of available cable sizes is relatively small when compared to OH conductor, and future "up-rating" of assets is very costly or impossible.

This is particularly evident during a period of asset renewal and replacement, where older, more heavily utilised assets are replaced with modern equivalent assets. In many cases the modern equivalent is larger capacity than legacy designs because of current economies of scale in procurement and where the cost differential between different sizes is small. Brownfield area development with modern standard assets may also result in a capacity mismatch between existing assets, such as 11kV trunk feeder capacity. This may limit future utilisation capabilities.

Brownfield developments will also affect unit costs. Augmenting an old legacy zone, for example, may require upgrades to protection and communication schemes which would otherwise not be required. Land costs can also be a big component, particularly in high density areas where available land is limited and expensive.

Ausgrid's urban HV feeder network is in general older than that of other DNSPs. It has been constructed with tapering conductor rating away from the zone substation. As load demand increases, it was observed in many cases that non-compliances downstream of the trunk triggered feeder augmentation. As acknowledged in Section 5.1.3 of the AER Augmentation Model Handbook, this has the effect of increasing the unit cost; with non-trunk augmentation allowing the trunk utilisation threshold to be increased. However the benefits of the augmentation would not be realised until the time augmentation is triggered.

The existence of Ausgrid's well established network also makes augmentation work difficult. The existing zone substations have limited number of available feeders for new connections. Cable routes are congested and acquisition of new easement is generally not feasible. Therefore, in many cases new feeders are prohibitive expensive or infeasible on Ausgrid's network. Augmentation is often restricted to upgrading existing feeders and reconfiguring. Such projects have low capacity factor, but achieves compliance without necessarily increasing trunk capacity.

$/MVA:

- The calculation for determining $/MVA requires the data to be available for both the MVA installed and the cost incurred for a given project. This information was only able to be reported for 625 projects undertaken during the regulatory period. Determining full information for all other projects is cost prohibitive.
- The 625 projects used to determine the $/MVA in each category are assumed to be representative of the total population of projects for their respective category for the purposes of calculating the metric. The resulting overall $/MVA was compared against the total cost booked across the SY.01.03 and SY.01.04 programmes by multiplying the $/MVA and the total MVA added for capacity related augmentation during the regulatory period. The resulting comparison produced values with 5% difference between them.

Capacity Factor:

- The method used to calculate the capacity factor for each network segment was highly dependent on the information available. A correlation of the marginal increase in MVA against the capacity of the overloaded portion of the network was not possible due to a lack of complete data sets across the segments.
- The estimated value of the capacity factor for each network segment was based on an analysis of the scope of typical capacity driven augmentation projects across the segments combined with actual project numbers for the current regulatory period taken from cost of delivery analysis. The exception to this approach was for the Long Rural segment for which the project information mentioned above was not sufficient. The capacity factor for this segment was calculated based on a sample of actual projects undertaken in this regulatory period. These projects were capacity driven augmentation involving small capacity pole-mounted distribution substations typical to a Long Rural feeder

Standard Deviation of Utilisation Threshold:

- The large degree of variability in the magnitude of any given breach of the utilisation threshold by a distribution substation makes any accurate calculation of the actual standard deviation impractical. The degree to which a substation breaches the threshold on first identification of the threshold breach is not recorded and hence cannot be reported. The assumption that the threshold breach is rectified within a maximum of 18 months is also dependant on the quantity and urgency of other scheduled work on the network and the severity of the breach.
- The estimated standard deviation is based on an assumed constant linear load growth and incorporating the escalation in utilisation between identification and rectification. In reality constant linear load growth is highly unlikely in Distribution Substations and LV Feeders, however in the absence of known data the value can be used for the purposes of the Augex model.

4.6 Table 2.4.6 - Capex and net capacity added by segment group

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 engineering and investment management systems or is based on advice from the relevant subject matter experts.

Regarding table 2.4.6, for *customer-initiated & capacity-related augmentation* and for *NSP-initiated & capacity-related augmentation*, Ausgrid's financial processes do not identify shared network augmentations triggered by new connections. As a result, this has been reported as zero. It is also difficult to provide an estimate for this since this there has not been a requirement to report this. Investigations are underway to sample/review historical projects in an attempt to estimate this and develop a process to report this in the future.

Explain the source from which Ausgrid obtained the information provided.

The information sources include:

Capex

All figures are based on the derived figures in Table 2.3.4.

Capacity Added

Sub-Transmission Line, STS and Zone Substations: Capacity Added information was compiled by subject matter experts (Senior Planners) from Ausgrid's established planning processes, such as the Planning Data Management System, Development Briefs, and Development Forecasts.

HV Feeders

The net number of 11kV feeders added to the network was sourced from GIS over the period of 2012-13 to 2013-14.

Distribution Substations & LV Feeders

The information for the net commissioned substations came from Ausgrid's ERP SAP for the population of RIN table 2.4.6. A report identified the substations with a commissioned/decommissioned date within the 2009-2014 regulatory period including any asset information required to apportion this data across the nominated asset categories.

The asset quantities for the as yet incomplete 2013/14 financial year are based on the actual quantities at the time of the report generation scaled according to the actual vs. forecast programme spend.

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

Capex

Capex: All figures are based on the derived figures in Table 2.3.4. Please refer to section 3.4 for the associated assumptions and methodology (which are based on fully allocated project costs from the reg account).

In addition to using the derived figures from Table 2.3.4, since Table 2.3.4 are structured differently, the following actions are taken to suit the required format:

Step 1: Subtransmission lines can be mapped from Table 2.3.4 as a one to one relationship;

Step 2: Based on the Reg account figures used for Table 2.3.4, separate between Zone Substations and Subtransmission Substations/Subtransmission Switching Stations;

Step 3: The total HV Feeders from Table 2.3.4 (including land and easement costs) is used as the base and then allocated based on the combined growth rate of each associated feeder category stated in Table 2.4.2 (negative growth rates are treated as zero since Ausgrid don't de-invest in a financial perspective);

Step 4: The total Distribution Substations from Table 2.3.4 (including land and easement costs) is used as the base and then allocated based on the combined growth rate of each associated feeder category stated in Table 2.4.2 (negative growth rates are treated as zero since Ausgrid don't de-invest in a financial perspective);

Step 5: The unmodelled augmentation is the net remainder of the total in Table 2.3.4 (this mostly comprised of some communication, network property and IT requirements). These costs are considered as supporting requirements associated with the other augmentation assets and in a majority of cases does not provide additional capacity independently.

Capacity Added

Sub-Transmission Line, STS and Zone Substations

With reference to planned projects, Ausgrid Planning engineers have reviewed proposed projects in the regulatory submission to identity Normal and Emergency rating increases for each project. For forecast projects, Type 1 and Type 2 capacity added is assumed to be the same as no better information exists prior to commissioning.

HV Feeders

The total net 11kV feeders added to the network was estimated based on a GIS extract showing the number and lengths of all 11kV feeders for the two periods 2012-13 and 2013-14. A comparison of the number of feeders that existed between the two periods was done and the total net number of feeders added was obtained. The GIS extract for the period 2013-14 was taken on 01/01/2014 and therefore may not contain all the data till the end of the 2013-14 financial year. All feeders in the GIS extract of lengths equal to zero were ignored as they would most likely represent feeders not connected to the network. The feeders were then classified based on the four feeder type

classifications (CBD, Urban, Short Rural, Long Rural). This was based on the requested feeder categorisation spreadsheets from 2008/09 and 2012/13 from the Reliability Group. Where the feeder type did not exist in the spreadsheets (all new feeders), it was assumed based on the overall zone feeder type. For example if the zone contained only Urban feeders then it was assumed the additional feeder added to the network was also an Urban feeder.

The net capacity of each feeder type was then calculated assuming that each additional 11kV feeder had a rating of 400A. Therefore the additional net capacity in MVA for each additional feeder was calculated to be 7.62MVA. The voltage was assumed to be 11000V in these calculations.

It was not possible to obtain the net capacity added in MVA for customer-initiated & capacity-related, or for NSP-initiated & capacity-related only, as this data is not recorded and cannot be estimated to a reasonable level.

Distribution Substations & LV Feeders

The net MVA added to each network segment is determined by the commissioned and decommissioned substations associated with that segment in the financial years indicated. The sum of commissioned MVA is reduced by the sum of the decommissioned MVA where the driver is capacity related augmentation. The MVA information for 2013/14 financial year is scaled based on the known expenditure and asset information at the end of February 2014 and the expected expenditure for the financial year.

The information for customer initiated augmentation is included in the connections RIN tables and is not reproduced in this table.

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

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

Capex

Ausgrid financial system does not capture project costs in the require feeder and substation categories and thus must be allocate using estimation methodology (ie. CBD, Urban, etc).

HV Feeders

Ausgrid does not record the actual number of 11kV feeders added to the network. A manual comparison of the trunk feeders was done by reviewing the System Diagrams published as of 1/7/2012 and as of 9/5/2014 and the differences manually read off diagrams. Any new or removed feeder was identified and the ratings in 11kV amps for both summer and winter was recorded off the diagrams. Additional feeders that were expected to be formed between 9/5/2014 and on or before 30/6/2014 were gathered from existing projects (DNP/DBs) (advice provided by the Field Services). Their ratings were calculated based on the expected cables and configuration in the project documentation. Double banked feeders were counted as 2 separate individual feeders. Feeders that did not exit the substation were not included eg Aux, FIU, Cap Banks. The feeders were then classified based on the four feeder type classifications (CBD, Urban, Short Rural, Long Rural). The classifications came from the reliability group's classification of the feeders as at 1/7/2012 and their last available classification identification done on the 31/12/2013. Feeders that did not have an identified classification (eg new feeders) were given one based on the current planning criteria definitions. Feeders that did not have an identified classification were given one based on the planning criteria definitions. Where feeder category was not available the feeder load / length and load type and surrounding feeder classifications were used to assign feeder category. Conversion to MVA of 5kV and 11kV loads used nominal voltages of 11000V and 5000V respectively. It was not possible to obtain the Net capacity added (MVA) "For customer-initiated & capacity-related augmentation" or "For NSP-initiated & capacity-related augmentation", as this data is not recorded and cannot be estimated to a reasonable level.

(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 Feeders

Ausgrid does not record the actual number of 11kV feeders added to the network. A manual comparison of the trunk feeders was done by reviewing the System Diagrams published as of 1/7/2012 and as of 9/5/2014 and the differences manually read off diagrams. Any new or removed feeder was identified and the ratings in 11kV amps for both summer and winter was recorded off the diagrams. Additional feeders that were expected to be formed between 9/5/2014 and on or before 30/6/2014 were gathered from existing projects (DNP/DBs) (advice provided by the Field Services). Their ratings were calculated based on the expected cables and configuration in the project documentation. Double banked feeders were counted as 2 separate individual feeders. Feeders that did not exit the substation were not included eg Aux, FIU, Cap Banks. The feeders were then classified based on the four feeder type classifications (CBD, Urban, Short Rural, Long Rural). The classifications came from the reliability group's classification of the feeders as at 1/7/2012 and their last available classification identification done on the 31/12/2013. Feeders that did not have an identified classification (eg new feeders) were given one based on the current planning criteria definitions. Feeders that did not have an identified classification were given one based on the planning criteria definitions. Where feeder category was not available the feeder load / length and load type and surrounding feeder classifications were used to assign feeder category. Conversion to MVA of 5kV and 11kV loads used nominal voltages of 11000V and 5000V respectively.

It was not possible to obtain the Net capacity added (MVA) "For customer-initiated & capacity-related augmentation" or "For NSP-initiated & capacity-related augmentation", as this data is not recorded and cannot be estimated to a reasonable level.

Distribution Substations & LV Feeders

Where driver information for the commissioned substations is not available (i.e. listed as "0" or "#N/A" in the available reports), the MVA is apportioned across the various drivers based upon the proportion of instances with known driver information. This estimate uses the best available data to approximate the unknown portion of data.

5 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.

5.1 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 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 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 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. The forecast information has been estimated using the historical data and the method outlined below. Customer 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. This caused some confusion and in the audit, different interpretations were applied between Table 2.5.1 and 2.5.2. This was rectified in the final RIN.

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 between 2009 and 2013 to forecast. Projects were categorised on the basis of existing categorisation and an analysis of materials booked to the various project.

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.

Table 2.5.1 does not currently include the expenditure associated with 'Commercial/Industrial – Complex connection Sub-transmission', however this expense is recorded in Table 2.5.2. There did not appear to be a clearly defined category to include Sub-transmission in Table 2.5.1, where it is clear in Table 2.5.2. Work in this category is also Contestable and therefore funded by the Customer. Ausgrid's expense is therefore minor.

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 information was obtained from reports SAP and GIS. The SAP Business Intelligence and Business Object reports were used as a basis for determining direct costs associated with new residential & commercial connections. The forecast information has been estimated using the historical data and the method outlined below.

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. This was then transposed into the RIN template directly as opposed to summarised detail.

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 total values obtained from SAP projects data.

The SAP Business Intelligence report was used as a basis for determining total expenditure associated with residential and commercial Distribution Centres (DC's) installed as a part of a customer's installation and Business Objects report was utilised to determine the total MVA added to the network. The number of DC's installed was obtained from SAP via a Business Objects (Technical Asset) report which provided the break-up into kVA categories. 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, this was based on historical data produced by subject matter experts.

Total connections volumes 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 total spend on DC's estimates for typical DC installation jobs were prepared (for free issue material only) and applied to each of the DC category totals (i.e. 60kVA, 60-600kVA and >600kVA), for residential and commercial installations. The forecasts were modelled on the SAP Business Planning and Consolidation (BPC) custom built models used to produce Ausgrid's transitional and substantive proposals. Assumptions were to correlate the kVA allocation to fix types and categories, referred to in the Low Voltage Customer Connections model.

High Voltage (HV) and Low Voltage (LV) network augmentation information for the total 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 total 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. Forecast volumes are based on data from FY2012/13 and considered to remain constant over the period 2014-2019.

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 is exploring the costs to modify our systems to record the required detail for preparation of data input into future RINs.

(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.

5.2 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 worksheets and supporting documentation as provided by the AER up until 7th March 2014 and as interpreted by the relevant completing Ausgrid business units. The information provided was primarily obtained from Ausgrid's SAP system or based on advice from the relevant business unit subject matter experts.

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 total expenditure associated with new residential & commercial connections. The forecast information has been estimated using the historical data and the method outlined below and is based upon Ausgrid's transitional and substantive proposal modelling system for connection capex (BPC).

Connection figures for Table 2.5.2 were obtained from a detailed analysis of projects within the Customer Connection program for the period 2009 - 2013. This was required because projects were not categorised in Ausgrid's systems in the same way as the AER's RIN categories. This method was used to estimate volumes for the Economic Benchmarking RIN as well as volumes of projects and expenditure by project category for the Reset RIN.

The Reset RIN required forecasts for Connections for the next regulatory period. The only way of estimating these was via a modelling approach. This modelling approach used the detailed analysis of the Customer Connection

program to estimate the volume and expenditure by project type. Estimates for historical project volumes and expenditure by category, were pro-rated on the basis of relative expenditure within the 2009-13 period. This methodology formed the basis of our substantive proposal for Customer Connection expenditure.

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

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. The forecast information has been estimated using the historical data and the method outlined below.

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

Residential & Commercial Connections

Customer connections activity is characterised by high volumes of projects with low materiality, a top down forecasting model was developed to forecast capital expenditure for customer connections. The key processes in this approach are:

- Forecasting residential and non-residential customer numbers, through considering forecasts of the various drivers
- Analysing historical connection projects to develop basic unit costs using past project volumes by work type, geographical area and recorded costs
- Developing forecast expenditure by combining the forecast connection volumes by customer type and the relevant unit costs.
- 'Minor works' costs are forecast by scaling up an average of minor works costs from the 2009-14 regulatory period using the connection volume forecast.
- 'Support costs' are forecast in a separate plan on an activity basis after taking account of activity drivers.

The expenditure for customer connections in 2009-14 was less than originally forecast. This was primarily due to the impact of the global financial crisis, which reduced development activity. While the annual number of new connections is expected to increase again, the continuing lower connection expenditure forecast from 2015 onwards is largely driven by the regulatory change and how costs will be recovered in future. 'Minor works' are other activities which contribute to the connection, such as inspections to comply with compliance requirements under the Electricity Supply Act (NSW) and design review. These typically have individual values of $10,000 or less. 'Support costs' are other activities which support connections work, such as network switching and asset inspections.

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. Forecast volumes are based on actual from FY2012/13 and considered constant over the period.

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 is exploring the costs to modify our systems to record the required detail for preparation of data input into future RINs.

(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.

6 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

6.1 2.6.1 NON-NETWORK EXPENDITURE

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

Actual data for the period FY2008/09 to FY2012/13 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 annual Regulatory Accounts and have been made in accordance with our Cost Allocation Methodology (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 and annual Regulatory Accounts, 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 FY2008/09 to FY2012/13 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 TM1 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.
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 FY2008/09 to FY2012/13 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).
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 FY2009/10 to FY2012/13 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	FY2008/09 and FY2009/10 Capex is obtained from Capex Actual Mapping file from Fixed Assets. FY2010/11 to FY2012/13 Capex, the numbers are obtained from draft Regulatory Accounts.	
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.

Other Opex Rationale:

RIN Category	Overhead Group	Rationale
Network control	Network Overhead	Attributed to control of Network system assets therefore not disclosed in template 2.6
Logistics & procurement	Network Overhead	Directly attributed non-network costs disclosed in Motor vehicles component of template 2.6
Insurance	Corporate Overhead	Not directly attributable to specific assets, but total operations
Land tax	Corporate Overhead	Directly attributed non-network costs disclosed in Property & Buildings component of template 2.6
Executive management	Corporate Overhead	Not directly attributable to specific assets, but total operations
IT planning, infrastructure and operations	Corporate Overhead	Directly attributed non-network costs disclosed in IT and Communications component of template 2.6
Property management (excluding land tax)	Corporate Overhead	Directly attributed non-network costs disclosed in Property & Buildings component of template 2.6
Training and development (including apprentices)	Network Overhead	Not directly attributable to specific assets, but total operations
Other	Network Overhead	Not directly attributable to specific assets, but total operations
Non-network alternatives (demand management)	Network Overhead	Directly attributed to programs to reduce demand on network system assets, therefore not dislosed on this template.
Customer operations	Network Overhead	Attributed to control of Network system assets therefore not disclosed in template 2.6
Network venture development, asset management, major projects & engineering and metering & connections	Network Overhead	Attributed to Network system asset development therefore not disclosed in template 2.6
Network divisional management, finance & commercial and other	Network Overhead	Not directly attributable to specific assets, but total operations
Contact centre and customer relations	Network Overhead	Not directly attributable to specific assets, but total operations
Utilities services – metering	Metering	Attributed to metering network system assets therefore not disclosed in template 2.6
Debt management	Corporate Overhead	Not directly attributable to specific assets, but total operations
Data operations	Network Overhead	Attributed to network system installation and asset data, therefore not disclosed in template 2.6.
Divisional management & other	Corporate Overhead	Not directly attributable to specific assets, but total operations

Corporate finance function	Corporate Overhead	Not directly attributable to specific assets, but total operations

Forecast Costs

Forecast costs have been based on

Expense Category	Methodology	Assumptions
Client Devices Opex	Based on forecast calculation results for IT & Communications contained in template 2.12 x proportion of client devices total IT & Communications costs incurred during 2012/13 base year.	Based on forecast model underlying assumptions.
Client Devices Capex	Based on outcomes of Non-System Capital Forecast Model.	Based on forecast model underlying assumptions.
Recurrent Opex	Based on forecast calculation results for IT & Communications contained in template 2.12 x proportion of recurrent opex of total IT & Communications costs incurred during 2012/13 base year.	Based on forecast model underlying assumptions.
Recurrent Capex	Based on outcomes of Non-System Capital Forecast Model.	Based on forecast model underlying assumptions.
Non Recurrent Opex	Based on forecast calculation results for IT & Communications contained in template 2.12 x proportion of non recurrent opex of total IT & Communications costs incurred during 2012/13 base year.	Based on forecast model underlying assumptions.
Non Recurrent Capex	Based on outcomes of Non-System Capital Forecast Model.	Based on forecast model underlying assumptions.
Car Opex	Based on forecast calculation results for Motor Vehicles contained in template 2.12 x proportion of car opex of total motor vehicle costs incurred during 2012/13 base year.	
Car Capex	Based on outcomes of Non-System Capital Forecast Model.	Based on forecast model underlying assumptions.
Light Commercial Vehicle (LCV) Opex	Based on forecast calculation results for Motor Vehicles contained in template 2.12 x proportion of light commercial vehicle opex of total motor vehicle costs incurred during 2012/13 base year.	Based on forecast model underlying assumptions.
Light Commercial Vehicle Capex	Based on outcomes of Non-System Capital Forecast Model.	Based on forecast model underlying assumptions.
Elevated Work Platform (EWP) LCV Opex	Based on forecast calculation results for Motor Vehicles contained in template 2.12 x proportion of elevated work platform LCV opex of total motor vehicle costs incurred during 2012/13 base year.	Based on forecast model underlying assumptions.
Elevated Work Platform (EWP) LCV Capex	Based on outcomes of Non-System Capital Forecast Model.	Based on forecast model underlying assumptions.

Elevated Work Platform (EWP) HCV Opex	Based on forecast calculation results for Motor Vehicles contained in template 2.12 x proportion of elevated work platform HCV opex of total motor vehicle costs incurred during 2012/13 base year.	Based on forecast model underlying assumptions.
Elevated Work Platform (EWP) HCV Capex	Based on outcomes of Non-System Capital Forecast Model.	Based on forecast model underlying assumptions.
Heavy Commercial Vehicle (HCV) Opex	Based on forecast calculation results for Motor Vehicles contained in template 2.12 x proportion of heavy commercial vehicle opex of total motor vehicle costs incurred during 2012/13 base year.	Based on forecast model underlying assumptions.
Heavy Commercial Vehicle (HCV) Capex	Based on outcomes of Non-System Capital Forecast Model.	Based on forecast model underlying assumptions.
Buildings and Property Opex	Based on forecast calculation results building and property costs contained in template 2.12	Based on forecast model underlying assumptions.
Buildings and Property Capex	Based on outcomes of Non-System Capital Forecast Model.	Based on forecast model underlying assumptions.
Other Opex	Nil opex reported as remaining Network and Corporate Overhead costs not directly attributable to system network assets.	Nil opex reported as remaining Network and Corporate Overhead costs not directly attributable to system network assets.

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 5% of total Fleet Capex spend annually is on Cars. This was multiplied by the annual Capex spend for vehicles.	The required information is not readily available from our Financial and Fleet systems.
Light Commercial Vehicle Capex	Estimated that 10% of total Fleet Capex spend annually is 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	Assumed the remaining 85% of total capex was expensed between the two HCV vehicles classes. Given that EWP's require significant additional expense, it was estimated that it costs double the costs of a normal HCV, thus providing a calculation of 66% of the remaining 85% (56%) as the proportion multiplied by the total capex spend.	The required information is not readily available from our Financial and Fleet systems.
Heavy Commercial Vehicle (HCV) Capex	Assumed the remaining 85% of total capex was expensed between the two HCV vehicles classes. Given that EWP's require significant additional expense, it was estimated that it costs double the costs of a normal HCV, thus providing a calculation of 33% of the remaining 85% (28%) as the proportion	The required information is not readily available from our Financial and Fleet systems.

	multiplied by the total capex spend.	

Forecasts

This table has been updated based on the outcomes provided by the Standard Control Services Opex Forecast Model and Non-System Capex Forecast Models for the FY2014/15 to FY2018/19 regulatory period. The Standard Control Services Opex Forecast Model has in general taken a base year approach with bottom up calculations where appropriate for identified step changes and growth factors. As this table is based on projected financial data, the contents are entirely estimated. The Non-System Capex Forecast Model has been based on a bottom up approach.

(i) 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.

Circumstance	Estimation Used	Basis for Estimate
IT and Communications Non – Network Opex	The basis used for allocation between Network and Non Network is the asset base split. It is believed this split will more closely mirror actual dollar spent on the two areas as OPEX spend is used to support this asset base.	An estimate was required for IT to split OPEX cost between System/Network and Non System/Non Network because Ausgrid do not allocate OPEX IT cost between Network and Non Network and there is no way of reconstructing this through actual allocations.
Car Capex	Estimated that 5% of total Capex spend annually is on Cars. This was multiplied by the annual Capex spend for vehicles.	Given that the required information is not readily available, feedback from the business was used as a proxy for the percentages used to split capex amongst the categories.
Light Commercial Vehicle Capex	Estimated that 10% of total Capex spend annually is on Light Commercial Vehicles. This was multiplied by the annual Capex spend for vehicles.	Given that the required information is not readily available, feedback from the business was used as a proxy for the percentages used to split capex amongst the categories.
Elevated Work Platform (EWP) HCV Capex	Assumed the remaining 85% of total capex was expensed between the two HCV vehicles classes. Given that EWP's require significant additional expense, it was estimated that it costs double the costs of a normal HCV, thus providing a calculation of 66% of the remaining 85% (56%) as the proportion multiplied by the total capex spend.	Given that the required information is not readily available, feedback from the business was used as a proxy for the percentages used to split capex amongst the categories.
Heavy Commercial Vehicle (HCV) Capex	Assumed the remaining 85% of total capex was expensed between the two HCV vehicles classes. Given that EWP's require significant additional expense, it was estimated that it costs double the costs of a normal HCV, thus providing a calculation of 33% of the remaining 85% (28%) as the proportion multiplied by the total capex spend.	Given that the required information is not readily available, feedback from the business was used as a proxy for the percentages used to split capex amongst the categories.
Motor Vehicle Opex (All Categories)	As per methodology section for information regarding calculation techniques.	Information was not readily available as per the required categories, hence we have leveraged data that was available to make appropriate estimates.

6.2 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.

The employee numbers are consistent with Average Staff Levels provided in Worksheet 2.11.

Explain the source from which Ausgrid obtained the information provided.

Actual data for the period FY2008/09 to FY2012/13 has been 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). Future balances have been estimated on currently known changes only.

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

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 system log-in accounts.

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;

Historical balances for user accounts for years prior to FY11/12 are not readily available and 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.

Historical balances for user accounts for years prior to FY2011/12 are not readily available and have been estimated based on declining trend of staff over those years. This is the best estimate for this variable.

Future balances for both number of devices and user accounts have been estimated on currently known changes only (eg. printer device rationalisation).

6.3 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 FY2008/09 to FY2012/13 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:

	2009	2010	2011	2012	2013
Leased					
Sedans	405	436	433	389	337
Station Wagons	822	875	957	971	883
Utilities / Vans	142	210	265	312	308
Owned					
EWP	222	228	242	281	271
PHB/PE	48	48	47	47	46
Trucks	643	398	437	469	464
Light Cab Chasis				306	310
Sedans			4	1	1
Special Units	49	55	50	3	3
Vans/Utilities	831	1144	1136	904	804
Wagons	82	88	90	100	93
Total	3244	3482	3661	3783	3520

Descriptor Category	Methodology	Assumptions
Number of Leased and Owned Cars	Sedans + Wagons from FigFleet	Assumed all wagons and Sedans to be 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 Chasis from FigFleet.	Assumed all Vans, Utilities, Special Units and Light Cab Chasis 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.	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 FigFLeet.	Assumed all PHB/PE and Trucks are categoried 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	Vehicles per category as a percentage of the total fleet multiplied by the total kilometres travelled for the total fleet as per FigFleet information.	Total kilometres was only able to be extracted from the FigFleet system on an overall basis, not by specific category.

(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.

Total kilometres for the overall Ausgrid fleet were the only information available for this requirement. A summary is shown below.

Year	2009	2010	2011	2012	2013
Kilometres Travelled	**58,280**	**65,370**	**66,769**	**67,500**	**61,160**

Circumstance	Estimation Used	Reason for Estimate
Average Kilometres Travelled	Vehicles per category as a percentage of the total fleet multiplied by the total kilometres travelled for the total fleet as per FigFleet information.	The required information is not readily available from our Financial and Fleet systems.

7 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.

7.1 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:

1. Provide compliance audits of vegetation management work conducted by Ausgrid during the current regulatory control period. See attachment 'RIN attachment 2.7 audits'.
2. A list of regulations that impose a material cost on performing *vegetation management* works (including, but is not limited to, bushfire mitigation regulations). See attachment RIN attachments 2.7 regulations; standards; costs 27 March 14'.
3. A list any of self-imposed standards from Ausgrid's *vegetation management* program which apply to that zone. See attachment RIN attachments 2.7 regulations; standards; costs 27 March 14'.
4. An explanation of the cost impact of regulations and self-imposed standards on performing *vegetation management* work. See attachment RIN attachments 2.7 regulations; standards; costs 27 March 14'.

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. GIS data was available for 2009/10 to 2012/13.

To classify route lengths into feeder categories the above data was combined with the 2012/13 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 refers to underground cables. This definition was not incorporated into the calculations for Template 2.7 as underground cables are not relevant to vegetation management.

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 2012/13. Earlier years have been estimated.

Average number of trees per maintenance span

GIS data. Route maintenance spans combined with;

1. 2013 reliability feeder classifications applied to 2008/09 to 2012/13
2. Ausgrid acquired 2012 and 2013 Light Detection And Ranging (LiDAR)
3. Vegetation defect data, and
4. Vegetation management contract data for 2008/09 to 2010/11

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:

1. The circuit data was split into line segments at every pole
2. Where the line segments ran parallel they were snapped together, and
3. 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:
    - CBD
    - Urban
    - 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 are as follows;

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

Services line 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 areas where the service span connected to Ausgrid's network is subject to vegetation management practises it has been counted as a span. 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.

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 used for 2012/13. 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

Ausgrid utilised LiDAR acquired data for 2011/12 and 2012/13 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 metres 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 LiDAR data acquired in 2012 did not encompass low voltage network and related defects. The coverage area for LiDAR acquisition was increased in 2013 to include low voltage (excluding services) and coverage area was increased. This results in a difference in sample data used between 2012 and 2013 shown in table below.

Sample Data Representation of Total Network

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

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 results for average number of trees and defects are as follows:

Year	Tree	Defects
2011/12	0.34	0.04
2012/13	0.30	0.06

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 number8 metres 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.

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

7.2 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.

Tree trimming and Other vegetation management costs

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

The other figures shown in Table 2.7.2 have been estimated.

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

Tree trimming and Other vegetation management costs

Prior to 2009/10 Ausgrid's corporate financial system (SAP) was not set up with the current work order structure to capture vegetation management costs. This means that data in 2008/09 for "tree trimming" and "other vegetation management costs" is unreliable so the 2009/10 data is used. For the other categories all data is estimated (see below) however the 2009/10 data was used for 2008/09.

"Other vegetation management costs" are a combination of contract management "site audit and inspection" costs and the 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 finance system (SAP) has not been set up to capture the cost information in these sub-categories, this information has been estimated. The methodology used in providing this estimated 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;

Tree trimming and Other vegetation management costs

Prior to 2009/10 Ausgrid's corporate financial system (SAP) was not set up with the current work order structure to capture vegetation management costs. This means that data in 2008/09 for "tree trimming" and "other vegetation management costs" is unreliable so the 2009/10 data is used. For the other categories all data is estimated (see below) however the 2009/10 data was used for 2008/09.

Hazard tree cutting and Tree replacement program costs

Ausgrid does not have an established "Hazardous tree cutting" program. It does conduct hazardous tree removal within the tree trimming program however, this is more of a stakeholder management issue.

Ausgrid does not have an established "Tree replacement program". As a result, Ausgrid has put in a "0" response for these cells.

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

Because Ausgrid's corporate finance system (SAP) has not been set up to capture the cost information in these sub-categories, this information has been estimated. The methodology used in providing this estimated data is explained below.

(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.

Tree trimming

Because of the unreliability of the data for the 2008/09 financial year, the 2009/10 costs have been used.

Other vegetation management costs

As stated in Section 2.4 (c) above, this figure is a combination of contract management "site audit and inspection" costs and the costs associated with gaining access ("outage costs") to the network. These figure comprise:

1. **Site audit and inspection:** 60% of Ausgrid's contract management costs. (See below for an explanation of the 60% allocation used)
2. **Outage costs:** Is a combination of outage resource costs normal time, overtime and overheads.

Because of the unreliability of the data for the 2008/09 financial year, the 2009/10 costs have been used.

All other sub-category costs

For the remainder of the data in Table 2.7.2, the following assumptions were made:

1. **Ground clearance:** 1% of Ausgrid's total tree trimming costs
2. **Vegetation corridor clearance:** 1% of Ausgrid's total tree trimming costs
3. **Inspection:** 3% of Ausgrid's total tree trimming costs
4. **Audit:** 1% of Ausgrid's total tree trimming costs
5. **Contract negotiations:** 10% of Ausgrid's contract management costs

Due to the "Maintenance" contract structure of Ausgrid's vegetation management contracts, Ausgrid approached each of its incumbent contractors to provide them with an average split in the categories above. An average of these was taken to achieve the final splits shown.

1. **Site audit and inspection:** 60% of Ausgrid's contract management costs.
2. **Contractor liaison:** 40% of Ausgrid's contract management costs

Analysis was undertaken of Ausgrid's Contract Officer time. The outcome was that approximately 60% of their time was committed to "Site audit and inspection" and 40% of their time associated with contract management activities ("Contractor liaison)

7.3 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

In completing Table 2.7.3, Ausgrid has complied with the instructions provided in sections 13.16 and 13.17 of Appendix E of the RIN.

As Ausgrid does not currently collect this information, it has blacked out the cells in line with the relevant instructions.

Consequently, there is no additional discussion of the information in this section of the Basis of Preparation.

Explain the source from which Ausgrid obtained the information provided.

Ausgrid does not currently collect this data.

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

No data provided.

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;

Ausgrid does not currently collect this 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.

Ausgrid does not currently collect this data.

8 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.

8.1 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 – ie 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 (and sub-categories). 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 line maintenance this data is not available historically – only current values can be obtained. As such these have been estimated.
- For the remaining categories this data has been obtained from SAP PM via SAP BI and processed in MS Access (file "Poles for Asset Count.mdb"). A combination of current status, commissioned date and retired date is used to determine if an asset was commissioned at the end of each year. Assets that have been identified as dual function

assets (ie 'Business Type' = "TSP") have been included in the 'SUBTRANSMISSION ASSET MAINTENANCE' categories, 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 "Poles for Asset Count.mdb"). A combination of current status, commissioned date and retired date is used to determine if an asset was commissioned at the end of each year. Assets include poles and pillar standards.

Overhead asset inspection

This data has been obtained from yearly GIS extracts giving length of commissioned mains. For data prior to 2013 the "Length" column contains a value equal to the sum of the route length for the cable code multiplied by the "ODRC Multiplier" value for that particular cable code. As the use of the multiplying factor was discontinued in 2013, the data for previous years has had to be modulated to remove the multiplying factor (and provide a route length figure for that voltage). This has been done for each of the years 2009 to 2012, with the modified value being stored in the field "ODRC Multiplier Removed Length".

These files have then been processed to provide the required summations and stored with file names:

- ODRC__NETWORK_AGE__01_07_2009.xlsx
- ODRC__NETWORK_AGE__15_09_2010 10_18_42.xlsx
- ODRC__NETWORK_AGE_01_07_2011.xlsx
- ODRC_FINYEAR_2012_NETWORK_AGE_01_07_2012.xlsx
- ODRC_FINYEAR_2013_NETWORK_AGE_01_07_2013.xlsx

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

Data File	Data extract file filters		Data used
Year(s)	Asset Category	Primary Operation Voltage	Length field used
2009-12	LV line	LV	ODRC Multiplier Removed Length
	HV line	11kV	
	HV line	12.7kV	
	HV line	22kV	
	HV line	33kV	
	HV line	66kV	
	HV line	132kV	
2013	LV line	LV	Length Total ODRC (kms)
	HV line	11kV	
	HV line	12.7kV	
	HV line	22kV	
	HV line	33kV	
	HV line	66kV	
	HV line	132kV	

Network underground cable maintenance by voltage

This data has been obtained from yearly GIS extracts giving length of commissioned mains. For data prior to 2013 the "Length" column contains a value equal to the sum of the route length for the cable code multiplied by the "ODRC Multiplier" value for that particular cable code. As the use of the multiplying factor was discontinued in 2013, the data for previous years has had to be modulated to remove the multiplying factor (and provide a route length figure for that voltage). This has been done for each of the years 2009 to 2012, with the modified value being stored in the field "ODRC Multiplier Removed Length".

These files have then been processed to provide the required summations and stored with file names:

- ODRC__NETWORK_AGE__01_07_2009.xlsx
- ODRC__NETWORK_AGE__15_09_2010 10_18_42.xlsx
- ODRC__NETWORK_AGE_01_07_2011.xlsx
- ODRC_FINYEAR_2012_NETWORK_AGE_01_07_2012.xlsx
- ODRC_FINYEAR_2013_NETWORK_AGE_01_07_2013.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 File	Data extract file filters		Data used
Year(s)	Asset Category	Primary Operation Voltage	Length field used
2009-12	LV cable	LV	ODRC Multiplier Removed Length
	HV cable	5kV	
	HV cable	11kV	
	HV cable	22kV	
2013	LV cable	LV	Length Total ODRC (kms)
	HV cable	5kV	
	HV cable	11kV	
	HV cable	22kV	

For category '33kV and above' this data has been estimated.

Network underground cable maintenance: by location

Data is not retained in this category - as such as information has been estimated.

Distribution substation equipment, zone substation equipment maintenance, zone substation property maintenance, protection systems maintenance, subtransmission asset maintenance

Asset data has been extracted from SAP PM via Business Objects and stored in files "Asset Quantities EQ.xlsx" and "Asset quantities - FL.xlsx". These records have then been mapped to the applicable categories and sub-categories using the rules contained in file "Mapping logic for Asset Quantities.xlsx". A combination of current status, commissioned date and retired date is used to determine if an asset was commissioned at the end of each year.

For categories 'Subtransmission Overhead – Pole Top & Overhead Lines' and 'Subtransmission Overhead – Tower Lines' the data has been obtained from SAP PM via SAP BI and processed in MS Access (file "Poles for Asset Count.mdb"). A combination of current status, commissioned date and retired date is used to determine if an asset was commissioned at the end of each year. Assets that have been identified as dual function assets (ie 'Business Type' = "TSP") only are selected, with all object type = POLE going to category 'Subtransmission Overhead – Pole Top & Overhead Lines' and all object type = TOWER going to categroy 'Subtransmission Overhead – Tower Lines'.

For category 'Subtransmission Underground Maintenance' this data has been estimated.

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 each year.

SCADA & network control maintenance

This data has been obtained from yearly GIS extracts giving length of commissioned mains. These files have then been processed to provide the required summations and stored with file names:

- ODRC__NETWORK_AGE__01_07_2009.xlsx
- ODRC__NETWORK_AGE__15_09_2010 10_18_42.xlsx
- ODRC__NETWORK_AGE_01_07_2011.xlsx

- ODRC_FINYEAR_2012_NETWORK_AGE_01_07_2012.xlsx
- ODRC_FINYEAR_2013_NETWORK_AGE_01_07_2013.xlsx

All records with the 'Asset Category' of "Auxiliary Cable" have been summarised to give the total length. The summarised figures are held in file "Summary Comms Cables Length and Average Age.xlsx"

Asset quantity inspected/maintained

For Categories 'POLES AND OVERHEAD LINES', 'POLE TOPS AND OVERHEAD LINES – 33kV and above' and 'SUBTRANSMISSON OVERHEAD – POLE TOP & OVERHEAD LINES' the quantities inspected have been extracted from SAP PM using Business Objects and selecting "Line Inspection" notifications. The categories have been assigned using the 'Room' field to distinguish dual function assets, distribution function 33kV and above assets, and distribution function assets below 33kV. This is stored in file "LINS completion by Year.xlsx". Service lines inspections are undertaken in conjunction with Overhead Asset Inspection, and as the expenditure for these tasks is contained within that category the quantities reported for routine service line inspections are entered as 0.

For 'POLE INSPECTION AND TREATMENT' the quantities inspected have been extracted from SAP PM using Business Objects and selecting "Pole Inspection" notifications. This is stored in file "PINS completion by Year.xlsx".

For 'OVERHEAD ASSET INSPECTION' the length inspection has been estimated.

For 'PUBLIC LIGHTING MAINTENANCE' the quantities inspected have been extracted from SAP PM using Business Objects and selecting "Bulk Lamp Replacement" notifications. This information was then loaded into a MS Access database in order to identify those records which were for lights on major roads or minor roads (using data extracted from GIS). This is held in file "Streetlights for Average Age.mdb".

For 'NETWORK UNDERGROUND CABLE MAINTENANCE: BY LOCATION': Data is not retained in this category - as such as information has been estimated.

For 'DISTRIBUTION SUBSTATION TRANSFORMERS' and '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 substation (with the exception of the HV switchgear).

For 'SCADA & NETWORK CONTROL MAINTENANCE' there are no pro-active maintenance tasks undertaken for these assets thus the inspection/maintenance quantities reported are 0.

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.

For all other categories the following applies:

- For 2009 an extract of all completed M1 inspection notifications completed in the 2009 financial year has been obtained from SAP PM via Business Objects. Identifiable planned maintenance has been manually categorised into the appropriate categories. This is stored in file "2009 Completed tasks.xls".
- For year 2010 to 2013 an extract on all completed maintenance plan calls has been extracted from SAP PM via SAP BI – using data stored in a reporting solution specifically for planned maintenance tracking and manangement. These maintenance tasks have then been manually assigned to the corresponding RIN maintenance category and summated. This is stored in file "2010 to 2013 completions.xlsx".

Average age of asset group

Pole overhead line & service line maintenance

For service line maintenance this data is not available historically – only current values can be obtained. As such these have been estimated.

For the remaining categories this data has been obtained from SAP PM via SAP BI and processed in MS Access (file "Poles for Asset Count.mdb"). A combination of current status, commissioned date and retired date is used to determine the age of an asset at the end of each 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' categories, 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 "Poles for Asset Count.mdb"). A combination of current status, commissioned date and retired date is used to determine the age of an asset at the end of each year. The average age of the assets for each year is then calculate using a standard MS Access query. Assets include poles and pillar standards.

Overhead asset inspection

This data has been obtained from yearly GIS extracts giving length of commissioned mains. For data prior to 2013 the "Length" column contains a value equal to the sum of the route length for the cable code multiplied by the "ODRC Multiplier" value for that particular cable code. As the use of the multiplying factor was discontinued in 2013, the data for previous years has had to be modulated to remove the multiplying factor (and provide a route length figure for that voltage). This has been done for each of the years 2009 to 2012, with the modified value being stored in the field "ODRC Multiplier Removed Length".

These files have then been processed to provide the required summations and stored with file names:

- ODRC__NETWORK_AGE__01_07_2009.xlsx
- ODRC__NETWORK_AGE__15_09_2010 10_18_42.xlsx
- ODRC__NETWORK_AGE_01_07_2011.xlsx
- ODRC_FINYEAR_2012_NETWORK_AGE_01_07_2012.xlsx
- ODRC_FINYEAR_2013_NETWORK_AGE_01_07_2013.xlsx

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

Data File	Data extract file filters		Data used
Year(s)	Asset Category	Primary Operation Voltage	Length field used
2009-12	LV line	LV	ODRC Multiplier Removed Length
	HV line	11kV	
	HV line	12.7kV	
	HV line	22kV	
	HV line	33kV	
	HV line	66kV	
	HV line	132kV	
2013	LV line	LV	Length Total ODRC (kms)
	HV line	11kV	
	HV line	12.7kV	
	HV line	22kV	
	HV line	33kV	
	HV line	66kV	
	HV line	132kV	

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 yearly GIS extracts giving length of commissioned mains. For data prior to 2013 the "Length" column contains a value equal to the sum of the route length for the cable code multiplied by the "ODRC Multiplier" value for that particular cable code. As the use of the multiplying factor was discontinued in 2013, the data for previous years has had to be modulated to remove the multiplying factor (and provide a route length figure for that voltage). This has been done for each of the years 2009 to 2012, with the modified value being stored in the field "ODRC Multiplier Removed Length".

These files have then been processed to provide the required summations and stored with file names:

- ODRC__NETWORK_AGE__01_07_2009.xlsx
- ODRC__NETWORK_AGE__15_09_2010 10_18_42.xlsx
- ODRC__NETWORK_AGE_01_07_2011.xlsx
- ODRC_FINYEAR_2012_NETWORK_AGE_01_07_2012.xlsx
- ODRC_FINYEAR_2013_NETWORK_AGE_01_07_2013.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 File	Data extract file filters		Data used
Year(s)	Asset Category	Primary Operation Voltage	Length field used
2009-12	LV cable	LV	ODRC Multiplier Removed Length
	HV cable	5kV	
	HV cable	11kV	
	HV cable	22kV	
2013	LV cable	LV	Length Total ODRC (kms)
	HV cable	5kV	
	HV cable	11kV	
	HV cable	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' 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 File	Data extract file filters		Data used
Year(s)	Asset Category	Primary Operation Voltage	Length field used
2009-12	HV cable	33kV	ODRC Multiplier Removed Length
	HV cable	66kV	
	HV cable	132kV	
2013	HV cable	33kV	Length Total ODRC (kms)
	HV cable	66kV	
	HV cable	132kV	

Network underground cable maintenance: by location

Data is not retained in this category - as such as information has been estimated.

DISTRIBUTION SUBSTATION EQUIPMENT, ZONE SUBSTATION EQUIPMENT MAINTENANCE, ZONE SUBSTATION PROPERTY MAINTENANCE, PROTECTION SYSTEMS MAINTENANCE, SUBTRANSMISSION ASSET MAINTENANCE

Asset data has been extracted from SAP PM via Business Objects and stored in files "Asset Quantities EQ.xlsx" and "Asset quantities - FL.xlsx". These records have then been mapped to the applicable categories and sub-categories using the rules contained in file "Mapping logic for Asset Quantities.xlsx". A combination of current status, commissioned date and retired date is used to determine the age of an asset at the end of each year. These ages are then averaged across all assets in a category using an MS Excel pivot table.

For categories 'Subtransmission Overhead – Pole Top & Overhead Lines' and 'Subtransmission Overhead – Tower Lines' the data has been obtained from SAP PM via SAP BI and processed in MS Access (file "Poles for Asset

Count.mdb"). A combination of current status, commissioned date and retired date is used to determine the age of an asset at the end of each year. Assets that have been identified as dual function assets (ie 'Business Type' = "TSP") only are selected, with all object type = POLE going to category 'Subtransmission Overhead – Pole Top & Overhead Lines' and all object type = TOWER going to categroy 'Subtransmission Overhead – Tower Lines'.

For category 'Subtransmission Underground Maintenance' this data has been obtained from yearly GIS extracts giving length of commissioned mains. For data prior to 2013 the "Length" column contains a value equal to the sum of the route length for the cable code multiplied by the "ODRC Multiplier" value for that particular cable code. As the use of the multiplying factor was discontinued in 2013, the data for previous years has had to be modulated to remove the multiplying factor (and provide a route length figure for that voltage). This has been done for each of the years 2009 to 2012, with the modified value being stored in the field "ODRC Multiplier Removed Length".

These files have then been processed to provide the required summations and stored with file names:

- ODRC__NETWORK_AGE__01_07_2009.xlsx
- ODRC__NETWORK_AGE__15_09_2010 10_18_42.xlsx
- ODRC__NETWORK_AGE_01_07_2011.xlsx
- ODRC_FINYEAR_2012_NETWORK_AGE_01_07_2012.xlsx
- ODRC_FINYEAR_2013_NETWORK_AGE_01_07_2013.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 File	Data extract file filters		Data used
Year(s)	Asset Category	Primary Operation Voltage	Length field used
2009-12	HV cable	33kV	ODRC Multiplier Removed Length
	HV cable	66kV	
	HV cable	132kV	
2013	HV cable	33kV	Length Total ODRC (kms)
	HV cable	66kV	
	HV cable	132kV	

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 each year. The average age of the assets for each year is then calculated using a standard MS Access query.

SCADA & network control maintenance

The unit of measure specified by Ausgrid for this category is length of communications cables. This data has been obtained from yearly GIS extracts giving lengths of commissioned assets. These files have then been processed to provide the required summations and stored with file names:

- ODRC__NETWORK_AGE__01_07_2009.xlsx
- ODRC__NETWORK_AGE__15_09_2010 10_18_42.xlsx
- ODRC__NETWORK_AGE_01_07_2011.xlsx
- ODRC_FINYEAR_2012_NETWORK_AGE_01_07_2012.xlsx
- ODRC_FINYEAR_2013_NETWORK_AGE_01_07_2013.xlsx

All records with the 'Asset Category' of "Auxiliary Cable" and where the 'Asset Type' contains the text "OPGW" or "OPTIC" have been copied to a worksheet titled 'Fibre' in the file for each respective year of data. All records with the 'Asset Category' of "Auxiliary Cable" and where the 'Asset Type' does not contain the text "OPGW" or "OPTIC" have been copied to a worksheet titled 'Other Aux' (for each respective year also). As there is a significant proportion

of the data that has an unknown data, an estimated average age has been applied to these lengths for each year. To provide an estimate the corresponding data used in the 2011 RIN response (file "Ausgrid – Final RIN – 2010–11 and 2011–12 templates v0.8 20111125.xls") has been used to calculate the average age for Fibre and Other Aux respectively. This calculation is seen in file "WAA calc for comms cables using 2011 RIN data.xlsx". These average ages have been used for the lengths of unknown cables for the 2011 data. For data extractions for years 2012 and 2013 the substituted age has been increased by 1 year and 2 years respectively, and correspondingly for the years 2009 and 2010 the substituted age has been decreased by 2 years and 1 year respectively. The weighted average ages for each year for Fibre and Other Aux has then been calculated separately.

These values have then been summarised in file "Summary Comms Cables Length and Average Age.xlsx" and a weighted average age across the two types has then been calculated for each year.

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;

Estimates have been used in instances where actual information is not available, or is not complete.

(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.

Asset quantity at year end

For 'SERVICE LINES' this data was estimated using the current extracted value in place of the end of 2013 figure. The data for historical years was then estimated using the number of poles reported at the end of each year in the 'POLES AND OVERHEAD LINES' category divided by the number of poles reported at the end of 2013 in the 'POLES AND OVERHEAD LINES' category multiplied by the number of services reported at the end of the 2013.

For category '33kV and above' and 'Subtransmission Underground Maintenance', this data has been obtained from yearly GIS extracts giving length of commissioned mains. For data prior to 2013 the "Length" column contains a value equal to the sum of the route length for the cable code multiplied by the "ODRC Multiplier" value for that particular cable code. As the use of the multiplying factor was discontinued in 2013, the data for previous years has had to be modulated to remove the multiplying factor (and provide a route length figure for that voltage). This has been done for each of the years 2009 to 2012, with the modified value being stored in the field "ODRC Multiplier Removed Length".

These files have then been processed to provide the required summations and stored with file names:

- ODRC__NETWORK_AGE__01_07_2009.xlsx
- ODRC__NETWORK_AGE__15_09_2010 10_18_42.xlsx
- ODRC__NETWORK_AGE_01_07_2011.xlsx
- ODRC_FINYEAR_2012_NETWORK_AGE_01_07_2012.xlsx
- ODRC_FINYEAR_2013_NETWORK_AGE_01_07_2013.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 "TMUG split.xls". This percentage is then applied to the corresponding length for voltages 33kV and above for each respective year.

Data File	Data extract file filters		Data used
Year(s)	Asset Category	Primary Operation Voltage	Length field used
2009-12	HV cable	33kV	ODRC Multiplier Removed Length
	HV cable	66kV	
	HV cable	132kV	
2013	HV cable	33kV	Length Total ODRC (kms)
	HV cable	66kV	
	HV cable	132kV	

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.

Asset quantity inspected/maintained

For 'OVERHEAD ASSET INSPECTION' the length inspected has been estimated using the proportionate number of poles that were line inspected in each year multiplied by the route length installed at the end of each year. This is required as line inspection is tracked via each pole and managed mostly via map section, and not via length of line.

For 'NETWORK UNDERGROUND CABLE MAINTENANCE: BY LOCATION' the required data is not retained in a way that inspection quantities can be reported in these categories. As such an apportionment of the total inspection quantities for 'NETWORK UNDERGROUND CABLE MAINTENANCE: BY VOLTAGE' has been applied using the proportionate length of underground high voltage cable in the CBD feeder category.

Average age of asset group

For 'SERVICE LINES', in the absence of historical data, the average age of the current profile has been estimated to be valid for all previous years. This is considered reasonable in that this closely aligns with the estimated mean for economic life.

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.

8.2 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 (and sub-categories). 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 MS Excel files ("Routine Maintenance Costs (new RIN) v1.xlsx" and "Non-Routine Maintenance Costs (new RIN) v1.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).

The extracted information in the MS Excel files ("Routine Maintenance Costs (new RIN) v1.xlsx" and "Non-Routine Maintenance Costs (new RIN) v1.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 (including the additional sub-categories inserted by Ausgrid). 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.
- 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 "Pole, overhead line and service line maintenance / service lines" unless the asset category was defined as "LV Service Mains Conductor & Accessories" (expenditure allocated to "Service lines") or the asset category was defined as OH control points (expenditure was assigned to distribution switchgear).
- 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 / LV – 11 to 22 kV as it is assumed that the majority of their work would be in relation to access HV pits in the Sydney CBD.
- For Voltage Regulation workgroups or transformer related inspection tasks, expenditure was assigned to Distribution voltage regulators 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" as this is the assumed majority of their work.
- For building maintenance workgroups, expenditure was assigned to "Pole, overhead line and service maintenance / Poles 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" as it is not planned inspection / testing.
- For protection workgroups, battery maintenance tasks are assumed to be for voltage regulators as the tasks for reclosers /ELBS's include battery replacement within the "SW180*" tasks. Non-routine expenditure is assumed to be for distribution switchgear, primarily reclosers or ELBS's.
- For telecontrol workgroups, expenditure was assigned to distribution 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 pole tops and overhead lines if the asset category was related to OH conductors , or assigned to distribution switchgear if the asset category was related to OH control points.
- For customer connections workgroups, expenditure was assigned to "Pole, overhead line and service maintenance / service lines" unless the asset category was related to LV mains or conductor (this expenditure assigned to "Poles 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 and property maintenance / Distribution switchgear".
- Expenditure identified against either a "TX" task or a voltage regulation workgroup was assigned to "Distribution substation equipment and property maintenance / Distribution voltage regulators and capacitors".
- Expenditure identified against a "DC" task was assigned to "Distribution substation equipment and property maintenance / Distribution substation - batteries".
- Expenditure identified against an "SU" task (except for task SU0106) was assigned to "Distribution substation equipment and 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 and 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 and 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 and property maintenance / Distribution substation transformers".
- Expenditure identified against an asset category which included "Zone transformer" was assigned to "Zone substation equipment maintenance / Transformers – zone substation".

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 or Subtransmission substation "switchgear" RIN sub-category (based on the "Room" field value).
- Expenditure identified against either a "TX" task, a "VR" tasks or a voltage regulation workgroup was assigned to the Zone substation or Subtransmission substation "Transformers" RIN sub-category (based on the "Room" field value).
- Expenditure identified against a "DC" task or a "DC systems" asset category was assigned to the Zone substation or Subtransmission substation "Other equipment" RIN sub-category (based on the "Room" field value).
- Expenditure identified against a "PR" task or against an asset category for "CT's and VT's" was assigned to the Zone substation or Subtransmission substation "Current / Voltage Transformers" RIN sub-category (based on the "Room" field value).
- Expenditure identified against an "ER" task was assigned to the Zone substation or Subtransmission substation "Earthing" RIN sub-category (based on the "Room" field value).
- Expenditure identified which does not have a task or asset category, or which has a "general" asset category, was assigned to the Zone substation or Subtransmission substation "other equipment" RIN sub-category (based on the "Room" field value).
- Expenditure identified against a "Reactor and capacitor" asset category, was assigned to the Zone substation or Subtransmission substation "other equipment" RIN sub-category (based on the "Room" field value).
- Expenditure identified against an "SU" task (except for tasks SU0106, SU0115 or SU0116) was assigned to the Zone substation or Subtransmission substation "other equipment" RIN sub-category (based on the "Room" field value).
- Expenditure identified against an "SU0115" or "SU0116" task or an "Oil Cont" workgroup was assigned to the Zone substation or Subtransmission substation "Oil containment" RIN sub-category (based on the "Room" field value).
- Expenditure identified against task "SU0106, against asset categories which include "Land" / "Building" or against building maintenance workgroups was assigned to the Zone substation or Subtransmission substation "Property" RIN sub-category (based on the "Room" field value).
- 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 or Subtransmission substation "SCADA & Customer Load Control" RIN sub-category (based on the "Room" field value).
- Expenditure identified against a "Protection and control" asset category and a Protection workgroup was assigned to the Zone substation or Subtransmission substation "Protection systems maintenance" RIN category (based on the "Room" field value).

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" RIN category.
- Expenditure identified against an "SW" task and a Protection workgroup was assigned to "Zone substation – switchgear" due to the very small expenditure.
- Expenditure identified against a "Control points" asset category and an OH workgroup was assigned to "Pole tops and overhead lines – 33kV and above".
- Expenditure identified against maintenance activity "Tower inspection", against a "Tower line" asset category or a "Tower" workgroup was assigned to the "Pole, Overhead Line and Service line maintenance" or "Subtransmission asset maintenance" RIN category and "Tower lines" RIN sub-category (based on the "Room" field value).
- Expenditure identified against a "Sub-transmission Mains UG" asset category was assigned to the assigned to "Network underground cable maintenance / 33kV and above" RIN sub-category.
- All other expenditure was assigned to the "Pole tops and overhead lines – 33kV and above" RIN sub-categories (based on the "Room" field value).

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 / 33kV and above" RIN sub-category and "TSP" expenditure has been assigned to the "Subtransmission asset maintenance / Subtransmission underground cable 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 or Subtransmission substation "switchgear" RIN sub-category (based on the "Room" field value).
- Expenditure identified against either a "TX" task, a "VR" tasks or a voltage regulation workgroup was assigned to the Zone substation or Subtransmission substation "Transformers" RIN sub-category (based on the "Room" field value).
- Expenditure identified against a "DC" task or a "DC systems" asset category was assigned to the Zone substation or Subtransmission substation "Other equipment" RIN sub-category (based on the "Room" field value).
- Expenditure identified against a "PR" task or against an asset category for "CT's and VT's" was assigned to the Zone substation or Subtransmission substation "Current / Voltage Transformers" RIN sub-category (based on the "Room" field value).
- Expenditure identified against an "ER" task was assigned to the Zone substation or Subtransmission substation "Earthing" RIN sub-category (based on the "Room" field value).

- Expenditure identified which does not have a task or asset category, or which has a "general" asset category, was assigned to the Zone substation or Subtransmission substation "other equipment" RIN sub-category (based on the "Room" field value).
- Expenditure identified against a "Reactor and capacitor" asset category, was assigned to the Zone substation or Subtransmission substation "other equipment" RIN sub-category (based on the "Room" field value).
- Expenditure identified against an "SU" task (except for tasks SU0106, SU0115 or SU0116) was assigned to the Zone substation or Subtransmission substation "other equipment" RIN sub-category (based on the "Room" field value).
- Expenditure identified against an "SU0115" or "SU0116" task or an "Oil Cont" workgroup was assigned to the Zone substation or Subtransmission substation "Oil containment" RIN sub-category (based on the "Room" field value).
- Expenditure identified against task "SU0106, against asset categories which include "Land" / "Building" or against building maintenance workgroups was assigned to the Zone substation or Subtransmission substation "Property" RIN sub-category (based on the "Room" field value).
- 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 or Subtransmission substation "SCADA & Customer Load Control" RIN sub-category (based on the "Room" field value).
- Expenditure identified against a "Protection and control" asset category and a Protection workgroup was assigned to the Zone substation or Subtransmission substation "Protection systems maintenance" RIN category (based on the "Room" field value).
- Expenditure identified against a "Transmission UG" or "Tunnels" workgroup was assigned to the "Network underground cable maintenance / 33kV and above" RIN sub-category or to the "Subtransmission asset maintenance / Subtransmission underground cable maintenance" RIN sub-category (based on the "Room" field value).

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.

Data for 2009 has then been further treated as per the detail in the 'estimates' section.

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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.

Estimates have been used in instances where actual information is not available, or is not complete.

For 2009 the information for the categories provided was only available for part of the year (due to the introduction of SAP PM part-way through the year). As such a multiplication factor has been applied to the dollars obtained for all categories. The multiplication factor was calculated by using the ratio of total (ie direct + non-direct) dollars reported in the 2010 financial year to the total direct costs for each maintenance type (ie routine and non-routine), and using this to calculate an estimated total direct cost for 2009 given the total (ie direct + non-direct) dollars (obtained from an internal report). This ratio of the total direct costs for 2009 to the obtained (ie part of year) costs was then applied. This is considered the best estimate as it uses the available data from 2009 in conjunction with the observed ratios from 2010.

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.

9 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.

9.1 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), and has been verified against Statutory Accounts and Regulatory Financial Statements.

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 RIN 6.4 Historical MEDs and are a subset of that worksheet including direct costs (2008/09 - 2012/13).

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 (Business Objects).

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

Total Emergency Response reported in Table 2.9 has been prepared for all Regulatory years in accordance with the IPART Accounting Separation Code and the ACCC Requirement Guidelines and aligns to IPART and ACCC Regulatory Accounting Statements from FY2006 to FY2010.

Ausgrid has prepared FY2011 - FY2013 information based on these categories. FY2011-FY2013 have used the same methodology as was applied in the regulatory accounting statements for FY2006-FY2009.

The integrated asset management system implemented in FY2010 resulted in generic costs being allocated to more direct categories. This has changed the category of costs and management has made assessments in the outer years to prepare the FY2010 – FY2013 information.

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
5. Emergency Service Officers (EMSO) costs (sourced via TM1) haves been included on the basis of 30% allocation of a network costs for 'emergency work' (the balance is other work - no supplies, reconnections etc)
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.

Assumptions made are:

- PM03 & PM04 defines emergency response
- TMED days exceeding 12/13 threshold of 2.69 define major event days
- Call Centre staff costs are allocated for in RIN worksheet 6.1 Telephone Answering
- 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;

Not applicable for all items except for cost capture of individual major event work. 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 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.

Consistent with the Economic and Reset RIN 2012/13 TMED target (2.69) has been applied to all previous regulatory years.

There are no major storms in the reporting period. Under the SAT there have been no declared major storms, ie capitalised nature induced break downs in the period defined.

10 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.

10.1 TABLE 2.10.1 – NETWORK OVERHEADS EXPENDITURE

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

As per the requirements of the written RIN Appendix E Section 15.1 information provided has been generated to show "expenditure before it is allocated to services or direct expenditure, and before any part of it is capitalised". This then defines that the information is not consistent with the Ausgrid Cost Allocation Methodology or the Classification of Services in accordance with the AER's framework and approach paper.

The information provided in table 2.10.1 is in line with the requirements of the RIN Schedule 1, APPENDIX E: PRINCIPLES AND REQUIREMENTS; and APPENDIX F: DEFINITIONS with the exception of 15.3(a)(vi), which stipulates that "Network Overhead -Other" to include training, OH&S functions, network billing, and customer service functions. All of those services are provided and managed by Ausgrid as part of its Corporate function and have therefore been included in the Corporate Overhead figures rather than as a Network Overhead as a consequence of both system constraints and ensuring comparable historical data is provided.

The format of the RIN template is such that is suggests that with the exception of the 5 mandatory categories, all Other Overheads be provided in "Expenditure Categories Currently Reported as part of the annual Regulatory Accounts". This is not possible for a number of reasons, the most significant of which, is that the current and historical RIN provide numbers consistent with the application of the Ausgrid Cost Allocation Methodology (ie. subsequent to the CAM and post the allocation of expenditure to Capital activities).

It should be noted, the financial information presented as part of Template 2.10 of the Reset RIN are prior to the Cost Allocation Methodology and therefore fundamentally different to those presented in the historical RIN. As the categories being reported currently and historically are constructed around the basis of being operational or capital in nature and whether the expenditure relates to standard control services, alternate control services or unregulated services, these are at contradiction of the data requested to be presented as part of RIN Template 2.10.

Furthermore, it is also unclear as to what specific categories currently reported as part of the annual Regulatory Accounts are being referenced (noting a variety of categories currently reported across a number of worksheets).

Explain the source from which Ausgrid obtained the information provided.

Actual data for the period FY2008/09 to FY2012/13 has been based on an extraction of actual financial data directly or via TM1 and BI from our SAP financial system. As such, the prevailing entries represent figures that have been reported in our annual audited financial statements, and annual Regulatory Accounts however cannot be readily reconciled to figures reported in either as those documents are prepared after capitalisation and application of our Cost Allocation Methodology at the time of entry.

Forecast data for FY2013/14 has been based on an extrapolation of extracted YTD actual financial data directly or via TM1 and BI from our SAP financial system, to derive a financial year forecast position.

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

As per the requirements of the written RIN Appendix E Section 15.1 numbers have had to be generated to show "expenditure before it is allocated to services or direct expenditure, and before any part of it is capitalised". These numbers therefore are not readily reconciled to any other part of our submission, or historical Regulatory Accounts.

As per the requirements of the written RIN Appendix E Section 15.2 states there are 6 mandatory categories, noting these do not correspond to historical RIN categories or the categories used in our submission. Consequently, the data provided as part of Template 2.10.1 does not readily reconcile to our submission, or our historical Regulatory Accounts, noting all financial data extracts are from our systems used to generate our historical Regulatory Accounts.

RIN Appendix E Section 15.2 stipulates a mandatory category of Other and Section 15.3(b) suggests that any other Network Overhead expenditure not yet reported in one of the mandatory categories be reported in further categories. In order to avoid potential confusion caused by reporting "Other Other" we have reported all Network

Overhead not included in the first 5 defined mandatory categories in the final mandatory category Other. Whilst it is theoretically possible to provide a further segmentation of the 'Other' figure into sub-categories, it is not a requirement of the Regulatory Information Notice as issued. Furthermore, whilst the notice provides an indication of the types of expenditure that should be included, it does not stipulate or propose any categories with which this type of expenditure should be reported. Additionally, as noted previously, any attempt to segment this expenditure in alignment with the expenditure categories currently reported as part of the annual Regulatory Accounts are inconsistent with the manner in which the data has been required to be prepared.

Network Overhead has been reported based on overhead expenditure incurred within one of the 3 Network Divisions of the company (Network Operations, Network Development and Chief Engineer). Within Network Overhead, overhead expenditure has been extracted for organisational units corresponding to each of the mandatory categories, with the residual amount of overhead being attributed to Other Network Overhead.

As this is historical data Alternate Control Services relates to Public Lighting only, and not to the services proposed to become Alternate Control Service during the next Regulatory Period (ie. 2014/19).

Overhead has been calculated in the following manner: Total Expenditure on Network LoB (Standard Control Services) less direct expenditure on Capital or System Maintenance activities, plus overheads allocated to Alternate Control Services (Public Lighting), and Unregulated Business.

The same logic has been used to derive total Ausgrid Overheads, and for each of the subcategories.

Nothing has been reported in the sections for *Overhead before Allocation to Alternative Control Service*, *Overhead before Allocation Negotiated Services* or *Overhead before Allocation Unregulated Services* because there is no expenditure to report, noting all overheads are attributed to those services, with no overhead expenditure incurred for those services prior to allocation.

Capitalised Overheads as a total has been obtained directly from the SAP financial system (via the Tm1 reporting tool) - overheads allocated to System and Non System projects.

For each of the discrete categories reported 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 % of working hours booked to capital within the division year by 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. This data was not available in 2009 due to change in financial system, so the ratio of 2010 has been applied to the 2009 figure. 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.
- Project Governance & Related Functions - all overhead in this area is capitalised.
- Other Network Overhead - this is all other capitalised overhead. Due to the vast number of cost centres that this overhead is derived from, it has not been individually calculated, but the balancing figure taken

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 the Ausgrid Cost Allocation Methodology. 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. The reduction in the level of capitalisation is not due to a change in policy, but simply due to a reduction in the overall overhead incurred.

Network Planning expenditure have been capitalised as the predominant purpose of the Network Planning group is to work on future capital programs. Both the level of total overhead incurred and the level of overhead capitalised have reduced as a result in changes to business process rather than any change to Ausgrids' Capitalisation Policy.

During 2012/13 there were improvements in the underlying business processes to allocate time directly to capital projects rather than incur as overhead expenditure and subsequently allocate this expenditure, especially in instances where expenditure could be directly attributable to a specific Capital Project.

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 the Ausgrid Cost Allocation Methodology. Both the level of total overhead incurred and the level of overhead capitalised have reduced as a result in improvements in underlying business process to allocate time directly to capital projects rather than incur as overhead expenditure and subsequently allocate this expenditure, especially in instances where expenditure could be directly attributable to a specific Capital Project.

Quality & Standards the vast majority of expenditure in this area is direct cost attributed to capital activities. The overheads associated with this are attributed to capital as a result of the Ausgrid Cost Allocation Methodology.

Project Governance is engaged in the management of our capital programs. On the same basis as Network Planning, expenditure on this function has been attributed to capital as it would not be incurred if it were not for the delivery of capital works.

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.

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 level of Capitalised Overhead can be extracted directly from the financial system. However, the nature of the cost allocation methodology that underpinned the allocation of the overheads in the current regulatory period makes it exceptionally difficult to determine the exact source of the overhead in many instances.

(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 process outlined in the methodology has been used to provide as accurate an estimate as possible of the original source of the capitalised overhead based on the categories stipulated in the RIN.

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.

10.2 TABLE 2.10.2 – CORPORATE OVERHEADS EXPENDITURE

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

As per the requirements of the written RIN Appendix E Section 15.1 information provided has been generated to show "expenditure before it is allocated to services or direct expenditure, and before any part of it is capitalised". This then defines that the information is not consistent with the Ausgrid Cost Allocation Methodology or the Classification of Services in accordance with the AER's framework and approach paper.

The information provided in table 2.10.1 is in line with the requirements of the RIN Schedule 1, APPENDIX E: PRINCIPLES AND REQUIREMENTS; and APPENDIX F: DEFINITIONS with the exception of 15.3(a)(vi), which stipulates that "Network Overhead -Other" to include training, OH&S functions, network billing, and customer service functions. All of those services are provided and managed by Ausgrid as part of its Corporate function and have therefore been included in the Corporate Overhead figures rather than as a Network Overhead as a consequence of both system constraints and ensuring comparable historical data is provided.

Explain the source from which Ausgrid obtained the information provided.

Actual data for the period FY2008/09 to FY2012/13 has been based on an extraction of actual financial data directly or via TM1 and BI from our SAP financial system. As such, the prevailing entries represent figures that have been reported in our annual audited financial statements, and annual Regulatory Accounts however cannot be readily reconciled to figures reported in either as those documents are prepared after capitalisation and application of our Cost Allocation Methodology at the time of entry.

Forecast data for FY2013/14 has been based on an extrapolation of extracted YTD actual financial data directly or via TM1 and BI from our SAP financial system, to derive a financial year forecast position.

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

As per the requirements of the written RIN Appendix E Section 15.1 numbers have had to be generated to show "expenditure before it is allocated to services or direct expenditure, and before any part of it is capitalised". These numbers therefore are not readily reconciled to any other part of our submission, or historical Regulatory Accounts.

All overhead incurred in the Corporate divisions has been defined as Corporate Overhead.

Applying similar logic to Corporate Overhead as used for Network Overhead, expenditure for a number of categories have been specifically determined with the residual balance reported as Other Corporate Overhead

As this is historical data Alternate Control Services relates to Public Lighting only, and not to the services proposed to become Alternate Control Service during the next Regulatory Period (ie. 2014/19).

Overhead has been calculated in the following manner: Total Expenditure on Network LoB (Standard Control Services) less direct expenditure on Capital or System Maintenance activities, plus overheads allocated to Alternate Control Services (Public Lighting), and Unregulated Business.

The same logic has been used to derive total Ausgrid Overheads, and for each of the subcategories.

Nothing has been reported in the sections for Overhead before Allocation to Alternative Control Service, Overhead before Allocation Negotiated Services or Overhead before Allocation Unregulated Services because there is no expenditure to report, noting all overheads are attributed to those services, with no overhead expenditure incurred for those services prior to allocation.

Capitalised Overheads as a total has been obtained directly from the SAP financial system (via the Tm1 reporting tool) - overheads allocated to System and Non System projects.

For each of the discrete categories reported the capitalised component has been determined in the following manner:

- Finance - the only capitalised overhead relates to the Business Partnering group, which was formerly embedded in each division. The overheads have been allocated to capital based on the % of working hours booked to capital within those divisions year by year (in accordance with the manner in which our cost allocation methodology actually distributes these costs).
- Property (excl Land Tax) - all overheads allocated to Capital Projects within this group
- Information Technology - all overheads allocated to Capital Projects within this group
- Learning & Development - all overheads allocated to capital projects from this group
- Metering - all overheads allocated to Capital Projects within this group
- Other Corporate - this is procurement charge internally re-allocated directly to capital projects in accordance with our cost allocation methodology

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.

The capitalisation of overheads for corporate areas is a result of the application of the Ausgrid Cost Allocation Methodology.

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 level of Capitalised Overhead can be extracted directly from the financial system. However, the nature of the cost allocation methodology that underpinned the allocation of the overheads in the current regulatory period makes it exceptionally difficult to determine the exact source of the overhead in many instances.

(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 process outlined in the methodology has been used to provide as accurate an estimate as possible of the original source of the capitalised overhead based on the categories stipulated in the RIN.

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.

11 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.

11.1 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 years 2008/09 through to 2013/14 have been allocated in accordance with Ausgrids' Cost Allocation Methodology at the time of entry.

The actual labour expenditure provided 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.

The information provided in table 2.11.1 is in line with the requirements in RIN Schedule 1, APPENDIX E: PRINCIPLES AND REQUIREMENTS; and APPENDIX F: DEFINITIONS with the exception that the ASL (average staffing level) has been based on estimated, actual or forecast positions at the end of each fiscal year, as this reflects what could be sourced from our systems.

The RIN template as provided to Ausgrid contained 7 Labour Classifications for Network Overheads and 7 for Corporate Overheads. Our systems do not have the capability of segregating staffing levels and expenditures into the classification set out by the RIN.

Whilst the data held by Ausgrid systems does allow us to identify a broad labour classification under which Average Staff Levels reside, the segmentation of a number of those classifications into Network and Corporate is unable to be done on a consistent basis. The identification of certain labour types as being only 'Network Direct' does not align with the current operations of the Ausgrid business, noting employees may fall within one of those classes of employment category albeit not reflect a direct cost of a network activity, but rather be classified as an overhead. Conversely, individuals within the labour classifications defined by the AER as being an 'Overhead' may reflect a direct cost / expenditure in undertaking Network activities (ie. Capital or Maintenance activities). It should be noted, it is not possible to segment the ASL that fall within the "overhead" classifications between Network and Corporate on any consistent basis. The organisational unit the ASL is recorded against does not necessarily indicate the activities they are working on or the activities to which this classification of ASL allocates time. On the basis that we could not provide meaningful data in the format requested by the regulator, Ausgrid has elected to provide the most accurate data that could be obtained from our systems.

Explain the source from which Ausgrid obtained the information provided.

Actual data for the period FY2008/09 to FY2012/13 has been based on an extraction of data directly or via TM1 from our SAP system.

Forecast data for staffing levels has been derived from the Ausgrid SCI. Forecast expenditure has been built on the basis of applying 13/14 forecast expenditure per ASL to the forecast staffing levels and applying inflation using a figure based on the current enterprise bargaining agreement.

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

With the exception of Stand Down Occurrences for the years 08/09 – 12/13 all entries in this template are either estimates or forecasts. For the years 08/09 – 12/13 the values are determined as estimates on the basis of the application of a number of assumptions with which the end data was required to be derived and for 13/14 through to 18/19 the values are representative of forecasts.

It could be considered that the Stand Down Occurrences figures are also an estimate, as they are based on the mapping of Job Family to Labour Classification, not on "actual" data. Ausgrid has made an underlying assumption in respect of the mapping of actual data and the basis for determining the data as an estimate.

The distinction between estimate and forecast for 13/14 is hard to make, noting all forecasts are estimated by by definition. Ausgrid has made the assumption that because the 13/14 figures are based on SCI forecast data it is a forecast.

ASL by Labour Classification

Ausgrid does not keep records of staff numbers in the labour classifications as requested by the AER, data is held in Ausgrid systems by 'Job Family' and these have been mapped to the relevant AER classifications. The mapping is shown below.

AER Classification	Ausgrid Job Family
Executive Manager	Executive (level 2 Job Family within Professional)
Senior Manager	None
Manager	None
Professional	Electrical Engineer Non-Electrical Engineer Professional (less Executive)
Semi professional	Engineering Officer
Support Staff	Administration
Intern, junior staff, apprentice	None *
Skilled electrical worker	Electrical Technician Operator Power Line
Skilled non-electrical worker	Non-Electrical Technician
Apprentice	None *
Unskilled worker	Electrical Supply Operative
Senior Managers, Managers and Apprentices are recognised in Ausgrid systems within their actual substantive job families, not by separate classifications.	

All data is required to be a combination of employee and agency (ie. labour hire) numbers. Unfortunately our historical SAP HR data has a number of gaps, consequently the basis for determining historical labour hire equivalence has been based on the respective historical years expenditure profiles for labour hire expenditure and 10/11 base agency FTE data (after consideration of inflation for each of the respective years).

The number of employees and agency (labour hire) in each category has been combined, and then adjustments have been made to:

- only recognise half of group employees (as the costs of these employees are shared with other distributors); and
- recognise apprentices as separate from the job families in which we record them within our systems;
- This has then provided a total FTE position for the previous 5 years.

An estimate of the number of FTEs working on Standard Control Services has been done by using the ratio of labour expenditure on Standard Control Services compared to the labour expenditure in total.

For the current and future years, the targeted FTE position (based on the underlying headcount & subsequent conversion to align with the SCI data) has then been allocated to Standard Control Services based on the 2012/13 labour allocation with the forecast adjusted for:

- cessation of the TSA mid 2014/15
- further reduction of TSA staff during 2015/16

It should be noted the forecast allocation of FTEs is based on Standard Control Services as they are today (ie. does not consider Metering & Network Ancillary Services as an Alternate Control Services) for comparative purposes.

Total Labour Costs

Total Labour expenditure for Standard Control Services has been extracted from our systems for the historical actual. For the current year, the Q2 forecast of total labour expenditure has been used, and subsequently allocated to SCS based on the 2012/13 base year (& consistent with the forecast approach noted in Table 1).

To estimate the expenditure in future years, the 13/14 forecast labour spend has been divided by the 13/14 headcount. This number was then escalated at 3.5% p.a. to give an average labour cost per FTE, which was then multiplied by the forecast FTE number for the year. The 1% offset is deemed to have been included in the reducing number of staff.

The total labour expenditure estimated as being attributable to standard control services has then been distributed across the FTE in each labour classification as determined previously in Table 1.

Average Productive Hours per ASL

Estimated Available Hours has been used to underpin the quantum of Productive Hours, noting our systems are simply not capable of providing the data that the AER has requested.

Per the AER definition of Productive Hours, we have deemed that using estimated Available Hours was appropriate, as Ausgrid systems are simply not capable of providing the data requested. We have been able to source the available hours used for the budget process for 2010/11 through to 2014/15 for Award and SCS. There is only 13/14 and 14/15 available for Labour Hire. Relative FTE numbers have been applied to the relevant available hours to come up with an average productive/available hours by year by labour classification.

According to the AER definition, 1st Year Apprentices have 0% productive as their time is spent in classroom learning as opposed to on the job. This has been built into the estimated average productive hours for the apprentices.

Stand Down Occurrences

Prior year 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. There is potential for understatement of the number of occurrences for apprentices, as they are not a job family that could be cross referenced.

The figure for 13/14 is an extrapolation of the January 2014 year-to-date position.

The forecasts for 2014/15 through to 2018/19 are based on the average of 2012/13 and 2013/14. An average over the past 4 years was deemed inappropriate based on analysis that reflects exceedingly high figures in earlier years, and a subsequent significant decline in the last 2 years. Consequently, it was (& is) more appropriate to use the past 2 years average, which is what has been applied.

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;

As detailed above, Ausgrid has had to provide estimated information for the following:

- The number of agency employees in 08/09 and 09/10

- The ASL working on Standard Control services
- Productive Hours
- Total Labour Costs by Labour Classification

There was no data to be found relating to the level of agency staff engaged by Ausgrid for 2008/09 and the figures that could be obtained for 09/10 were patently inaccurate.

Ausgrid is able to report on the number of staff (employees and agency), however it cannot distinguish those working on standard control from those working on alternate control or unregulated services based on HR data. As the RIN stipulates the information in this template is to relate to labour engaged in standard control services only, an estimate had to be made of the number of FTE engaged in solely that work.

The definition of Productive Hours provided in the RIN is close to what Ausgrid considers Available Hours. Ausgrid systems are not capable of providing actual Productive or Available hours for employees, and certainly not capable of providing these as an average for a labour classification.

Whilst the actual labour expenditure on standard control services could be obtained from our systems in total, it could not be broken down into the labour classifications. There could not be a consistent link made between the labour dollars determined under the Ausgrid Cost Allocation Methodology, and the employee data. An estimate has therefore been provided, using the estimated ASL numbers as the basis for allocating the labour expenditure.

(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 determining historical labour hire numbers has been based on the respective historical years expenditure profiles for labour hire expenditure and 10/11 base agency FTE data (after consideration of inflation for each of the respective years).

The estimate of the number of FTEs working on Standard Control Services has been done by using the ratio of labour expenditure on Standard Control Services compared to the labour expenditure in total and applying that ratio to the number of FTE.

Per the AER definition of Productive Hours, we have deemed that using estimated Available Hours was appropriate, as Ausgrid systems are simply not capable of providing the data requested. We have been able to source the available hours used for the budget process for 2010/11 through to 2014/15 for Award and SCS. There is only 13/14 and 14/15 available for Labour Hire. Relative FTE numbers have been applied to the relevant available hours to come up with an average productive/available hours by year by labour classification.

According to the AER definition, 1st Year Apprentices have 0% productive as their time is spent in classroom learning as opposed to on the job. This has been built into the estimated average productive hours for the apprentices.

The labour cost by labour classification has been estimated using the estimated ASL for each labour classification as the basis for spreading the labour expenditure across the labour classifications. The total labour expenditure on standard control services has been divided by the total number of ASL estimated to have been working on standard control services, and then the dollar values allocated pro rata based on the number of ASL in each labour classification.

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

11.2 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.

Actual data for FY2013/14 has been based on an extraction of data directly or via TM1 from our SAP system.

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

Average productive hours per ASL is calculated already for table 2.11.1, and the same numbers used.

Average hourly rate per ASL has been calculated by taking the forecast total labour figure for 2013/14 (table 2) and dividing that by the number of FTE x estimated available hours.

Total Overtime hours incurred March 2014 year-to-date were sourced directly from SAP, and using cross reference to job family mapped to labour classification. This figure was then divided by FTE for that classification.

Total Overtime dollars were also extracted by job family and mapped to classification. The dollars were divided by the FTE and the hours per FTE to give and 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;

As outlined above, we have had to estimate the Average Productive Work Hours per ASL Normal Time. The definition of Productive Hours provided in the RIN is close to what Ausgrid considers Available Hours. Ausgrid systems are not capable of providing actual Productive or Available hours for employees, and certainly not capable of providing these as an average for a labour classification.

As a result it can be inferred that the Average Productive Work Hours Hourly Rate per ASL is also 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.

Per the AER definition of Productive Hours, we have deemed that using estimated Available Hours was appropriate, as Ausgrid systems are simply not capable of providing the data requested. We have been able to source the available hours used for the budget process for 2010/11 through to 2014/15 for Award and SCS. There is only 13/14 and 14/15 available for Labour Hire. Relative FTE numbers have been applied to the relevant available hours to come up with an average productive/available hours by year by labour classification.

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

12 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.

12.1 Table 2.12 Input tables

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

Actual Data

Actual data for the period FY2009/10 to FY2012/13 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 Regulatory accounts and 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.

Forecast Data

This table has been updated based on the outcomes provided as part of Ausgrids' forecast operating expenditure over the period for Standard Control Services, Public Lighting and forecast capital expenditure for system assets. Ausgrid's' forecast operating expenditure for Standard Control Services has in general taken a base year approach with bottom up calculations where appropriate for identified step changes and growth factors. The model has been developed with reference to the AER's framework and approach paper and has incorporated the impact of the proposed Cost Allocation Method for the FY2014/15 to FY2018/19 regulatory period as submitted to the AER in November 2013.

The Public Lighting Opex Forecast Model has been based on a bottom up build of costs with a number of key assumptions with regards to:

1. Failure rates;
2. Schedule routine maintenance schedules
3. Asset useful lives;
4. Employee labour rates and average task handling times;
5. Overhead rates etc.

Explain the source from which Ausgrid obtained the information provided.

Actual Data

Actual data for the period FY2009/10 to FY2012/13 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

Forecast Data

This table has been updated based on the outcomes provided as part of Ausgrids' forecast operating expenditure over the period for Standard Control Services, Public Lighting and forecast capital expenditure for system assets.

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

Actual Data

Actual data for the period FY2009/10 to FY2012/13 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 existing RIN categories as follows:

Reset RIN Category	ANNUAL RIN CATEGORY
Corporate Overhead	Insurance
Corporate Overhead	Land tax
Corporate Overhead	Executive management
Corporate Overhead	IT planning, infrastructure and operations
Corporate Overhead	Property management (excluding land tax)
Corporate Overhead	Debt management
Corporate Overhead	Divisional management & other
Corporate Overhead	Corporate finance function
Network Overhead	Network control
Network Overhead	Logistics & procurement
Network Overhead	Training and development (including apprentices)
Network Overhead	Other
Network Overhead	Non-network alternatives (demand management)
Network Overhead	Customer operations
Network Overhead	Network venture development, asset management, major projects & engineering and metering & connections
Network Overhead	Network divisional management, finance & commercial and other
Network Overhead	Contact centre and customer relations
Network Overhead	Data operations
Metering	Utilities services - metering

Costs were then extracted from SAP via the TM1 tm1prod:Line of Business – iAMS (for FY2009/10 to FY2012/13) and tm1prod:Line of Business (for FY2009) cubes 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
- LOB-OTHOHS/ LOB-OTHIAL: Other Overhead Allocations

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 = LOB-OPEX less LOB-LABOUR less LOB-LABOHS less LOB-MAT less LOB-CONT less LOB-OTHOHS/LOB-OTHIAL.

The calculation of other costs above excludes overhead and indirect cost allocations to provide a direct cost view.

The amounts reported in Non-Network Expenditure for IT and Communication costs, Motor Vehicles and Buildings and Property are then deducted from overheads as these costs are included within the reported Overhead costs to ensure they are not duplicated in the template.

Public Lighting

Costs for Public Lighting have been extracted from SAP via the TM1 tm1prod:Line of Business cube against the 1010 – Network:Street Lighting Business LoB by the following cost groupings:

- LOB-OPEX: Total Opex
- LOB-LABOUR: Total Labour costs
- LOB-LABOHS: Overhead Labour Allocations

- LOB- MAT: Materials
- LOB-CONT: Contractors
- LOB-OTHOHS: Other Overhead Allocations

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

- Direct Labour Costs = LOB-LABOUR less LOB-LABOHS
- Direct Materials Costs = LOB-MAT
- Contract Costs = LOB-CONT
- Other Costs = LOB-OPEX less LOB-LABOUR less LOB-LABOHS less LOB-MAT less LOB-CONT less LOB-OTHOHS.

The calculation of other costs above excludes overhead and indirect cost allocations to provide a direct cost view.

Forecast Data

This table has been updated based on the outcomes provided as part of Ausgrids' forecast operating expenditure over the period for Standard Control Services, the Public Lighting Opex Forecast model and the Capex forecast model for System Capital.

Ausgrids' forecast operating expenditure for Standard Control Services has in general taken a base year approach with bottom up calculations where appropriate for identified step changes and growth factors. The model has been developed with reference to the AER's framework and approach paper and has incorporated the impact of the proposed Cost Allocation Method for the FY2014/15 to FY2018/19 regulatory period as submitted to the AER in November 2013.

The Public Lighting Opex Forecast Model has been based on a bottom up build of costs with a number of key assumptions with regards to:

1. Failure rates;
2. Schedule routine maintenance schedules
3. Asset useful lives;
4. Employee labour rates and average task handling times;
5. Overhead rates etc.

Further detail can be found within the Public Lighting Opex Forecast Model.

Details by expense category are shown below:

Expense Category	Source
Vegetation Management	Based on the outcomes of Opex Forecast Model Vegetation Management forecast component of System Maintenance – Inspection.
Routine Maintenance	Based on the outcomes of Opex Forecast Model System Maintenance – Inspection, less Vegetation Management, Private Mains and Asbestos Audit program. The has then been split to each asset category by the proportional split that existed in FY2012/13 in accordance with the base year methodology approach of the Opex forecast.
Non-Routine Maintenance	Based on the outcomes of Opex Forecast Model System Maintenance – Correction. The has then been split to each asset category by the proportional split that existed in FY2012/13 in accordance with the base year methodology approach of the Opex forecast.
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 details below.

Overheads

The overhead forecasts have been based on the outcomes of the Opex Forecast Model for Standard Control Services by combining the following operational expenditure categories:

Corporate Overheads:

- Finance Functions
- Information, Communications & Technology
- Insurance
- Management
- Property Management

Less: Non-Network Expenditure

- IT and Communications
- Motor Vehicles
- Buildings and Property

Network Overheads:

- Contact Centre
- Customer Operations
- Data Operations
- Engineering, Planning & Project Management
- Non-network Alternatives (Demand Management)
- Operational Technology
- Training & Development
- Other

To obtain direct labour and direct other costs, the direct/indirect split of costs that occurred during 2012/13 (the base year for the forecast model) has been used. This has been determined as follows:

- Direct Labour % = 1 - LOB-LABOHS / LOB-LABOUR
- Direct Other Cost % = 1 - LOB-OTHS / Other Costs*

This % is then applied to the Opex Forecast Model outcomes for Labour and Other costs from the above Opex categories to arrive at the direct labour and direct other costs.

* Other Costs have been calculated per the method discussed for the actual Overheads and Metering costs in this section above.

Direct materials is equivalent to the Materials opex outcomes from the Opex Forecast Model.

Direct contractors is equivalent to Contractors and Labour Hire costs with the exception of Information Technology which has Labour hire as a staff cost given the nature of their engagement.

Metering

The Metering forecast has been based on the outcomes of the Opex Forecast Model for all services (Standard Control Services, Alternate Control Services and Ancillary Network Services) across all Opex Categories.

To obtain direct labour and direct other costs, the direct/indirect split of costs that occurred during 2012/13 (the base year for the forecast model) has been used.

This has been determined as follows:

- Direct Labour % = 1 - LOB-LABOHS / LOB-LABOUR
- Direct Other Cost % = 1 - LOB-OTHS / Other Costs*

This % is then applied to the Opex Forecast Model outcomes for Labour and Other costs from the above Opex categories to arrive at the direct labour and direct other costs.

* Other Costs have been calculated per the method discussed for the actual Overheads and Metering costs in this section above.

Direct materials are equivalent to the Materials opex outcomes from the Opex Forecast Model.

Direct contractors are equivalent to Contractors and Labour Hire costs.

Public Lighting

The Public Lighting forecast has been based on the outcomes of the Public Lighting Opex Forecast Model.

After discussions with the Public Lighting AER program, the following assumptions have been made to determine the direct cost view:

- Direct Materials = Bulk materials + Spot Materials
- Direct Labour = Spot Labour + Connections Labour
- Contracts = Bulk contract
- Other = EWP costs

Non-Network Expenditure

1. IT & Communications & Building and Property

The non-network expenditure forecast has been based on the outcomes of the Opex Forecast Model for Standard Control Services for IT & Communications and Building and Properties as follows:

- IT & Communications: based on the Opex Forecast Model Outcomes for the Information Technology opex category
- Buildings and Property: based on the Opex Forecast Model Outcomes for the Property Management opex category

To obtain direct labour and direct other costs, the direct/indirect split of costs that occurred during 2012/13 (the base year for the forecast model) has been used.

This has been determined as follows:

- Direct Labour % = 1 - LOB-LABOHS / LOB-LABOUR
- Direct Other Cost % = 1 - LOB-OTHS / Other Costs*

This % is then applied to the Opex Forecast Model outcomes for Labour and Other costs from the above Opex categories to arrive at the direct labour and direct other costs.

* Other Costs have been calculated per the method discussed for the actual Overheads and Metering costs in this section above.

Direct materials are equivalent to the Materials opex outcomes from the Opex Forecast Model.

Direct contractors are equivalent to Contractors and Labour Hire costs.

2. Motor Vehicles

As Motor Vehicle costs are transferred to the other parts of the business across each Opex category via internal business charges, no independent Opex cateogory exists for these costs within the Opex Forecast Model. As such, these costs have been forecast based on taking the 2012/13 base year costs and escalating them on an annual basis by the real cost escalators used in the Opex Forecast Model.

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.

This is not applicable.

13Template 2.13 – Provisions

The information provided in template 2.13 has been completed in accordance with the AER RIN requirements and instructions applying to template 2.13 including Appendix E and F, and the requirements in the worksheet.

13.1 Table 2.13.1 - Changes in total provisions incl. RPM

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

Information reported in table 2.13.1 is consistent with the requirements in paragraph 17.1 of Schedule 1 of the RIN. The information reported is in accordance with the Regulatory Accounting Statements as well as Ausgrid's Cost Allocation Methodology (CAM)and the instructions Worksheet 2.13.

Ausgrid prepares Standard Control Services Annual Regulatory Statements for 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. The Regulatory Accounting Statements include Standard Control Services (Distribution) and Standard Control Services (Transmission) and Alternative Control Services (public lighting). The financial information provided is for each grouping of provisions identified as follows:

- Employee Benefits:
  - Employee Benefits consist of long service leave, untaken sick leave, supplementary superannuation, untaken annual leave, defined benefits superannuation, bonus provisions, on-costs provisions and accrued employee benefits.
- Restructuring costs:
  - Ausgrid's organisational structure has changed from 1 July 2012 as part of the NSW electricity industry reform program. The impact will result in a significant reorganisation and centralisation of functions, including the consolidation of some roles and the reconsideration of future workforce plans. A provision for restructure has been raised relating to agreed individual employee redundancies at 30 June 2014 covering redundant Network business roles.
- Insurance:
  - Insurance provision includes self insurance for workers' compensation and general insurance to meet the legal and constructive obligation of Ausgrid.
- Dividends:
  - Dividend provision for the regulated distribution business, provision is made for the amount of dividends determined by the Directors as declared in the Statement of Corporate Intent with NSW Treasury but not yet distributed on balance sheet date.
- Other:
  - Other provisions consist of Asbestos Remediation, Polychlorinated Biphenyls (PCB) disposal costs for end of life equipment provision, legal provision, and asset decommissioning.

Note, there have not been any material changes in accounting policies from FY2008 to FY2014.

Explain the source from which Ausgrid obtained the information provided.

Information provided is based on:

- Submitted Regulatory Accounting statements;
- Historical accounting records;
- TM1 and SAP (Ausgrid's financial accounting and reporting systems) and
- External actuarial reports.

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

Ausgrid applied the IPART Accounting Separation Code and the ACCC Information Requirement Guidelines and its Cost Allocation Methodology in providing the required information for FY2008 - FY2013.

Forecast information for FY2014 has been provided to the best of Ausgrid's knowledge based on historical results, forecast positions and current conditions.

Financial information on provisions reconciles to the reported closing balances for provisions in the Regulatory Accounting Statements for each Regulatory Year. Ausgrid has deviated from the Regulatory Accounting Statements, where more information has been obtained to meet the required categories in the Reset RIN. Where deviations have occurred, the information has been extracted from the accounting system. Movements in the provision accounts reflect the movements in the accounting system.

The disclosure of the discount rate may have impacted the values reported in the Regulatory Accounting Statements for each Regulatory Year in the categories of "increases to the provision" or "unused amount reversed during the period". The discount rate impact was estimated and was not sourced from the accounting system.

The discount rate assumptions applied to the provisions are outlined below

- **Defined Benefits Superannuation (in Employee Benefits Provisions)**

The defined benefits superannuation position has been assessed by an actuary each year. The impact and value of this assessment is recognised by Ausgrid. The actuary did not provide Ausgrid any information on the impact of discount rates unless specifically requested. The discount rate impact is known for the years ended 30 June 2012 and 2013. For FY2008 to FY2011, the discount rate impact is not known. The "increase during the period in the discounted amount arising from the passage of time and the effect of any change in the discount rate" for FY2008 to FY2009 has been estimated by Ausgrid as the year-end adjustment. The discount rate for FY2010 and FY2011 has been estimated by Ausgrid as the net impact of actuarial gains and losses as the "discounted rate impact". The discount rate for FY2014 was not able to be estimated. The expected timing of any resulting outflows is in line with the actuarial assessments obtained.

- **Long Service Leave, Supplementary Superannuation and Severance allowance, and Preserved Sick leave (in Employee Benefits Provisions)**

The position of these provisions has been assessed by an actuary each year. The impact and value of this assessment is recognised by Ausgrid. The actuary only provided information as at 31 December of each financial year. Therefore Ausgrid has rolled forward this discount rate impact to calculate an estimated 30 June discount rate effect. The discount rate for FY2014 was not able to be estimated. The expected timing of any resulting outflows is in line with the actuarial assessments obtained.

- **Workers' Compensation Insurance**

The position of this provision has been assessed by an actuary each year. The impact and value of this assessment is recognised by Ausgrid. The actuary did not provide any information on the impact of discount rates. The "increase during the period in the discounted amount arising from the passage of time and the effect of any change in the discount rate" for FY2008 to FY2013 has been estimated by Ausgrid using the actuarial numbers of "effect of change in economic assumptions" over the "sum of changes across the period". This actuarial information used by the actuary is based on data extraction dates which are not exact balance sheet dates. The discount rate for FY2014 was not able to be estimated. The expected timing of any resulting outflows are in line with the actuarial assessments obtained.

- **PCB and Site Remediation provisions (in Other Provisions)**

The discount rate applied to the PCB and the Site Remediation provisions was based on market yield on Commonwealth government 10 year bond rate as at 30 June for the relevant year.

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.

Ausgrid has used estimated information for "The increase during the period in the discounted amount arising from the passage of time and the effect of any change in the discount rate" where actual information was not available.

Information provided is categorised as estimates as they are not readily available from either Ausgrid's annual financial statements, TM1 or SAP. Furthermore, actuaries have not specifically provided Ausgrid this information. The disclosure of the discount rate may have impacted the values reported in the Regulatory Accounting Statements for each Regulatory Year in the categories of "increases to the provision" or "unused amount reversed during the period".

Ausgrid has outlined above under Methodology and Assumptions the basis for the estimates.

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.

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.

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.

13.2 Table 2.13.2 - Allocation of movement in total provisions incl. RPM

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

Information reported in Table 2.13.2 is consistent with the requirements in paragraph 17.1 of Schedule 1 of the RIN. The information reported is in accordance with the Regulatory Accounting statements as well as Ausgrid's Cost Allocation Methodology and the instructions Worksheet 2.13.

Explain the source from which Ausgrid obtained the information provided.

Information provided is based on:

- Submitted Regulatory Accounting statements;
- Historical accounting records;
- TM1 and SAP (Ausgrid's financial accounting and reporting systems) and
- External actuarial reports

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

Employee Benefits

Significant fluctuations in employee benefits mainly reflect the movements based on actuarial assessments and calculations as a result of changes in long government bond rates. In Table 2.13.1, the increases in the provisions in FY2007/08, FY2009/10 and FY2011/12 mainly relate to the decreasing long term government bond rate and this also affects the "increase during the period in the discounted amount arising from the time and discount rate" and "unused amounts".

Restructuring Costs

The movement in FY2013 represents cost related to recent restructuring in Ausgrid. This was disclosed separately for the first time in FY2013. In previous years, this was disclosed in the Other Provision category. FY2014 restructuring cost movement has not been forecasted as information is currently not available.

Insurance

Significant increase in FY2012 relate to workers' compensation adjustments based on actuarial calculations. The movement in FY2013 in Table 3.1.2 and movement in 'unused amounts' in Table 3.1.1 reflect the adjustment to the workers compensation related to the changes in the legislation and hence change in measurement for the year end actuarial calculation.

Other

Significant movement is noted in FY2010 due to increase in provision mainly relating to site remediation. A new provision was recognised for contaminated land restoration and an increase in asbestos work. It is expected that these provisions will be utilised across the next 4 years (FY2011-2015). FY2012 increases in the provision related to an update in the assumptions and impact of the discount rate for the provision related to the removal of Polychlorinated Biphenyls (PCB) oil which is required by legislation, a further recognition of decommissioning costs and restructuring costs.

Movement in provisions allocated to Capex

Ausgrid has not shown 'movement in provisions allocated to as-incurred capex by asset class' (table 2.13.2) as the net impact of the provision movement is fully utilised. Ie. increases in capex is fully utilised during the year.

Movement in provisions allocated to Other

Employee benefits

The provision movement reflects the impact of the defined benefits superannuation which is posted to equity accounts. This follows the accounting standard treatment. This accounting standard change commenced in FY2009.

Dividend

Provision for dividend is 70% of Ausgrid's Net Profit After Tax subject to guidelines provided by the Treasury and in line with Ausgrid's Cost Allocation Methodology.

Other

Provision for PCB disposal and decommissioning movements reflect the increase in the discount impact which is reflected in interest expense as well as the impact to asset values (not capex). This is in line with the accounting standards.

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.

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.

14 Template 2.14 – Forecast price changes

The information provided in template 2.14 has been completed in accordance with the AER RIN requirements and instructions applying to template 2.14. The requirements are outlined in paragraph 18.3 of Schedule 1 of the RIN and instructions in the template.

14.1 Table 2.14.1 - Forecast labour and materials price changes

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

The RIN requires:

- Labour & material price changes assumed by Ausgrid in estimating forecast capex and opex proposals.
- Provision of models used to derive price changes, copies if Enterprise Bargaining Agreements and
- Evidence that forecast price changes accurately explain the price of materials previously purchased by Ausgrid.

Data provided in RIN Template 2.14.1 contains historic and forecast labour & material price changes.

The models used to derive the historic & forecast price changes developed by CEG are attached to the regulatory proposal (Attachment 5.19 to the regulatory proposal (document ID 00278).

It should be noted that certain costs such as civil construction costs are not readily comparable. In the current regulatory period these costs were impacted by changes in delivery method (Alliance arrangements).

Explain the source from which Ausgrid obtained the information provided.

Sources of information by type include:

Labour Costs

- Ausgrid Enterprise Bargaining Agreement
- Independent Economics Analysis & Report (Based on ABS Data)

Material Costs

- Construction Costs:
  - Construction Forecasting Council Forecasts (Based on ABS Data)
- Copper & Aluminium Prices:
  - London Metal Exchange Data (Bloomberg)
  - Consensus Economics Forecasts
- Steel Prices
  - MEPS (International) LTD (MEPS) Asia CBN Data (Bloomberg)
  - Consensus Economics Forecasts
- Oil
  - Assumed constant real $US prices (AER approach)
  - US Department of Energy (Not used for forecast)
  - Consensus Economics Forecasts

Australian Dollar Exchange Rate

- Forward Market Rates (Bloomberg.)

CPI

- CPI to deflate Labour Costs to real (Independent Economics)
- CPI to deflate Commodity Futures (RBA forecasts).

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

Methodology is outlined in the following reports:

- Escalation factors affecting expenditure forecasts, Draft Report 230713
- Escalation factors affecting expenditure forecasts, December 2013 - CEG Asia Pacific (attached)
- Labour cost escalators for NSW, the ACT and Tasmania, February 2014 – Independent Economics.

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;

Historical information is based on actual information (i.e Enterprise Bargaining Agreement data, Commodity market prices, Exchange rates and ABS Data). In the case of major items of equipment, it is necessary to rely on price adjustment formulae contained in procurement contracts (when available). In some cases this is not possible since the contract period is short and suppliers include allowances for expected commodity price movements in their contract offer.

(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.

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15 Template 2.15 – Commercial insurance and self-insurance

The information provided in template 2.15 has been completed in accordance with the AER RIN requirements and instructions applying to template 2.15 including Appendix E and F, and the requirements in the worksheet.

15.1 Table 2.15.1 - Forecast commercial insurance premiums by risk category

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

The information provided in table 2.15.1 is consistent with the requirements in the RIN. As required by paragraph 11.2(a) of Schedule 1 of the RIN, table 2.15.1 provide a summary of all Ausgrid's proposed insurance costs. These costs exclude GST.

As required by paragraph 11.3 of Schedule 1 of the RIN, the following information is provided for each commercially insured risk listed in table 2.15.1:

1. The name and description of each insured risk, including policy limits and sublimits;
2. Description of the general method used to forecast premiums (this may be in the form of an insurance premium forecast report by a qualified risk specialist);
3. No changes in cover between current and forecast .However policy limits, excess levels and extent of coverage are reviewed annually based upon updated risk information (including claims experience) and insurance market conditions which are cyclical.

Explain the source from which Ausgrid obtained the information provided.

Ausgrid's insurance brokers', Aon and Marsh (risk specialists), reports provided premium/rate forecasts and past premiums

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

In accordance with paragraph 11.3 of Schedule 1 of the RIN, Ausgrid has forecast 2014-2019 premiums with its insurance brokers, Aon and Marsh, providing their rate/premium estimates of the cyclical insurance market using their 2013-14 budget premiums as a base. Where appropriate, Ausgrid has then increased property values to account for assets under construction coming on stream eg City East cable tunnel which will increase the replacement values used by insurers to calculate their property insurance premiums in addition to CPI. Bushfire risk continues as a major issue for global insurers. Black Saturday and more recent Australian fires, particularly the October 2013 Blue Mountain bushfires, remain fresh in insurers' minds and could lead to significantly increased premiums.

Additional assumptions:

- No major bushfire losses in Australia;
- Claims generally consistent with past history;
- Deductibles remaining static;
- No significant change in risk profile;
- No limit changes;
- No global events which may impact the insurance market generally; and
- No changes to stamp duty or other government imposts.

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;

See above plus due to the cyclical and sometimes unpredictable nature of the insurance market.

Refer to Ausgrid notes providing responses to Paragraph 11.2 to 11.8 of schedule 1 of the RIN.

(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.

See above.

15.2 Table 2.15.2 - Insurance premium - Total property

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

As required by paragraph 11.2(b) of Schedule 1 of the RIN, the information provided in tables 2.15.2 provides more detailed information regarding total property and liability premiums only. As required the total property premiums forecast in table 2.15.2 equals the sum of the premium forecasts classed as property insurance in table 2.15.1.

Explain the source from which Ausgrid obtained the information provided.

See responses to 2.15.1 above.

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

See responses to 2.15.1 above.

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;

See responses to 2.15.1 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.

See responses to 2.15.1 above.

15.3 Table 2.15.3 - Insurance premium - Total liability

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

As required by paragraph 11.2(b) of Schedule 1 of the RIN, the information provided in tables 2.15.3 provides more detailed information regarding total property and liability premiums only

Explain the source from which Ausgrid obtained the information provided.

See responses to 2.15.1 above. NB comments regarding bushfire liability claims and October 2013 Blue Mountain fires

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

See responses to 2.15.1 above.

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;

See responses to 2.15.1 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.

See responses to 2.15.1 above.

15.4 Table 2.15.3 - Insurance premium - Total liability

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

As required by paragraph 11.7 of Schedule 1 of the RIN, the information provided in tables 2.15.4 provides information regarding Ausgrid's self insurance costs and is consistent with the requirements in the RIN .

Explain the source from which Ausgrid obtained the information provided.

Ausgrid records and appointed actuary.

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

The following is the current premium allocation methodology:

- The Group Insurance Committee (GIC) consider the broker's recommendations as to the
- estimated premium and the split between Fire and General Liability (GL) which will be used in the formula. The GIC will also review annually any other issues that may impact on the allocation to ensure fairness to all parties.
- Maintain the Fire premium allocation percentage/formula previously established (ie based on a number of factors such as population, length of lines, rainfall, vegetation, area etc) to apply to the Fire content of premium.
- Each year 50% of the G L premium proportion to be allocated based on the insured claims performance of each member for the previous five (5) full insurance years as a percentage of the group insured claims for the same period as at 31st December each year and capping anyone claim at $500,000. ie the maximum amount for any claim included in the formula is $500,000. Also adjusting for sold business eg water assets.
- Each year 50% of the GL premium proportion to be allocated based upon each member's estimated revenue for the budget year in question as a % of the group revenue.

This methodology means the overall proportion allocated to each of the Group can change each year due to the GL claims element of the formula.

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;

Due to the nature of the information required it must be based upon estimates for the future.

(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.

Ausgrid's brokers, Aon and Marsh, provided premium/rate estimates. Ausgrid then adjusted the Property insurance to factor in any new assets coming on stream after acquisition and/or construction and CPI.

16 Template 2.16 – Opex Summary

The information provided in template 2.16 has been completed in accordance with the AER RIN requirements and instructions applying to template 2.16 including Appendix E and F, and the requirements in the worksheet.

16.1 Table 2.16.1 – Standard control services opex by driver

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

This table has been updated based on the outcomes provided by the Standard Control Services Opex Forecast Model for the FY2014/15 to FY2018/19 regulatory period. The Standard Control Services Opex Forecast Model has in general taken a base year approach with bottom up calculations where appropriate for identified step changes and growth factors. This model has been developed with reference to the AER's framework and approach paper and has incorporated the impact of the proposed Cost Allocation Method for the FY2014/15 to FY2018/19 regulatory period as submitted to the AER in November 2013.

It effectively splits expenditure to each required driver based on the methodology described below. Additionally, the split for Dual Function assets has been provided based on the costs allocated to Transmission Services.

Explain the source from which Ausgrid obtained the information provided.

This table has been updated based on the outcomes provided by the Standard Control Services Opex Forecast Model for the FY2014/15 to FY2018/19 regulatory period. The Standard Control Services Opex Forecast Model has in general taken a base year approach with bottom up calculations where appropriate for identified step changes and growth factors. The base year FY2012/13 results from which this forecast have been based on have been taken from Ausgrids SAP financial accounting ledger via TM1 extraction software and has been reconciled to the FY2012/13 annual RIN submitted to the AER.

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

This table has been updated based on the outcomes provided by the Standard Control Services Opex Forecast Model for the FY2014/15 to FY2018/19 regulatory period. The Standard Control Services Opex Forecast Model has in general taken a base year approach with bottom up calculations where appropriate for identified step changes and growth factors.

As Ausgrid has taken a 'base year' approach and it has been assumed in the Standard Control Services Opex Forecast that there are no dual function assets, only table 2.16.1 has been completed per the instructions detailed in template 2.16 Opex Summary Instructions. The respective sections of the table have been calculated using the following methodology:

1. **Efficient historic opex**: The underlying Standard Control Services Opex before real price escalation, productivity savings and step changes are applied to the Opex Forecast.
2. **Real price changes**: The total value of real price escalation calculated in the Standard Control Services Opex Forecast model applying the price escalators developed by CEG in the independent price escalation report provided by Independent Economics in December 2013.
3. **Output growth factors**: This value has been based on the total value of the following productivity initiative implementation costs and efficiency savings inherent within the Standard Control Services Opex Forecast model:
    - Incremental Opex from IT Business Cases contained within the Non-System Capital Program which used a bottom up costing approach;
    - Incremental Opex associated with the increase in NEMS activity post the cessation of the TSA;
    - Incremental Opex associated with NECF requirements and the end of the Solar Bonus Scheme in data operations;
    - Incremental Opex associated with the Broadbased Demand Program;
    - Incremental Opex associated with Private Mains Inspection Plan; and
    - Incremental Opex associated with Asbestos Inspection and Audit Plan.

4. **Productivity growth**: This value has been based on the total value of the following productivity initiative implementation costs and efficiency savings inherent within the Standard Control Services Opex Forecast model:
    - Incremental cost impediments associated with the cessation of the TSA and the introduction of the proposed Cost Allocation Methodology for the FY2014/15 to FY2018/19 regulatory period by comparing the difference in allocation under the current Cost Allocation Methodology by applying both to the base year of FY2012/13;
    - Management commitment to deliver efficiencies to offset the impacts of the cessation of the TSA and proposed Cost Allocation Methodology;
    - Implementation costs associated with the implementation of Network Reform Program initiatives and staff exit restructure costs;
    - Opex savings associated with Network Reform Program initiatives as determined in conjunction with Networks NSW; and
    - Cost reductions from changes to the apprenticeship & cadet scheme.
5. **Step changes:** The total value of step changes included in the Standard Control Services Opex Forecast model as contained in Template 2.17 Step Changes, table 2.17.1 – Forecast opex step changes for standard control services. Details of the methodology applied to obtain these numbers are contained in section 17 Worksheet 2.17 Step Changes.

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;

This table has been updated based on the outcomes provided by the Standard Control Services Opex Forecast Model for the FY2014/15 to FY2018/19 regulatory period. The Standard Control Services Opex Forecast Model has in general taken a base year approach with bottom up calculations where appropriate for identified step changes and growth factors. As this table is based on projected financial data, the contents are entirely 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.

The Standard Control Services Opex Forecast Model has in general taken a base year approach with bottom up calculations where appropriate for identified step changes and growth factors. The efficient 'Base Year' has been identified as FY2012/13. This year has been considered as the efficient 'Base Year' as it is the year that best represents the operations of Ausgrid moving into the next regulatory period as well as being the lowest reported period of expenditure.

16.2 Table 2.16.2 - Standard control services opex by category

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

As Ausgrid has taken a 'base year' approach in the Standard Control Services Opex Forecast this table and was not required to be completed per the instructions detailed in template 2.16 Opex Summary Instructions.

Explain the source from which Ausgrid obtained the information provided.

Ausgrid has taken a 'base year' approach in the Standard Control Services Opex Forecast this table and was not required to be completed per the instructions detailed in template 2.16 Opex Summary Instructions.

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

Ausgrid has taken a 'base year' approach in the Standard Control Services Opex Forecast this table and was not required to be completed per the instructions detailed in template 2.16 Opex Summary Instructions.

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;

Ausgrid has taken a 'base year' approach in the Standard Control Services Opex Forecast this table and was not required to be completed per the instructions detailed in template 2.16 Opex Summary Instructions.

(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.

Ausgrid has taken a 'base year' approach in the Standard Control Services Opex Forecast this table and was not required to be completed per the instructions detailed in template 2.16 Opex Summary Instructions.

16.3 Table 2.16.3 - Dual function assets opex by driver

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

This table has been completed based on the outcomes provided by the Standard Control Services Opex Forecast Model for the FY2014/15 to FY2018/19 regulatory period. The Standard Control Services Opex Forecast Model has in general taken a base year approach with bottom up calculations where appropriate for identified step changes and growth factors. This model has been developed with reference to the AER's framework and approach paper and has incorporated the impact of the proposed Cost Allocation Method for the FY2014/15 to FY2018/19 regulatory period as submitted to the AER in November 2013.

The results of table 2.16.1 were taken and the proportional split of costs relating to transmission over the forecast period was applied to provide the costs associated with dual function assets.

Explain the source from which Ausgrid obtained the information provided.

This table has been updated based on the outcomes provided by the Standard Control Services Opex Forecast Model for the FY2014/15 to FY2018/19 regulatory period. The Standard Control Services Opex Forecast Model has in general taken a base year approach with bottom up calculations where appropriate for identified step changes and growth factors. The base year FY2012/13 results from which this forecast have been based on have been taken from Ausgrids SAP financial accounting ledger via TM1 extraction software and has been reconciled to the FY2012/13 annual RIN submitted to the AER.

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

Refer to the discussion in section 16.1 for details.

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;

This table has been updated based on the outcomes provided by the Standard Control Services Opex Forecast Model for the FY2014/15 to FY2018/19 regulatory period. The Standard Control Services Opex Forecast Model has in general taken a base year approach with bottom up calculations where appropriate for identified step changes and growth factors. As this table is based on projected financial data, the contents are entirely 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.

The Standard Control Services Opex Forecast Model has in general taken a base year approach with bottom up calculations where appropriate for identified step changes and growth factors. The efficient 'Base Year' has been identified as FY2012/13. This year has been considered as the efficient 'Base Year' as it is the year that best

represents the operations of Ausgrid moving into the next regulatory period as well as being the lowest reported period of expenditure.

16.4 Table 2.16.4 – Dual function assets opex by category

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

Ausgrid has taken a 'base year' approach in the Standard Control Services Opex Forecast this table and was not required to be completed per the instructions detailed in template 2.16 Opex Summary Instructions.

Explain the source from which Ausgrid obtained the information provided.

Ausgrid has taken a 'base year' approach in the Standard Control Services Opex Forecast this table and was not required to be completed per the instructions detailed in template 2.16 Opex Summary Instructions.

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

Ausgrid has taken a 'base year' approach in the Standard Control Services Opex Forecast this table and was not required to be completed per the instructions detailed in template 2.16 Opex Summary Instructions.

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;

Ausgrid has taken a 'base year' approach in the Standard Control Services Opex Forecast this table and was not required to be completed per the instructions detailed in template 2.16 Opex Summary Instructions.

(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.

Ausgrid has taken a 'base year' approach in the Standard Control Services Opex Forecast this table and was not required to be completed per the instructions detailed in template 2.16 Opex Summary Instructions.

17Template 2.17 – Step changes

The information provided in template 2.17 has been completed in accordance with the AER RIN requirements and instructions applying to template 2.17 including Appendix E and F, and the requirements in the worksheet.

17.1 Table 2.17.1 – Forecast opex step changes for standard control services

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

Actual Data

Actual data for the period FY2009/10 to FY2012/13 has been based on an extraction of financial accounting entries relating to specific end of year adjustments associated with the required annual actuarial assessment of Ausgrids' Long Service Leave Provision and subsequent reported on an annual basis as part of the Corporate Finance expenditure category of Ausgrids' Regulatory accounts as they relate to Standard Control Services. Consequently, the prevailing entries have been made in accordance with Ausgrids' (nee EnergyAustralias's) approved Cost Allocation Methodology at the time of entry and include costs associated with both Distribution & Transmission activities for Standard Control Services.

Forecast Data

This table has been updated based on the outcomes provided as part of Ausgrids' forecast operating expenditure over the period for Standard Control Services. Ausgrids' forecast operating expenditure for Standard Control Services has in general taken a base year approach with bottom up calculations where appropriate for identified step changes and growth factors. The model has been developed with reference to the AER's framework and approach paper and has incorporated the impact of the proposed Cost Allocation Method for the FY2014/15 to FY2018/19 regulatory period as submitted to the AER in November 2013.

Explain the source from which Ausgrid obtained the information provided.

Actual Data

Actual data for the period FY2009/10 to FY2012/13 has been based on an extraction of the contents of Ausgrids' Sundry Trading Profit Centre from SAP (Ausgrids' financial ERP), and the same basis of preparation of Ausgrids' annual Regulatory accounts. Ausgrids' Sundry Trading Profit Centre contains a number of end of financial year adjustments that relate to the organisation as a whole and has been reported on annual basis as part of the Corporate Finance expenditure category of Ausgrids' Regulatory accounts as they relate to Standard Control Services. All items within the SAP ledger for this Profit Centre relating to Long Service Leave actuarial adjustments required as part of the organisations compliance with Accounting Standards for an assessment of future liabilities associated with Employee Remuneration Entitlements have been identified and itemised separately as a historical step change.

Forecast Data

The step changes included in the model have been modelled based on feedback from the business on the approved step changes to be included for Standard Control Services Opex for the next regulatory period as follows:

1. **Head Office Sale and Leaseback**: based on the associated head office lease costs per the sale contract for a period of three years (two years plus a one year option) and a reduction maintenance costs upon relocation of staff to RCH based on current maintenance costs incurred for head office.

This table has been updated based on the outcomes provided as part of Ausgrids' forecast operating expenditure over the period for Standard Control Services. Ausgrids' forecast operating expenditure for Standard Control Services has in general taken a base year approach with bottom up calculations where appropriate for identified step changes and growth factors. The model has been developed with reference to the AER's framework and approach paper and has incorporated the impact of the proposed Cost Allocation Method for the FY2014/15 to FY2018/19 regulatory period as submitted to the AER in November 2013.

The step changes included as outcomes of Ausgrids forecast operating expenditure for Standard Control Services have been modelled based on feedback from the business with regards to the forecast impacts over the next regulatory period as follows:

1. **Demand Management:** Broad Based Demand Program costs as contained in the Standard Control Services Opex Forecast Model based on the content of the Demand Management Opex Supporting Document.
2. **Private Mains Inspections**: Private Mains Inspection Plan costs as contained in the Standard Control Services Opex Forecast Model based on the content of the System Maintenance Opex Supporting Document and Maintenance Opex Forecast Model.
3. **Head Office Sale and Leaseback**: Associated head office lease costs and maintenance savings as contained in the Standard Control Services Opex Forecast Model based on the content of the Property Opex Supporting Document and Property Opex Forecast Model.
4. **Efficiency Initiatives Implementation Costs**: Total implementation costs and associated staff exit costs as contained in the Standard Control Services Opex Forecast Model.

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

Actual Data

Actual data for the period FY2009/10 to FY2012/13 has been based on an extraction of the contents of Ausgrids' Sundry Trading Profit Centre from SAP (Ausgrids' financial ERP), and the same basis of preparation of Ausgrids' annual Regulatory accounts. Ausgrids' Sundry Trading Profit Centre contains a number of end of year adjustments that relate to the organisation as a whole and has been reported on annual basis as part of the Corporate Finance expenditure category of Ausgrids' Regulatory accounts. All items within the SAP ledger for this Profit Centre relating to Long Service Leave actuarial adjustments required as part of the organisations compliance with Accounting Standards for an assessment of future liabilities associated with Employee Remuneration Entitlements have been identified and itemised separately as a historical step change.

Forecast Data

The step changes included in the model have been modelled based on feedback from the business on the approved step changes to be included for Standard Control Services Opex for the next regulatory period as follows:

1. **Head Office Sale and Leaseback**: based on the associated head office lease costs per the sale contract for a period of three years (two years plus a one year option) and a reduction maintenance costs upon relocation of staff to RCH based on current maintenance costs incurred for head office.

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;

Forecast Data

This table has been updated based on the outcomes provided by the Standard Control Services Opex Forecast Model for the FY2014/15 to FY2018/19 regulatory period. The Standard Control Services Opex Forecast Model has in general taken a base year approach with bottom up calculations where appropriate for identified step changes and growth factors. As this table is based on projected financial data, the contents are entirely 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.

Forecast Data

This table has been updated based on the outcomes provided by the Standard Control Services Opex Forecast Model for the FY2014/15 to FY2018/19 regulatory period. The Standard Control Services Opex Forecast Model has in general taken a base year approach with bottom up calculations where appropriate for identified step changes and growth factors. As this table is based on projected financial data, the contents are entirely estimated.

All bottom up estimates discussed above have been based on either costs derived from the content of the industrial instruments we currently operate under or historical costs and processes of activities where appropriate.

17.2 Table 2.17.2 – Forecast capex step changes for standard control services

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

Ausgrid has not disclosed any actual or proposed step changes in Capex for standard control services as such, this table has not been populated.

Explain the source from which Ausgrid obtained the information provided.

Ausgrid has not disclosed any actual or proposed step changes in Capex for standard control services as such, this table has not been populated.

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

Ausgrid has not disclosed any actual or proposed step changes in Capex for standard control services as such, this table has not been populated.

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;

Ausgrid has not disclosed any actual or proposed step changes in Capex for standard control services as such, this table has not been populated.

(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.

)

Ausgrid has not disclosed any actual or proposed step changes in Capex for standard control services as such, this table has not been populated.

17.3 Table 2.17.3 – Forecast opex step changes for dual function assets

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

Actual Data

Actual data for the period FY2009/10 to FY2012/13 has been based on an extraction of financial accounting entries relating to specific end of year adjustments associated with the required annual actuarial assessment of Ausgrids' Long Service Leave Provision and subsequent reported on an annual basis as part of the Corporate Finance expenditure category of Ausgrids' Regulatory accounts as they relate to Standard Control Services in the first instance. Consequently, the prevailing entries have been made in accordance with Ausgrids' (nee EnergyAustralias's) approved Cost Allocation Methodology at the time of entry.

The proportional allocation to Transmission activities has been based on the actual split used for the Sundry Trading Cost Centre for the respective financial years and in accordance with the application of Ausgrids (nee EnergyAustralia's) approved Cost Allocation Methodology. This split has been sourced via our TM1 software.

Explain the source from which Ausgrid obtained the information provided.

Actual Data

Actual data for the period FY2009/10 to FY2012/13 has been based on an extraction of the contents of Ausgrids' Sundry Trading Profit Centre from SAP (Ausgrids' financial ERP), and the same basis of preparation of Ausgrids' annual Regulatory accounts. Ausgrids' Sundry Trading Profit Centre contains a number of end of financial year adjustments that relate to the organisation as a whole and has been reported on annual basis as part of the Corporate Finance expenditure category of Ausgrids' Regulatory accounts as they relate to Standard Control Services in the first instance. All items within the SAP ledger for this Profit Centre relating to Long Service Leave actuarial adjustments required as part of the organisations compliance with Accounting Standards for an assessment of future liabilities associated with Employee Remuneration Entitlements have been identified and itemised separately as a historical step change.

The proportional allocation to Transmission activities has been based on the actual split used for the Sundry Trading Cost Centre for the respective financial years and in accordance with the application of Ausgrids (nee EnergyAustralia's) approved Cost Allocation Methodology. This split has been sourced via our TM1 software.

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

Actual Data

Actual data for the period FY2009/10 to FY2012/13 has been based on an extraction of the contents of Ausgrids' Sundry Trading Profit Centre from SAP (Ausgrids' financial ERP), and the same basis of preparation of Ausgrids' annual Regulatory accounts. Ausgrids' Sundry Trading Profit Centre contains a number of end of year adjustments that relate to the organisation as a whole and has been reported on annual basis as part of the Corporate Finance expenditure category of Ausgrids' Regulatory accounts. All items within the SAP ledger for this Profit Centre relating to Long Service Leave actuarial adjustments required as part of the organisations compliance with Accounting Standards for an assessment of future liabilities associated with Employee Remuneration Entitlements have been identified and itemised separately as a historical step change.

The proportional allocation to Transmission activities has been based on the actual split used for the Sundry Trading Cost Centre for the respective financial years and in accordance with the application of Ausgrids (nee EnergyAustralia's) approved Cost Allocation Methodology. This split has been sourced via our TM1 software.

Forecast Data

This has been based on the forecast Transmission v Distribution split over the forecast period.

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.

18Template 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.

18.1 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 31/12/13).

Responses provided in table 4.1.1 for Public Lighting have ben complete 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 31/12/13 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 31/12/13 was provided rather than an inaccurate count on 30/6/13.

18.2 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 or M4 notifications.

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

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

Volume of GSL breaches (0s)

This figure in 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 ($000s)

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.

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 Date1 and Date2 (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 Ausgrids 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 capexl 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.

The total cost associated with Light maintenance - volume of works and expenditure, is the total public lighting opex expenditure including all overheads.

GSL payments ($000s)

Based on the Volume of GSL beaches multiplied by $15.

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.

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.

Forecasts: Based on the average number of lights installed over the 5 years of the current determination. Total cost forecast based on nominal average of $1000/pole.

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.

Forecasts: based on future replacement programs.

The total number of steel column replacements was readily available from SAP however the split between minor and major roads was not. An average of the split between minor and major roads was used (70/30).

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.

The number of BLR work completed in SAP is not accurate, especially in the earlier years when SAP was first introduced. The number of reported jobs is a fraction of the actual work completed and using these figures would not give an accurate representation of the work performed. Figures are calculated by dividing the total street light population by 2.5 to arrive at a figure. Because of this method of calculating the work performed a 70/30 split of minor v's major roads was used (which on average is the split between the two).

Forecasts: based on current figures and anticipated drops in spot maintenance due to more reliant streetlights being deployed.

Maintenance expenditure has been taken from the Statement of Corporate Intent figures for Public Lighting OPEX.

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.

Forecasts: based on Public Lighting Code target of being < 8.0 days

Volume of GSL breaches (0s)

Forecasts: based on current figure average.

GSL payments ($000s)

Forecasts: Based on the average Volume of GSL beaches multiplied by $15.

Volume of customer complaints (0s)

Forecasts: based on current figure average

18.3 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.

Brackets under 2.5 metres as well as "T1" brackets are defined as minor roads and brackets 2.5 metres and above as well as all other "T" type brackets are major roads.

Supports –non- TRL supports are classed as minor roads as well as decoratives and columns under 7 metres. TRL supports, columns over 7 metres and masts are classed as major roads.

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.

Brackets under 2.5 metres as well as "T1" brackets are defined as minor roads and brackets 2.5 metres and above as well as all other "T" type brackets are major roads.

Supports –non- TRL supports are classed as minor roads as well as decoratives and columns under 7 metres. TRL supports, columns over 7 metres and masts are classed as major roads.

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.

Connections are charged for underground connections and are not specific to either minor or major roads.

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.

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

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.

19Template 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.

19.1 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 historical reporting methodology and operational quantities are drawn from the appropriate Ausgrid database.

Explain the source from which Ausgrid obtained the information provided.

Historic volumes were identified from Ausgrid's Metering Business System databases.

For FY2014, data has been extrapolated to June 30 2014.

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 to the central point. A feedback loop was also incorporated to ensure the Executive Manager could verify supplied information aligned to the various subject matter expert submissions and in accordance with the Draft 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:

- All specified future (forecast) volumes / costs are draft pending final Ausgrid AER regulatory submission
- **Tables 4.2.1 (Meter Type 4)** – Relates to Contestable Meter Sites (Type 1-4) – This is deemed not to be part of this regulatory submission – all entries have been set to zero
- **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. ie chronic access
- Data has been supplied in Financial Years (ie as at 30th June)
- Volume growth in total network connected sites based on Ausgrid's Network Forecasting.

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 are provided for future events.

(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 4.2.1 – Meter type 5 & type 6 - Volume estimates are provided for the balance of FY2014 and all future financial years. Post FY2014 data estimates are based upon the AER FY2015/19 Regulatory Submission analysis.

Future volumes were taken from the most recent version of the AER Regulatory Submission papers for the FY2015-FY19 period.

19.2 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 database.

Explain the source from which Ausgrid obtained the information provided.

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.

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 do not include corporate overheads.

Historic volumes were extracted from Ausgrid's Metering Business System databases and from the Shared Services Data Mart Database. In a number of FY2009 cells, volumes have been provided as estimates as actual data was not available for some of the categories for this period. These estimates are based upon analysis of the following year/s volumes. This was the best estimate available. Details are contained in appropriate sections of this document.

For FY2014, financial data has been estimated using FY2013 and an I/O by I/O analysis was undertaken and where appropriate the addition of CPI and removal of tasks no longer performed. Volume data for 2013/14 was based on an extrapolation of actual volumes YTD at time of data entry.

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 to the central point. A feedback loop was also incorporated to ensure the Executive Manager could verify supplied information aligned to the various subject matter expert submissions and in accordance with the Draft 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:

- All specified future (forecast) volumes / costs were taken from Ausgrid AER regulatory submission details
- **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 services as documented in worksheet 4.3
- **Tables 4.2.2 (Meter Type 4)** – Relates to Contestable Meter Sites (Types 1-4) – This is deemed not to be part of this regulatory submission – all entries have been set to zero.
- **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 database for Type 5 and Type 6 metering in each year. The apportionment of the overall costs includes a small quantity of logistics labour attributed to new meter purchase. All meter test and release costs were assigned to new meter installs. For future projections, new meter purchase is only hardware. The costs of meter test/release have been apportioned between new meter installations and meter replacements relative to the projected number of meters.
- **Table 4.2.2 (Meter Purchase)** - purchased meters (pre 2014) are based on meter and material costs when added to the regulated Asset base and not at the time of purchase. ie; purchased meters are at time of installation
- **Table 4.2.2 (Meter Purchase – Meter Type 5)** - 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
- **Table 4.2.2 (Meter Purchase – Meter Type 6)** - type 6 meter is defined as an accumulation only meter;

Supplementary Note - no type 6 meters have been purchased FY2009-14. FY15 and onward are based upon new strategy inclusive of accumulation meters;

- **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 is 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.

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

- **Table 4.2.2 (Meter Investigation – Meter Type 5 & Meter Type 6)** - Indicated type 5 meter investigations also include type 6 meter investigations at a NMI level (unable to separate meter tests into separate categories).

- **Table 4.2.2 (Scheduled Meter Reading)** - Scheduled means routine meter reads (including either monthly or quarterly).

  Meter type 5 & type 6 volumes means scheduled routine reading on a NMI basis. Cost is per read excluding special meter reads as detailed in worksheet 4.3

- **Table 4.2.2 (Special Meter Reading – Meter Type 5 & Meter Type 6)** – Means Off-Cycle Reads and are ancillary services as detailed in worksheet 4.3 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. ASP driven (new & upgrade) activity only. Meter and material costs are included in the Meter purchase costs

- **Table 4.2.2 (Meter Replacements – Meter Type 5)** – This represents combined proactive and reactive replacements (Ausgrid Only). Up to FY14, this means all meter replacements. From FY15 onwards, this means a meter installed with a NMI that is registered as MRIM in the NEM at time of meter change (like for like). Meter and material costs are included in the Meter purchase costs

  For FY15 and beyond, volumes have been maintained at the FY15 level for type 5 meters due to the change in strategy and the indexing of type 6 meters over the same period.

- **Table 4.2.2 (Meter Replacements – Meter Type 6)** - This represents combined proactive and reactive replacements (Ausgrid Only). Up to FY14, existing BASIC installations were upgraded to MRIM, thus zero BASIC replacements. From FY15 onwards, this means a meter installed with a NMI that is registered as BASIC in the NEM at time of meter change (like for like). Meter and material costs are included in the Meter purchase costs

- **Table 4.2.2 (Meter Maintenance – Meter Type 5 & Type 6)** - Indicates field meter maintenance tasks excluding Investigation and Meter Test, detailed elsewhere in this document.

  Indicated type 5 volume and costs represent the sum of both type 5 & type 6 meter maintenance activity at a NMI level (unable to separate meter tests into separate categories).

- **Table 4.2.2 (Other Metering – Meter Type 5 & Type 6)** - The main components are Meter Data Processing and Distribution, Metering Technology and Engineering Support.

  Indicated type 5 costs represent the sum of both type 5 & type 6 'Other metering' activity.

- **Table 4.2.2 (Other Metering – Meter Type 7)**

  It is noted that there are no Type 7 physical meters. 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;

- Estimates are provided for future events;

- For the FY2009 period, actual data for some volume based tasks could not be derived from either the financial or meter business 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.

Post FY2014 data estimates are based upon the Draft AER FY2014/19 Regulatory Submission. Any assumptions have been detailed above including the methodology employed. The basis for any estimate is premised upon the best available information for the specified period.

All specified data is based upon information supplied by task subject matter experts or data supplied from Ausgrid financial systems or its Metering Business Systems / reporting databases.

All type 4 entries have been assessed as pertaining to contestable services and as such do not form part of this submission. All entries associated with type 4 activities have been set to zero.

Depending upon the level of detail requested, in some cases it was not possible to split the data by task between type 5 and type 6. In these cases, presented data has been grouped and presented in the type 5 category. For example, data obtained relating to a specific task may not be easily separated into a type 5 or type 6 classification. In such situations, the type 6 data has been set to zero and a collated type 5 &6 figure supplied at the respective type 5 cell.

For 2009 period, where actual data for some volume based tasks was not available the volume assessment was based on trending for the FY2010 period/FY2011 periods with % increase/decrease applied dependant upon if Type 5 or Type 6 ie established that volumes had trended at 13.56% increase for Type 5 & 2.32% decrease for Type 6. This was the best estimate available.

For FY2014, financial data has been estimated using FY2013 and an I/O by I/O analysis was undertaken and where appropriate the addition of CPI and removal of tasks no longer performed.

20 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.

20.1 Detailed Service Descriptions:

In accordance with Section 19 of Appendix E of the RIN the following table contains a description of each fee-based and quoted service.

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.

20.2 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 and 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.

This response is based on the RIN worksheets and supporting documentation as provided by the AER up until 7th March 2014. 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. Ausgrid's supplementary information includes a service model of each service from which Ausgrid's proposed revenue requirements are calculated.

A number of entries in the RIN state 'Not applicable to this period'. This represents proposed new services where the service would not be available until the period beginning FY2015.

Explain the source from which Ausgrid obtained the information provided.

In general, the data primarily comes from Ausgrid's SAP System and is used in underlying models to reflect a 2012/13 'base year' approach. Where data was found to be inadequate, unreliable or nonexistent the relevant business unit provided average task duration information required to prepare a bottom up estimate.

We used 2012-13 as a base year as it was the most recent year of actual costs which are the best estimate of efficient costs for the services to be provided in the future, subject to recognising changes in cost drivers over time.

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.

Our cost build up approach has been to estimate the price and quantity of the inputs required to provide the quoted service then estimate the required quantity of services to estimate the total expenditure.

We propose 5 labour rates used in our bottom-up estimates which are based on the labour categories that provide the service. We used either an appropriate midpoint of skill level that provides the service where the number of categories is small or the median point with some weighting given to numbers of technical staff involved where much broader range categories are involved.

1. **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.

2. **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.

3. **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 extracted from the overall projects by filtering on a combination of words. The method relies on the accuracy of the description entered in the text field by the relevant user.

As the data is not available at the discrete service level, an allocation method was developed with input from the relevant business unit. The source data file from SAP was transferred to CN43n and project categories and subcategories were added and the projects filtered by the relevant subcategories.

4. **Inspection of Service Work by Level 2 ASPs – NOSW**

Historical volumes and costs were extracted from SAP based on order numbers provided by the responsible business unit.

5. **Clearance to Work**

As this is a new service, a bottom up model was developed based on input from the relevant business experts delivering the services.

6. **Notices of Arrangement**

Feedback from the business suggested that costs for this service were not captured separately. The average daily cost of employees was taken from the order number where NoA costs are booked for the Hunter Region, which was then used as the basis for an average costing.

7. Authorisation of ASP

Given costs are split between cost centre and some specific order numbers for these tasks, a bottom up approach was used to back/fore cast based on available historical volume metrics.

8. 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 FY2013 SAP data as a base year, with each prior year reduced by 2.5% inflation.

As the data is not available at the discrete service level, an allocation method was developed with input from the relevant business breaking the services into required discrete service subcategories.

9. Conveyancing Information

Historical costs are based on SAP data as for the period. Volumes had to be estimated based on actual for FY2012 & forecast of FY2013.

Forecast volume utilise historical information and was considered constant over the next period.

10. Connection Offers

This is a new service resulting from NECF and there is no historical data available. As this is a new service, a bottom up model was developed based on input from the relevant business experts who will deliver the service.

The forecast volumes are based on connections forecasts as provided in the Economic RIN broken down into the relevant services from input by the responsible business units.

11. 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.

Pre FY2015 costs represent direct attributed costs. For FY2015 onwards costs include CAM, real escalators and CPI.

1. 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).

2. 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:

1. 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
2. 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
3. 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.
4. A charge will not be levied for this service ('special meter reading') in either of the following circumstances:
5. where the customer is or is about to move premises; or
6. 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.

7. 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.

8. 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.

9. 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.

10. 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.

11. 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.

12. 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.

13. 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.

14. 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.

15. 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.

16. 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.

17. 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.

18. Reconnection / Disconnection - Disconnections or reconnections outside of business hours

Reconnection Outside Normal Business Hours

At the request of the Retailer:

1. 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
2. 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.

3. 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.

4. 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.

5. 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.

6. 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.

7. 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.

8. 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.

9. 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.

10. 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.

11. Design Related Services, Inspection of Works (Level 1 ASPs), Contestable Substation Commissioning, Access Permits

Costs for FY2013 were generated from SAP Business Intelligence reports. The costs specific to the services were then extracted from the overall projects by filtering on a combination of specific word. The method relies on the accuracy of the description entered in the text field by the relevant user. The cost forecast is based on a projection of the historical costs adjusted for the increase in true cost recovery labour rates, incremented at 2.5% annually. The volume forecast data is based on FY2013 and considered to be constant.

As the data is not available at the discrete service level, an allocation method was developed based on input from the relevant business experts and on work to determine splits of Inspection services. The same allocations were then applied to the respective services.

The actual income / revenue for the service taken from SAP for each financial year were used to determine an average allocation of costs between the subcategories. This allocation breakup was then used to apportion costs for each fee type given the known combined total cost from SAP and the model.

Various fee groups required breaking down into sub-groups (for fee based costs). The breaking down was based on expertise provided by the relevant business unit as system based evidence was inconclusive. The allocations between the services were applied to the volumes to determine a volume for each fee at the lower level. Where necessary, the volume of each fee was broken down into sub-categories (No of lots / no. of poles etc) using the allocations determined for the subgroups.

12. 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. Historical costs are as recorded in SAP. No clarification between grades of ASP is available in Ausgrid's systems.

Due to the lack of information/data entry, the costs between the grades were estimated based on feedback from the business where an allocation of 80% of ASPs are A-grade with the remaining 20% split evenly between B and C Grade ASPs.

The FY2013 costs booked to SAP specific orders are used as the base year. The forecast projections are escalated by 2.5% per annum.

13. Clearance to Work

Volumes were estimated by the business unit responsible for delivering the service and assumed to be constant over the period.

Unit prices are based on a bottom up estimate form average task duration provided by the business unit and escalated by 2.5% each year of the period.

14. Notices of Arrangement

The projected volumes have been calculated from the average of past three years (FY2011 to FY 2013) used as more consistent with projected trend. FY2009 and FY2010 were considered low volume years.

The business also provided details of the time requirements for each NOA and the amount in FY12 so the historical costs could be obtained. Given no code was provided for Sydney North and Central Coast, the Hunter average was used (materiality also supports this).

The methodology was used to determine the average cost of each NoA based on feedback from the business in regards to time and average cost from SAP (1700036499). This was then multiplied against each annual volume figure. The AHT has been suggested as a work day (6/8 hours). The forecast costs have been based on FY2013 as the base year and escalated by 2.5% per annum.

15. Authorisation of Accredited Service Provider (ASP)

The projected volumes have been calculated from historical average of past 3 years as FY2009 and FY2010 were materially lower. The past three years have consistent volumes that better represent the volumes going forward.

A bottom up estimate from the business for the activities involved was used to determine a unit cost escalated by 2.5% per annum. This was then multiplied against each annual volume figure.

16. Administration

Through consultation with key stakeholders, it was determined that the vast majority of administration costs were booked directly to cost centres. Consultation with the business also produced an average amount of time per week spent on the administration process. Costs have been extracted by taking the average amount of time spent per week, multiplied by the average daily rate of admin staff (taken from SAP Cost Centre 4905).

The cost calculations are based on FY2013 as a base year with each prior year reduced by 2.5% inflation.

As the data is not available at the discrete service level, an allocation method was developed based on input from the relevant business experts and on work to determine splits of Inspection services. The same allocations were then applied to the respective services.

Various fee groups required breaking down into sub-groups (for fee based costs). The breaking down was based on expertise provided by the relevant business unit as system based evidence was inconclusive. The allocations between the services were applied to the volumes to determine a volume for each fee at the lower level. Where necessary, the volume of each fee was broken down into sub-categories (No of lots / no. of poles etc) using the allocations determined for the subgroups.

17. Conveyancing Information

The historical volumes were provided by the business for FY2012 and FY2013 actual. The average is considered to be constant over the entire periods. Historical costs are based on the revenue extracted from SAP divided by back cast volumes.

Forecast costs are based on the FY2012 and FY2013 average volumes multiplied by the average task duration as provided by the business. This is a bottom up approach with costs escalated by 2.5% per annum.

18. Connection Offers

A bottom up approach was utilised to calculate unit price based on average task time and relevant labour class as provided by the business. Each service is then multiplied by the forecast volumes. The hourly rate is escalated by 2.5% each year of the period.

19. **Supply & connect temporary supply**

Volumes were estimated by the relevant group based on past experience working with ASPs and assumed to be constant over the period.

Unit prices are based on a bottom up estimate from average task durations as provided by the responsible business unit. Hourly rates are escalated by 2.5% each year of the period.

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. An investigation is underway to cost modifications to Ausgrid's systems to 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]:

- Post FY2014 data estimates are based upon Ausgrid draft AER 15/19 Regulatory Submission
- Pre FY2014 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 90.21%(move in/move out) to 9.79% (special read) was applied.
- FY 2014 costs estimates were based on actual data 2012/13 extrapolated plus CPI of 2.5%
- FY 2014 volumes were reflective of what was calculated of what was calculated for AER submission.

21 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.

21.1 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 20.

21.2 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 Services Fixed Fee and 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.

This response is based on the RIN worksheets and supporting documentation as provided by the AER up until 7th March 2014. 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. Ausgrid's supplementary information includes a service model of each service from which Ausgrid's proposed revenue requirements are calculated.

A number of entries in the RIN state 'Not applicable to this period'. This represents proposed new services where the service would not be available until the period beginning FY2015.

Explain the source from which Ausgrid obtained the information provided.

In general, the data primarily comes from Ausgrid's SAP System and is used in underlying models to reflect a 2012/13 'base year' approach. Where data was found to be inadequate, unreliable or nonexistent the relevant business unit provided average task duration information required to prepare a bottom up estimate.

We used 2012-13 as a base year as it was the most recent year of actual costs which are the best estimate of efficient costs for the services to be provided in the future, subject to recognising changes in cost drivers over time.

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.

Our cost build up approach has been to estimate the price and quantity of the inputs required to provide the quoted service then estimate the required quantity of services to estimate the total expenditure.

We propose 5 labour rates used in our bottom-up estimates which are based on the labour categories that provide the service. We used either an appropriate midpoint of skill level that provides the service where the number of categories is small or the median point with some weighting given to numbers of technical staff involved where much broader range categories are involved.

1. **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 extracted from the overall projects by filtering on a combination of words. The method relies on the accuracy of the description entered in the text field by the relevant user.

As the data is not available at the discrete service level, an allocation method was developed with input from the relevant business unit. The source data file from SAP was transferred to CN43n and project categories and subcategories were added and the projects filtered by the relevant subcategories.

2. **Re-inspection of Installation Work - CoCEW**

The data was retained in SAP and extracted from the applicable cost centres using dedicated orders for the work involved.

3. **Access Standby**

There is no history of this service being charged in the current period. A proposed forecast is provided as it is expected that this service will be utilised in the next period.

4. **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 FY2013 SAP data as a base year, with each prior year reduced by 2.5% inflation.

As the data is not available at the discrete service level, an allocation method was developed with input from the relevant business breaking the services into required discrete service subcategories.

5. **Customer Interface, Preliminary Enquiry, Connection Facilitation, Planning Studies, Deeds of Agreement, ASP Investigations**

As these are new services, a bottom up model was developed based on input from the relevant business experts who will deliver the service.

6. **Connection Offers**

This is a new service resulting from NECF and there is no historical data available. As this is a new service, a bottom up model was developed based on input from the relevant business experts who will deliver the service.

The forecast volumes are based on connections forecasts as provided in the Economic RIN broken down into the relevant services from input by the responsible business units.

7. **Rectification Works**

These services were Excluded Distribution Services in FY2009 to FY 2014. Data was extracted from SAP.

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

1. **Design Related Services, Inspection of Works (Level 1 ASPs), Contestable Substation Commissioning, Access Permits**

Costs for FY2013 were generated from SAP Business Intelligence reports. The costs specific to the services were then extracted from the overall projects by filtering on a combination of specific word. The method relies on the accuracy of the description entered in the text field by the relevant user. The cost forecast is based on a projection of the historical costs adjusted for the increase in true cost recovery labour rates, incremented at 2.5% annually. The volume forecast data is based on FY2013 and considered to be constant.

As the data is not available at the discrete service level, an allocation method was developed based on input from the relevant business experts and on work to determine splits of Inspection services. The same allocations were then applied to the respective services.

The actual income / revenue for the service taken from SAP for each financial year were used to determine an average allocation of costs between the subcategories. This allocation breakup was then used to apportion costs for each fee type given the known combined total cost from SAP and the model.

Various fee groups required breaking down into sub-groups (for fee based costs). The breaking down was based on expertise provided by the relevant business unit as system based evidence was inconclusive. The allocations between the services were applied to the volumes to determine a volume for each fee at the lower level. Where necessary, the volume of each fee was broken down into sub-categories (No of lots / no. of poles etc) using the allocations determined for the subgroups.

Inspection of service works by level 1 ASPs - HV or LV UG joint, ABS/enclosed switch, Decommission Substation, Kiosk/PT or HV Sw cubicle came from the same FY2013 data set.

Assumptions made:

- Inspection of service works by level 1 ASPs - HV or LV UG joint, ABS/enclosed switch- Inspection time = 4 hours
- Inspection of service works by level 1 ASPs – decommission substation - Inspection time = 8 hours

- Inspection of service works by level 1 ASPs - substation (kiosk/PT0 or HV Sw cubicle-Inspection time= 10 hours

2. Re-inspection of Installation Work - CoCEW

Historical volume for FY2009 to FY 2013 (excluding FY2012 due to anomaly from solar bonus scheme) is used to forecast and considered to constant over the period. The historical costs are directly from dedicated SAP orders used to book costs against for this work. FY2013 is used as a base year to forecast with 2.5% escalation per annum.

3. Access Standby

As this service has not been charged in the past, a forecast of 100 hours p.a. was estimated by the relevant group expected to provide this service multiplied by the appropriate proposed labour class (R4 Field Worker).

4. Administration

Through consultation with key stakeholders, it was determined that the vast majority of administration costs were booked directly to cost centres. Consultation with the business also produced an average amount of time per week spent on the administration process. Costs have been extracted by taking the average amount of time spent per week, multiplied by the average daily rate of admin staff (taken from SAP Cost Centre 4905).

The cost calculations are based on FY2013 as a base year with each prior year reduced by 2.5% inflation.

As the data is not available at the discrete service level, an allocation method was developed based on input from the relevant business experts and on work to determine splits of Inspection services. The same allocations were then applied to the respective services.

Various fee groups required breaking down into sub-groups (for fee based costs). The breaking down was based on expertise provided by the relevant business unit as system based evidence was inconclusive. The allocations between the services were applied to the volumes to determine a volume for each fee at the lower level. Where necessary, the volume of each fee was broken down into sub-categories (No of lots / no. of poles etc) using the allocations determined for the subgroups.

5. Customer Interface, Preliminary Enquiry

Volume was estimated by the responsible group and assumed to be constant over the period. This service could be provided by either an Engineering Officer or Senior Engineer depending on the complexity of the connection. A weighted average of the two relevant proposed labour rates is used to provide a single hourly rate. The hourly rate is escalated by 2.5% each year of the period.

6. Connection Offers

A bottom up approach was utilised to calculate unit price based on average task time and relevant labour class as provided by the business. Each service is then multiplied by the forecast volumes. The hourly rate is escalated by 2.5% each year of the period.

7. Rectification Works

Forecast volume for Torapolis is based on the five year average from FY2009 to FY2013 and considered constant. Forecast volume for Illegal Connections uses 2013 as a base year and is considered constant. Forecast volume for High Load Escorts uses FY2013 only as a base year due to expected economic downturn resulting in lower likelihood of higher levels than experienced in 2013. The financial data was extracted from SAP to provide a top down approach for these services.

No records exist for Additional Crew so a forecast is based on one service per week using a bottom up approach.

Forecast costs are escalated by 2.5% each year of the period.

8. Connection Facilitation

Volume was estimated by the responsible group and assumed to be constant over the period. The hourly rate is escalated by 2.5% each year of the period.

9. Planning Studies

Hours were estimated from time entry records using 'inTime' for FY2013 and assumed to be constant over the period. The hourly rate is escalated by 2.5% each year of the period.

10. Deeds of Agreement

Hours were estimated from records held by the responsible group for the number of services provided relating to this work. An average of FY2011 to FY2013 was used as the basis and assumed to be constant over the period. The hourly rate is escalated by 2.5% each year of the period.

11. ASP Investigations

Hours were estimated from records held by the responsible group from the number of investigations relating to this proposed new service. An average of FY2012 and FY2013 was used as the basis and assumed to be constant over the period. The hourly rate is escalated by 2.5% each year of the period.

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. An investigation is underway to cost modifications to Ausgrid's systems to 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.

22 Template 5.1 Material projects

The information provided in template 5.1 has been completed in accordance with the AER RIN requirements and instructions applying to template 5.1 including Appendix E and F, and the requirements in the worksheet.

22.1 Table 5.1.1 - Projects in forthcoming regulatory control period

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

The sources of information include:

1. SAP BI reports of the forecasting system as the primary source of capital expenditure data and associated information regarding certain dates, project status and maintenance requirements;
2. SAP BI reports of the transaction system as the primary source of business case approval date and associated expenditure;
3. Area Plans, Development Brief, Project Offers and Final Report documentations to provide further details regarding project location and description;
4. Actual and expected Demand Management expenditure are sourced from the Demand Management group which aligns with published reports and latest screening test analysis
5. For IT and communication ICT Business Cases and SAP for actuals (AER1419) and SAP BPC for Forecasts (AER1419).

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

The methodology and assumptions include:

- **Step 1.** For network projects with expenditure within FY2015-19, populate the projects with actual and expected capital expenditure greater than or equal to $5 million over the life of the project in Real 13/14. The expenditure presented are fully assessed costs (ie. includes 'indirect labour' and 'indirect other' cost elements).
- **Step 2.** Provide the associated demand management expenditures as operational expenditure. It is assumed that the only non-maintenance operational expenditure for capital projects are the associated demand management costs.
- **Step 3.** Using the major assets associated with each project on commissioning and the average asset maintenance cost per annum within each major asset group, derived the associated maintenance expenditure for each project.
- **Step 4.** Provide propose start dates and commissioning dates based on expected completion date and anticipated project construction span.
- **Step 5.** Provide project description, location, business care approval and associated approval dates through various internal governance documents.

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;

1. Any expected forecast expenditure is by nature an estimate.
2. For projects that have already commenced, the start date is estimated using anticipated construction span.

(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.

Since there are no actual start date recorded in the transaction system (other than the authorisation date), it is deemed consistent to use the anticipated project construction span to determine the start date via the forecasting system (as some project doesn't necessarily start immediately upon approval).

22.2 Table 5.1.2 - Projects in current regulatory control period

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.

The source of information includes:

1. SAP BI reports of the forecasting system as the primary source of capital expenditure data and associated information regarding certain dates, project status and maintenance requirements;
2. SAP BI reports of the transaction system as the primary source of business case approval date and associated expenditure;
3. Area Plans, Development Brief, Project Offers and Final Report documentations to provide further details regarding project location, description and expected expenditure at the time of business case approval;
4. Actual and expected Demand Management expenditure are sourced from the Demand Management group which aligns with published reports and latest screening test analysis.

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

- **Step 1**. For network projects with expenditure within FY2010-14, populate the projects with actual and expected capital expenditure greater than or equal to $5 million over the life of the project in Real 13/14. The expenditure presented are fully assessed costs (ie. includes 'indirect labour' and 'indirect other' cost elements).
- **Step 2**. Provide the associated demand management expenditures as operational expenditure. It is assumed that the only non-maintenance operational expenditure for capital projects are the associated demand management costs.
- **Step 3**. Using the major assets associated with each project on commissioning and the average asset maintenance cost per annum within each major asset group, derived the associated maintenance expenditure for each project.
- **Step 4**. Provide propose start dates and commissioning dates based on expected completion date and anticipated project construction span.
- **Step 5**. Provide project description, location, business care approval and associated approval dates through various internal governance documents.

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;

1. Any expected forecast expenditure is by nature an estimate (for FY2014).
2. For projects that have already commenced, the start date is estimated using anticipated construction span.

3. As actual project specific maintenance expenditure is not readily available within the transaction system, an estimate is provided using the same methodology as described in table 5.1.1 Step 3 above.
4. There are no project specific maintenance forecast requirements in the approval governance process, thus the estimated approved maintenance expenditure is the same as item 3 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.

1. Since there are no actual start date recorded in the transaction system (other than the authorisation date), it is deem consistent to use the anticipated project construction span to determine the start date via the forecasting system (as some project doesn't necessarily start immediately upon approval).
2. It is deem that the maintenance expenditure for both actual and business case approval are best estimates as they're based on the actual maintenance expenditure for similar assets in recent years.

22.3 Table 5.1.3 - Non-network asset projects in the forthcoming regulatory control period

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 BI reports of the forecasting system as the primary source of for any potential non-network asset projects;

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

- **Step 1**. For non-network projects with expenditure within FY2015-19, filter on any expected capital expenditure greater than or equal to $2 million over the life of the project in Real 2013/14. The expenditure presented are fully assessed costs (ie. includes 'indirect labour' and 'indirect other' cost elements).
- **Step 2**. Confirm that there is no non-network asset greater than or equal to $2 million by consulting subject matter expert.

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.

22.4 Table 5.1.4 - Non-network asset projects in the current regulatory control period

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 BI reports from the transaction systems as the primary source of historical costs for any potential non-network asset projects.

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

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.

22.5 Table 5.1.5 - New customer connections projects in forthcoming regulatory control period

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 BI reports of the forecasting system as the primary source of for any new customer connections projects;

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

Step 1. For customer connections projects with expenditure within FY2015-19, filter on any expected capital expenditure greater than or equal to $5 million over the life of the project in Real 13/14. The expenditure presented are fully assessed costs (ie. includes 'indirect labour' and 'indirect other' cost elements).

Step 2. Confirm that there is no non-network asset by greater than or equal to $5 million consulting subject matter expert (exclude gifted asset assessed costs).

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 since there is no customer connections projects greater than or equal to $5 million

(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 since there is no customer connections projects greater than or equal to $5 million

22.6 Table 5.1.6 - New customer connections projects in the current regulatory control period

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 BI reports from the transaction systems as the primary source of historical costs for any new customer connections projects.

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

- **Step 1.** For customer connections projects with expenditure within FY2010-14, filter on any expected capital expenditure greater than or equal to $5 million over the life of the project in Real 13/14. The expenditure presented are fully assessed costs (ie. includes 'indirect labour' and 'indirect other' cost elements).
- **Step 2**. Confirm that there is no non-network asset by greater than or equal to $5 million consulting subject matter expert (exclude gifted asset assessed costs).

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 since there is no customer connections projects greater than or equal to $5 million.

(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 since there is no customer connections projects greater than or equal to $5 million.

23Template 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.

23.1 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 Other (excluding Meters). Data for Overhead Conductors, Underground Cables, Service Lines, and SCADA – Copper Pilot Cable has been sourced from Ausgrid's GIS (Geographical Information System). 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 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 (traceable back to purchase contracts).

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 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. Additional information was retrieved from GIS to enable the identification of 22kV poles, as the SAP data is not sufficient for this purpose. The data was then extracted from MS Access to MS Excel and processed to provide the required age profiles.

For the mean and standard deviation of economic life, the population of poles retired/decommissioned during the 2013 regulatory year 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.

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.

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 2013 calendar 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 without SL.mdb", and the summary extracted into file "Staked pole summary.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_2014_NETWORK_AGE_01_01_2014.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 v 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 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.

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. The "Network Age" 6 monthly extract file is used, specifically the file "ODRC_FINYEAR_2014_NETWORK_AGE_01_01_2014.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 economic life mean and standard deviation 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. 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.

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 underground services is contained in file "UG Services Age profile.xlsx" and for overhead service lines is in file "Age Asset Profile - OH Services.xls".

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.

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 for age profile.xlsx" and "Major Txs for age profile.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 31/12/2013, 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 number of Pole and 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 for Average Age.xlsx" and "Major Txs for Average Age.xlsx"

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 over all 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. 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 number of categories there is insufficient data to generate a reliable output. For most of these 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.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 (file "Major Road poles GIS.txt"), 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 was extracted for each respective component where the effective date for the component was within the 2013 financial year, but the light had been commissioned prior to that year (ie to identify those replaced in the year but existed prior). This is held in file "SL component economic life information.xlsx". 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. As such change record extracts were obtained, for each of the component categories, for those lights identified as having the component changed within the 2013 financial year. These change records (stored in file "SL component change records for Economic life calcs.xlsx") were then used to calculate the age of the component at the time of being changed. 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).

For economic life information for poles, data has been extracted from SAP PM for all poles that are classified as being solely for public lighting purposes that were retired in the 2013 financial year (file "SL Poles for Economic 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.

SCADA, network control and protection systems

Field Devices

Data was obtained from SAP PM for all Relays and RTUs. For relays, an age profile was obtained by using all currently commissioned assets. For RTUs it was acknowledged that data for assets with a commissioning date of prior to 1985 is considered inaccurate. Assets with commissioning dates prior to 1985 were evenly distributed across the years from 1985 to 1995 – the period for which SCADA retrofits to existing substations were undertaken.

Economic life mean and standard deviation for relays was obtained using the data of assets retired during the 2013 calendar year.

Local Network Wiring Assets

This data was estimated with further explanation in the next section.

Communications Network Assets

Optical fibre for the last 3 years has been obtained from the PNI database. Previous years were estimated based on a fibre optic rollout program commenced in 2004/5. The total length of fibre currently in service is accurate. Life and standard deviations are estimated and averaged across a population of approximately 50% ADSS, 25% UGFO and 25% OPGW.

Copper pilot cable age profiles are based on a conglomerate age profile for UG MV and HV cabling. Total distance is derived from GIS.

Master Station Assets

Age profiles for the sub-categories were obtained using the actual equipment acquisition dates retained in purchasing documentation.

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 "2014-02-17 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 meters given with installation year 1920 and prior have been smoothed proportionately across all other years based on the relatively quantity in each year.

Economic life data has been obtained from the 2013 annual RIN. As above, this data was sourced from the MBS and contains installation dates and removal dates for removed meters. This data is stored in MS access database "Meter data.mdb".

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, and a valid commissioned data and decommissioned data were available. 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 2013 RIN response. These in turn were obtained from the "Asset Investment Outcomes" Business Objects dashboard which calculates the figures using assets retired within the current regulatory period. As there have been only a small number of assets retired the standard deviation is quite low.

Global assumption

No privately owned assets are included in the data sets.

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;

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 number of 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.

Overhead conductors

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

No data exists for abandoned 22kV and 66kV cables. As such it is considered a best estimate to use the corresponding economic life values calculated for 11kV and 33kV cables respectively. This is considered satisfactory as these are the most similar types of cables

Service lines

The mean and standard deviation for economic life 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.

Transformers

For pole and kiosk transformer categories that require estimation the most similar category with sufficient data has been used for economic life figures. This is considered a best estimate in that it users 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 categories '> 11 kV & < = 22 kV ; CIRCUIT BREAKER' and '> 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 ; CIRCUIT BREAKER' and '> 22 kV & < = 33 kV ; SWITCH' respectively have been used.

SCADA, network control and protection systems

Field Devices

For RTUs the economic life mean and standard deviation values were estimated based on expected asset life given observation of their historical performance.

Local Network Wiring Assets

Local network wiring assets include all secondary wiring in a major substation including power supplies to secondary equipment. The estimate is based on 8km of cable per major substation (a typical substation was used), some 250 major substations, and an age profile was derived from the population of 11kV switchgear in service. Lifetime and standard deviation reflects change-out of major equipment rather than lifetime of the wiring itself.

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.

Master Station Assets

Economic life mean and standard deviation for the assets in this category have been estimated from typical asset life observed.

24 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.

24.1 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.

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

Ausgrid performs weather normalisation at 10% & 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% & %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. For weather corrected network coincident maximum demand in the forecast years, it is simply the forecasted value for each particular forecast year at each location multiplied by the 5 year historical system diversity factor average.

Embedded Generation values in table 5.3.1 are simply the total aggregated value of installed solar capacity at each zone substation in that year. It is assumed that 12MW of solar generation is installed across the network each year based on current installation rates between April-September 2013.

Key assumptions include:

- For forecasting purposes, Ausgrid's winter season covers period 1st May – 31st 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 1st May 2007 – 30th 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", "zone substation", or "High Voltage Customer" connected at 132kV for table 5.3.1.
- A 5 year historical system diversity factor is calculated for all locations based on the location previous five seasons diversity factors.
- Each location's weather corrected forecast load for a particular year has the 5 year historical system diversity factor average applied to all forecast years in order to get a non-coincident values suitable for aggregation to the system network level

Data provided from 2013/14 onwards is based on the forecast prepared in June 2013. No Actual data is provided for 2013/14 onwards, with the exception of the date and time of the raw maximum demand, which is based on the actual time of the network level maximum demand for 2013/14.

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 forecasted values used in table 5.3.1 are an estimate based on Ausgrid's spatial demand base forecast

(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.

This is explained above in discussion of the methodology.

All forecasted values used in table 5.3.1 are best estimates because they are based on Ausgrid's spatial demand base forecast which is the best available information.

25 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.

25.1 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% & 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% & %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 Ausgrids spatial demand forecast for each respective historical year. The higher of the summer and winter Raw MVA for each year determines the dominant season with the corresponding substation rating, date and time of peak being displayed for that year.

Substation rating (MVA) for forecast years takes into account any changes in rating due to committed projects. Ausgrid does not forecast raw MW and MVA, only 10% and 50% POE are forecasted. Only the substation rating of the dominant year is shown.

Non-coincident 10% and 50% POE Maximum Demand for Tables 5.4.1 at each location is the forecasted value of the selected dominant season at each location in each year. Historical Non-coincident 10% and 50% POE Maximum Demand is the weather normalised load based on the simulation output of the forecast system

Coincident 10% and 50% POE Maximum Demand for Tables 5.4.2 at each required location is the multiplication of the substation summer forecast value by the forecasted system diversity factor. 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 coincident factor (MVA) for each respective year.

Embedded Generation values in table 5.4.1 and table 5.4.2 are simply the total **accumulative value of installed solar capacity** at each zone substation in that year. It is assumed that 12MW of solar generation is installed across the network each year based on current installation rates between April-September 2013. Future embedded generation values at the spatial level are calculated by apportioning the 12MW across all zone substation locations based on current penetration of solar at each respective zone substation. STS values are simply the summation of installed solar capacity of each zone substation connected to the STS. These are **NOT** adjustments made during the forecasting process.

Key assumptions include:

- For forecasting purposes, Ausgrid's winter season covers period 1st May – 31st 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 1st May 2007 – 30th 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.
- System diversity factors applied for all forecast years at sub transmission and zone substations are simply an average of the last 5 years historical system diversity factors and is used in the calculation of Coincident forecast loads at each location

- Selection of the dominant season in forecast years for Coincident Maximum Demand for Tables 5.4.1 is set at Summer for all sub transmission and zone substations. Selection of the dominant season for Non-coincident Maximum Demand for Tables 5.4.1 and is as follows:
    - A comparison of the summer and winter 7 year trend starting point for each location is undertaken. The season that has the greater 7 year trend starting point value taken as dominant season for the first forecast year.
    - The dominant season for the first forecast season is held as the dominant season for all forecast years
    - New zones commissioned in future forecast years do not have 7 year trend starting points available for comparison. The dominant season is Summer for all future commissioned zones
- Embedded generation adjustments are inherent in the 7 year weather corrected load trend line which is used to determine the rate of growth for each sub. Embedded generation for future years is taken into account in the calculation of economic rates of growth applied to location. **No quantified adjustment is made in either historical or future Forecast years at the spatial level.** Installed solar capacity at each zone location in Tables 5.4.1 and 5.4.2 is shown for indicative purposes only.
- Data provided from 2013/14 onwards is based on the forecast prepared in June 2013. No Actual data is provided for 2013/14 onwards, with the exception of the date and time of the raw maximum demand, which is based on the actual time of the network level maximum demand for 2013/14.
- For any substation that is not commissioned in a particular year, the acronym "NC" is entered into the data table column for that year.
- Any substation that does not have any historical or future 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 forecasted values used in tables 5.4.1 and 5.4.2 are an estimate based on Ausgrid's spatial demand base forecast

(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.

This is explained above in discussion of the methodology.

All forecasted values used in tables 5.4.1 and 5.4.2 are best estimates because they are based on Ausgrid's spatial demand base forecast which is the best available information.

26Template 6.1– Telephone answering

The information provided in template 6.1 has been completed in accordance with the AER RIN requirements and instructions applying to template 6.1 including Appendix E and F, and the requirements in the worksheet.

26.1 Table 6.1.1 – Telephone answering data

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

We have completed the information required in worksheet 6.1 in accordance with the RIN requirements and definition provided in 6.2.5.

For the metric of '*Calls abandoned within 30 seconds*', Ausgrid only began capturing this data from the 21/06/2010. We have provided the actual information from this date onwards. We have provided an estimate of this metric prior to this date calculated at 5% (5% average abandoned rate for period 21/6/2010 to 30/6/2012). This calculation applied is considered the most appropriate method.

Explain the source from which Ausgrid obtained the information provided.

The source of the information for telephone answering was obtained from:

- Genesys,
- Alcatel,
- Rockwell data via SSDM (Shared Services Reporting tool).

Information was retrieved via Business Objects reporting and stored in a summary Spreadsheet monthly since 01/07/2009. Due to a Voice telephony platform change Genesys, monthly data was added on the first of each month as a default for the period 01/10/2009 until 30/06/2010. Post this date the Genesys reporting became the base and all other data sources were merged with it.

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

Voice Calls:

Voice Telephony data is aggregated daily for Genesys and Rockwell handled calls. Voice Alcatel call data is retrieved via a manual report and loaded into SSDM via Tibco.

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;

Prior to 21/6/2010 a metric for abandoned in 30 sec did not exist in Ausgird's telephony platform.

(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.

We have provided an estimate of this metric prior to this date calculated at 5% (5% average abandoned rate for period 21/6/2010 to 30/6/2012). This calculation applied is considered the most appropriate method and as such the best estimate.

27Template 6.2 Reliability and customer service performance

The information provided in template 6.2 has been completed in accordance with the AER RIN requirements and instructions applying to template 6.2 including Appendix E and F, and the requirements in the worksheet.

27.1 Table 6.2.1 - Unplanned minutes off supply (SAIDI) - Actual, target and proposed reliability

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. The table below summarises the requirements of the notice applicable to table 6.2.1 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, 23.1	Ausgrid calculates reliability metrics differently from Appendix A of the STPIS due to technical constraints. 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)

Explain the source from which Ausgrid obtained the information provided.

For regulatory years 2008/09 – 2012/13

Ausgrid obtained information to complete table 6.2.1 from table 6.3.1 (Sustained interruptions to supply) and table 6.4.1 (Major Event Day data) of this Notice. Supplementary information required to complete table 6.2.1 was obtained from the business objects report 01_03 – OMS Customers Fed, Daily Ver 2.2 (Extracted 1/4/2014). This report contains a list of the daily active customers fed for each feeder classification. The original source for table 6.3.1 and the business objects report is Ausgrid's Outage Management System (OMS) and is described in detail below (6.3. source data).

For regulatory years 2013/14 – 2018/19

Ausgrid obtained information to complete table 6.2.1 from Ausgrid's Reliability Forecast System (RFS). The RFS is used to determine future performance by starting with the past performance and adjusting it to take into account various factors that are expected to cause performance to deteriorate or improve. The methodology followed within the RFS is documented separately.

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

Key elements of the methodology is set out in the following tables.

Regulatory years 2008/09 – 2012/13	
Variable	**Methodology**
Total sustained minutes off supply	Calculate the "Feeder classification SAIDI" for each entry in table 6.3.1 by dividing the product of the "Number of customer affected by the interruption" and the "Average duration of sustained customer interruption" by the customer count in *01_03 – OMS Customers Fed, Daily Ver 2.2* that matches the "Date of event" and "Feeder classification" for the entry. Calculate the CBD, Urban, Short Rural and Long Rural values by summing the "Feeder classification SAIDI" for entries in table 6.3.1 (Planned outages are not included in this calculation). Calculate the Total value by summing the "Effect on unplanned SAIDI" for entries in table 6.3.1 (Planned outages are not included in this calculation).
Total value of excluded events* *see 3.3 of STPIS	Calculate the CBD, Urban, Short Rural and Long Rural values by summing the "Feeder classification SAIDI" for entries in table 6.3.1 (Including only excluded interruptions as indicated in the "Reason for interruption column" or interruptions marked with a "Y" in the "MED" column). Calculate the Total value by summing the "Effect on unplanned SAIDI" for entries in table 6.3.1(Including only excluded interruptions as indicated in the "Reason for interruption column" or interruptions marked with a "Y" in the "MED" column).
Total sustained minutes off supply after removing excluded events	Calculate the CBD, Urban, Short Rural and Long Rural values by calculating the difference between the "Total sustained minutes off supply and the "Total value of excluded events".

Regulatory years 2013/14 – 2018/19	
Variable	**Methodology**
Total sustained minutes off supply	Calculate all values by summing the "Total value of excluded events" and the "Total sustained minutes off supply after removing excluded events".
Total value of excluded events* *see 3.3 of STPIS	Calculate all values from 2013/14 – 2018/19 to be equal to the average value from 2008/09 – 2012/13 (For CBD, Urban, Short Rural, Long Rural and Total).
Total sustained minutes off supply after removing excluded events	Use the "Total sustained minutes off supply after removing excluded events" values from 2008/09 – 2012/13 as inputs for the RFS. Copy the 2013/14 – 2018/19 values into the appropriate cells in table 6.2.1 from the RFS (For CBD, Short Rural, Long Rural and Total).

All data in table 6.2.1 has been rounded to four significant figures.

Key assumptions used in the methodology:

The assumptions used in completing table 6.2.1 include those used in completing table 6.3.1. The following assumptions are additional:

1. The RFS produces the expected future reliability performance and is indicative only.

2. Excluded events are random in nature. Ausgrid has not attempted to forecast the occurrence of excluded events. Therefore, the average contribution of excluded events to Ausgrid's performance over the last five years is expected to continue.
3. Momentary interruptions of duration one minute or less are not included in table 6.3.1.
4. 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 $_{(AUSGRID)}$

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.

No estimated data is provided in table 6.2.1.

27.2 Table 6.2.2 - Unplanned interruptions to supply (SAIFI) - Actual, target and proposed reliability

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. The table below summarises the requirements of the notice applicable to table 6.2.2 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, 23.1	Ausgrid calculates reliability metrics differently from Appendix A of the STPIS due to technical constraints. 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) STPIS Appendix A, Note 4: MAIFI is not reported on in this Notice. Ausgrid reports of MAIFIe. In calculating MAIFIe, multiple operations of an automatic reclose device within one minute are counted as a single event. Sustained interruptions which occur when a recloser locks out after several attempts to reclose are deleted from MAIFIe calculations. (Different)

Explain the source from which Ausgrid obtained the information provided.

For regulatory years 2008/09 – 2012/13

Ausgrid obtained information to complete table 6.2.2 from table 6.3.1 (Sustained interruptions to supply) and table 6.4.1 (Major Event Day data) of this Notice. Supplementary information required to complete table 6.2.2 was obtained from the business objects report 01_03 – OMS Customers Fed, Daily Ver 2.2. The original source for table 6.3.1 and the business objects report is Ausgrid's Outage Management System (OMS) and is described in detail below (6.3. source data).

For regulatory years 2013/14 – 2018/19

Ausgrid obtained information to complete table 6.2.2 from Ausgrid's Reliability Forecast System (RFS). The RFS is used to determine future performance by starting with the past performance and adjusting it to take into account various factors that are expected to cause performance to deteriorate or improve. The methodology followed within the RFS is documented separately.

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

Key elements of the methodology is set out in the following table.

Regulatory years 2008/09 – 2012/13	
Variable	**Methodology**
Total sustained customer interruptions	Calculate the "Feeder classification SAIFI" for each entry in table 6.3.1 by dividing the product of the "Number of customer affected by the interruption" and the "Average duration of sustained customer interruption" by the customer count in *01_03 – OMS Customers Fed, Daily Ver 2.2* that matches the "Date of event" and "Feeder classification" for the entry. Calculate the CBD, Urban, Short Rural and Long Rural values by summing the "Feeder classification SAIFI" for entries in table 6.3.1 (Planned outages are not included in this calculation). Calculate the Total value by summing the "Effect on unplanned SAIDI" for entries in table 6.3.1 (Planned outages are not included in this calculation).
Total value of excluded events* *see 3.3 of STPIS	Calculate the CBD, Urban, Short Rural and Long Rural values by summing the "Feeder classification SAIFI" for entries in table 6.3.1 (Including only excluded interruptions as indicated in the "Reason for interruption column" or interruptions marked with a "Y" in the "MED" column). Calculate the Total value by summing the "Effect on unplanned SAIFI" for entries in table 6.3.1(Including only excluded interruptions as indicated in the "Reason for interruption column" or interruptions marked with a "Y" in the "MED" column).
Total sustained customer interruptions after removing excluded events	Calculate the CBD, Urban, Short Rural and Long Rural values by calculating the difference between the "Total sustained customer interruptions" and the "Total value of excluded events".

Regulatory years 2013/14 – 2018/19	
Variable	**Methodology**
Total sustained customer interruptions	Calculate all values by summing the "Total value of excluded events" and the "Total sustained customer interruptions after removing excluded events".
Total value of excluded events*	Calculate all values from 2013/14 – 2018/19 to be equal to the average value from 2008/09 – 2012/13 (For CBD,

*see 3.3 of STPIS	Urban, Short Rural, Long Rural and Total).
Total sustained customer interruptions after removing excluded events	Use the "Total sustained customer interruptions after removing excluded events" values from 2008/09 – 2012/13 as inputs for the RFS. Copy the 2013/14 – 2018/19 values into the appropriate cells in table 6.2.1 from the RFS (For CBD, Short Rural, Long Rural and Total).

All data in table 6.2.2 has been rounded to four significant figures.

Key assumptions used in the methodology:

The assumptions used in completing table 6.2.2 include those used in completing table 6.3.1. The following assumptions are additional:

1. The RFS produces the expected future reliability performance and is indicative only.
2. Excluded events are random in nature. Ausgrid has not attempted to forecast the occurrence of excluded events. Therefore, the average contribution of excluded events to Ausgrid's performance over the last five years is expected to continue.
3. Momentary interruptions of duration one minute or less are not included in table 6.3.1.
4. 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:
5. Active = Energised + De-energised
6. Inactive = Extinct = Deactivated
7. De-energised $_{(AER)}$ = Temporary disconnection $_{(AUSGRID)}$
8. Inactive $_{(AER)}$ = Permanent disconnection $_{(AUSGRID)}$
9. 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;

(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.

No estimated information is contained in table 6.2.2.

27.3 Table 6.2.3 - Unplanned momentary interruptions to supply (MAIFI) - Actual, target and proposed reliability

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. The table below summarises the requirements of the notice applicable to table 6.2.3 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, 23.1	Ausgrid calculates reliability metrics differently from Appendix A of the STPIS due to technical constraints. 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) STPIS Appendix A, Note 4: MAIFI is not reported on in this Notice. Ausgrid reports of MAIFIe. In calculating MAIFIe, multiple operations of an automatic reclose device within one minute are counted as a single event. Sustained interruptions which occur when a recloser locks out after several attempts to reclose are deleted from MAIFIe calculations. (Different)

Explain the source from which Ausgrid obtained the information provided.

Ausgrid obtained information to complete table 6.2.3 from table 6.3.1 (Sustained interruptions to supply) and table 6.4.1 (Major Event Day data) of this Notice. Additional information required to complete table 6.2.3 was obtained from the business objects reports 01_03 – OMS Customers Fed, Daily Ver 2.2 and AER Reset 2013-14 RIN Momentary Events V1.0. The original source for table 6.3.1 and the business objects reports is Ausgrid's Outage Management System (OMS) and is described in detail below (6.3. source data). Interruptions of duration one minute or less are flagged in OMS during the manual entry of outage attributes post event.

The report *AER Reset 2013-14 RIN Momentary Events V1.0* contains a list of momentary interruptions with the following key attributes:

- Event ID
- Reporting date
- Financial Year
- Feeder ID
- Feeder Category
- Customer Interruptions (CI)

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

Key elements of the methodology are set out in the following tables.

Regulatory years 2008/09 – 2012/13	
Variable	**Methodology**
Total customer interruptions (one minute or less)	Calculate the "Feeder Classification MAIFIe" for each entry in *AER Reset 2013-14 RIN Momentary Events V1.0* by dividing the CI by the customer count in *01_03 – OMS Customers Fed, Daily Ver 2.2* that matches the "Date of event" and "Feeder category" for the entry. Calculate the "Total MAIFIe" for each entry in *AER Reset 2013-14 RIN Momentary Events V1.0* by dividing the CI by the total distribution customer count in *01_03 – OMS Customers Fed, Daily Ver 2.2* that matches the "Date of event". Calculate the CBD, Urban, Short Rural and Long Rural values by summing the "Feeder classification MAIFIe" for entries in *AER Reset 2013-14 RIN Momentary Events V1.0*.

	Calculate the Total value by summing the "Total MAIFIe" for entries in *AER Reset 2013-14 RIN Momentary Events V1.0*.
Total value of excluded events* *see 3.3 of STPIS	Determine which days are Major Event Days (MEDs) in accordance with the methodology for worksheet 6.3. Calculate the CBD, Urban, Short Rural and Long Rural values by summing the "Feeder classification MAIFIe" for entries in *AER Reset 2013-14 RIN Momentary Events V1.0* where the reporting date is a MED. Calculate the Total value by summing the "Total MAIFIe" for entries in *AER Reset 2013-14 RIN Momentary Events V1.0* where the reporting date is a MED.
Total momentary customer interruptions after removing excluded events	Calculate the CBD, Urban, Short Rural and Long Rural values by calculating the difference between the "Total customer interruptions (one minute or less)" and the "Total value of excluded events".

Regulatory years 2013/14 – 2018/19	
Variable	**Methodology**
Total customer interruptions (one minute or less)	Calculate the 2013/14 – 2018/19 values to be equal to the average of the 2008/09 – 2012/13 values.
Total value of excluded events* *see 3.3 of STPIS	Calculate the 2013/14 – 2018/19 values to be equal to the average of the 2008/09 – 2012/13 values.
Total momentary customer interruptions after removing excluded events	Calculate the 2013/14 – 2018/19 values to be equal to the average of the 2008/09 – 2012/13 values.

All data in table 6.2.3 has been rounded to four significant figures.

Key assumptions used in the methodology:

The assumptions used in completing table 6.2.3 include those used in completing table 6.3.1. The following assumptions are additional:

1. Table 6.2.3 is populated with MAIFIe. MAIFIe is calculated on the basis momentary events. Momentary events may include one or more momentary interruptions with summated interruption duration of less than one minute. Ausgrid does not have the capacity to strictly report on MAIFI for historical years.
2. Customer interruptions listed in *AER Reset 2013-14 RIN Momentary Events V1.0* are momentary events.
3. Ausgrid has not attempted to forecast the occurrence of momentary events. Therefore, the average contribution of momentary events to Ausgrid's performance over the last five years is expected to continue. There is no significant evidence that suggests this is not the case.
4. 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 $_{(AUSGRID)}$

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;

An estimate of MAIFI is required for regulatory years 2008/09, 2009/10 and 2010/11 because quality assurance checks have not been performed on the source data. It is not possible to perform these checks after a significant amount of time has passed since the event.

(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 unchecked source data (as for worksheet 6.3) is used as the basis for the estimate. This is considered to be the best estimate as it is based on the best available information.

27.4 Table 6.2.4 - Customer numbers

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. The table below summarises the requirements of the notice applicable to table 6.2.3 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, 23.1	Ausgrid calculates reliability metrics differently from Appendix A of the STPIS due to technical constraints. 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)

Explain the source from which Ausgrid obtained the information provided.

The information required to complete table 6.2.4 was obtained from the business objects report *01_03 – OMS Customers Fed, Daily Ver 2.2* (Extracted 1/4/2014). This report contains a list of the daily active customers fed for each feeder classification. The original source for table 6.3.1 and the business objects report is Ausgrid's Outage Management System (OMS) and is described in detail below (6.3. source data). The information contained in the report is consistent with the table above. Supplementary information was also obtained from table 3.4.2.1 of this notice. (Forecast distribution customers by customer type). Note that the customer numbers for table 6.2.4 have been determined under the same assumptions that all other reliability metrics have been determined.

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

Key elements of the methodology:

For regulatory years 2008/09 – 2012/13:

1. Use 01_03 – OMS Customers Fed, Daily Ver 2.2 to determine the number of customers on the first day of each regulatory year (For CBD, Urban, Short Rural, Long Rural and Total)
2. Use 01_03 – OMS Customers Fed, Daily Ver 2.2 to determine the number of customers on the last day of each regulatory year (For CBD, Urban, Short Rural, Long Rural and Total)
3. Calculate the average value of step 1 and step 2 and insert into table 6.2.4 for each regulatory year.

For regulatory years 2013/14 – 2018/19

1. Determine the annual customer growth rate from table 3.4.2.1
2. Apply the annual growth rates to each historical value in table 6.2.4.

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.

No estimates are contained in table 6.2.4.

27.5 Table 6.2.5 - Customer service

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

We have completed the information required in worksheet 6.2.5 in accordance with the RIN requirements and definition provided.

Estimates have been used for FY periods 2013/14 – 2018/19.

Explain the source from which Ausgrid obtained the information provided.

The source of the information for telephone answering was obtained from:

- Genesys,
- Alcatel,
- Rockwell data via SSDM (Shared Services Reporting tool).

Information was retrieved via Business Objects reporting and stored in a summary Spreadsheet monthly since 01/07/2009. Due to a Voice telephony platform change Genesys, monthly data was added on the first of each month as a default for the period 01/10/2009 until 30/06/2010. Post this date the Genesys reporting became the base and all other data sources were merged with it.

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

Voice Telephony data is aggregated daily for Genesys and Rockwell handled calls. Voice Alcatel call data is retrieved via a manual report and loaded into SSDM via Tibco.

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;

For FY 13/14 to FY 18/19 we have utilised results from FY12/13 as a straight line projection. We have applied this simple method as more detailed forecasting for this line of business is not available.

(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 FY 2013/14 to FY 2018/19 we have utilised results from 2012/13 as a straight line projection based on the results for the most recent 2 financial years as this would provide the best estimate going forward.

27.6 Table 6.2.6 - Estimated data percentage accuracy – SAIDI

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

Information provided is consistent with all requirements of this notice.

Explain the source from which Ausgrid obtained the information provided.

The source data is obtained from a review of accuracy findings in audits of Ausgrid's reported reliability performance for STPIS (2010/11) and Design Reliability Performance Licence Conditions (2011/12 and 2012/13) supplemented by data extracted from the OMS via Business Objects Reports.

Tables 6.2.1 and 6.2.2 are also used to calculate the accuracy of the forecast values for 2013/14 – 2018/19.

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

For 2008/09 – 2012/13

Reviewed findings of audits reports on reported past reliability performance. Assessments of the less significant discrepancy areas were utilised from these reports and assumed similar in earlier years.

The more significant area identified (overstatement of SAIFI and SAIDI for single phase LV faults) was modelled using data extracted from OMS. At system level for the period 2010/11-2012/13 the customer impact due to single phase LV faults was identified. An estimated overstatement of SAIFI/SAIDI was identified based on the proportion of customers (at a system level) who are single phase customers.

Estimated impact for earlier years was established based on the relationship between System SAIFI/SAIDI and the estimated overstatement for the period 2010/11-2012/13 applied to the System SAIFI/SAIDI result for each year.

At a feeder category level for the period 2011/12-2012/13 the customer impact due to single phase LV faults was identified. An estimated overstatement of SAIFI/SAIDI was identified based on the proportion of customers (at a system level) who are single phase customers.

For Urban the estimated impact for earlier years was established based on the relationship between System SAIFI/SAIDI and the estimated system overstatement for the period 2011/12-2012/13 applied to the Urban SAIFI/SAIDI for each year.

For other categories the estimated impact for earlier years was based on the average estimated overstatement for the period 2011/12-2012/13 and the SAIFI/SAIDI result for each year.

This approach assumes:

- Every LV fault affects the same proportion of single phase customers
- The proportion of single phase LV faults in 2008/09 & 2009/10 is similar to more recent years.
- There are no additional areas of inaccuracy beyond those estimated by audits.

For 2013/14 – 2018/19

The forecast accuracy was calculated on the basis of the "Total sustained minutes off supply removing excluded events" and "Total sustained customer interruptions removing excluded events" from 6.2.1 and 6.2.2. The forecast accuracy is calculated as the maximum variance from the mean divided by the mean value over the period from 2008/09 – 2012/13.

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;

Ausgrid does not have an established process or methodology to report on data accuracy. Hence estimated accuracy identified in audit reports was utilised.

The only way of identifying single phase LV faults for 2008/09-2009/10 would be based on a review of event comments for each and every LV fault.

2010/11 information was available in part based on previous analysis.

System changes meant this information has been recorded in more recent years and is available for use for 2011/12 & 2012/13.

Gaps were filled based on either models of estimated overstatement or average estimated overstatement.

(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.

This approach provides a good indication of Ausgrid's confidence in the values in the SAIDI and SAIFI values entered in this template. The high forecast percentage accuracy number shows that reliability performance can be highly variable and difficult to forecast.

27.7 Table 6.2.7 - Estimated data percentage accuracy – SAIFI

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

Information provided is consistent with all requirements of the RIN.

Explain the source from which Ausgrid obtained the information provided.

The source data is obtained from a review of accuracy findings in audits of Ausgrid's reported reliability performance for STPIS (2010/11) and Design Reliability Performance Licence Conditions (2011/12 and 2012/13) supplemented by data extracted from the OMS via Business Objects Reports.

Tables 6.2.1 and 6.2.2 are also used to calculate the accuracy of the forecast values for 2013/14 – 2018/19.

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

For 2008/09 – 2012/13

Reviewed findings of audits reports on reported past reliability performance. Assessments of the less significant discrepancy areas were utilised from these reports and assumed similar in earlier years.

The more significant area identified (overstatement of SAIFI and SAIDI for single phase LV faults) was modelled using data extracted from OMS. At system level for the period 2010/11-2012/13 the customer impact due to single phase LV faults was identified. An estimated overstatement of SAIFI/SAIDI was identified based on the proportion of customers (at a system level) who are single phase customers.

Estimated impact for earlier years was established based on the relationship between System SAIFI/SAIDI and the estimated overstatement for the period 2010/11-2012/13 applied to the System SAIFI/SAIDI result for each year.

At a feeder category level for the period 2011/12-2012/13 the customer impact due to single phase LV faults was identified. An estimated overstatement of SAIFI/SAIDI was identified based on the proportion of customers (at a system level) who are single phase customers.

For Urban the estimated impact for earlier years was established based on the relationship between System SAIFI/SAIDI and the estimated system overstatement for the period 2011/12-2012/13 applied to the Urban SAIFI/SAIDI for each year.

For other categories the estimated impact for earlier years was based on the average estimated overstatement for the period 2011/12-2012/13 and the SAIFI/SAIDI result for each year.

This approach assumes:

- Every LV fault affects the same proportion of single phase customers
- The proportion of single phase LV faults in 2008/09 & 2009/10 is similar to more recent years.
- There are no additional areas of inaccuracy beyond those estimated by audits.

For 2013/14 – 2018/19

The forecast accuracy was calculated on the basis of the "Total sustained minutes off supply removing excluded events" and "Total sustained customer interruptions removing excluded events" from 6.2.1 and 6.2.2. The forecast accuracy is calculated as the maximum variance from the mean divided by the mean value over the period from 2008/09 – 2012/13.

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;

Ausgrid does not have an established process or methodology to report on data accuracy. Hence estimated accuracy identified in audit reports was utilised.

The only way of identifying single phase LV faults for 2008/09-2009/10 would be based on a review of event comments for each and every LV fault.

2010/11 information was available in part based on previous analysis.

System changes meant this information has been recorded in more recent years and is available for use for 2011/12 & 2012/13.

Gaps were filled based on either models of estimated overstatement or average estimated overstatement.

(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.

This approach provides a good indication of Ausgrid's confidence in the values in the SAIDI and SAIFI values entered in this template. The high forecast percentage accuracy number shows that reliability performance can be highly variable and difficult to forecast. On this basis the information is considered to be the best estimate.

28Template 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.

28.1 Table 6.3.1 – Sustained interruptions to supply (from 1 July 2008)

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. All planned interruptions to supply have been entered for regulatory years 2011/12 and 2012/13. Due to prohibitive resource and technical constraints there are some planned outages not entered in table 6.3.1 for regulatory years 2008/09, 2009/10 and 2010/11. This is explained in more detail below.
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 each regulatory year from 2008/09 to 2012/13. 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" where outage event records contain sufficient information. Where the outage event record does not contain sufficient information to select a detailed reason, the cell has been coloured black. This is consistent with the requirements of the notice.

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, SAIFI and MAIFI 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 each regulatory year from 2008/09 to 2012/13 is generated from the reporting environment on 1/4/2014. Each report contains a list of outage events with the following key attributes:

- Event ID
- Reporting date
- Feeder ID

[1] There may be multiple restoration times for customer groups within a single outage event due to staged restoration works.

- Feeder Category
- Event Trigger
- Event Hierarchy
- 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 period from 2008/09 to 2012/13 planned outages from LID were manually entered into OMS. For regulatory years 2011/12 and 2012/13 planned outages from DAROS were manually entered into OMS. For regulatory years 2009/10 and 2010/11 only a limited number of outages from DAROS were entered into OMS. For 2008/09 no outages from DAROS were entered into OMS. Due to prohibitive resource and technical constraints[3] it is not feasible to complete the import of DAROS records into OMS for all planned outages in regulatory years 2008/09, 2009/10 and 2010/11; hence, there has not been a complete set of historical planned outages entered into table 6.3.1.

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
Global SAIDI	Effect on unplanned SAIDI
Global SAIFI	Effect on unplanned SAIFI

[2] Verified to be calculated in accordance with the assumptions below.
[3] Ausgrid does not have access to sufficient archived information to accurately determine the historical configuration of the network necessary to calculate the SAIDI and SAIFI contributions for planned outages entered into the DAROS database from regulatory years 2008/09, 2009/10 and 2010/11.

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:

Event trigger	Event Hierarchy	Reason for interruption	Detailed reason for interruption
Animal Bird		Animal	Animal impact
Animal Flying Fox		Animal	Animal impact
Animal Frog		Animal	Animal impact
Animal Insect		Animal	Animal impact
Animal Other		Animal	Animal impact
Animal Possum		Animal	Animal impact
Animal Rat		Animal	Animal impact
Arcing		Other	Other – Arcing
Bushfire		Other	Bushfire
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 Ausgrid Staff		Network business	Network error
Excavation 3rd Party		Third Party	Dig-in
Fire (non-electrical)		Third Party	Fire
Lightning Strike		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 Clearing Trigger		Other	Other – Self clearing trigger
Staff Operation		Network business	Switching or protection error
Staff Other		Network business	Network error
Tree Branch on Mains		Vegetation	
Tree Cut Down		Third Party	
Vandalism		Third Party	Unauthorised access
Wires Clashing		Weather	
3rd Part 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 1/7/2008 to 30/6/2013 by summing the "Effect on unplanned SAIDI" column in table 6.3.1.

5. Using the data from Step 4 and additional data from table 6.4.1 (Major event Day data); calculate the Major Event Day Threshold (T_{MED}) for financial years 2008/09 to 2012/13 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:
7. Active = Energised + De-energised
8. Inactive = Extinct = Deactivated
9. De-energised (AER) = Temporary disconnection (AUSGRID)
10. Inactive (AER) = Permanent disconnection (AUSGRID)
11. Annual TMED boundaries are calculated and applied separately to each regulatory year in accordance with the table below:

Regulatory Year	Daily SAIDI source data range
2008/09	2003/04 – 2007/08
2009/10	2004/05 – 2008/09
2010/11	2005/06 – 2009/10
2011/12	2006/07 – 2010/11
2012/13	2007/08 – 2011/12

12. 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;

The information in the "Detailed reason for interruption" column is estimated in accordance with the requirements of this notice.

(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 estimate was based on the table shown above in the methodology and is considered to be the best estimate.

29Template 6.4 – Historical major event days

The information provided in template 6.4 has been completed in accordance with the AER RIN requirements and instructions applying to template 6.4 including Appendix E and F, and the requirements in the worksheet.

29.1 Table 6.4.1 – Major Event Day data

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. The table below summarises the requirements of the notice applicable to table 6.4.1 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 due to technical constraints. 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)

Explain the source from which Ausgrid obtained the information provided.

The data source for table 6.4.1 is identical to table 6.3.1 for the regulatory year 2007/08. The data earlier regulatory years has been obtained from the OMS reporting environment. The original source data for 2003/04 – 2006/07 in the reporting environment is Ausgrid's legacy database titled Network Reliability Data (NRD). NRD contained calculations for SAIDI that were based on a post code averaging techniques. In order to avoid a step change in reliability metrics between NRD and OMS, the reporting environment contains "OMS equivalent data" that has been estimated on the basis of NRD data. Therefore, data in table 6.4.1 for regulatory years 2003/04 to 2006/07 has been estimated in table 6.4.1 (See below for further details regarding the estimation process).

A report (*AER RIN 2013 – 14 Sustained Interruption to Supply V1.0*) for each regulatory year from 2003/04 to 2007/08 is generated from the reporting environment on 1/4/2014. Each report contains a list of outage events with separate sections for unplanned, planned and excluded outages. The key event attributes included in the report are outlined in the table 6.3.1 methodology.

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

Key elements of the methodology:

1. Calculate the daily total SAIDI for the period spanning 1/7/2003 to 30/6/2008 by summing the Total SAIDI column in AER RIN 2013 – 14 Sustained Interruption to Supply V1.0 (Unplanned section)

2. Calculate the daily total SAIDI for the period spanning 1/7/2003 to 30/6/2007 by summing the Total SAIDI column in AER RIN 2013 – 14 Sustained Interruption to Supply V1.0 (Excluded section) for "Customer Installation Faults" only4.
3. Calculate the daily "Network SAIDI (after removing excluded events)" for table 6.4.1 by summing the daily values from steps 1 and 2.

Key assumptions used in the methodology:

1. All outage event attributes are correctly entered in OMS or NRD
2. 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.
3. All unmetered customers are excluded from calculations
4. 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.
5. 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:
6. Active = Energised + De-energised
7. Inactive = Extinct = Deactivated
8. De-energised (AER) = Temporary disconnection (AUSGRID)
9. Inactive (AER) = Permanent disconnection (AUSGRID)
10. 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;

The reliability data contained in Ausgrid's OMS reporting environment has originated from two different sources:

1. OMS (2007/08 to present)
2. NRD (2002/03 to 2006/07)

The number of customers affected by an outage event is determined with different methods as follows:

1. OMS – GIS connectivity model and SAP CCS / B2B
2. NRD – Average customers connected to distribution substations in each post code

The different customer allocation methodologies between OMS and NRD would result in a significant step change in both daily and annual reliability metrics. The OMS customer allocation method is significantly more accurate than the NRD method. The data from table 6.4.1 will be used to calculate Major Event Day (MED) boundaries for application to reliability metrics for regulatory years from 2008/09 to 2012/13. It is therefore essential that the data from 2003/04 to 2006/07 is estimated to ensure that the data sourced from NRD is comparable to OMS.

(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.

Ausgrid has used estimated information for table 6.4.1 for regulatory years from 2003/04 to 2006/07 in order to account for the differences between the allocations of customers to outage events for NRD and OMS. An estimate of the number of CI and CMI was made for each outage event record. The estimation involved scaling the NRD CI and

[4] Note that interruptions caused by customer installation faults were previously excluded under Schedule 4 of the Design, Reliability and Performance Licence Conditions for Distribution Network Service Providers (2007). Customer installation faults are not excluded under Clause 3.3 (a) of the STPIS. These interruptions were only flagged as excluded events for regulatory years prior to 2007/08.

CMI outage event attributes based on the relative distribution substation customer counts in the two systems. The associated equations are shown below:

$$\frac{\text{}}{\text{}}$$

$$\frac{\text{}}{\text{}}$$

Calculations were performed using an Access database in which the NRD CI and CMI information at a low voltage distributor level was loaded. The distribution substation level scaling was produced by using a translation table imported into Access. This translation table provided the OMS customers as at 30/8/2007 and the corresponding NRD customers as at 30/6/2007 at a distribution substation level. Note that the estimated attributes for these outages are contained in the OMS reporting environment, so identical methodology and assumptions have been applied for all regulatory years to calculate the information for table 6.4.1.

30 Template 7.1 – Plans, policies, procedures and strategies

The information provided in template 7.1 has been completed in accordance with the AER RIN requirements and instructions applying to template 7.1 including Appendix E and F, and the requirements in the worksheet.

30.1 Table 7.1.1 – Plans, policies, procedures and strategies

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

The information provided in template 7.1 has been completed in accordance with the AER RIN requirements and instructions applying to template 7.1 including Appendix E and F, and the requirements in the worksheet.

Explain the source from which Ausgrid obtained the information provided.

Information has been sourced from internal records on policies procedures and strategies.

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

Not applicable.

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.

31 Template 7.2 – Contingent projects

The information provided in template 7.2 has been completed in accordance with the AER RIN requirements and instructions applying to template 7.2 including Appendix E and F, and the requirements in the worksheet.

31.1 Table 7.2.1 - Proposed contingent projects for the 2014-15 to 2018-19 regulatory control period

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

Template 7.2 has been considered in accordance with the AER RIN requirements and instructions applying to template 7.2 including Appendix E and F, and the requirements in the worksheet.

As such Ausgrid does not have any contingent projects. Ausgrid has not included any contingent projects in the regulatory proposal. On this basis Ausgrid has completed table 7.2.1 - Proposed contingent projects for the 2014-15 to 2018-19 regulatory control period with a "Nil" response.

Explain the source from which Ausgrid obtained the information provided.

Not applicable.

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

Not applicable.

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.

32 Template 7.3 – Obligations, requirements and standards

The information provided in template 7.3 has been completed in accordance with the AER RIN requirements and instructions applying to template 7.3 including Appendix E and F, and the requirements in the worksheet.

32.1 Table 7.3.1 – Obligations or requirements

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

The information provided in template 7.3 has been completed in accordance with the AER RIN requirements and instructions applying to template 7.3 including Appendix E and F, and the requirements in the worksheet.

Explain the source from which Ausgrid obtained the information provided.

Information has been sourced from internal records on obligations and standards..

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

Not applicable.

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.

33Template 7.4 – Shared assets

The information provided in template 7.4 has been completed in accordance with the AER RIN requirements and instructions applying to template 7.4 including Appendix E and F, and the requirements in the worksheet.

33.1 Table 7.4.1 - Total unregulated revenue earned with shared assets ($'000 nominal)

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

These are the sources of External revenue from Ausgrid's financial systems. This comprises the external revenue for shared asset use from all of Ausgrid's current and anticipated contracts.

Explain the source from which Ausgrid obtained the information provided.

Previous years revenue was sourced from SAP.

Current year information is based on the forecast by extrapolating the Year to Date figures from SAP with business unit forecasts on invoices still to be raised.

Future year revenue is an estimation.

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

Ausgrid has included the value of all invoices that will be generated this year.

The future year revenues are based on the likely continuance or otherwise of individual contracts as well as new contracts or growth. The unit prices have been estimated to increased by CPI but the pricing is subject to market forces via contract re-negotiation from time to time which could result in increases or decreases in revenue on individual contracts.

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;

Contracts with third parties for future revenue are generally subject to mutual agreement. Revenue can decline based on the third party's decisions to reduce their usage or to terminate the entire agreement.

(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 forecasts are the estimates of the Ausgrid managers who are most informed about the contracts or potential and the market place.

33.2 Table 7.4.2 - Shared asset unregulated services - apportionment methodology

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

These are the sources of External revenue from Ausgrid's financial systems.

Explain the source from which Ausgrid obtained the information provided.

Previous years revenue was sourced from SAP.

Current year information is based on the forecast by extrapolating the Year to Date figures from SAP with business unit forecasts on invoices still to be raised.

Future year revenue is an estimation.

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

Ausgrid has had to assume that the predicted invoicing for the rest of the year will remain valid.

The future year revenues are based on the likely continuance or otherwise of individual contracts as well as new contracts or growth. The unit prices have been estimated to increased by CPI but the pricing is subject to market forces via contract re-negotiation from time to time which could result in increases or decreases in revenue on individual contracts.

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;

Contracts with third parties for future revenue are generally subject to mutual agreement. Revenue can decline based on the third party's decisions to reduce their usage or to terminate the entire agreement.

(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 forecasts are the estimates of the Ausgrid managers who are most informed about the contracts or potential and the market place.

34 Template 7.5 – Efficiency Benefit Sharing Scheme (EBSS)

The information provided in template 7.5 has been completed in accordance with the AER RIN requirements and instructions applying to template 7.5 including Appendix E and F, and the requirements in the worksheet.

34.1 Table 7.5.1 - The carryover amounts that arise from applying the EBSS during the 2009-10 to 2013-14 regulatory control period

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

Information reported in table 7.5.1 is in accordance with the Regulatory Accounting Statements as well as Ausgrid's Cost Allocation Methodology (CAM) and Ausgrid's Post Tax Revenue Revenue (PTRM) model. Ausgrid prepares Standard Control Services Annual Regulatory Statements for AER in compliance 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. The Regulatory Accounting Statements include Standard Control Services (Distribution) and Standard Control Services (Transmission) and Alternative Control Services (Public Lighting).

The CPI index, rebased index, actual and estimated inflation data and the formula for calculation of EBSS target was pre-provided by AER in their Reset RIN Templates. Ausgrid applied these AER pre-provided figures in its calculations.

Explain the source from which Ausgrid obtained the information provided.

Information provided is based on:

- Regulatory Accounting Statements submitted to the AER
- EBSS information submitted to the AER
- PTRM model for Ausgrid
- TM1 and SAP (Ausgrid's financial accounting and reporting systems).

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

The actual opex data reported on table 7.5.1 aligns to the Regulatory Accounting Statements and EBSS information submitted to the AER from FY2010-FY2013. The forecast data aligns to original AER real forecast numbers reported in the Post Tax Revenue Revenue (PTRM) model for Ausgrid.

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 data is actual or forecast.

(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.

35 Template 7.7 Services and indicative prices

The information provided in template 7.7 has been completed in accordance with the AER RIN requirements and instructions applying to template 7.7 including Appendix E and F, and the requirements in the worksheet.

35.1 Table 7.7.1 – Standard control services

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

Information has been provided in relation to Augrid's proposed tariff classes and tariffs at the tariff component level.

The information for sales quantities, revenue earned and current prices have been derived from a mixture of actual and forecast information as follows:

Sales Quantities

The Sales quantities ("Q") and customer numbers for 2009/10 to 2011/12 were obtained from the WAPC final audited quantities. Q and customer numbers for 2012/13 and 2013/14 have been sourced from the tariff component level forecast volumes underpinning Ausgrid's Energy Volume Forecasts to 2018/19 (Attachment 4.11 to the regulatory proposal). The customer numbers have been included to determine the Revenue from Network Access Charges, to enable the calculation of the complete DUOS revenue. The customer number has been excluded from the totalling of the sales quantities for each tariff.

For two tariffs associated with the Smart Grid Smart City trial which concluded on 14 February 2014 quantities were estimated. These are the Dynamic Peak Tariff (EA 970) and the Seasonal Peak Tariff (EA984) for financial years 12-13 and 13-14. The estimation was carried out in the following way to derive what we consider the best estimation of quantities for these tariffs.

- EA970
- Dynamic TOU

We determined the number of days of Dynamic Peaks during FY13 and FY14.

- FY13 = 2 Dynamic Peaks
- FY14 = 7 Dynamic Peaks

Peak Quantity multiplied by number of Dynamic Peak days / (5 working days x 52 weeks in the year).

FY2013

i.e factor applied to Peak quantity was 2/260 for Dyanmic Peak price and 258/260 for the remainder of the Peak price

FY14 35 weeks (1 July 2013 to 28 February 2014)

i.e. factor applied to Peak quantity was 7 / 175 for Seasonal Peak price and 168 / 175 for the remainder of the Peak price.

- EA984
- Seasonal TOU

Quantity multiplied by the number of seasonal months / number of months in the year.

FY13 = 8 seasonal months per Year

i.e factor applied to Peak quantity was 8/12 for Seasonal Peak price and 4/12 for the remainder of the Peak price.

FY14 = 6 seasonal months from (July 13 to Feb 14)

i.e factor applied to Peak quantity was 6/8 for Seasonal Peak price and 2/8 for the remainder of the Peak price.

Current Prices

The Current Prices ("P") for 2009/10 to 2013/14 were obtained from the annual Ausgrid Network Pricing Proposals (WAPC Compliance Models).

Revenues

Revenue earned ("R") for 2009/10 to 2013/14 have been derived by the formula:

$R = Q \times P$

CRNP Customers

Information for CRNP customers has been aggregated. The Q for 2009/10 to 2011/12 was obtained from the WAPC final audited quantities. Whilst quantities for 2012/13 and 2013/14 are from the tariff component level forecast volumes underpinning Ausgrid's Energy Volume Forecasts to 2018/19 (Attachment 4.11 to the regulatory proposal).

The CRNP Revenue was sourced from the Audited WAPC models for 2009/10 to 2011/12. For 2012/13 and 2013/14 the R was sourced from the Ausgrid's Annual Pricing Proposal (WAPC compliance model)

Indicative Prices

The indicative prices for 2014/15 to 2018/19 have been sourced from the indicative pricing model which was used to support Ausgrid's regulatory proposal for the 2014-2019 regulatory control periods. The indicative prices have been prepared on the following basis:

1. A uniform price increase applied to each tariff component in each year of the 2014-19 regulatory control period.
2. No change to the structure of tariffs in the 2014-19 regulatory control period.
3. No re-assignment of existing customers
4. The indicative prices have been set in each year of the 2014-19 regulatory control period to achieve a zero closing balance of the overs and unders account for transmission, Climate Change Fund and distribution, noting that the closing balance of the transmission and CCF overs and unders account is estimated to be an under-recovery of 17.014m and $66,000, respectively, in FY2014.
5. The indicative prices do not take into account the difference between the forecast revenue requirement and the AER transitional placeholder revenue in FY 2014/15.
6. The indicative prices for Cost Reflective Network Price (CRNP) customers are shown at the tariff class level.

35.2 Table 7.7.2 – Negotiated services

Ausgrid has not provided any Negotiated distribution services during the 2009-14 period.