# RIN Response

# Part B

# Capital expenditure

Aurora Energy Pty Ltd
ABN 85 082 464 622
Level 2 / 21 Kirksway Place
Hobart TAS 7000
www.auroraenergy.com.au
Enquiries regarding this RIN Response should be addressed to:
Network Regulatory Manager
Aurora Energy Pty Ltd
GPO Box 191
Hobart TAS 7001
e-mail: RRP2012@auroraenergy.com.au

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# 1. Capital expenditure

In this document Aurora will set out its responses to questions raised by the AER within section 4, Capital Expenditure, of the Regulatory Information Notice (RIN) issued to Aurora by the AER on 21 April 2011.

Section 4 of the RIN requires Aurora to provide responses in relation to a number of matters concerning Aurora's total forecast capital expenditure proposal.

Aurora has responded to each of the questions raised by the AER in its RIN and these are provided in the following chapters of this RIN Response.

# 2. Aurora work categories

## 2.1. RIN requirements

RIN paragraph 4.1 requires Aurora to provide Actual Capex, Estimated Capex and Forecast Capex values disaggregated into Aurora's individual work categories.

This data is appended as an attachment (Capex by Work Category $0910.xls) to this RIN Response.

# 3. Aggregation from work categories to RIN categories

## 3.1. RIN requirements

RIN paragraph 4.2 requires Aurora to explain how the Actual Capex, Estimated Capex and Forecast Capex values at the work category level provided in response to paragraph 4.1 are aggregated and allocated to each relevant Standard Control Capex Category.

The RIN provides three levels of categorisation for *standard control services* capital expenditure in a tree structure, with the highest level of categorisation having the fewest components. Aggregation of capital expenditure from the lowest levels to the highest levels is according to this structure.

For the Actual Capex:

- actual expenditure for each work category was reviewed to ensure that each work category maps to only one of the lowest-level RIN categories;
- where this was not the case, actual expenditure was split so that the individual portions of the expenditure map to a work category that maps to only one of the lowest-level RIN categories; and
- work categories were mapped to the lowest-level RIN categories based upon the classification of services given in the Framework and Approach paper.

For the Estimated Capex:

- estimated expenditure for each work category was reviewed to ensure that each work category maps to only one of the lowest-level RIN categories;
- where this was not the case, estimated expenditure was split so that the individual portions of the expenditure map to a work category that maps to only one of the lowest-level RIN categories; and
- work categories were mapped to the lowest-level RIN categories based upon the classification of services given in the Framework and Approach paper.

For Forecast Capex:

- each asset class has a set of unique work categories;
- each work category maps to only one of the lowest lowest-level RIN categories;
- work categories are chosen such that the work forecast for that work category pertains to only one of the lowest-level RIN categories; and
- work categories are mapped to lowest-level RIN categories based upon the classification of services given in the Framework and Approach paper.

# 4. Standard Control Capex categories

## 4.1. RIN requirements

RIN paragraph 4.3 requires that for the forecast capex proposal and each Standard Control Capex Category that Aurora:

(a) provide an overall description including:

  (i) its aims and objectives.

  (ii) an explanation of how expenditure is distinguished between:

    (1) Demand Related Capex and Non-Demand Related Capex;

    (2) Reinforcements Capex and New Customer Connections Capex;

    (3) Reinforcements Capex and Reliability & Quality Maintained Capex;

    (4) Reliability & Quality Maintained Capex and Reliability & Quality Improvements Capex;

    (5) Reliability & Quality Maintained Capex and Regulatory Obligation Or Requirement Capex;

    (6) Reliability & Quality Improvements Capex and Regulatory Obligation Or Requirement Capex;

    (7) any other categories where there is reasonable scope for ambiguity in categorisation;

(b) identify:

  (i) all relevant Policies and Strategies, Procedures and consultant's reports provided in the response to paragraph 1.1(c);

  (ii) each Key Driver or Input used and if applicable, its quantum;

  (iii) each relevant Regulatory Obligation or Requirement (Regulatory Obligations or Requirements of a similar nature may be grouped together for the purposes of identification); and

  (iv) the relevant network planning standards, and the Standard Control Capex Categories to which each network planning standard is relevant;

(c) explain, with reference as relevant to the responses to paragraph 4.3(a) and 4.3(b):

  (i) how Aurora ensures that double-counting is avoided or compensated for in distinguishing expenditure between the Standard Control Capex Categories, and if not, why not;

  (ii) any departures from any conclusions and recommendations contained in each consultant report identified in the response to paragraph 4.3(b)(i);

  (iii) whether and how Aurora considers it is required to:

(1) meet or manage the expected demand for *Standard Control Services* over the Forthcoming *Regulatory Control Period*;

(1) comply with all applicable *regulatory obligations or requirements* associated with the provision of *Standard Control Services*;

(2) maintain the quality, reliability and security of supply of *standard control services*;

(3) maintain the reliability, safety and security of the *distribution system* through the supply of *standard control services*;

(iv) whether and how Aurora considers that it reflects:

(1) the efficient costs of achieving the *capital expenditure objectives*;

(1) the costs that a prudent operator in the circumstances of Aurora would require to achieve the *capital expenditure objectives;* and

(2) a realistic expectation of the demand forecast and cost inputs required to achieve the *capital expenditure objectives*;

(v) whether and how Aurora considers it takes into consideration:

(1) benchmark capital expenditure that would be incurred by an efficient *Distribution Network Service Provider* over the Forthcoming *Regulatory Control Period*;

(1) the relative prices of operating and capital inputs;

(2) the substitution possibilities between operating and capital expenditure;

(3) the consistency of the total labour costs included with the incentives provided by the STPIS;

(4) efficient non-network alternatives;

(vi) the methodology used in its development and any changes from the methodology used to develop Aurora's final capex proposal for the previous EPI, including:

(1) explanation of the data sources used to derive relevant inputs and assumptions, categorised as:

(A) those derived directly from competitive tender processes;

(A) those based upon, but not directly derived from, competitive tender processes;

(B) those based upon other contractor or manufacturer estimates;

(C) those based upon independent benchmarks;

(D) those based upon actual costs extracted from Aurora's financial systems; or

(E) other estimates;

(2) explanation of any quantitative models used in its development, and description of model inputs and assumptions;

(3) whether the methodology is the same as those used by Aurora for its internal ongoing day-by-day Project and cost estimation, and if it is not, an explanation of why and an explanation of any differences;

(4) why the current methodology is appropriate, or if not, why not; including explanation of any validation or verification process that have been used to ensure that the application of the methodology is appropriate and how the accuracy or inaccuracy of past forecasting exercises has informed the current methodology;

(vii) for each Policy and Strategy and Procedure identified in the responses to paragraph 4.3(b)(i):

(1) how it was taken into account and complied with

(2) if any changes were made thereto in the current *regulatory control period,* the effect such changes had;

(viii) how the proposed reliability targets for the STPIS for Aurora have been incorporated;

(ix) how the relevant network planning standards have been incorporated;

(x) how the costs attributable to each project and program in the capital plan provided in response to paragraph 4.3(b) are allocated to Aurora's work categories as provided in response to paragraph 4.1;

(xi) for each assumption identified in the response to paragraph 4.3(c)(vi)(2)

(1) its source or basis;

(2) whether and how the assumption has been applied and was taken into account; and

(3) the effect or impact of the assumption on the forecast capex proposal in the forthcoming *Regulatory Control Period* taking into account:

(A) the Actual Capex incurred during the current *Regulatory Control Period*; and

(B) the sensitivity of the forecast capex proposal to the assumption;

(xii) with reference to the relevant Key Drivers or Inputs, differences in the forecast capex proposal from Actual Capex and Estimated Capex;

(xiii) if any of the matters referred to in this paragraph 4.1 are not relevant in any respect, why that is the case;

(d) provide any cost benchmarking undertaken by Aurora and explain how it was taken into account in determining the Forecast Capex.

The RIN defines Procedures as including procedures or processes which relate to the matters referred to in the definition of Policies and Strategies.

The NEL defines a *regulatory obligation or requirement* as:

(a) in relation to the provision of an electricity network service by a regulated network service provider:

  (i) a distribution system safety duty or transmission system safety duty; or

  (ii) a distribution reliability standard or transmission reliability standard; or

  (iii) a distribution service standard or transmission service standard; or

(b) an obligation or requirement under:

  (i) this Law or Rules; or

  (ii) an Act of a participating jurisdiction, or any instrument made or issued under or for the purposes of that Act, that levies or imposes a tax or other levy that is payable by a regulated network service provider; or

  (iii) an Act of a participating jurisdiction, or any instrument made or issued under or for the purposes of that Act, that regulates the use of land in a participating jurisdiction by a regulated network service provider; or

  (iv) an Act of a participating jurisdiction or any instrument made or issued under or for the purposes of that Act that relates to the protection of the environment; or

  (v) an Act of a participating jurisdiction, or any instrument made or issued under or for the purposes of that Act (other than national electricity legislation or an Act of a participating jurisdiction or an Act or instrument referred to in subparagraphs (ii) to (iv)), that materially affects the provision, by a regulated network service provider, of electricity network services that are the subject of a distribution determination or transmission determination.

The RIN defines Project as series of related works with a common purpose, expected start and finishing dates, and relates to one or more Standard Control Opex Category or Standard Control Capex Category which commences during, or commenced during the *Previous Regulatory Control Period* or the *Current Regulatory Control Period* and continues into, the *Forthcoming Regulatory Control Period*.

## 4.2. Aurora interpretations

### 4.2.1. Prudent operator

RIN paragraph 4.3(c)(iv)(2) requires that Aurora explain, with reference as relevant to the responses to paragraph 4.3(a) and 4.3(b) whether and how Aurora considers that it reflects the costs that a prudent operator in the circumstances of Aurora would require to achieve the *capital expenditure objectives*.

Aurora interprets this requirement to mean that Aurora should explain:

- whether the forecast capital expenditure in each standard control capex category is of the same magnitude that a prudent operator in the same circumstances as Aurora would forecast to achieve the same outcomes; and
- why Aurora considers this is true.

### 4.2.2. Realistic expectation of the demand forecast and cost inputs

RIN paragraph 4.3(c)(iv)(3) requires that Aurora explain, with reference as relevant to the responses to paragraph 4.3(a) and 4.3(b) whether and how Aurora considers that it reflects a realistic expectation of the demand forecast and cost inputs required to achieve the *capital expenditure objectives*.

Aurora interprets this requirement to mean that Aurora should explain:

- whether Aurora considers that the forecast capital expenditure in each standard control capex category is appropriate (neither too large nor too small) when the magnitude and trend of demand forecasts and the magnitude and trend of the costs are considered; and
- why Aurora considers this is true.

### 4.2.3. Benchmark expenditure

RIN paragraph 4.3(c)(v)(1) requires that Aurora explain, with reference as relevant to the responses to paragraph 4.3(a) and 4.3(b) whether and how Aurora considers it takes into consideration the benchmark capital expenditure that would be incurred by an efficient *Distribution Network Service Provider* over the *Forthcoming Regulatory Control Period*.

Aurora interprets this requirement to mean that Aurora should explain:

- whether, in preparing the forecast capital expenditure in each standard control capex category, Aurora took into consideration benchmark capital expenditure that would be incurred by an efficient *Distribution Network Service Provider* over the *Forthcoming Regulatory Control Period*; and
- how this was achieved.

## 4.3. Description of standard control capex categories

The following section of this RIN Response provides an overall description including the aims and objectives of each standard control capex category.

### 4.3.1. Capitalised overheads

Capitalised overheads is defined in the RIN as capital expenditure indirectly attributable to activities related to the provision of *standard control services*.

Capitalised overheads relate to the capitalised portion of Network Services division direct overheads that are allocated to each of Aurora's work programs. The Network Services division direct overheads are from the two shared cost pools comprising:

- corporate and shared costs; and
- Network Services management overheads.

Under the normal operation of Aurora's models, the values for each capital expenditure work category of Aurora's work program would be inclusive of the capitalised portion of direct overhead. However, consistent with the AER's RIN requirements Aurora has created a separate expenditure category in its models so that it can quantify the magnitude of this capitalised component throughout the *Forthcoming Regulatory Control Period*.

As Aurora does not use this category for its own planning, there are no associated aims and objectives.

### 4.3.2. Customer initiated capex

Customer initiated capex is defined in the RIN as capital expenditure, excluding attributed capitalised overheads and before any associated customer contributions, resulting directly from the connection of new customer connections to the distribution network, or changes to existing customer connections, where the associated activities are primarily due to meeting the specific requests of customers.

Forecast capital expenditure in the customer initiated capex standard control capex category relates to:

- construction of new network assets for the connection of new customers to the distribution network;
- augmentation of upstream distribution network assets to accommodate the demand characteristics of new customers connecting to the distribution network; and
- augmentation of upstream distribution network assets to accommodate the changed demand characteristics of existing customers connected to the distribution network.

The aim of the customer initiated capex standard control capex category is to capture costs associated with the provision of connection and distribution services to newly connecting customers or existing customers that have changed their load characteristics.

The objective of this thread program is to prudently manage these new and modified connections.

The main programs of work associated with customer connection activities are:

- residential;
- commercial; and
- irrigation;

Each of the above programs can be further broken down into the following sub activities:

#### 4.3.2.1. Residential

- overhead extensions for low consumption customers;
- overhead minor extensions and cross over poles;
- overhead extensions to permanently occupied residences;
- underground service tails for connections;
- underground subdivisions;
- overhead subdivisions; and
- underground supply extensions.

#### 4.3.2.2. Commercial

- overhead extensions for general supply installations;
- underground extensions for general supply installations;
- underground supply – major projects; and
- commercial upgrades – substations.

#### 4.3.2.3. Irrigation

- irrigation extensions and modifications.

### 4.3.3. Demand related capex

Demand related capex standard control capex category is defined in the RIN as capital expenditure primarily to meet growth in demand and includes capital expenditure associated with the following standard control capex categories:

- customer initiated capex; and
- reinforcements capex.

The aim of the demand related capex standard control capex category is to capture costs associated with the construction of new, or augmentation of existing, distribution infrastructure required to provide the necessary demand requirements for the connection and distribution services provided to Aurora's customers.

### 4.3.4. Non-demand related capex

Non-demand related capex standard control capex category is defined in the RIN as capital expenditure primarily for the replacement of distribution network assets that have reached the end of their economic lives and includes capital expenditure associated with the following standard control capex categories:

- reliability & quality improvements capex; and
- reliability & quality maintained capex.

The aim of the non-demand related capex standard control capex category is to capture costs associated with the augmentation of existing distribution infrastructure that has reached the end of its useful life and are required to provide the necessary connection and distribution services to Aurora's customers.

### 4.3.5. Non-network – IT & communications capex

Non-network – IT & communications capex standard control capex category is defined in the RIN as non-network capex directly attributable to the replacement, installation and maintenance of non-operational IT and communications systems, excluding SCADA and network control systems and excluding attributed capitalised overheads.

The aim of the non-network – IT & communications capex standard control capex category is to capture costs associated with the provision of information technology and communication services to the distribution business.

### 4.3.6. Non-network – motor vehicle capex

Non-network – motor vehicle capex standard control capex category is defined in the RIN as non-network capex directly attributable to the purchase, replacement, and maintenance of motor vehicles assets, excluding mobile plant & equipment and excluding attributed capitalised overheads.

The aim of the non-network – motor vehicles capex standard control capex category is to capture costs associated with the provision of motor vehicle and associated fleet services to the distribution business.

### 4.3.7. Non-network – other capex

Non-network – other capex standard control capex category is defined in the RIN as capital expenditure associated with the replacement, installation and maintenance of non-network assets excluding motor vehicle assets, property, plant & equipment and IT assets, and excluding attributed capitalised overheads.

The aims and objectives for the non-network – other capex standard control capex category are to capture costs associated with the minor assets provided to the staff of Aurora for the necessary performance of their duties.

### 4.3.8. Non-network – plant & equipment capex

Non-network – plant & equipment capex standard control capex category is defined in the RIN as non-network capex directly attributable to the purchase, replacement, repair or maintenance of plant and equipment and excluding attributed capitalised overheads.

Aurora has not forecast capital expenditure in the non-network – plant & equipment capex standard control capex category.

### 4.3.9. Non-network – property capex

Non-network – property capex standard control capex category is defined in the RIN as non-network capex directly attributable to the replacement, installation and maintenance of non-operational buildings, fittings and fixtures; excluding attributed capitalised overheads.

The aim of the non-network – property capex standard control capex category is to capture costs associated with the provision of accommodation, property and facilities services to the distribution business.

### 4.3.10. Non-system capex

Non-system capex standard control capex category is defined in the RIN as capital expenditure associated with the following standard control capex categories:

(a) non-network – it & communications capex;

(b) non-network – motor vehicles capex;

(c) non-network – plant & equipment capex;

(d) non-network – property capex;

(e) SCADA & network control capex; and

(f) non-network – other capex.

As the non-system standard control capex category is an aggregate of the other non-network standard control capex categories and the SCADA & network control standard control capex category there is no single aim or objective for this expenditure and the aims and objectives for the forecast capital expenditure is discussed in those standard control capex categories.

### 4.3.11. Regulatory obligations or requirements capex

Regulatory obligation or requirement capex is defined in the RIN as capital expenditure primarily to meet a regulatory obligation or requirement, excluding attributed capitalised overheads.

The aim of the regulatory obligation or requirement capex standard control capex category is to capture costs associated with the capital expenditure specifically required to meet a regulatory obligation or requirement.

### 4.3.12. Reinforcements capex

Reinforcements capex is defined in the RIN as capital expenditure, excluding attributed capitalised overheads, directly resulting from changes to, or forecast changes to, the existing pattern or profile of demand, where the associated activities are not classified as customer initiated capex.

The aim of the reinforcements capex standard control capex category is to capture costs associated with the construction of distribution network assets to ensure that the network is sufficient to meet the electrical demand of Aurora's customers. Aurora's intention is to develop the network in a prudent manner to deliver an effective and efficient, least-cost, robust and reliable network.

### 4.3.13. Reliability & quality improvements capex

Reliability & quality improvement capex is defined in the RIN as capital expenditure primarily to improve network reliability, excluding attributed capitalised overheads.

Aurora has not forecast capital expenditure in the reliability & quality improvement capex standard control capex category.

### 4.3.14. Reliability & quality maintained capex

Reliability & quality maintained capex is defined in the RIN as capital expenditure, excluding attributed capitalised overheads, directly resulting from the need to maintain the functionality of the existing asset base, irrespective of changes to the pattern or profile of demand, and may relate to expenditure driven by the age, condition, technology or the environment of the existing assets, and the imposition such matters may have on maintaining reliability levels and compliance with power quality, safety and environmental obligations.

The aim of the reliability & quality maintained capex standard control capex category is to capture costs associated with the replacement of network infrastructure for reasons other than demand; for example, age-based replacement, condition-based replacement, or fault-driven replacement. Through appropriate expenditure, Aurora's distribution network will operate optimally and efficiently, providing the best customer cost outcomes when balanced with service expectations.

Reliability and quality maintained RIN category is an aggregate of the following asset management programs:

- poles;
- pole-top structures;
- conductors;
- underground cables;
- services;
- distribution transformers;
- distribution switchgear;
- distribution other assets;

- zone transformers;
- zone switchgear; and
- zone other assets.

Asset replacement is generally only chosen when replacement represents a more economic proposition to ongoing maintenance costs over the estimated remaining service life of the asset. These are identified from the maintenance and inspections activities and feed into the list of proposed capital expenditure projects for prioritisation.

## Poles

The wood pole program has two components:

- replace condemned pole; and
- replace poles MRBA storms.

### Replace condemned pole

The aim of this program is to replace poles that are classified as condemned by Aurora's pole inspection program. These condemned poles require replacement within a set period not exceeding 4 months.

### Replace poles MRBA storms

This is a reactive work program to cover the capitalisation of pole replacements undertaken under fault during major events such as during a storm or bushfire.

## Pole-top Structures

The pole-top structures program has eight components:

- replace LV links with LV fuses;
- replace ABS/HV links;
- replace complete EDO at site due to obsolete equipment;
- replace EDO fuse tubes to ensure correct operation;
- replace EDO with fire safe alternatives to address high fault levels;
- replace LV links with fuses to address public safety;
- replace recloser and or control box; and
- replace HV insulators.

### Replace LV links with LV fuses

The aim of this program is to proactively evaluate and redesign/repair substandard LV sites to ensure that under fault conditions the LV network is appropriately protected. This can be either through replacing LV links with LV fuses or redesigning the system due to overly long runs of LV.

### Replace ABS/HV links

The aim of this program is to replace air break switches and HV links that are in poor condition as identified during Aurora's asset inspection programs, replace devices that fail in service or replace devices where other business drivers require a three phase switching device or high current switching.

### Replace complete EDO at site due to obsolete equipment

This program is related to the HV EDO fuse tube replacement program and is required when the existing fuse carrier cannot accept the current fuse tubes, or the EDO unit is in a poor condition.

### Replace EDO fuse tubes to ensure correct operation

The aim of this program is to ensure that EDO fuse tubes operate correctly and do not start fires. EDOs fuses in poor condition have a tendency to hang up and consequently cause fires.

### Replace EDO with fire safe alternatives to address high fault levels

The aim of this program is to address the issues associated with EDO fuses operating in high fault level areas and expelling molten metal through the replacement of the complete EDO unit with a new boric acid fuse unit.

### Replace LV links with fuses to address public safety

The aim of this program is to reduce the risk associated with circuits connected by LV links by replacing the LV links on transformers with an LV fuse sized to the size of the transformer, there is no design component to this work. This ensures there is some form of protection on the circuit.

### Replace recloser and or control box

This program covers the replacement of reclosers in Aurora's overhead system due to the condition of the asset. Aurora's current reclosers only have a manufacturer assessed asset life of 20 years. Replacement of reclosers will be undertaken based on condition assessments and as driven by other business drivers.

### Replace HV insulators

The program to replace HV insulators aims to replace insulators in poor condition that have been identified during asset inspections.

## Conductors

The conductors program has 10 components:

- replace/relocate LV OH due to building clearances;
- replace LV feeders due to safety;
- replace LV feeders due to condition;
- replace/relocate low LV conductors;
- replace HV copper conductor;
- replace HV galvanised iron (GI) conductor;
- replace/relocate HV due to vegetation issues;
- replace HV feeders (safety);

- replace HV live line clamps (safety); and
- replace/relocate HV OH (low clearance).

### Replace/relocate LV OH due to building clearances

This program covers relocation or replacement LV overhead conductor because of issues with building clearances e.g. when new buildings are erected that infringe on Aurora's clearance, that cannot be repaired under the reactive maintenance program.

This program has two components:

- relocating or replacing with LV ABC; and
- replacing with underground cable.

### Replace LV feeders due to Safety

The aim of this program is for the replacement of sections of LV feeders that, whilst they comply with the standard of the day they were installed, present a risk to public safety, such as LV running through areas of changed land use (plantation to agriculture), or vertical LV spans that have a higher risk of clashing due to excessive span length.

### Replace LV feeders due to condition

This program is for replacement of poor condition or substandard construction LV feeders as identified through Aurora's asset inspections and audits.

### Replace/relocate low LV conductors

This program covers the relocation or replacement of LV overhead conductor to address low clearances associated with road crossings and plant contact that cannot be repaired under the reactive maintenance program such as the installation of a pole to fix the clearance issue.

### Replace HV copper conductor

The aim of this program is to remove substandard condition copper conductor from the overhead system.

### Replace HV galvanised iron (GI) conductor

The aim of this program is to remove substandard condition GI conductor from the overhead system and to replace sections of overhead GI conductor around coastal areas.

### Replace/relocate HV due to vegetation issues

The aim of this program is to address the issue of high vegetation maintenance costs in certain areas. Historically, there have been cases where it is more efficient to relocate assets around vegetation rather than managing the vegetation near the assets such as areas where vegetation is protected (national parks) or where there are community or environmental considerations or where there are onerous vegetation management requirements due to bushfire risk management.

### Replace HV feeders (safety)

This program covers situations where spans of HV conductors are required to be moved or replaced because their location or condition poses a safety risk. The safety issue is resolved by relocating, undergrounding or augmenting the HV conductor.

### Replace HV live line clamps (safety)

The aim of this program is to replace HV live line clamps with D Clamps.

### Replace/relocate HV OH (low clearance)

This program covers the relocation or replacement of HV overhead conductor to address low clearance associated with road crossings and plant contact that cannot be repaired under the reactive maintenance program such as the installation of a pole to fix the clearance issue.

## Transformers

The transformers program has two components:

- transformer replacement programs; and
- replace transformer 'H' pole structures.

### Transformer replacement programs

This program has three components:

- replace transformers (leaking/condition);
- replace transformers MRBA storms; and
- replace transformer neutral.

### Replace transformer (leaking/condition)

The aim of this program is to reduce the risk of asset failure and oil spills by replacing transformers found to be in poor condition or leaking during asset inspections.

### Replace transformers MRBA storms

This is a reactive work program to cover the capitalisation of replacement of transformers under fault during major events such as during a storm or bushfire.

### Replace transformer neutral

The aim of this program is to improve public safety by ensuring that the neutral connection on transformers is secure by inspecting and maintaining all LV connections on all transformers that have been in service for over 40 years. This program is one of the programs that Aurora has in place to address the issue of broken neutrals,

### Replace transformer 'H' pole structures

This program covers the replacement of transformers on H-structures due to their condition and a small number of sites overhanging roadways and being vulnerable to being hit by high loads. A separate program is required due to their high removal and redesign costs when compared to a transformer mounted on a single pole.

## Underground system

The aim and objective of the Underground System work program is to minimise the cost of supply to the customer whilst:

- maintaining network performance;
- managing business objective risks; and
- complying with regulatory, contractual and legal responsibilities.

## Switchgear

The aim of these programs is to remove suboptimal switchgear from the distribution network.

### Oil-filled switchgear

Oil-filled switchgear was installed from the 1960s to 1980s. This type of switchgear is contained in building, fence and padmount type substations throughout the state.

The consequences of explosion of oil-filled switchgear are much greater than other types of switchgear due to the flammability of the oil, which creates a significantly higher risk to operator safety and damage to adjacent assets.

Additionally, there is the risk of environmental damage in the event of an oil spillage for sites that do not have oil containment facilities.

### Brown Boveri RGB24

Brown Boveri RGB24 units were installed from the late 1970s to early 1980s. The design of the rear epoxy spouts allows the collection of dirt and moisture over time, which eventually causes insulation failure and flashover that leads to switchgear failure and outage of the entire site. Generally, complete switchgear replacement is required if this occurs.

### LV switchgear – live front boards

Many of the low voltage boards installed in Aurora's building and vault-type substations are of open-type or live front construction. The construction of these boards means that live parts of the equipment are easily accessible and pose a risk to personnel safety. Many of these boards are located in cramped operating conditions with little access for escape in the event of contact with live parts.

### LV switchgear – asbestos arc chutes

This is a continuation of an existing program to remove this type of LV circuit breaker as it contains asbestos in the arc chutes.

## Specific Issues

The drives for this program relate to compliance, environment, operational safety and site safety.

### Asbestos

Aurora is required to comply with Workplace Health and Safety Regulations 1998 and the National Occupational Health and Safety Commission Code of Practice for the Management and Control of Asbestos in Workplaces [NOHSC: 2018 (2005)].

### Compliance with fire standards

All building and vault type substations must comply with the Building Code of Australia (BCA) and AS 1851:2005 Maintenance of Fire Protection Systems and Equipment.

Aurora is required to inspect and maintain all entry and exits, ventilation and building penetrations. These types of substations typically have one access door, which require inspection.

Other equipment that forms part of the fire integrity of the installation and require inspection includes fire dampers and fire proofing of cables.

Vault and building integrated Ground Mounted Substations pose a greater risk of damage and/or loss of distribution assets and other assets and injury to personnel or public in the event of fire. These substations are incorporated into other buildings making it easier for fire to spread to adjacent assets and because they are less accessible by Tasmania Fire Service to control the fire.

### Oil Containment

Distribution transformers contain a mineral insulating oil for both electrical insulation of the internal components and cooling.

AS 2067, Clause 6.7.11 requires that every high voltage installation containing equipment with more than 500 litres of a liquid dielectric such as transformer oil, shall have provision for containing the total volume of any possible leakage and meet the overall objectives of AS 1940, Appendix H.

Older installations do not have the same level of oil containment controls as modern installations and accordingly represent a higher level of risk to the environment should an asset fail.

### Confined Spaces

The definition of a confined space is contained in Schedule 1 of the *Workplace Health and Safety Regulations 1998.*

Safe entry into confined spaces to perform work is governed by the requirements of AS 2865 and is called up as a direct reference in the Workplace Health and Safety Regulations 1998.

To address the operator safety issues associated with confined spaces, it is Aurora's aim to relocate substation sites where the whole of the substation is classified as a confined space to improve operator safety and reduce operational costs. Where the site cannot be relocated, the substation will be remote controlled to reduce the number of visits required to these sites.

## 4.3.15. SCADA & network control capex

SCADA & network control capex is defined in the RIN as capital expenditure associated with the replacement, installation and maintenance of SCADA and network control hardware, software and associated IT systems and excluding attributed capitalised overheads.

The aim of the SCADA & network control capex standard control capex category is to capture costs associated with the provision of appropriate information gathering, information management and information analysis hardware, software and systems to allow Aurora to efficiently provide *standard control services*.

## 4.3.16. System capex

System capex is defined in the RIN as capital expenditure associated with the following standard control capex categories:

- customer initiated capex;
- demand related capex;
- non-demand related capex;
- reinforcements capex;
- regulatory obligations or requirements capex;
- reliability & quality improvements capex; and
- reliability & quality maintained capex.

As the system capex standard control capex category is an aggregate of the standard control capex categories there is no single aim or objective for this expenditure and the aims and objectives for the forecast capital expenditure is discussed in those standard control capex categories.

## 4.3.17. How expenditure is distinguished

This section of Aurora's RIN Response will provide an explanation of how capital expenditure is distinguished between varying standard control capex categories.

### 4.3.17.1. Distinction between demand related capex and non-demand related capex

Aurora categorises demand related capex and non-demand related capex in accordance with the definitions given in the RIN.

### 4.3.17.2. Distinction between Reinforcements Capex and New Customer Connections Capex

Aurora notes that there is no standard control capex category "New Customer Connections Capex" in its RIN, and assumes that customer initiated capex is meant, in line with the definition given in the RIN.

Aurora categorises reinforcements capex and customer initiated capex in accordance with the definitions given in the RIN.

### 4.3.17.3. Distinction between Reinforcements Capex and reliability & quality maintained capex

Aurora categorises reinforcements capex and reliability and quality maintained capex in accordance with the definitions given in the RIN.

#### 4.3.17.4. Distinction between reliability & quality maintained capex and reliability & quality improvements capex

Aurora categorises reliability & quality maintained capex and reliability & quality improvements capex in accordance with the definitions given in the RIN. Aurora has not forecast capital expenditure in the reliability & quality improvements standard control capex category.

#### 4.3.17.5. Distinction between reliability & quality maintained capex and Regulatory Obligation or Requirement Capex

Aurora categorises reliability & quality maintained capex and regulatory obligation or requirement capex in accordance with the definitions given in the RIN.

#### 4.3.17.6. Distinction between reliability & quality improvements capex and regulatory obligations or requirements capex

Aurora categorises reliability & quality improvements capex and regulatory obligation or requirement capex in accordance with the definitions given in the RIN. Aurora has not forecast capital expenditure in the reliability & quality improvements capex standard control capex category.

#### 4.3.17.7. Distinction between any other categories where there is reasonable scope for ambiguity in categorisation

Aurora considers that there are no standard control capex categories where there is reasonable scope for ambiguity in categorisation.

## 4.4. Identified policies, strategies, procedures, consultants reports and key drivers

This section of Aurora's RIN Response will deal with the:

- policies and strategies, procedures and consultant's reports;
- Key Drivers or Inputs;
- Regulatory Obligations or Requirements; and
- network planning standards;

relevant to Aurora's capital expenditure forecasts.

### 4.4.1. Policies and strategies, procedures and consultant's reports

Aurora has identified the following policies and strategies, procedures and consultants reports as relevant to the following capex categories and explains how they are taken into account and whether any changes or departures have been made:

Aurora has identified the following policies and strategies, procedures and consultants reports identified in response to RIN paragraph 1.1(c) as relevant to Aurora's forecast capital expenditure proposal and each standard control capex category.

#### 4.4.1.1. Policies and strategies

The following policies and strategies are relevant to all the standard control capex categories:

- AuroraGreen (AE003);
- AuroraSafe (AE004);
- AuroraHealth (AE005);
- Aurora Procurement Policy (AE007);
- Aurora Capitalisation Policy (AE008);
- Aurora Corporate Plan (AE011);
- Aurora Strategic Plan (AE012);
- Aurora Cost Allocation Method (AE067);
- Aurora Compliance Policy; and
- Aurora Non Compliance Management Policy.

The following policies and strategies are relevant to all the system capex standard control capex categories:

- Aurora Asset Management Plan (AE010);
- Distribution Business Strategy (AE016);
- Network Management Strategy (AE017);
- Management Strategy Bushfire Mitigation (AE018);
- Management Strategy Vegetation Management (AE019);
- Reliability Strategy 2010 (AE020);
- Management Plan 2011 – Protection and Control (AE024);
- Management Plan 2011 – Reliability (AE025);
- Management Plan 2011 – Power Quality (AE026);
- Management Plan 2011 – Zone Substations (AE027);
- Management Plan 2011 – High Voltage Regulators (AE028);
- Management Plan 2011 – Underground System (AE029);
- Management Plan 2011 – Overhead System and Structures (AE030);
- Management Plan 2011 – Ground Mounted Substations (AE031);
- Management Plan 2011 – Capacity (AE033);
- Management Plan 2011 – Demand Management (AE034);
- Management Plan 2011 – Bushfire Mitigation (asset programs) (AE040);

- Deliverability Plan – Network Services (AE042);
- Distribution System Planning Manual; and
- Electricity Distribution Customer Charter.

Where additional policies or strategies are relevant to Aurora's forecast capital expenditure proposal they are discussed in that standard control capex category.

#### 4.4.1.2. Procedures

No procedures were used in the development of any standard control capex category capital expenditure forecast.

#### 4.4.1.3. Consultant's reports

Consultant's reports are discussed within each standard control capex category.

#### 4.4.1.4. Capitalised overheads

##### Policies and strategies

No additional policies and strategies were used in the development of the capitalised overheads standard control capex category capital expenditure forecast.

##### Consultant's reports

No consultant's reports were used in the development of the capitalised overheads standard control capex category capital expenditure forecast.

#### 4.4.1.5. Customer initiated capex

##### Policies and strategies

The following additional policies and strategies were used in the development of the customer initiated capex standard control capex category capital expenditure forecast:

- Management Plan 2011 – Customer Initiated Capital Works (AE032).

##### Consultants reports

One consultant report was used in the development of the customer initiated capex standard control capex category capital expenditure forecast:

- Aurora New Customer Connections Forecast, ACIL Tasman.

#### 4.4.1.6. Demand related capex

As the demand related capex standard control capex category is an aggregate of the other standard control capex categories the relevant policies and strategies, procedures and consultant's reports are discussed in those standard control capex categories.

### 4.4.1.7. Non-demand related capex

As the non-demand related capex standard control capex category is an aggregate of the other standard control capex categories the relevant policies and strategies, procedures and consultant's reports are discussed in those standard control capex categories.

### 4.4.1.8. Non-network – IT & communications capex

#### Policies and strategies

The following additional policies and strategies have been used in the development of the non-network – IT & communications capex standard control capex category capital expenditure forecast:

- Aurora Distribution Network ISG Strategy 2012 – 2017 (AE013).

#### Consultants reports

The following consultant reports were used in the development of the non-network – IT & communications capex standard control capex category capital expenditure forecast:

- Network IT Strategy Review Aurora Energy, Marchment Hill Consulting; and
- Enterprise Architects suite of reports.

### 4.4.1.9. Non-network – motor vehicle capex

#### Policies and strategies

The following additional policies and strategies were used in the development of the non-network motor vehicle capex standard control capex category capital expenditure forecast:

- Strategic Fleet Asset Management Plan (AE015).

#### Consultants reports

One consultant report was used in the development of the non-network motor vehicle capex standard control capex category capital expenditure forecast:

- Final Report Aurora Energy Fleet Management Review, Logistics Association of Australia, May 2008 (The Boland Report).

The consultant's report (The Boland Report) contained 25 recommendations for Aurora to consider. The recommendations in the report have been considered by Aurora and either have been implemented or will be delivered with the implementation of a fleet management system.

A recommendation to outsource fleet management services was considered by Aurora as part of an exercise to lease versus purchase Aurora's fleet. The outcome of that review was for Aurora to continue to purchase/own its vehicle fleet and fleet management services was retained in-house.

### 4.4.1.10. Non-network – other capex

#### Policies & strategies

No additional policies and strategies were used in the development of the non-network – other capex standard control capex category capital expenditure forecast.

#### Consultants reports

No consultant's reports were used in the development of the non-network – other capex standard control capex category capital expenditure forecast.

### 4.4.1.11. Non-network – plant & equipment capex

Aurora has not forecast capital expenditure in the non-network – plant & equipment capex standard control capex category.

### 4.4.1.12. Non-network – property capex

#### Policies & strategies

The following additional policies and strategies were used in the development of the non-network – property capex standard control capex category capital expenditure forecast:

- Property and Accommodation Strategy (AE022); and
- Facilities Management Plan 2010 (AE041).

#### Consultants reports

No consultant's reports were used in the development of the non-network – property capex standard control capex category capital expenditure forecast.

### 4.4.1.13. Non-system capex

As the non-system capex standard control capex category is an aggregate of the other standard control capex categories the relevant policies and strategies, procedures and consultant's reports are discussed in those standard control capex categories.

### 4.4.1.14. Regulatory obligations or requirements capex

#### Policies and strategies

No additional policies and strategies were used in the preparation of the regulatory obligations or requirements capex standard control capex category capital expenditure forecast.

#### Consultants reports

No Consultants Reports were used in the preparation of the regulatory obligations or requirements category capital expenditure forecast.

### 4.4.1.15. Reinforcements capex

#### Policies and strategies

The following additional policies and strategies were used in the preparation of the reinforcements capex standard control capex category capital expenditure forecast:

- Central Development Plan;
- East Coast Development Plan;
- Hobart West Development Plan;
- Hobart East Development Plan;
- North Coast Development Plan;
- North East Development Plan;
- North West Development Plan;
- Sorell-Peninsula Development Plan;
- South Development Plan;
- Tamar Development Plan; and
- West Coast Development Plan.

#### Consultants reports

The following consultant's reports were used in the preparation of the reinforcements capex standard control capex category capital expenditure forecast:

- Aurecon – System Strategic Planning Capacity Report;
- Futura Consulting – Proposed Non-network initiatives; and
- ACIL Tasman – Load Forecast.

### 4.4.1.16. Reliability & quality improvements capex

Aurora has not forecast capital expenditure in the reliability & quality improvements capex standard control capex category.

### 4.4.1.17. Reliability & quality maintained capex

#### Policies and strategies

No additional policies and strategies were used in the development of the reliability & quality maintained capex standard control capex category capital expenditure forecast.

#### Consultants reports

No Consultants Reports were used in the preparation of the non-demand related – reliability & quality maintained category capital expenditure forecast.

#### 4.4.1.18. SCADA & network control capex

##### Policies & strategies

The following additional Policy and Strategy was used in the development of the SCADA & network control capex standard control capex category:

- Aurora Distribution Network ISG Strategy 2012 – 2017 (AE013).

##### Consultants reports

The following Consultant Reports were used in the development of the SCADA & network control capital expenditure forecast:

- Network IT Strategy Review Aurora Energy, Marchment Hill Consulting;
- Enterprise Architects; and
- Minutes from Meeting with Gartner on DMS, SCADA, Historian.

#### 4.4.1.19. System capex

As the system capex standard control capex category is an aggregate of the other standard control capex categories the relevant policies and strategies, procedures and consultant's reports are discussed in those standard control capex categories.

### 4.4.2. Key drivers or inputs

The key drivers or inputs of expenditure are set out in chapter 7 of Aurora's Regulatory Proposal. The application of these drivers to standard control capex categories is as follows.

#### 4.4.2.1. Peak demand

Forecast of peak demand has been applied to the reinforcements capex standard control capex category capital expenditure forecasts.

#### 4.4.2.2. Utilisation levels

Aurora does not use a system network utilisation as a basis for forecasting its capital expenditure programs. Rather, in part, it analyses a lower level of system infrastructure (conductors and transformers and associated infrastructure) to develop its capital expenditure based upon the limitations of the individual network assets to meet either actual or forecasted demand.

#### 4.4.2.3. Standard asset life

Aurora does not use standard asset life as a basis for forecasting its capital expenditure programs.

#### 4.4.2.4. Energy consumption

Aurora does not use energy consumption as a basis for forecasting its capital expenditure programs; rather it uses energy consumption to set tariff prices.

#### 4.4.2.5. Customer numbers

Forecast of customer numbers has been applied to the following standard control capex categories:

- customer initiated capex; and
- reinforcements capex.

#### 4.4.2.6. Line length

Aurora does not use line length as a basis for forecasting its capital expenditure programs.

#### 4.4.2.7. Unit rates

Forecast of unit rates has been applied to the following standard control capex categories capital expenditure forecasts:

- capitalised overheads capex;
- customer initiated capex;
- regulatory obligations or requirements capex;
- reinforcements capex; and
- reliability & quality maintained capex.

#### 4.4.2.8. Labour escalators

Forecast of labour escalators has been applied to all standard control capex categories capital expenditure forecasts.

#### 4.4.2.9. Material escalators

Forecast of material escalators has been applied to all standard control capex categories capital expenditure forecasts.

### 4.4.3. Regulatory obligations or requirements

Aurora's regulatory obligations are set out in section 4.17 of Aurora's Regulatory Proposal.

Aurora's capital expenditure work programs are managed in a way to ensure Aurora complies with all regulatory requirements and maintains its electrical infrastructure in a way that minimises the risks associated with failure or reduced performance of assets.

Clause 8.2.1 of the TEC requires that a *Distribution Network Service Provider* must in relation to the maintenance of its electrical infrastructure:

(a) adopt quality management and assurance procedures which:

1. comply with the laws and other performance obligations which apply to the provision of distribution services, including those contained in this Code; and
2. minimise the risks associated with the failure or reduced performance of assets; and

(b) adopt good electricity industry practice.

Where good electricity industry practice is defined to be:

> The exercise of that degree of skill, diligence, prudence and foresight that reasonably would be expected from a significant proportion of operators of facilities forming part of the power system for the generation, transmission or supply of electricity under conditions comparable to those applicable to the relevant facility consistent with applicable laws, regulations, licences, codes, reliability, safety and environmental protection. The determination of comparable conditions is to take into account factors such as the relative size, duty, age and technological status of the relevant facility and the applicable laws, regulations, licences and codes.

Aurora observes good electricity supply industry practice by minimising the risk associated with the failure or reduced performance of assets. This requirement is part of the basis that forms inspection and replacement programs.

Clause 3 of Aurora's electricity distribution licence requires that:

3.1 The *Licensee* must comply with the *Act,* the *Code* and *guidelines*.

3.2 The *Licensee* must comply with the *National Electricity Rules*. In the event that the *National Electricity Rules* are inconsistent with the *Code*, then the *National Electricity Rules* prevail to the extent of such inconsistency.

3.3 For the avoidance of doubt, the *statutory licence conditions* are deemed to form part of this licence and the *Licensee* must comply with the *statutory licence conditions*.

Where statutory licence conditions is defined to be the licence conditions referred to in the *Act* and applicable to Aurora's licence.

Clause 9 of Aurora's electricity distribution licence requires that:

9.1 The *Licensee* must develop and submit to the *Regulator*, in accordance with the *Code*, *management plans*.

9.2 The *Licensee* must develop and submit to the *Regulator*, in accordance with the *Code*, a *compliance plan*.

Clause 10 of Aurora's electricity distribution licence requires that:

10.1 The *Licensee* must develop and maintain an emergency management plan in accordance with any *guideline* issued by the *Jurisdictional System Security Co-ordinator*.

10.2 Any such emergency management plan must be implemented by no later than the date specified by the *Jurisdictional System Security Co-ordinator*, or when no such date is specified, within a reasonable period of time.

Schedule 2 of Aurora's electricity distribution licence requires that:

The aspects of the *Licensee's* operations that shall be the subject of *management plans* are:

1 asset management of the *authorised distribution network*, including reliability and performance of the *authorised distribution network*;

2 vegetation management; and

3 emergency management as provided for in clause 10.

In addition, the following sections of this RIN Response list of the regulatory obligations or requirements applicable to specific standard control capex categories.

### 4.4.3.1. Capitalised overheads

The relevant regulatory obligations or requirements to be considered in the capitalised overheads standard control capex category are contained within the following (note that regulations relating to acts are not listed):

- obligations under National Electricity Law or National Electricity Rules:
  - Part F of Chapter 6 of the Rules; and
  - Electricity distribution network service providers Cost allocation guidelines, issued by the AER in June 2008.

### 4.4.3.2. Customer initiated capex

The relevant regulatory obligations or requirements to be considered in the customer initiated standard control capex category are contained within the following (note that regulations relating to acts are not listed):

- distribution system safety duties:
  - *Electricity Supply Industry Act 1995;*
  - TEC, Chapter 8;
  - Rules, Chapter 4;
- obligations under National Electricity Law or National Electricity Rules:
  - Rules, Chapters 4 and 5;
- land use obligation:
  - *Crown Lands Act 1976;*
  - *Electricity Supply Industry Act 1995;*
  - *Electricity Wayleaves and Easements Act 2000;*
  - *Land Use Planning and Approvals Act 1993;*
  - *Tasmanian Planning Commission Act 1997;*
- environmental protection obligation:
  - *Aboriginal and Torres Strait Islander Heritage Protection Act 1984;*
  - *Aboriginal Relics Act 1975;*
  - *Assessment of Site Contamination Measure 1999;*
  - *Biological Control Act 1986;*
  - *Environment Protection and Biodiversity Conservation Act 1999;*
  - *Environmental Management and Pollution Control Act 1994;*
  - *Forest Practices Act 1985;*
  - *Forest Practices Code 2000;*

- *Historic Cultural Heritage Act 1995;*
- *Inland Fisheries Act 1995;*
- *Movement of Controlled Wastes Between States and Territories 1998;*
- *National Environment Protection Council (Tasmania) Act 1995;*
- *National Environment Protection Council Act 1994;*
- *National Greenhouse and Energy Reporting Act 2007;*
- *National Parks and Reserves Management Act 2002;*
- *National Resource Management Act 2002;*
- *Native Title Act 1993;*
- *Natural Resource Management Act 2002;*
- *Nature Conservation Act 2002;*
- *Plant Quarantine Act 1997;*
- *Poisons Act 1971;*
- *Resource Management and Planning Appeal Tribunal Act 1993;*
- *State Coastal Policy 1996;*
- *State Coastal Policy Validation Act 2003;*
- *State Policies and Projects Act 1993;*
- *State Policy on the Protection of Agricultural Land 2009;*
- *State Policy on Water Quality Management 1997;*
- *Tasmanian Bilateral Agreement 2000;*
- *Tasmanian Wilderness World Heritage Area Management Plan 1999;*
- *Threatened Species Protection Act 1995;*
- *Vermin Control Act 2000;*
- *Water Act 2007;*
- *Weed Management Act 1999;*
- *Wellington Park Act 1993;*
- *Wildlife Regulations 1999;*
- *World Heritage Area Management Plan 1999;*

- any other obligation:
  - *Agricultural and Veterinary Chemicals (Control of Use) Act 1995;*
  - *Agricultural and Veterinary Chemicals (Tasmania) Regulations 2004;*
  - *Building Act 2000;*

- *Emergency Management Act 2006;*
- *Fair Work Act 2009;*
- *Fire Service Act 1979;*
- *Occupational Licensing Act 2005;*
- *Occupational Licensing (Electrical Work) Regulations;*
- *Ombudsman Act 1978;*
- *Road & Jetties Act 1935; and*
- *Workplace Health and Safety Act 1995.*

#### 4.4.3.3. Non-network – IT & communications capex

The relevant Regulatory Obligations or Requirements to be considered in the non-network – it & communications capex standard control capex category are contained within the following (note that regulations relating to acts are not listed):

- obligations under National Electricity Law or National Electricity Rules:
  - Rules;
  - MSATS;
  - Metrology procedures;
  - B2B procedures;
- any other obligation:
  - TEC, Chapters 8 and 9.

#### 4.4.3.4. Non-network – property capex

The relevant Regulatory Obligations or Requirements to be considered in the non-network – property capex standard control capex category are contained within the following (note that regulations relating to acts are not listed):

- any other obligation:
  - Building Act 2000; and
  - Workplace Health and Safety Act 1995.

#### 4.4.3.5. Non-network – motor vehicles capex

The relevant Regulatory Obligations or Requirements to be considered in the non-network – motor vehicles capex standard control capex category are contained within the following (note that regulations relating to acts are not listed):

- any other obligation:
  - Workplace Health and Safety Act 1995.

### 4.4.3.6. Non-network – other capex

The relevant Regulatory Obligations or Requirements to be considered in the non-network – other capex standard control capex category are contained within the following (note that regulations relating to acts are not listed):

- any other obligation:
  - *Workplace Health and Safety Act 1995.*

### 4.4.3.7. Regulatory obligations or requirements

The relevant Regulatory Obligations or Requirements to be considered in the regulatory obligations or requirements capex standard control capex category are contained within the following (note that regulations relating to acts are not listed):

- distribution system safety duties:
  - Electricity Supply Industry Act 1995;
  - TEC, Chapter 8;
  - Rules, Chapter 4;
- environmental protection obligation:
  - *Aboriginal and Torres Strait Islander Heritage Protection Act 1984;*
  - *Aboriginal Relics Act 1975;*
  - *Assessment of Site Contamination Measure 1999;*
  - *Biological Control Act 1986;*
  - *Environment Protection and Biodiversity Conservation Act 1999;*
  - *Environmental Management and Pollution Control Act 1994;*
  - *Forest Practices Act 1985;*
  - *Forest Practices Code 2000;*
  - *Historic Cultural Heritage Act 1995;*
  - *Inland Fisheries Act 1995;*
  - *Movement of Controlled Wastes Between States and Territories 1998;*
  - *National Environment Protection Council (Tasmania) Act 1995;*
  - *National Environment Protection Council Act 1994;*
  - *National Greenhouse and Energy Reporting Act 2007;*
  - *National Parks and Reserves Management Act 2002;*
  - *National Resource Management Act 2002;*
  - *Native Title Act 1993;*
  - *Natural Resource Management Act 2002;*
  - *Nature Conservation Act 2002;*

- *Plant Quarantine Act 1997;*
- *Poisons Act 1971;*
- *Resource Management and Planning Appeal Tribunal Act 1993;*
- *State Coastal Policy 1996;*
- *State Coastal Policy Validation Act 2003;*
- *State Policies and Projects Act 1993;*
- *State Policy on the Protection of Agricultural Land 2009;*
- *State Policy on Water Quality Management 1997;*
- *Tasmanian Bilateral Agreement 2000;*
- *Tasmanian Wilderness World Heritage Area Management Plan 1999;*
- *Threatened Species Protection Act 1995;*
- *Vermin Control Act 2000;*
- *Water Act 2007;*
- *Weed Management Act 1999;*
- *Wellington Park Act 1993;*
- *Wildlife Regulations 1999;*
- *World Heritage Area Management Plan 1999;*

- any other obligation:
  - *Building Act 2000;*
  - *Emergency Management Act 2006;*
  - *Fire Service Act 1979;*
  - *Occupational Licensing Act 2005;*
  - *Occupational Licensing (Electrical Work) Regulations;*
  - *Ombudsman Act 1978;*
  - *Road & Jetties Act 1935; and*
  - *Workplace Health and Safety Act 1995.*

### 4.4.3.8. Reliability & quality maintained capex

The relevant Regulatory Obligations or Requirements to be considered in the reliability & quality maintained capex standard control capex category are contained within the following (note that regulations relating to acts are not listed):

- distribution system safety duties:
  - Electricity Supply Industry Act 1995;
  - TEC, Chapter 8;
  - Rules, Chapter 4;

- distribution reliability standard:
  - TEC clause 8.6.11,
- distribution service standard:
  - Electricity Distribution Network Service Providers Service Target Performance Incentive Scheme Guideline, issued by the AER in November 2009;
- obligations under National Electricity Law or National Electricity Rules:
  - Rules, Chapters 4 and 5;
- land use obligation:
  - *Crown Lands Act 1976;*
  - *Electricity Supply Industry Act 1995;*
  - *Electricity Wayleaves and Easements Act 2000;*
  - *Land Use Planning and Approvals Act 1993;*
  - *Tasmanian Planning Commission Act 1997;*
- environmental protection obligation:
  - *Aboriginal and Torres Strait Islander Heritage Protection Act 1984;*
  - *Aboriginal Relics Act 1975;*
  - *Assessment of Site Contamination Measure 1999;*
  - *Biological Control Act 1986;*
  - *Environment Protection and Biodiversity Conservation Act 1999;*
  - *Environmental Management and Pollution Control Act 1994;*
  - *Forest Practices Act 1985;*
  - *Forest Practices Code 2000;*
  - *Historic Cultural Heritage Act 1995;*
  - *Inland Fisheries Act 1995;*
  - *Movement of Controlled Wastes Between States and Territories 1998;*
  - *National Environment Protection Council (Tasmania) Act 1995;*
  - *National Environment Protection Council Act 1994;*
  - *National Greenhouse and Energy Reporting Act 2007;*
  - *National Parks and Reserves Management Act 2002;*
  - *National Resource Management Act 2002;*
  - *Native Title Act 1993;*
  - *Natural Resource Management Act 2002;*
  - *Nature Conservation Act 2002;*

- *Plant Quarantine Act 1997;*
- *Poisons Act 1971;*
- *Resource Management and Planning Appeal Tribunal Act 1993;*
- *State Coastal Policy 1996;*
- *State Coastal Policy Validation Act 2003;*
- *State Policies and Projects Act 1993;*
- *State Policy on the Protection of Agricultural Land 2009;*
- *State Policy on Water Quality Management 1997;*
- *Tasmanian Bilateral Agreement 2000;*
- *Tasmanian Wilderness World Heritage Area Management Plan 1999;*
- *Threatened Species Protection Act 1995;*
- *Vermin Control Act 2000;*
- *Water Act 2007;*
- *Weed Management Act 1999;*
- *Wellington Park Act 1993;*
- *Wildlife Regulations 1999;*
- *World Heritage Area Management Plan 1999;*

- any other obligation:
  - *Agricultural and Veterinary Chemicals (Control of Use) Act 1995;*
  - *Agricultural and Veterinary Chemicals (Tasmania) Regulations 2004;*
  - *Building Act 2000;*
  - *Emergency Management Act 2006;*
  - *Fair Work Act 2009;*
  - *Fire Service Act 1979;*
  - *Occupational Licensing Act 2005;*
  - *Occupational Licensing (Electrical Work) Regulations;*
  - *Ombudsman Act 1978;*
  - TEC, Chapter 8;
  - *Road & Jetties Act 1935; and*
  - *Workplace Health and Safety Act 1995.*

### 4.4.3.9. SCADA & network control capex

The relevant Regulatory Obligations or Requirements to be considered in the SCADA & network control capex standard control capex category are contained within the following (note that regulations relating to acts are not listed):

- distribution system safety duties:
  - *Electricity Supply Industry Act 1995;*
  - TEC, Chapter 8;
  - Rules, Chapter 4;
- obligations under National Electricity Law or National Electricity Rules:
  - Rules, Chapters 4 and 5.

### 4.4.4. Network planning standards

There are no jurisdictional planning standards in existence within Tasmania and Aurora has therefore adopted its own standards for network operations and development.

Work programs can be referenced to specific sections of Aurora's 2011 management plans, and these management plans reference the requirements of Aurora's internal planning standards. These management plans are appended as an attachment to Aurora's Regulatory Proposal.

## 4.5. Explanation of responses to paragraphs 4.3(a) and 4.3(b)

This section of Aurora's RIN Response will provide an explanation of factors pertinent to the responses provided to paragraphs 4.3(a) and 4.3(b) of the RIN, where relevant.

### 4.5.1. Double counting

Aurora's capital expenditure forecasts have been prepared by asset managers within the network division. Each asset manager is responsible for a group of like assets and projects which are determined using a bottom-up approach and historical trends. A unique set of work category codes is applied to classify the capital expenditure forecasts. Asset managers regularly met to discuss and plan programs to ensure no overlap in programs and avoid any double counting.

### 4.5.2. Departures from consultant's reports

Aurora has not departed from any recommendation contained within any consultant's report provided as part of setting its capital expenditure forecasts or for each standard control capex category.

### 4.5.3. Meet or manage expected demand

The following section outlines how Aurora considers each of the capital expenditure forecasts within the standard control capex categories meets or manages the expected demand for *standard control services* over the *Forthcoming Regulatory Control Period*.

#### 4.5.3.1. Capitalised overheads

Whilst the capitalised overheads standard control capex category does not contribute directly in meeting or managing the expected demand for *standard control services* it provides an essential support services that ensure the other standard control capex categories meet or manage this expected demand.

#### 4.5.3.2. Customer initiated capex

The forecast programs for the customer initiated capex standard control capex category are designed to maintain the distribution network at current and forecast levels of demand, reliability and power quality by addressing issues associated with the forecast increased demand for network services resulting from increases in customer connections.

#### 4.5.3.3. Demand related capex

As the demand related capex standard control capex category is an aggregate of the other standard control capex categories how Aurora considers it meets or manages the expected demand for *standard control services* are discussed in those standard control capex categories.

#### 4.5.3.4. Non-demand related capex

As the non-demand related capex standard control capex category is an aggregate of the other standard control capex categories how aurora considers it meets or manages the expected demand for *standard control services* are discussed in those standard control capex categories.

#### 4.5.3.5. Non-network – IT & communications capex

Whilst the non-network – IT & communications capex standard control capex category does not contribute directly in meeting or managing the expected demand for *standard control services* it provides an essential support services that ensure the other standard control capex categories meet or manage this expected demand.

#### 4.5.3.6. Non-network – motor vehicles capex

Whilst the non-network – motor vehicles capex standard control capex category does not contribute directly in meeting or managing the expected demand for *standard control services* it provides an essential support services that ensure the other standard control capex categories meet or manage this expected demand.

#### 4.5.3.7. Non-network – other capex

Whilst the non-network – other capex standard control capex category does not contribute directly in meeting or managing the expected demand for *standard control services* it provides an essential support services that ensure the other standard control capex categories meet or manage this expected demand.

#### 4.5.3.8. Non-network – plant & equipment capex

Aurora has not forecast capital expenditure in the non-network – plant & equipment capex standard control capex category.

### 4.5.3.9. Non-network – property capex

Whilst the non-network – property capex standard control capex category does not contribute directly in meeting or managing the expected demand for *standard control services* it provides an essential support services that ensure the other standard control capex categories meet or manage this expected demand.

### 4.5.3.10. Non-system capex

As the non-system capex standard control capex category is an aggregate of the other standard control capex categories how aurora considers it meets or manages the expected demand for *standard control services* are discussed in those standard control capex categories.

### 4.5.3.11. Regulatory obligations or requirements capex

The forecast programs for the regulatory obligations or requirements capex standard control capex category are designed to maintain the distribution network at current levels of demand by addressing issues associated with potential non-compliances or specific regulatory obligations.

### 4.5.3.12. Reinforcements capex

The forecast programs for the reinforcements capex standard control capex category are designed to maintain the distribution network at current and forecast levels of demand, reliability and power quality by addressing issues associated with the forecast increased demand for network services and increases in customer connections arising from the customer initiated capex standard control capex category.

The reinforcements capex work program is also designed to manage expected demand for *standard control services* by managing the following capacity related issues:

- switchgear, transformers, cables and conductors not rated for load current;
- suboptimal sizing of cables and conductors causing increased voltage drop and losses;
- circuit(s) not rated for load distribution, i.e. transitioning from single phase to two or three phase distribution; and
- circuits not capable of load transfer, i.e. improving operational flexibility and management;

Through prudent management of the above Capacity related issues, the reinforcements capex work program is designed to mitigate the following Capacity related risks:

- increased risk to human safety by:
  - electric shock or electrocution; and
  - physical damage or harm;
- decreased operating clearances leading to:
  - increasing risk of third party contact;

- increased risk of conductor clashing leading to interruptions and fire starts;
- explosion; and
- asset failure;

- overheating of transformers and switchgear leading to:
  - flashover;
  - explosion;
  - interruption;
  - oil spill;
  - lower current ratings; and
  - equipment failure;
- suboptimal customer outcomes leading to:
  - substandard reliability (SAIFI & SAIDI); and
  - substandard quality of supply;
- increased loss of equipment life, e.g. decreased life expectancy of assets due to operating above the design criteria; and
- system instability, e.g. running the system in an unsecure state or above its capability that may lead to consequential failures.

#### 4.5.3.13. Reliability & quality improvements capex

Aurora has not forecast capital expenditure in the reliability & quality improvements capex standard control capex category.

#### 4.5.3.14. Reliability & quality maintained capex

The forecast programs for the reliability & quality maintained capex standard control capex category are designed to maintain the distribution network at current levels of demand by addressing issues associated with deteriorating asset condition, technology or environmental changes, non-compliances or reliability and quality obligations.

#### 4.5.3.15. SCADA & network control capex

Whilst the SCADA & network control capex standard control capex category does not contribute directly in meeting or managing the expected demand for *standard control services* it provides an essential support services that ensure the other standard control capex categories meet or manage this expected demand.

#### 4.5.3.16. System capex

As the system capex standard control capex category is an aggregate of the other standard control capex categories how aurora considers it meets or manages the expected demand for *standard control services* are discussed in those standard control capex categories.

## 4.5.4. Regulatory obligations

The following section outlines how Aurora considers each of the capital expenditure forecasts within the standard control capex categories comply with applicable Regulatory Obligations or Requirements.

### 4.5.4.1. Capitalised overheads

Costs encapsulated by the capitalised overheads standard control capex category are required to comply with all applicable Regulatory Obligations or Requirements associated with the provision of *standard control services*, being for the systems and staff that provide administrative and logistical support to the staff that directly work on the distribution network.

### 4.5.4.2. Customer initiated capex

Costs encapsulated by the customer initiated capex standard control capex category are required to comply with all applicable Regulatory Obligations or Requirements associated with the provision of *standard control services*. Aurora considers that compliance with the major regulatory obligations or requirements associated with this standard control capex category is achieved through the following approach:

- work in this category is initiated through an application process compliant with the provisions of Chapters 5 and 6 of the Rules; and
- assets constructed under this category are constructed in compliance with the requirements of the Occupational Licensing Act – Electrical Work Regulations.

### 4.5.4.3. Demand related capex

As the demand related capex standard control capex category is an aggregate of the other standard control capex categories how Aurora considers it complies with all applicable Regulatory Obligations or Requirements associated with the provision of *standard control services* are discussed in those standard control capex categories.

### 4.5.4.4. Non-demand related capex

As the non-demand related capex standard control capex category is an aggregate of the other standard control capex categories how Aurora considers it complies with all applicable Regulatory Obligations or Requirements associated with the provision of *standard control services* are discussed in those standard control capex categories.

### 4.5.4.5. Non-network – IT & communications capex

Forecast capital expenditure in the non-network – IT & communications capex standard control capex category is designed to comply with all applicable Regulatory Obligations or Requirements. This is achieved by including the requirement for compliance into the scopes for IT systems. This point is also discussed in the sections within the RIN Response dealing with large IT projects.

### 4.5.4.6. Non-network – motor vehicles capex

Forecast capital expenditure in the non-network – motor vehicles capex standard control capex category is required to comply with all applicable Regulatory Obligations or Requirements. The vehicle fleet is procured to be compliant with the applicable vehicle standards and to ensure safe working conditions for Aurora's workforce.

### 4.5.4.7. Non-network – other capex

As capital expenditure in the non-network – other capex standard control capex category is for the provision of minor assets required by staff of Aurora in the provision of *standard control services* there are not direct Regulatory Obligations or Requirements associated with the provision of *standard control services*.

### 4.5.4.8. Non-network – plant & equipment capex

Aurora has not forecast capital expenditure in the non-network – plant & equipment capex standard control capex category.

### 4.5.4.9. Non-network – property capex

Forecast capital expenditure in the non-network – property capex standard control capex category is required to comply with all applicable Regulatory Obligations or Requirements. Aurora incorporates compliance with applicable regulatory obligations into the preparation of its forecast.

### 4.5.4.10. Non-system capex

As the non-system capex standard control capex category is an aggregate of the other standard control capex categories how Aurora considers it complies with all applicable Regulatory Obligations or Requirements associated with the provision of *standard control services* are discussed in those standard control capex categories.

### 4.5.4.11. Regulatory obligations or requirements capex

Aurora considers that capital expenditure in the regulatory obligations or requirements category is required to comply with all applicable Regulatory Obligations or Requirements associated with the provision of standard control services. Aurora considers the applicable regulatory obligations to be associated with environmental and safety legislation. Expenditure in this category is directed towards compliance with obligations under environmental and safety legislation.

### 4.5.4.12. Reinforcements capex

Forecast capital expenditure in the reinforcements capex standard control capex category is designed to comply with all applicable Regulatory Obligations or Requirements associated with the provision of *standard control services*. This is achieved by including the requirement for compliance within the Aurora asset management plans. These management plans are appended as an attachment to Aurora's Regulatory Proposal.

The regulatory obligations to be considered in this standard control capex category relate to continuity of supply, quality of supply, and standard of network construction.

The reinforcements capex work program is designed to comply with all applicable regulatory obligations or requirements associated with the provision of *standard control services* by managing the following capacity related issues:

- suboptimal sizing of cables and conductors causing increased voltage drop and losses; and
- quality of supply issues associated with voltage flicker and waveform distortion associated with electrical loading of infrastructure.

Through prudent management of the above Capacity related issues, the reinforcements capex work program is designed to mitigate the following capacity related risks:

- decreased operating clearances leading to:
  - increasing risk of third party contact;
  - increased risk of conductor clashing leading to interruptions and fire starts;
  - explosion; and
  - asset failure;
- overheating of transformers and switchgear leading to:
  - flashover;
  - explosion;
  - interruption;
  - oil spill;
  - lower current ratings; and
  - equipment failure;
- suboptimal customer outcomes leading to:
  - substandard reliability (SAIFI & SAIDI); and
  - substandard quality of supply;
- non compliance to business or legislated standards, e.g. fine, breach of code and standard or license for TEC, Rules, connection agreements, legislation and regulation;
- increased loss of equipment life, e.g. decreased life expectancy of assets due to operating above the design criteria; and
- system instability, e.g. running the system in an unsecure state or above its capability that may lead to consequential failures.

### 4.5.4.13. Reliability & quality improvements capex

Aurora has not forecast capital expenditure in the reliability & quality improvements capex standard control capex category.

#### 4.5.4.14. Reliability & quality maintained capex

Forecast capital expenditure in the reliability & quality maintained capex standard control capex category is designed to comply with all applicable Regulatory Obligations or Requirements associated with the provision of *standard control services*. This is achieved by including the requirement for compliance within the Aurora asset management plans. These management plans are appended as an attachment to Aurora's Regulatory Proposal.

The regulatory obligations to be considered in this standard control capex category relate to continuity of supply, quality of supply, and standard of network construction.

#### 4.5.4.15. SCADA & network control capex

Forecast capital expenditure in the SCADA & network control capex standard control capex category is required to comply with all applicable Regulatory Obligations or Requirements. Aurora incorporates compliance with applicable regulatory obligations into the preparation of its forecast.

#### 4.5.4.16. System capex

As the system capex standard control capex category is an aggregate of the other standard control capex categories how Aurora considers it complies with all applicable Regulatory Obligations or Requirements associated with the provision of *standard control services* are discussed in those standard control capex categories.

### 4.5.5. Quality, reliability and security of supply

The following section outlines how Aurora considers each of the capital expenditure forecasts within the standard control capex categories maintain the quality, reliability and security of supply of *standard control services*.

Forecast capital expenditure is designed to maintain the distribution network at current levels of power quality, reliability and security of supply while addressing the risks associated with the distribution network assets.

#### 4.5.5.1. Capitalised overheads capex

Aurora does not consider quality, reliability and security of supply when preparing the forecast for this RIN category.

#### 4.5.5.2. Customer initiated capex

Whilst the customer initiated capex standard control capex category does not contribute directly in maintaining the quality, reliability and security of supply of *standard control services* it does create assets and infrastructure that must be considered within the other standard control capex categories when maintaining the quality, reliability and security of supply.

#### 4.5.5.3. Demand related capex

As the demand related capex standard control capex category is an aggregate of the other standard control capex categories how Aurora considers it maintains the quality, reliability and security of supply of *standard control services* are discussed in those standard control capex categories.

#### 4.5.5.4. Non-demand related capex

As the non-demand related standard control capex category is an aggregate of the other standard control capex categories how Aurora considers it maintains the quality, reliability and security of supply of *standard control services* are discussed in those standard control capex categories.

#### 4.5.5.5. Non-network – IT & communications capex

Aurora does not consider quality, reliability and security of supply when preparing the forecast for this RIN category.

#### 4.5.5.6. Non-network – motor vehicles capex

Aurora does not consider quality, reliability and security of supply when preparing the forecast for this RIN category.

#### 4.5.5.7. Non-network – other capex

Aurora does not consider quality, reliability and security of supply when preparing the forecast for this RIN category.

#### 4.5.5.8. Non-network – plant & equipment capex

Aurora has not forecast capital expenditure in the non-network – plant & equipment capex standard control capex category.

#### 4.5.5.9. Non-network – property capex

Aurora does not consider quality, reliability and security of supply when preparing the forecast for this RIN category.

#### 4.5.5.10. Non-system capex

As the non-system capex standard control capex category is an aggregate of the other standard control capex categories how Aurora considers it maintains the quality, reliability and security of supply of *standard control services* are discussed in those standard control capex categories.

#### 4.5.5.11. Regulatory obligations or requirements capex

Whilst the regulatory obligations or requirements capex standard control capex category does not contribute directly in maintaining the quality, reliability and security of supply of *standard control services* it does create assets and infrastructure that must be considered within the other standard control capex categories when maintaining the quality, reliability and security of supply.

#### 4.5.5.12. Reinforcements capex

Reinforcements capex work programs are designed to maintain the distribution network's current levels of power quality, reliability and security by addressing issues associated with asset condition, generally through the augmentation of existing assets that have the potential to allow the distribution network to not meet the required levels of quality, reliability and security of supply.

The reinforcements capex work program is designed to maintain the quality, reliability and security of supply of *standard control services* by managing the following capacity related issues:

- switchgear, transformers, cables and conductors not rated for load current;
- suboptimal sizing of cables and conductors causing increased voltage drop and losses;
- circuit(s) not rated for load distribution i.e. transitioning from single phase to two or three phase distribution; and
- quality of supply issues associated with voltage flicker and waveform distortion associated with electrical loading of infrastructure.

Through prudent management of the above capacity related issues, the reinforcements capex work program is designed to mitigate the following capacity related risks:

- increased risk to human safety by:
  - electric shock or electrocution; and
  - physical damage or harm;
- decreased operating clearances leading to:
  - increasing risk of third party contact;
  - increased risk of conductor clashing leading to interruptions and fire starts;
  - explosion; and
  - asset failure;
- Overheating of transformers and switchgear leading to:
  - flashover;
  - explosion;
  - interruption;
  - oil spill;
  - lower current ratings; and
  - equipment failure;
- suboptimal customer outcomes leading to:
  - substandard reliability (SAIFI & SAIDI); and
  - substandard quality of supply;
- non compliance to business or legislated standards, e.g. fine, breach of code and standard or license for TEC, Rules, connection agreements, legislation and regulation;
- increased loss of equipment life, e.g. decreased life expectancy of assets due to operating above the design criteria;
- system instability, e.g. running the system in an unsecure state or above its capability that may lead to consequential failures; and

- operability of reticulation and system components, e.g. sub optimal system design and/or equipment that cannot be operated.

#### 4.5.5.13. Reliability & quality improvements capex

Aurora has not forecast capital expenditure in the reliability & quality improvements capex standard control capex category.

#### 4.5.5.14. Reliability & quality maintained capex

Reliability & quality maintained capex work programs are designed to maintain the distribution network's current levels of power quality, reliability and security by addressing issues associated with asset condition, generally through the replacement of existing assets that are in substandard condition or have the potential to allow the distribution network to not meet the required levels of quality, reliability and security of supply.

#### 4.5.5.15. SCADA & network control capex

SCADA & network control capex work programs are designed to maintain the distribution network's current levels of power quality, reliability and security by addressing issues associated with asset condition, generally through initiatives that will deliver process efficiencies replacing manual intensive processes with automated processes to allow the distribution network to continue to meet the required levels of quality, reliability and security of supply.

It is also anticipated that these initiatives will mitigate risks associated with the manual intensive nature of the current environment.

#### 4.5.5.16. System capex

As the system capex standard control capex category is an aggregate of the other standard control capex categories how Aurora considers it maintains the quality, reliability and security of supply of *standard control services* are discussed in those standard control capex categories.

### 4.5.6. Reliability, safety and security of the distribution system

The following section outlines how Aurora considers each of the capital expenditure forecasts within the standard control capex categories maintain the reliability, safety and security of the distribution system through the supply of *standard control services*.

#### 4.5.6.1. Capitalised overheads

Whilst the capitalised overheads standard control capex category does not contribute directly in maintaining the reliability, safety and security of the distribution system through the supply of *standard control services* it provides the essential support services that ensure the other Opex Categories maintain the reliability, safety and security of the distribution system.

### 4.5.6.2. Customer initiated capex

Programs in the customer initiated capex standard control capex category are indirectly required to maintain the reliability, safety and security of the distribution system through the supply of *standard control services*, being intended to meet the Aurora's obligation to provide access to *standard control services* on fair and reasonable commercial terms. The reliability, safety and security of the network are subsidiary concerns that are addressed through appropriate planning and construction of the assets of this category.

### 4.5.6.3. Demand related capex

As the demand related capex standard control capex category is an aggregate of the other standard control capex categories how Aurora considers it maintains the reliability, safety and security of the distribution system through the supply of *standard control services* are discussed in those standard control capex categories.

### 4.5.6.4. Non-demand related capex

As the non-demand related capex standard control capex category is an aggregate of the other standard control capex categories how Aurora considers it maintains the reliability, safety and security of the distribution system through the supply of *standard control services* are discussed in those standard control capex categories.

### 4.5.6.5. Non-network – IT & communications capex

Aurora does not consider reliability, safety and security of the distribution system when preparing the forecast for this RIN category.

### 4.5.6.6. Non-network – motor vehicles capex

Aurora does not consider reliability, safety and security of the distribution system when preparing the forecast for this RIN category.

### 4.5.6.7. Non-network – other capex

Aurora does not consider reliability, safety and security of the distribution system when preparing the forecast for this RIN category.

### 4.5.6.8. Non-network – plant & equipment capex

Aurora has not forecast capital expenditure in the non-network – plant & equipment capex standard control capex category.

### 4.5.6.9. Non-network – property capex

Aurora does not consider reliability, safety and security of the distribution system when preparing the forecast for this RIN category.

### 4.5.6.10. Non-system capex

As the non-system capex standard control capex category is an aggregate of the other standard control capex categories how Aurora considers it maintains the reliability, safety and security of the distribution system through the supply of *standard control services* are discussed in those standard control capex categories.

### 4.5.6.11. Regulatory obligations or requirements capex

Aurora considers that programs in the regulatory obligations or requirements capex standard control capex category are required to maintain the safety, but not the reliability or security, of the distribution system. Expenditure in this standard control capex category is directed in part towards correcting network issues that have potential safety ramifications.

### 4.5.6.12. Reinforcements capex

Reinforcements capex standard control capex category programs are designed to maintain the distribution network's current levels of reliability, safety and security by addressing issues associated with deteriorating asset condition, generally through the replacement of existing assets that are in poor or suboptimal condition.

Programs in the reinforcements capex standard control capex category are required to maintain the power quality of the distribution system: sub-optimally sized network infrastructure can lead to under-voltage situations under load.

Programs in the reinforcements capex standard control capex category are not required to maintain the reliability of the distribution system, although reliability may be improved due to correct sizing of network components reducing the likelihood of spontaneous, in-service asset failure due to over-loading.

Programs in the reinforcements capex standard control capex category contribute to the safety of the distribution system: overheating of transformers and switchgear due to sub-optimal sizing can lead to leading to flashover, explosion, oil spills and equipment failure with concomitant third party safety risk.

Programs in the reinforcements capex standard control capex category are required to maintain the security of the distribution system: appropriately sized infrastructure permits load transfer to provide alternate supply to areas of importance.

Programs in the reinforcements capex standard control capex category can also reduce operational and fault costs; overloaded asset or assets running near capacity have a greater possibility of failure and high maintenance requirements.

### 4.5.6.13. Reliability & quality improvements capex

Aurora has not forecast capital expenditure in the reliability & quality improvements capex standard control capex category.

### 4.5.6.14. Reliability & quality maintained capex

Programs in the reliability & quality maintained capex standard control capex category are required to maintain the reliability, safety and security of the distribution system through the supply of *standard control services*. Capital expenditure programs in the reliability & quality maintained capex standard control capex category are designed to maintain reliability of the distribution network, fix safety issues identified in the distribution network, maintain the quality of power supplied, or to minimise the likelihood of unplanned outages by replacing assets before they fail in service.

### 4.5.6.15. SCADA & network control capex

SCADA & network control capex work programs are designed to maintain the distribution network's current levels of reliability, safety and security by addressing issues associated with asset condition, generally through initiatives that will deliver process efficiencies replacing manual intensive processes with automated processes to allow Aurora to continue to meet the required levels of reliability, safety and security.

It is also anticipated that these initiatives will mitigate risks associated with the manual intensive nature of the current environment.

### 4.5.6.16. System capex

As the system capex standard control capex category is an aggregate of the other standard control capex categories how Aurora considers it maintains the reliability, safety and security of the distribution system through the supply of *standard control services* are discussed in those standard control capex categories.

## 4.5.7. Efficient costs

The following section outlines how Aurora considers each of the capital expenditure forecasts within the standard control capex categories reflects the efficient costs of achieving the *capital expenditure objectives*.

Aurora considers that expenditure in all standard control capex categories reflects the efficient costs of achieving the *capital expenditure objectives* in that the volumes forecast and the rates forecast are appropriate.

Aurora considers that the forecast volumes of work are appropriate because capital expenditure programs are managed in a way to ensure Aurora is running a reliable, safe and secure distribution network using cost efficient approaches. Aurora's work programs are developed using a bottom-up approach. This involves determining work volumes in accordance with the applicable asset management plan and applying the appropriate unit rates.

Section 18.4 of Aurora's Regulatory Proposal provides details on how Aurora considers its unit rates represent the efficient costs of achieving the expenditure objectives.

Aurora sources all material and contractors through a rigorous tendering and contracts process. Aurora utilises an external contractor to deliver a portion of its programs, which has been benchmarked against Aurora's internal labour costs.

Aurora is also actively involved in industry working groups and committees, where Aurora has identified that the management strategies and work practices from other jurisdictions are consistent with those adopted by Aurora.

Aurora is also able to demonstrate it is efficient through a benchmarking review of its top 10 unit rates undertaken by PB.

Factors that are more specific to a particular standard control capex category are discussed in the following sections of this RIN Response.

#### 4.5.7.1. Customer initiated capex

Aurora considers that the forecast volumes of work are appropriate because they are based upon the ACIL Tasman customer connection forecast. The connection of customers is achieved through the connection process. Aurora can only connect customers that wish to take an electricity supply.

#### 4.5.7.2. Non-network – IT & communications capex

Given that the process of investigating the reconfiguration of Aurora's IT systems is still in its infancy, Aurora has taken into consideration the costs borne by other Australian DNSPs in implementing similar systems and considers that its costs are appropriate.

#### 4.5.7.3. Non-network – motor vehicles capex

The application of Aurora's Fleet management Plan and the associated Policies, Strategies and Procedures ensures there is appropriate governance and control over all aspects of managing Aurora's vehicle fleet. Authorisation of the replacement of unbudgeted vehicles is outlined in the Board approve Delegations manual. Authority to purchase an unbudgeted vehicle requires General Manager approval, with advice to the Chief Financial Officer. This ensures tight control over the acquisition of vehicles in addition to those considered as part of the budgeting process.

Aurora considers that the rates are appropriate. Fuel and vehicles are obtained under State Government contract, which is subject to tender.

#### 4.5.7.4. SCADA & network control capex

Aurora has engaged expert consultants; Marchment Hill Consulting and Enterprise Architects; to assist in the formulation of this expenditure program. In addition Aurora frequently engaged Gartner during the development of the program to ensure its approach was sound.

### 4.5.8. Prudent operator

Aurora considers that expenditure in all standard control capex categories reflects the costs that a prudent operator in the circumstances of Aurora would require to achieve the *operating expenditure objectives*.

During the course of the pricing investigation for the *Current Regulatory Control Period* OTTER engaged Wilson Cook to:

> *"... recommend expenditure allowances for Aurora Energy for prudent and efficient levels of forecast capital and operating expenditure for the period 1 July 2006 to 30 June 2012."*[1]

Wilson Cook, in reviewing Aurora's forecast operating expenditure, found that:

> *"... Aurora's forecast operating expenditure for the period 1 July 2006 to 30 June 2012 may be considered prudent and efficient as adjusted in section 4.3 of this report."*[2]

Additionally, in the same report, Wilson Cook found Aurora's expenditure on operational assets for the period 1 July 2005 to 30 June 2006, and on non-operational assets for the period 1 July 2002 to 30 June 2006 to be prudent and efficient.

The forecasting methodology that Aurora applied for the *Current Regulatory Control Period* has remained consistent for the *Forthcoming Regulatory Control Period*. Aurora notes that it has not significantly changed its capital expenditure forecasting process for the *Forthcoming Regulatory Control Period* and, in consequence, considers the finding of prudency to be transferable.

These work programs are managed in a way to ensure Aurora complies with all regulatory requirements and maintains its electrical infrastructure to minimise the risks associated with failure or reduced performance of assets.

### 4.5.9. Realistic expectation of the demand forecast and cost inputs

Aurora considers that the forecasts of all standard control capex categories are a realistic expectation of the demand forecast and cost inputs to achieve the *capital expenditure objectives*.

Aurora's work programs have generally been determined in consideration of historic volumes and expenditure. In most cases there are no deviations from historic spend and where there is, this is explained in the associated asset management plan. These management plans are appended as an attachment to Aurora's Regulatory Proposal.

### 4.5.10. Benchmark capital expenditure

Network capital expenditure work programs are managed in a way to ensure Aurora is operating a safe and reliable system using cost efficient approaches.

Aurora's work programs are developed using a bottom-up approach. This involves determining work volumes in accordance with the applicable asset management plan and applying the appropriate unit rates. Unit rates are key inputs in developing Aurora's operational and capital expenditure programs and are discussed in section 18.4 of Aurora's Regulatory Proposal and detail how Aurora considers its unit rates represent:

- the efficient costs of achieving the expenditure objectives; and

[1] 2007 Final Report, page 79
[2] Covering letter, 2007 Wilson Cook Report

- the costs that a prudent operator in Aurora's circumstances would require too achieve the capital and *operating expenditure objectives*.

Aurora does not directly utilise a benchmarking approach to determine its capital expenditure forecasts. However, in order to the prudency of its expenditure programs, Aurora engaged Benchmark Economics to assess its expenditure against the expenditure criteria. In making its assessment, Benchmark Economics also analysed Aurora's capital expenditure and forecasts to determine if there were any trade-offs with operating expenditure.

For the *Current Regulatory Control Period*, Benchmark Economics determined that Aurora's capital expenditure was within the range of a prudent and efficient operator.

For the *Forthcoming Regulatory Control Period*, Benchmark Economics found that Aurora's capital expenditure was in line with Aurora's business conditions and industry average investment levels. Further, Benchmark Economics accepted that Aurora's capital expenditure does not include an off-set for higher/lower operating expenditure.

The full Benchmark Economics' report (AE062) is appended as an attachment to Aurora's Regulatory Proposal.

### 4.5.11. Relative prices of operating and capital inputs

Aurora's capital expenditure work programs are developed using a bottom-up approach. This involves determining work volumes in accordance with the applicable asset management plan and applying the appropriate unit rates. Aurora's unit rates have been determined by aggregating the following:

- estimated labour time required to undertake the task multiplied by the hourly rate of the skill set utilised;
- material costs;
- contractor costs;
- service provider overheads; and
- plant and equipment.

The unit rates within the individual work programs for this expenditure category are exclusive of escalation factors for materials and labour.

The methodology used by Aurora to develop the forecast projects for each work category is set out in Aurora's management plans.

### 4.5.12. Substitution possibilities

Substitution possibilities for capital expenditure are also discussed in sections 11.4 and 12.4, and chapter 13 of Aurora's Regulatory Proposal.

Aurora's asset management practices have been stable for a number of years and generally considered to be providing a well balanced trade-off between maintenance and capital expenditure.

Aurora constructs its asset management plans considering the whole of life costs associated with managing assets. This includes considering replacement of assets when maintenance costs begin increasing as the condition of an asset declines.

The following sections of the RIN Response provide further and more specific information the relevant standard control capex category, where appropriate.

#### 4.5.12.1. Customer initiated capex

Capex in this category is for the construction of network assets to provide customer connection services and there are limited possibilities for operating expenditure considerations. The provision of customer connection services is therefore typically not achieved using operating expenditure.

#### 4.5.12.2. Non-network – IT & communications capex

The capital expenditure forecast for non-network IT & communications capex for the *Forthcoming Regulatory Control Period* was developed in conjunction with comprehensive IT review conducted by Enterprise Architects. The focus of the review was to determine an optimal strategy for IT investment.

#### 4.5.12.3. Non-network – motor vehicles capex

The capital expenditure forecast for Motor Vehicles Capex for the *Forthcoming Regulatory Control Period* was developed in conjunction with a review undertaken by Aurora of its light and heavy vehicle fleet. The focus of the review was to determine an optimal life and replacement strategy for light and heavy vehicles.

#### 4.5.12.4. Non-network – property capex

The capital works program for the *Forthcoming Regulatory Control Period* does not contain any significant property investments, whether acquisition of new properties or refurbishment of existing properties.

The Facilities Management Plan outlines Aurora's current strategy which determines that office accommodation is leased, and properties that are used for specific operational requirements are owned. This is consistent with the previous Board approved accommodation strategy.

### 4.5.13. Consistency of labour costs

As Aurora has not been subject to a STPIS arrangement during the *Current Regulatory Control Period*, it has utilised a consistent approach for all labour costs. Labour rates for service provision have had a three percent efficiency factor applied for each year of the *Forthcoming Regulatory Control Period*.

Aurora has not considered the interactions between total labour costs and the incentives provided by STPIS when developing its forecasts.

### 4.5.14. Non-network alternatives

Non-network alternatives are also discussed in chapter 14 of Aurora's Regulatory Proposal and in response to paragraph 11 of the RIN.

References to the decisions made within Aurora's engineering management on whether a need for augmentation can be met via operating expenditure or alternative capital augmentation projects, for example through non-network alternatives, are dealt with in the management plans associated with the relevant expenditure category.

Consideration of non-network alternatives is undertaken on an asset specific basis. Where applicable, Aurora has considered non-network alternatives for each of the standard control capex categories and these are discussed in the following sections of this RIN Response.

#### 4.5.14.1. Customer initiated capex

Aurora did not consider the use of efficient non-network alternatives in developing the capital expenditure forecast for this customer initiated capex standard control capex category because, until customers request new connections or augmentations to accommodate changed connection characteristics, Aurora will not know what network construction will be required. When Aurora responds to future requests for new connections or augmentations to accommodate changed connection characteristics it will consider the use of efficient non-network alternatives.

#### 4.5.14.2. Regulatory obligations or requirements capex

Expenditure in the regulatory obligations or requirements capex standard control capex category does not take into consideration efficient non-network alternatives. Expenditure in this category is to correct network deficiencies and there are therefore no viable non-network alternatives.

#### 4.5.14.3. SCADA & network control capex

The expenditure in this RIN category in considered by Aurora as a key enabler for managing non-network alternative solutions in the future.

### 4.5.15. Methodology used to develop forecasts

Where applicable, discussions in response to RIN paragraphs 4.3(c)(vi)(1), (3) & (4) are provided in the following sections of this RIN Response.

Aurora uses a number of integrated models to develop its program of work. These models are appended as an attachment to Aurora's Regulatory Proposal, AE083 – Aurora's Proposed Program of Work and provide further details in response to RIN paragraph 4.3(c)(vi)(2).

#### 4.5.15.1. Capitalised overheads

##### Methodology

The methodology for deriving capitalised overheads is detailed in section 11.4.1 of Aurora's Regulatory Proposal. The following sections discuss the methodology for determining the inputs into capitalised overheads.

**Corporate and shared services costs**

The methodology for determining corporate and shared services costs is contained in Aurora's ICAM.

### Distribution business shared resource costs

Distribution business shared resource costs include costs relating to the distribution finance team, the distribution executive, and the distribution safety team. These are costs that are associated with functions which are shared between Aurora's Network and Network Services divisions.

Aurora's recent distribution business restructure has provided a revised organisation structure. This organisational structure provides a basis for developing labour forecasts by position (including salary ranges) for all full time equivalent employees which form part of the distribution shared services cost pool. Labour costs have been developed using Aurora's current salary table in conjunction with Aurora's on cost assumptions (the consistent approach for calculating labour associated on-costs across Aurora).

Material, contractor and other costs forecasts have been developed using historical costs as a base (extracted from Aurora's financial systems) and in consultation with relevant team managers. This approach is consistent with the forecasting methodology used annually as part of Aurora's budgeting and planning process.

Forecasts have been developed using Aurora's budgeting and forecasting tool.

### Network management costs

Network management costs include costs relating to the management of Aurora's Network division, which includes labour and team costs.

The network management costs forecast has been prepared as part of the annual budget and business planning process, a base year forecast was established using historical actual data. Known changes in business direction, strategies and policies were considered and a base year forecast established, (2010-11). The forecast base year was escalated, resulting in forecast costs for the *Forthcoming Regulatory Control Period*.

### Network services management costs

Network services management costs include costs relating the management of Aurora's Network Services division, which includes labour and team costs.

The network services management costs forecast has been prepared as part of the annual budget and business planning process, a base year forecast was established using historical actual data. Known changes in business direction, strategies and policies were considered and a base year forecast established, (2010-11). The forecast base year was escalated, resulting in forecast costs for the *Forthcoming Regulatory Control Period*.

### Changes from previous EPI – corporate and shared services costs

Aurora's ICAM has recently been revised, and as a consequence the methodology used for forecasting corporate and shared services costs for the *Forthcoming Regulatory Control Period* differs from the methodology previously adopted.

The previous methodology for allocating corporate and shared services costs to Aurora's divisions and subsidiaries was heavily reliant on managerial estimates (in relation to volumes of work undertaken for Aurora's divisions and subsidiaries); it was an allocative methodology which was subjective in nature and therefore required review.

The revised ICAM includes fundamental changes from the previous methodology. This was done to realign the methodology with the recent structural changes which have occurred within Aurora and to improve the robustness of the allocation mechanisms.

The revised methodology includes a distinction between corporate costs and shared costs. Corporate costs (includes for example costs associated with Aurora's Board), will vary depending on the strategic direction of the company. Shared services costs include transactional and other shared services costs where functions are grouped for economies of scale and provided to the operating business units.

The following is a statement of the principles that underpin Aurora's revised ICAM:

- consideration has been given to consistency, relevance, reliability and requirements for comparability over reporting periods (i.e. the underlying data can be sourced easily and reliably and replicated over reporting periods, allocation methods are applied consistently to departments and across departments);
- materiality – material costs, where possible, are allocated on a causal basis – the materiality of individual department cost categories (GL costs codes) is assessed to ensure specific costs or specific activity costs are allocated using an appropriate cost allocator;
- operating expenditure and capital expenditure are separate source transactions in the financial system and remain separate for allocation purposes;
- indirect costs are allocated using identified causality drivers; and
- when a causal relationship cannot be established without undue costs and effort the indirect costs are allocated on good practice principles (for example, consistency, appropriate trade-offs between transparency, complexity and accuracy and alignment with other industry peers).

Table 1 compares the cost drivers under the previous ICAM to those utilised in Aurora's revised methodology: please note that the table only denotes instances where a change in allocation driver has occurred. Definitions of allocators used in the revised ICAM are outlined in Table 2.

**Table 1. Comparison of ICAM cost drivers between Regulatory Periods**

| Divisional Group | Previous Allocator | Revised Allocator |
|---|---|---|
| **Commercial Services Group** | | |
| Group Finance | Profitability contribution | Weighted Average |
| Treasury operations (labour) | Agreed % allocator by Group Financial Controller | Weighted Average |
| Company Secretary and Legal Services | Based upon usage provided by the Company Secretary | Weighted Average |
| **ISG** | | |
| Management | Weighted average of other ISG functions | Number of PC's |
| Information Management | Weighted Average | Number of PC's |
| Infrastructure | Primarily on servers (some on number of PC's) | Number of PC's |
| Application Management (residual costs) | Number of servers (primary driver is by application) | Number of PC's |
| Application Development | Based upon projected development plans | Number of PC's |
| Program Management | Number of servers | Number of PC's |
| **Supply Chain Services Group** | | |
| Management | Weighted average of other Supply Chain Services | Dollar Value of Contracts |
| Tendering and Contracts | Allocation provided by contracts department | Dollar value of contracts |
| Procurement | Allocation provided by contracts department | Dollar value of contracts |
| **Strategy and Corporate Affairs Group** | | |
| Corporate Affairs | FTE's, fixed asset values, media enquiries and direct allocation | Weighted average |
| Strategy | Average of other allocators used for the purposes of allocation Strategy and Corporate Affairs costs | Weighted Average |

**Table 2. Explanation of allocators used in revised ICAM**

| Allocator | Definition |
|---|---|
| Weighted Average | Costs are allocated based on the weighted average of the total cost allocations that have a causality driver (i.e. excludes those costs allocated using a weighted average) |
| Number of FTE's | The number of FTEs that primarily work for a specific Division or Subsidiary |
| Volume of External Payment Invoices Processed | The transaction cost of external payment invoices over 12 months for a specific Division or Subsidiary |
| All Occupied Floor Space | The total physical floor space (area) provided to a specific Division or Subsidiary. Floor space includes leased sites. Land is excluded. |
| Rented Occupied Floor Space | The total physical floor space (area) provided to a specific Division or Subsidiary. Floor space includes only leased sites. Land is excluded. |
| Dollar Value of Contracts | The dollar value of contracts for a specific Division or Subsidiary. |
| Debt Portfolio | The allocated debt value for a specific Division or Subsidiary. |
| Insured Property Asset Values | The insured asset values for a specific Division or Subsidiary. Insurance cover includes selected building assets, substation assets and minor assets. Leased property and land is excluded from the calculation. |
| Insurance – Liability Risk Assessment | A managerial risk estimate, the insured risk is determined by assessing risk factors of business size (number of people) and likelihood of specific risks occurring and resulting in a claim. The risk estimates are prepared with advice from Aurora's brokers. |
| Insurance Other & Brokerage Risk Assessment | A managerial risk estimate of the businesses carrying the greatest insurance risk (i.e. A high likelihood for claim and / or a requirement for analysis of potential risks based on risk mitigated versus uninsured risks. |
| Number of PCs | The total number of PC's connected to Aurora's communications network for a specific Division or Subsidiary. |
| Number of Vehicles | The total number of vehicles (light and heavy) for a specific Division or Subsidiary |
| Direct Allocation | Costs are allocated directly when Cost Categories or specific services are 100% attributable to only one division or subsidiary |

## Changes from previous EPI – distribution business shared resource costs

Distribution business shared resource costs have arisen as a result of a recent restructure within Aurora's Distribution Business. The restructure resulted in a realignment of functions within the distribution business with a primary focus on customer impacts. This has meant a number of functions are now shared by both divisions within the distribution business (Network and Network Services), and as such the cost pool of distribution shared services costs have been forecasted as part of this *Forthcoming Regulatory Control Period.*

Previously forecasts have been compiled at a divisional level (i.e. Network and Network Services) rather than a focus on distinguishing between costs which arise due to a sharing of resources within Aurora's distribution business. However, the underlying methodology used to forecast costs has not changed.

### Changes from previous EPI – network management costs

There has been no change to the methodology used to forecast network management costs for the *Forthcoming Regulatory Control Period*.

### Changes from previous EPI – network services management costs

There has been no change to the methodology used to forecast network services management costs for the *Forthcoming Regulatory Control Period*.

### Data sources

Corporate and shared services costs for the *Forthcoming Regulatory Control Period* have been developed based upon actual costs extracted from Aurora's financial systems.

Distribution business shared resource costs for the *Forthcoming Regulatory Control Period* have been developed based upon actual costs extracted from Aurora's financial systems.

Network management costs for the *Forthcoming Regulatory Control Period* have been developed based upon actual costs extracted from Aurora's financial systems.

Network services management costs for the *Forthcoming Regulatory Control Period* have been developed based upon actual costs extracted from Aurora's financial systems.

## Models uses in the development of forecasts

### Unit rates model

The Unit Rates Model is used to estimate the cost of all programs/projects in Aurora's work program for the *Forthcoming Regulatory Control Period*, using a bottom up methodology.

Labour hours by skill set are determined in the bottom up estimation process. These direct labour hours form the basis for the allocation of network services management costs and Networks Services allocated corporate and shared services costs (operating expenditure) in accordance with Aurora's amended CAM.

capitalised overheads is the total of network services management costs and Network Services allocated corporate and shared services costs allocated to standard control capex category programs on the basis of direct labour hours.

Labour rates, by skill set, used within the Unit Rates Model are fully inclusive rates (include all labour associated on-costs as well as an adjustment for the recovery of non-billable hours). Forecast efficiencies have been built into the unit rates.

Historic data contained within Aurora's works and asset management systems has been used as a basis for the development of Unit Rates.

Unit Rates Model data inputs include:

- Aurora's program of work which details forecast capital and operating projects and programs for the *Forthcoming Regulatory Control Period*. The program is classified by service classification, RIN category (to the lowest level) and work category level;

- labour rates by skill set for all direct work type skill sets. These hourly rates include on-costs;
- network services management costs; and
- Network Services allocated corporate and shared services costs (sourced from Aurora's ICAM).

There are no assumptions used in the Unit Rates Model.

### Threads Data Model

The Threads Data Model is used as an interface model between Aurora's program of work and the Regulatory Modelling Suite used to input into the AER's PTRM and Aurora's specific pricing models. Data from the program of work is inputted in a format enabling the amalgamation of projects and programs (line items) into expenditure classes by service classification, RIN category (to the lowest level) and asset class.

Unit rates for projects and programs are broken into the following discrete cost categories:

- direct labour;
- direct materials;
- direct contractors;
- direct other;
- direct overheads labour;
- direct overheads materials;
- direct overheads contractors; and
- direct overheads other.

The categorisation of each program of work line item into the above categories allows the calculation of the capitalised overheads, being the sum of all direct overheads allocated to standard control capex programs for the *Forthcoming Regulatory Control Period*.

Aurora's program of work including unit rates and allocated overheads (network services management and Network Services allocated corporate and shared services costs) inputs into the Threads Data Model.

Capital expenditure allocated to the distribution business via Aurora's ICAM which is able to be directly allocated to the forms of control is inputted into the Threads Data Model.

Capital expenditure programs and projects are allocated a work category within Aurora's program of work which is mapped to regulatory asset classes using the mapping table as used in the preparation of Aurora's Regulatory Accounts. The mapping matrix forms an input to the Threads Data Model.

There are no assumptions used in the Threads Data Model.

## Capex Data Model

The Capex Data model is used to summarise the capital expenditure program for the *Forthcoming Regulatory Control Period* by asset class (for eventual input into the PTRM), by RIN category (for input into the RIN) and by category (ensuring the correct application of escalation factors).

Input data is sourced from the Threads Data Model.

There are no assumptions used in the Capex Data Model.

## LMCO Capex Data Split Model

The LMCO Capex Data Split Model calculates discrete cost category splits for each regulatory asset class, allowing the correct allocation of real escalators within Aurora's Escalations Data Model. Real escalators are applied by regulatory asset class, by labour, material, contractor and other sub-categories.

The discrete cost category split for each capital expenditure line item is calculated based on the unit rate components (labour, materials, contractors and other). A weighted average discrete cost category split for each regulatory asset class is calculated using the total capital expenditure by regulatory asset class and the component splits calculated within the model.

Input data sources for the LMCO Capex Data Split Model include:

- forecast capital expenditure program from Aurora's Threads Data Model; and
- total forecast capital expenditure by regulatory asset class from Aurora's Capex Data Model.

There are no assumptions used in the LMCO Capex Data Split Model.

## Escalations Data Model

The Escalations Data Model is used for the application of real escalation factors to capital and operating expenditure programs and projects. The Escalations Data Model outputs operating expenditure by discrete cost category (escalated), capital expenditure by asset class (escalated) and capital expenditure by RIN category (escalated).

Capital expenditure escalators have been provided by Sinclair Knight Mertz (SKM) at as asset class level, and are applied as such. The Escalations Thread Data Model is used to apportion the calculated escalation amounts by thread (calculated using capital expenditure by asset class) to the capital expenditure RIN categories by thread and the capital expenditure by discrete cost categories by thread.

The Escalation Amounts worksheet is used to calculate the Capex escalation amounts by Asset Class for each thread, a total system and non-system escalation amount for each thread is also calculated. The escalator data used to derive these totals is sourced from the escalation data (from SKM final report).

The Escalations Data Model is then used to allocate the calculated escalations per thread, split between system and non-system to the Capex RIN Categories and capital expenditure discrete cost categories for each thread. This is allocated based on a percentage total of the system and non-system capital expenditure totals for each thread. As a result the Escalation Amounts worksheet contains capital expenditure escalation amounts for each thread presented by asset class, by activity and by category, these amounts are sourced by the requisite output sheets.

Data Inputs to the Escalations Data Model include:

- data contained within Aurora's Capex Data Model and Opex Data Model;
- real escalation factors as provided by SKM in their final report; and
- discrete cost category splits by asset class from Aurora's LMCO Capex Data Split Model.

There are no assumptions used in the Escalations Data Model.

The methodology used in forecasting capital expenditure in the capitalised overheads standard control capex category is the same as that used by Aurora for its internal ongoing day-by-day Project and cost estimation.

## Appropriateness of methodology

### Corporate and shared services costs

The corporate and shared services costs forecast is prepared as part of the annual budget and business planning process, and is prepared in accordance with the strategic objectives and Aurora wide global planning assumptions and instructions. These are issued to the business at the beginning of each budgeting cycle and set out the high level timelines and rules, which ensures consistency across all business units.

The development of Corporate and Shared Services work program follows an extensive process, which is governed by a number of internal controls and sign offs to ensure the expenditure is appropriate and prudent expenditure and in line with the strategic objectives of Aurora. Key sign offs and internal control steps in this process include:

- Group Managers determine their annual budget and five year business plan submissions. Team overhead expenses and FTE data is entered into Aurora's budget system (BAF), which forms the data set for budgets. All assumption work papers and calculations are also maintained within this system;
- internal review of submitted costs to ensure they are in line with business financial constrains and to ensure the prudency of expenditure; and
- final endorsement and sign-off by General Manager.

The final corporate divisions' budgets are incorporated into the final Corporate and Shared Services budget and forms part of the final business budget submission to:

- the CFO for sign-off (February);

- the CEO for budget and business plan sign off (February); and
- Aurora's Board for budget and business plan sign-off (March).

These final forecasts are then allocated to the divisions and subsidiaries of Aurora in accordance with the Aurora ICAM.

### Network services management

The network services management forecast is prepared as part of the annual budget and business planning process, and is prepared in accordance with the strategic objectives and Aurora wide global planning assumptions and instructions. These are issued to the business at the beginning of each budgeting cycle and set out the high level timelines and rules, which ensures consistency across all business units.

The development of network services management work program follows an extensive process, which is governed by a number of internal controls and sign-offs to ensure the expenditure is appropriate and prudent expenditure and in line with the strategic objectives of Aurora. Key sign offs and internal control steps in this process include:

- Team Leaders determine their annual budget and five year business plan submissions. Team overhead expenses and FTE data is entered into Aurora's budget system (BAF), which forms the data set for budgets. All assumption work papers and calculations are also maintained within this system;
- internal review of submitted costs are undertaken to ensure consistency with business financial constrains and to ensure the prudency of expenditure. This is carried out by the Manager Management Accounting; and
- final endorsement and sign-off by distribution business Commercial Manager.

The final network services division management work program is incorporated into the final Network Services division budget and forms part of the final distribution business budget submission to:

- the distribution executive and Network GM for sign-off (February);
- the CEO for budget and business plan sign-off (February); and
- Aurora's Board for budget and business plan sign-off (March).

### Network management

The network division management forecast is prepared as part of the annual budget and business planning process, and is prepared in accordance with Aurora's strategic objectives and Aurora-wide global planning assumptions and instructions. The process is the same as that undertaken for the network services management forecast process.

### Distribution business shared resource costs

The Distribution business shared resource costs forecast form part of the process undertaken in establishing the network management forecasts.

## 4.5.15.2. Customer initiated capex

### Methodology

The methodology for forecasting customer initiated capex during the *Forthcoming Regulatory Control Period* was on the basis of work undertaken by ACIL Tasman.

ACIL Tasman applied an econometric methodology to forecast new customer connections in the Aurora network. This approach required the estimation and testing of statistical relationships between the numbers of new connections and the underlying drivers that influence the number of new connections.

An internal model was used, that based the value of new customer connections at each work level using the customer numbers that were derived from the ACIL Tasman analysis. The output of the model was referenced to the historical expenditures and connections to ascertain if the result was within expectations.

#### Changes from previous EPI

The previous EPI was by means of an extrapolation of trends in unique and discrete sub-categories.

#### Data sources

Data sources used to develop the forecast capital expenditure are:

- ACIL Tasman Customer Forecasts.

The ACIL Tasman customer forecast was not used in the *Current Regulatory Control Period*. ACIL Tasman was engaged to provide a method and model to address concerns that Aurora had about the accuracy of the pure extrapolation of costs methodology.

### Models uses in the development of forecasts

An explanation of the quantitative models is contained within the ACIL Tasman report: Aurora New Customer Connections Forecast.

### Appropriateness of methodology

The methodology used to forecast capital expenditure for the *Forthcoming Regulatory Control Period* is the same as that used by Aurora of its internal day-by-day processes for the forecast.

Aurora considers that the current methodology is appropriate, being developed by ACIL Tasman, who were engaged based upon their expertise in the field.

Aurora has not engaged another consultant to verify the ACIL Tasman methodology.

### 4.5.15.3. Non-network – IT & communications capex

#### Methodology

The methodology used is contained within the AE013 – Aurora Distribution Network ISG Strategy 2012 – 17, which is appended as an attachment to Aurora's Regulatory Proposal. The Strategy has been prepared for Aurora by expert consultants Enterprise Architects. Both Aurora and Enterprise Architects have used Gartner Advisory Services throughout the development of the IT Strategy and associated Technology Roadmap for Distribution.

**Changes from previous EPI**

The previous EPI was by means of an extrapolation of trends in unique and discrete sub-categories.

**Data sources**

Aurora has utilised TOGAF to develop its IT Strategy, this has strengthened the relationship between business strategy and the selection and deployment of capabilities to create efficiencies and support business processes.

#### Appropriateness of methodology

Estimates have been made for forecast expenditure based on the costs associated with the execution of similar IT projects within Aurora, estimations of hardware requirements, based on existing contracts with suppliers and estimations from a number of vendors that provide the types of capabilities that Aurora will acquire or require to be upgraded, enhanced or replaced in the *Forthcoming Regulatory Control Period*. More detailed estimates will be prepared for Business Case approval and tendering requirements as detailed analysis is completed closer to the projects execution.

The methodology used in the development of the Standard Control Category – non-system Capex – Non-network – IT & Communications capital expenditure forecast is the same as those used by Aurora for its internal ongoing day-by-day project and cost estimation.

### 4.5.15.4. Non-network – motor vehicles capex

#### Methodology

Capex forecasts in the motor vehicles category consists of a 5 year forecast prepared using an excel spreadsheet.

For each year of the forecast a budget vehicle replacement schedule is developed in line with the annual Replacement Guideline and the requirements of the business.

Capital costs are estimated and are then transitioned into a Replacement Program of Work.

**Changes from previous EPI**

The method to prepare forecasts has in principle remained unchanged during the current regularly period. The methodology has also been applied to the fleet forecasts for the *Forthcoming Regulatory Control Period*.

### Appropriateness of methodology

The current method is verified on an ongoing basis. Vehicles are budgeted to be replaced in accordance with approved procedures and guidelines which were verified as part of the heavy and light fleet optimal retirement analysis.

Authorisation of the replacement of unbudgeted vehicles is outlined in the Board approve Delegations manual. Authority to purchase an unbudgeted vehicle requires General Manager approval with advice to the Chief Financial Officer. This ensures tight control over the acquisition of vehicles in addition to those considered as part of the budgeting process.

No cost benchmarking was undertaken.

No quantitative models are used in developing the capital expenditure forecast for the motor vehicles category.

The fleet replacement cost forecasts are based upon:

- replacing vehicles at the end of their expected life for year 2 and beyond in the current budgetary period. The budgeted fleet cost for year 1 of the *Current Regulatory Control Period* is prepared on the basis of the replacement vehicle guideline; and
- forecast increases/reductions in the size of the fleet based upon estimates provided by the business.

The methodology is the same as those used by Aurora for its internal ongoing day-by-day Project and cost estimation.

## 4.5.15.5. Non-network – other capex

### Methodology

Forecast capital expenditure for the non-network – other capex was estimated based on the expenditure for the 2009-10 financial year.

#### Changes from previous EPI

The method to prepare forecasts has in principle remained unchanged during the current regularly period. The methodology has also been applied to the forecasts for the *Forthcoming Regulatory Control Period*.

#### Data sources

The data source used to develop the forecast capital expenditure for the non-network – other capex for the *Forthcoming Regulatory Control Period* was Aurora's accounting system.

### Models uses in the development of forecasts

No quantitative models were used to forecast capital expenditure in the non-network – other capex.

### Appropriateness of methodology

The methodology used to forecast non-network – other capex is the same as that used for its internal on-going day-by-day project and cost estimation of expenditure of this type. This applies also for the *Current Regulatory Control Period*.

Aurora considers that the method used to develop the capital expenditure forecast for non-network – other capex is appropriate given the quantum of capital expenditure in the category, as a more analytically intense process is unwarranted.

### 4.5.15.6. Non-network – plant & equipment capex

Aurora has not forecast capital expenditure in the non-network – plant & equipment capex standard control capex category.

### 4.5.15.7. Non-network – property capex

#### Methodology

The non-network – property capex forecasts are developed in conjunction with Aurora's Strategic Planning process which is summarised in the following sections.

Each year as part of its strategic planning process, Aurora documents its business strategy for the future in a five-year Strategic Plan. This strategic planning process commenced formally in 2005 as Aurora prepared to enter the national market. The Strategic Plan is developed as part of a comprehensive process undertaken by the Board and management team over a number of months, the first step is a Board Planning Day in August each year.

The Strategic Plan, reflects the outcomes of these discussions, and is submitted to the Board for its approval in December each year. The primary audience for this document is the Board and Aurora's Executive Team, with the Plan used to inform and guide the development of Aurora's Corporate Plan. The Strategic Plan is not widely distributed within the business, nor is it provided to the Shareholders or other stakeholders outside the business.

Once approved by the Board, the Strategic Plan sets the direction for the next Corporate Plan. Aurora's Corporate Plan is required to be submitted to our Shareholders by 31 March each year. The strategies, initiatives and measures outlined in the Strategic Plan are expanded upon in the Corporate Plan and associated Financial Plan. Aurora's five year Financial Plan is a primary element of the Corporate Plan and includes segment forecasts as well as the identification of key risks and management strategies. A high level Planning Assumption document is prepared to assist in the development of the Corporate Plan.

The Corporate Plan subsequently provides the basis for Divisional Operating Plans that set out the means by which Aurora's overall strategy will be implemented at the divisional level.

**Data sources**

The property capital expenditure forecast is developed in accordance with the Facilities Management Plan and the requirements of the Property Register. The properties are maintained to appropriate standards which is a key driver for the development of the operating expenditure budget. Business strategy and the age of facilities property are the key drivers for the development of the capital expenditure budget.

### Changes from previous EPI

The method to develop forecasts in 2008-12 is principally the same as 2012 - 2017, the difference being that in 2008-12 the final components of the board approved southern accommodation strategy that were still being undertaken.

#### Models uses in the development of forecasts

There are no quantitative models used in developing the Property capital expenditure forecast.

#### Appropriateness of methodology

The current method is verified on an ongoing basis. Property capital expenditure budgets are implemented in accordance with the Board Approved Delegation Manual and expenditure monitored on an ongoing basis. Any significant variations to the forecast capital expenditure program will be identified and approved prior to being undertaken. Efficient costs for projects are achieved through the competitive tendering and contracting of property operating expenditure and capital expenditure programs.

Costs associated with the capital expenditure forecast for the non-network – property capex standard control capex category is based on those derived directly and indirectly from competitive tender process because Aurora does not work on its own non-network buildings.

The Aurora Property Register (as at 30 June 2010) is an excel spreadsheet which includes a strategic capital expenditure plan for each site and is used to plan the upkeep and improvements across external works, building fabric, building fit-out and building systems for the regulatory period to 2016-17.

## 4.5.15.8. Non-network – plant & equipment capex

Aurora has not forecast capital expenditure in the non-network – plant & equipment capex standard control capex category.

## 4.5.15.9. Regulatory obligations or requirements capex

#### Methodology

The methodology for forecasting regulatory obligations or requirements capex is contained within Aurora asset management plans.

### Changes from previous EPI

There have been no changes from the methodology used to develop this category of capital expenditure in Aurora's final capital expenditure proposal for the previous EPI.

### Data sources

Data sources used to develop the Forecast capital expenditure are:

- State wide HV Cables Pole Terminations Details;
- NPV Summary Sheet [HV Regs];
- Substandard Conductor Audit Spreadsheet;
- WASP;

- FRAMME/GTECH; and
- IRIS.

There have been no significant changes to the data sources used in the development of the forecast capital expenditure for the regulatory obligations or requirements capex standard control capex category.

### Models uses in the development of forecasts

No quantitative models were used in the development of the capital expenditure forecast for the Regulatory Obligations or Requirements category.

### Appropriateness of methodology

The methodology for developing the capital expenditure forecast for the Regulatory Obligations or Requirements category is the same as those used by Aurora for its internal ongoing day-by-day project and cost estimation, and has not changed between EPIs.

Aurora considers that the current methodology is appropriate because it has been in use for several *Regulatory Control Period*s and there is no evidence of increasing defect or failure rates.

No external or explicit verification processes have been used to ensure that the application of the methodology is appropriate.

The accuracy or inaccuracy of past forecasting exercises has not influenced the current methodology.

## 4.5.15.10. Reinforcements capex

### Methodology

The program development methodology is contained in Aurora's asset management plans.

Reinforcements capex standard control capex category forecast is developed using the following methodologies.

Capacity related risks are identified through the following reports, data analysis and planning schemes:

- Aurora 40 year Strategic Plan;
- Transend Annual Planning Report;
- Distribution Operations Biannual Report;
- Feeder Load Reporting System;
- Overloaded Conductor study;
- Statewide Upgrade Substations for Capacity Rolling Prioritised List;
- Council Planning Schemes;
- Tasmanian Irrigation Schemes; and
- Customer Connection Status Listing.

Identified capacity related risks are discussed in the following forums as appropriate:

- Aurora & Transend Joint Planning;
- Distribution Operations Biannual Report review; and
- Customer Service Team.

Discussed capacity related risks are populated in the following documents:

- Development Area Plans; and
- Statewide Upgrade Substations for Capacity Rolling Prioritised List.

Conceptual analysis of identified capacity related constraints is undertaken in conjunction with the following:

- Aurora & Transend Joint Planning Group;
- Capacity Management Plan; and
- Distribution Planning Manual.

Conceptual analysis of identified capacity related constraints is detailed in the following documents:

- Development Area Plans.

System Development thread work program is extracted from the following documentation:

- Development Area Plans; and
- Statewide Upgrade Substations for Capacity Rolling Prioritised List.

## How plans are taken into account

### Capacity Management Plan

The Capacity Management Plan includes a methodology for the management of capacity related risks. This methodology was used to assess asset security issues, at the relevant planning level (i.e. major system, high voltage system and low voltage system). Treatment of asset security issues requiring capital expenditure has been included in the reinforcements capex work program.

### Distribution Operations Biannual Report

The Distribution Operations: Biannual Report is produced following the winter and summer periods. The reports highlight operational constraints during either the winter of summer periods. Included are identified operational flexibility issues relating to Asset Security. Projects to mitigate constraints identified in this report are documented in the Development Area Plans and are included in the reinforcements capex work program.

### Development Area Plans

The Development Area Plans contain relevant distribution planning information for the appropriate supply areas. This includes:

- critical loads (hospitals, treatment plants, industrial customers) and embedded generation sites requiring a high level of asset security;
- system constraints on critical assets identified through load forecasting analysis, system analysis and those identified from the Distribution Operations Control Centre; and

- relevant council planning schemes and system constraints identified through load forecasting analysis, system analysis and those identified from the Distribution Operations Biannual Report.

In addition, the Development Area Plans detail the short, medium and long term strategic plans for the relevant planning area. Capacity related risk treatment, regarding asset security, included in the relevant asset management work programs has been determined in conjunction with the Development Area Plans to ensure opportunities to manage forecast capacity related issues are taken advantage of.

### Distribution Planning Manual

The Distribution Planning Manual details Aurora's capacity planning requirements, regarding *Asset Security,* at each planning level.

The manual provides guidance to network planners and designers on standard system configurations and arrangements used to control risk treatment options. Capacity related risk treatment, regarding asset security, included in the relevant asset management work programs has been determined in conjunction with the Distribution Planning Manual.

The Distribution planning manual is currently undergoing a revision. Revisions made to the document have not impacted on asset security related projects included in the reinforcements capex work program.

### Distribution System Planning Report

Aurora has a compliance obligation, as per clause 8.3.2 of the TEC, to produce an annual Distribution System Planning Report (DSPR).

The DSPR is compiled from the results of the Annual Planning Review conducted jointly by Aurora and Transend in April each year as part of the ongoing joint planning process. The Aurora - Transend joint planning process is well established, and includes regular liaison to ensure optimal solutions to network issues are considered, assessed and implemented. The DSPR also includes issues, constraints and planning associated with network connections with Hydro assets.

The information contained in the DSPR is collated from the Development Area Plans.

## Changes from previous EPI

The forecasting methodology has not changed significantly between the previous and current EPIs.

## Data sources

Data sources used to develop the Forecast capital expenditure are:

- Transmission historical substation peak demand data;
- Confirmed future customer point loads;
- Confirmed embedded generation;
- Confirmed load transfers;
- BOM temperature data for Tasmania.

### Models uses in the development of forecasts

One quantitative model was used in the development of the forecast capital expenditure program for the current and previous EPIs: DINIS.

DINIS is a system load flow tool that is used to undertake studies on power load transfers, voltage analysis and fault level analysis. It is primarily an engineering tool that enables system analysis using varied scenarios.

Its outputs are: load amps, MW, MVA & voltage.

The inputs used by DINIS are the:

- transformer installed capacity;
- conductor size;
- network configuration.

DINIS has not changed materially since the creation of the forecast for the previous EPI.

### Appropriateness of methodology

The methodology used to forecast capital expenditure for the Forthcoming *Regulatory Control Period* is the same as those used by Aurora of its internal day-by-day processes for the forecast.

Aurora considers that the current methodology is appropriate, being not significantly different from the previous method, which has met all of the requirements placed upon Aurora with regards to meeting capacity requirements in the distribution network.

Aurora has not engaged in any verification or validation process.

The accuracy or inaccuracy of past forecasting was not taken into account.

## 4.5.15.11. Reliability & quality improvements capex

Aurora has not forecast capital expenditure in the reliability & quality improvements capex standard control capex category.

## 4.5.15.12. Reliability & quality maintained capex

The program development methodology is contained in Aurora's asset management plans.

### Changes from previous EPI

There has been only one change to forecast methodology. The approach to the use of remote control switchgear has changed. During the previous EPI, remote control switchgear was aimed at reducing outage duration in line with Aurora's reliability priorities. Reflecting Aurora's new reliability priorities, remote control is used in the network to reduce operational expenditure by reducing the need to have crews on site to operate the network while work is in progress.

### Data sources

Data sources used to develop the Forecast capital expenditure are:

- Unit rates;

- Historical expenditure in this category;
- State wide HV Cables Pole Terminations Details;
- Oil Data Analysis;
- NPV Summary Sheet [HV Regs];
- Regulator Operational Issue – Feeder Parallel;
- REGMI – Replace GI – Failure Analysis;
- Structures: Annual Equivalent Calculation;
- Substandard Conductor Audit Spreadsheet;
- Condemned Poles Age Profile;
- Fire Analysis;
- Structures – Annual Equivalent Calculation;
- LV Service Audit Findings and Conclusions;
- Estimated SIMs Cost;
- Introduction to the New Active Recloser List;
- WASP;
- FRAMME/GTECH; and
- IRIS.

### Models uses in the development of forecasts

No quantitative models were used in the development of the capital expenditure forecast for reliability & quality maintained capex.

### Appropriateness of methodology

The methodology for developing the capital expenditure forecast for reliability & quality maintained capex is the same as those used by Aurora for its internal ongoing day-by-day Project and cost estimation.

Aurora considers that the current methodology is appropriate because it has been in use for several *Regulatory Control Period*s and there is no evidence of increasing defect or failure rates.

No external or explicit verification processes have been used to ensure that the application of the methodology is appropriate.

The accuracy or inaccuracy of past forecasting exercises has not influenced the current methodology.

## 4.5.15.13. SCADA & network control capex

### Methodology

All capital expenditure proposed for SCADA & Network Control capex is based on contractor and manufacturer estimates combined with actual costs extracted from Aurora's financial systems.

### Changes from previous EPI

The forecasting methodology has not changed significantly between the previous and current EPIs.

There was no significant capital expenditure in the SCADA & network control capex standard control capex category during the *Current Regulatory Control Period*.

#### Models uses in the development of forecasts

No quantitative modelling was used in developing the SCADA & network control capex standard control capex category forecast for either the *Current Regulatory Control Period* or the *Forthcoming Regulatory Control Period*.

#### Appropriateness of methodology

The methodology used in developing the SCADA & network control capex standard control capex category forecast is the same as used internally ongoing day by day.

## 4.5.16. Policies, Strategies and Procedures identified at 4.3(b)(i)

### 4.5.16.1. Taken account and compliance

This section of Aurora's RIN Response discusses how Aurora has taken account of the policies, strategies and procedures identified in response to RIN paragraph 4.3(b)(i) and complied with those identified.

The Management Plan 2011 – Customer Initiated Capital Works (AE032) provides guidance around the approach to meeting customer connection requirements.

The Distribution System Planning Manual provides guidance with planning parameters for major, high and low voltage systems; background information for decision making in the execution of the infrastructure layouts and augmentations associated with customer extensions.

Work programs that feed into the capital expenditure forecasts in the standard control capex categories are developed using the documents listed at section 4.4.1.1 of this RIN Response.

AuroraSafe is Aurora's Safety Management System that provides the standards for safe work, to ensure it satisfies its moral and legal obligations to its employees, contractors and the community.

AuroraHealth provides activities and guidance to support injury or illness, and to promote the health and general well-being of Aurora employees and their families.

AuroraGreen provides the procedural documentation for use to ensure Aurora meets its legal obligation for the protection of the environment.

All procurement is conducted in accordance with Aurora's Procurement Policy, Procurement Framework, Sustainable Vehicle Procurement Policy and relevant guidelines.

The Aurora Compliance Policy states that, "… [I]n the conduct of its business Aurora will comply fully with all legal obligations both under statute and common law …". This policy statement is the basis for Aurora's work.

Ongoing management of the Aurora vehicle fleet is guided by the Strategic Fleet Asset Management Plan, the Fleet Disposal Obligation and the Fleet Improvement Program Management Plan.

The Property and Accommodation Strategy and Facilities Management Plan 2010 provides guidance for current and future accommodation specifications, to achieve and maintain a compliant, safe and healthy work environment.

Risk management principles are applied throughout the business and are an integral part of the process of developing strategies and plans which are funded and supported through the development of financial forecasts included into the planning and budgeting process. The Risk Management Framework outlines key supporting risk management documents such as risk management policy and processes. They are applied by the business in the same manner as the risk management framework.

The Aurora Distribution Network ISG Strategy is the blueprint for the IT infrastructure and systems that will support the Distribution Business for the next 10 years. The capital expenditure forecast was developed using this document.

Aurora had developed a comprehensive schedule of projects based on business requirements derived from the Aurora IT Strategy 2009 – 2012 and the Marchment Hill IT Strategy Review. Built from the "bottom up", this "organic" program of work comprising 130 projects was analysed and reviewed paying specific attention to the impact on enterprise architecture.

Enterprise Architects Pty Ltd (Enterprise Architects) was engaged by Aurora to perform the architectural analysis and to develop its enterprise architecture based IT strategy for Aurora's Distribution Network. This was achieved by going through an iteration of the Open Group Architecture Framework (TOGAF) Architecture Development Method (ADM) to create current state/transition states/target state road maps of the proposed projects revealing their impact on business capability and application architecture.

Whilst the bottom up method addressed the issues raised in the Marchment Hill Review, there was no overarching architectural strategic design underpinning the program. From an architectural perspective, the investment should be built on an IT strategy that is aligned to business strategy. This required an alternative hypothesis to be developed using a "top down" approach with the specific aims of reducing complexity and improving capabilities critical to strategic business execution.

### 4.5.16.2. Changes

The Management Plan 2011 – Customer Initiated Capital Works was redrafted during the *Current Regulatory Control Period* to reflect Aurora's revised management strategies, improving customer connection modelling, and altered approach to customer contributions.

The following planning documents were created following the receipt of the Aurecon reports (listed below) to replace the existing regional planning documentation:

- Central Development Plan;
- East Coast Development Plan;
- Hobart West Development Plan;
- Hobart East Development Plan;
- North Coast Development Plan;
- North East Development Plan;
- North West Development Plan;
- Sorell-Peninsula Development Plan;
- South Development Plan;
- Tamar Development Plan; and
- West Coast Development Plan.

The changes were to rationalise the number of planning areas, and were also designed to take into account a more rigorous approach to capital expenditure deferral and demand management.

The Network Management Strategy was revised during 2010 to reflect the new Network Strategy. This change in strategy has also been reflected in the revisions to Aurora's asset management plans.

A significant number of the fleet documents have been developed since 2008 and reflect current practices and processes.

The Procurement Policy and Framework have been revised during the *Current Regulatory Control Period* to tighten up accountabilities for expenditure.

The Compliance documentation has been revised during the *Current Regulatory Control Period* to provide more information around compliance handling activities.

The Risk Management Framework was reviewed during the *Current Regulatory Control Period* to reflect the Board's heightened awareness of Risk. The revisions created no increase in the forecast capital expenditure or operating expenditure, but were intended to provide a firmer basis upon which to make decisions.

The Procurement Policy has been revised during the *Current Regulatory Control Period* to tighten up accountabilities for expenditure.

### 4.5.17. STPIS Targets

Aurora has derived its proposed STPIS reliability targets for SAIDI and SAIFI from those prescribed within the TEC on the assumption that all Aurora's reliability improvement projects will be completed within the *Current Regulatory Control Period* and future expenditure will be required for compliance activities only, with no specific capital investment aimed at substantive improvements in reliability in the *Forthcoming Regulatory Control Period*.

STPIS targets are also discussed in sections 11.4.3 and 25.3.9 of Aurora's Regulatory Proposal.

## 4.5.18. Cost Allocations

Capital expenditure forecasts have been developed from a project or program level by asset managers, with each asset manager responsible for a group of like assets or programs. A unique suite of work category codes has been allocated to each asset manager, these work category codes have been utilised in the classification of the capital expenditure forecasts.

The following table shows the mapping of Aurora's work categories to RIN categories:

The following table shows the mapping of Aurora's work categories to RIN categories.

| Capex / Opex | Service Classification | RIN Category | RIN Subcategory | RIN Sub-subcategory | Work Category |
|---|---|---|---|---|---|
| CAPEX | Standard Control | Non-system Capex | Non-network | IT & Communications | IT Software - General |
| | | | | Non-system Capex Other | NS Minor Assets |
| | | | SCADA & Network Control | SCADA & Network Control | Install HV Fdr Control, DA & Comms - Underground |
| | | | | | Install HV Fdr Control, DA & Comms - Underground Automation |
| | | | | | Install HV Fdr Control, DA & Comms Cooper Regulators |
| | | | | | IT Software - SCADA |
| | | System Capex | Demand Related | Customer Initiated | CT AND VT - New |
| | | | | | Install Service Connections (New Installations) |
| | | | | | Meter Panels |
| | | | | | New supply to Private Contract Lighting |
| | | | | | Preliminary drive by design (Retail) |
| | | | | | Supply Build /Alter Dist Subs |

| Capex / Opex | Service Classification | RIN Category | RIN Subcategory | RIN Sub-subcategory | Work Category |
|---|---|---|---|---|---|
| | | | | | Supply HV General Supply Inst OH |
| | | | | | Supply HV General Supply Inst UG |
| | | | | | Supply HV Ground Major Project |
| | | | | | Supply HV Irrigation OH |
| | | | | | Supply HV Low Consumption and IORs OH |
| | | | | | Supply HV Perm Occupied Residence OH |
| | | | | | Supply LV Ext and Crossover Poles etc OH |
| | | | | | Supply Perm Occupied Residence UG |
| | | | | | Supply service cables UG |
| | | | | | Supply Subdivision 5 Lot Min OH |
| | | | | | Supply Subdivision n Lots UG |
| | | | | | System Studies |
| | | | | Reinforcements | Embedded Generation Connections |

| Capex / Opex | Service Classification | RIN Category | RIN Subcategory | RIN Sub-subcategory | Work Category |
|---|---|---|---|---|---|
| | | | | | HV Feeder Upgrade - Capacity |
| | | | | | LV Feeders Upgrade - Capacity |
| | | | | | SWER line replacement |
| | | | | | Terminal Station Fdr Connections |
| | | | | | Transformer Upgrades - Capacity |
| | | | | | Zone Substation Upgrades - Capacity |
| | | | | | Zone Substation Upgrades - Capacity HV Feeders |
| | | | Non-demand Related | Reliability & Quality Maintenance | Change over/upgrade service on Telstra Poles |
| | | | | | CT AND VT - Replacement |
| | | | | | Fire mitigation projects - Conductor |
| | | | | | Fire mitigation projects - Switchgear |
| | | | | | Install bird diverters & pole tops reconfigs |
| | | | | | Install Group fusing |

| Capex / Opex | Service Classification | RIN Category | RIN Subcategory | RIN Sub-subcategory | Work Category |
|---|---|---|---|---|---|
| | | | | | Install HV Fdr Control, DA & Comms OH Fault Indicators |
| | | | | | Install HV Fdr Control, DA & Comms OH Feeder Load Transfer |
| | | | | | Install HV Fdr Control, DA & Comms Underground Fault |
| | | | | | Install HV Switchgear OH |
| | | | | | Install lightning arrestors |
| | | | | | Install Power Quality metering |
| | | | | | Install Reclosers |
| | | | | | Install Regulators |
| | | | | | Install Sectionalisers |
| | | | | | Meter Panels |
| | | | | | Pole Replacements |
| | | | | | Pole Staking |
| | | | | | Preliminary design work |
| | | | | | Preliminary Design Work - Substations |
| | | | | | Rectification work minor (eg upgrade fuses) |

| Capex / Opex | Service Classification | RIN Category | RIN Subcategory | RIN Sub-subcategory | Work Category |
|---|---|---|---|---|---|
| | | | | | Rectification work multi visit transformers |
| | | | | | Relocate/Alter HV Fdrs OH |
| | | | | | Replace cables UG - HV |
| | | | | | Replace cables UG - LV |
| | | | | | Replace Ground Mounted Transformer |
| | | | | | Replace Ground Mtd Auxiliary Equip |
| | | | | | Replace Ground Mtd HV Switchgear |
| | | | | | Replace Ground Mtd Sub |
| | | | | | Replace HV copper conductor |
| | | | | | Replace HV GI conductor |
| | | | | | Replace HV insulators |
| | | | | | Replace LV cables UG CONSAC |
| | | | | | Replace LV Feeders (Substandard) |
| | | | | | Replace OH Switchgear |
| | | | | | Replace Reclosers |

| Capex / Opex | Service Classification | RIN Category | RIN Subcategory | RIN Sub-subcategory | Work Category |
|---|---|---|---|---|---|
| | | | | | Replace Regulator Ground Mtd Single Phase |
| | | | | | Replace Regulator Ground Mtd Three Phase |
| | | | | | Replace Rural Zones |
| | | | | | Replace Rural Zones Other |
| | | | | | Replace Rural Zones Transformers |
| | | | | | Replace services OH & service fuses |
| | | | | | Replace Transformer Earthing |
| | | | | | Replace Transformer 'H'-pole structures |
| | | | | | Replace Transformers |
| | | | | | Replace UG furniture |
| | | | | | Replace Urban/CBD Zones Other |
| | | | | | Replace Urban/CBD Zones Switchgear |
| | | | | | Replace Urban/CBD Zones Transformers |
| | | | | | Replace/relocate HV OH (Low Clearance) |

| Capex / Opex | Service Classification | RIN Category | RIN Subcategory | RIN Sub-subcategory | Work Category |
|---|---|---|---|---|---|
| | | | | | Replace/relocate HV OH (Vegetation) |
| | | | | | Replace/relocate LV OH (Low Clearance) |
| | | | | | Undergrounding in Special Areas Projects |
| | | | | | Upgrade access tracks |
| | | | | | Upgrade HV Fdrs (Reliability) |
| | | | | | Upgrade HV Fdrs (Voltage Regulation) |
| | | | | | Upgrade HV Fdrs (Voltage Regulation) Surveys and Studies |
| | | | | | Upgrade LV Fdrs (Voltage Regulation) |
| | | | | | Upgrade Transformer (Voltage Regulation) |
| | | | Regulatory Obligations or Requirements | Regulatory Obligations or Requirements | Address Safety and Env Issues in GMS |
| | | | | | Install anticlimbing barriers/signage program |
| | | | | | Install insulator covers |

| Capex / Opex | Service Classification | RIN Category | RIN Subcategory | RIN Sub-subcategory | Work Category |
|---|---|---|---|---|---|
| | | | | | Replace Ground Mtd LV Switchgear |
| | | | | | Replace Ground Mtd Sub |
| | | | | | Replace HV Feeders (Safety) |
| | | | | | Replace HV Live Line Clamps (Safety) |
| | | | | | Replace LV Feeders (Safety) |
| | | | | | Replace LV Feeders (Substandard) |
| | | | | | Replace OH Switchgear (Safety) |
| | | | | | Replace Terminations - 11kV cast iron potheads |
| | | | | | Replace Terminations - 22kV cast iron potheads |
| | | | | | Replace Terminations - LV cast iron potheads |
| | | | | | Replace Transformers |
| | | | | | Replace Urban/CBD Zones Other |
| | | | | | Replace/relocate LV OH (Building Clearances) |

| Capex / Opex | Service Classification | RIN Category | RIN Subcategory | RIN Sub-subcategory | Work Category |
|---|---|---|---|---|---|
| | | | | | Replace/relocate LV OH (Building Clearances) with UG |
| | | | | | Safety and Environmental Issues in Regulators |
| | | | | | Upgrade Ground Mtd Earthing |
| | | | | | Wildlife Endangered Species Protection |
| OPEX | Standard Control | Demand Management | Demand Management | Demand Management | Capex Deferrals |
| | | | | | Customer Programs |
| | | | | | Demand Management Incentive Allowance |
| | | | | | Network Programs |
| | | Maintenance | Non-routine Maintenance | Non-routine Maintenance Network Asset Maintenance | Asset Repair - Fire Mit |
| | | | | | Decomission Metering Assets |
| | | | | | Decommission Assets |
| | | | | | Ground Mounted Substations Asset Repair |

| Capex / Opex | Service Classification | RIN Category | RIN Subcategory | RIN Sub-subcategory | Work Category |
|---|---|---|---|---|---|
| | | | | | Ground Mounted Substations Asset Repair Other |
| | | | | | OH Structures maintenance |
| | | | | | OH Structures maintenance Pole Straightening |
| | | | | | OH Switchgear asset repair |
| | | | | | OH System asset repair |
| | | | | | OH System Low Conductor Clearance |
| | | | | | PQ monitoring & investigations |
| | | | | | Regulators Asset Repair |
| | | | | | TRIP Maintenance Costs |
| | | | | | UG System Asset Repair |
| | | | | | UG System asset repair - Oil-filled Cables |
| | | | | | Zone Substation Asset Repair |
| | | | | Non-routine Maintenance Non-Network Asset Maintenance | Access track clearing |
| | | | | | Electrical Inspections |

| Capex / Opex | Service Classification | RIN Category | RIN Subcategory | RIN Sub-subcategory | Work Category |
|---|---|---|---|---|---|
| | | | | | Emergency & Unscheduled Power System Response & Repair |
| | | | | | Meter Ancillary Equipment Repair |
| | | | Routine Maintenance | Routine Maintenance Network Asset Maintenance | Asset Inspections Associated with Intelligent Networks UG |
| | | | | | Asset Inspections Associated with Intelligent Networks ZS |
| | | | | | Fire Mitigation inspection & auditing |
| | | | | | Ground Mounted Substation Inspection and Load Monitoring |
| | | | | | Ground Mounted Substation Routine Maintenance |
| | | | | | Insulator washing & pollution mitigation |
| | | | | | OH Fdr ground auditing & inspection |
| | | | | | OH Fdr high vehicle load auditing & inspection |

| Capex / Opex | Service Classification | RIN Category | RIN Subcategory | RIN Sub-subcategory | Work Category |
|---|---|---|---|---|---|
| | | | | | OH Structures inspection and monitoring |
| | | | | | OH System Thermal Inspection |
| | | | | | OH Transformers inspection & monitoring |
| | | | | | OH Transformers load & voltage monitoring |
| | | | | | Oil Management |
| | | | | | Oil-filled cable inspection & monitoring |
| | | | | | Regulators (Ground Mtd) Inspection and Monitoring |
| | | | | | Regulators (Ground Mtd) Routine Maintenance |
| | | | | | Regulators (OH) Routine Maintenance |
| | | | | | Submarine cables inspection & monitoring |
| | | | | | TRIP Maintenance Costs |
| | | | | | UG cable inspection & monitoring |
| | | | | | Underground System Condition Monitoring |

| Capex / Opex | Service Classification | RIN Category | RIN Subcategory | RIN Sub-subcategory | Work Category |
|---|---|---|---|---|---|
| | | | | | Zone Substation Inspection and Monitoring |
| | | | | | Zone Substation Routine Maintenance |
| | | | | Routine Maintenance Non-Network Asset Maintenance | Meter Ancillary Equipment Inspection |
| | | | | | OH Conductor condition inspection |
| | | | | | Vegetation Management |
| | | Operating Costs | Non-network Divisional Management | System Operations | System Reconfigurations |
| | | | | | System Status Checks |
| | | | Operating Costs Other | Operating Costs Other | Operating Modem Costs for Power Quality Meters |
| | | | | | Operating Modem Costs for Reclosers |
| | | | | | Software & Hardware Consumables |
| | | | | | Software & Hardware Service Provider Charges |
| | | | | | Systems Spares Management |

## 4.5.19. Justification of modelling assumptions

Aurora uses a number of integrated models to develop its program of work. These models are appended as an attachment to Aurora's Regulatory Proposal, AE083 – Aurora's Proposed Program of Work and provide further details in response to RIN paragraph 4.3(c)(xi).

### 4.5.19.1. Capitalised overheads

No quantitative models are used in developing the capital expenditure forecast for this standard control capex category.

### 4.5.19.2. Customer initiated capex

Modelling assumptions and justifications are contained within the Management Plan 2011 – Customer Initiated Capital Works.

### 4.5.19.3. Non-network – IT & communications capex

No quantitative models are used in developing the capital expenditure forecast for this standard control capex category.

### 4.5.19.4. Non-network – motor vehicles capex

No quantitative models are used in developing the capital expenditure forecast for this standard control capex category.

### 4.5.19.5. Non-network – other capex

No quantitative models are used in developing the capital expenditure forecast for this standard control capex category.

### 4.5.19.6. Non-network – plant & equipment capex

Aurora has not forecast capital expenditure in the non-network – plant & equipment capex standard control capex category.

### 4.5.19.7. Non-network – property capex

No quantitative models are used in developing the capital expenditure forecast for this standard control capex category.

### 4.5.19.8. Regulatory obligations or requirements capex

No quantitative models are used in developing the capital expenditure forecast for this standard control capex category.

### 4.5.19.9. Reinforcements capex

There are no underlying assumptions in DINIS that Aurora is aware of.

### 4.5.19.10. Reliability & quality improvements capex

Aurora has not forecast capital expenditure in the reliability & quality improvements capex standard control capex category.

### 4.5.19.11. Reliability & quality maintained capex

No quantitative models are used in developing the capital expenditure forecast for this standard control capex category.

### 4.5.19.12. SCADA & network control capex

No quantitative models are used in developing the capital expenditure forecast for this standard control capex category.

## 4.5.20. Differences between forecast, actual and estimated capex

In this section of the RIN Response Aurora discusses the differences in the forecast capital expenditure proposal from Actual Capex and Estimated Capex.

Note that OTTER assumed that capital expenditure for the period 1/1/2008 – 30/6/2008 was half the allowed annual capital expenditure for the financial year.

### 4.5.20.1. Capitalised overheads

Actual and Estimated Capex for the *Current Regulatory Control Period* and Forecast Capex for the *Forthcoming Regulatory Control Period* for the capitalised overheads standard control capex category are given in the table below.

Aurora considers that there are no material differences between the forecast capital expenditure proposal for the *Forthcoming Regulatory Control Period* and the Actual and Estimated Capex for the *Current Regulatory Control Period*.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Actual and estimated | ½ of 13,603 | 17,634 | 17,658 | 20,534 | 20,807 |
| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
| Forecast | 20,506 | 20,606 | 19,850 | 19,383 | 19,565 |

### 4.5.20.2. Customer initiated capex

Actual and Estimated Capex for the *Current Regulatory Control Period* and Forecast Capex for the *Forthcoming Regulatory Control Period* for the customer initiated capex standard control capex category are given in the table below.

Aurora considers that there are no material differences between the forecast capital expenditure proposal for the *Forthcoming Regulatory Control Period* and the Actual and Estimated Capex for the *Current Regulatory Control Period*.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Actual and estimated | ½ of 39,391 | 40,009 | 39,993 | 39,793 | 40,767 |
| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
| Forecast | 37,055 | 36,852 | 36,847 | 36,241 | 36,323 |

### 4.5.20.3. Demand related capex

Actual and Estimated Capex for the *Current Regulatory Control Period* and Forecast Capex for the *Forthcoming Regulatory Control Period* for the demand related capex standard control capex category are given in the table below.

As the demand related capex standard control capex category is an aggregate of the other standard control capex categories differences between the forecast capital expenditure proposal for the *Forthcoming Regulatory Control Period* and the Actual and Estimated Capex for the *Current Regulatory Control Period* are discussed in those standard control capex categories.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Actual and estimated | ½ of 54,770 | 53,515 | 61,637 | 60,273 | 63,763 |
| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
| Forecast | 54,855 | 53,842 | 52,467 | 54,063 | 53,542 |

### 4.5.20.4. Non-demand related capex

Actual and Estimated Capex for the *Current Regulatory Control Period* and Forecast Capex for the *Forthcoming Regulatory Control Period* for the non-demand related capex standard control capex category are given in the table below.

As the non-demand related capex standard control capex category is an aggregate of the other standard control capex categories differences between the forecast capital expenditure proposal for the *Forthcoming Regulatory Control Period* and the Actual and Estimated Capex for the *Current Regulatory Control Period* are discussed in those standard control capex categories.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Actual and estimated | ½ of 22,070 | 39,748 | 45,954 | 42,528 | 33,795 |
| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
| Forecast | 42,651 | 43,575 | 43,568 | 40,944 | 42,962 |

### 4.5.20.5. Non-network – IT & communications capex

Actual and Estimated Capex for the *Current Regulatory Control Period* and Forecast Capex for the *Forthcoming Regulatory Control Period* for the non-network IT & communications capex standard control capex category are given in the table below.

Aurora considers that the material difference is due to the changed approach of Aurora towards IT infrastructure.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Actual and estimated | ½ of 12,652 | 11,740 | 11,243 | 21,920 | 9,806 |
| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
| Forecast | 9,818 | 7,349 | 7,148 | 10,994 | 10,995 |

### 4.5.20.6. Non-network – motor vehicles capex

Actual and Estimated Capex for the *Current Regulatory Control Period* and Forecast Capex for the *Forthcoming Regulatory Control Period* for the motor vehicles capex standard control capex category are given in the table below.

Aurora considers that there are no material differences between the forecast capital expenditure proposal for the *Forthcoming Regulatory Control Period* and the Actual and Estimated Capex for the *Current Regulatory Control Period*.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Actual and estimated | ½ of 5,165 | 5,744 | 6,635 | 4,566 | 7,053 |
| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
| Forecast | 7,021 | 6,488 | 5,052 | 3,371 | 3,383 |

### 4.5.20.7. Non-network – other capex

Actual and Estimated Capex for the *Current Regulatory Control Period* and Forecast Capex for the *Forthcoming Regulatory Control Period* for the non-network – other capex standard control capex category are given in the table below.

Aurora considers that there are no material differences between the forecast capital expenditure proposal for the *Forthcoming Regulatory Control Period* and the Actual and Estimated Capex for the *Current Regulatory Control Period*.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Actual and estimated | ½ of 814 | 2,053 | 2,201 | 633 | 608 |
| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
| Forecast | 546 | 546 | 546 | 546 | 546 |

### 4.5.20.8. Non-network – plant & equipment

Aurora has not forecast capital expenditure in the non-network – plant & equipment capex standard control capex category.

Actual and Estimated Capex for the *Current Regulatory Control Period* and Forecast Capex for the *Forthcoming Regulatory Control Period* for the plant & equipment capex standard control capex category are given in the table below.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Actual and estimated | - | - | - | - | - |
| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
| Forecast | - | - | - | - | - |

### 4.5.20.9. Non-network – property capex

Actual and Estimated Capex for the *Current Regulatory Control Period* and Forecast Capex for the *Forthcoming Regulatory Control Period* for the property capex standard control capex category are given in the table below.

Aurora considers that the material difference between the forecast capital expenditure proposal for the *Forthcoming Regulatory Control Period* and the Actual and Estimated Capex for the *Current Regulatory Control Period* is due to the refurbishment of Kirksway place, the construction of a data centre and redevelopment of the training centre.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Actual and estimated | ½ of -916 | ,500 | 382 | 9,296 | 1,400 |
| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
| Forecast | 352 | 330 | 287 | 253 | 232 |

### 4.5.20.10. Non-system capex

As the non-system capex standard control capex category is an aggregate of the other standard control capex categories differences between the forecast capital expenditure proposal for the *Forthcoming Regulatory Control Period* and the Actual and Estimated Capex for the *Current Regulatory Control Period* are discussed in those standard control capex categories.

## 4.5.20.11. Regulatory obligations or requirements capex

Actual and Estimated Capex for the Current *Regulatory Control Period* and Forecast Capex for the Forthcoming *Regulatory Control Period* for the regulatory obligations or requirements capex standard control capex category are given in the table below.

Aurora considers that there are no material differences between the forecast capital expenditure proposal for the Forthcoming *Regulatory Control Period* and the Actual and Estimated Capex for the Current *Regulatory Control Period*.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Actual and estimated | ½ of 1,688 | 9,924 | 3,988 | 5,142 | 1,980 |
| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
| Forecast | 5,515 | 5,484 | 5,230 | 5,152 | 5,043 |

## 4.5.20.12. Reinforcements capex

Actual and Estimated Capex for the Current *Regulatory Control Period* and Forecast Capex for the Forthcoming *Regulatory Control Period* for the reinforcements capex standard control capex category are given in the table below.

Aurora considers that there are no material differences between the forecast capital expenditure proposal for the Forthcoming *Regulatory Control Period* and the Actual and Estimated Capex for the Current *Regulatory Control Period*.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Actual and estimated | ½ of 15,378 | 13,505 | 21,643 | 20,480 | 22,996 |
| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
| Forecast | 17,800 | 16,990 | 15,979 | 17,822 | 17,219 |

## 4.5.20.13. Reliability & quality improvements capex

Actual and Estimated Capex for the Current *Regulatory Control Period* and Forecast Capex for the Forthcoming *Regulatory Control Period* for the reliability and quality improvements capex standard control capex category are given in the table below.

Aurora has not forecast capital expenditure in the reliability & quality improvements capex standard control capex category.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Actual and estimated | ½ of 8,078 | 11,437 | 13,947 | 11,601 | 6,402 |
| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
| Forecast | - | - | - | - | - |

## 4.5.20.14. Reliability & quality maintained capex

Actual and Estimated Capex for the Current *Regulatory Control Period* and Forecast Capex for the Forthcoming *Regulatory Control Period* for the reliability & quality maintenance capex standard control capex category are given in the table below.

Aurora considers that there is a material difference between the forecast capital expenditure proposal for the Forthcoming *Regulatory Control Period* and the Actual and Estimated Capex for the Current *Regulatory Control Period*. This is due to cessation of activities associated with reliability and quality improvements capex.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Actual and estimated | ½ of 12,304 | 18,387 | 28,020 | 25,785 | 25,413 |
| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
| Forecast | 37,136 | 38,091 | 38,338 | 35,792 | 37,919 |

## 4.5.20.15. SCADA & network control capex

Actual and Estimated Capex for the *Current Regulatory Control Period* and Forecast Capex for the *Forthcoming Regulatory Control Period* for the reliability and quality improvements capex standard control capex category are given in the table below.

Aurora did not categorise SCADA & Network Control as a category of work during the *Current Regulatory Control Period*, rather this expenditure was under the Asset Management Capability Category. Over the current period no significant capital investment was made in regards to SCADA and Network Control.

Aurora is proposing a significant investment in SCADA and Network Control in the forthcoming *Regulatory Control Period*.

System Operations is intended to address the requirements for a Distribution Management System (DMS) and a SCADA system.

The components that the initiative will look to introduce to support the above-mentioned capabilities are, but not limited to:

- DMS capabilities providing support for network diagram management, control room work flow management, switching and safety logic management, system configuration management and replication capability to provide 24x7 system availability;
- SCADA capabilities providing support for initiating remote control and receiving asynchronous changes of state, analogue management, alarm management, advanced intelligent automated schemes, and online configuration testing and commissioning of incremental additions to the SCADA system; and
- Distribution power analysis capabilities providing support for load flow and short circuit calculations, multiple modes for analysis e.g. live and study modes, load profiling and load allocation, and graphical and text reporting.

Integration with the existing Outage Management System (OMS), InService, will be required. An investment in InService in 2010 will see the existing OMS capability supported through the *Forthcoming Regulatory Control Period* however a consolidation exercise is envisaged for the 2018-2023 *Regulatory Control Period* to consolidate all works scheduling capability into the enterprise works scheduling solution introduced as part of initiative DSN.04 – Works Management.

The initiative is also intended on delivering a set of analytics and reports that provide the ability to report in outages, restoration times, feeder performance, and the measures required for regulatory reporting. This analysis should also support the operational related 'historian' requirements of Aurora.

The initiative is currently scheduled to commence the start of 2015 with a target completion date mid 2016.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Actual and estimated | ½ of 1,499 | 213 | 71 | 155 | 284 |
| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
| Forecast | 1,157 | 5,762 | 5,766 | 716 | 708 |

## 4.5.20.16. System capex

Actual and Estimated Capex for the *Current Regulatory Control Period* and Forecast Capex for the *Forthcoming Regulatory Control Period* for the system capex standard control capex category are given in the table below.

As the system capex standard control capex category is an aggregate of the other standard control capex categories differences between the forecast capital expenditure proposal for the *Forthcoming Regulatory Control Period* and the Actual and Estimated Capex for the *Current Regulatory Control Period* are discussed in those standard control capex categories.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Actual and estimated | ½ of 76,840 | 93,263 | 107,591 | 102,801 | 97,558 |
| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
| Forecast | 97,506 | 97,417 | 96,034 | 95,007 | 96,503 |

# 5. Deliverability

## 5.1. RIN requirements

RIN paragraph 4.4 requires that for the forecast capex proposal that Aurora:

(a) provide all Documents which were taken into account and relate to its Deliverability; and

(b) explain the proposed deliverability, including how Aurora takes into account – or if it does not, why not – th costs of ensuring deliverability of a project or program:

(i) in selecting the projects or programs that make up the forecast capex proposal;

(ii) in the options analysis associated with the project or program.

Aurora is confident that it will have an efficient level of competent and skilled resources that are commensurate with the work programs it intends to deliver. This is described in detail in both chapter 15 of Aurora's Regulatory Proposal and the accompanying attachment: Deliverability Plan Network Services (AE042).

# 6. Changes to regulatory obligations or requirements capex

## 6.1. RIN requirements

RIN paragraph 4.5 requires that for the Regulatory Obligation or Requirement Capex Standard Control Capex Category that Aurora:

(a) identify any substantive changes to any Regulatory Obligation or Requirements (including the introduction or abolition of Regulatory Obligations or Requirements) anticipated to occur during regulatory years 2010-11 and 2011-12 of the Current *Regulatory Control Period* or during the Forthcoming *Regulatory Control Period*;

(b) in relation to each substantively changed Regulatory Obligation or Requirement identified in the response to paragraph 4.5(a):

(i) provide a copy of the relevant Regulatory Obligation or Requirement;

(ii) identify:

(1) the differences between current and projected levels (at the commencement of the Forthcoming *Regulatory Control Period*) of compliance and those imposed by the new or substantively changed Regulatory Obligation or Requirement;

(2) any electrical safety management schemes that Aurora proposes to implement during the Forthcoming *Regulatory Control Period* or the remainder of the Current *Regulatory Control Period*;

(3) any compliance audits conducted by Workplace Safe Tasmania or any other authorised regulatory agent during the Previous *Regulatory Control Period* or the Current *Regulatory Control Period*;

(iii) explain;

(1) all differences identified in the response to paragraph 4.5(b)(ii)(1);

(2) the Regulatory Obligation or Requirement and explain how it differs from existing Regulatory Obligations or Requirements;

(3) any costs, or changes to level or scope of costs, incurred in meeting the substantively changed Regulatory Obligation or Requirement that have been reported by Aurora under any Standard Control Capex Category that is not the Regulatory Obligation Or Requirement Capex Category;

(4) in relation to activities that will be required to comply with the new or substantively changed Regulatory Obligation or Requirement but would wholly have not be undertaken if the changes to the Regulatory Obligations or Requirements had not occurred; the scope, timing and cost of activities, including where relevant:

(A) any alternative options considered to address the identified Regulatory Obligation or Requirement including the scope of activities and timing of options considered;

(B) the costs and benefits of each option considered including that of the option chosen;

(C) why the preferred option was chosen over each alternative option identified or if no alternative options were identified, why;

(D) whether a 'do nothing' option was considered, including short-term 'do-nothing' options or options with various stages that involve a 'do-nothing' stage; how the risks of this option were assessed and compared with the other options; whether risk mitigation measures were considered, and how the time period over which such an option could be used was assessed;

(E) all contingency factors included in the costs of the options considered including in that of the option chosen;

(F) the estimated expenditure for each regulatory year in the Forthcoming *Regulatory Control Period* and regulatory years 2010-11 and 2011-12 of the Current *Regulatory Control Period*, distinguishing between capex and opex;

(G) whether any consideration was given to substituting capex for opex or vice-versa; and

(H) the forecast impact on duration of customer interruptions and frequency of customer interruptions for each individual supply reliability area, for each individual supply reliability category and for the entirety of Aurora's distribution network; and how the impact has been calculated;

(5) in relation to each substantively changed Regulatory Obligation or Requirement identified in the response to paragraph 4.5(a) … explain … in relation to activities that will be required to comply with the new or substantively changed Regulatory Obligation or Requirement excluding those activities captured by paragraph 4.5(b)(iii)(4); the scope, timing and cost of activities, including where relevant:

(A) any alternative options considered to address the identified Regulatory Obligation or Requirement including the scope of activities and timing of options considered;

(B) the costs and benefits of each option considered including that of the option chosen;

(C) why the preferred option was chosen over each alternative option identified or if no alternative options were identified, why;

(D) whether a 'do nothing' option was considered, including short-term 'do-nothing' options or options with various stages that involve a 'do-nothing' stage; how the risks of this option were assessed and compared with the other options; whether risk mitigation measures were considered, and how the time period over which such an option could be used was assessed;

(E) all contingency factors included in the costs of the options considered including in that of the option chosen;

(F) the estimated expenditure for each regulatory year in the Forthcoming *Regulatory Control Period* and regulatory years 2010-11 and 201-12 of the Current *Regulatory Control Period*, distinguishing between capex and opex;

(G) any difference in the estimated expenditure in paragraph 4.5(b)(iii)(5)(F) and the estimate of expenditure that would be required in relation to each activity if there had been no new or substantively changed Regulatory Obligation or Requirement; and

(H) whether any consideration was given to substituting capex for opex or vice-versa;

(I) the forecast impact on duration of customer interruptions and frequency of customer interruptions for each individual supply reliability area, for each individual supply reliability category and for the entirety of Aurora's distribution network; and how the impact has been calculated;

(c) in relation to each electrical safety management schemes identified in the response to paragraph 4.5(b)(ii)(2):

(i) identify the Regulatory Obligation or Requirement to which a variation or exemption may be granted in recognition of the proposed electrical safety management scheme;

(ii) provide a copy of the proposed Electricity Safety Management Scheme or electricity safety management plans ;

(iii) explain:

(1) the nature and scope of the electrical safety management scheme;

(2) the period of time to which the scheme or plan and associated variation or exemption applies;

(d) in relation to each compliance audit identified in the response to paragraph 4.5(b)(ii)(3), identify and explain:

(i) any areas of non-compliance;

(ii) the scope, timing and costs of activities undertaken to date to become compliant including whether these activities were one-off o ongoing; and

(iii) any outstanding areas of non-compliance and the scope, timing and cost of activities planned to become compliant including whether these activities will be one-off or ongoing.

### 6.1.1. Substantive changes

Aurora considers there to be one substantive change in Regulatory Obligations or Requirements. This relates to the Tasmanian Government's decision to open a further tranche of contestability to Tasmanian electricity consumers consuming greater that 50 MWh per year.

A copy of the Contestable Customer Regulations is attached to this RIN Response as NW-#30187336-v1-Contestable_Customer_Regs.

### 6.1.2. Differences between current and projected levels

The introduction of Tranche 5a will require Aurora to:

- prepare default contract for customers and distribution;
- prepare default contract for retailers and distribution;
- provide notification to customers in approved form. Notification is to all contestable customers; and
- notify customer when they become a large offer contestable customer.

These items are additional to those required in the previous version of the Contestable Customer Regulations and are required to be in place prior to the tranche going live, and will be approved by the jurisdictional Regulator prior to being communicated to customers/retailers.

Aurora will also undertake additional System builds to enable MSATS communications, and AEMO functionality such as B2B.

### 6.1.3. Electrical safety management schemes

The Regulatory Obligation or Requirement that is varied in recognition of the proposed electrical safety management scheme is that those employees who work under the scheme are exempted from the need to be licensed in accordance with the Occupational Licensing Act 2005. Aurora is implementing this scheme to cover otherwise unlicensed employees who are performing work that has been classified as "electrical work" under the Occupational Licensing (Electrical Work) Regulations 2008. Until the proclamation of these Regulations, Aurora employees were exempted from requiring licenses for this type of work by virtue of the Electricity Industry Safety and Administration Regulations 1999. With the loss of the exemption, Aurora commenced work with Workplace Standards Tasmania, the body responsible for the administration of the Occupational Licensing Act 2005 and the Electricity Industry Safety and Administration Act 1997, to ensure that both Aurora and its employees could transition between the regimes.

### 6.1.4. Compliance audits

Aurora has not had any compliance audits conducted by Workplace Safe Tasmania or any other authorised regulatory agent during the previous or *Current Regulatory Control Period*s.

### 6.1.5. Differences identified in the response to paragraph 4.5(b)(ii)(1)

Tranche 5A differs from existing Regulatory Obligations and Requirements by making electricity consumers consuming between 50 MWh/year and 150 MWh/year contestable from 1 July 2011.

#### 6.1.5.1. Costs, or changes to level or scope of costs

The project for delivery of systems and process to support the implementation of Tranche 5A is currently being executed by Aurora, expenditure for this project is not expected to exceed $7.55m. Final project costs will not be known until late 2011, once the project has been finalised. Aurora does not expect to have any future capital expenditure for the delivery of system and processes to support Tranche 5A in the 2011-12 financial year.

#### 6.1.5.2. Activities that will be required to comply

Aurora would not have planned or executed the activities to change business systems and processes or incur these costs had there been no requirement to allow a further Tranche of contestability.

#### 6.1.5.3. Alternative options considered

Two options were considered in order for Aurora to implement obligations expected to arise due to the introduction of the tranche 5a in a way that meets the expectation of least cost consistent with regulatory requirements:

- Option 1 - Development of systems and accreditation required by Network to manage its new obligations resulting from T5a, or
- Option 2 - Installation of type 4 meters onto customers that churn.

### 6.1.5.4. Costs and benefits of each option

Option 1 - Benefits

- Would retain meter ownership with Aurora
- System developments better able to support higher levels of churn and future Smart Grid approach
- Minimises changes to field processes
- Continues system development strategy for contestability as originally planned
- Supports currently established business pathway to FRC

Option 2 - Benefits

- Network avoids requirement to build a data delivery to market capability and having to acquire accreditation for that role, but there are still system changes required for customer transfers and reconciliation of data with the market.
- Network's existing accreditation as MPB 1-4 will be sufficient to provide meter installation services on a competitive basis.

### 6.1.5.5. Preferred option

Option 1 was selected for implementation. This was the preferred option as:

- Financial modelling of the capital and operating costs under the two options has shown that Option 2 is the least cost alternative only as long as customer churn remains below 13%. Past this point, Option 1 is the least cost alternative. Currently, churn in tranche 4 is at 16%, less than 6 months after the end of the grace period for this tranche;
- Given Option 2 is not Full Retail Contestability (FRC) scalable, that churn will likely push past 13% over time, that installing type 4 meters is not smart-grid compliant and there are significant risks to Aurora recovering its costs under Option 2, the Aurora Executive Team (AET) and Board has endorsed Option 1, systems development, as the approach for achieving T5a compliance.

### 6.1.5.6. Do nothing option

A do-nothing option was not considered as Aurora is required to comply with Regulatory Obligations and Requirements to retain its Distribution Licence.

### 6.1.5.7. Contingency factors

A contingency of $0.09m has been approved for the execution of the project, as the project is still in execution phase the final costs at this stage are unknown.

### 6.1.5.8. Estimated expenditure

Aurora does not expect additional capital or operating expenditure will be required after the 2010-11 financial year for this regulatory obligation.

### 6.1.5.9. Capex/opex considerations

Due to the complexity and business processes and systems involved, substituting capital expenditure for operating expenditure was not considered for this project.

### 6.1.5.10. Forecast impact on customer interruptions

The implementation of Tranche 5a does not impact on customers supply or reliability.

## 6.1.6. Regulatory Obligations or Requirements identified in the response to paragraph 4.5(a)

Please refer to Aurora's response to paragraph 4.5(b)(iii)(4). There are no other new or substantively changed Regulatory Obligation or Requirement excluding those activities captured by paragraph 4.5(b)(iii)(4).

## 6.1.7. Electrical safety management schemes identified in the response to paragraph 4.5(b)(ii)(2)

Aurora cannot provide these final details of the electrical safety management scheme as it will not be finalised until June 2011. However, Aurora can provide details of the draft Electricity Safety Management Scheme.

The scope of the ESMS will cover the following roles:

- Asset Inspectors;
- Pole Stakers;
- Meter Readers;
- A-Workers (connect/disconnect consumer electricity supply);
- Electrical Engineers;
- Local Area Managers/Asset Officers;
- Location Officers; and
- Field Credit Officers

The scheme will apply for 5 years, after which it will need to be reapproved.

Aurora cannot provide a copy of the electrical safety management scheme as it will not be finalised until June 2011. Aurora will provide the finalised scheme in its revised Regulatory Proposal.

The Regulatory Obligation or Requirement that is varied in recognition of the proposed electrical safety management scheme is that those employees who work under the scheme are exempted from the need to be licensed in accordance with the Occupational Licensing Act 2005. Aurora is implementing this scheme to cover otherwise unlicensed employees who are performing work that has been classified as "electrical work" under the Occupational Licensing (Electrical Work) Regulations 2008. Until the proclamation of these Regulations, Aurora employees were exempted from requiring licenses for this type of work by virtue of the Electricity Industry Safety and Administration Regulations 1999. With the loss of the exemption, Aurora commenced work with Workplace Standards Tasmania, the body responsible for the administration of the Occupational Licensing Act 2005 and the Electricity Industry Safety and Administration Act 1997, to ensure that both Aurora and its employees could transition between the regimes.

### 6.1.8. Compliance audit identified in the response to paragraph 4.5(b)(ii)(3)

There were no areas of non-compliances identified.

# 7. Reliability and quality maintained capex

## 7.1. RIN requirements

RIN paragraph 4.6 requires that for the Reliability & Quality Maintained Capex Standard Control Capex Category that Aurora:

(a) identify

  (i) asset replacement models developed by or for Aurora;

  (ii) where actual replacement volumes for any asset category have diverged by 10 per cent or more from those forecast in any models identified in response to paragraph 4.6(a)(i);

(b) for each asset replacement model identified in the response to paragraph 4.6(a):

  (i) provide:

    (1) a copy of the model used; and

    (2) all supporting documentation and data for the model used;

    (3) mapping of asset categories used in the model(s) to the asset categories in table 3C of regulatory template 6.9;

  (ii) explain

    (1) how model inputs were substantiated;

    (2) all other relevant considerations; and

    (3) how any proposed Demand Related Capex associated with the replacement of assets before the end of their technical life has been taken into account in the model;

    (4) the reasons for each divergence identified in response to paragraph 4.6(a)(ii), in terms of the following:

      (A) longer or shorter replacement lives than used in the model;

      (B) higher or lower unit replacement costs than used in the model;

      (C) overlap with other expenditure drivers;

      (D) changed knowledge of the age profile;

      (E) the assumptions behind the replacement profile for the assets that were older than the assumed replacement life;

      (F) other factors;

(c) for the replacements sub-category,

  (i) provide an estimated breakdown of Actual Capex, Estimated Capex and Forecast Capex categorised as:

(1) like-for-like replacements;

(2) non-like-for-like replacements;

(ii) explain how the estimates in paragraph 4.6(c)(i) have been calculated.

## 7.2. Identification of models

### 7.2.1. Asset replacement models

Aurora does not have any models developed by or for Aurora for the Reliability and Quality Maintained Capex Standard Control category.

### 7.2.2. Asset replacement models identified in the response to paragraph 4.6(a)

Aurora has not identified any models in response to RIN paragraph 4.6(a).

### 7.2.3. Replacements sub-category,

Aurora is unable to provide a response to RIN paragraph 4.6(c), as there is no "replacements sub-category" identified in the RIN.

# 8. Reinforcement capex

## 8.1. RIN requirements

RIN paragraph 4.7 requires that for Reinforcement Capex Standard Control Capex Category that Aurora:

(a) identify models developed by or for Aurora for the forecasting of Reinforcement Capex;

(b) for each model identified in the response to paragraph 4.7(a):

  (i) provide:

    (1) a copy of the model used; and

    (2) all supporting documentation and data for the model used;

  (ii) explain:

    (1) how model inputs were substantiated;

    (2) all other relevant considerations;

    (3) how the model takes into account the timing of any forecast asset replacements proposed by the asset replacement model referred to in paragraph 4.6 in the timing of Reinforcements Capex;

(c) the forecast impact on duration of customer interruptions and frequency of customer interruptions for each individual supply reliability area, for each individual supply reliability category and for the entirety of Aurora's distribution network; and how the impact has been calculated.

### 8.1.1. Identification of models

Aurora engaged Utility Engineering Solutions (UES) to forecast the maximum demand that was to be used in the capital expenditure forecast for the Forthcoming *Regulatory Control Period*. The methodology used by UES is contained within their report *2008 Distribution Network Connection Ten-Year Consumption and Maximum Demand Forecast* of December 2008 (2008 UES Report). The capital expenditure program was costed in the standard Aurora manner. No financial models were used in the development of the category forecast.

### 8.1.2. Models identified in the response to paragraph 4.7(a):

Aurora does not have access to the UES proprietary demand forecasting model.

No capital expenditure forecasting models were used.

A description of the demand forecasting model and approach is contained in the 2008 UES Report.

Aurora has a small number of engineering staff working on its asset management program. In developing capital expenditure and operating expenditure forecasts, the staff responsible for different threads discuss their programs and adjust to account for other programmed work.

### 8.1.3. Forecast impact on customer interruptions

Aurora does not forecast a reliability impact as a result of forecast capital expenditure in the reinforcements capex standard control capex category.

# 9. Asset categories in Regulatory Template

## 9.1. RIN requirements

RIN paragraph 4.8 requires for each asset category and asset type in table 6.9 of Regulatory Template 6.9 that Aurora:

(a) identify any internal Documents or analysis or independent benchmarking, that justifies or supports any explanation provided in response to paragraph 4.6(c); and

(b) provide:

  (i) a more complete description of the asset type, including:

    (1) the assets that are included in the asset type;

    (2) an explanation of how assets are allocated to asset types; and

  (ii) a description of the unit that the quantity in table 6.9.1 of Regulatory Template 6.9 represents;

  (iii) an estimate of the proportion of assets in the age profile from 2006 to the age profile date that represent:

    (1) replacements due to the aging of existing assets;

    (2) replacements due to other factors;

    (3) additional assets due to the augmentation, extension or development of the network;

    (4) additional assets due to other factors;

  (iv) an estimate of the number of assets in each financial year from 2002-03 to 2009-10 that were relocated to another part of the distribution network due to a need, either customer or Aurora initiated, to upgrade before the end of the asset's useful life, the system capacity at the asset's original point in the distribution network;

  (v) details of methods and assumptions used to derive estimates, and any internal documentation or analysis, or independent benchmarking that supports its response to paragraph 4.8(c)(in) and paragraph 4.8(b)(iv);

(c) explain:

  (i) the main drivers for replacement;

  (ii) what the replacement unit cost allows for, including a clear indication if this is to achieve the extension of the life of an existing asset rather than a replacement, and in such circumstances, whether the costs are capitalised or not;

  (iii) the methodology, data sources and assumptions used to derive the replacement unit cost;

(iv) what possibility there is of double-counting in the replacement unit cost estimate, and the process applied to ensure that double-counting is appropriately accounted for;

(v) the variability in the unit costs between individual asset replacements, and the main drivers of the variability;

(vi) the relationship of the unit cost to historical replacement costs, and the derivation of this relationship, including quantifying any assumed cost differences which are due to increases in cost inputs such as labour and materials;

(vii) the process applied to verify that the replacement unit cost is a appropriate estimate of the actual unit cost;

(viii) the methodology data sources and assumptions used to derive the mean asset life and standard deviation;

(ix) the relationship between the mean asset life and standard deviation to historical replacement lives;

(x) Aurora's views on the most appropriate probability distribution to simulate the replacement needs, including consideration of:

(1) the appropriateness of the normal distribution, the Weibull distribution, or another distribution;

(2) the typical age when the 'wear-out' phase becomes evident;

(3) the skewness of the distribution;

(xi) the process applied to verify that the mean asset life and standard deviation are appropriate estimates of actual asset lives; and

(xii) for all forecast new asset installations and existing asset replacements for the Forthcoming *Regulatory Control Period* provided in response to Regulatory Template 3.4, the forecast capacity of the asset.

## 9.2. Explanation provided in response to paragraph 4.6(c)

Aurora did not provide a response to paragraph 4.6(c) as there is no "replacements sub-category" identified in the RIN.

### 9.2.1. Description of the asset types

The following table shows each asset type and provides a reference for a description of that asset type.

| Asset Type | Description of Asset Type |
|---|---|
| **Poles** | |
| Wood (Natural) | Management Plan 2011 Overhead and Structures |
| Wood (CCA) | |
| Concrete | |
| Steel/concrete (Stobie) | |
| Steel Lattice Tower (previously EHV) | |
| Steel Lattice | |
| Steel Rail (RSJ) | |
| Steel Other | |
| **Conductor** | |
| Steel 3/2.75 GI - Inland | Management Plan 2011 Overhead and Structures |
| Steel 3/2.75 GI - Near Coast | |
| Copper | |
| ACSR | |
| AAC | |
| AAAC | |
| HVABC | |
| LV Bare (material unknown) | |
| LVABC | |
| **Underground Cables** | |
| HV Sub-transmission Cables, Oil-filled | Management Plan 2011 Underground System |
| HV Sub-transmission Cables, Others | |
| HV Cable, Oil Draining | |
| HV Cable, MIND | |
| HV Cable, Submarine | |
| HV Cable, XLPE | |
| HV Cable, XLPE - TR | |
| LV Cable. Oil Draining | |
| LV Cable, MIND | |
| LV Cable, CONSAC | |
| LV Cable, XLPE | |
| **Distribution Transformers** | |
| Single pole-mounted transformer, 200 kVA or greater | Management Plan 2011 Overhead |

| Asset Type | Description of Asset Type |
|---|---|
| Single pole-mounted transformer, 50 – 200 kVA | and Structures |
| Single pole-mounted transformer, 5 – 50 kVA | |
| Single pole-mounted transformer, SWER, 25 – 50 kVA | |
| Single pole-mounted transformer, SWER, 5 – 25 kVA | |
| HV Transformers: SWER, Isolating & Step | |
| Galvanised Single pole-mounted transformer, 200 kVA or greater | |
| Galvanised Single pole-mounted transformer, 50 – 200 kVA | |
| Galvanised Single pole-mounted transformer, 5 – 50 kVA | |
| Galvanised Single pole-mounted transformer, SWER, 25 – 50 kVA | |
| Galvanised Single pole-mounted transformer, SWER, 5 – 25 kVA | |
| Padmount-type: Transformer, 1500 kVA or greater | Management Plan 2011 Ground Mounted Substations |
| Padmount-type: Transformer, 1000 kVA | |
| Padmount-type: Transformer, 750 kVA | |
| Padmount-type: Transformer, 500 kVA or less | |
| Fence-type: Transformer, 1500 kVA or greater | |
| Fence-type: Transformer, 1000 kVA | |
| Fence-type: Transformer, 750 kVA | |
| Fence-type: Transformer, 500 kVA or less | |
| Building-type: Transformer, 1500 kVA or greater | |
| Building-type: Transformer, 1000 kVA | |
| Building-type: Transformer, 750 kVA | |
| Building-type: Transformer, 500 kVA or less | |
| **Distribution Switchgear** | |
| Padmount/Kiosk: 1500 kVA or greater, oil-filled | Management Plan 2011 Ground Mounted Substations |
| Padmount/Kiosk: 1500 kVA or greater, air/gas insulated | |
| Padmount/Kiosk: 1000 kVA, oil-filled | |
| Padmount/Kiosk: 1000 kVA, air/gas insulated | |
| Padmount/Kiosk: 750 kVA, oil-filled | |
| Padmount/Kiosk: 750 kVA air/gas insulated | |
| Padmount/Kiosk: 500 kVA or less, oil-filled | |
| Padmount/Kiosk: 500 kVA or less, air/gas insulated | |
| Padmount/Kiosk: LV Switchgear | |
| Fence-type: Switchgear, oil-filled | |
| Fence-type: Switchgear, air/gas insulated | |
| Fence-type: LV switchgear | |

| Asset Type | Description of Asset Type |
|---|---|
| Building-type: Switchgear, oil-filled | |
| Building-type: Switchgear, air/gas insulated | |
| Building-type: LV Switchgear | |
| Switching Station: Oil-filled switchgear | |
| Switching Station: air/gas insulated switchgear | |
| **Distribution Other Assets** | |
| Padmount/Kiosk, Infrastructure | Management Plan 2011 Ground Mounted Substations |
| Fence-type, Infrastructure | |
| Building-type, Building and infrastructure | |
| LV Furniture, Cabinet | Management Plan 2011 Underground System |
| LV Furniture, Turret | |
| HV Terminations (Cast Iron Potheads) | |
| HV Terminations (Heat Shrink) | |
| LV Terminations | |
| **Zone Transformers** | |
| Rural Zone: Transformer, between 1 MVA and 2.5 MVA | Management Plan 2011 Zone Substations |
| Rural Zone: Transformer, less than 1 MVA | |
| Urban Zone: Transformer, 20/30 MVA | |
| Urban Zone: Transformer, 15/22.5 MVA | |
| **Zone Switchgear** | |
| Rural Zone: Switchgear | Management Plan 2011 Zone Substations |
| Urban Zone: Switchgear, oil-insulated, 2 transformer sub | |
| Urban Zone: Switchgear, air-insulated, 2 transformer sub | |
| Urban Zone: Switchgear, oil-insulated, 3 transformer sub | |
| Urban Zone: Switchgear, air-insulated, 3 transformer sub | |
| **Zone Other Assets** | |
| Rural Zone: Building and Infrastructure | Management Plan 2011 Zone Substations |
| Urban Zone: Building and Infrastructure | |
| Urban Zone: Protection Systems | |
| Urban Zone: SCADA Systems | |
| Urban Zone: Batteries | |
| **Other** | |
| Metering Transformers | Management Plan 2011 Connection Assets |
| Three Phase Regulators | Management Plan 2011 High Voltage Regulators |
| Single Phase Regulators (Pole Mounted) | |

| Asset Type | Description of Asset Type |
|---|---|
| Single Phase Regulators (Ground Mounted) | |
| **Services** | |
| All types | Management Plan 2011 Connection Assets |

The following table provides a description of each asset type and its corresponding unit of quantity.

| Asset Type | Unit |
|---|---|
| **Poles** | |
| Wood (Natural) | Each |
| Wood (CCA) | |
| Concrete | |
| Steel/concrete (Stobie) | |
| Steel Lattice Tower (previously EHV) | |
| Steel Lattice | |
| Steel Rail (RSJ) | |
| Steel Other | |
| **Conductor** | |
| Steel 3/2.75 GI - Inland | per kilometre |
| Steel 3/2.75 GI - Near Coast | |
| Copper | |
| ACSR | |
| AAC | |
| AAAC | |
| HVABC | |
| LV Bare (material unknown) | |
| LVABC | |
| Underground Cables | |
| HV Sub-transmission Cables, Oil-filled | per kilometre |
| HV Sub-transmission Cables, Others | |
| HV Cable, Oil Draining | |
| HV Cable, MIND | |
| HV Cable, Submarine | |
| HV Cable, XLPE | |
| HV Cable, XLPE - TR | |
| LV Cable. Oil Draining | |
| LV Cable, MIND | |
| LV Cable, CONSAC | |
| LV Cable, XLPE | |

| Asset Type | Unit |
|---|---|
| **Distribution Transformers** | |
| Single pole-mounted transformer, 200 kVA or greater | each |
| Single pole-mounted transformer, 50 – 200 kVA | |
| Single pole-mounted transformer, 5 – 50 kVA | |
| Single pole-mounted transformer, SWER, 25 – 50 kVA | |
| Single pole-mounted transformer, SWER, 5 – 25 kVA | |
| HV Transformers: SWER, Isolating & Step | |
| Galvanised Single pole-mounted transformer, 200 kVA or greater | |
| Galvanised Single pole-mounted transformer, 50 – 200 kVA | |
| Galvanised Single pole-mounted transformer, 5 – 50 kVA | |
| Galvanised Single pole-mounted transformer, SWER, 25 – 50 kVA | |
| Galvanised Single pole-mounted transformer, SWER, 5 – 25 kVA | |
| Padmount-type: Transformer, 1500 kVA or greater | |
| Padmount-type: Transformer, 1000 kVA | |
| Padmount-type: Transformer, 750 kVA | |
| Padmount-type: Transformer, 500 kVA or less | |
| Fence-type: Transformer, 1500 kVA or greater | |
| Fence-type: Transformer, 1000 kVA | |
| Fence-type: Transformer, 750 kVA | |
| Fence-type: Transformer, 500 kVA or less | |
| Building-type: Transformer, 1500 kVA or greater | |
| Building-type: Transformer, 1000 kVA | |
| Building-type: Transformer, 750 kVA | |
| Building-type: Transformer, 500 kVA or less | |
| **Distribution Switchgear** | |
| Padmount/Kiosk: 1500 kVA or greater, oil-filled | per set |
| Padmount/Kiosk: 1500 kVA or greater, air/gas insulated | |
| Padmount/Kiosk: 1000 kVA, oil-filled | |
| Padmount/Kiosk: 1000 kVA, air/gas insulated | |
| Padmount/Kiosk: 750 kVA, oil-filled | |
| Padmount/Kiosk: 750 kVA air/gas insulated | |
| Padmount/Kiosk: 500 kVA or less, oil-filled | |
| Padmount/Kiosk: 500 kVA or less, air/gas insulated | |
| Padmount/Kiosk: LV Switchgear | |
| Fence-type: Switchgear, oil-filled | |
| Fence-type: Switchgear, air/gas insulated | |
| Fence-type: LV switchgear | |
| Building-type: Switchgear, oil-filled | |

| Asset Type | Unit |
|---|---|
| Building-type: Switchgear, air/gas insulated | |
| Building-type: LV Switchgear | |
| Switching Station: Oil-filled switchgear | |
| Switching Station: air/gas insulated switchgear | |
| **Distribution Other Assets** | |
| Padmount/Kiosk, Infrastructure | per installation |
| Fence-type, Infrastructure | |
| Building-type, Building and infrastructure | |
| LV Furniture, Cabinet | |
| LV Furniture, Turret | |
| HV Terminations (Cast Iron Potheads) | |
| HV Terminations (Heat Shrink) | |
| LV Terminations | |
| **Zone Transformers** | |
| Rural Zone: Transformer, between 1 MVA and 2.5 MVA | each |
| Rural Zone: Transformer, less than 1 MVA | |
| Urban Zone: Transformer, 20/30 MVA | |
| Urban Zone: Transformer, 15/22.5 MVA | |
| **Zone Switchgear** | |
| Rural Zone: Switchgear | per set |
| Urban Zone: Switchgear, oil-insulated, 2 transformer sub | |
| Urban Zone: Switchgear, air-insulated, 2 transformer sub | |
| Urban Zone: Switchgear, oil-insulated, 3 transformer sub | |
| Urban Zone: Switchgear, air-insulated, 3 transformer sub | |
| **Zone Other Assets** | |
| Rural Zone: Building and Infrastructure | per installation |
| Urban Zone: Building and Infrastructure | |
| Urban Zone: Protection Systems | |
| Urban Zone: SCADA Systems | |
| Urban Zone: Batteries | |
| **Other** | |
| Metering Transformers | each |
| Three Phase Regulators | per installation |
| Single Phase Regulators (Pole Mounted) | |
| Single Phase Regulators (Ground Mounted) | |
| **Services** | |
| All types | per installation |

### 9.2.2. Age profile proportion of assets

Aurora is unable to provide an estimate of the proportion of assets in the age profile from 2006 that represent the various prescribed categories. This level of information is not recorded within Aurora's systems.

### 9.2.3. Number of assets relocated in each financial year

Aurora is unable to provide an exact response to this requirement because Aurora's asset records do not contain this detail.

Aurora is unable to provide a meaningful estimate of the number of assets that have been relocated or when such occurred.

Conceptually, voltage regulators or distribution transformers of capacity greater than 500 kVA that are removed as a result of system reinforcement may be stored and used elsewhere in the network. There are, however, so few of this type of asset in the system, that the number that would be subject to this treatment is negligible, making estimation misleading.

### 9.2.4. Main drivers for replacement

In most instances assets are relocated as a result of a request from an external party such as the Department of Infrastructure when road works are occurring.

### 9.2.5. Replacement unit cost

In all cases the replacement unit cost is the cost of a new asset, and those costs will be capitalised.

### 9.2.6. Methodology to derive the replacement unit cost

Aurora's program of work contains all capital expenditure and opex projects and programs to be performed by Network Division. Line items within the program of work are categorised by work type, allowing the correct costing methodology to be applied. Projects and programs are classified as either A type, B type, C type, or D type work:

- Type A Work – Projects with detailed scopes as provided by the client, one scope for each work project, clear outcomes, and design is necessary prior to construction. Type A work is generally relatively complex in nature, low in volume and high in dollar value. All A types have been calculated by a desk-top design. An experienced designer has looked at the general scope of the project, and estimated the project based on experience using the same methodology that is used every day for current projects.

- Type B Work – These jobs generally have an annual scope which defines the work by either a set of rules and conditions that specify what work is to be done and how or a list of specific smaller jobs that have been identified by Network to be done. Type B work has a unit rate; often unknown quantities or locations for delivery of work with budgeted volume based on historical experience. Exact timing of the work is not known and is relatively low complexity, high volume and low unit cost (for example, pole replacements). All B Type unit rates are reviewed annually, to ensure that budget allocations are appropriate for the amount of work required. The labour and material quantities for B types in the POW have been calculated using the same methodology.
- Type C Work – Is work that is identified as being the domain of an external service provider. Work can be managed directly by Network or alternatively it can be given to Network Services. Network division provides the budgeted amount for this type of work in the program of work – unit rates are not calculated by Network Services unless requested to do the work.
- Type D Work – Type D work is work that has a detailed scope of work for each Work Category, and design is usually necessary prior to construction. Individual Type D projects are generally relatively low in complexity, high in volume and low in dollar value (for example, customer connections work). Type D projects are not specifically identified prior to the financial year, as the projects have a relatively short lead time and annual budgets are set based on historical records. D type work is identified as a budget figure, based on historical experience with the category of work. For example if the average actual amount for Install Substation - New OH Transformers for Voltage Improvement was $2.15 million from the previous few years, it is probable that we would (all things remaining equal) expect to spend a similar amount in future years.

Aurora's Works and Asset management system (WASP) contains all asset, labour and project data used to manage our workforce and assets. WASP contains unit assemblies for small packages of work that are reviewed quarterly (or as needed) to ensure that the rates and volumes for the components are current. For example, a unit assembly for installing a pole in shale soil would contain components for materials (pole and possum guard) and labour (linesman, labourer and borer driver).

For all A type and B type work all projects are estimated at this level, using standard unit assemblies.

D type work has been calculated by using a historical break-up of the quantities forecast. The historical percentage mix of the Labour, Material, Contractor and Other for each project, and the historical skill set used (the percentage mix of the respective skill sets) are stored in Aurora's Annual Planning Tool to ensure a consistent methodology is used across all D types.

For all D type work, Aurora has assumed that an average of our historical volumes is likely to be a reasonable basis of a forecast of future volumes. Historic anomalies have been excluded in the calculation methodology, while changes in work practices have been accounted for. For A type work there may be some assumptions on:

- soil type;
- amount of traffic management required;
- span length due to terrain conditions;
- wayleave requirements;
- complexity of implementation;
- travel time (resources may come from different depots);
- materials to match adjoining assets;
- amount of tree clearing required;
- how much material can be recycled; and
- whether portions of the project will be done in-house or by contract.

In general Aurora has assumed that much as of the work will be done as "business as usual", unless there is a specific reason to do otherwise.

### 9.2.7. Possibility of double-counting

Aurora believes that the bottom up and formulaic methodologies it has used for the calculation of unit rates are sound and that the possibility of double counting is remote. All estimates produced in this process have been reviewed by a panel of six of Aurora's experienced designers, and further examined by asset managers, accountants and analysts.

### 9.2.8. Variability in the unit costs

There is some scope for variability between different instances of the same asset replacement. As noted in the "assumptions" question above, the replacement of, for example, a Padmount/kiosk may be affected by:

- soil type;
- amount of traffic management required;
- wayleave requirements;
- complexity of implementation;
- travel time (resources may come from different depots);
- materials to match adjoining assets;
- amount of tree clearing required;
- how much material can be recycled; and
- whether portions of the project will be done in-house or by contract.

Nonetheless, Aurora has taken every opportunity to make its estimates as accurate and uniform as possible.

## 9.2.9. Relationship of the unit cost to historical costs

The Unit Rates are derived from the information stored in WASP. The costs applied to individual components of the unit assemblies are reviewed quarterly (or as needed) to ensure currency of the data. As such the historic rates should quite closely resemble the rates proposed for the forthcoming determination period.

There are no individual cost increases for the forthcoming determination period factored into the unit assemblies. Any predicted cost increases for labour, materials, contracts or other are dealt with in the cost escalation models, and have no effect on the base unit rate data.

## 9.2.10. Process applied to verify unit cost

All estimates produced in this process have been reviewed by a panel of six of Aurora's most experienced designers, and further examined by asset managers, accountants and analysts. Aurora's asset managers analyse the benefits of replacing the assets compared with life-extension programs to ensure that the budget allocation is prudent and focussed in the correct areas.

## 9.2.11. Mean asset life and standard deviation

The instructions to Regulatory Template 6.9 state that,

> *Asset lives must be those used for the calculation of regulatory depreciation, and not tax depreciation.*

Asset lives used for calculations of regulatory depreciation were inherited from the Hydro Electric Corporation on disaggregation in 1998, and have not been changed since that time. The method used by the Hydro Electric Corporation to determine the asset lives is unknown to Aurora.

Aurora is unable to calculate the "standard deviation of the mean life for each asset type" as required in Regulatory Template 6.9. Aurora does not collect actual asset life data to enable such a calculation to be made.

Aurora cannot explain the data sources used to derive the mean asset lives in Regulatory Template 6.9. Asset lives used for calculations of regulatory depreciation were inherited from the Hydro Electric Corporation on disaggregation in 1998, and have not been changed since that time. The data used by the Hydro Electric Corporation to determine the asset lives is unknown to Aurora.

Aurora cannot explain the assumptions used to derive mean asset lives and standard deviations. Aurora made no assumptions underlying calculations because it made no calculations. The mean asset lives were inherited from the from the Hydro Electric Corporation on disaggregation in 1998.

Aurora did not calculate standard deviations for mean asset lives because Aurora does not have collect the appropriate data, hence there were no assumptions.

### 9.2.12. Relationship between the mean asset life and standard deviation

Aurora is unable to answer this question for the majority of its asset categories. Aurora does not routinely collect historical replacement lives data.

### 9.2.13. Appropriate probability distribution

Aurora is unable to discuss the appropriateness of any probability distribution to simulate replacement needs without knowing the model to be used.

Aurora does not have data to indicate when the "wear-out" phase becomes evident in the majority of its assets and considers it imprudent to estimate.

Aurora does not have the data to analyse the skewness of distributions associated with the majority of its assets and considers it imprudent to estimate.

### 9.2.14. Verification of mean asset life and standard deviation

There has been no process applied to verify that the mean asset life and standard deviation are appropriate estimates of actual asset lives.

### 9.2.15. Forecast capacity assets

The forecast capacities of those assets are provided in the following table.

| Asset Type | Forecast Capacity |
|---|---|
| **Poles** | |
| Wood (Natural) | Three phase, 10 A to 415 A for 400 V – 44 kV voltage levels |
| Wood (CCA) | Three phase, 10 A to 415 A for 400 V – 44 kV voltage levels |
| Concrete | Three phase, 10 A to 415 A for 400 V – 44 kV voltage levels |
| Steel/concrete (Stobie) | Three phase, 10 A to 415 A for 400 V – 44 kV voltage levels |
| Steel Lattice Tower (previously EHV) | Three phase, 10 A to 415 A for 400 V – 44 kV voltage levels |
| Steel Lattice | Three phase, 10 A to 415 A for 400 V – 44 kV voltage levels |
| Steel Rail (RSJ) | Three phase, 10 A to 415 A for 400 V – 44 kV voltage levels |
| Steel Other | Three phase, 10 A to 415 A for 400 V – 44 kV voltage levels |
| **Conductor** | |
| Steel 3/2.75 GI - Inland | 46 A |
| Steel 3/2.75 GI - Near Coast | 46 A |
| Copper | 7/0.48 (87 A) to 19/2.75 (429 A) |

| **Asset Type** | **Forecast Capacity** |
|---|---|
| ACSR | 3/4/2.50 (113 A) to 26/.1236/7/.0961 (450 A) |
| AAC | 7/.093 (153 A) to 19/.325 (414 A) |
| AAAC | 7/3.00 (203 A) |
| HVABC | 50 mm² AAC (160 A) to 185 mm² AAC (550 A) |
| LV Bare (material unknown) | See Copper, AAC, AAAC |
| LVABC | 25 mm² AAC (125 A summer) to 150 mm² AAC (285 A summer) |
| **Underground Cables** | |
| HV Sub-transmission Cables, Oil-filled | Not Applicable |
| HV Sub-transmission Cables, Others | See HV XLPE |
| HV Cable, Oil Draining | 23 mm² (7/0.064) (136 A) to 240 mm² (340 A) |
| HV Cable, MIND | 23 mm² (7/0.064) (136 A) to 240 mm² (340 A) |
| HV Cable, Submarine | 23 mm² (7/0.064) (136 A) to 240 mm² (340 A) |
| HV Cable, XLPE | 185mm² (350 A) to 400 mm² (400 A) |
| HV Cable, XLPE - TR | Not Applicable |
| LV Cable. Oil Draining | 23 mm² (7/0.064) (136 A) to 240 mm² (340 A) |
| LV Cable, MIND | 23 mm² (7/0.064) (136 A) to 240 mm² (340 A) |
| LV Cable, CONSAC | 23 mm² (7/0.064) (136 A) to 240 mm² (340 A) |
| LV Cable, XLPE | 120 mm² Al to 400 mm² Al |
| **Distribution Transformers** | |
| Single pole-mounted transformer, 200 kVA or greater | 200 kVA, 11 kV and 22 kV |
| Single pole-mounted transformer, 50 – 200 kVA | 50 – 200 kVA, 11 kV and 22 kV |
| Single pole-mounted transformer, 5 – 50 kVA | 5 – 50 kVA, 11 kV and 22 kV |
| Single pole-mounted transformer, SWER, 25 – 50 kVA | 25 – 50 kVA, 22 kV |
| Single pole-mounted transformer, SWER, 5 – 25 kVA | 5 – 25 kVA, 22 kV |
| HV Transformers: SWER, Isolating & Step | 5 – 50 kVA, 22 kV |
| Galvanised Single pole-mounted transformer, 200 kVA or greater | 200 kVA, 11 kV and 22 kV |
| Galvanised Single pole-mounted transformer, 50 – 200 kVA | 50 – 200 kVA, 11 kV and 22 kV |
| Galvanised Single pole-mounted transformer, 5 – 50 kVA | 5 – 50 kVA, 11 kV and 22 kV |

| Asset Type | Forecast Capacity |
|---|---|
| Galvanised Single pole-mounted transformer, SWER, 25 – 50 kVA | 25 – 50 kVA, 11 kV and 22 kV |
| Galvanised Single pole-mounted transformer, SWER, 5 – 25 kVA | 5 – 25 kVA, 11 kV and 22 kV |
| Padmount-type: Transformer, 1500 kVA or greater | 1500 kVA, 11 kV and 22 kV |
| Padmount-type: Transformer, 1000 kVA | 1000 kVA, 11 kV and 22 kV |
| Padmount-type: Transformer, 750 kVA | 750 kVA, 11 kV and 22 kV |
| Padmount-type: Transformer, 500 kVA or less | 500 kVA, 11 kV and 22 kV |
| Fence-type: Transformer, 1500 kVA or greater | 1500 kVA, 11 kV and 22 kV |
| Fence-type: Transformer, 1000 kVA | 1000 kVA, 11 kV and 22 kV |
| Fence-type: Transformer, 750 kVA | 750 kVA, 11 kV and 22 kV |
| Fence-type: Transformer, 500 kVA or less | 500 kVA, 11 kV and 22 kV |
| Building-type: Transformer, 1500 kVA or greater | 1500 kVA, 11 kV and 22 kV |
| Building-type: Transformer, 1000 kVA | 1000 kVA, 11 kV and 22 kV |
| Building-type: Transformer, 750 kVA | 750 kVA, 11 kV and 22 kV |
| Building-type: Transformer, 500 kVA or less | 500 kVA, 11 kV and 22 kV |
| **Distribution Switchgear** | |
| Padmount/Kiosk: 1500 kVA or greater, oil-filled | 1500 kVA, 11 kV and 22 kV |
| Padmount/Kiosk: 1500 kVA or greater, air/gas insulated | 1500 kVA, 11 kV and 22 kV |
| Padmount/Kiosk: 1000 kVA, oil-filled | 1000 kVA, 11 kV and 22 kV |
| Padmount/Kiosk: 1000 kVA, air/gas insulated | 1000 kVA, 11 kV and 22 kV |
| Padmount/Kiosk: 750 kVA, oil-filled | 750 kVA, 11 kV and 22 kV |
| Padmount/Kiosk: 750 kVA air/gas insulated | 750 kVA, 11 kV and 22 kV |
| Padmount/Kiosk: 500 kVA or less, oil-filled | 500 kVA, 11 kV and 22 kV |
| Padmount/Kiosk: 500 kVA or less, air/gas insulated | 500 kVA, 11 kV and 22 kV |
| Padmount/Kiosk: LV Switchgear | Not Applicable |
| Fence-type: Switchgear, oil-filled | Not Applicable |
| Fence-type: Switchgear, air/gas insulated | Not Applicable |
| Fence-type: LV switchgear | Not Applicable |
| Building-type: Switchgear, oil-filled | Not Applicable |
| Building-type: Switchgear, air/gas insulated | Not Applicable |
| Building-type: LV Switchgear | Not Applicable |
| Switching Station: Oil-filled switchgear | Not Applicable |
| Switching Station: air/gas insulated switchgear | Not Applicable |
| **Distribution Other Assets** | |
| Padmount/Kiosk, Infrastructure | Not Applicable |
| Fence-type, Infrastructure | Not Applicable |

| Asset Type | Forecast Capacity |
|---|---|
| Building-type, Building and infrastructure | Not Applicable |
| LV Furniture, Cabinet | Not Applicable |
| LV Furniture, Turret | Not Applicable |
| HV Terminations (Cast Iron Potheads) | Not Applicable |
| HV Terminations (Heat Shrink) | Not Applicable |
| LV Terminations | Not Applicable |
| **Zone Transformers** | |
| Rural Zone: Transformer, between 1 MVA and 2.5 MVA | 1 MVA to 2.5 MVA, 11 kV and 22 kV |
| Rural Zone: Transformer, less than 1 MVA | 1 MVA, 11 kV and 22 kV |
| Urban Zone: Transformer, 20/30 MVA | 20/30 MVA |
| Urban Zone: Transformer, 15/22.5 MVA | 15/22.5 MVA |
| **Zone Switchgear** | |
| Rural Zone: Switchgear | Not Applicable |
| Urban Zone: Switchgear, oil-insulated, 2 transformer sub | Not Applicable |
| Urban Zone: Switchgear, air-insulated, 2 transformer sub | Not Applicable |
| Urban Zone: Switchgear, oil-insulated, 3 transformer sub | Not Applicable |
| Urban Zone: Switchgear, air-insulated, 3 transformer sub | Not Applicable |
| **Zone Other Assets** | |
| Rural Zone: Building and Infrastructure | Not Applicable |
| Urban Zone: Building and Infrastructure | Not Applicable |
| Urban Zone: Protection Systems | Not Applicable |
| Urban Zone: SCADA Systems | Not Applicable |
| Urban Zone: Batteries | 125 V DC |
| **Other** | |
| Metering Transformers | Not Applicable |
| Three Phase Regulators | 100 A and 200 A ,11 kV and 22 kV |
| Single Phase Regulators (Pole Mounted) | 100 A and 200 A, 11 kV and 22 kV |
| Single Phase Regulators (Ground Mounted) | 100 A and 200 A, 11 kV and 22 kV |

# 10. Utilisation

## 10.1. RIN Requirements

RIN paragraph 4.9 requires, for the utilisation information provided in response to tables 6.4.1 and 6.4.2 of Regulatory Templates 6.4; tables 6.5.1 and 6.5.2 of Regulatory Templates 6.5; and tables 6.6.1 and 6.6.2 of Regulatory Templates 6.6, that Aurora:

(a) provide the basis and calculations underlying the forecasts; and

(b) explain the relationship between those forecasts and the forecast capex proposal.

## 10.2. Identification of models

Aurora is unable to respond to this request. Tables 6.4.1 and 6.4.2 of Regulatory Templates 6.4; tables 6.5.1 and 6.5.2 of Regulatory Templates 6.5; and tables 6.6.1 and 6.6.2 of Regulatory Templates 6.6 do not request utilisation information.

Aurora does not use a system network utilisation to forecast its capital expenditure. Rather, in part, it analyses a lower level of system infrastructure (conductors and transformers and associated infrastructure) to develop its capital expenditure based upon the limitations of the individual network assets to meet either actual or forecasted demand.

# 11. Non-network capex

RIN paragraph 4.10 requires that for each of SCADA & Network Control Capex, Non-Network – IT & Communications Capex, Non-Network – Motor Vehicles Capex, Non Network – Property Capex, Non-Network – Plant & Equipment Capex and Non-Network – Other Capex Standard Control Capex Categories that Aurora:

(a) provide a description of the forecast capex, including:

(i) with reference to the scope of activities, timing and cost

(ii) whether activities of the same type were undertaken in the Current *Regulatory Control Period*; and

(iii) whether activities of the same type were planned to be undertaken in the current *Regulatory Control Period* and for which expenditure was accepted by OTTER in the EPI; and

(iv) where the response to paragraph 4.10(a)(i) differs to the response to paragraph 4.10(a)(ii), including in relation to scope, timing or cost, provide an explanation for the differences.

## 11.1. SCADA & network control capex

Forecast expenditure in the SCADA & network control capex standard control capex category for the Forthcoming *Regulatory Control Period* is given in the table below.

| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
|---|---|---|---|---|---|
| Forecast | 1,157 | 5,762 | 5,766 | 716 | 708 |
| Description | Small projects | Network management & SCADA (DSN.05) | | Small projects | Small projects |

Aurora did not categorise SCADA & Network Control as a category of work during the *Current Regulatory Control Period*, rather this expenditure was under the Asset Management Capability Category. Over the current period no significant capital investment was made in regards to SCADA and Network Control.

Aurora is proposing a significant investment in SCADA and Network Control in the forthcoming *Regulatory Control Period*.

System Operations is intended to address the requirements for a Distribution Management System (DMS) and a SCADA system.

The components that the initiative will look to introduce to support the above-mentioned capabilities are, but not limited to:

- DMS capabilities providing support for network diagram management, control room work flow management, switching and safety logic management, system configuration management and replication capability to provide 24x7 system availability.

- SCADA capabilities providing support for initiating remote control and receiving asynchronous changes of state, analogue management, alarm management, advanced intelligent automated schemes, and online configuration testing and commissioning of incremental additions to the SCADA system.
- Distribution power analysis capabilities providing support for load flow and short circuit calculations, multiple modes for analysis e.g. live and study modes, load profiling and load allocation, and graphical and text reporting.

Integration with the existing Outage Management System (OMS), InService, will be required. An investment in InService in 2010 will see the existing OMS capability supported through the *Forthcoming Regulatory Control Period* however a consolidation exercise is envisaged for the *Regulatory Control Period* commencing 1 July 2018 to consolidate all works scheduling capability into the enterprise works scheduling solution introduced as part of initiative DSN.04 – Works Management.

The initiative is also intended on delivering a set of analytics and reports that provide the ability to report in outages, restoration times, feeder performance, and the measures required for regulatory reporting. This analysis should also support the operational related 'historian' requirements of Aurora.

It is anticipated that the initiative would span 18 months estimated at $11.1m. The initiative is currently scheduled to commence the start of 2015 with a target completion date mid 2016.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Forecast | ½ of 1,499 | 213 | 71 | 155 | 284 |
| Description | Install HV feeder control, DA & comms<br>Install zone protection, control & comms | | | | |

Activities of the same type as those in the SCADA & network control capex standard control capex category were planned to be undertaken in the Current *Regulatory Control Period* and expenditure was allowed by OTTER in the EPI.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Forecast | ½ of 1,127 | 178 | 60 | 128 | 358 |
| Description | Install HV feeder control, DA & comms<br>Install zone protection, control & comms | | | | |

### 11.1.1. Non-network – IT & communications capex

Forecast expenditure in the non-network IT & communications capex standard control capex category for the Forthcoming *Regulatory Control Period* is given in the table below.

| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
|---|---|---|---|---|---|
| Forecast | 9,818 | 7,349 | 7,148 | 10,944 | 10,995 |
| Description | Market interfaces, financial management, BI enhancements, service orientated architecture, document management, enterprise server infrastructure, Enterprise storage architecture | Asset management, systems management services, data network & security, mobile technology, identity management, BI enhancements, document management, market interfaces | Virtual desktop interface, planning & budgeting, HRMIS upgrade, workflow management, BI enhancements | Profiling & tariff modelling, BI enhancements | Customer case management, BI enhancements |

Activities of the same type as those in the non-network IT & communications capex standard control capex category were undertaken in the Current *Regulatory Control Period*. Actual and expected expenditure is given in the following table.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Forecast | ½ of 12,625 | 11,740 | 11,243 | 22,553 | 10,414 |
| Description | Data warehouse, 3G comms to remote devices, GSL tool, GTech implementation | Supply quality database, customer reporting stage1, GTech implementation, InService stage 2, VEGeMITe upgrade | InService stage 2 completion, InService field mobility, InService trouble analysis, DINIS CONAN, reliability BI, GTech v10 upgrade | InService field mobility completion, InService trouble analysis completion, protection database scoping, WASP Basix annual planning tool implementation | Ops works management suite commencement, WASp Basix monthly planning toll implementation, customer new connections database, substation modelling |

Activities of the same type as those in the non-network IT & communications capex standard control capex category were planned to be undertaken in the Current *Regulatory Control Period* and expenditure was allowed by OTTER in the EPI.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Forecast | ½ of 8,774 | 6,688 | 7,500 | 7,947 | 9,068 |
| Description | Mobile field computing; upgrades of GTech, InService, SCADA; data warehouse establishment; develop process tools and decision environment; asset information acquisition; contract management system | | | | |

The overall reduction in non-network IT and Communications capital expenditure between the *Current Regulatory Control Period* and the *Forthcoming Regulatory Control Period* is due to the changed approach of Aurora towards IT infrastructure.

## 11.2. Non-network – motor vehicles capex

Forecast expenditure in the non-network motor vehicles capex standard control capex category for the Forthcoming *Regulatory Control Period* is given in the table below.

| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
|---|---|---|---|---|---|
| Forecast | 7,021 | 6,488 | 5,052 | 3,371 | 3,383 |
| Description | Purchase of light and heavy vehicles | | | | |

Activities of the same type as those in the non-network motor vehicles capex standard control capex category were undertaken in the Current *Regulatory Control Period*. Actual and expected expenditure is given in the following table.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Forecast | ½ of 5,165 | 5,774 | 6,635 | 4,565 | 7,053 |
| Description | Purchase of light and heavy vehicles | | | | |

Activities of the same type as those in the non-network motor vehicles capex standard control capex category were planned to be undertaken in the Current *Regulatory Control Period* and expenditure was allowed by OTTER in the EPI.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Forecast | ½ of 3,373 | 6,437 | 5,567 | 5,791 | 5,541 |
| Description | Purchase of light and heavy vehicles | | | | |

Aurora considers that there are no material differences in the forecast capital expenditure proposal from Actual Capex and Estimated Capex.

Aurora considers that there are no material differences in the Actual Capex and Estimated Capex from that allowed by OTTER in the previous EPI.

## 11.3. Non-network – plant & equipment capex

Forecast expenditure in the non-network plant & equipment capex standard control capex category for the Forthcoming *Regulatory Control Period* is given in the table below.

| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
|---|---|---|---|---|---|
| Forecast | - | - | - | - | - |
| Description | None | | | | |

Activities of the same type as those in the non-network plant & equipment capex standard control capex category were undertaken in the Current *Regulatory Control Period*. Actual and expected expenditure is given in the following table.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Forecast | - | - | - | - | - |
| Description | None | | | | |

Activities of the same type as those in the non-network plant & equipment capex standard control capex category were planned to be undertaken in the Current *Regulatory Control Period* and expenditure was allowed by OTTER in the EPI.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Forecast | - | - | - | - | - |
| Description | None | | | | |

There is no difference between OTTER allowed and Aurora spent, nor between Aurora's expenditure in the Current *Regulatory Control Period* and proposed in the Forthcoming *Regulatory Control Period*.

## 11.4. Non-network – property capex

Forecast expenditure in the non-network property capex standard control capex category for the Forthcoming *Regulatory Control Period* is given in the table below.

| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
|---|---|---|---|---|---|
| Forecast | 352 | 330 | 287 | 253 | 232 |
| Description | Routine works | | | | |

Activities of the same type as those in the non-network property capex standard control capex category were undertaken in the Current *Regulatory Control Period*. Actual and expected expenditure is given in the following table.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Forecast | ½ of (916) | 1,500 | 382 | 9,296 | 1,400 |
| Description | Accounting adjustment | Cambridge data centre | Routine works | Kirksway refurbishment, data centre, training centre | Training centre upgrade |

Activities of the same type as those in the non-network property capex standard control capex category were planned to be undertaken in the Current *Regulatory Control Period* and expenditure was allowed by OTTER in the EPI.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Forecast | ½ of 3,373 | 6,437 | 5,567 | 5,791 | 5,541 |
| Description | Finalisation of Cambridge resource centre, refurbishment of Kirksway place office, refurbishment of Mornington training centre, expansion and reconfiguration of Rocherlea centre | | | | |

## 11.5. Non-network – other capex

Forecast expenditure in the non-network – other capex standard control capex category for the Forthcoming *Regulatory Control Period* is given in the table below.

| Year | 2012-13 (real $'000) | 2013-14 (real $'000) | 2014-15 (real $'000) | 2015-16 (real $'000) | 2016-17 (real $'000) |
|---|---|---|---|---|---|
| Forecast | 546 | 546 | 546 | 546 | 546 |
| Description | Minor assets and inventory spares | | | | |

Activities of the same type as those in the non-network – other capex standard control capex category were undertaken in the Current *Regulatory Control Period*. Actual and expected expenditure is given in the following table.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Forecast | ½ of 814 | 2,052 | 2,201 | 633 | 608 |
| Description | Minor assets and inventory spares | | | | |

Activities of the same type as those in the non-network – other capex standard control capex category were planned to be undertaken in the Current *Regulatory Control Period* and expenditure was allowed by OTTER in the EPI.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Forecast | ½ of 767 | 1,204 | 1,508 | 1,026 | 1,540 |
| Description | Minor assets and inventory spares | | | | |

# 12. Non-network – IT & communications capex

## 12.1. RIN Requirements

RIN paragraph 4.11 requires that for Non-Network – IT & Communications Capex Standard Control Capex Category that Aurora:

(a) identify:

(i) Projects that represent more than 10 per cent of that category's total forecast capex in any single year of the Current *Regulatory Control Period;* and

(ii) Projects that represent more than 10 per cent of that category's total forecast capex in any single year of the Forthcoming *Regulatory Control Period;*

(b) explain:

(i) the process for acquiring IT services; and

(ii) any changes to the processes referred to in paragraph 4.11(b)(i) that occurred in the Previous *Regulatory Control Period* or Current Regulatory Period, including:

(1) quantifying how each change affected capital expenditure;

(2) how Aurora considers each of these changes prudently and efficiently satisfies the capex objectives;

(iii) any material changes that occurred to the Projects identified in paragraph 4.11(a)(i), including explanation of changes to the timing, scope and expenditure for the Project from that forecast by Aurora in its final capex proposal to the previous EPI;

(iv) for each Project referred in paragraph 4.11(a)(ii)

(1) the systems including hardware and software that are part of the Project;

(2) when the systems were last replaced or significantly upgraded;

(3) how Aurora considers that the Project prudently and efficiently satisfies the capex objectives.

## 12.2. Identified projects

### 12.2.1. Current Regulatory Control Period

The following projects represented more than 10 percent of non-network IT & communications capital expenditure in the *Current Regulatory Control Period*:

- 2007-08 – MDMS;
- 2008-09 – NEM –Renewal;

- 2009-10 – NEM – Renewal;
- 2010-11 – NEM – Renewal and NEM – Tranche 5A; and
- 2011-12 – PABX Replacement.

### 12.2.2. Forthcoming Regulatory Control Period

The following projects are expected to represent more than 10 percent of the category's total forecast capital expenditure in any single year of the Forthcoming *Regulatory Control Period*.

- Initiative DSN.01 – Market Interfaces
- Initiative DSN.03 – Asset Management
- Initiative DSN.04 – Workforce Management
- Initiative DSN.06 – Customer Case Management
- Initiative DSN.07 – Profiling and Tariff Modelling

## 12.3. Process for acquiring IT services;

Aurora engaged Enterprise Architects to conduct an assessment of Aurora's business and define the requirements, the primary output being a Technology Road Map. Aurora will use existing process for tendering and procurement service to acquire IT services in line with Aurora's delegation manual.

## 12.4. Changes to the processes referred to in paragraph 4.11(b)(i)

There were no changes to processes throughout the *Previous* or *Current Regulatory Control Period* that affected Capex.

There were no changes to processes throughout the *Previous* or *Current Regulatory Control Period* that affected Capex.

## 12.5. Material changes that occurred to the Projects identified in paragraph 4.11(a)(i)

Tranche 5A and Renewal were not planned to be executed in the final capital expenditure proposal in the current EPI. This expenditure was due to regulatory obligations and requirements due to the further tranches of contestability in the Tasmanian electricity market.

## 12.6. Projects referred in paragraph 4.11(a)(ii)

### 12.6.1. Initiative DSN.01 – Market Interfaces

Large IT project "Initiative DSN.01 – Market Interfaces" is intended to introduce additional capability in the following market applications:

- Bravo: a market interface process suite required for activity in the NEM; and

- Gentrack: an application that is the master repository of metering data and associated information.

The enhancements to Bravo provide, amongst other things, general enhancements to support additional reporting functionality, upgrades for increases in data volume through the Market Interface Layer (MIL) gateway and a general platform migration from .Net 2005 to .Net 2008.

The enhancements to Gentrack are intended to support the abovementioned changes.

Specific details will not be known in detail until the current IT review is further advanced. At a high level, however, the following are expected to be required:

- hardware – three servers and SAN storage; and
- software – Bravo and Gentrack enhancements.

Both Gentrack and Bravo were implemented as new capability during the *Current Regulatory Control Period*. Neither system has yet been replaced or required significant upgrades.

#### 12.6.1.1. Capex Objective 1

Bravo and Gentrack do not contribute to the provision of the shared network and the reliability and power quality of the supply.

Bravo and Gentrack peripherally contribute to the connection of new customers, in that they are used to collect and manage metering data.

Some parts of Bravo and Gentrack do not contribute to the provision of the shared network, the connection of new customers and the reliability & power quality of the supply. Bravo and Gentrack are used by Aurora to meet its obligations under Chapter 7 of the Rules and under part B of Chapter 9 of the TEC. Aurora considers the services required to meet these obligations to be *standard control services*.

#### 12.6.1.2. Capex Objective 2

The systems Brave and Gentrack are designed to meet the relevant requirements of Chapter 9 of the Rules and the metrology procedures.

#### 12.6.1.3. Capex Objective 3

The Project is designed to maintain the quality of services provided by Aurora: the enhanced software will allow Aurora to remain compliant with existing market legislation and will also provide quicker access to market information to allow Aurora to deal with requests from retailers.

The Project is not designed to maintain the reliability of services that Aurora provides.

The Project is not designed to maintain the security of the supply of services that Aurora provides.

#### 12.6.1.4. Capex Objective 4

The Project is not designed to maintain the power quality of the system.

The Project is not designed to maintain the reliability of the system.

The Project is not designed to maintain the safety of the system.

The Project is not designed to maintain the security of supply.

The project is being done to enable Aurora to meet its ongoing regulatory obligations with regard to metering under the Rules and jurisdictional laws and rules.

### 12.6.2. Initiative DSN.03 – Asset Management

Large IT project "Initiative DSN.03 – Asset Management" is to improve Aurora's ability to manage its assets. The initiative will provide a central repository for all current and historical asset information including, but not limited to, the type (including fleet), location (including GIS integration), condition, cost, maintenance, and depreciation data. These data should permit Aurora to measure and benchmark the performance of the assets whilst also providing a view of the total lifetime cost of the asset, and also support the asset-related historical information requirements upon Aurora.

Additional functionality is expected to include:

- inventory management, including the optimisation of storeroom inventory and purchasing capabilities for material sourcing and replenishment;
- program and project management capability to provide greater management and cost control over large programs of work; and
- safety and regulatory compliance reporting.

Specific details will not be known in detail until the current IT review is further advanced. At a high level, however, the software suite for this project is expected to comprise:

- an enterprise asset management solution such as Oracle's Works and Asset Management solution; and
- an enterprise portfolio management solution such as Oracle Primavera.

The hardware will be that required to support these systems:

- Tier 1 Blade Servers with SAN.

Large IT project "Initiative DSN.03 – Asset Management" will retire the following systems:

- Condemned Private Pole Management System – is a purpose-built process that has been developed in-house and refined over the past four years.
- Private Pole Vegetation Defects – an in-house developed Microsoft Access solution developed as an interim solution until the Condemned Private Pole Management System is upgraded to have the required functionality. The package deals with poles and services that are inaccessible due to customer vegetation issues.
- "PowerDraft" – a cut down version of "MicroStation", a Computer Aided Drafting (CAD) package provided by Bentley Systems, which is used by the network designers for drawing up new plans for the distribution network. It was last upgraded in August 2007.

#### 12.6.2.1. Capex Objective 1

Forecast capital expenditure in the Project is required to meet or manage the expected demand for *standard control services* over the Forthcoming *Regulatory Control Period*.

The Project contributes to the provision of the shared network, the connection of new customers and the reliability & power quality of the supply by providing increased information gathering and retention capability within Aurora. This is expected to lead to improved capacity to analyse asset performance and optimise asset maintenance and replacement cycles.

All parts of the project contribute to the provision of shared network services.

#### 12.6.2.2. Capex Objective 2

The forecast capital expenditure is designed to be compliant. The design scope should require the developer to ensure compliance with applicable regulatory obligations or requirements associated with the provision of *standard control services*.

#### 12.6.2.3. Capex Objective 3

The Project is designed to maintain quality of the services that we provide by providing improved information upon which to base asset management decisions.

The Project is not designed to maintain the reliability of the services that we provide.

The Project is designed to maintain the security of supply of the services that we provide by:

- allowing supply chain optimisation to ensure adequate, but not excessive, stock for maintenance or replacement purposes; and
- simplifying planning of asset replacement or maintenance to reduce costs to end customers.

#### 12.6.2.4. Capex Objective 4

The Project is designed to maintain the power quality of the system: targeted asset maintenance should reduce the factors that result in poor power quality.

The Project is designed to maintain the reliability (SAIDI & SAIFI) of the system: targeted asset maintenance should reduce the likelihood of spontaneous, in-service asset failure thereby reducing SAIFI and, consequently, SAIDI.

The Project is designed to maintain the security of supply: optimised asset maintenance indirectly maintains the security of supply when used in conjunction with appropriate asset loading at critical locations. That is, by designing the network such that the load unserved by failure of a critical component can be transferred to an adjacent asset, the duration of loss of supply events are minimised. Appropriate maintenance of the assets at these critical locations ensures that the "back up" is unlikely to fail spontaneously or due to overloading whilst acting in its reserve capacity.

## 12.6.3. Initiative DSN.04 – Workforce Management

Large IT Project "Initiative DSN.04 – Workforce Management" is designed to manage Aurora's mobile workforce. The initiative will look to optimise work scheduling and resource utilisation, with the scope of the initiative covering the entire work order lifecycle, from appointment booking, resource assignment, vehicle tracking, work order delivery, and order status/completion.

Specific details will not be known in detail until the current IT review is further advanced. At a high level, however, the following are expected to be required:

- the software is expected to be an enterprise workforce management solution such as Oracle Mobile Workforce Management; and
- the hardware will be that required to host the application suite – a Tier 1 Blade Server system with SAN, field tools and a communications network.

Large IT Project "Initiative DSN.04 – Workforce Management" will retire the following systems:

- WASP – WASP is the enterprise asset and works management system used by Aurora. There are two implementations of WASP in Aurora, one for the Network division and one for the Network Services division. WASP was implemented in both divisions in 1998, and the last upgrade was in 2007.
- WASP Basix – WASP Basix was deployed as an interim platform to support works planning at the macro level because such capability does not exist in WASP. WASP Basix was first deployed in 2011 and has not been upgraded.
- DIAS – DAIS is the Distribution Asset Inspection System (DAIS), an application provided by Field Access Systems. DAIS allows the collection of field inspection and asset data. While DIAS has not had a major upgrade since deployment in the late 1990s, there have, been several hardware (server) replacements and modifications to interfaces.
- TVD Customer Support Center (TVD-CSC) – TVD CSC is used for service order management. TVD-CSC was first deployed in 2006 and has not been upgraded since being deployed.

### 12.6.3.1. Capex Objective 1

Forecast capital expenditure in the Project is required to meet or manage the expected demand for *standard control services* over the Forthcoming *Regulatory Control Period*.

The Project contributes to the provision of the shared network, the connection of new customers and the reliability & power quality of the supply by permitting more efficient use of the existing Aurora field work-force.

All parts of the project contribute to the provision of shared network services.

#### 12.6.3.2. Capex Objective 2

The forecast capital expenditure is designed to be compliant. The design scope should require the developer to ensure compliance with applicable regulatory obligations or requirements associated with the provision of *standard control services*.

#### 12.6.3.3. Capex Objective 3

The Project is designed to maintain quality of the services that we provide: improved works and workforce planning should enable Aurora have the right work-force at the right time to do the right work.

The Project is designed to maintain the reliability of the services that we provide: improved works and workforce planning should enable Aurora have the right work-force at the right time to do the right work.

The Project is designed to maintain the security of supply of the services that we provide: improved works and workforce planning should enable Aurora have the right work-force at the right time to do the right work.

#### 12.6.3.4. Capex Objective 4

The Project is not designed to maintain the power quality of the system.

The Project is indirectly designed to maintain the reliability (SAIDI & SAIFI) of the system: efficient scheduling of resources should result in appropriate work done at the required time, which should reduce the likelihood of spontaneous, in-service asset failure thereby reducing SAIFI and, consequently, SAIDI.

The Project is indirectly designed to maintain the security of supply: optimised asset maintenance indirectly maintains the security of supply when used in conjunction with appropriate asset loading at critical locations. That is, by designing the network such that the load unserved by failure of a critical component can be transferred to an adjacent asset, the duration of loss of supply events are minimised. Appropriate and timely maintenance of the assets at these critical locations ensures that the "back up" is unlikely to fail spontaneously or due to overloading whilst acting in its reserve capacity.

### 12.6.4. Initiative DSN.06 – Customer Case Management

The Large IT Project "Initiative DSN.06 – Customer Case Management" intends to introduce capabilities required to manage customer complaints and claims. The intent is to leverage the existing investment in the corporate customer information system (CIS), Oracle's CC&B, which was introduced into Aurora's Retail Business in February 2011.

The project will be limited to dealing with the information required to manage customer complaints and claims. Specific details will not be known in detail until the current IT review is further advanced. At a high level, however, the following are expected to be required:

- software that is intended to leverage capability from the existing Oracle-based CIS; and
- hardware that is expected to be an expansion of that currently hosting the CIS – that is, a Blade Server and SAN.

The project will retire the following systems:

- Claims Management Process Tool – This is an in-house process tool that was developed about 10 years ago, and which has not been replaced or upgraded.
- Supply Quality Database – This is an in-house process tool that was developed about 10 years ago, and which has not been replaced or upgraded.

### 12.6.4.1. Capex Objective 1

Forecast capital expenditure in the Project is required to meet or manage the expected demand for *standard control services* over the Forthcoming *Regulatory Control Period*.

The project indirectly contributes to the provision of the shared network by allowing Aurora to track customer complaints and deal with customer claims against Aurora. Customer complaints handling is a requirement under section 8.4 of the TEC and the NECF. A process to process customer claims is a requirement of section 8.4 of the TEC.

All parts of the project contribute to the provision of shared network services.

### 12.6.4.2. Capex Objective 2

The Project is designed to be compliant. The design scope for the project should require the developer to ensure compliance with applicable regulatory obligations or requirements associated with the provision of *standard control services*.

### 12.6.4.3. Capex Objective 3

The Project is designed to maintain quality of the services that we provide: improved and compliant customer complaints and claims handling processes will enhance the customer experience.

The Project is designed to maintain the reliability of the services that we provide: improved and compliant customer complaints and claims handling processes should improve Aurora's ability to monitor the progress customer interactions, thereby providing a degree of quality control over the process.

The Project is not designed to maintain the security of supply of the services that we provide.

### 12.6.4.4. Capex Objective 4

The Project is not designed to maintain the power quality of the system.

The Project is not designed to maintain the reliability of the system.

The Project is not designed to maintain the safety of the system.

The Project is not designed to maintain the security of supply.

The Project is proposed to provide Aurora with a means to ensure that Aurora's customer service obligations are met.

## 12.6.5. Initiative DSN.07 – Profiling and Tariff Modelling

Large IT Project "Initiative DSN.07 – Profiling & Tariff Modelling" is intended to introduce two new analysis and reporting capabilities into Aurora:

- a consumption profiling engine to create half-hourly consumption data from profiles imported from AEMO; and
- a tariff modelling/forecasting solution to support "what-if" analysis of forecast tariff scenarios.

Specific details will not be known in detail until the current IT review is further advanced. At a high level, however, the following are expected to be required:

- a software expansion of the existing Bravo suite; and
- hardware to support this expansion.

Aurora has no existing automated IT systems to perform this function. This project is to automate existing un-automated data extraction and analysis.

### 12.6.5.1. Capex Objective 1

The project contributes to the provision of shared network services by:

- allowing modelling of network demand patterns, which can be used to drive and optimise network augmentation activities; and
- better modelling of network consumption patterns for input into tariff models to ensure that each customer class contributes appropriately for network usage.

All parts of the project contribute to the provision of shared network services.

### 12.6.5.2. Capex Objective 2

The design scope for the project should require the developer to ensure compliance with applicable regulatory obligations or requirements associated with the provision of *standard control services*.

### 12.6.5.3. Capex Objective 3

The Project is designed to maintain quality of the services that we provide: improved demand modelling will result in more efficient network utilisation resulting in lower end cost; and improved consumption modelling should increase equity across the distribution tariff suite.

The Project is not designed to maintain the reliability of the services that we provide.

The Project is not designed to maintain the security of supply of the services that we provide.

### 12.6.5.4. Capex Objective 4

The Project is indirectly designed to maintain the power quality of the system: understanding demand patterns can indicate appropriate sizing of network assets to reduce the likelihood of overloading introducing power quality issues..

The Project is indirectly designed to maintain the reliability of the system: understanding demand patterns can indicate appropriate sizing of network assets to reduce the likelihood of in-service asset failure due to persistent overloading, hence reducing SAIFI and SAIDI.

The Project is not designed to maintain the safety of the system: understanding demand patterns can indicate appropriate sizing of network assets to reduce the likelihood of in-service asset failure due to persistent overloading, hence reducing SAIFI and SAIDI.

The Project is indirectly designed to maintain the security of supply: understanding demand patterns can indicate appropriate sizing of network assets in critical network areas, reducing the likelihood of in-service asset failure due to acute overloading in a situation requiring load transfer from a failed asset to the “back-up”.

# 13. Motor vehicle capex

## 13.1. RIN Requirements

RIN paragraph 4.12 requires that for the Non-Network – Motor Vehicles Capex Standard Control Capex Category that Aurora:

(a) provide a description of the treatment of motor vehicle expenditure, in the current *Regulatory Control Period* and proposed treatment in the *Forthcoming Regulatory Control Period*; and

(b) explain whether motor vehicles are purchased or leased and the number of years before a vehicle is disposed of.

## 13.2. Treatment of expenditure

Fleet Services are responsible for the management, procurement and disposal of light, heavy vehicles and mobile plant fleet assets. The Aurora fleet consists of approximately 950 vehicle and plant assets.

Fleet Services are committed to the introduction of the Strategic Fleet Asset Management Plan 2011-2016. The asset management plan was developed to identify accountabilities of fleet services including the integration of the fleet asset management system, system implementation and future enhancements.

The plan ensures a consistent approach to planning, operations, maintenance and disposal of fleet assets at all stages of their lifecycle. It also demonstrates responsive management of assets and services provided from the assets, compliance with regulatory requirements and effective management of risks.

All Aurora fleet assets must be disposed of under the relevant contract agreement for Disposal of Fleet Assets and unless otherwise specified the method of disposal must be consistent with the obligations set out under the disposal process and correctly authorised by the appropriate delegate.

The following three methods of vehicle disposal are as follows:

- public auction;
- executive vehicle purchase; and
- write-off.

A fleet management solution is required to enable the effective management of the Aurora fleet, covering functions such as fuel cost management, maintenance, registration renewal, vehicle internal hire, safety, vehicle disposals, FBT, Driver information, budgeting and vehicle replacement and disposal management. In addition, the implementation of a fleet management system will support the requirement for appropriate risk management.

Capital expenditure consists of a 5 year forecast, each year a budget vehicle replacement schedule is developed in line with the annual Replacement Guideline. Capital costs are estimated and are then transitioned into a replacement program of work. Vehicles are purchased and costs are monitored monthly in accordance with the budget. Vehicles are hired out internally and monthly charges are recouped through the internal hire charge-out process.

Fleet asset replacement is guided by the assets age or kilometers traveled (km). In all cases the replacement criteria are applied unless Fleet Services determine that replacement should be based on asset condition.

Exceptions to the replacement guideline may occur on a case by case basis as follows:

- early disposal due to asset write-off;
- early retirement of the asset before the replacement criteria is reached due to mechanical failure, other condition (fit for purpose), changes to legislation/safety standards or market conditions; or
- extension of service life beyond the replacement guideline criteria including remote locations, subject to asset condition and kilometres traveled as assessed by Fleet Services.

The purpose of the Fleet Improvement Program is to deliver the following objectives:

- to fully meet the Aurora Price Determination Program and comply with regulatory requirements;
- to develop Fleet Asset Management Strategy;
- to review current Fleet Policies and identify required improvements;
- to complete the operational Fleet Management Framework;
- review and improve safety of all fleet assets;
- to implement the recommendations from the Fleet Replacement and Lease vs. Own analysis;
- provide strategies for ensuring budgetary compliance with operational costs of fuel, maintenance and repairs including FBT requirements;
- to implement the relevant recommendations from the previous fleet reviews;
- fleet software management system implementation, including data migration, cleansing and centralisation;
- to develop team position descriptions, roles and responsibilities;
- to improve and streamline internal fleet processes;
- to identify business risks and ensure efficient fleet management capabilities into the future;
- to implement the Fleet Management System and identify improvements to how we transfer data to Navision (Finance System) for the capture and disposal of fleet asset information; and
- fleet specific benchmarking and peer surveys against other energy utilities.

The timing of the outcomes will affect the overall delivery of the program.

## 13.3. Purchased or leased

All vehicles within the Aurora fleet are purchased. Aurora does not lease motor vehicles.

A "Fleet Replacement Guideline" based on a mix of fleet asset's age and kilometres travelled are used in order to establish the Schedule of Fleet Asset Replacement.

As part of determining the Replacement Program, consideration is given to the following fleet asset replacement criteria:

- fitness for purpose;
- cost required to make a fleet asset 'fit for purpose';
- changes to service levels to meet operational requirements;
- technologically obsolete;
- potential useful life;
- backup parts, servicing and maintenance;
- safety ratings and features;
- environmental ratings and sustainability; and
- replacement lead times.

All plant and vehicles are purchased in accordance with the Sustainable Vehicle Procurement Policy.

The replacement guideline and replacement criteria are based on asset service life class. In general terms, light vehicles are replaced after travelling 150,000 km and heavy vehicles are replaced after 9 years.

# 14. Material Projects

## 14.1. RIN Requirements

RIN paragraph 4.13 requires that for each Material Project Aurora:

(a) identify:

(i) all alternative options considered including the scope of activities and timing of options considered including that of the Material Project chosen;

(ii) the costs and benefits of each option considered including that of the option chosen including that of the Material Project chosen;

(iii) all contingency factors included in the costs of the options considered including in that of the option chosen including that of the Material Project chosen;

(iv) the estimated expenditure for each *regulatory year* in the Current *Regulatory Control Period* and Forthcoming *Regulatory Control Period*, distinguishing between capex and opex;

(v) each project where the roll-out of the National Broadband Network in Tasmania and the potential for Aurora to provide services in relation to the National Broadband Network has substantively influenced the options analysis for the Project; and

(vi) those projects that are joint with Transend;

(b) explain:

(i) the need that the Material Project addresses;

(ii) why it was chosen over each alternative option identified;

(iii) if no alternative options were identified, why;

(iv) whether a 'do nothing' option was considered, including short-term 'do-nothing' options or options with various stages that involve a 'do-nothing' stage; how the risks of this option were assessed and compared with the other options; whether risk mitigation measures were considered, and how the time period over which such an option could be used was assessed;

(v) each cost benefit analysis undertaken and the relevant results;

(vi) if no cost benefit analyses were undertaken, why;

(vii) whether any consideration was had to substituting capex for opex or vice-versa;

(viii) the expenditure estimation process used including identifying where estimates are:

(1) derived directly from competitive tender processes n/a

(2) based upon competitive tender processes for similar Project– power transformer replacement - this was used for the substation component;

(3) based upon estimates obtained from contractors or manufacturers;

(4) based upon independent benchmarks; and

(5) based upon actual historical costs for similar Projects;

(ix) for each contingency factor identified in response to paragraph 4.13(a)(iii):

(1) the risks accounted for; and

(2) how each risk was calculated;

(x) the estimated expenditure for each regulatory year;

(xi) what further planning, forecasting or other assessment work is expected prior to the commencement of the Project or the actual expenditure being incurred, and how these assessments are factored into the forecast capex proposal;

(xii) in each financial year of the Forthcoming *Regulatory Control Period*, the forecast impact of the Project, compared to the counterfactual of the Project entirely not being undertaken, on duration of customer interruptions and frequency of customer interruptions:

(1) for each individual supply reliability area;

(2) for each individual supply reliability category;

(3) for the entirety of Aurora's distribution network;

(xiii) the methodology employed in calculating the forecast impact referred to in paragraph 4.13(b)(xii);

(xiv) for Projects identified in response to paragraph 4.13(a)(v), how the options analysis for the Project and the selected preferred option were influenced by the roll-out of the National Broadband Network;

(xv) whether and how Aurora considers that the expenditure associated with the Project is or is not required to:

(1) meet or manage the expected demand for *standard control services* over the Forthcoming *Regulatory Control Period*;

(2) maintain the quality, reliability and security of *standard control services*;

(3) maintain the reliability, safety and security of the distribution system through the supply of *standard control services*;

(xvi) whether and how Aurora considers that the expenditure associated with the Project does or does not reflect:

(1) the efficient costs of achieving the *capital expenditure objectives*;

(2) the costs that a prudent operator in the circumstances of Aurora would require to achieve the *capital expenditure objectives*; and

(3) a realistic expectation of the demand forecast and cost inputs required to achieve the expenditure objectives;

(xvii) whether and how Aurora considers that the expenditure associated with the Project takes into consideration

(1) the relative prices of operating and capital inputs;

(2) the substitution possibilities between operating and capital expenditure;

(3) the consistency of the total labour costs included with the incentives provided by the STPIS;

(4) efficient non-network alternatives

(xviii) all relevant considerations;

The RIN defines Material Project as a Project that relates to one or more Standard Control Capex Categories and which over the life of the works exceeds:

(a) $2 million (real 2011 dollars) in the case of a project which relates to either of the standard control capex categories non-network-IT & communications capex, non-network-property capex, non-network-plant & equipment capex, non-network-motor vehicles capex, non-network-other capex, SCADA & network control capex; or

(b) $5 million (real 2011 dollars) in the case of a project not covered by paragraph (a)

## 14.2. Material Projects

Aurora considers that there are no Material Projects within its forecasts for capital expenditure.

While there are a number of projects that appear to have a common purpose and when combined appear to meet the criteria for a Material Project; they each of have their own objectives and aims and have been separately classified within Aurora's proposed work programs.

Aurora has therefore not provided any further response to the questions within RIN paragraph 4.13.

# 15. Actual and estimated capex

## 15.1. RIN Requirements

RIN paragraph 4.14 requires in relation to Actual Capex and Estimated Capex that Aurora:

(a) identify all capital expenditure in the current *Regulatory Control Period* that has been deferred due to:

  (i) the implementation of a non-network solution; or

  (ii) being substituted for operating expenditure;

(b) explain, for each variation from the approved OTTER allowance identified in response to Regulatory Template 3.2, and for each variation from Aurora's final capex proposal submitted to previous EPIs identified in response to Regulatory Template 3.3:

  (i) the reasons for the variation, categorised and quantified in terms of:

    (1) the following non-efficiency matters:

      (A) external and relating to demand and/or customer growth;

      (B) external and relating to changes in regulatory obligations or requirements;

      (C) other external factors not under the control of Aurora;

      (D) internal knowledge of Aurora's distribution network, its needs and Projects resulting from business practices and processes that are a continuation of practices and processes applied prior to the relevant capex proposal; and

      (E) other internal factors; and

    (2) the following efficiency matters:

      (A) structural changes to business operations or ownership;

      (B) changes to asset management and/or planning;

      (C) changes to risk management strategies or Project approval processes;

      (D) changes to contracting arrangements; and

      (E) other factors;

  (ii) whether this is recurrent or a one off variation; and

  (iii) the factors which generally influenced variations to the OTTER approved allowance;

(c) where a variation referred to in paragraph 4.14(b) is due to factors beyond Aurora's control, provide supporting Documents which relate to the variations;

(d) identify Material Projects that substantially changed from those forecast in Aurora's final capex proposals to previous EPIs, and explain the reasons for any changes, including:

(i) timing changes;

(ii) cost changes where the scale or scope of the Project was substantially unchanged; and

(iii) changes to the scale or scope of the Project.

## 15.2. Deferred capital expenditure in the Current Regulatory Control Period

### 15.2.1. Implementation of a non-network solution

There is one occasion in the *Current Regulatory Control Period* that the implementation of a non-network solution has deferred capital expenditure – see the response to RIN question 11 for more details.

### 15.2.2. Substituted for operating expenditure

There are no instances where this has occurred in the *Current Regulatory Control Period*.

## 15.3. Variation from the approved OTTER allowance and Aurora proposals

Variations between OTTER allowed capital expenditure and Aurora's actual capital expenditure during the *Current Regulatory Control Period* are also discussed in section 11.3 of Aurora's Regulatory Proposal

### 15.3.1. Customer initiated capex

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| OTTER Allowance | 11.11 | 32.89 | 33.98 | 32.71 | 31.71 |
| Actual | 19.70 | 40.01 | 39.99 | 39.79 | 40.77 |
| Variance | -8.58 | -7.12 | -6.01 | -7.08 | -9.06 |

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Aurora proposed | 11.62 | 35.16 | 36.39 | 36.06 | 37.88 |
| Actual | 19.70 | 40.01 | 39.99 | 39.79 | 40.77 |
| Variance | -8.08 | -4.85 | -3.60 | -3.74 | -2.89 |

Customer-initiated capex has shown a greater than 10 percent upwards variation between OTTER allowed, Aurora proposed and actual expenditure in each year. This was due to increasing customer growth and connections in irrigation, commercial and residential sub-divisions during the *Current Regulatory Control Period*. Aurora expects that this is a recurrent variation.

### 15.3.2. Reinforcements capex

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| OTTER Allowance | 5.00 | 23.86 | 19.11 | 11.16 | 9.68 |
| Actual | 7.69 | 13.51 | 21.64 | 20.48 | 23.00 |
| Variance | -2.69 | 10.36 | -2.53 | -9.32 | -13.32 |

Reinforcement capex shows a greater than 10 percent variation in all years between OTTER allowed and actual expenditure in each year. Aurora considers that these variations are due to increasing demand growth which resulted in timing of reinforcements projects. Aurora expects that this will be a recurrent variation.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Aurora proposed | 5.38 | 24.59 | 20.48 | 12.39 | 11.47 |
| Actual | 7.69 | 13.51 | 21.64 | 20.48 | 23.00 |
| Variance | -2.31 | 11.09 | -1.17 | -8.09 | -11.52 |

Reinforcement capex shows a greater than 10 percent variation in all years between Aurora proposed and actual expenditure in each year. Aurora considers that these variations are due to increasing demand growth which resulted in timing of reinforcements projects. Aurora expects that this will be a recurrent variation.

## 15.3.3. Reliability and quality improvements capex

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| OTTER Allowance | 3.66 | 10.30 | 12.09 | 9.95 | 7.87 |
| Actual | 4.04 | 11.44 | 13.95 | 11.60 | 6.40 |
| Variance | -0.38 | -1.14 | -1.86 | -1.65 | 1.46 |

Reliability and quality improvements capex shows greater than a 10 percent variation between OTTER allowed and actual expenditure in each year, however the overall variance is less than 10 percent. The variations are due to timing issues and changes in when work was undertaken. The variations are regarded as non-recurrent.

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Aurora proposed | 4.21 | 10.50 | 12.34 | 10.55 | 8.84 |
| Actual | 4.04 | 11.44 | 13.95 | 11.60 | 6.40 |
| Variance | 0.17 | -0.93 | -1.61 | -1.05 | 2.44 |

Reliability and quality improvements capex shows less than a 10 percent variation between Aurora proposed and actual expenditure in each year.

## 15.3.4. Reliability and quality maintained capex

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| OTTER Allowance | 6.79 | 20.06 | 26.38 | 26.22 | 26.72 |
| Actual | 6.15 | 18.39 | 28.02 | 25.78 | 25.41 |
| Variance | 0.64 | 1.67 | -1.64 | 0.43 | 1.30 |

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Aurora proposed | 8.02 | 23.23 | 30.48 | 29.26 | 30.43 |
| Actual | 6.15 | 18.39 | 28.02 | 25.78 | 25.41 |
| Variance | 1.86 | 4.84 | 2.46 | 3.48 | 5.02 |

Reliability and quality maintained capex shows less than a 10 percent variation between OTTER allowed and actual expenditure in each year.

## 15.3.5. Regulatory obligations or requirements capex

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| OTTER Allowance | 1.00 | 3.58 | 3.36 | 4.49 | 1.90 |
| Actual | 0.84 | 9.92 | 3.99 | 5.14 | 1.98 |
| Variance | 0.16 | -6.35 | -0.63 | -0.65 | -0.07 |

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Aurora proposed | 1.20 | 4.39 | 4.07 | 5.28 | 2.30 |
| Actual | 0.84 | 9.92 | 3.99 | 5.14 | 1.98 |
| Variance | 0.35 | -5.54 | 0.08 | 0.13 | 0.32 |

Regulatory obligations or requirements capex shows a greater than material variation for actual expenditure compared to both OTTER allowed and Aurora proposed in 2008-09. This variation was due to expenditure on Aurora's broken neutral device. The reason for the variation is solely due to the introduction of this device. This was a one off variation.

## 15.3.6. SCADA and network control capex

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| OTTER Allowance | 0.56 | 0.18 | 0.06 | 0.13 | 0.36 |
| Actual | 0.75 | 0.21 | 0.07 | 0.16 | 0.28 |
| Variance | -0.19 | -0.03 | -0.01 | -0.03 | 0.07 |

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Aurora proposed | 0.68 | 0.18 | 0.06 | 0.14 | 0.39 |
| Actual | 0.75 | 0.21 | 0.07 | 0.16 | 0.28 |
| Variance | -0.07 | -0.03 | -0.01 | -0.02 | 0.11 |

SCADA and network control capex is discussed in the response to RIN question 4.10. There are no annual or overall material variations in this category.

## 15.3.7. Non-network – IT & communication capex

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| OTTER Allowance | 4.39 | 6.69 | 7.50 | 7.95 | 9.07 |
| Actual | 6.31 | 11.74 | 11.24 | 21.92 | 9.81 |
| Variance | -1.93 | -5.05 | -3.74 | -13.97 | -0.74 |

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Aurora proposed | 5.33 | 9.03 | 10.77 | 10.90 | 12.47 |
| Actual | 6.31 | 11.74 | 11.24 | 21.92 | 9.81 |
| Variance | -0.98 | -2.71 | -0.47 | -11.02 | 2.66 |

There are material variances between OTTER allowed, Aurora proposed and actual expenditure for non-network IT & communications capital expenditure during the *Current Regulatory Control Period*. These variances relates to the establishment of IT systems required to support further tranches of retail contestability and NEM activity. Whilst the expenditure pattern is inconsistent with OTTER's allowance, the uncertain nature of the expenditure was recognised by OTTER and an adjustment mechanism was included.

## 15.3.8. Non-network – motor vehicles capex

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| OTTER Allowance | 1.69 | 6.44 | 5.97 | 5.79 | 5.54 |
| Actual | 2.58 | 5.77 | 6.64 | 4.57 | 7.05 |
| Variance | -0.90 | 0.66 | -0.67 | 1.22 | -1.51 |

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Aurora proposed | 2.84 | 6.71 | 7.32 | 6.91 | 6.81 |
| Actual | 2.58 | 5.77 | 6.64 | 4.57 | 7.05 |
| Variance | 0.26 | 0.94 | 0.69 | 2.34 | -0.24 |

Non-network – motor vehicles capex is discussed in the response to RIN question 4.10. There is no material variation between OTTER allowed and actual and expenditure. The significant underspend variation between Aurora-proposed expenditure and actual and expenditure is due to OTTER disallowing $1.5m annually from this capital expenditure category (2007 Final Report, section 4.4.6) and Aurora re-budgeting to accommodate the change.

## 15.3.9. Non-network – property capex

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| OTTER Allowance | 0.87 | 3.17 | 2.60 | 3.70 | 0.84 |
| Actual | -0.46 | 1.50 | 0.38 | 9.30 | 1.40 |
| Variance | 1.32 | 1.67 | 2.22 | -5.59 | -0.56 |

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Aurora proposed | 1.46 | 3.31 | 0.42 | 4.42 | 1.03 |
| Actual | -0.46 | 1.50 | 0.38 | 9.30 | 1.40 |
| Variance | 1.92 | 1.80 | 0.04 | -4.88 | -0.37 |

There is no overall material variation between OTTER allowed and actual expenditure, but there are annual material variations, some over and some under OTTER allowed and Aurora proposed. The variations are due to timing issues, changes in when work was done.

## 15.3.10. Non-network – other capex

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| OTTER Allowance | 0.38 | 1.20 | 1.51 | 1.03 | 1.54 |
| Actual | 0.41 | 2.05 | 2.20 | 0.63 | 0.61 |
| Variance | -0.02 | -0.85 | -0.69 | 0.39 | 0.93 |

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Aurora proposed | 0.65 | 1.26 | 2.43 | 1.22 | 1.89 |
| Actual | 0.41 | 2.05 | 2.20 | 0.63 | 0.61 |
| Variance | 0.24 | -0.80 | 0.23 | 0.59 | 1.29 |

Non-network – other capex – this is discussed in the response to RIN question 4.10. There is one material variation, between actual expenditure and Aurora proposed expenditure for the 2011-12 year. The corresponding difference in comparison to OTTER allowed capital expenditure is not material, which indicates that the materiality is due to OTTER reducing Aurora's allowance in this category. The variation is due to efficiency. Aurora expects that this will be a one-off variation.

### 15.3.11. Capitalised overheads

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| OTTER Allowance | 4.93 | 17.25 | 14.54 | 16.37 | 19.22 |
| Actual | 6.80 | 17.63 | 17.66 | 20.53 | 20.81 |
| Variance | -1.87 | -0.38 | -3.12 | -4.16 | -1.58 |

| Year | 1/1/2008 – 30/6/2008 (nominal $'000) | 2008-09 (nominal $'000) | 2009-10 (nominal $'000) | 2010-11 (real $'000) | 2011-12 (real $'000) |
|---|---|---|---|---|---|
| Aurora proposed | 5.87 | 19.88 | 17.18 | 19.60 | 20.74 |
| Actual | 6.80 | 17.63 | 17.66 | 20.53 | 20.81 |
| Variance | -0.93 | 2.24 | -0.48 | -0.94 | -0.07 |

Aurora did not forecast, nor did OTTER allow expenditure, in the *Current Regulatory Control Period* for capital expenditure in this category. Rather, figures presented in are produced using percentages for the *Forthcoming Regulatory Control Period* to extract portions from existing work categories. Accordingly, variations in this category simply reflect variations in the categories that were apportioned.

## 15.4. Identified Material Projects

### 15.4.1. Howrah substation

This project was originally termed Shoreline.

#### 15.4.1.1. Timing changes

Originally intended as switching station (2007 to 2010) and express feeders but upon completion of RIT – 'Development of the electricity supply network in the Hobart Eastern shore region Hobart eastern shore region', a zone substation at Howrah substation was considered as the best option. This substation is programmed for completion in February 2012.

#### 15.4.1.2. Cost changes

$1.02 million to present $10.935 million (2009 business case)

#### 15.4.1.3. Scale changes

Scale changes are covered above in timing changes.

### 15.4.2. Rosny/Bellerive third transformer

This project was originally termed Kangaroo Bay.

#### 15.4.2.1. Timing changes

Kangaroo Bay zone substation was considered to be required beyond 2012. Arising from the Hobart Eastern Shore joint study, a zone substation at Rosny substation was considered as best option. Further studies identified a reduced supply arrangement (Bellerive third transformer) that met the identified constraint as described in the RIT – 'Development of the electricity supply network in the Hobart Eastern shore region Hobart eastern shore region'. This substation is programmed for completion in March 2012.

#### 15.4.2.2. Cost changes

$0 to $7.0 million (2011 business case)

#### 15.4.2.3. Scale changes

There are no scale changes applicable to this project.

### 15.4.3. Derwent River submarine cables

This project was originally aligned with the development of the Rosny zone substation.

#### 15.4.3.1. Timing changes

Two submarine cables were considered for installation in 2008-09. Following the completion of the RIT – 'Development of the electricity supply network in the Hobart Eastern shore region' a zone substation at Rosny substation was considered as best option for this identified constraint. The development of this solution negated the need for the submarine cable installations.

#### 15.4.3.2. Cost changes

This project was initially budgeted at $1.8 million (2008-09). These costs have been absorbed as part of the Rosny/Bellerive third transformer.

#### 15.4.3.3. Scale changes

This project has been negated by the installation of the third transformer at Rosny/Bellerive.

### 15.4.4. Cambridge zone substation

#### 15.4.4.1. Timing changes

Cambridge zone was considered to be required beyond 2012 and was not included in the 2006-12 regulatory period. The advent of a significant customer requirement (major shopping precinct) required the substation to be constructed in 2009.

#### 15.4.4.2. Cost changes

This project was not considered as part of Aurora's proposals and was constructed at a cost of $10.68 million.

#### 15.4.4.3. Scale changes

There are no scale changes applicable to this project.

### 15.4.5. Trial Harbour zone substation

This project was originally termed Zeehan.

#### 15.4.5.1. Timing changes

This project was not considered as part of Aurora's proposals. The advent of a significant customer requirement (major mining operation) required the substation to be constructed in 2009.

#### 15.4.5.2. Cost changes

This project was not considered as part of Aurora's proposals and was constructed at a cost of $8.87 million.

#### 15.4.5.3. Scale changes

There are no scale changes applicable to this project.

### 15.4.6. Wesley Vale substation

This project is a joint project with Transend.

#### 15.4.6.1. Timing changes

This project was to be constructed in the period 2008-2010. This project has been deferred based upon further load studies and the proposed implementation of non-network solutions. Aurora does not consider that this project will be required as part of the *Forthcoming Regulatory Control Period*.

#### 15.4.6.2. Cost changes

Original budgets for this project were:

- 2008-09 – $0.27 million; and
- 2009-10 – $1.47 million.

#### 15.4.6.3. Scale changes

There are no scale changes applicable to this project.

### 15.4.7. Wynyard terminal substation

This project is a joint project with Transend.

#### 15.4.7.1. Timing changes

This project was to be constructed in the period 2008-2010. This project has been deferred based upon further load studies and the proposed implementation of non-network solutions. Aurora does not consider that this project will be required as part of the *Forthcoming Regulatory Control Period*.

#### 15.4.7.2. Cost changes

Original budgets for this project were:

- 2008-09 – $0.39 million; and
- 2009-10 – $1.14 million.

#### 15.4.7.3. Scale changes

There are no scale changes applicable to this project.

### 15.4.8. Creek Road zone substation

#### 15.4.8.1. Timing changes

This project was to be constructed in 2010-11. This project has been deferred based upon further load studies and the report 'Hobart West area strategic plan, System capacity planning project, Aurecon 20 May 2010' which indicated that this work would not be required to be undertaken during the *Forthcoming Regulatory Control Period*.

#### 15.4.8.2. Cost changes

Original 2010-11 budget for this project was $2.76 million.

#### 15.4.8.3. Scale changes

There are no scale changes applicable to this project.

### 15.4.9. Penguin terminal substation

This project is a joint project with Transend.

#### 15.4.9.1. Timing changes

This project was to be constructed in 2011-12. This project has been deferred based upon further load studies and the report 'North Coast area strategic plan, System capacity planning project, Aurecon 20 May 2010' which indicated that this work would not be required to be undertaken during the *Forthcoming Regulatory Control Period*.

#### 15.4.9.2. Cost changes

Original 2010-11 budget for this project was $1.05 million.

#### 15.4.9.3. Scale changes

There are no scale changes applicable to this project.

### 15.4.10. Browns Road zone substation

This project is a joint project with Transend.

#### 15.4.10.1. Timing changes

This project was to be constructed in 2009-10. This project has been deferred based upon further load studies and an opportunity for non-network solutions.

#### 15.4.10.2. Cost changes

Original 2009-10 budget for this project was $4.11 million.

#### 15.4.10.3. Scale changes

There are no scale changes applicable to this project.

### 15.4.11. Strahan feeder

#### 15.4.11.1. Timing changes

This project was to be constructed in the period 2010-12. This project has been deferred based upon extreme cost, the requirement to only service a small location and the ability to manage reliability via other management processes.

Original budgets for this project were:

- 2008-09 – $5.71 million; and
- 2009-10 – $3.12 million.

#### 15.4.11.2. Scale changes

There are no scale changes applicable to this project.

### 15.4.12. Bruny Island submarine cable

#### 15.4.12.1. Timing changes

This project has been deferred due to its high cost and opportunities for non-network solutions.

#### 15.4.12.2. Cost changes

Original 2009-10 budget for this project was $0.80 million. The revised estimate for this project is now $4.0 million.

#### 15.4.12.3. Scale changes

There are no scale changes applicable to this project.