

## **Attachment 6.02**

### **Forecast opex model explanatory statement**

May 2014



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# 1 Executive Summary

## Purpose

This document sets out Ausgrid's strategy, approach, tools and processes relating to forecasting operational expenditure both for regulatory purposes and for ongoing operational reasons. This document applies to Ausgrid's Standard Control Services (SCS) OPEX Forecast Model (see Attachment 6.01: Total forecast opex model (Standard control)).

## Forecasting strategy

The strategy is to develop a forecast which Ausgrid considers:

- Fulfils the operating expenditure objectives in the National Electricity Rules (NER); and
- Assists the efficient commercial operation of the business on an ongoing basis.

Section 2 provides more details.

## Approach

The forecast operating expenditure is built up using a 'base year' approach from an efficient base cost at the activity level, sourced from the 2012/13 year's audited regulatory accounts. Cost escalations and change factors are applied to the base year to produce the required Opex to fulfil the operating expenditure objectives within the NER.

More detailed 'bottom up' forecasts have been performed for components of Maintenance, Demand Management, Information Technology, Insurance and Property, to take into account changes in workload or drivers. These have then superseded the underlying base year forecasts for those activities.

The total forecast operating cost for the Ausgrid Network is the sum of the cost forecasts for all of the Network activities performed within each of the functional categories for the particular year.

The 2012/13 base year underlying costs used are inclusive of all costs that were classified as SCS during that regulatory year. This means that the newly classified Alternate Control Metering, Ancillary Services and unregulated Third Party Damage operations have been included in the underlying base opex. To ensure a correct base year approach has been adopted, Ausgrid has rolled these costs forward and then removed the associated costs to ensure that only SCS are included in the Opex forecast.

Where relevant, the newly classified costs have been used as the forecast for the respective service within Ausgrid's Substantive Regulatory Proposal.

## Tools and systems

An Excel OPEX forecasting model has been developed to assist in forecasting operational expenditure for regulatory submission and within regulatory control periods.

As well as developing forecasts, the model has been designed in a manner that allows for the tracking of operational expenditure performance against the forecast at the operational functional category level. This allows Ausgrid to react to forecast overspend against the allowance and to evaluate the likely future performance for budgeting purposes.

The functionality and operation of the model is described in Section 4.

## Processes

At the highest level, the forecasting process has four steps:

1. Input data collection and provision;
2. Data processing and validation;
3. Data entry and documentation; and
4. Forecast modelling.

The detailed underlying processes include various checks:

- On the integrity of input information, mainly through a consultative process of data provision with operational management and staff;
- That authorised information is actually entered into the model;
- Independent third party validation of the calculations contained within the model; and
- Management approval of final operational expenditure plans containing forecast information.

## **Key assumptions, rationale and sources**

There are three main groups of assumption used in the operational cost forecasting process and model:

- Efficient base cost assumptions;
- Price escalation assumptions; and
- Change factor impacts.

Section 5 describes the rationale, source and responsibility for each assumption applied under each of these three categories.

Actual 2012/13 values used as the base year for the forecast are included in the model.

Where there are specific additional assumptions regarding individual functional categories, these are included in Appendix B: Assumptions.

## **Risk assessment & mitigation strategies**

There are various risks relating to the operational expenditure forecasting process and tools described in this document. A basic risk assessment is described in Section 6 which addresses the key risks, their impacts, their likelihood and mitigation strategies employed to manage those.

## 2 OPEX Forecasting Strategy

### Objectives of forecasting strategy

Ausgrid needs to accurately forecast operational expenditure in order to:

- Meet its regulatory obligation to submit a regulatory application for an annual revenue requirement determination every five years (an operational expenditure forecast being integral to that); and
- Assist the efficient commercial operation of the business on an ongoing basis.

These are described further in the sections below.

### Forecast requirements

The requirements for distribution operational expenditure forecasts are mainly set out in NER clauses 6.5.6. This operational expenditure forecast represents Ausgrid's forecast of the expenditure required to achieve the 'operating expenditure objectives'.

Broadly these require that the forecast expenditure allows:

- Demand for those monopoly services to be met (or managed, in the case of distribution);
- Compliance with all applicable regulatory obligations or requirements associated with the provision of the services;
- Reliability, safety and security of supply of the services to be maintained; and
- Reliability, safety and security of supply of the distribution and transmission systems to be maintained, through the supply of the services.

For Ausgrid, those other applicable regulatory obligations and requirements which the forecast expenditure should allow to be met include: the Distribution Licence Conditions (Design, Reliability and Performance conditions), health and safety legislation and regulations (Electricity Supply {Safety and Network Management} Regulation), the Energy Services Corporations Act 1995, the Electricity Supply Act 1995, the Protection of the Environment Administration Act 1991 and the Environment Planning and Assessment Act 1997. A table of Ausgrid's obligations and the enforcing authority is shown in Appendix A, 'Key obligations'.

The forecasts should cover the particular regulated services and should be for the whole period and also for each financial year within it. They are also required to comply with various information requirements which are prescribed through particular guidelines and other regulatory information specifications published by the Australian Energy Regulator (AER).

### Acceptance of the forecast

The NER states that if the forecast reasonably reflects the 'operational expenditure criteria', the AER must accept the forecast. These criteria are that the forecast reasonably reflects:

- The efficient costs of achieving the operating expenditure objectives;
- The costs that a prudent operator in Ausgrid's circumstances would require to achieve the operating expenditure objectives; and
- A realistic expectation of the demand forecast and cost inputs required to achieve the operating expenditure objectives.

In making its decision, the AER must have regard to various 'operating expenditure factors' which are outside the scope of this document but are described in clause 6.5.6(e) of the NER.

This summary of obligations is intended as a guide only - the NER should be referred to for a definitive guide to operational cost forecasting obligations.

## Ongoing business usage

Under the 'ex-ante' regulatory regime, the revenue requirements for monopoly transmission and distribution services are based upon costs forecasts presented before the start of the period and are fixed for the five year period<sup>2</sup>. This means that, in seeking an appropriate commercial outcome of the business, Ausgrid must track operational expenditure performance against the forecast. Forecasts are also re-visited within the five year period for budgeting purposes and to evaluate the likely future performance against the allowance. This allows Ausgrid to react to forecast overspend against the allowance.

## Description of the forecasting strategy

Given the above, Ausgrid's strategy is to ensure that its forecast activities allow it to satisfy:

- The operating expenditure objectives in the NER, to ensure that it can meet all of its transmission and distribution service and other obligations;
- The operating expenditure criteria, relating to efficiently achieving those objectives by spending an amount which a prudent operator would spend to do the same in Ausgrid's circumstances – ensuring that the forecast is accepted by the AER; and
- The requirement to track outturn and predict performance against the allowance within a regulatory period.

The fulfilment of these objectives has led Ausgrid to develop the forecasting approach, model, processes and assumptions detailed in the remainder of this document.

<sup>2</sup> Although there are some limited pass-through arrangements for exceptional items and some large uncertain transmission investments can be subject a 'contingent projects' arrangement

## 3 Approach

### Description of forecasting approach

#### High level assumptions

Ausgrid produces a forecast of Network operating expenditure on the following basis.

The Transitional Services Agreement with EnergyAustralia will come to an end in November 2014. This will result in some costs borne by the unregulated business in the base year, reverting to the Network business. Management initiatives will be implemented to offset this progressively over the next 3 years.

In line with changes to the regulatory view of Standard Control Services, forecast expenditure for Type 5 & 6 metering services, ancillary network services are classified as alternative control services and emergency recoverable works (third party damage) is unregulated and therefore for the purpose of the forecast and not included in the forecast figures for standard control services.

Other than these changes it has been assumed that the structure of the business will remain fundamentally as it is now, notwithstanding the continuing implementation of the Network Reform Program across New South Wales. That is, the forecast is based upon the assumption that Ausgrid will remain as a transmission and distribution network business, where 'corporate' and 'shared' services are provided from the current 'Finance & Compliance', 'People & Services', 'Information Communications & Technology' and 'Health Safety & Environment' business units. To facilitate this, the current forecasting approach assumes that cost allocations between the Network functions, Alternate Control functions and Unregulated functions are based on the latest approach, documented in 'Ausgrid's Proposed Cost Allocation Method' as submitted to the AER in November 2013 (approved by the AER on 2 May 2014)

The capital expenditure / operational expenditure trade-off in asset management is included inherently in this operational cost forecast. The forecast of asset maintenance workloads are provided by the Manager, Primary Systems, with supporting documentation and modelling being maintained within the Engineering division.

Similarly, the forecast includes the impact of other capital expenditure – property and IT expenditure in particular has impacts on operational costs.

#### Forecasting from an efficient starting point

Practically, a separate expenditure forecast is created for each of the separate activities performed by organisational units within Ausgrid and aggregated based on the functional category of the activity, as opposed to divisional structure.

The forecast operating expenditure is built up on a 'bottom up' basis from an efficient base cost at the activity level, sourced from the 2012/13 year's audited regulatory accounts. This is then escalated based upon:

- Price escalation factors; and
- Change factors.

The 2012/13 year was the lowest year for expenditure during the current regulatory period and this expenditure was below the allowance approved by AER for this period.

In summary, the total forecast operating cost for the Ausgrid Network is the sum of the cost forecasts for all of the Network activities performed by each business unit for the particular year.

#### Categorisation of forecast for reporting

Each activity cost is incurred by the profit centre undertaking the task. For reporting and management purposes each activity is mapped to a 'functional category'. This allows the costs of related tasks which undertaken across Ausgrid to be analysed and reported together. There are currently twenty-one of these used in forecasting. These 'functional categories' are, in turn, mapped to high level 'operating cost categories' which are:

- **Maintenance costs:** are related to direct electrical system costs. The costs incurred in this category are largely driven by asset condition, type and quantity as well as the particular operating environment. They are also clearly linked to the system capital program – the capital expenditure / operating expenditure trade-off is an integral part of Ausgrid's network investment analysis.

- **Operations & Support:** are those which support the operation of the distribution system. Network support costs covered include network control, customer operations, and engineering, planning and connections. They are broadly driven by the complexity of the network and assets in their particular operating context (weather, CBD etc), the size of the capital program and customer numbers. It also includes activities which support the operation of the business itself. They include costs which would be incurred by most businesses, for example IT, property, training & development, Finance, executive management, Human Resources and Safety.
- **Other Opex:** costs associated with the delivery and reporting of demand management and non-network alternative programs.

Details of the functional categories that contribute to each of the above 'operating cost categories' are contained in the 'Functional Category' section below.

## Activity cost forecast calculations

As noted above, an activity level cost forecast is based upon a base level efficient level of costs (as determined by the results of the efficient base year) for each functional category with escalations applied for price impacts. Each functional category has been split between five major Expense Element groups.

These Expense Element groups are as follows:

- Labour costs;
- Labour hire costs;
- Contracted services costs;
- Materials costs; and
- Other costs.

Price escalation is applied to each of these groupings separately using the appropriate escalation index. Change factor cost impacts calculated separately, escalated and then added to the base activity cost.

## Price escalation factors

Price escalation factors allow various different types of expected real increases in the costs of performing tasks to be incorporated. Price escalation factors consist of:

- CPI;
- Labour indexation;
- Labour Hire indexation;
- Contracted Services indexation;
- Materials indexation, and
- Other indexation.

The price escalations for operating expenditure are considered to be consistent across all parts of the business. For example, 'labour cost escalation' is deemed to be consistent across the business as award staff are employed under the same award. Escalation forecasts for the regulatory submission have been developed by an independent consultant, CEG. More details on the values used and their rationale are in section 5, 'Key assumptions, rationale and sources'.

## Change Factors

These recognise incremental movements in costs which are expected to occur in addition to (or less than, for efficiency improvements) the efficient base cost of the particular activity. Such positive or negative base cost changes could occur where the manner of an activity changed from the base year to the next.

The change factors included in the Opex Forecast include:



- Incremental expenditure associated with the sale and lease back of Ausgrid's head office building;
- Operational costs relating to property increase or decrease as land is added to or removed from Ausgrid's land portfolio for new substations and feeders. As the land 'footprint' grows there are impacts on property taxes, municipal rates, water rates and maintenance.
- Costs associated the inspection of private mains connected to Ausgrid's network;
- Additional costs from a more comprehensive asbestos inspection and audit plan;
- A decrease in Learning & Development operating costs can be a consequence of significant reduction in the number of apprentices;
- Incremental expenditure associated with the implementation of IT capital business cases;
- Implementation costs and savings associated with efficiency programs;
- The cost impact of transitioning to the new CAM approved by the AER on 2 May 2014; and
- The loss of synergy costs associated with the cessation of the TSA with EnergyAustralia.

## Operating cost grouping and categorisation

The approach described in this section is a bottom-up approach to cost forecasting, considering the various activities the Network business performs to meet its obligations. As well as being used for forecasting, the analysis is used for reporting and management analysis purposes. Each activity is therefore mapped to a 'functional category'. 'Functional Categories' are mapped to high level 'operating cost categories'. This allows cost analysis and reporting of related tasks.

This section further describes functional categories and operating cost categories.

## Functional Categories

This section describes the activities performed within each functional category, how the categories link to Ausgrid's obligations and how they map to broader operating cost categories.

The table describes the types of activity costs which are covered by the categories and an indication is given of the obligations each functional category addresses.

Operating Cost Category	Functional Category	Types of activity & costs included	Obligations covered
Maintenance Costs	System Maintenance - Inspection	o Planned Inspection of Ausgrid system assets	o OHS obligations o Licence conditions (reliability) o Industry specific statutory obligations
	System Maintenance - Corrective	o Corrective maintenance of Ausgrid system assets	o OHS obligations o Licence conditions (reliability) o Industry specific statutory obligations
	System Maintenance - Breakdown	o Maintenance of Ausgrid system assets following breakdown	o OHS obligations o Licence conditions (reliability) o Industry specific statutory obligations
	System Maintenance – Nature Induced Breakdown	o Maintenance of Ausgrid system assets following breakdown caused by weather or animals	o OHS obligations o Licence conditions (reliability) o Industry specific statutory obligations
	System Maintenance – Engineering Support	o Engineering support costs directly related to maintenance activities	o OHS obligations o Licence conditions (reliability) o Industry specific statutory obligations
	System Maintenance – Non-Direct Maintenance	o Maintenance of plant & tools o Testing of inventory	o OHS obligations o Licence conditions (reliability) o Industry specific statutory obligations

	Third Party Damage (Forecasted from base year but not included as part of SCS Opex Forecast)	o Costs relating to repair of vandalism and other damage caused by third parties	o OHS obligations o Licence conditions (reliability) o Industry specific statutory obligations
	Non-System Property Maintenance (Included as part of Property Forecast)	o Costs relating to repair and maintenance of non-system property	o OHS obligations o Industry specific statutory obligations
	Non-System Training & Development Maintenance (Included as part of Learning & Development Forecast)	o Costs relating to repair and maintenance of assets by apprentices under training	o OHS obligations o Industry specific statutory obligations
Operations & Support (Network Operations)	Network Operations - System Control	o Control room and despatch activities	o Licence conditions (reliability & security of supply) o OHS obligations o Public safety
	Network Operations - Engineering, Planning & Project Management	o Asset strategy and investment management o Ratings & supply quality o Major customer connections o Major projects planning and engineering	o Ausgrid-specific statutory obligations o National Electricity Rules obligations
	Network Operations - Customer Operations	o Connection design o Installation inspections o Planning for emergency events o Response to emergencies including call centre and field activities	o National Electricity Rules obligations (e.g. meter point data) o Technical obligations such as Australian Standards o Industry specific statutory obligations o Licence conditions (reliability & security of supply) o Public safety
Operations & Support (Support Operations)	Information Communications & Technology and Operational Technology	o PC support o Corporate communications o E-mail systems o SAP o Office of the CIO o Operational technology system support o Various technical services including data management	o Industry specific statutory obligations o General corporations reporting & governance obligations o Licence conditions (reliability & security of supply) o Industry specific statutory obligations (e.g. Public safety)
	Property	o Property maintenance, land tax, rates and rent for 'system' and 'non- system' properties o Utility bills o Environmental costs	o Licence conditions (reliability) o Planning legislation o National Electricity Rules obligations o Industry specific statutory obligations
	Learning & Development (Training)	o Training o Apprentice recruitment and training o Organisational development	o Industry specific statutory obligations o National Electricity Rules obligations
	Metering	o Metering services within Ausgrid substations	o National Electricity Rules obligations
	Contact Centre	o Network outage and hazard response capability o First point of contact for	o Industry specific statutory obligations o National Electricity Rules

		NECF compliance obligations; breach identification, complaints management o Public Safety and Customer service deliverables	obligations
	Data Operations	o GIS – data operations o Installation data operations o NEM operations	o Industry specific statutory obligations o National Electricity Rules obligations (e.g. meter point data)
	Insurance	o Insurance not covered by self insurance	o Industry specific statutory obligations
	Finance Functions	o Financial Control o Commercial & Decision Support o Finance Transactions & Services o PMO, Strategy & Performance	o General corporations reporting & governance obligations
	Management	o Executive management company secretary, legal, & communications o Networks NSW management	o General corporations reporting obligations
	Other	o Fleet and logistics activities o Occupational Health & Safety o Environmental Services o Regulation & Compliance o Network Customer Investigations o Communications & Community Partnerships o Human Resources	o Industry specific statutory obligations o Licence conditions (e.g. fast fault response) o National Electricity Rules obligations
Other Costs	Non-network alternative (demand management)	o Site specific demand management o Broad based demand management program o DM Innovation Allowance	o National Electricity Rules obligations o Industry specific statutory obligations

## 4 Tools and systems

### Overview

An Excel OPEX forecasting model has been developed to assist in forecasting operational expenditure for regulatory submission and within regulatory control periods.

As well as developing forecasts the Model allows the tracking of operational expenditure performance against the forecast. This allows Ausgrid to evaluate the likely future performance for budgeting purposes and to react to forecast overspend against the allowance.

### Model Structure

The Model uses 2012/13 operational expenditure attributed to the network line of business as a cost base, and the cost activities are each classified as being a Labour, Labour Hire, Contract, Material or Other cost.

Forecast assumptions are input in the form of Price escalations and change factors, and the Model combines these forecast assumptions with the Actual Cost Data to calculate the forecast operational expenditure costs for future regulatory periods reported by activity and cost type.

As well as calculating the operational expenditure forecasts, the Model also presents other information relating to Transmission and Distribution split by activity and functional category.

### *Input Sheets*

#### Base Year Input

The base year input page contains the financial results for the 2012/13 financial year (as reported in the annual RIN) in actual dollars split into the proposed new RIN categories and itemised by the following Expense Elements: Labour, Labour Hire, Contracted Services, Materials and Other.

#### Prior Year Input

The Prior year input page contains the financial results for the 2009/2010, 2010/2011 and 2011/12 financial years (as reported in the annual RIN) in actual dollars split into the proposed new RIN categories and itemised by the following Expense Elements: Labour, Labour Hire, Contracted Services, Materials and Other.

#### EOY Adj Input

The EOY Adj Input page shows the historical figures for Long Service Leave and reclassification of Opex and Capex for the financial years 2010 through to 2013. These have been itemised separately and removed from total opex to ensure that the forecast has been based on the true 'underlying' operational cost structure of the business.

#### RIN Adj Input

The page shows adjustments to the RIN during the 2009-2014 regulatory period. These include Depreciation Adjustments and Overstated Maintenance Expenditure that has been corrected and has been included to allow correct statement of historical opex against the allowance as reported in the annual RIN.

#### CAM Impact Input

The CAM Impact Input page contains the impact of changes to the cost allocation method (CAM) on the results from the 2012/13 financial year. The change in cost allocation drivers results in shared costs being distributed proportionately different in the next regulatory period, which is compounded by the reclassification of metering and

monopoly services. The impact of the change in CAM drivers has been applied to the base year result and included as a separately identified change factor within each impacted functional category forecast.

## **TSA CAM Impact Input**

The TSA CAM Impact Input page contains the impact of changes to the cost allocation method (CAM) on shared costs as a result of the cessation of the TSA. The removal of the TSA business will result in shared costs being distributed proportionately different in the next regulatory period, which is compounded by the reclassification of metering and monopoly services. The impact has been applied to the base year result and included as a separately identified change factor within each impacted functional category forecast.

## **TSA Ops Impact Input**

The loss of the TSA will have a direct impact on certain functional categories as a result of the network no longer having the ability to leverage upon TSA functions. The TSA Ops Impact Input page contains the operational impact on the network business financial forecast for the 2014/15 through 2018/19 years. These forecast numbers are itemised by the following Expense Elements: Labour, Labour Hire, Contracted Services, Materials and Other. They are presented with zero escalation applied.

## **Escalators – Real Input**

The Escalators Real Input sheet is the input page for all Price Escalations factors above CPI, in order to be able to produce forecast view in Real 2013/14 terms. It consists of CPI, Labour indexation, Contracted Services indexation, Materials indexation and Other indexation.

### **CPI**

As the requirement is to account for indexation above CPI, the real escalator for CPI is 0 throughout the forecast period. There is only a value for those years relevant to bringing 2012/13 actual up to real 2013/14 dollars.

The sheet calculates and displays a cumulative indexation figure for CPI from the yearly rates input.

### **Labour Indexation**

This requires the user to input the Indexation Requirement component for labour indexation as a percentage for forecast years above the level of CPI for that year.

The labour indices used are based on the current award agreement until the completion of that agreement and then specific labour indexation calculated for the Electricity Water & Gas industry. These indices are provided by independent economists CEG.

The sheet calculates and displays a cumulative indexation figure for each of the labour indices from the yearly rates input.

### **Contracted Services & Contract Labour Hire**

This requires the user to input the Indexation Requirement component for Contracted Services and Contracted Labour Hire as a percentage for forecast years above the level of CPI for that year.

The sheet calculates and displays a cumulative indexation figure for each of the labour indices from the yearly rates input.

### **Materials Indexation**

Price escalation factors relating to Materials indexation are applied in the same way as labour indexation and contracted services indexation in the Model. Refer to Labour Indexation and Contracted Services Indexation above for detailed descriptions and examples.

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There has been an assumption made that there will be no indexation above CPI applicable to Materials.

The sheet calculates and displays a cumulative indexation figure for each of the labour indices from the yearly rates input.

### **Other Indexation**

Price escalation factors relating to Other indexation are applied in the same way as labour indexation and contracted services indexation in the Model. Refer to Labour Indexation and Contracted Services Indexation above for detailed descriptions and examples.

There has been an assumption made that there will be no indexation above CPI applicable to Materials.

The sheet calculates and displays a cumulative indexation figure for each of the labour indices from the yearly rates input.

## **Escalators – Nom Input**

The Escalators Nom Input sheet is the input page for all Price Escalations factors including CPI, in order to be able to produce forecast view in Nominal dollars. As for the Escalators – Real Input page, it consists of CPI, Labour indexation, Contracted Services indexation, Materials indexation and Other indexation.

The escalators are applied in the same manner as the Real escalators are except that they include CPI throughout the full period of the model.

## **Escalators – 0914 Input (Act)**

This page provides calculated CPI rates to be applied to the financial expenditure during the last regulatory period in order to present these numbers in Real 2013/14 terms. The page includes a split of Transmission versus Distribution and applies these across each category in accordance with the expenditure split in each category.

## **NRP Efficiencies Input**

This page shows the savings associated with the implementation of Network Reform Programs commencing in the 2013/14 year and extending through the next regulatory period.

## **TSA Efficiencies Input**

This page shows the additional efficiency savings commencing in 2013/14 and extending through the next regulatory period to offset the TSA Loss of Synergy costs. The TSA (transitional service agreement) is in place to continue to service the retail section of the business which has been sold. This includes ongoing costs currently, and also the costs of the loss of synergy when the arrangement comes to an end.

## **CAM Efficiencies Input**

This page shows the additional efficiency savings commencing in 2013/14 and extending through the next regulatory period to offset the impact of change to the proposed cost allocation method (CAM).

## **IT Business Case Input**

This page details the costs and savings relating to the IT plan through the next regulatory period.

## **Allowance Input**

This page contains the input cells for the Regulatory Opex Allowance budget amounts, which is used for reporting and analysis of budgeted allowance amounts against actual operational expenditure for the prior period. The Regulatory Allowance figures are entered using the proposed Functional Categories, and the totals reconciled to the current Regulatory Allowance.

## **Alternate Control - Input**

This page provides the input data for 3<sup>rd</sup> Party Damage, Metering Alternate Control and Ancillary Services which were previously included in the Opex figures for SCS in prior years. These costs are input into this sheet to allow them to be identified and removed from the Standard Control Services forecast.

## **Tx\_Dx Split Input**

This page shows the Transmission versus Distribution split of expenditure across all the Opex functional categories. These percentages have been obtained through the TM1 system by analysing the actual percentages spent during the 2012/13 financial year.

## **Eff Imp Costs Input**

This page contains details regarding the implementation costs of NRP, TSA and cash prioritisation savings initiatives.

## **Growth Factor Input**

This page contains growth factor inputs for specific categories within the business. These impact upon Data ops, IT and Learning and Development (Training).

## **Insurance Input**

This page shows the quotes for insurance provided by Marsh Insurance Brokers for the next 5 year regulatory period. The costs are in nominal dollars and are used as the input data for the Cat\_Insurance page.

## **Maintenance Input**

This page shows the financial data directly from the separate Maintenance model. This page has zero escalation applied. It is used as the input page for Cat\_Maint page.

## Calculation Sheets Functional Category

Each Functional Category has a separate worksheet. These sheets provide a baseline forecast of the costs within that functional area applying the escalation indices to the 2012/13 actual result for that cost category. This is not an input component. Input is possible only to add any change factors to the baseline forecast or where specific modelling has been done for one of the function categories such as maintenance as previously mentioned above. In addition to this there are category pages for Efficiency Initiatives Implementation, Efficiency Savings, the impact of TSA finalisation, and the impact of CAM changes.

The user is able to input any change factors applicable to the activities within the functional category. These change factor impacts assumptions are input by cost category being Labour, Contracted Services or Other.

Change factor impacts recognise incremental movements, both positive and negative, in costs which are expected to occur in addition to the efficient cost base of the particular activity.

The change factor impact assumptions are categorised in the same way as the Actual Cost Data input, where each activity cost in each functional category is split between Labour, Labour Hire, Contracted Services, Materials and Other. This allows additional flexibility in applying specific change factor impacts to individual cost categories to come to specific operational expenditure forecasts within the functional category.

It should be noted that where a change factor impact is input in a base or forecast period for an activity, the impact does not automatically recur as of that period. Where the amount is a recurring amount it has been input into each period in which the changes occur.

## Calculations

The key calculations in the Model are the determination of cumulative price escalation, and the application of the price escalation rates to base. Other calculations are primarily lookup and sum calculations.

### Calculation of Cumulative Escalation Rates

The below table illustrates the calculation of the cumulative escalation rate for labour hire in real terms:

		Base	Forecast	Forecast	Forecast	Forecast	Forecast	
		FY2012/13 1/2 Yr Esc	FY2013/14	FY2014/15	FY2015/16	FY2016/17	FY2017/18	FY2018/19
Labour Hire	% per annum	0.39%	3.66%	0.56%	1.06%	1.67%	1.75%	1.81%
2012 Dec = 1.0000	4dp	1.0039	1.0406	1.0465	1.0576	1.0752	1.0940	1.1139

Base year cumulative rate = 1 + escalation rate

2<sup>nd</sup> year cumulative rate = prior year cumulative rate x (1 + 2<sup>nd</sup> year escalation rate)

3<sup>rd</sup> year cumulative rate = prior year cumulative rate x (1 + 3<sup>rd</sup> year escalation rate)

and so on.



## Calculation of forecast operational expenditure

The “Cat\_{xxxx}” sheets of the model contain the forecast calculations for each Operating Cost Category split by Functional Activity, further split by Expense Element. Each sheet is divided into three sections: Nominal, Real and Zero Escalation Opex forecasts.

The Zero escalation forecast section takes the underlying Base Year results, escalated to 2013/14 dollar terms and applies them across the five year period without real escalators for future years being applied. Similarly, any change or growth factors are identified separately from the underlying Base Year results and are shown in the same manner.

The Real forecast section converts the zero escalation forecast and applies real price escalation indexation (as calculated from the “Escalators – Real Input” sheet by each individual Expense Element to produce the real FY2013/14 results of the opex model.

Similarly, the Nominal forecast section converts the zero escalation forecast and applies nominal price escalation indexation (as calculated from the “Escalators – Nominal Input” sheet by each individual Expense Element to produce the real 2013/14 results of the opex model.

## Calculation Sheets

Calculation sheet	Operating Cost Category	Functional Activity
Cat CustCont	Customer Contact Centre	<ul style="list-style-type: none"> <li>▪ Emergency Contact Centre</li> <li>▪ TSA Overflow Contact Centre</li> </ul>
Cat CustOps	Customer Operations	<ul style="list-style-type: none"> <li>▪ Customer Connections</li> <li>▪ Major Customer Connections</li> <li>▪ Field Operations</li> <li>▪ Emergency Management</li> </ul>
Cat DataOps	Data Operations	<ul style="list-style-type: none"> <li>▪ NEM Data Operations</li> <li>▪ Installation Data Operations</li> <li>▪ GIS Data Operations</li> </ul>
Cat DemMgmt	Demand Management, DMIA & Project Specific	<ul style="list-style-type: none"> <li>▪ Demand Management, DMIA &amp; Project Specific</li> <li>▪ Energy Save</li> <li>▪ Broad Based Demand Management</li> </ul>
Cat EngPlan	Engineering, Planning & Project Management	<ul style="list-style-type: none"> <li>▪ Engineering – Operational Technology</li> <li>▪ Engineering – Primary &amp; Secondary Systems</li> <li>▪ Engineering – Testing</li> <li>▪ Network &amp; Asset Planning</li> <li>▪ Project Management – Capital Programs &amp; Major Projects</li> <li>▪ Project Management – Project Development</li> </ul>
Cat Finance	Finance	<ul style="list-style-type: none"> <li>▪ Commercial Services &amp; Decision Support</li> <li>▪ Financial Control</li> <li>▪ Financial Transactions &amp; Services</li> <li>▪ PMO &amp; Corporate Planning</li> </ul>
Cat ICT	Information, Communications & Technology	<ul style="list-style-type: none"> <li>▪ ICT – Management</li> <li>▪ ICT – Vendor Sourcing</li> <li>▪ ICT – Governance &amp; Services Mgmt</li> <li>▪ ICT – Infrastructure Services</li> <li>▪ ICT – Business Systems</li> </ul>
Cat ITOT	Operational Technology	<ul style="list-style-type: none"> <li>▪ Distribution Systems &amp; Telecommunications</li> <li>▪ Operational Technology Development</li> </ul>

Cat Ins	Insurance	<ul style="list-style-type: none"> <li>▪ Insurance</li> </ul>
Cat Maint	Maintenance	<p>System Maintenance</p> <ul style="list-style-type: none"> <li>▪ System Maintenance – Inspection</li> <li>▪ System Maintenance – Corrective</li> <li>▪ System Maintenance – Breakdown</li> <li>▪ System Maintenance – Nature Induced</li> <li>▪ System Maintenance – Non-Direct</li> <li>▪ System Maintenance – Engineering Support</li> </ul> <p>Non-System Maintenance</p> <ul style="list-style-type: none"> <li>▪ Non-system – Property (Included in Property SCS Forecast)</li> <li>▪ Non-system – Training &amp; Development (included in Training &amp; Development SCS Forecast)</li> <li>▪ Unregulated Damage by 3<sup>rd</sup> Party (Excluded from SCS Forecast)</li> </ul>
Cat Meter	Metering	<ul style="list-style-type: none"> <li>▪ Metering Data</li> <li>▪ Metering Technology</li> <li>▪ Metering Operations</li> <li>▪ Meter Reading</li> <li>▪ Disconnections</li> </ul>
Cat Mgmt	Management	<ul style="list-style-type: none"> <li>▪ Ausgrid Executive</li> <li>▪ Networks NSW</li> <li>▪ Legal</li> <li>▪ Internal Audit</li> </ul>
Cat Prop	Property	<ul style="list-style-type: none"> <li>▪ Property Management</li> <li>▪ Land Tax</li> </ul>
Cat SysCont	System Control	<ul style="list-style-type: none"> <li>▪ System Control</li> </ul>
Cat Train	Training & Development	<ul style="list-style-type: none"> <li>▪ Learning &amp; Development</li> <li>▪ Training Management</li> <li>▪ Organisational Capability &amp; Change</li> </ul>
Cat Other	Other Support Services	<ul style="list-style-type: none"> <li>▪ Customer Investigations</li> <li>▪ Health, Safety &amp; Environment</li> <li>▪ Human Resources</li> <li>▪ Marketing, Communications &amp; Partnerships</li> <li>▪ Network Regulation</li> <li>▪ Procurement, Fleet &amp; Logistics</li> </ul>
Cat EffImp	Efficiency Implementation Costs	<ul style="list-style-type: none"> <li>▪ Efficiency Implementation Costs</li> </ul>
Cat_EffSav	Efficiency Savings	<ul style="list-style-type: none"> <li>▪ Efficiency Savings</li> </ul>

## ***Impact Calculation Sheets***

### **Impact CAM**

This category sheet shows the impact that changes to the CAM will have on specific areas of the business as well as the business as a whole.

## **Impact TSA**

This category sheet shows the impact that the end of the TSA will have on specific areas of the business as well as the business as a whole.

## **Summary Output Sheets**

The overall output of the Model is the forecast operational expenditure cost in future regulatory periods, which is used to compare with actual operational expenditure and the regulatory opex allowance. The opex amounts are reported in annual terms as well as by regulatory period and are summarised by functional category. Year end adjustments are applied to non forecast periods to ensure reconciliation between audited accounts and the Model.

To allow detailed analysis of the operational expenditure amounts, the outputs are shown using various output sheets which detail the Opex totals in real and nominal dollar terms by functional category and with transmission and distribution split. The key output sheets in the Model are:

- Total Zero
- Total Real
- Total Nominal
- 09-14 vs Allowance
- Total Fcst - Real
- Total Fcst – Nominal
- SCS Opex Fcst - Real
- SCS Opex Fcst - Nominal

The output sheets report the actual and forecast operational expenditure of Ausgrid on an annual basis as well as by regulatory periods. The information is provided at summary level (by functional category) in the Summary Output pages, and on a detailed basis (by activity and Expense Element) within the individual category sheets.

## **Total Zero**

The Total Zero output sheet reports the total operational expenditure for actual base year and forecast years with no escalation applied. This comes from displaying the values for each of the Functional Categories, both in total and broken down by Expense Element in current (2013/14) values without any price escalation being applied to outer years.

This output sheet is derived from the forecasts by Functional Category. Total operational expenditure shown is reported as NLOB Opex which then is split by Service Classification between:

- Standard Control Services (SCS)
- Alternate Control Services
- Ancillary Network Services
- Unregulated 3<sup>rd</sup> Party Damage

As discussed in section 1, the underlying operational in the base year of 2012/13 included services that will be classified differently in the next regulatory period. A total Opex view was taken and the non SCS portions identified for exclusion.

## **Total Real**

The Total Real output sheet reports the total operational expenditure for actual base year and forecast years with real cost escalation applied. This comes from displaying the values for each of the Functional Categories, both in

total and broken down by Expense Element in current (2013/14) values real price escalation being applied to outer years.

This output sheet is derived from the forecasts by Functional Category. Total operational expenditure shown is reported as NLOB Opex which then is split by Service Classification between:

- Standard Control Services (SCS)
- Alternate Control Services
- Ancillary Network Services
- Unregulated 3<sup>rd</sup> Party Damage

As discussed in section 1, the underlying operational in the base year of 2012/13 included services that will be classified differently in the next regulatory period. A total Opex view was taken and the non SCS portions identified for exclusion.

## **Total Nominal**

The Total Nominal output sheet reports the total operational expenditure for actual base year and forecast years with real cost escalation applied. This comes from displaying the values for each of the Functional Categories, both in total and broken down by Expense Element in current (2013/14) values nominal price escalation being applied to outer years.

This output sheet is derived from the forecasts by Functional Category. Total operational expenditure shown is reported as NLOB Opex which then is split by Service Classification between:

- Standard Control Services (SCS)
- Alternate Control Services
- Ancillary Network Services
- Unregulated 3<sup>rd</sup> Party Damage

As discussed in section 1, the underlying operational in the base year of 2012/13 included services that will be classified differently in the next regulatory period. A total Opex view was taken and the non SCS portions identified for exclusion.

## **09-14 vs Allowance**

The 09-14 vs Allowance output sheet provides the user a summary of total actual SCS operational expenditure of Ausgrid on an annual basis by functional category for the FY10 to FY14 Regulatory Period recast into the proposed new RIN categories for the purpose of reporting and analysis against the current Regulatory Opex Allowance.

## **Total Fcst - Real**

The Total Fcst - Real output sheet reports the total actual operational expenditure for years 2009/10 to 2012/13 and forecast years 2013/14 to 2018/19 in real 2013/14 terms. This is shown at the total level for each functional category.

In this report, the year end adjustments are shown in prior years to enable a reconciliation between actual and base year underlying operational expenditure totals with the audited regulatory accounts.

Also shown in the 10 Year Trend Real report are the values for efficiency implementation costs and savings which are not yet specifically related to a functional category.

## **Total Fcst - Nominal**

The Total Fcst - Real output sheet reports the total actual operational expenditure for years 2009/10 to 2012/13 and forecast years 2013/14 to 2018/19 in nominal year of expenditure terms. This is shown at the total level for each functional category.

In this report, the year end adjustments are shown in prior years to enable a reconciliation between actual and base year underlying operational expenditure totals with the audited regulatory accounts.

Also shown in the 10 Year Trend Nominal report are the values for efficiency implementation costs and savings which are not yet specifically related to a functional category.

## **SCS Opex Fcst - Real**

The SCS Opex Fcst - Real output sheet reports only the total standard control services operational expenditure for years 2009/10 to 2012/13 and forecast years 2013/14 to 2018/19 in real 2013/14 terms. This is shown at the total level for each functional category.

In this report, the year end adjustments are shown in prior years to enable a reconciliation between actual and base year operational totals inclusive of year end adjustments with the audited regulatory accounts.

Also shown in the SCS Opex Fcst - Real report are the values for efficiency implementation costs and savings which are not yet specifically related to a functional category.

## **SCS Opex Fcst - Nominal**

The SCS Opex Fcst - Nominal output sheet reports the total actual operational expenditure for years 2009/10 to 2012/13 and forecast years 2009/10 to 2012/13 in nominal year of expenditure terms. This is shown at the total level for each functional category.

In this report, the year end adjustments are shown in prior years to enable a reconciliation between actual and base year operational totals inclusive of year end adjustments with the audited regulatory accounts.

Also shown in the SCS Opex Fcst - Nominal report are the values for efficiency implementation costs and savings which are not yet specifically related to a functional category.

## **Controls and security**

### Cell Protection

The final Financial Model will contain physical security measures with cell protection built into the entire workbook. The cell protection will restrict the user to imputation only within specific input cells. All calculation cells, or cells not designated input cells will not allow the user to modify or delete the content, unless the user is authorised with the correct password.

The final version of the model will be completely locked, including input fields, to prevent any further changes unless the user is authorised with the correct password.

## 5 Key assumptions, rationale and sources

This section describes each of the main groups of assumptions used in the operational cost forecasting process and model:

- Efficient base cost assumptions (5.1); and
- Price escalation assumptions (5.2);

The source of each assumption is described along with either an explanation for its rationale or a reference to an external document which explains this rationale. Where relevant, the responsible parties are identified.

### 5.1 Efficient base cost assumptions

As described in Section 3, the efficient base costs form the basis of the forecast. The assumptions around the efficient base costs, their sources, their rationale and the responsible persons are described in the following table:

Assumptions	Source	Responsibility / ownership	Rationale
Ausgrid efficient base costs	Last audited regulatory accounts	Manager Commercial & Decision Support	This is the last set of cost information which has been robustly audited in a form useful for forecasting.
Manipulated efficient base costs for all Functional Categories <sup>3</sup>	Analysis of Manager Financial Forecasting and Planning	Manager Commercial & Decision Support	For the forecast to accurately reflect the costs of each Functional Category, it has to reflect the activities which will be undertaken by that Division (especially if they were undertaken elsewhere in the past)

<sup>3</sup> Cost line items are moved between functional categories based on any changes to where activities will take place going forward

### 5.2 Price escalation assumptions

The table below describes the five price escalation indices used in the model, their application, their source and the responsible person.

Escalation	Application	Source
Forecast wage growth	Applied to all labour components of Ausgrid including Maintenance, Network Support, Metering, ICT, Property, Finance, Demand Management and all other Business Support areas.	Independent report commissioned from CEG
Forecast growth in Labour Hire	Applied to categories where there are Labour Hire personnel performing duties within Ausgrid	Independent report commissioned from CEG
Forecast growth in Contract Services	Applied to categories where contractors are used to complete some of the requirements of Ausgrid	Independent report commissioned from CEG
Forecast growth in Materials	Applied where there are costs of materials within a cost category	Independent report commissioned from CEG
Consumer Price Index (CPI) and other	Applied to all other costs	Independent report commissioned from CEG

Assumptions specific to certain parts of the model are detailed in Appendix B: Assumptions.

## 6 Risk assessment & mitigation strategies

The following table describes an assessment of key risks relating to the operational expenditure forecasting process and tools described in this document. Mitigation strategies are briefly explained.

Risk	Impact	Likelihood	Mitigation
A major outage event not included in forecast	GCSS, contact centre and emergency response costs higher than forecast	Difficult to forecast depends on weather	It would be very difficult for Ausgrid to forecast major events in the short term. Longer term averages are considered and plans are in place to allow an appropriate customer response.
Catastrophic storms	Impact greater than self-insured value (e.g. Contact centre and emergency response costs higher than forecast (likely to be excluded form GCSS))	Difficult to forecast depends on weather	Nominated pass through events 'natural disaster event'
Unidentified pass-through events	An unforeseen event causes costs to be incurred which are not covered by regulatory arrangements	Possible	Possible pass-through events are nominated for the AER's acceptance.
Key person risk – Much of the knowledge of the process and tools resides with one person	A later forecast may not be produced to the same standard and rigour as this one	Possible	This document should allow a knowledgeable person to follow the methodology, gather data and use the tools.
Error in forecast from Model	Incorrect forecast – financial and regulatory impacts	Possible	An independent review of the model has been completed and validated by KPMG
Error in forecast from input data	Incorrect forecast – financial and regulatory impacts	Possible	Input data has been independently reviewed and validated by KPMG
AMI roll-out	Financial impact as may be mandated to install new advanced meters	Possible	
Cost escalation	Forecast may not be as accurate as it could be	Possible	Independent report commissioned from CEG

# Appendix A Key Obligations

Table 1 - Existing obligations

Obligations that have already been incorporated into the fabric of the business and are evident in historic costs

Key Obligations	Regulator or Authority	Relevant legislative or regulatory instrument and provisions(s)	DNSP's obligation
	NSW Department of Water and Energy, NSW Independent Pricing and Regulatory Tribunal, Energy & Water Ombudsman	Electricity Supply Act 1995, Electricity Supply (General) Regulation 2001, Market Operation Rules and Ministerially imposed Licence Conditions	Compliance and reporting against 354 obligations as listed in the Electricity Distribution Network Service Provider Reporting Manual, Independent Pricing And Regulatory Tribunal Of New South Wales, December 2006
	AER	National Electricity Law & National Electricity Rules	Compliance and reporting against all obligations relevant to NSPs as listed in the NER.
	NSW Department of Water and Energy, NSW Office of Fair Trading	Electricity Supply (Safety & Network Management) Regulation and the Electricity (Consumer Safety) Act & Regulation.	The following plans are required to be prepared to outline how obligations under these instruments will be met : Network Management Plan, Bushfire Risk Mgt Plan, Public Electrical Safety Awareness Plan, Customer Installation Safety Plan.
	Various Environmental Regulators	There are approximately 40 different environmental laws, regulations and guidelines plus many Local Environment Plans, Regional Environment Plans and State Environment Planning Policies that need to be complied with, resulting in many hundreds of obligations.	The two main environmental legislative instruments are the Environmental Planning & Assessment Act 1979 and the Protection of the Environment Operations Act 1997. These two Acts not only govern the 12 environmental licences that Ausgrid holds (POEO Act) but also the activities conducted in the field where Ausgrid is most likely to be fined. Certain environmental incidents must be reported to the Regulator and a deliberate environmental breach could result in a gaol sentence. Breaches are measured by fines or incidents reported to a Regulator.
	Workplace Health & Safety	NSW Work Health Safety Act 2011 SW Work Health Safety Regulation 2011 NSW Code of Practice – Managing Asbestos in the Workplace	To ensure a safe workplace for employees and the general public.



# Appendix B Specific Assumptions

## Customer Contact

It is assumed that the transitional services agreement that has been in place since the sale of the retail business will cease in November 2014. This will remove the ability to use the TSA call centre staff as “overflow” staffing in times of heavy call loads. Therefore additional staff will be required to provide sufficient capacity to be able to cope with calls even during peak times. Details can be found in Attachment 6.11 ‘Other operations and business support plan’.

## Data Operations

It is assumed that the transitional services agreement that has been in place since the sale of the retail business will cease in November 2014. The synergies that arise from this agreement will be lost after the sale. This will result in an increase in processing volumes for both Network billing and B2B. Details can be found in Attachment 6.11 ‘Other operations and business support plan’.

## Demand Management

The Demand Management function will have a number of changes compared to the previous regulatory period. There will also be a number of changes during the course of the new regulatory period. Specific assumptions are detailed within in Attachment 6.12 ‘Demand management opex plan’.

## Engineering, Planning and Project Management

Engineering Planning and Project Management will have a number of functions transferred to it from Operational Technology (ITOT) for the next regulatory period. These changes are due to the organisational restructure of the business. Details can be found in Attachment 6.05 ‘Information, communications and technology (ICT) opex plan’.

## ICT

The ICT model has a number of specific assumptions relating to its incremental costs from the implementation of IT business cases. Details can be found in Attachment 6.05 ‘Information, communications and technology (ICT) opex plan’.

## ITOT

Operational Technology (ITOT) will transfer a number of functions to Engineering Planning and Project Management for the next regulatory period. Details can be found in Attachment 6.05 ‘Information, communications and technology (ICT) opex plan’.

## Maintenance

The Maintenance model has a number of specific assumptions relating to its calculations, with particular reference to Private Mains, Asbestos and Vegetation Management forecasts. Details can be found in Attachment 6.03 ‘System maintenance opex plan’.

## Property

The Property forecast has a number of specific assumptions around the purchase of properties to meet the demands of our network operations, the sale and lease back of head office building and land tax. Details can be found in Attachment 6.04 ‘Property opex plan’.

## Learning and Development

There are a number of assumptions made in the calculation of proposed expenditure for the apprentice scheme and training staff. Details can be found in Attachment 6.08 'Learning & development plan'.

## Appendix C Source Data

Input Page	Methodology	Source
Base Year Input	Data extracted from TM1 for each category for the 2012/13 financial year	SAP via TM1
Prior Year Input	Data extracted from TM1 for each category for the 2009/10, 2010/11 & 2011/12 financial years	SAP via TM1
CAM Impact Input	Direct Input	External model "Impact of Proposed CAM on Base Year"
TSA CAM Impact Input	Direct Input	External model "Net Impact of Proposed CAM after TSA"
TSA Ops Impact Input	Direct Input	External model
EOY Adj Input	Calculation of allocation	SAP via TM1. FY10 to FY13 EOY Adjustments.xlsx
RIN Adj Input	Direct Input	External model "FY10 to FY13 EOY Adjustments"
Escalators – Real Input	Data supplied by external providers	Competition Economists Group and Independent Economics
Escalators – Nom Input	Data supplied by external providers	Competition Economists Group and Independent Economics
Escalators – 0914 Input(Act)	Direct Input	Provided by Matt McQuarrie, Regulatory Reset Program Director
NRP Efficiencies – Input	Direct Input	Provided by Andrew Nash, Manager – PMO & Corporate Planning
TSA Efficiencies – Input	Calculation	Impact_TSA tab
CAM Efficiencies – Input	Calculation	Impact_CAM tab
IT Business Case – Input	Direct Input	External model "Technology Opex Forecast Model".
Allowance Input	Direct Input + calculation	Based on current RIN allowance.
Alternate Control Input	Direct Input + calculation	External model "Metering Opex Forecast Model".
Tx Dx Split	Calculation	SAP via TM1
Cat CustCont	Input data sourced from "Base Year Input" page and "Escalators - ..." pages	SAP via TM1
Cat CustOps	Input data sourced from "Base Year Input" page and "Escalators - ..." pages	SAP via TM1
Cat DataOps	Input data sourced from "Base Year Input" page and "Escalators - ..." pages	SAP via TM1
Cat DemMgmt	Bottom up model	External document "Demand management opex plan"
Cat EngPlan	Input data sourced from "Base Year Input" page and "Escalators - ..." pages	SAP via TM1
Cat Finance	Input data sourced from "Base Year Input" page and "Escalators - ..." pages	SAP via TM1
Cat ICT	Input data sourced from "Base Year Input" page and "Escalators - ..." pages + direct input	SAP via TM1 and "Information, communication and technology (ICT) plan"
Cat ITOT	Input data sourced from "Base Year Input" page and "Escalators - ..." pages	SAP via TM1 and "Information, communication and technology (ICT) plan"
Cat Ins	Labour extracted from TM1 source data.	SAP via TM1 and Marsh

	Insurance quotes provided by independent broker	Insurance Brokers "Insurance Opex Detail 2015-19.xls"
Cat Maint	Bottom up costing model	SAP via TM1 and "Maintenance Opex Forecast Model"
Cat Meter	Input data sourced from "Base Year Input" page and "Escalators - ..." pages	SAP via TM1 and "Metering Opex Forecast Model"
Cat Mgmt	Input data sourced from "Base Year Input" page and "Escalators - ..." pages	SAP via TM1
Cat Prop	Bottom up costing model	SAP via TM1 and "Property Opex Forecast Model"
Cat SysCont	Input data sourced from "Base Year Input" page and "Escalators - ..." pages	SAP via TM1
Cat Train	Input data sourced from "Base Year Input" page and "Escalators - ..." pages. Includes step changes due to staffing changes	SAP via TM1 and "Learning & Development Opex Forecast Model"
Cat Other	Input data sourced from "Base Year Input" page and "Escalators - ..." pages	SAP via TM1